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## ***When Reliability Matters!***

### ***The GRI Warranty***

GRI's magnetic contacts for doors and windows carry a ***Lifetime Warranty*** against faulty workmanship, material and factory defects.

Our replacement policy is **2 for 1**, prior to installation.

After installation, if the switch fails due to material or factory workmanship, a \$10 credit will be applied, providing that the following conditions are met:

- Switch must be returned to the factory, case intact, for examination and determination of cause.
- If failure is due to physical abuse or contact freezing from high voltage, lightning, transient surge or capacitor discharge through the contact, the part will not be eligible for the \$10 credit nor replacement.

*Consult the GRI catalog or **WWW.GRISK.COM** for additional warranty information on specialty products.*

**GRI Provides Quality Products and Customer Service to Surpass Our Customer's Expectations.**

***GRI Products - Built to  
Impossibly High Standards!***



## Innovation, Quality & Service

At GRI, only the finest raw materials are used in producing a contact switch that you can install with confidence. Our purchasing department requires vendors to meet or exceed our specifications on reeds, plastic, wire and potting material.

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GRI is a vertically integrated manufacturing company with in-house facilities for tool and die, injection molding, engineering and production. Our name and logo are also found on products other than security switches. GRI produces the Air Traffic Control **board** used by the Federal Aviation Administration in their control towers across the nation. One of our custom pushbutton switches was developed specifically for use by the F.A.A.

Our engineering department uses CAD/CAM (computer-aided design and computer-aided manufacturing) to design not only your security contacts, but also custom keyboards, switches and more. All GRI products are proudly built to rigid specifications for applications in military, aerospace, industrial and medical fields.

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Our Founder, Mr. George Risk, knew a company could not draw a line down the middle of the production floor and build products to MIL-SPEC on one side and not the other! GRI's quality assurance department inspects all incoming materials, sub-assemblies and finished goods to the same exact standards demanded by our high tech applications.

***GRI - Your Choice When Reliability Matters!***

**Securing the World into the  
Millennium and Beyond!**



Made in U.S.A.

# ***Glossary of GRI Part Numbers for Switches and Accessories***

| <b>TERM</b> | <b>DESCRIPTION</b>                      | <b>EXAMPLE</b>                    |
|-------------|-----------------------------------------|-----------------------------------|
| -A          | Armored Cable.....                      | 4400- <b>A</b>                    |
| A           | A Form Reed / Closed Loop.....          | 29 <b>A</b> -W                    |
| A-          | Adaptor .....                           | <b>A</b> -75-W                    |
| AA          | 2 A Form Reeds .....                    | <b>AA</b> 29P                     |
| AC          | 1 A Form Reed, 1 C Form Reed .....      | <b>AC</b> 29P                     |
| -AL         | Almond Color.....                       | 50F-12- <b>AL</b>                 |
| -B          | Brown Color .....                       | 20RS-12- <b>B</b>                 |
| B           | Biased Switch .....                     | <b>B</b> 70-12-W                  |
| B           | B Form Reed / Open Loop .....           | 29 <b>B</b> -W                    |
| BA          | Break Away Flange .....                 | 50F-12-B- <b>BA</b>               |
| -BL         | Black Color.....                        | A-75- <b>BL</b>                   |
| C           | C Form Reed / SPDT .....                | 29 <b>C</b> -W                    |
| C-          | Cases .....                             | <b>C</b> -5-W                     |
| CB-         | Cat Butt (Wire Run Plug).....           | <b>CB</b> -75-BL                  |
| CB-         | Call Button.....                        | <b>CB</b> -20                     |
| CBL-        | Call Button Latching .....              | <b>CBL</b> -20                    |
| CBM-        | Call Button Momentary.....              | <b>CBM</b> -01-B                  |
| CC-         | Current Controller.....                 | <b>CC</b> -01                     |
| COM-        | Raceway Connector Combo Pack .....      | E-Z 58 <b>COM</b> -W              |
| CP-         | Child Proof Pool Alarm .....            | 289 <b>CP</b> -3                  |
| CS-         | Current Sensor.....                     | <b>CS</b> -1                      |
| DC-         | Raceway Drop Ceiling .....              | E-Z 58 <b>DC</b> -W               |
| DP-         | Dummy Plug.....                         | <b>DP</b> -75-W                   |
| DPA-        | Dumb Pool Alarm .....                   | <b>DPA</b> -10                    |
| DPP-        | Double Gang Plastic Plate .....         | <b>DPP</b> -22                    |
| DSP-        | Double Gang Stainless Steel Plate ..... | <b>DSP</b> -22                    |
| DS-         | Dome Switch .....                       | <b>DS</b> -01                     |
| EC-         | Raceway End Cap .....                   | E-Z 58 <b>EC</b> -W               |
| E-Z 58      | 5/8"x 1/2" Raceway .....                | <b>E-Z 58</b> 6-W                 |
| E-Z 75      | 5/8"x 1 1/4" Raceway .....              | <b>E-Z 75</b> 6-W                 |
| F-          | Flange .....                            | 50F-12-W- <b>BA</b>               |
| -G          | Gray Color .....                        | 20RS-12- <b>G</b>                 |
| -GEN        | Generic / No print (100 per bag) .....  | 2020-12-W- <b>GEN</b>             |
| GT          | Gate Mount Pool Alarm .....             | <b>GT</b> 289-1                   |
| HD          | Heavy Duty .....                        | 200-36 <b>HD</b>                  |
| HD-         | Hold-Up Device .....                    | <b>HD</b> -1                      |
| HTP-        | High Temperature Probe .....            | <b>HTP</b> -1                     |
| IC-         | Raceway Inside Corner .....             | E-Z 58 <b>IC</b> -W               |
| -JC         | Jacketed Cable with Chain.....          | 4712- <b>JC</b>                   |
| M-          | Magnet.....                             | <b>M</b> -5-W                     |
| MC-         | Door or Window Channel Magnet .....     | <b>MC</b> -180-W or <b>MC</b> -25 |
| MM-         | Mighty Mag - Rare Earth Magnet .....    | <b>MM</b> -400                    |

| <b>TERM</b> | <b>DESCRIPTION</b>                  | <b>EXAMPLE</b>              |
|-------------|-------------------------------------|-----------------------------|
| N           | Rare Earth Switch Set.....          | <b>N2020-12</b>             |
| NSP-        | Narrow Gang Stainless Plate.....    | <b>NSP-17</b>               |
| OC-         | Raceway Outside Corner .....        | E-Z 58 <b>OC-W</b>          |
| OF          | Oval Flange.....                    | 20 <b>OF-12-W</b>           |
| P           | Pig Tail.....                       | 410 <b>P-G</b>              |
| PB-         | Push Button .....                   | <b>PB-100-B</b>             |
| PBF-        | Push Button With Flange .....       | <b>PBF-100-W</b>            |
| PL          | Private Logo .....                  | 29A-W( <b>PL</b> )          |
| PP-         | Single Gang Plastic Plate .....     | <b>PP-13</b>                |
| PW-         | Pre Wire Plug.....                  | <b>PW-375-W</b>             |
| R           | Recessed (Round) .....              | 50 <b>R-12-W</b>            |
| RA-         | Raceway Right Angle.....            | E-Z 58 <b>RA-W</b>          |
| RB-         | Roller Ball.....                    | <b>RB-01-W</b>              |
| RF          | Recessed (Round) With Flange.....   | 50 <b>RF-12-W</b>           |
| RS          | Recessed (Round) Short .....        | 50 <b>RS-12-W</b>           |
| R2          | Resistor Pack With 2 1.5K Resistors |                             |
| S           | Switch Only.....                    | <b>S20RS-12-W</b>           |
| S-          | Spacer or Bracket .....             | <b>S-28-B</b> or <b>S-9</b> |
| SB-         | Timed Electronic Shunt Switch ..... | <b>SB-2000</b>              |
| SG-         | Raceway Junction Box.....           | E-Z 58 <b>SG-W</b>          |
| SG-         | Shockguard.....                     | <b>SG-1</b>                 |
| SP-         | Raceway Splice .....                | E-Z 58 <b>SP-W</b>          |
| SP-         | Single Gang Steel Plate.....        | <b>SP-20</b>                |
| T-          | Tape.....                           | <b>T-3/8</b>                |
| -T          | Terminal Switch .....               | 2020- <b>T-W</b>            |
| TEE-        | Raceway Tee Connector .....         | E-Z 58 <b>TEE-W</b>         |
| TP-         | Temperature Probe.....              | <b>TP-1</b>                 |
| TS-         | Tamper Switch .....                 | <b>TS-20</b>                |
| TSC-        | Tamper Switch With Clip.....        | <b>TSC-20</b>               |
| VS-         | Vent Switch.....                    | <b>VS-06</b>                |
| W           | White Color .....                   | 20RS-12- <b>W</b>           |
| WB          | Alarmed Window Bar.....             | <b>WB-26-38</b>             |
| WG          | Wide Gap .....                      | 2020-12 <b>WG-W</b>         |
| XWG         | Extra Wide Gap.....                 | 2020-12 <b>XWG-W</b>        |
| Z           | Zip Cord .....                      | <b>Z50-12-W</b>             |
| -12"-36"    | Wire Length.....                    | 2020- <b>12/200-36</b>      |

### **CONTACT SPECIFICATIONS:**

**Closed Loop** ..... Switch closed when magnet is in close proximity.

**Open Loop** ..... Switch open when magnet is in close proximity.

**SPDT** ..... Switch has common, open and closed sides.

**DPDT** ..... Two switches, each having common, open and closed sides.

# Switch and Corresponding Magnet

*Magnet Pairing Subject To Change Dependent Upon Availability & Configuration*

| PRODUCT    | MAGNET                                                        | PRODUCT  | MAGNET                                                               |
|------------|---------------------------------------------------------------|----------|----------------------------------------------------------------------|
| 120T-12WG  | <b>M-5</b><br>1/4" x 1"<br>M-12 Magnet in Case                | 50F-12   | <b>M-7F</b><br>3/16" x 1"<br>M-19 Magnet in Case                     |
| 130T-12WG  |                                                               | 50F-12WG |                                                                      |
| 140T-12WG  |                                                               | 55F-12   |                                                                      |
| 2020-12WG  |                                                               | 55F-12WG |                                                                      |
| 2020-TWG   |                                                               | 60F-12   |                                                                      |
| 3030-12WG  |                                                               | 60F-12WG |                                                                      |
| 3030-T     |                                                               | 65F-12   |                                                                      |
| 3030-TWG   |                                                               | 65F-12WG |                                                                      |
| 4040-12WG  |                                                               | 70F-12   |                                                                      |
| 4545-12    |                                                               | 70F-12WG |                                                                      |
| 2120-12WG  |                                                               | 75F-12   |                                                                      |
| 2130-12WG  |                                                               | 75F-12WG |                                                                      |
| 2140-12WG  |                                                               |          |                                                                      |
| 20RS-12XWG |                                                               | 28A      | <b>M-8</b><br>.800" x .375"<br>x .420"<br>#7355 Magnet in Case       |
| 20RS-TXWG  |                                                               | 29A      |                                                                      |
| 30RS-12XWG |                                                               | 29PA     |                                                                      |
| 40RS-12XWG |                                                               | 28B      |                                                                      |
|            |                                                               | 29B      |                                                                      |
|            |                                                               | 29PB     |                                                                      |
|            |                                                               | 28C      |                                                                      |
|            |                                                               | 29C      |                                                                      |
|            |                                                               | 29PC     |                                                                      |
|            |                                                               |          |                                                                      |
| 20F-12     | <b>M-5F</b><br>1/4" x 1"<br>M-12 Magnet in Case               | 28AWG    | <b>M-14</b><br>2 - .800" x .375"<br>x .420"<br>#7355 Magnets in Case |
| 20F-12WG   |                                                               | 28AXWG   |                                                                      |
| 30F-12     |                                                               | 29AWG    |                                                                      |
| 30F-12WG   |                                                               | 29AXWG   |                                                                      |
| 40F-12     |                                                               | 29PAWG   |                                                                      |
| 40F-12WG   | <b>M-5 OF</b><br>1/4" x 1"<br>M-12 Magnet in Case             | 29PAXWG  |                                                                      |
|            |                                                               | 28BWG    |                                                                      |
|            |                                                               | 28BXWG   |                                                                      |
|            |                                                               | 29BWG    |                                                                      |
|            |                                                               | 29BXWG   |                                                                      |
|            |                                                               | 29PBWG   |                                                                      |
|            |                                                               | 29PBXWG  |                                                                      |
|            |                                                               | 28CWG    |                                                                      |
| 20RS-TWG   | <b>M5RS</b><br>1/4" x 5/8" M-17 Alnico<br>Magnet in 20RS Case | 28CXWG   |                                                                      |
| 20RS-12WG  |                                                               | 29CWG    |                                                                      |
| 50-12      | <b>M-7</b><br>3/16" x 1"<br>M-19 Magnet in Case               | 29CXWG   |                                                                      |
| 50-12WG    |                                                               | 29PCWG   |                                                                      |
| 60-12      |                                                               | 29PCXWG  |                                                                      |
| 60-12WG    |                                                               | VSB-06   |                                                                      |
| 70-12      |                                                               | VSB-08   |                                                                      |
| 70-12WG    |                                                               |          |                                                                      |



**PRODUCT**
**MAGNET**

410WG  
410PWG  
411WG  
411PWG  
412WG  
412PWG

**M-15**  
3/8" x 2 9/16"  
#3938 Magnet in Case

410  
410P  
411  
411P  
412  
412P

**M-20**  
3/8" x 1 1/2"  
M-16 Magnet in Case

101-12  
102-12

**M-100**  
1/4" x 1", M-12 Magnet in Case

101-12WG  
101-TWG  
102-12WG

**M-100WG**  
1/4" x 1", M-12 Magnet  
in Case Printed "Magnet"

111-12  
112-12

**M-110**  
1/4" x 1", M-12 Magnet in Case

111-12WG  
111-TWG  
112-12WG

**M-110WG**  
1/4" x 1", M-12 Magnet in Case  
Printed "Magnet"

129A  
129AWG  
129B  
129BWG

**M-129**  
1/4" x 3/4"  
M-10 Magnet in Case

150-12WG  
150-TWG  
160-12WG  
170-12WG

**M-150**  
1/4" x 1"  
M-12 Magnet in Case

180-12  
185-12  
190-12  
195-12  
8080-T  
8585-T

**M-180**  
1/4" x 1"  
M-12 Magnet in Case

180-12WG  
185-12WG  
190-12WG  
195-12 WG  
8080-TWG  
8585-TWG

**M-180WG**  
3/8" x 1 1/2"  
M-16 Magnet in Case

**PRODUCT**
**MAGNET**

180MC-12  
184MC-12  
185MC-12  
189MC-12  
190MC-12  
194MC-12  
195MC-12  
199MC-12  
8080-TMC  
8484-TMC  
8585-TMC  
8989-TMC

**MC-180**  
3/4" x .325"  
#6757 Magnet in Case

MC120T-12  
MC150-12  
MC150-T  
MC20RS-12  
MC20RS-T  
MC2020-T  
MC2020-12  
MC5065

**MC-25**  
1/4" x 1/4"  
x 1/8"  
#7665 Rare Earth  
Magnet in Case

184-12  
189-12  
194-12  
199-12  
8484-T  
8989-T

**M-184**  
1/4" x 1"  
M-12 Magnet in Case

184-12WG  
189-12WG  
194-12WG  
199-12WG  
8484-TWG  
8989-TWG

**M-184WG**  
3/8" x 1 1/2"  
M-16 Magnet in Case

200-36  
250-36

**M-250**  
3/8" x 2 9/16"  
#3938 Magnet in Case

200-36HD  
200-36WG  
210-36  
220-36  
250-36HD  
250-36WG  
260-36  
270-36

**M-280**  
2 - 3/8" x 2 9/16"  
#3938 Magnets in Case

**PRODUCT**
**MAGNET**

400

401

402

**M-401**

3/8" x 1 1/2"

M-16 Magnet in Case

400WG

401WG

402WG

**M-402**

3/8" x 2 9/16"

#3938 Magnet in Case

4400

4400A

4400AB

4402

4402A

4402AB

4405A

**M-4400**

.450" x 2.50"

#7547 Magnet in Case

4532

4532C

**M4532**

5 - .500" x .500" x .500"

#7352 Magnet in Case

4704

4704-A

**M-4704**

3/8" x 1 1/2"

M-16 Magnet in Case

4714

4714-A

4714-JC

**M-4714**

3/16" x 1"

M-19 Magnet in Case

150MF-12

5088

5088T

5088RS

5088RST

5088WG

5088-TWG

5088RSWG

5088RS-TWG

**MF-875**

1/8" x 3/8"

x 7/8"

Bare Flat Magnet with Tape

4532L

4532LB

4532CL

**M-4532L**

3/8" x 2 9/16"

#3938 Magnet in 400  
Case with S-12 Bracket

**PRODUCT**
**MAGNET**

50R-12

50R-12WG

50RF-12

50RF-12WG

50RS-12XWG

60R-12

60R-12WG

60RF-12

60RF-12WG

60RS-12XWG

70R-12

70R-12WG

70RF-12

70RF-12WG

70RS-12XWG

**M-12**

1/4" x 1"

Bare Magnet

120T-12XWG

130T-12XWG

140T-12XWG

20F-12XWG

20-OF-12XWG

30F-12XWG

30-OF-12XWG

40F-12XWG

40-12 (8187)

40-OF-12XWG

45F-12

45F-12WG

45F-12XWG

45-OF-12

45-OF-12WG

45-OF-12XWG

2020-12XWG

2020-TXWG

3030-12XWG

3030-TXWG

4040-12XWG

4545-12WG

**M-16**

3/8" x 1 1/2"

Bare Magnet

50RS-12

50RS-12WG

60RS-12

60RS-12WG

70RS-12

70RS-12WG

150RS-TWG

**M-17**

1/4" x 5/8"

Bare Magnet

**PRODUCT****MAGNET**

1100A-12  
1100A-12WG  
1100B-12  
1100B-12WG  
1100C-12  
1100C-12WG  
VS-06  
VS-06T  
VS-08  
VS-08T

**M-1100**  
1/4" x 1 3/16"  
M-13 Magnet in Case

500  
501  
502  
503

**M-500**  
.125 Dia. x .750  
#10083 Magnet in Case

505  
505WG  
506  
506WG

**M-505**  
1/8" x .937"  
#5278 Magnet in Case

5065  
WB-26-36  
WB-26-46

**M-5065**  
1/4" x 1 3/16"  
M-13 Magnet in Case

5066

**M-5066**  
1/4" x 1 3/16"  
M-13 Magnet in Case

N120T-12  
N150-12  
N150RS-12  
N150RS-T  
N2020-12  
N2120-12  
N20RS-12  
N2020-T  
N20RS-T  
N4473  
N50R-12  
N50RF-12  
N50RS-12  
N5065

**MM-400**  
3/8" x 1/8"  
Bare Rare Earth Magnet

**PRODUCT****MAGNET**

N120T-12WG  
N150-12WG  
N2020-12WG  
N2120-12WG  
N20RS-12WG  
N2020-TWG  
N20RS-TWG  
N4473WG  
N50R-12WG  
N50RF-12WG  
N50RS-12WG

**MM-600**  
5/8" x 1/8"  
Bare Rare Earth Magnet

150-12  
160-12  
170-12  
175-12  
150-T  
150RS-12  
160RS-12  
170RS-12  
150RS-T

**MM-150RS**  
1/4" x 1/2"  
MM-9 Rare Earth  
Magnet in Case

120T-12  
130T-12  
140T-12  
2020-12  
2020-T  
2120-12  
2130-12  
2140-12  
3030-12  
4040-12  
4545-12  
20RS-12  
20RS-T  
30RS-12  
40RS-12  
4473  
4834  
4834-T

**MM-9RS**  
1/4" x 1/2"  
MM-9 Rare Earth  
Magnet in Case

**PRODUCT****MAGNET**

100-12

100-T

100-TC

101-T

**MM-900**

1/4" x 1/2"

MM-9 Rare Earth Magnet in Case

110-12

110-T

111-T

**MM-910**

1/4" x 1/2"

MM-9 Rare Earth Magnet in Case

100-12WG

100-TWG

100-TCWG

101-TWG

101-12WG

**MM-100**1/4" x 3/4" MM-10 Rare Earth Magnet  
in Case Printed WG

110-12WG

110-TWG

**MM-110**1/4" x 3/4" MM-10 Rare Earth Magnet  
in Case Printed WG

100-12 w/ resistors

100-T w/ resistors

100-TC w/ resistors

**M-100**1/4" x 1" M-12  
Magnet in Case

102-12WG

100-12WG w/ resistors

100-TWG w/ resistors

100-TCWG w/ resistors

**M-100WG**1/4" x 1" M-12  
Magnet in Case  
Printed "Magnet"

110-12 w/ resistors

110-T w/ resistors

111-12 w/ resistors

111-T w/ resistors

112-12 w/ resistors

**M-110**1/4" x 1"  
M-12 Magnet in Case

110-12WG w/ resistors

110-TWG w/ resistors

**M-110WG**1/4" x 1" M-12 Magnet  
in Case printed "Magnet"**PRODUCT****MAGNET**

4110

4110A

4112

4112A

4460

4460A

4461

4461A

4462

4462A

4463

4463A

**M-4460**1/4" x 1 3/16"  
M-13 Magnet in  
Case

4510

4612

**8540**

1/2" x 3" Bare Magnet

180RS-12

8080RS-T

**MM-180RS**

3/8" x 1/2"

MM-375 In Cut Down 80 Mag. Case

4700A

4700AXL

4701A

4701AXL

**M-4700**.5 x 3 Alnico (cow magnet)  
In 45° Case #10155

184RS-T

8484RS-T

**MM-184RS**

3/8" x 1/2"

MM-375 In Cut Down 184 Mag. Case

700-T

700CL-12

700EL-12

701CL-12

701EL-12

**MM-700**.560 x .220  
Half-Moon Magnet in  
'700 mini' round case



# Special Services

WWW.GRISK.COM



## CABLE AND WIRE OPTIONS

GRI stocks three basic lead lengths at a reduced cost for our customers. Special lengths, colors and styles are available for an additional charge. Call for pricing.

12" Leads #22AWG  
36" Leads #22AWG  
72" Leads #22AWG  
Special Lengths #22AWG  
Zip Cord  
Jacketed 2 Conductor  
Jacketed 4 Conductor  
Jacketed 6 Conductor  
#5702 Armored 3/16" ID Bulk SquareLok  
#8296 Armored 7/32" ID Bulk SquareLok  
#8449 Armored 5/16" ID Bulk SquareLok  
#5702 & #8296 Armored Cable  
#8449 Armored Cable  
Supervisory Loop  
Dummy Center Terminal

Standard  
Stock Item  
Stock Item  
Non-Standard  
Non-Standard  
Non-Standard  
Non-Standard  
Non-Standard  
Unstrung Cable  
Unstrung Cable  
Unstrung Cable  
Strung Including Ferrules  
Strung Including Ferrules  
Using Standard Wire

## DIODE & RESISTOR SWITCHES

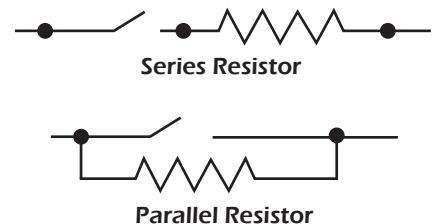
GRI makes resistors and/or diodes built-in the switch for your convenience. Our standard tolerance is  $\pm 5\%$ . Other tolerances are available upon request. Call for available values and with any questions.

### RESISTORS

1 Resistor Any Value  
2 Resistors Any Value

### DIODES

1 Diode  
2 Diodes



*SPDT & DPDT is available in a variety of GRI recessed and surface mount contacts as well as standard gap, wide gap & extra wide gap.*

## MOLEX CONNECTIVITY

GRI offers crimp connections, allowing us to accurately and efficiently add Molex, AMP/TE, and other connectors to our security switches and environmental sensors. Most suitable for high precision stripping and subsequent crimping of terminals for wires between 30-12 AWWG (0.05-4.00 sq.mm).

## CUSTOM MANUFACTURING

We offer custom manufacturing to help you out in those special situations where a standard product just won't work.

*All costs are approximate and subject to change without notice.*

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G.R.I. PLAZA  
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# *Special Services*

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## *When Reliability Counts — You Can Count On GRI!*

The statement, *“a switch is a switch,”* usually comes from those we refer to as price shoppers. This type of person only seems to consider the actual cost of the contact in computing the cost of installation. The cost of repeated trips to the site of a false alarm, or complaints from customers that their system is not operating correctly, isn't typically considered. Just what is the expense in a warranty service call? Certainly more than the price of a switch!

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## *Quality Control*

GRI's *“ZERO” Defect Program* is the standard our employees follow. They know that quality cannot be inspected “in”. We build with quality parts, quality people and quality standards. Each GRI production line must 100% inspect the sub-assemblies produced by their line. Quality control inspectors then do an on-the-spot inspection of 20% of these sub-assemblies *prior* to moving the lot onto the next process. If any defective assemblies are discovered, another 20% of the lot is inspected by Q.C., continuing on up to 100% inspection. All faulty assemblies are discarded plus an investigation is begun to determine the cause for the defective assemblies.

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## *Lifetime Warranty*

GRI is one of a very small group of manufacturers that continues to offer customers a lifetime warranty on standard magnetic reed contact products. We have always felt, that with this guarantee, we are showing the confidence GRI has in our workmanship and quality of components used in manufacturing our contacts. To see the confidence level of other switch manufacturers, check out their warranty.

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## *Individual Private Labeling*

Private labeling adds credibility to your company. GRI offers a variety of private labeling, including heat stamp, foil and mold insert. All surface mount switches, except the 50 and 50F series, are available for this service. First time heat stamp orders require a one-time set-up charge of \$30 - \$50, dependent upon the intricacy of the plate design, plus the \$.05 per case charge. Please contact us for any mold insert labeling as they require a special quote process. All private labeling must have a minimum order of 100 sets. Camera ready art work is required.

Foil colors available for private labeling are: gold, silver, red, blue, green, black and white.

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# Magnetic Contacts with Built-In E.O.L Resistors and Resistor Packs

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- ◆ Supervision for Open and Closed Loop Systems
  - ◆ Eliminates soldering on the job
- ◆ Standard Switch Sets use 1/8 or 1/4 watt Resistors
- ◆ Closed Loop Switches have Resistors in series to switch
- ◆ Open Loop Switches have Resistors parallel to switch
  - ◆ Resistor Only Packs are available for retro-fits
  - ◆ Available in all our standard colors

Magnetic contacts with end of line resistors are available in most GRI products where size restrictions permit.

Resistor only packs can be custom designed to your specifications using commonly available values. Available in or without a case. Our very popular 6644 features two 1K 1/8 watt 5% carbon film resistors in our 50R brown case, with two blue and two black, 12-inch leads.

The ideal position for the end of line resistor (E.O.L.) at the farthest point from the panel in the zone loop. This will confirm the integrity of most, if not all, of the wiring between the panel and the last device installed on the zone loop, thus preventing an intentional or accidental compromise of the security zone loop. The closer the E.O.L. is mounted to the panel in the wiring loop, the greater the possibility of compromise of the unprotected loop wiring after the resistor position. Door and window contacts with build-in resistors are the absolute best and easiest way of placing the end of line resistor in that ideal position. Resistors are available in most all popular values in 1/8 and 1/4 watt depending on size constraints. Multi-resistor configurations in conjunction with build-in switcher are offered, as well as resistor only packages. Most popular security panel resistor values are available. Please state value when ordering. Contact factory for ordering information.



## Sample Part Numbers for Magnetic Contacts with E.O.L. Resistors:

100-T-W w/1K  
180-12-B w/2K  
2020-12-W w/5.6K

20RS-T-W w/3.3  
29A-W w/10K  
4532C w/33K



29A w/1K



2020-12 w/5.6K



100-T w/1K



180-12 w/1K

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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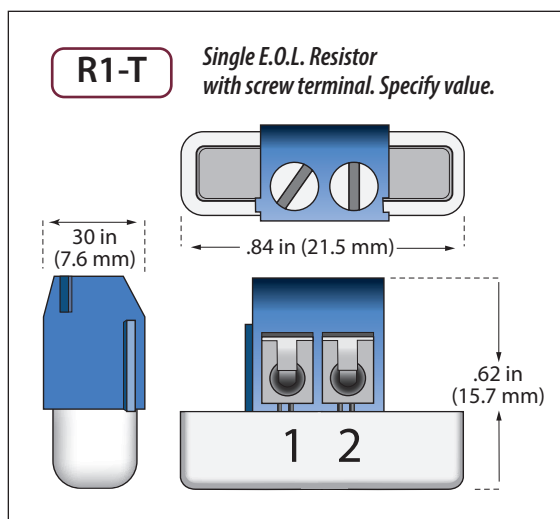
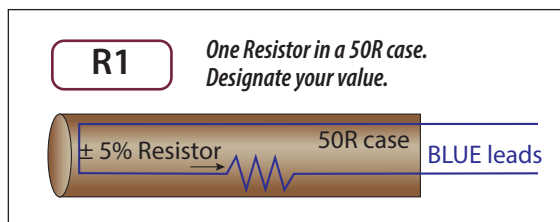
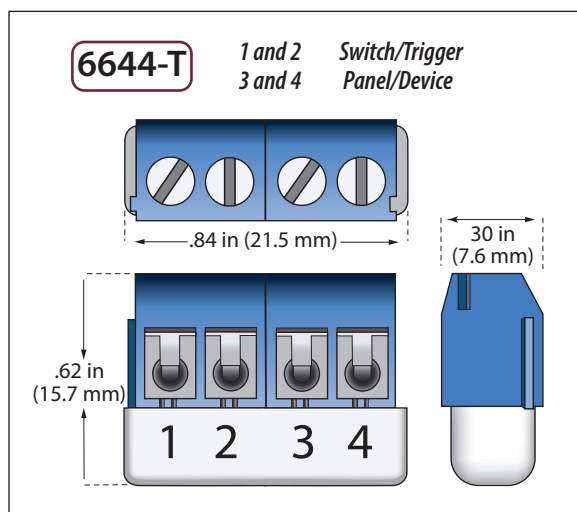
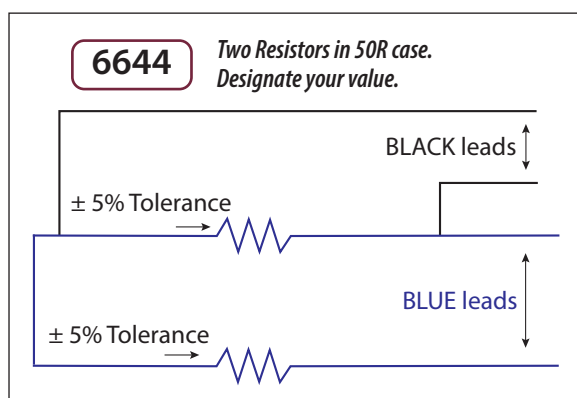
# Magnetic Contacts with Built-In E.O.L. Resistors and Resistor Packs

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In addition to building switches with E.O.L. Resistors inside the switch case, GRI assembles just the resistors in convenient packages to help in the installation of E.O.L. loads and supervision needs. For 2 or more independent resistors in one case, call factory with specifications.

## RESISTOR PACKS



### STANDARD SERIES PARALLEL RESISTOR PACKS

| Part Number | Switch or Trigger | Control Panel on Terminal | Resistor Reading $\pm 5\%$ |               |
|-------------|-------------------|---------------------------|----------------------------|---------------|
|             |                   |                           | Switch Open                | Switch Closed |
| 6644-T      | 1 & 2             | 3 & 4                     | 2 K                        | 1 K           |
| 8366-T      | 3 & 4             | 1 & 2                     | 10 K                       | 5 K           |

Call GRI for a sampling of Resistor Packs and Part Numbers as well as additional values.

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## GEORGE RISK INDUSTRIES, INC.

802 S. Elm Street  
Kimball, Nebraska 69145-1599

Telephone (308) 235-4645  
Keyboard sales fax # (308) 235-2609  
Security sales fax # (308) 235-3561  
Email: sales@grisk.com

[WWW.GRISK.COM](http://WWW.GRISK.COM)

### *Private Label Information Sheet*

#### Contact Information

Company

Company Contact Name

Address

Phone

Email

#### Switch Information

Please list the product number(s) you are requesting for private labeling (29A, 400, etc.): \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Exact wording for your private label: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Attach camera ready artwork (.pdf) of the exact layout / logo for your private label plate.

#### Important Notice:

Plates require at least two weeks to be engraved.  
Please fill out form and return as soon as possible  
for quickest turnaround.

#### For GRI use only

Date submitted: \_\_\_\_\_

Requested by: \_\_\_\_\_

Authorized by: \_\_\_\_\_





## ***Table of Contents Recessed Switches***

***1/4" Super Miniature 50RS Series***

***1/4" Miniature 50R/50RF Series***

***Rare Earth Magnet N Series***

***3/8" Miniature 20RS Series***

***3/8" 2020 Series***

***3/8" Flanged 20F/20-OF Series***

***3/8" Ribbed 2120 Series***

***3/8" One Inch Gap 5065 Series***

***3/8" Flat Magnet 5088 Series***

***1/2" Snap Fit Short 150RS Series***

***1/2" Snap Fit 150 Series***

***3/4" Aluminum, Vinyl or Wood Door 120T / 4473 Series***

***3/4" Steel Door 180 / 184 / 8080-T Series***

***3/4" Stubby Steel Door 180RS / 8080RS-T Series***

***MC-25 Window Channel Magnet Series***

***MC-180 Steel Door Channel Magnet Series***

***NEW! GR1840 Steel Door Channel Magnet Series***





# 1/4" Super Miniature Recessed Switch Set

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## 50RS-12 Series



- ◆ Just .562" long, the 50RS-12 Super Mini is ideal for thin framed doors & windows
- ◆ Open Loop and S.P.D.T. configurations are .810" in length
  - ◆ Recessed Magnetic Contact
    - ◆ Press to fit
    - ◆ 12" #22AWG leads
- ◆ Longer leads, zip cord or jacketed cable upon request
  - ◆ Hermetically sealed
    - ◆ Plated contacts resist sticking or freezing
- ◆ Built-in E.O.L. Resistors and Diodes upon request
  - ◆ Switches and Magnets available separately
    - ◆ Colors: white, brown, gray
    - ◆ Lifetime Warranty

| <u>Part Numbers</u> |                    |                  |             |
|---------------------|--------------------|------------------|-------------|
|                     | <u>Closed Loop</u> | <u>Open Loop</u> | <u>SPDT</u> |
| Standard Gap 1/4"   | 50RS-12            | 60RS-12          | 70RS-12     |
| Wide Gap 1/2"       | 50RS-12WG          | 60RS-12WG        | 70RS-12WG   |
| Extra Wide Gap 3/4" | 50RS-12XWG         | 60RS-12XWG       | 70RS-12XWG  |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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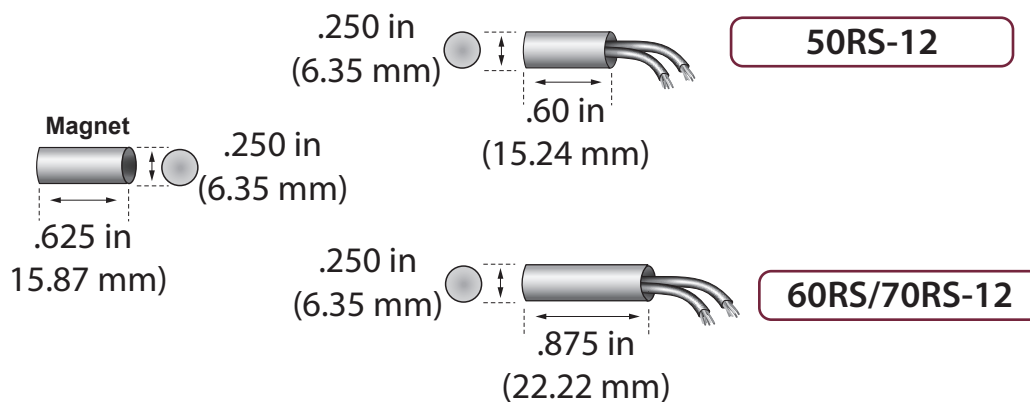
# 1/4" Super Miniature Recessed Switch Set

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## INSTALLATION APPLICATIONS

The GRI 50RS series is a 1/4" diameter switch set designed for applications where a miniature recessed is required. Only .562" in length, the switch is able to be recessed in places where a standard switch is too large. The 50RS series is also widely used in the manufacture of alarm screens.



### GRI PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type   | Electrical Configuration | Reed Form | Max. Initial Contact Resistance (Ω) | Max. Contact Rating (W) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|-------------|--------------------------|-----------|-------------------------------------|-------------------------|------------------------------|----------------------------|
| 50RS-12     | Closed      | N/O                      | A         | .150                                | 10                      | 200                          | .500                       |
| 50RS-12WG   | Closed      | N/O                      | A         | .150                                | 10                      | 200                          | .500                       |
| 50RS-12XWG  | Closed      | N/O                      | A         | .150                                | 10                      | 200                          | .500                       |
| 60RS-12     | Open        | N/C                      | B         | .140                                | 5                       | 175                          | .250                       |
| 60RS-12WG   | Open        | N/C                      | B         | .140                                | 5                       | 175                          | .250                       |
| 60RS-12XWG  | Open        | N/C                      | B         | .140                                | 5                       | 175                          | .250                       |
| 70RS-12     | Open/Closed | SPDT                     | C         | .140                                | 5                       | 175                          | .250                       |
| 70RS-12WG   | Open/Closed | SPDT                     | C         | .140                                | 5                       | 175                          | .250                       |
| 70RS-12XWG  | Open/Closed | SPDT                     | C         | .140                                | 5                       | 175                          | .250                       |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# 1/4" Miniature Recessed Switch Set

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## 50R & 50RF Series



- ◆ Ideally suited for residential & light commercial applications where aesthetics are a requirement
- ◆ Recessed Magnetic Contact
  - ◆ Press to fit or Flanged styles
  - ◆ Hermetically sealed
  - ◆ 12" #22 AWG leads
- ◆ Longer leads, zip cord or jacketed cable upon request
  - ◆ Plated contacts resist sticking or Freezing
- ◆ Built-in E.O.L. Resistors available in some models
  - ◆ Supervisory Loops in some models
- ◆ Switches and Magnets available separately
  - ◆ Colors: white, brown, gray
  - ◆ Lifetime Warranty



50R-12



50RF-12

| <u>Part Numbers</u> |                       |                       |                       |
|---------------------|-----------------------|-----------------------|-----------------------|
|                     | <u>Closed Loop</u>    | <u>Open Loop</u>      | <u>SPDT</u>           |
| Standard Gap 1/2"   | 50R-12<br>50RF-12     | 60R-12<br>60RF-12     | 70R-12<br>70RF-12     |
| Wide Gap 3/4"       | 50R-12WG<br>50RF-12WG | 60R-12WG<br>60RF-12WG | 70R-12WG<br>70RF-12WG |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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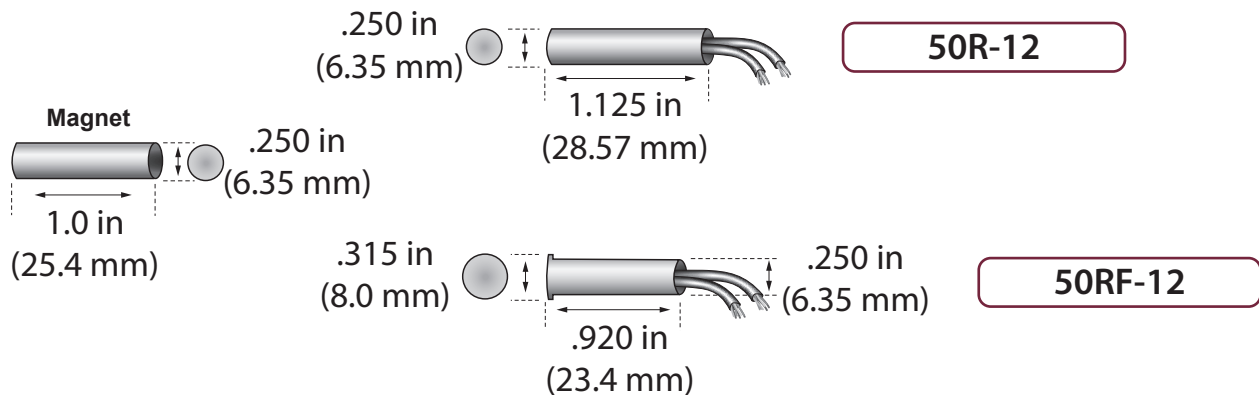
# 1/4" Miniature Recessed Switch Set

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## INSTALLATION APPLICATIONS

The 50R and 50RF series are 1/4" diameter switch sets designed for applications where a small diameter recessed switch set is required. This makes the set desirable in residential installations where no sign of an alarm system should be seen or where there is not room to install a larger diameter recessed switch set. The 50R-12 is a straight cylindrical set for flush or counter sunk installations. The 50RF-12 set is flanged to prevent inadvertent pulling of the switch into the wall.



### GRI PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type   | Electrical Configuration | Reed Form | Max. Initial Contact Resistance (Ω) | Max. Contact Rating (W) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|-------------|--------------------------|-----------|-------------------------------------|-------------------------|------------------------------|----------------------------|
| 50R-12      | Closed      | N/O                      | A         | .150                                | 10                      | 200                          | .500                       |
| 50R-12WG    | Closed      | N/O                      | A         | .150                                | 10                      | 200                          | .500                       |
| 50RF-12     | Closed      | N/O                      | A         | .150                                | 10                      | 200                          | .500                       |
| 50RF-12WG   | Closed      | N/O                      | A         | .150                                | 10                      | 200                          | .500                       |
| 60R-12      | Open        | N/C                      | B         | .140                                | 5                       | 175                          | .250                       |
| 60R-12WG    | Open        | N/C                      | B         | .140                                | 5                       | 175                          | .250                       |
| 60RF-12     | Open        | N/C                      | B         | .140                                | 5                       | 175                          | .250                       |
| 60RF-12WG   | Open        | N/C                      | B         | .140                                | 5                       | 175                          | .250                       |
| 70R-12      | Open/Closed | SPDT                     | C         | .140                                | 5                       | 175                          | .250                       |
| 70R-12WG    | Open/Closed | SPDT                     | C         | .140                                | 5                       | 175                          | .250                       |
| 70RF-12     | Open/Closed | SPDT                     | C         | .140                                | 5                       | 175                          | .250                       |
| 70RF-12WG   | Open/Closed | SPDT                     | C         | .140                                | 5                       | 175                          | .250                       |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

GEORGE RISK INDUSTRIES, INC.  
G.R.I. PLAZA  
KIMBALL, NE 69145

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(308) 235-4645  
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# Rare Earth Magnet N Series Switch Sets

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- ◆ Rare Earth Magnets paired with  
GRI's press to fit contacts
- ◆ Solves problem installations
- ◆ Time saving and efficient
- ◆ Nickel plated to protect from  
chipping and corrosion
- ◆ Use MM-600 with a standard gap  
switch to attain wide gap

GRI's "Mighty Mag" contacts will assist in resolving the installer's problem of drilling into the new thinner vinyl windows. These rare earth magnets are less than 1/8" high and install fast and easily without worry about damage to the window itself. (Please see the Mighty Mag page in the accessories section of GRI's full line catalog for dimensions).

GRI's Mighty Magnets make use of a rare earth alloy which allows the size of the magnet to be significantly reduced while still retaining or improving the gap involved. These rare earth magnets can be mounted with the stainless steel mounting screws provided (MM-400 and MM-600) and/or double stick tape included in the bag, or may be glued into place.

*GRI suggests using a silicone or clear nail polish sealant on the surface of installed rare earth magnets to prevent corrosion.*



N2120-12



N2020-TWG



N20RS-12

## Part Numbers

N120T-12  
N120T-12WG  
N150-12  
N150-12WG  
N2020-12  
N2020-12WG

N2020-T  
N2020-TWG  
N20RS-12  
N20RS-12WG  
N20RS-T  
N20RS-TWG

N2120-12  
N2120-12WG  
N4473  
N4473WG  
N50R-12  
N50R-12WG

N50RF-12  
N50RF-12WG  
N50RS-12  
N50RS-12WG  
N5065

Other possible combinations including Open Loop and S.P.D.T. available or as Switch Only and Magnet Only.

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# Rare Earth Magnet N Series Switch Sets

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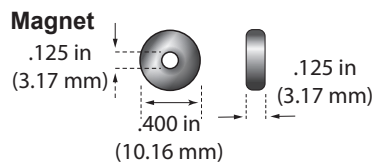
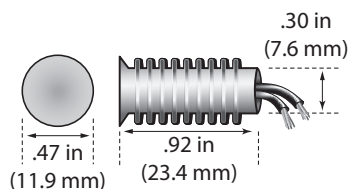


## PAIR SWITCH WITH MAGNET TO GET THE FOLLOWING GAPS:

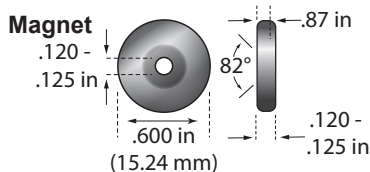
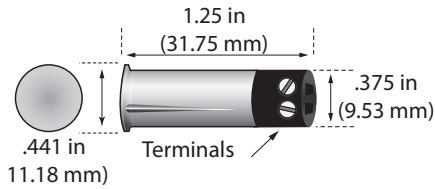
| Switch   | Description                    | MM-25<br>MMR-25 | MM-375       | MM-10    | MM-400     | MM-600       | MMF-875 |
|----------|--------------------------------|-----------------|--------------|----------|------------|--------------|---------|
| S120T-12 | 3/4" Press Fit/Leads           | 3/8"+           | 1"+          | Up to 1" | Up to 3/4" | 1"+          | 3/4"+   |
| S150-12  | 1/2" Press Fit/Leads           | 1/2"+           | 1 1/2"+      | Up to 1" | 3/4"+      | 1 1/2"+      | 1"+     |
| S2020-12 | 3/8" Press Fit/Leads           | Up to 1/2"      | 1"+          | Up to 1" | 1"+        | 1"+          | 1"      |
| S2020-T  | 3/8" Press Fit/Terminals       | 3/8"+           | 1"+          | Up to 1" | Up to 3/4" | 1"+          | 1/2"+   |
| S20RS-12 | 3/8" Short Press Fit/Leads     | Up to 3/8"      | 1"+          | 3/4"+    | Up to 3/4" | Up to 1"     | 3/4"    |
| S20RS-T  | 3/8" Short Press Fit/Terminals | 3/8"+           | 1"+          | 3/4"+    | Up to 3/4" | Up to 1"     | 3/4"    |
| S2120-12 | 3/8" Ribbed Press Fit/Leads    | 5/8"+           | 1"+          | Up to 1" | Up to 3/4" | 1"+          | 3/4"+   |
| S4473    | 3/4" Press Fit/Terminals       | Up to 1/2"      | 1 1/4"+      | Up to 1" | Up to 3/4" | 1"+          | 3/4"+   |
| S50R-12  | 1/4" Press Fit/Leads           | Up to 1/2"      | Up to 1 1/2" | 1"+      | 3/4"+      | Up to 1 1/4" | 3/4"+   |
| S50RF-12 | 1/4" Press Fit/Flanged/Leads   | Up to 1/2"      | Up to 1 1/2" | 1"+      | Up to 3/4" | Up to 1 1/4" | 1"      |
| S50RS-12 | 1/4" Short Press Fit/Leads     | Up to 3/8"      | 1"+          | 3/4"+    | Up to 1/2" | Up to 1 1/4" | 3/4"    |
| S5065    | 3/8" Press Fit/Leads           | 1/2"+           | 1"+          | 1"+      | Up to 1"   | Up to 1 1/4" | 1/2"+   |

*Magnet orientation will affect operation of switch. Please confirm operation prior to installation.*

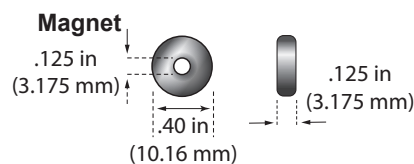
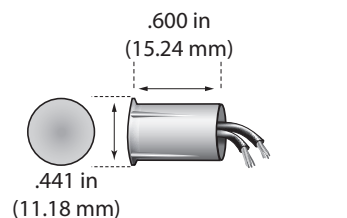
### N2120-12



### N2020-TWG



### N20RS-12



**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# 3/8" Miniature Recessed Switch Set

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## 20RS-12 & 20RS-T Series



- ◆ Ideal for thin framed doors and windows
- ◆ Recessed magnetic contact    ◆ Press to fit
- ◆ 12" #22AWG leads or screw terminals
- ◆ Longer leads, zip cord or jacketed cable upon request
  - ◆ Hermetically sealed
  - ◆ Plated contacts resist sticking or freezing
- ◆ Built-in E.O.L. Resistors and Diodes upon request
  - ◆ Supervisory Loops available upon request
  - ◆ Switches and Magnets available separately
  - ◆ Colors: white, brown, gray
  - ◆ Lifetime Warranty



| <u>Part Numbers</u> |                          |                  |             |
|---------------------|--------------------------|------------------|-------------|
|                     | <u>Closed Loop</u>       | <u>Open Loop</u> | <u>SPDT</u> |
| Standard Gap 1/2"+  | 20RS-12<br>20RS-T        | 30RS-12          | 40RS-12     |
| Extra Wide Gap 1"+  | 20RS-12 XWG<br>20RS-TXWG | 30RS-12XWG       | 40RS-12XWG  |

## INSTALLATION APPLICATIONS

The GRI recessed "shortie" switch set is designed for applications where a 3/8" press to fit set is needed, but space limitations will not allow for a full length set to be installed. Just 5/8" long, the installer is able to protect openings with the 20RS-12 that otherwise would have to be secured with more visible surface mount configurations. Available in regular and extra wide gaps, the 20RS series provides an easy answer to the difficult, high dollar window problems every installer encounters.

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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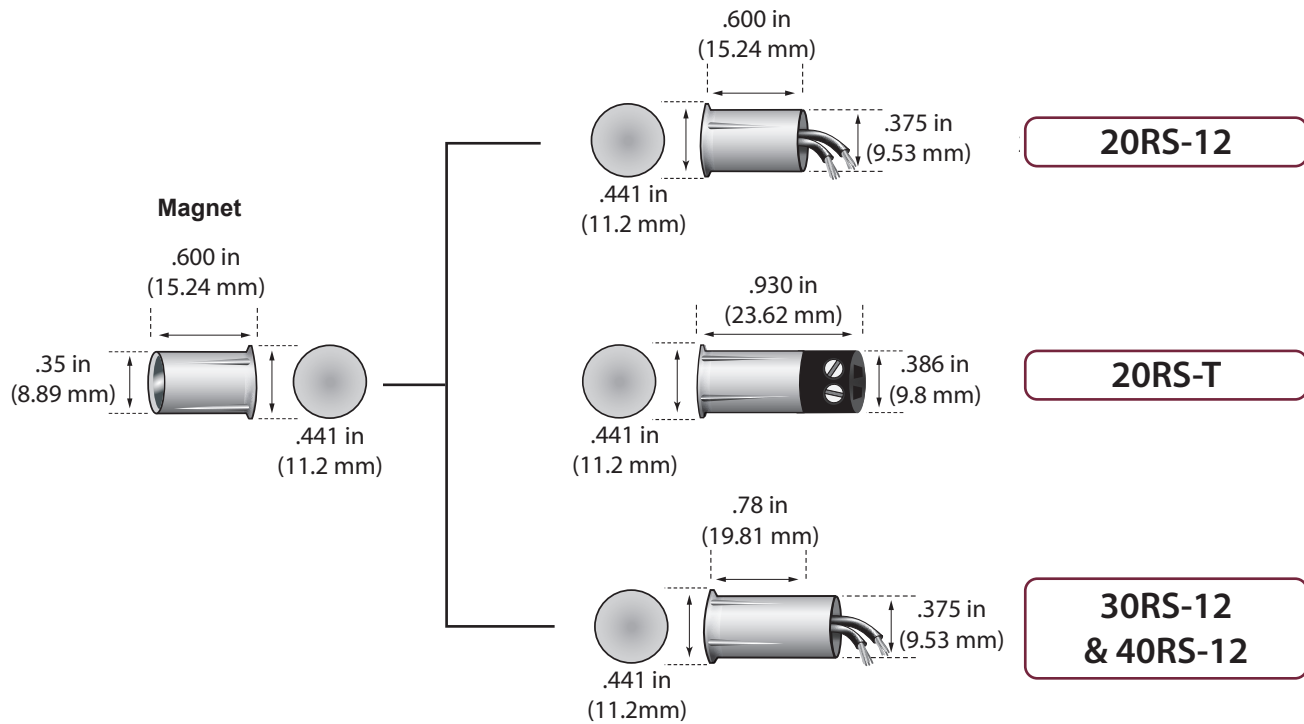
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# 3/8" Miniature Recessed Switch Set

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## GRI PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type   | Electrical Configuration | Reed Form | Max. Initial Contact Resistance (Ω) | Max. Contact Rating (W) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|-------------|--------------------------|-----------|-------------------------------------|-------------------------|------------------------------|----------------------------|
| 20RS-12     | Closed      | N/O                      | A         | .150                                | 10                      | 200                          | .500                       |
| 20RS-12XWG  | Closed      | N/O                      | A         | .150                                | 10                      | 200                          | .500                       |
| 20RS-T      | Closed      | N/O                      | A         | .150                                | 10                      | 200                          | .500                       |
| 20RS-TXWG   | Closed      | N/O                      | A         | .150                                | 10                      | 200                          | .500                       |
| 30RS-12     | Open        | N/C                      | B         | .140                                | 5                       | 175                          | .250                       |
| 30RS-12XWG  | Open        | N/C                      | B         | .140                                | 5                       | 175                          | .250                       |
| 40RS-12     | Open/Closed | SPDT                     | C         | .140                                | 5                       | 175                          | .250                       |
| 40RS-12XWG  | Open/Closed | SPDT                     | C         | .140                                | 5                       | 175                          | .250                       |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# 3/8" Recessed Switch Set

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## 2020-12 / 2020-T Series



- ◆ Recessed magnetic contact
- ◆ Press to fit
- ◆ 12" #22 AWG leads or screw terminals
- ◆ Longer leads, zip cord or jacketed cable upon request
- ◆ Hermetically sealed
- ◆ Plated contacts resist sticking or freezing
- ◆ Built-in E.O.L. Resistors and Diodes upon request
- ◆ Supervisory Loops available upon request
- ◆ Switches and Magnets available separately
- ◆ Colors: white, brown, gray, almond
- ◆ Lifetime Warranty



2020-12 CE



2020-T

|                           | <u>Part Numbers</u>     |                         |             |             |
|---------------------------|-------------------------|-------------------------|-------------|-------------|
|                           | <u>Closed Loop</u>      | <u>Open Loop</u>        | <u>SPDT</u> | <u>DPDT</u> |
| Standard Gap 1/2"+        | 2020-12 } C €<br>2020-T | 3030-12<br>3030-T       | 4040-12     | 4545-12     |
| Wide Gap 1"+              | 2020-12WG<br>2020-TWG   | 3030-12WG<br>3030-TWG   | 4040-12WG   | 4545-12WG   |
| Extra Wide Gap<br>1 1/2"+ | 2020-12XWG<br>2020-TXWG | 3030-12XWG<br>3030-TXWG | 4040-12XWG  |             |

## INSTALLATION APPLICATIONS

GRI's 3/8" recessed press-to-fit contacts can be installed in many different positions to accommodate a variety of applications. The switch and magnet can be mounted end-to-end within an imaginary arc around the switch, or parallel to the switch. When the application calls for a wide gap switch, install the painted end of the bare magnet facing the switch as they are polarity sensitive. The switch and magnet should never form a "T" configuration when installed.

If this series is to be used in a steel door application, GRI's PA-75 adapter should be used with a wide gap switch.

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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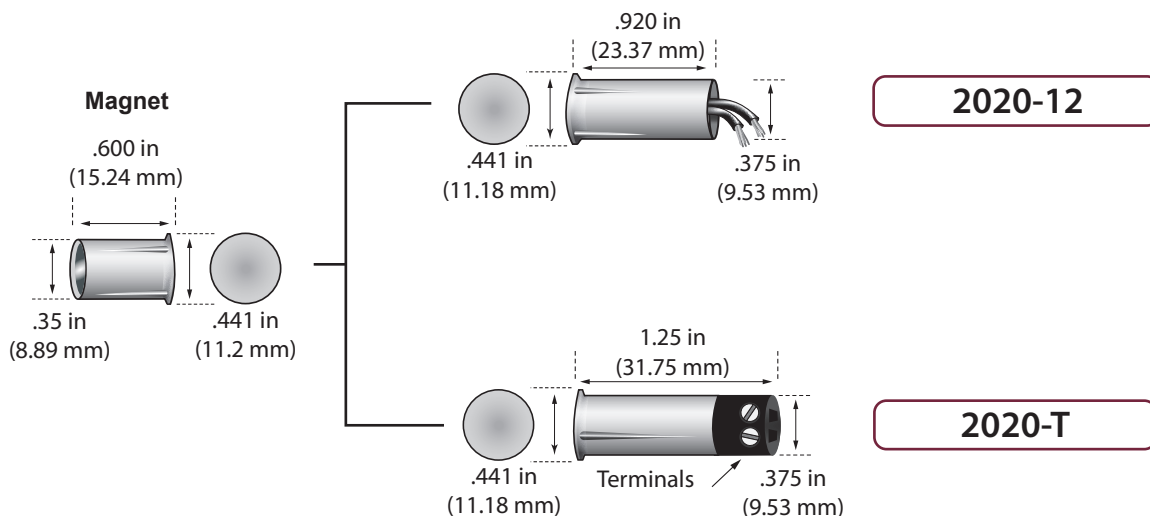
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# 3/8" Recessed Switch Set

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## GRI PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type   | Electrical Configuration | Reed Form | Max. Initial Contact Resistance (Ω) | Max. Contact Rating (W) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|-------------|--------------------------|-----------|-------------------------------------|-------------------------|------------------------------|----------------------------|
| 2020-12     | Closed      | N/O                      | A         | .150                                | 10                      | 200                          | .500                       |
| 2020-12WG   | Closed      | N/O                      | A         | .150                                | 10                      | 200                          | .400                       |
| 2020-12XWG  | Closed      | N/O                      | A         | .150                                | 10                      | 200                          | .400                       |
| 2020-T      | Closed      | N/O                      | A         | .150                                | 10                      | 160                          | .400                       |
| 2020-TWG    | Closed      | N/O                      | A         | .150                                | 10                      | 160                          | .400                       |
| 2020-TXWG   | Closed      | N/O                      | A         | .150                                | 10                      | 160                          | .400                       |
| 3030-12     | Open        | N/C                      | B         | .140                                | 5                       | 175                          | .250                       |
| 3030-12WG   | Open        | N/C                      | B         | .140                                | 5                       | 175                          | .250                       |
| 3030-12XWG  | Open        | N/C                      | B         | .140                                | 5                       | 175                          | .250                       |
| 3030-T      | Open        | N/C                      | B         | .140                                | 5                       | 175                          | .250                       |
| 3030-TWG    | Open        | N/C                      | B         | .140                                | 5                       | 175                          | .250                       |
| 3030-TXWG   | Open        | N/C                      | B         | .140                                | 5                       | 175                          | .250                       |
| 4040-12     | Open/Closed | SPDT                     | C         | .140                                | 5                       | 175                          | .250                       |
| 4040-12WG   | Open/Closed | SPDT                     | C         | .140                                | 5                       | 175                          | .250                       |
| 4040-12XWG  | Open/Closed | SPDT                     | C         | .140                                | 5                       | 175                          | .250                       |
| 4545-12     |             | DPDT                     | Cx2       | .140                                | 5                       | 175                          | .250                       |
| 4545-12WG   |             | DPDT                     | Cx2       | .140                                | 5                       | 175                          | .250                       |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# 3/8" Flanged Recessed Switch Set

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## 20F / 20 OF Series



- ◆ Recessed magnetic contact
- ◆ Round or Oval screw down flange
- ◆ Longer leads, zip cord or jacketed cable upon request
  - ◆ Hermetically sealed
- ◆ Plated contacts resist sticking or freezing
- ◆ Built-in E.O.L. Resistors and Diodes upon request
  - ◆ Supervisory Loops available upon request
  - ◆ Switches and Magnets available separately
  - ◆ Colors: white, brown, gray, black
  - ◆ Lifetime Warranty



20F-12



20OF-12

| Part Numbers           |                    |                  |             |             |
|------------------------|--------------------|------------------|-------------|-------------|
|                        | <u>Closed Loop</u> | <u>Open Loop</u> | <u>SPDT</u> | <u>DPDT</u> |
| Standard Gap 1/2"+     | 20F-12             | 30F-12           | 40F-12      | 45F-12      |
|                        | 20 OF-12           | 30 OF-12         | 40 OF-12    | 45 OF-12    |
| Wide Gap 1"+           | 20F-12WG           | 30F-12WG         | 40F-12WG    | 45F-12WG    |
|                        | 20 OF-12WG         | 30 OF-12WG       | 40 OF-12WG  | 45 OF-12WG  |
| Extra Wide Gap 1 1/2"+ | 20F-12XWG          | 30F-12XWG        | 40F-12XWG   | 45F-12XWG   |
|                        | 20 OF-12XWG        | 30 OF-12XWG      | 40 OF-12XWG | 45 OF-12XWG |

## INSTALLATION APPLICATIONS

The 20F and 20 OF series are flush mount designs that enable the installer to combine the security of a screw mount flanged switch with the concealment of a press fit switch. They have been used in hollow aluminum frames where inadequate material depth will not reliably retain a press fit switch and in holes that have been drilled or have somehow become slightly oversized. They are available in a 1/2" and 1 1/2" gap. Mounting hardware is provided.

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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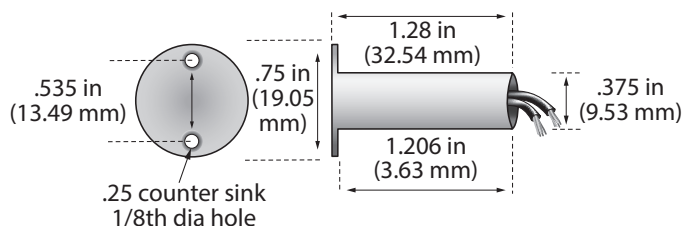
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# 3/8" Flanged Recessed Switch Set

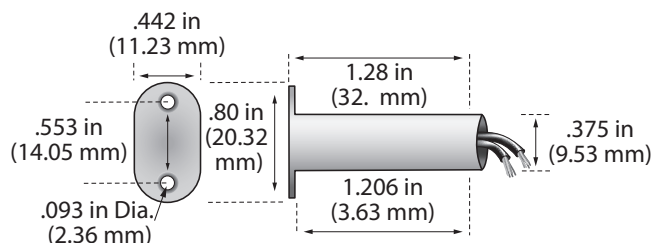
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20F-12



20 OF-12



**Magnets**  
match switch in size and shape

## GRI PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type   | Electrical Configuration | Reed Form | Max. Initial Contact Resistance (Ω) | Max. Contact Rating (W) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|-------------|--------------------------|-----------|-------------------------------------|-------------------------|------------------------------|----------------------------|
| 20F-12      | Closed      | N/O                      | A         | .150                                | 10                      | 200                          | .500                       |
| 20F-12WG    | Closed      | N/O                      | A         | .150                                | 10                      | 200                          | .500                       |
| 20F-12XWG   | Closed      | N/O                      | A         | .150                                | 10                      | 200                          | .500                       |
| 20 OF-12    | Closed      | N/O                      | A         | .150                                | 10                      | 200                          | .500                       |
| 20 OF-12WG  | Closed      | N/O                      | A         | .150                                | 10                      | 200                          | .500                       |
| 20 OF-12XWG | Closed      | N/O                      | A         | .150                                | 10                      | 200                          | .500                       |
| 30F-12      | Open        | N/C                      | B         | .140                                | 5                       | 175                          | .250                       |
| 30F-12WG    | Open        | N/C                      | B         | .140                                | 5                       | 175                          | .250                       |
| 30F-12XWG   | Open        | N/C                      | B         | .140                                | 5                       | 175                          | .250                       |
| 30 OF-12    | Open        | N/C                      | B         | .140                                | 5                       | 175                          | .250                       |
| 30 OF-12WG  | Open        | N/C                      | B         | .140                                | 5                       | 175                          | .250                       |
| 30 OF-12XWG | Open        | N/C                      | B         | .140                                | 5                       | 175                          | .250                       |
| 40F-12      | Open/Closed | SPDT                     | C         | .140                                | 5                       | 175                          | .250                       |
| 40F-12WG    | Open/Closed | SPDT                     | C         | .140                                | 5                       | 175                          | .250                       |
| 40F-12XWG   | Open/Closed | SPDT                     | C         | .140                                | 5                       | 175                          | .250                       |
| 40 OF-12    | Open/Closed | SPDT                     | C         | .140                                | 5                       | 175                          | .250                       |
| 40 OF-12WG  | Open/Closed | SPDT                     | C         | .140                                | 5                       | 175                          | .250                       |
| 40 OF-12XWG | Open/Closed | SPDT                     | C         | .140                                | 5                       | 175                          | .250                       |
| 45F-12      | Open/Closed | DPDT                     | Cx2       | .140                                | 5                       | 175                          | .250                       |
| 45F-12WG    | Open/Closed | DPDT                     | Cx2       | .140                                | 5                       | 175                          | .250                       |
| 45F-12XWG   | Open/Closed | DPDT                     | Cx2       | .140                                | 5                       | 175                          | .250                       |
| 45 OF-12    | Open/Closed | DPDT                     | Cx2       | .140                                | 5                       | 175                          | .250                       |
| 45 OF-12WG  | Open/Closed | DPDT                     | Cx2       | .140                                | 5                       | 175                          | .250                       |
| 45 OF-12XWG | Open/Closed | DPDT                     | Cx2       | .140                                | 5                       | 175                          | .250                       |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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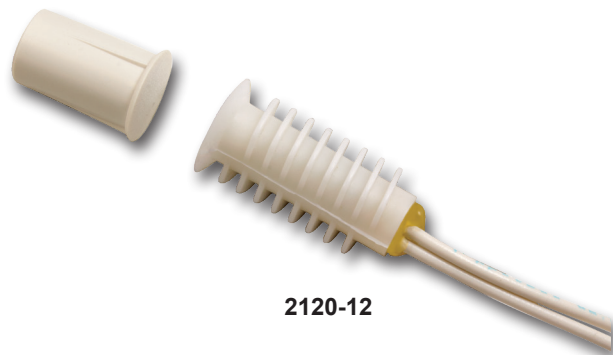
# 3/8" Ribbed Recessed Switch Set

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## 2120-12 Series

- ◆ Recessed magnetic contact
- ◆ Ribbed design allows secure fit
- ◆ Protects reed from swelling wood and header shift
- ◆ Cover over-drilled holes     ◆ Self-centering
- ◆ Solves angled wire path problems
  - ◆ Press to fit     ◆ 12" #22AWG Leads
  - ◆ Longer leads, zip cord or jacketed cable upon request
  - ◆ Hermetically sealed
  - ◆ Plated contacts resist sticking or freezing
  - ◆ Built-in E.O.L. Resistors and Diodes upon request
  - ◆ Supervisory Loops available upon request
  - ◆ Switches and Magnets available separately
  - ◆ Colors: white and brown
  - ◆ Lifetime Warranty



2120-12

### Part Numbers

|                    | <u>Closed Loop</u> | <u>Open Loop</u> | <u>SPDT</u> |
|--------------------|--------------------|------------------|-------------|
| Standard Gap 1/2"+ | 2120-12            | 2130-12          | 2140-12     |
| Wide Gap 3/4"+     | 2120-12WG          | 2130-12WG        | 2140-12WG   |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# 3/8" Ribbed Recessed Switch Set

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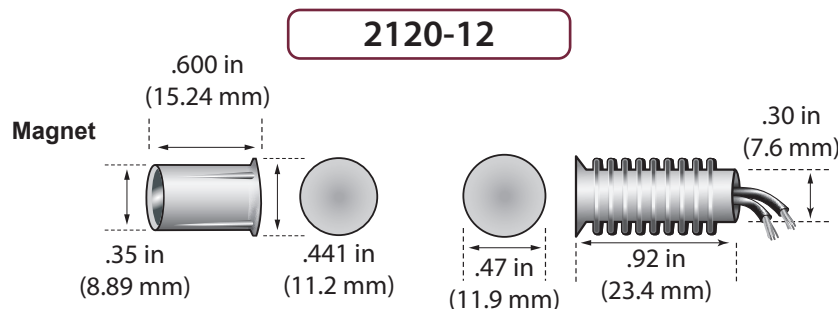


## INSTALLATION APPLICATIONS

The GRI 2120 Ribbed Switch, designed to complete a multi-task role, is a unique combination of special features and materials. The unusual ribbed outside diameter permits a secure mount over a wide range of drilled hole sizes. The installer does not have to glue this recessed switch into a slightly oversized hole, as the flexible ribs conform as it is pressed into the wood. Self adjusting to fit the larger hole, the 2120 also centers itself to the coverage of the mis-drilled hole.

Picked especially for the 2120 Ribbed Switches, a new material with enhanced memory properties allow the ribbed "O rings" to flex enough to fit an undersized hole but still maintain a firm holding force in an oversized hole. This mix of features yields an additional bonus in that it proves a high degree of protection from crushing, such as that encountered when wood swells or headers shift.

Finally, for installations utilizing an angled wire path away from the hole drilled for the switch barrel, the 2120 merely need to be aligned with one flat side along the path drilled for the lead wire and press fit. The ribbed rings, not being continuous, simply adjust to the wire and allow for an easy and quick install.



### GRI PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type   | Electrical Configuration | Reed Form | Max. Initial Contact Resistance (Ω) | Max. Contact Rating (W) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|-------------|--------------------------|-----------|-------------------------------------|-------------------------|------------------------------|----------------------------|
| 2120-12     | Closed      | N/O                      | A         | .150                                | 10                      | 200                          | .500                       |
| 2120-12WG   | Closed      | N/O                      | A         | .150                                | 10                      | 200                          | .400                       |
| 2130-12     | Open        | N/C                      | B         | .140                                | 5                       | 175                          | .250                       |
| 2130-12WG   | Open        | N/C                      | B         | .140                                | 5                       | 175                          | .250                       |
| 2140-12     | Open/Closed | SPDT                     | C         | .140                                | 5                       | 175                          | .250                       |
| 2120-12WG   | Open/Closed | SPDT                     | C         | .140                                | 5                       | 175                          | .250                       |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

GEORGE RISK INDUSTRIES, INC.  
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# 3/8" One Inch Gap Recessed Switch Set

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## 5065 / 5066 Series

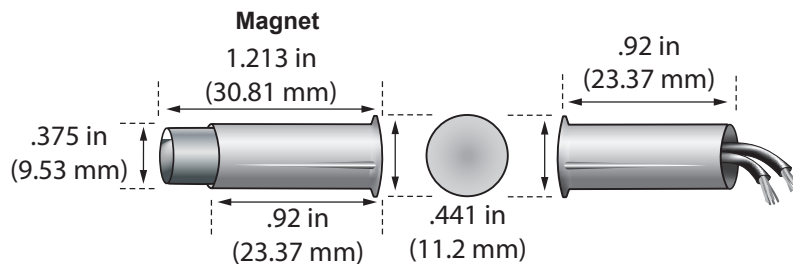
- ◆ One inch PLUS standard gap
- ◆ 3/8" diameter press fit
- ◆ Standard 12" leads #22 AWG
- ◆ Available in white as part #5065 
- ◆ Available in brown as part #5066



5065



5066



### GRI PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type | Electrical Configuration | Gap | Reed Form | Max. Initial Contact Resistance (Ω) | Maximum Contact Rating (W) | Maximum Switching Voltage (VDC) | Maximum Switching Current (A) |
|-------------|-----------|--------------------------|-----|-----------|-------------------------------------|----------------------------|---------------------------------|-------------------------------|
| 5065        | Closed    | N/O                      | 1"+ | A         | .150                                | 10                         | 200                             | .500                          |
| 5066        | Closed    | N/O                      | 1"+ | A         | .150                                | 10                         | 200                             | .500                          |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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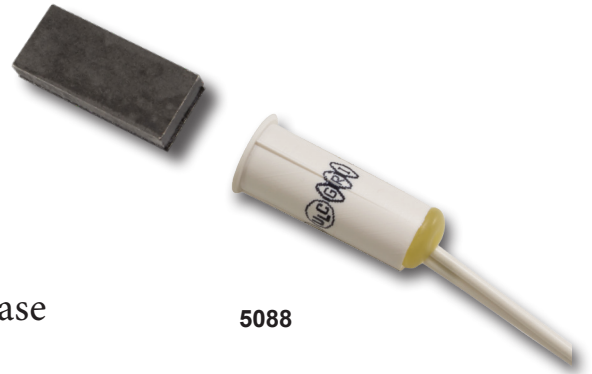
# 3/8" Flat Magnet Recessed Switch Set

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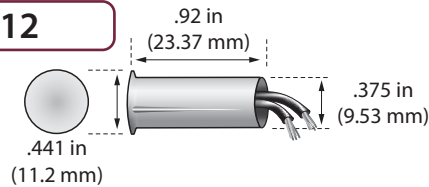
## 5088 / 5088RS Series

- ◆ Solves problem installs on aluminum and vinyl windows
- ◆ 3/8" diameter press fit
- ◆ 1/8" x 3/8" x 7/8" flat magnet
- ◆ Standard 12" leads #22 AWG
- ◆ Available in white, brown or gray
- ◆ Also available with GRI's "stubby" 3/8"x 5/8" case

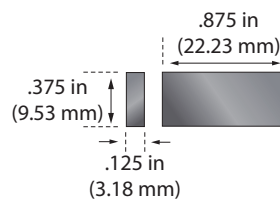


5088

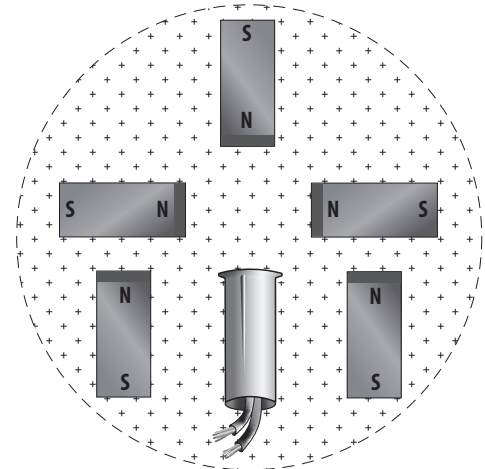
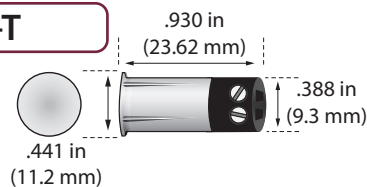
### 5088-12



**MAGNET  
MF-875**



### 5088-T



### GRI PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type | Electrical Configuration | Gap   | Reed Form | Max. Initial Contact Resistance (Ω) | Maximum Contact Rating (W) | Maximum Switching Voltage (VDC) | Maximum Switching Current (A) |
|-------------|-----------|--------------------------|-------|-----------|-------------------------------------|----------------------------|---------------------------------|-------------------------------|
| 5088        | Closed    | N/O                      | 1/2"+ | A         | .150                                | 10                         | 200                             | .500                          |
| 5088WG      | Closed    | N/O                      | 1"+   | A         | .150                                | 10                         | 200                             | .500                          |
| 5088-T      | Closed    | N/O                      | 1/2"+ | A         | .150                                | 10                         | 200                             | .500                          |
| 5088-TWG    | Closed    | N/O                      | 1"+   | A         | .150                                | 10                         | 200                             | .500                          |
| 5088RS      | Closed    | N/O                      | 1/4"+ | A         | .150                                | 10                         | 200                             | .500                          |
| 5088RS-WG   | Closed    | N/O                      | 1/2"+ | A         | .150                                | 10                         | 200                             | .500                          |
| 5088RS-T    | Closed    | N/O                      | 1/4"+ | A         | .150                                | 10                         | 200                             | .500                          |
| 5088RS-TWG  | Closed    | N/O                      | 1/2"+ | A         | .150                                | 10                         | 200                             | .500                          |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# *1/2" Snap Fit Short Recessed Switch Set*

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## *150RS Series*

- ◆ Designed for hollow core doors and windows
  - ◆ Hole size allows for extra wire, etc.
- ◆ 1/2" + Standard gap    ◆ Hermetically sealed
- ◆ Installs firmly in wood, vinyl and aluminum
- ◆ Recessed magnetic contact    ◆ Press or snap to fit
  - ◆ 12" #22AWG leads or screw terminals
- ◆ Longer leads, zip cord or jacketed cable upon request
  - ◆ Plated contacts resist sticking or freezing
- ◆ Built-in E.O.L. Resistors and Diodes upon request
  - ◆ Supervisory Loops available upon request
  - ◆ Switches and Magnets available separately
  - ◆ Colors: white and brown
  - ◆ Lifetime Warranty



150RS-12



150RS-T

### Part Numbers

Standard Gap 1/2"  
Standard Gap 1/2"  
Standard Gap 1/2"  
Wide Gap 3/4"  
Standard Gap 1/2"  
Wide Gap 3/4"

### Closed Loop

150RS-12  
150RS-T  
N150RS-12  
N150RS-12WG  
N150RS-T  
N150RS-TWG

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# 1/2" Snap Fit Short Recessed Switch Set

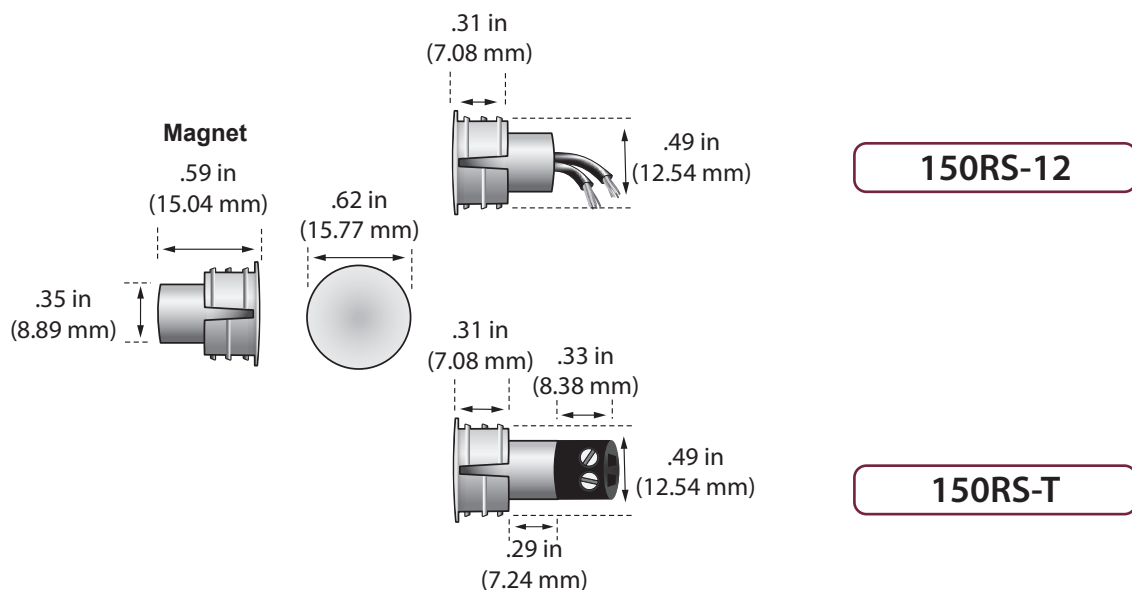
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Larger than 3/8" but smaller than 3/4", the GRI 150RS Series is a one-half inch diameter, flush mount contact. This 1/2" diameter design allows additional "working room" for extra wire, E.O.L. resistors, etc. Manufactured from a special polyvinyl material, the unique collar design will press into hollow core aluminum or vinyl clad windows with a "snap-in" fit. The 150RS can be ordered with 12" leads or screw terminals.

The GRI 150RS is paired with a matching 1/2" magnet case to offer the installer a 1/2"+ gap. The 150RS switches can also be paired with any of the wide selection of GRI magnets to help resolve difficult installation applications, including our MF-875.

Patent Pending.



## GRI PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type | Electrical Configuration | Reed Form | Max. Initial Contact Resistance (Ω) | Max. Contact Rating (W) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|-----------|--------------------------|-----------|-------------------------------------|-------------------------|------------------------------|----------------------------|
| 150RS-12    | Closed    | N/O                      | A         | .150                                | 10                      | 200                          | .500                       |
| 150RS-T     | Closed    | N/O                      | A         | .150                                | 10                      | 200                          | .500                       |
| N150RS-12   | Closed    | N/O                      | A         | .150                                | 10                      | 200                          | .500                       |
| N150RS-12WG | Closed    | N/O                      | A         | .150                                | 10                      | 200                          | .500                       |
| N150RS-T    | Closed    | N/O                      | A         | .150                                | 10                      | 200                          | .500                       |
| N150RS-TWG  | Closed    | N/O                      | A         | .150                                | 10                      | 200                          | .500                       |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# 1/2" Snap Fit Recessed Switch Set

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## 150 Series

- ◆ Designed for hollow core doors and windows
  - ◆ Hole size allows for extra wire, etc.
  - ◆ Up to one inch standard gap
  - ◆ Installs firmly in wood, vinyl and aluminum
- ◆ Recessed magnetic contact    ◆ Press or snap to fit
  - ◆ 12" #22AWG leads or screw terminals
  - ◆ Hermetically sealed
- ◆ Longer leads, zip cord or jacketed cable upon request
  - ◆ Plated contacts resist sticking or freezing
- ◆ Built-in E.O.L. Resistors and Diodes upon request
  - ◆ Supervisory Loops available upon request
  - ◆ Switches and Magnets available separately
  - ◆ Colors: white and brown
  - ◆ Lifetime Warranty



150-12



150-T

|                       | <u>Part Numbers</u> |                  |             |             |
|-----------------------|---------------------|------------------|-------------|-------------|
|                       | <u>Closed Loop</u>  | <u>Open Loop</u> | <u>SPDT</u> | <u>DPDT</u> |
| Standard Gap up to 1" | 150-12              | 160-12           | 170-12      | 175-12      |
| Standard Gap up to 1" | 150-T               |                  |             |             |
| Wide Gap up to 1 1/4" | 150-12WG            | 160-12WG         | 170-12WG    |             |
| Wide Gap up to 1 1/4" | 150-TWG             |                  |             |             |
| Standard Gap 5/8"+    | 150MF-12            | 160MF-12         | 170MF-12    |             |
| Wide Gap 1"           | 150MF-12WG          | 160MF-12WG       | 170MF-12WG  |             |

Larger than 3/8" but smaller than 3/4", GRI introduces their newest innovative switch design, the one-half inch diameter, flush mount 150-12. This new design is in response to customer requests for a switch that would give them additional "working room" for extra wire, E.O.L. resistors, etc., yet would more readily install in hollow core windows. The 150-12 is a 1/2" diameter contact, manufactured from a special polyvinyl material with a unique collar design that will press into wooden or vinyl clad windows with a "snap-in" fit for hollow core vinyl or aluminum windows.

The 150-12 is paired with a matching 1/2" magnet case to offer the installer a 1" gap. The 150 switch can also be paired with any of the wide selection of GRI magnets (including our MF-875) to help resolve difficult installation applications. Patent Pending.

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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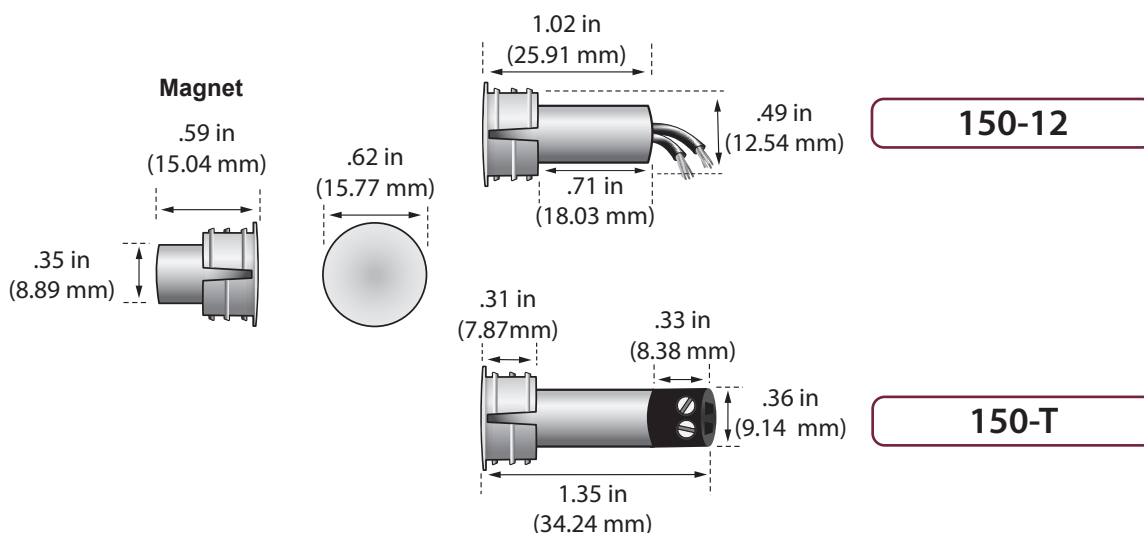
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# 1/2" Snap Fit Recessed Switch Set

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## GR I PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type   | Electrical Configuration | Reed Form | Maximum Initial Contact Resistance ( $\Omega$ ) | Maximum Contact Rating (W) | Maximum Switching Voltage (VDC) | Maximum Switching Current (A) |
|-------------|-------------|--------------------------|-----------|-------------------------------------------------|----------------------------|---------------------------------|-------------------------------|
| 150-12      | Closed      | N/O                      | A         | .150                                            | 10                         | 200                             | .500                          |
| 150-T       | Closed      | N/O                      | A         | .150                                            | 10                         | 200                             | .500                          |
| 150-12WG    | Closed      | N/O                      | A         | .150                                            | 10                         | 200                             | .400                          |
| 150-TWG     | Closed      | N/O                      | A         | .150                                            | 10                         | 200                             | .400                          |
| 150MF-12    | Closed      | N/O                      | A         | .150                                            | 10                         | 200                             | .500                          |
| 150MF-12WG  | Closed      | N/O                      | A         | .150                                            | 10                         | 200                             | .400                          |
| 160-12      | Open        | N/C                      | B         | .140                                            | 5                          | 175                             | .250                          |
| 160-12WG    | Open        | N/C                      | B         | .140                                            | 5                          | 175                             | .250                          |
| 160MF-12    | Open        | N/C                      | B         | .140                                            | 5                          | 175                             | .250                          |
| 160MF-12WG  | Open        | N/C                      | B         | .140                                            | 5                          | 175                             | .250                          |
| 170-12      | Open/Closed | SPDT                     | C         | .140                                            | 5                          | 175                             | .250                          |
| 170-12WG    | Open/Closed | SPDT                     | C         | .140                                            | 5                          | 175                             | .250                          |
| 170MF-12    | Open/Closed | SPDT                     | C         | .140                                            | 5                          | 175                             | .250                          |
| 170MF-12WG  | Open/Closed | SPDT                     | C         | .140                                            | 5                          | 175                             | .250                          |
| 175-12      | Open/Closed | DPDT                     | Cx2       | .140                                            | 5                          | 175                             | .250                          |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# 3/4" Recessed Wood, Aluminum, Vinyl Switch Set

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## 120T-12 / 4473 Series



- ◆ 3/4" switch and 3/8" magnet for wooden, vinyl or aluminum doors and windows
  - ◆ Stubby version also available
  - ◆ Recessed magnetic contact
  - ◆ Press to fit
- ◆ 12" #22AWG leads or screw terminals
  - ◆ Longer leads, zip cord or jacketed cable upon request
- ◆ Plated contacts resist sticking or freezing
- ◆ Built-in E.O.L. Resistors and Diodes upon request
  - ◆ Supervisory Loops available upon request
  - ◆ Switches and Magnets available separately
  - ◆ Colors: white, brown, gray and black
    - ◆ Hermetically sealed
    - ◆ Lifetime Warranty



### Part Numbers

|                       | <u>Closed Loop</u>                     | <u>Open Loop</u> | <u>SPDT</u> |
|-----------------------|----------------------------------------|------------------|-------------|
| Standard Gap 1/2"     | 120T-12<br>120RST-12<br>4473<br>4473RS | 130T-12          | 140T-12     |
| Wide Gap up to 3/4"+  | 120T-12WG                              | 130T-12WG        | 140T-12WG   |
| Extra Wide Gap 1 1/2" | 120T-12XWG                             | 130T-12-XWG      | 140T-12XWG  |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# 3/4" Recessed Wood, Aluminum, Vinyl Switch Set

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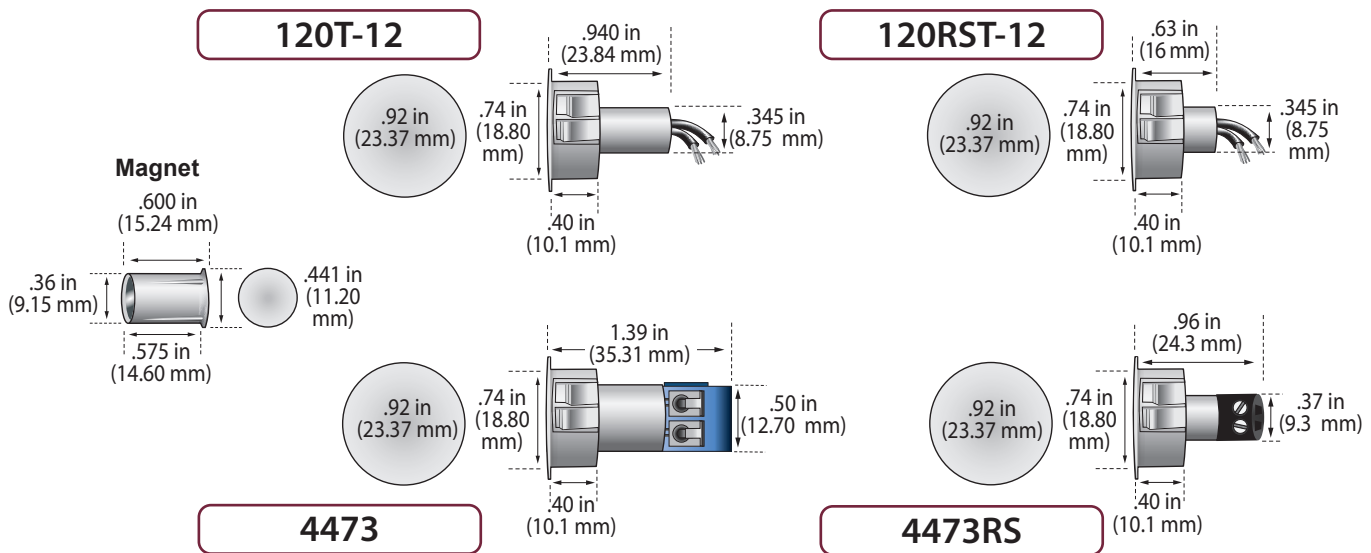


## INSTALLATION APPLICATIONS

The 120T-12 / 4473 requires that a 3/4" hole be drilled for the switch and a 3/8" hole for the magnet. The 3/4" switch mounting is desirable since extra wire and connections are more easily inserted into the larger hole for concealment. Also, should the need arise for testing or replacement, it would be easy to pull the switch, extend the extra wire and access the original connections.

Installation is further enhanced by using a smaller 3/8" magnet to avoid the need to center a larger hold in a 1" to 1 1/2" thick door or window. This will allow you to offset the magnet should it be required.

The 120T-12 / 4473 switch set was developed for and should only be used in openings with wood or aluminum frames.



### GRI PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type   | Electrical Configuration | Reed Form | Maximum Initial Contact Resistance (Ω) | Maximum Contact Rating (W) | Maximum Switching Voltage (VDC) | Maximum Switching Current (A) |
|-------------|-------------|--------------------------|-----------|----------------------------------------|----------------------------|---------------------------------|-------------------------------|
| 120T-12     | Closed      | N/O                      | A         | .150                                   | 10                         | 200                             | .500                          |
| 120RST-12   | Closed      | N/O                      | A         | .150                                   | 10                         | 200                             | .500                          |
| 120T-12WG   | Closed      | N/O                      | A         | .150                                   | 10                         | 200                             | .400                          |
| 120T-12XWG  | Closed      | N/O                      | A         | .150                                   | 10                         | 200                             | .400                          |
| 4473        | Closed      | N/O                      | A         | .150                                   | 10                         | 200                             | .500                          |
| 4473RS      | Closed      | N/O                      | A         | .150                                   | 10                         | 200                             | .500                          |
| 130T-12     | Open        | N/C                      | B         | .140                                   | 5                          | 175                             | .250                          |
| 130T-12WG   | Open        | N/C                      | B         | .140                                   | 5                          | 175                             | .250                          |
| 130T-12XWG  | Open        | N/C                      | B         | .140                                   | 5                          | 175                             | .250                          |
| 140T-12     | Open/Closed | SPDT                     | C         | .140                                   | 5                          | 175                             | .250                          |
| 140T-12WG   | Open/Closed | SPDT                     | C         | .140                                   | 5                          | 175                             | .250                          |
| 140T-12XWG  | Open/Closed | SPDT                     | C         | .140                                   | 5                          | 175                             | .250                          |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# 3/4" & 1" Steel Door Recessed Switch Set

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## 180 / 184 / 8080-T Series



- ◆ Recessed magnetic contact
- ◆ 12" #22AWG leads or screw terminals
- ◆ Longer leads, zip cord or jacketed cable upon request
- ◆ Built in E.O.L. Resistors and Diodes upon request
  - ◆ Supervisory Loops upon request
  - ◆ Colors white, brown, gray, black
- ◆  Indicates U.L. 10C Fire Rated



180-12



184-12 C E



8484-T



8080-T

### Part Numbers

|                                         |           | <u>Closed Loop</u>                                                                           | <u>Open Loop</u> | <u>SPDT</u> | <u>DPDT</u>  |
|-----------------------------------------|-----------|----------------------------------------------------------------------------------------------|------------------|-------------|--------------|
| Standard Gap<br>up to 1/2"<br>on steel* | 3/4" Dia. | 180-12    | 185-12           | 190-12      | 195-12       |
|                                         | 1" Dia.   | C E {184-12}                                                                                 | 189-12           | 194-12      | C E {199-12} |
|                                         | 3/4" Dia. | 8080-T                                                                                       | 8585-T           |             |              |
|                                         | 1" Dia.   | 8484-T                                                                                       | 8989-T           |             |              |
| Wide Gap<br>3/4"+<br>on steel*          | 3/4" Dia. | 180-12WG  | 185-12WG         | 190-12WG    | 195-12WG     |
|                                         | 1" Dia.   | 184-12WG                                                                                     | 189-12WG         | 194-12WG    | 199-12WG     |
|                                         | 3/4" Dia. | 8080-TWG                                                                                     | 8585-TWG         |             |              |
|                                         | 1" Dia.   | 8484-TWG                                                                                     | 8989-TWG         |             |              |

7/8" Diameter also available. P/N 81-12 & 81-12WG, white or black only. Call the factory for more information.

## INSTALLATION APPLICATIONS

The GRI 180-12 is the industry standard 3/4" diameter recessed steel door switch set with 12" leads. The innovative GRI 8080-T series is a 3/4" diameter recessed switch set designed for residential, commercial and industrial doors and frames. The shorter length terminals makes the installation of the set quick and simple.

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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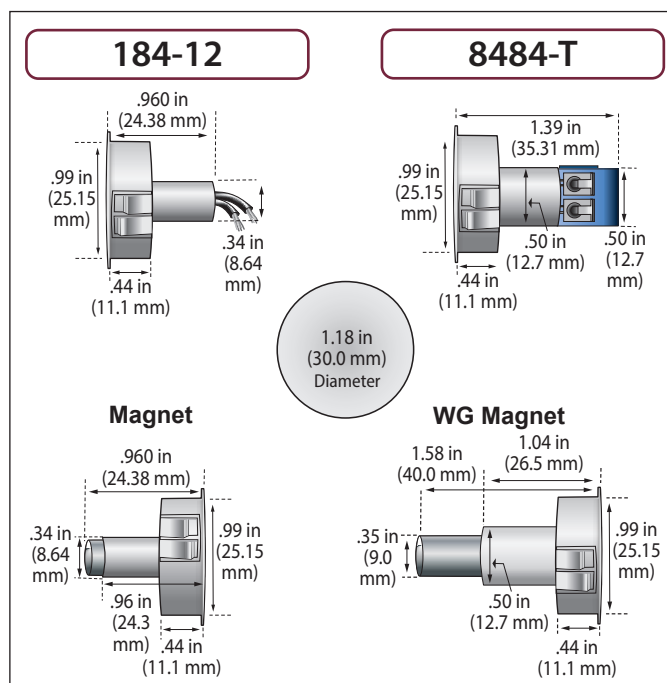
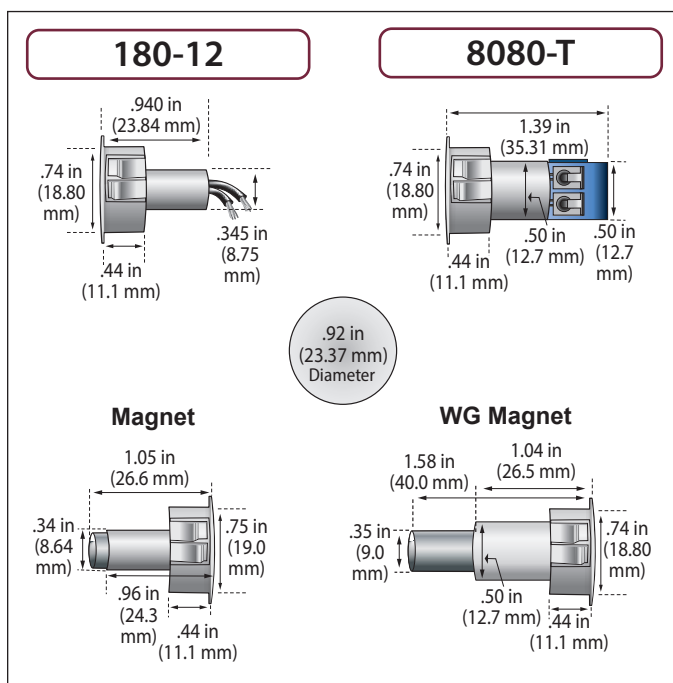
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# 3/4" & 1" Steel Door Recessed Switch Set

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## GRI PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type   | Electrical Configuration | Reed Form | Maximum Initial Contact Resistance (Ω) | Max. Contact Rating (W) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|-------------|--------------------------|-----------|----------------------------------------|-------------------------|------------------------------|----------------------------|
| 180-12      | Closed      | N/O                      | A         | .150                                   | 10                      | 200                          | .400                       |
| 180-12WG    | Closed      | N/O                      | A         | .150                                   | 10                      | 200                          | .400                       |
| 184-12      | Closed      | N/O                      | A         | .150                                   | 10                      | 200                          | .400                       |
| 184-12WG    | Closed      | N/O                      | A         | .150                                   | 10                      | 200                          | .400                       |
| 8080-T      | Closed      | N/O                      | A         | .150                                   | 10                      | 160                          | .400                       |
| 8080-TWG    | Closed      | N/O                      | A         | .150                                   | 10                      | 160                          | .400                       |
| 8484-T      | Closed      | N/O                      | A         | .150                                   | 10                      | 160                          | .400                       |
| 8484-TWG    | Closed      | N/O                      | A         | .150                                   | 10                      | 160                          | .400                       |
| 185-12      | Open        | N/C                      | B         | .140                                   | 5                       | 175                          | .250                       |
| 185-12WG    | Open        | N/C                      | B         | .140                                   | 5                       | 175                          | .250                       |
| 189-12      | Open        | N/C                      | B         | .140                                   | 5                       | 175                          | .250                       |
| 189-12WG    | Open        | N/C                      | B         | .140                                   | 5                       | 175                          | .250                       |
| 8585-T      | Open        | N/C                      | B         | .140                                   | 5                       | 175                          | .250                       |
| 8585-TWG    | Open        | N/C                      | B         | .140                                   | 5                       | 175                          | .250                       |
| 8989-T      | Open        | N/C                      | B         | .140                                   | 5                       | 175                          | .250                       |
| 8989-TWG    | Open        | N/C                      | B         | .140                                   | 5                       | 175                          | .250                       |
| 190-12      | Open/Closed | SPDT                     | C         | .140                                   | 5                       | 175                          | .250                       |
| 190-12WG    | Open/Closed | SPDT                     | C         | .140                                   | 5                       | 175                          | .250                       |
| 194-12      | Open/Closed | SPDT                     | C         | .140                                   | 5                       | 175                          | .250                       |
| 194-12WG    | Open/Closed | SPDT                     | C         | .140                                   | 5                       | 175                          | .250                       |
| 195-12      |             | DPDT                     | Cx2       | .140                                   | 5                       | 175                          | .250                       |
| 195-12WG    |             | DPDT                     | Cx2       | .140                                   | 5                       | 175                          | .250                       |
| 199-12      |             | DPDT                     | Cx2       | .140                                   | 5                       | 175                          | .250                       |
| 199-12WG    |             | DPDT                     | Cx2       | .140                                   | 5                       | 175                          | .250                       |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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G.R.I. PLAZA

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1-800-445-5218

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(308) 235-4645

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E-MAIL: sales@grisk.com

# 3/4" & 1" Stubby Steel Door Recessed Switch Set

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## 180RS & 8080RS-T Series

- ◆ Recessed magnetic contact
- ◆ 12" #22AWG leads or screw terminals
  - ◆ Longer leads, zip cord or jacketed cable upon request
- ◆ Built in E.O.L. Resistors and Diodes upon request
- ◆ Supervisory Loops upon request
- ◆ Colors white, brown, gray, black
- ◆ Available closed loop only



180RS-12



8484RS-T

### Part Numbers

Up to 5/8" Gap on steel\*

3/4" Dia.  
1" Dia.  
3/4" Dia.  
1" Dia.

### Closed Loop

180RS-12  
184RS-12  
8080RS-T  
8484RS-T

*\* Gaps will increase substantially for installations other than steel.*

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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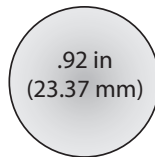
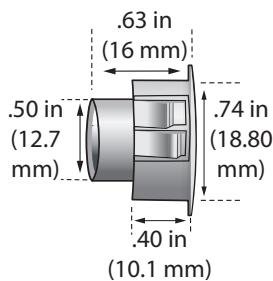
1-800-445-5218  
1-800-523-1227  
(308) 235-4645  
FAX (308) 235-3561  
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# 3/4" & 1" Stubby Steel Door Recessed Switch Set

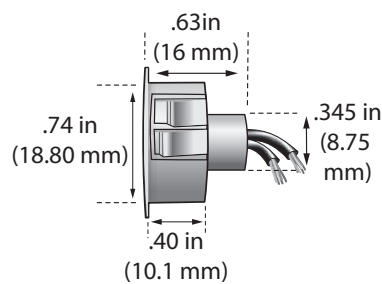
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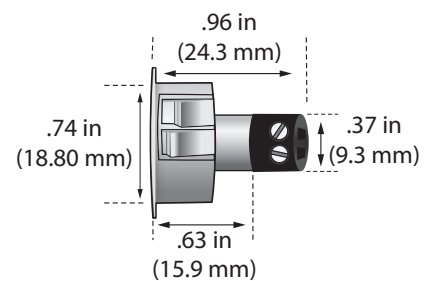
**Magnet**



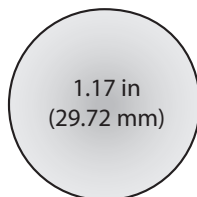
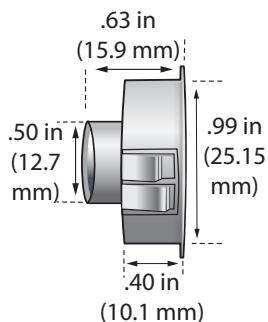
**180RS-12**



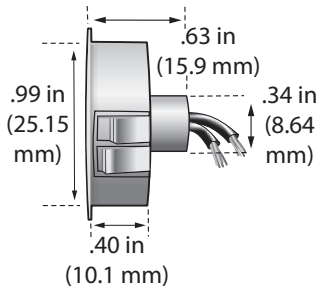
**8080RS-T**



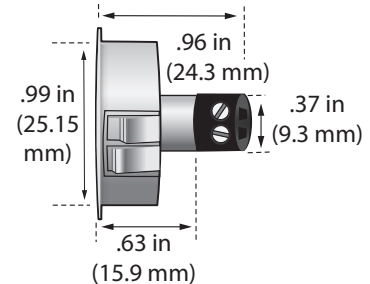
**Magnet**



**184RS-12**



**8484RS-T**



8080-TMC

## GR I PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type | Electrical Configuration | Reed Form | Maximum Initial Contact Resistance (Ω) | Maximum Contact Rating (W) | Maximum Switching Voltage (VDC) | Maximum Switching Current (A) |
|-------------|-----------|--------------------------|-----------|----------------------------------------|----------------------------|---------------------------------|-------------------------------|
| 180RS-12    | Closed    | N/O                      | A         | .150                                   | 10                         | 200                             | .500                          |
| 184RS-12    | Closed    | N/O                      | A         | .150                                   | 10                         | 200                             | .500                          |
| 8080RS-T    | Closed    | N/O                      | A         | .150                                   | 10                         | 200                             | .500                          |
| 8484RS-T    | Closed    | N/O                      | A         | .150                                   | 10                         | 200                             | .500                          |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# MC-25 Window Channel Series

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- ◆ The MC-25 is designed to be mounted in the track of aluminum windows and sliders
  - ◆ Rare Earth Magnet
  - ◆ Fits most aluminum tracks
  - ◆ Grippers hold magnet in place
  - ◆ No drilling required
- ◆ Arrow marks polarity; point arrow toward switch



MC-25

## Part Numbers

## Gap

|           |            |
|-----------|------------|
| MC2020-12 | Up to 1/2" |
| MC2020-T  | Up to 1/2" |
| MC20RS-12 | Up to 3/8" |
| MC20RS-T  | Up to 3/8" |
| MC2120-12 | Up to 1/2" |
| MC120T-12 | 1/2"+      |
| MC150-12  | 1/2"+      |
| MC150-T   | Up to 1/2" |
| MC5065    | 1/2"+      |

Other configurations also available.  
Please contact factory.



MC-25 shown with 20RS-T



2020-12



20RS-T



150-12

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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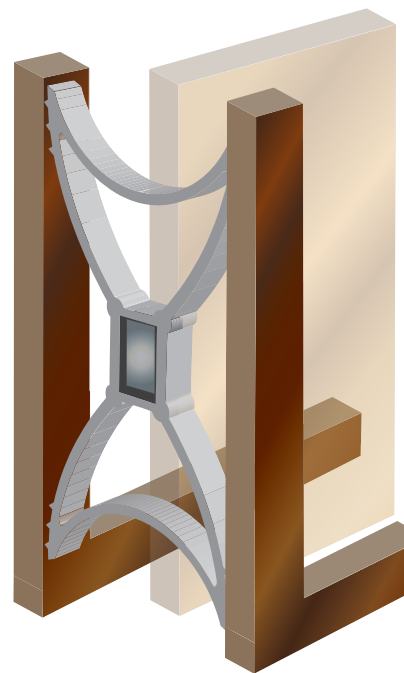
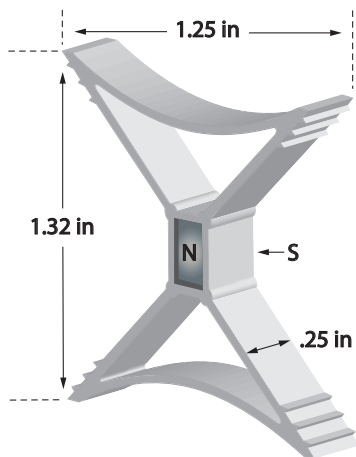
# MC-25 Window Channel Series

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## MC-25

The MC-25 may be compressed to fit channels from 5/16 to 1 inch.



**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# Door Channel Magnet with 3/4" & 1" Recessed Switch

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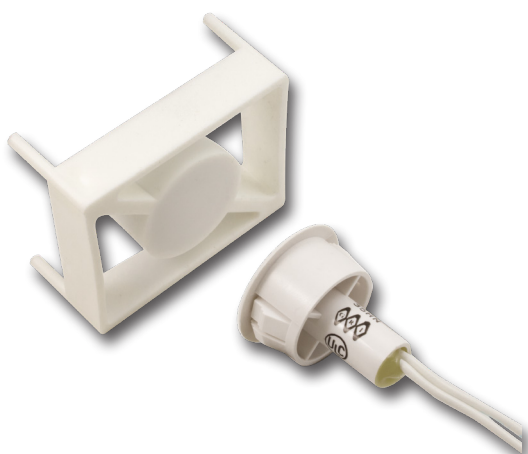


## MC-180 Series

- ◆ The MC-180 is designed to be mounted in top channel of a metal door
- ◆ Legs of the magnet case can be clipped to accommodate a more shallow channel
- ◆  Indicates U.L. 10C Fire Rated



MC-180 



MC-180 shown with 180MC-12



MC-180 shown with 8080-TMC

### Part Numbers

| Standard Gap<br>up to 1"<br>on steel | 3/4" Dia.<br>1" Dia.<br>3/4 Dia.<br>1" Dia. | <u>Closed Loop</u> |          | <u>Open Loop</u> |          | <u>SPDT</u> | <u>DPDT</u> |
|--------------------------------------|---------------------------------------------|--------------------|----------|------------------|----------|-------------|-------------|
|                                      |                                             | 180MC-12           | 184MC-12 | 185MC-12         | 189MC-12 | 190MC-12    | 195MC-12    |
|                                      |                                             | 8080-TMC           | 8484-TMC | 8585-TMC         | 8989-TMC | 194MC-12    | 199MC-12    |

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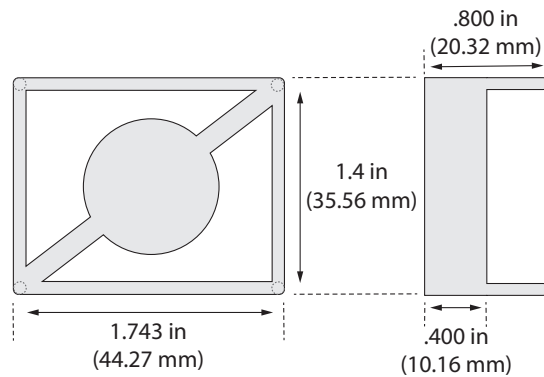
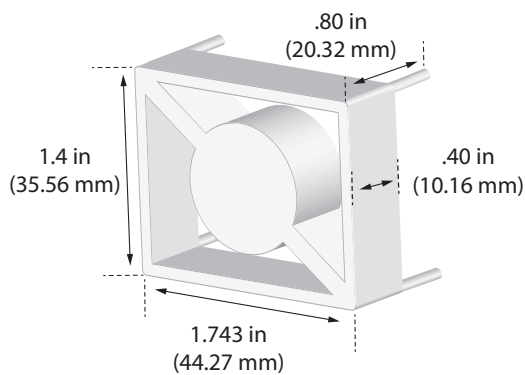
1-800-445-5218  
1-800-523-1227  
(308) 235-4645  
FAX (308) 235-3561  
E-MAIL: sales@grisk.com

# Door Channel Magnet with 3/4" & 1" Recessed Switch

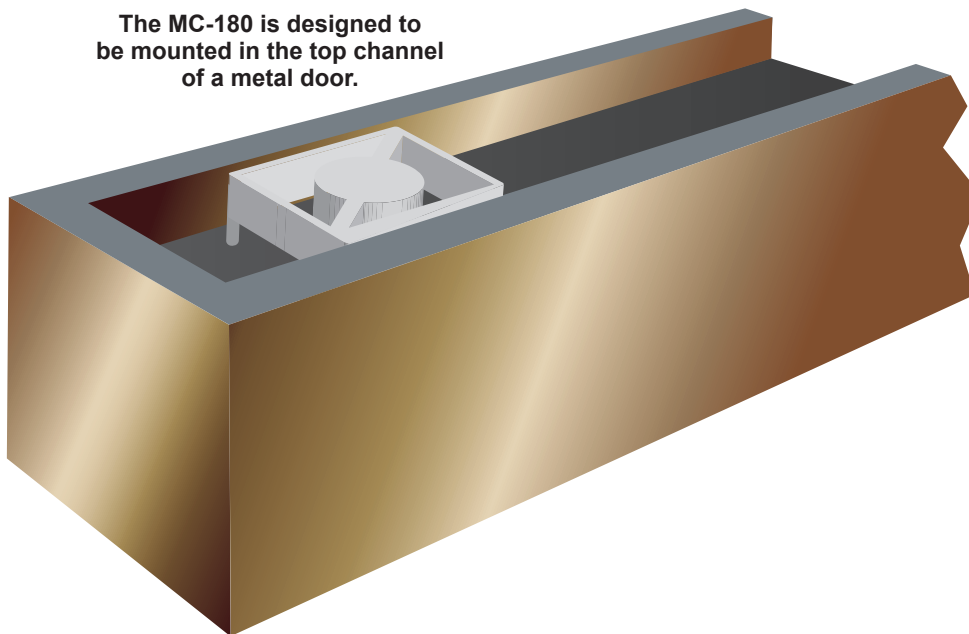
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MC-180



The MC-180 is designed to be mounted in the top channel of a metal door.



**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# Oval Channel Magnet with 3/4" & 1" Recessed Switch

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## GR1840

*UL pending*

- ◆ The GR1840 neodymium magnet is designed to be mounted in the top channel of a metal entry and/or exit door
- ◆ The magnet can be rotated to fit either wide or narrow top channels
- ◆ Switch colors: white, brown and gray
- ◆ Magnets available separately. Part No. GR1840



GR1840



GR1840  
shown with 180OC-12



GR1840  
shown with 8080-TOC



### Part Numbers

Standard Gap  
5/8" +  
on steel

3/4" Dia.  
  
1" Dia.

Closed Loop  
180OC-12  
8080-TOC  
184OC-12  
8484-TOC

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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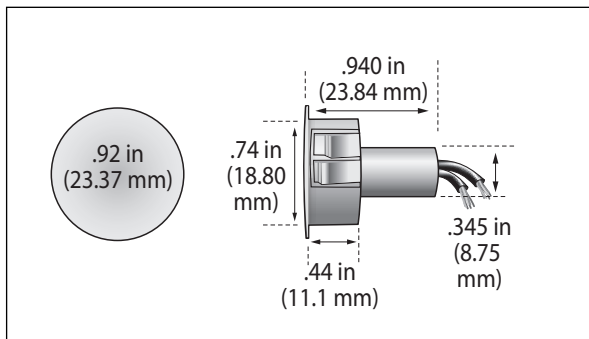
1-800-445-5218  
1-800-523-1227  
(308) 235-4645  
FAX (308) 235-3561  
E-MAIL: sales@grisk.com

# Oval Channel Magnet with 3/4" & 1" Recessed Switch

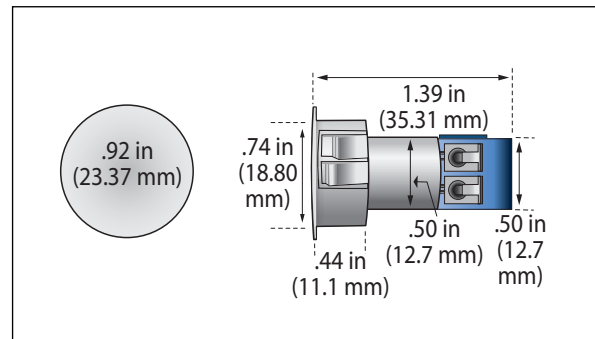
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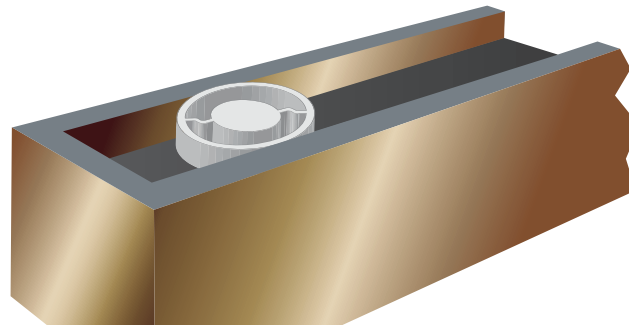
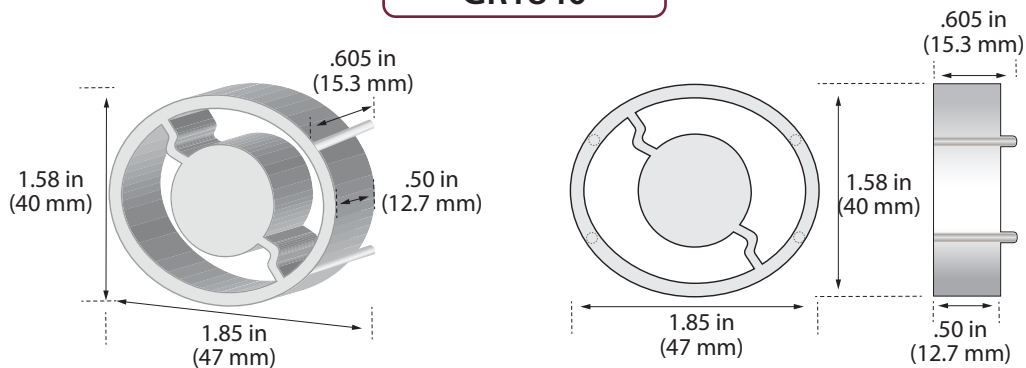
180OC-12



8080-TOC



GR1840



**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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***3/8" Plunger PB / PBF-2020 Series***

***Push Button Plunger PB / PBF Series***

***Short Roller Ball DS-01 Series***

***Roller Ball Plunger RB Series***

***Box Tamper TS-01 Series***

***Tamper Switch TS-20 Series***





# 3/8" Diameter Plunger Switch

WWW.GRISK.COM



## PB / PBF-2020 Series



- ◆ Adjustable screw plunger, travel distance  
total .250, pre-travel is  $.110 \pm 0.40$
- ◆ 3/8" diameter
- ◆ Single drill hole    ◆ Press fit or flange
- ◆ 12" #22AWG leads or screw terminals
- ◆ Colors: white, brown and gray
- ◆ Lifetime Warranty



PB-2020-T



PBF-2020

The 3/8" PB-2020 and PBF-2020 switch series is a unique switch package. Designed to incorporate a plunger, push-to-activate function, into the shortest-most compact package available. Promoted as a solution to securing the newest generation of vinyl extruded or custom type windows.

Available in press-to-fit or screw down flanges, the PB/PBF-2020 series offers the installer a reed and magnet combination for more cost effective installs.

### Part Numbers

PB-2020  
PBF-2020

PB-2020-T  
PBF-2020-T

PB-3030  
PBF-3030

### GRI PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type | Electrical Configuration | Reed Form | Max. Initial Contact Resistance ( $\Omega$ ) | Max. Contact Rating (W) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|-----------|--------------------------|-----------|----------------------------------------------|-------------------------|------------------------------|----------------------------|
| PB-2020     | Closed    | N/O                      | A         | .150                                         | 10                      | 200                          | .500                       |
| PB-2020-T   | Closed    | N/O                      | A         | .150                                         | 10                      | 200                          | .500                       |
| PBF-2020    | Closed    | N/O                      | A         | .150                                         | 10                      | 200                          | .500                       |
| PBF-2020-T  | Closed    | N/O                      | A         | .150                                         | 10                      | 200                          | .500                       |
| PB-3030     | Open      | N/C                      | B         | .140                                         | 5                       | 175VDC                       | .250                       |
| PBF-3030    | Open      | N/C                      | B         | .140                                         | 5                       | 175VDC                       | .250                       |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# 3/8" Diameter Plunger Switch

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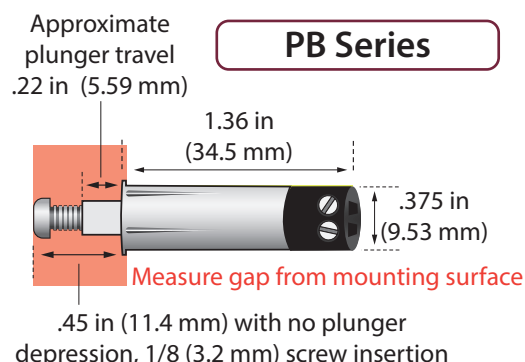
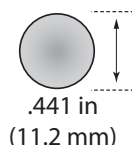
## INSTALLATION APPLICATIONS

Installation requires that a single 3/8" hole be drilled, usually into the window frame, eliminating the troublesome and potentially costly hole in the window sash.

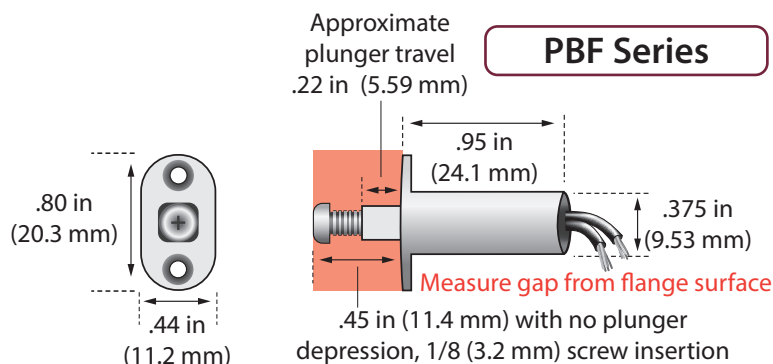
Make certain to properly adjust the screw plunger prior to complete closing of the window. Improper initial adjustment of screw could cause damage to the switch, resulting in a malfunction.

Available as a press fit or a screw mount style with an adjustable length plunger. The PB/PBF plunger series may be the most versatile reed switch to date!

**PB SERIES** Measure gap from the mounting surface. Press plunger down on the switch and adjust screw so distance between top of screw and the mounting surface is 1/32" (.0312) less than gap. If gap is 3/16" or less, remove adjusting screw. Determine maximum plunger extension PRIOR to closing window. Improper initial adjustment of screw could damage the switch.



**PBF SERIES** Measure gap from the outside edge of the flange, not the mounting surface.



**CAUTION** For best performance, slightly over drill the hole for the switch and carefully clear hole of all debris. Too snug of fit can cause interference with switch operation. Do not paint the switch. Do not apply lubricant to the switch as this could hamper or restrict performance. These switches are not recommended for bottom track of windows or sliding doors.

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# Push Button Plunger Switch

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## PB / PBF Series



- ◆ Recessed magnetic contact
  - ◆ PB is 9/16" press fit
- ◆ PBF is 3/4" x 1 1/2" with screw down flange
- ◆ Adjustable screw plunger, travel distance total .270, pre-travel is .090 ± .040
- ◆ 12" #22AWG leads or screw terminals
- ◆ Longer leads, zip cords or jacketed cable upon request
  - ◆ Hermetically sealed
  - ◆ Plated contacts resist sticking or freezing
  - ◆ Spacers and mounting hardware included
- ◆ Built-in E.O.L. Resistors and Diodes upon request
  - ◆ Colors: white and brown
  - ◆ Lifetime Warranty



PB-100



PB-100T



PBF-100



PBF-100T

### Part Numbers

|                | <u>Closed Loop</u>  | <u>Open Loop</u>    | <u>SPDT</u> |
|----------------|---------------------|---------------------|-------------|
| Without Flange | PB-100<br>PB-100T   | PB-101<br>PB101T    | PB-102      |
| With Flange    | PBF-100<br>PBF-100T | PBF-101<br>PBF-101T | PBF-102     |

## INSTALLATION APPLICATIONS

The push button or plunger actuated PB series was developed as a direct replacement of an existing and problematic mechanical type contact. The PBF flange push button can be installed without re-drilling or redesigning the original installation. The sealed contacts of the reed switch insure a long service life. Plunger actuated reed switches have become so popular on new installations that many variations are now being produced. The PB-100 is a press fit design and eliminates the screw mounted flange. A terminal connection is offered on most models and this option can be added by including a T at the end of the part number - for example PB-100-T.

**Important Note:** GRI's push button contacts are not recommended for the bottom track of windows or doors.

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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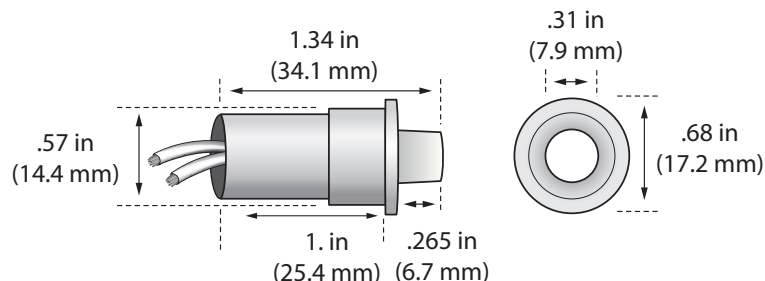
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# Push Button Plunger Switch

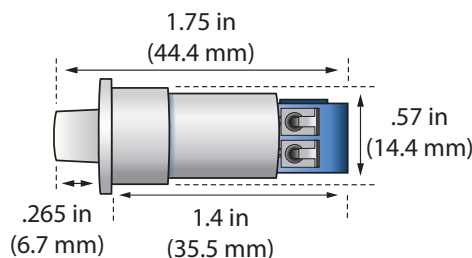
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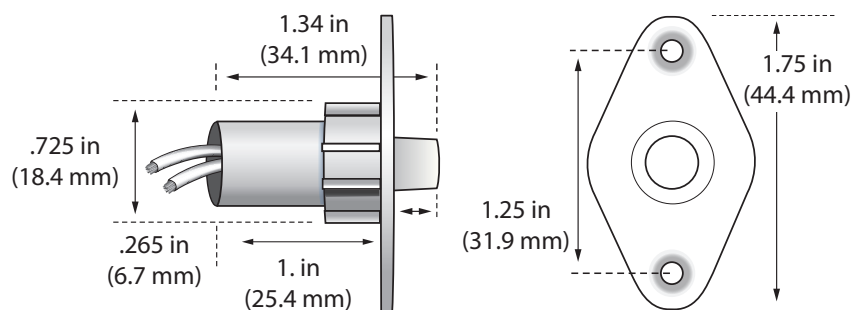
**PB-100**



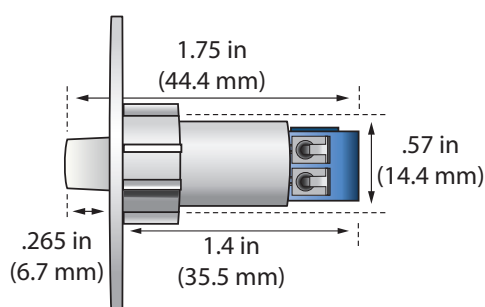
**PB-100T**



**PBF-100**



**PBF-100T**



## GR I PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type   | Electrical Configuration | Reed Form | Max. Initial Contact Resistance ( $\Omega$ ) | Max. Contact Rating (W) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|-------------|--------------------------|-----------|----------------------------------------------|-------------------------|------------------------------|----------------------------|
| PB-100      | Closed      | N/O                      | A         | .150                                         | 10                      | 200                          | .500                       |
| PB-100T     | Closed      | N/O                      | A         | .150                                         | 10                      | 200                          | .500                       |
| PBF-100     | Closed      | N/O                      | A         | .150                                         | 10                      | 200                          | .500                       |
| PBF-100T    | Closed      | N/O                      | A         | .150                                         | 10                      | 200                          | .500                       |
| PB-101      | Open        | N/C                      | B         | .140                                         | 5                       | 175VDC                       | .250                       |
| PB-101T     | Open        | N/C                      | B         | .140                                         | 5                       | 175VDC                       | .250                       |
| PBF-101     | Open        | N/C                      | B         | .140                                         | 5                       | 175VDC                       | .250                       |
| PBF-101T    | Open        | N/C                      | B         | .140                                         | 5                       | 175VDC                       | .250                       |
| PB-102      | Open/Closed | SPDT                     | C         | .140                                         | 5                       | 175VDC                       | .250                       |
| PBF-102     | Open/Closed | SPDT                     | C         | .140                                         | 5                       | 175VDC                       | .250                       |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# Short Roller Ball

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## DS-01 Series

*Replaces the Dome Switch*



- ◆ 360° of ball access, provides smooth travel of the plunger for longer life and better reliability
  - ◆ Screw down flange
- ◆ Travel distance total .200, pre-travel is  $.080 \pm .030$ 
  - ◆ 12" #22AWG leads or screw terminals
- ◆ Longer leads, zip cords or jacketed cable upon request
  - ◆ Hermetically sealed
  - ◆ Plated contacts resist sticking or freezing
  - ◆ Spacers and mounting hardware included
- ◆ Built-in E.O.L. Resistors and Diodes upon request
  - ◆ Additional spacers sold separately
  - ◆ Supervisory loops upon request
  - ◆ Colors: white and brown
  - ◆ Lifetime Warranty



DS-01



DS-01T

| <u>Part Numbers</u> |                    |             |
|---------------------|--------------------|-------------|
|                     | <u>Closed Loop</u> | <u>SPDT</u> |
| 12" Wire Leads      | DS-01              | DS-03       |
| Terminal Block      | DS-01T             |             |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

GEORGE RISK INDUSTRIES, INC.  
G.R.I. PLAZA  
KIMBALL, NE 69145

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# Short Roller Ball

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## INSTALLATION APPLICATIONS

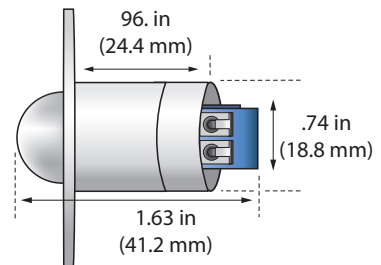
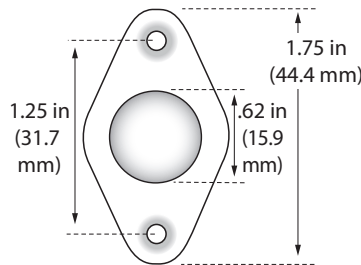
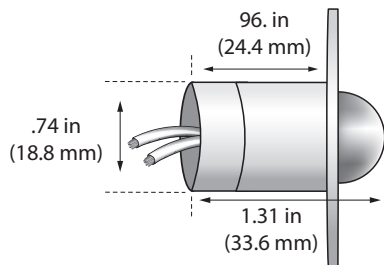
360° of ball access provides smooth travel of the ball downward resulting in longer life and better reliability. The shorter length of the body helps the installer by eliminating the need for a long, deep hole to allow for a switch housing. The collar is flanged to insure reliability with positioning and the positive retention when the switch is installed.

GRI's creation of the new short roller ball style switch uses a magnetic reed with a rolling ball to control the magnet. The ball plunger can be actuated from any direction. Our improved short roller ball switch is actuated when the ball rolls into the switch rather than simply being forced into the housing.

**Important Note:** GRI's improved DS and RB Series of products are not recommended for the bottom or side track of windows and doors.

DS-01

DS-01T



### GRI PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type   | Electrical Configuration | Reed Form | Max. Initial Contact Resistance ( $\Omega$ ) | Max. Contact Rating (W) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|-------------|--------------------------|-----------|----------------------------------------------|-------------------------|------------------------------|----------------------------|
| DS-01       | Closed      | N/O                      | A         | .150                                         | 10                      | 200                          | .500                       |
| DS-01T      | Closed      | N/O                      | A         | .150                                         | 10                      | 200                          | .500                       |
| DS-03       | Open/Closed | SPDT                     | C         | .140                                         | 5                       | 175VDC                       | .250                       |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# Roller Ball Plunger Contact

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## RB Series



- ◆ Works from all 360° of direction
- ◆ Screw down flange     ◆ Fits in a 3/4" hole
  - ◆ Travel distance total .200,  
pre-travel is .080 ± .030
  - ◆ 12" #22AWG leads
- ◆ Refer to DS-01T for terminal version
  - ◆ Longer leads, zip cords or jacketed cable upon request
- ◆ Hermetically sealed     ◆ Plated contacts resist sticking or freezing
  - ◆ Spacers and mounting hardware included
  - ◆ Built-in E.O.L. Resistors and Diodes upon request
  - ◆ Switches and spacers available separately
    - ◆ Supervisory loops upon request
    - ◆ Colors: white and brown
    - ◆ Lifetime Warranty



RB-01

| <u>Part Numbers</u> |                  |             |
|---------------------|------------------|-------------|
| <u>Closed Loop</u>  | <u>Open Loop</u> | <u>SPDT</u> |
| RB-01               | RB-02            | RB-03       |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# Roller Ball Plunger Contact

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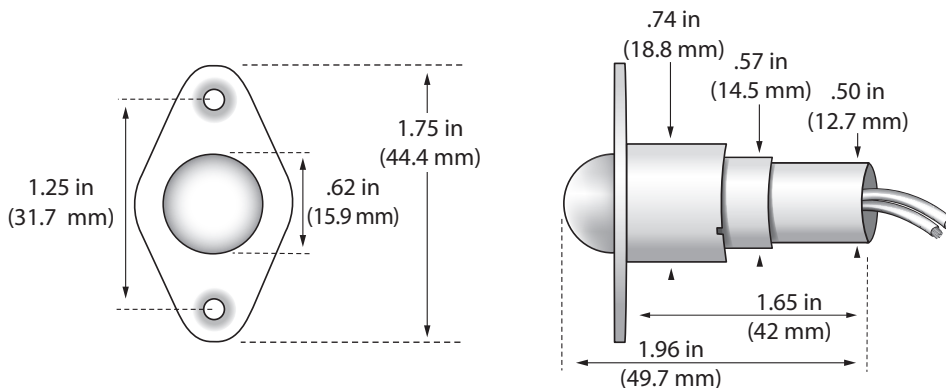


## INSTALLATION APPLICATIONS

GRI's Roller Ball Switch is a unique application of the magnetic reed, combining into a single package, a mechanical plunger action and the reliability of a hermetically sealed switch.

The ball plunger can be activated from any 360° direction, using a sliding motion. One typical example is that action produced by opening or closing of a door or window into its frame. The roller ball switch is also very effective used as an interior trap device by mounting on a flat surface, such as a display table, and placing the protected object directly on the switch to conceal and actuate the roller ball. GRI roller ball switches can work when nothing else will. Spacers and mounting hardware included with switch and also available separately. Not recommended for the bottom track of doors and windows.

### RB-01



#### GRI PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type   | Electrical Configuration | Reed Form | Max. Initial Contact Resistance ( $\Omega$ ) | Max. Contact Rating (W) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|-------------|--------------------------|-----------|----------------------------------------------|-------------------------|------------------------------|----------------------------|
| RB-01       | Closed      | N/O                      | A         | .150                                         | 10                      | 200                          | .500                       |
| RB-02       | Open        | N/C                      | A         | .150                                         | 10                      | 200                          | .400VDC                    |
| RB-03       | Open/Closed | SPDT                     | C         | .140                                         | 5                       | 175VDC                       | .250                       |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# Box Tamper Switch

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## TS-01 Box Tamper Series

- ◆ Environmentally sealed contacts
  - ◆ Longer service life
- ◆ Eliminates false alarms and nuisance service calls
  - ◆ Magnetically actuated plunger
- ◆ No blades to corrode    ◆ No more switch bounce
  - ◆ No additional hardware or adapters needed
  - ◆ Replaces older mechanical tampers
  - ◆ Fits most bell, siren and control panel mounting hole patterns
- ◆ Use indoors    ◆ Vibration free    ◆ Install and forget
  - ◆ Available in closed loop, open loop and SPDT
  - ◆ Available with screw terminals or wire leads
- ◆ Available with built in automatic shunt feature for system servicing (gray); TS-01S/TSW-01S, or as a non-shunt version TS-01/TSW-01
  - ◆ Travel distance total .40; pre-travel is .175 to .240
  - ◆ Colors: standard available in black, shunt available in gray



TS-01



TSW-01

The shunt feature is activated by simply pulling on the plunger until it locks. In this position, the circuit is closed while the door is open to help make servicing easier.

*When using the TS-01 series with the automatic service shunt, it is important to **remember to fully depress (reset) the plunger prior to closing the cabinet, box, door, etc., which will rearm the circuit.** Failure to restore the plunger will cause the TS-01 to become erratic and not secure the zone circuit properly.*

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# Box Tamper Switch

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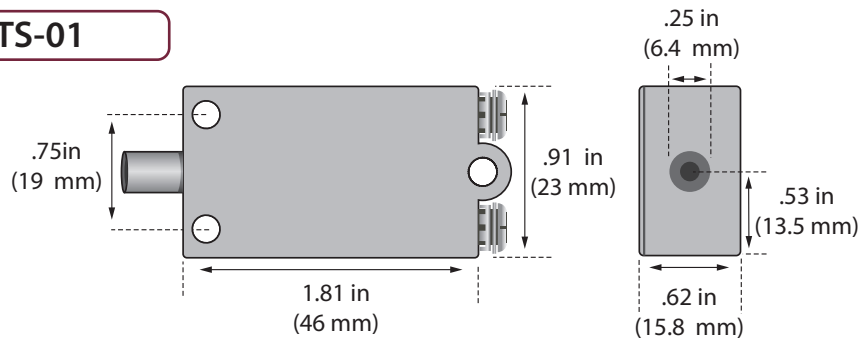


## INSTALLATION APPLICATIONS

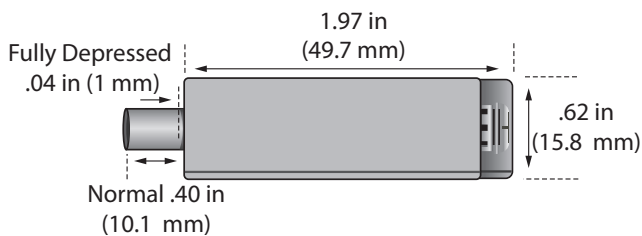
The TS-01 and TSW-01 magnetic reed, three hole box tamper switch is designed to fit almost all standard siren and panel boxes. Available with an adjustable plunger length, the TS-01 allows the installer to alarm the box to detect opening or prying to remove the box from its mounted position. Screw terminals or wire leads provide easy hook up.

Available in closed loop, open loop and SPDT. Mounting hardware included. TSW-03 is available with leads only.

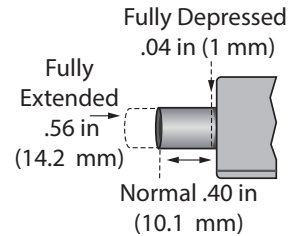
### TS-01



### Models without shunt



### Models with shunt



### GR I PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type   | Electrical Configuration | Reed Form | Max. Initial Contact Resistance ( $\Omega$ ) | Max. Contact Rating (W) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|-------------|--------------------------|-----------|----------------------------------------------|-------------------------|------------------------------|----------------------------|
| TS-01(S)    | Closed      | N/O                      | A         | .150                                         | 10                      | 160                          | .400                       |
| TSW-01(S)   | Closed      | N/O                      | A         | .150                                         | 10                      | 160                          | .400                       |
| TS-02(S)    | Open        | N/C                      | B         | .140                                         | 5                       | 175VDC                       | .250                       |
| TSW-02(S)   | Open        | N/C                      | B         | .140                                         | 5                       | 175VDC                       | .250                       |
| TSW-03(S)   | Open/Closed | SPDT                     | C         | .140                                         | 5                       | 175VDC                       | .250                       |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# Tamper Switch

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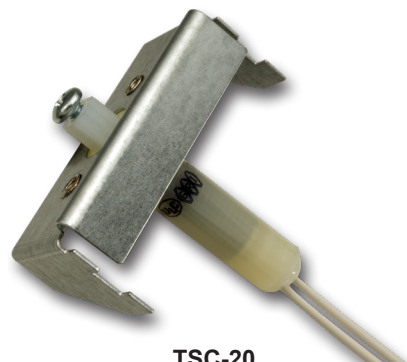
## TS-20 Series



- ◆ Recessed adjustable plunger from ¼" to ½"
- ◆ 3/8" diameter (*Smallest in the industry!*)
- ◆ Easy to install    ◆ Replaces old mechanical tampers
  - ◆ Strong spring action    ◆ Press to fit
  - ◆ 12" #22 AWG leads
- ◆ Screw down flange on TS-20 for positive retention
- ◆ Longer leads, zip cords or jacketed cable upon request
  - ◆ Hermetically sealed
  - ◆ Plated contacts resist sticking or freezing
- ◆ Travel distance total .250; pre-travel is .105 ± .035
  - ◆ Mounting hardware included
  - ◆ Supervisory loops upon request
  - ◆ Lifetime Warranty



TS-20



TSC-20

### Part Numbers

|                   | <u>Closed Loop</u> | <u>Open Loop</u> | <u>SPDT</u> |
|-------------------|--------------------|------------------|-------------|
| Screw down flange | TS-20              | TS-30            | TS-40       |
| Clip mounted      | TSC-20             | TSC-30           | TSC-40      |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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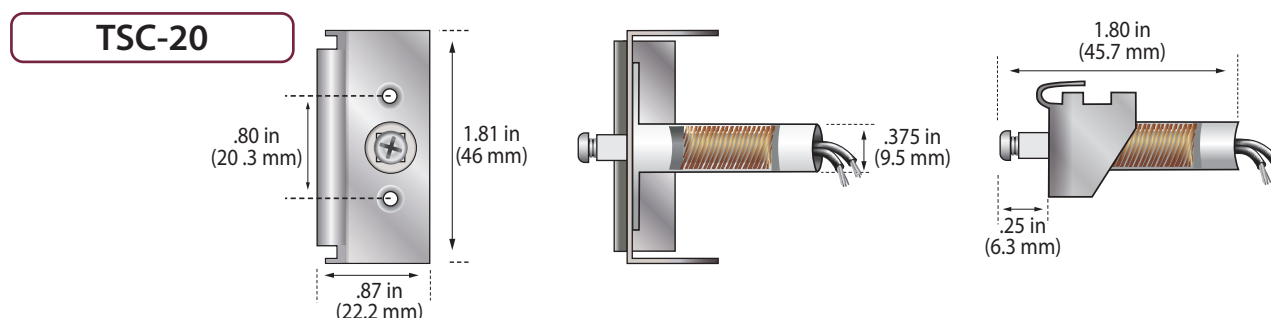
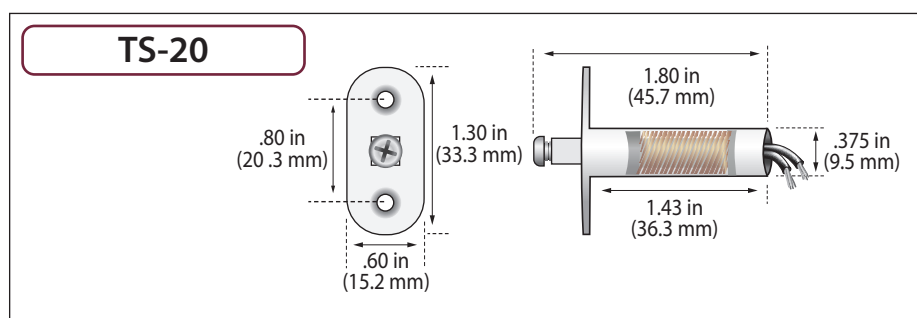
# Tamper Switch



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## INSTALLATION APPLICATIONS

The adjustable plunger actuated TS series was developed to provide a tamper switch with a smaller diameter for applications where a normal plunger or roller ball type switch is too large. The 3/8" diameter is ideal for a variety of door and window applications. The oval flange allows the switch to be solidly anchored where needed. The design also resists locking problems caused by expansion or contraction. Available with a bracket for box tamper. Made of nylon for flexibility, the stainless steel spring and sealed contact insure a long service life.



### GRI PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type   | Electrical Configuration | Reed Form | Max. Initial Contact Resistance ( $\Omega$ ) | Max. Contact Rating (W) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|-------------|--------------------------|-----------|----------------------------------------------|-------------------------|------------------------------|----------------------------|
| TS-20       | Closed      | N/O                      | A         | .115                                         | 10                      | 200                          | .500                       |
| TSC-20      | Closed      | N/O                      | A         | .115                                         | 10                      | 200                          | .500                       |
| TS-30       | Open        | N/C                      | B         | .140                                         | 5                       | 175                          | .250                       |
| TSC-30      | Open        | N/C                      | B         | .140                                         | 5                       | 175                          | .250                       |
| TS-40       | Open/Closed | SPDT                     | C         | .140                                         | 5                       | 175                          | .250                       |
| TSC-40      | Open/Closed | SPDT                     | C         | .140                                         | 5                       | 175                          | .250                       |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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## ***Table of Contents Surface Mount Switches***

***.85" Micro 500 Series***

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***1½" Miniature 50 / 50F / 55F Series***

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***1½" Miniature 129 Series***

***2" Miniature 1100 Series***

***2½" Commercial 28 / 29 / 29P Series***

***4" Commercial / Industrial 400 / 410P Series***





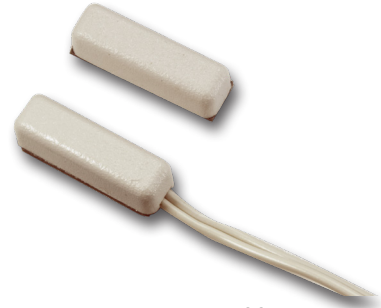
# *.85" Micro Surface Mount Switch Set*

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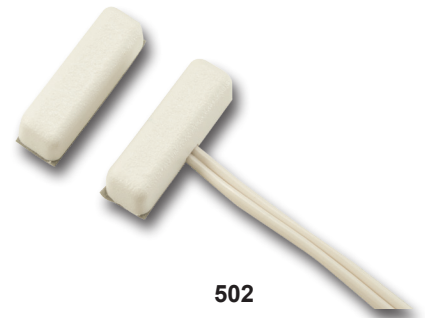


## *500 Series*

- ◆ Ideal for residential application and areas with limited space
- ◆ Surface mount magnetic contact
  - ◆ Easy to install
  - ◆ 12" #26 AWG leads
  - ◆ Longer leads upon request
- ◆ Plated contacts resist sticking or freezing
  - ◆ 3M double sided tape attached
- ◆ Switches and magnets available separately
  - ◆ Colors: white and brown
  - ◆ Lifetime Warranty



500



502

### Part Numbers

| Standard Gap 1/4" + |           | <u>Closed Loop</u> | <u>Open Loop</u> |
|---------------------|-----------|--------------------|------------------|
|                     |           |                    |                  |
|                     | END Lead  | 500                | 501              |
|                     | SIDE Lead | 502                | 503              |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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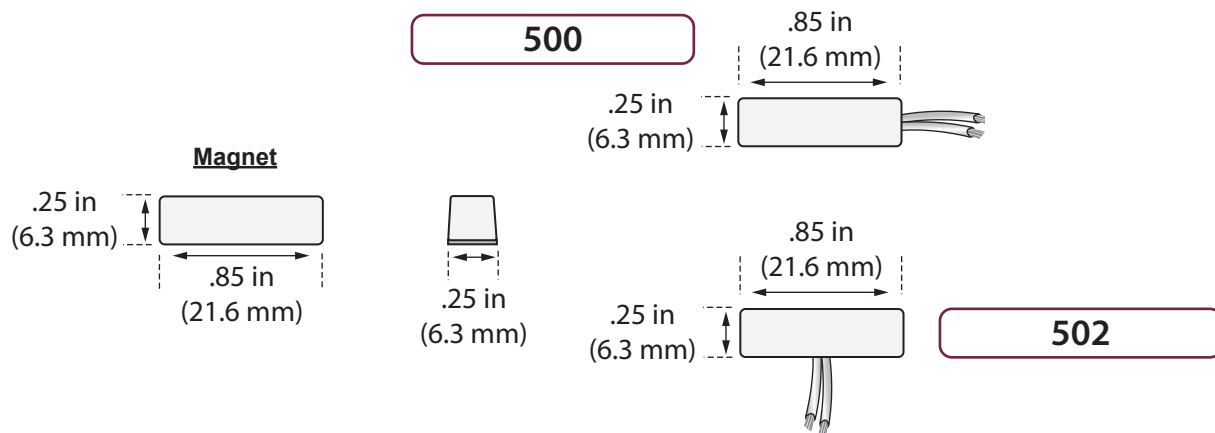
# Micro Surface Mount Switch Set

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## INSTALLATION APPLICATIONS

The Micro 500 switch is aimed at residential applications where aesthetics and small size are a consideration when choosing a switch. It offers the installer alternative wire configurations as well with either end or side leads and a choice of wire length. This helps to make installations and connections quick and easy as well as saving you time and money. Available in regular gap of 1/4"+. The flexibility of its small size allows it to become part of the existing decor as it can be mounted and hidden, for example, in the tract of a sliding door or crank out window. Offered in white and brown, both switch and magnet come with 3M double sided tape attached. Also available as switch only or magnet only.



### GR I PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type | Electrical Configuration | Reed Form | Max. Initial Contact Resistance ( $\Omega$ ) | Max. Contact Rating (W) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|-----------|--------------------------|-----------|----------------------------------------------|-------------------------|------------------------------|----------------------------|
| 500         | Closed    | N/O                      | A         | .150                                         | 10                      | 200                          | .500                       |
| 502         | Closed    | N/O                      | A         | .150                                         | 10                      | 200                          | .500                       |
| 501         | Open      | N/C                      | B         | .140                                         | 5                       | 175                          | .250                       |
| 503         | Open      | N/C                      | B         | .140                                         | 5                       | 175                          | .250                       |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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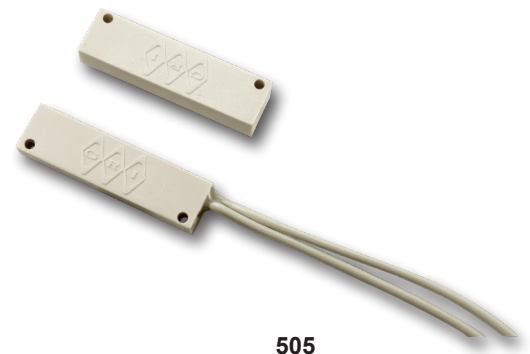
# 1" Super Miniature Surface Mount Brad Switch Set

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## 505 Series

- ◆ When a surface mount is a must  
*the 505 is the Answer!*
- ◆ Ideal for residential application and  
areas with limited space
- ◆ Surface mount magnetic contact
  - ◆ 12" #26 AWG leads
  - ◆ Longer leads upon request
  - ◆ Plated contacts resist sticking or freezing
- ◆ Mounting brads and die cut double sided tape included
  - ◆ Switches and magnets available separately
  - ◆ Colors: white and brown
  - ◆ Lifetime Warranty



505

### Part Numbers

Standard Gap 1/2" +

Wide Gap 3/4"+

#### Closed Loop

505

505WG



#### Open Loop

506

506WG



**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# 1" Super Miniature Surface Mount Brad Switch Set

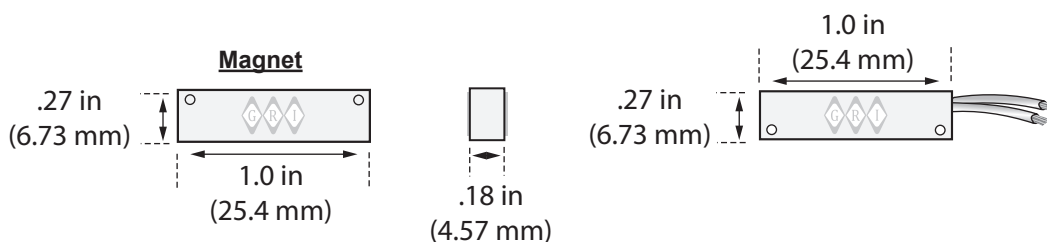
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## INSTALLATION APPLICATIONS

The 505 super miniature switch is aimed at residential applications where aesthetics and small size are a consideration. It offers the installer two methods of mounting, alternative cable types (flying leads or zip cord) and a choice of cable lengths. This helps to make installations and connections quick and easy as well as saving you time and money. Available in regular gap of 1/2"+ and a 3/4"+ wide gap version. The flexibility of its small overall size allows it to become part of the existing decor as it can be mounted and hidden, for example, in the track of a sliding door or crank out window. The brad holes in both switch and magnet should be opposing to achieve correct installation. Offered in white or brown, with mounting brads and die cut double sided tape included with switch sets. Also available as switch only or magnet only.

505



### GR I PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type | Electrical Configuration | Reed Form | Max. Initial Contact Resistance ( $\Omega$ ) | Max. Contact Rating (W) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|-----------|--------------------------|-----------|----------------------------------------------|-------------------------|------------------------------|----------------------------|
| 505         | Closed    | N/O                      | A         | .150                                         | 10                      | 200                          | .500                       |
| 505WG       | Closed    | N/O                      | A         | .150                                         | 10                      | 200                          | .500                       |
| 506         | Open      | N/C                      | B         | .140                                         | 5                       | 175                          | .250                       |
| 506WG       | Open      | N/C                      | B         | .140                                         | 5                       | 175                          | .250                       |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# 1" Capped Miniature Wide Gap Surface Mount Switch Set

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## 700 Series

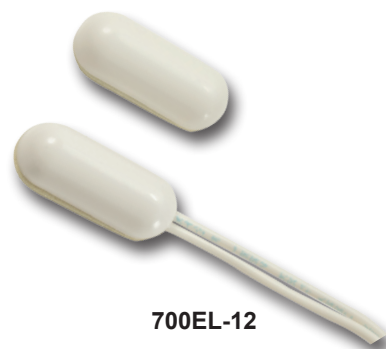
- ◆ Ideal for residential application and areas with limited space
- ◆ No drilling into window frames
- ◆ Available with terminal connection, end leads and center leads
  - ◆ 3/4" Gap
  - ◆ 12" #22 AWG leads
  - ◆ Longer leads upon request
  - ◆ 3M double sided tape attached
- ◆ Plated contacts resist sticking or freezing
- ◆ Switches and magnets available separately
  - ◆ Colors: white and brown
  - ◆ Lifetime Warranty



700-T



700CL-12



700EL-12

### Part Numbers

Standard Gap 3/4"+

#### Closed Loop

700-T  
700EL-12  
700CL-12

#### Open Loop

701EL-12  
701CL-12

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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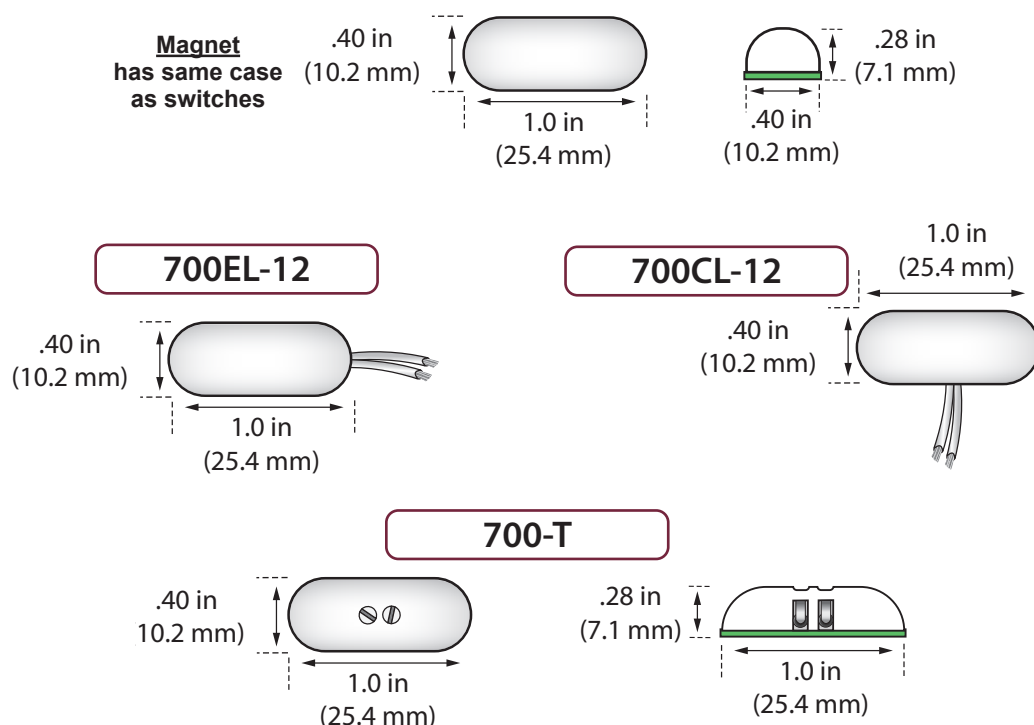
# 1" Capped Miniature Wide Gap Surface Mount Switch Set

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## INSTALLATION APPLICATIONS

The 700 series switch is aimed at residential applications where aesthetics and small size are a consideration. It offers the installer alternative wire configurations; terminal connections, end or center leads and a choice of wire lengths. This helps to make installations and connections quick and easy as well as saving you time and money. Available in regular gap 3/4". The flexibility of its small size allows it to become part of the existing decor without drilling into the window frame. Offered in white or brown, with 3M double sided tape attached. Also available as switch only or magnet only.



### GR I PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type | Electrical Configuration | Reed Form | Max. Initial Contact Resistance ( $\Omega$ ) | Max. Contact Rating (W) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|-----------|--------------------------|-----------|----------------------------------------------|-------------------------|------------------------------|----------------------------|
| 700-T       | Closed    | N/O                      | A         | .150                                         | 10                      | 160                          | .400                       |
| 700EL-12    | Closed    | N/O                      | A         | .150                                         | 10                      | 160                          | .400                       |
| 700CL-12    | Closed    | N/O                      | A         | .150                                         | 10                      | 160                          | .400                       |
| 701EL-12    | Open      | N/C                      | B         | .140                                         | 5                       | 175                          | .250                       |
| 700CL-12    | Open      | N/C                      | B         | .140                                         | 5                       | 175                          | .250                       |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# 1 1/2" Miniature Surface Mount Switch Set

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## 50 / 50F / 55F Series



- ◆ Excellent for residential applications
  - ◆ Surface mount magnetic contact
- ◆ Self stick or breakaway screw down flange
  - ◆ Center or end 12" #22 AWG leads
- ◆ Longer leads, zip cord or jacketed cable upon request
  - ◆ Hermetically sealed
- ◆ Plated contacts resist sticking or freezing
  - ◆ Mounting hardware included
- ◆ Built in E.O.L. Resistors and Diodes upon request
  - ◆ Supervisory loops upon request
- ◆ Switches and magnets available separately
  - ◆ Colors: white, brown, gray and almond
  - ◆ Lifetime Warranty

50-12

50F-12

55F-12

| Part Numbers       |                    |                  |             |
|--------------------|--------------------|------------------|-------------|
|                    | <u>Closed Loop</u> | <u>Open Loop</u> | <u>SPDT</u> |
| Standard Gap 1/2"+ | 50-12              | 60-12            | 70-12       |
|                    | 50F-12             | 60F-12           | 70F-12      |
|                    | 55F-12             | 65F-12           | 75F-12      |
| Wide Gap 3/4"+     | 50-12WG            | 60-12WG          | 70-12WG     |
|                    | 50F-12WG           | 60F-12WG         | 70F-12WG    |
|                    | 55F-12WG           | 65F-12WG         | 75F-12WG    |

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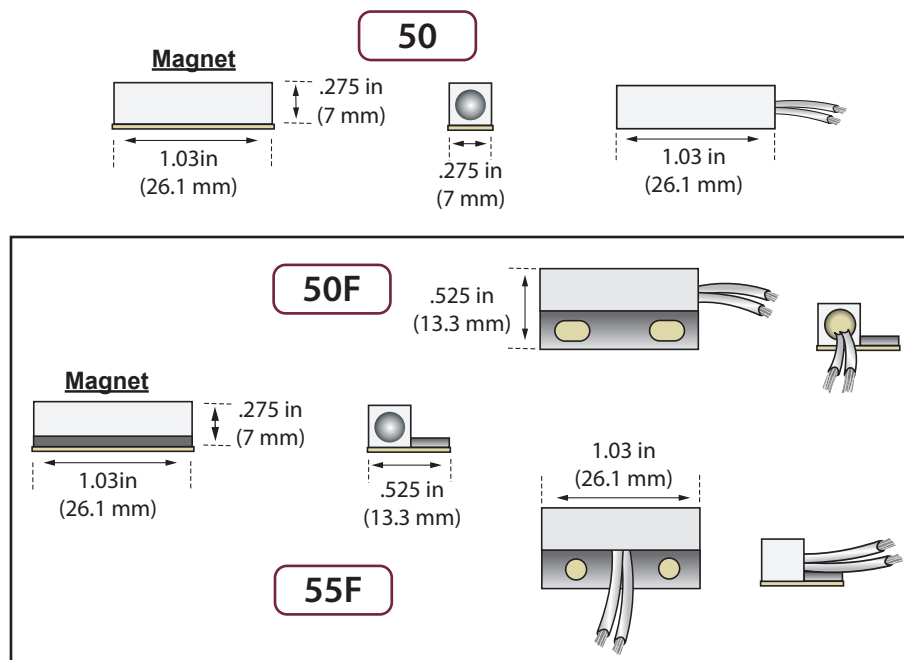
# 1 1/2" Miniature Surface Mount Switch Set

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## INSTALLATION APPLICATIONS

The GRI 50, 50F and 55F series switch sets are the most chosen configurations for residential installations. Low profile and self adhesive 3M tape make installing the sets quick and simple. The 50F and 55F come with a breakaway flange for applications where screws mounts are advisable. The 50 type is self adhesive only. The 50 and 50F have 12" leads exiting the case on the end. The 55F has a 12" lead exiting from the middle of the case. Available in open loop, closed loop and SPDT, regular and wide gap, white, brown, gray and almond. All mounting hardware included.



### GRI PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type   | Electrical Configuration | Reed Form | Max. Initial Contact Resistance ( $\Omega$ ) | Max. Contact Rating (W) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|-------------|--------------------------|-----------|----------------------------------------------|-------------------------|------------------------------|----------------------------|
| 50-12       | Closed      | N/O                      | A         | .150                                         | 10                      | 200                          | .500                       |
| 50F-12      | Closed      | N/O                      | A         | .150                                         | 10                      | 160                          | .400                       |
| 55F-12      | Closed      | N/O                      | A         | .150                                         | 10                      | 200                          | .500                       |
| 50-12WG     | Closed      | N/O                      | A         | .150                                         | 10                      | 160                          | .400                       |
| 50F-12WG    | Closed      | N/O                      | A         | .150                                         | 10                      | 200                          | .500                       |
| 55F-12WG    | Closed      | N/O                      | A         | .150                                         | 10                      | 200                          | .500                       |
| 60-12       | Open        | N/C                      | B         | .140                                         | 5                       | 175                          | .250                       |
| 60F-12      | Open        | N/C                      | B         | .140                                         | 5                       | 175                          | .250                       |
| 65F-12      | Open        | N/C                      | B         | .140                                         | 5                       | 175                          | .250                       |
| 60-12WG     | Open        | N/C                      | B         | .140                                         | 5                       | 175                          | .250                       |
| 60F-12WG    | Open        | N/C                      | B         | .140                                         | 5                       | 175                          | .250                       |
| 65F-12WG    | Open        | N/C                      | B         | .140                                         | 5                       | 175                          | .250                       |
| 70-12       | Open/Closed | SPDT                     | C         | .140                                         | 5                       | 175                          | .250                       |
| 70F-12      | Open/Closed | SPDT                     | C         | .140                                         | 5                       | 175                          | .250                       |
| 75F-12      | Open/Closed | SPDT                     | C         | .140                                         | 5                       | 175                          | .250                       |
| 70-12WG     | Open/Closed | SPDT                     | C         | .140                                         | 5                       | 175                          | .250                       |
| 70F-12WG    | Open/Closed | SPDT                     | C         | .140                                         | 5                       | 175                          | .250                       |
| 75F-12WG    | Open/Closed | SPDT                     | C         | .140                                         | 5                       | 175                          | .250                       |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# 2" Miniature Surface Mount Switch Set

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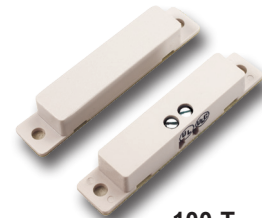
## 100 / 110 Series



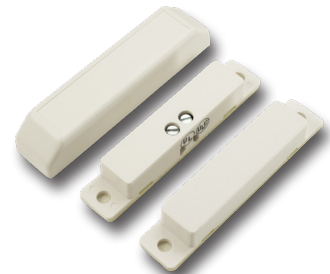
- ◆ Miniature profile series is perfect for residential and light commercial applications
- ◆ Surface mount magnetic contact
- ◆ Screw down flange or self stick
- ◆ 12" #22AWG leads or screw terminals
- ◆ Longer leads, zip cord or jacketed cable upon request
- ◆ Hermetically sealed
- ◆ Plated contacts resist sticking or freezing
- ◆ Covers and mounting hardware included
- ◆ Built in E.O.L. Resistors and Diodes upon request
- ◆ Supervisory loops upon request
- ◆ Switches and magnets available separately
- ◆ Colors: white, brown, gray and almond
- ◆ Private labeling upon request
- ◆ Lifetime Warranty



100-12



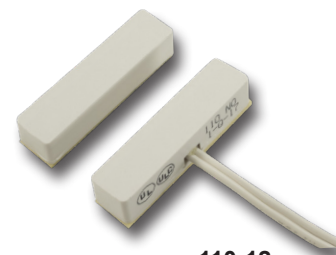
100-T



100-TC



110-T



110-12

|                          | Part Numbers       |                  |             |
|--------------------------|--------------------|------------------|-------------|
|                          | <u>Closed Loop</u> | <u>Open Loop</u> | <u>SPDT</u> |
| Standard Gap<br>up to 1" | 100-12             | 101-12           | 102-12      |
|                          | 100-T              | 101-T            |             |
|                          | 100-TC             | 101-TC           |             |
|                          | 110-12             | 111-12           | 112-12      |
|                          | 110-T              | 111-T            |             |
| Wide Gap<br>up to 1 1/4" | 100-12WG           | 101-12WG         |             |
|                          | 100-TWG            | 101-TWG          | 102-12WG    |
|                          | 100-TCWG           | 101-TCWG         |             |
|                          | 110-12WG           | 111-12WG         | 112-12WG    |
|                          | 110-TWG            | 111-TWG          |             |

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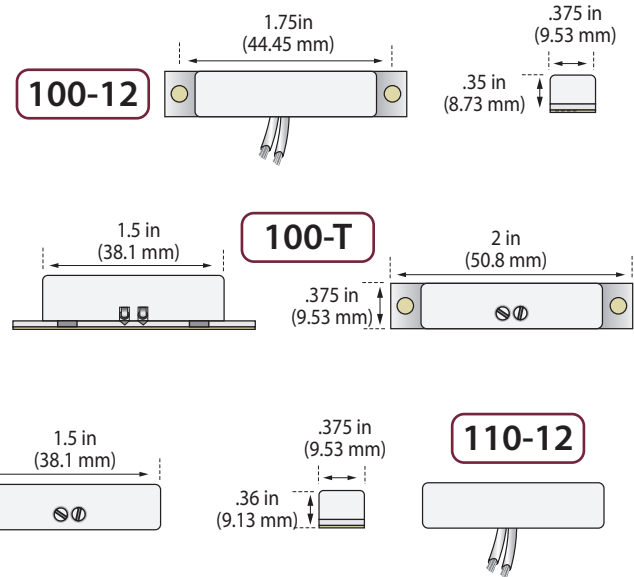
# 2" Miniature Surface Mount Switch Set

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## INSTALLATION APPLICATIONS

This series is one of our most popular miniature surface mount switches. Available both with and without flanges, this low profile series is perfect for residential and commercial use where larger configurations are not appropriate. Incorporates into most decor without being noticeable. Available in regular and wide gap. The 100 series come with mounting screws yet all come with 3M tape for mounting on aluminum, wood or vinyl. Spacers, switch only, magnet only and additional 3M tape are also available separately. Molded covers are included with P/N 100-TC.



**Magnets** have same case as corresponding switch.

### GRI PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type   | Electrical Configuration | Reed Form | Max. Initial Contact Resistance ( $\Omega$ ) | Max. Contact Rating (W) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|-------------|--------------------------|-----------|----------------------------------------------|-------------------------|------------------------------|----------------------------|
| 100-12      | Closed      | N/O                      | A         | .150                                         | 10                      | 200                          | .500                       |
| 100-12WG    | Closed      | N/O                      | A         | .150                                         | 10                      | 200                          | .500                       |
| 100-T       | Closed      | N/O                      | A         | .150                                         | 10                      | 160                          | .400                       |
| 100-TWG     | Closed      | N/O                      | A         | .150                                         | 10                      | 160                          | .400                       |
| 100-TC      | Closed      | N/O                      | A         | .150                                         | 10                      | 160                          | .400                       |
| 100-TCWG    | Closed      | N/O                      | A         | .150                                         | 10                      | 160                          | .400                       |
| 110-12      | Closed      | N/O                      | A         | .150                                         | 10                      | 200                          | .500                       |
| 110-12WG    | Closed      | N/O                      | A         | .150                                         | 10                      | 200                          | .500                       |
| 110-T       | Closed      | N/O                      | A         | .150                                         | 10                      | 160                          | .400                       |
| 110-TWG     | Closed      | N/O                      | A         | .150                                         | 10                      | 160                          | .400                       |
| 101-12      | Open        | N/C                      | B         | .140                                         | 5                       | 175                          | .250                       |
| 101-12WG    | Open        | N/C                      | B         | .140                                         | 5                       | 175                          | .250                       |
| 101-T       | Open        | N/C                      | B         | .140                                         | 5                       | 175                          | .250                       |
| 101-TC      | Open        | N/C                      | B         | .140                                         | 5                       | 175                          | .250                       |
| 101-TCWG    | Open        | N/C                      | B         | .140                                         | 5                       | 175                          | .250                       |
| 101-TWG     | Open        | N/C                      | B         | .140                                         | 5                       | 175                          | .250                       |
| 111-12      | Open        | N/C                      | B         | .140                                         | 5                       | 175                          | .250                       |
| 111-12WG    | Open        | N/C                      | B         | .140                                         | 5                       | 175                          | .250                       |
| 111-T       | Open        | N/C                      | B         | .140                                         | 5                       | 175                          | .250                       |
| 111-TWG     | Open        | N/C                      | B         | .140                                         | 5                       | 175                          | .250                       |
| 102-12      | Open/Closed | SPDT                     | C         | .140                                         | 5                       | 175                          | .250                       |
| 102-12WG    | Open/Closed | SPDT                     | C         | .140                                         | 5                       | 175                          | .250                       |
| 112-12      | Open/Closed | SPDT                     | C         | .140                                         | 5                       | 175                          | .250                       |
| 112-12WG    | Open/Closed | SPDT                     | C         | .140                                         | 5                       | 175                          | .250                       |

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# 1 1/2" Miniature Surface Mount Switch Set

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## 129 Series



- ◆ Perfect for residential and light commercial applications
- ◆ Small size is 1/2" x 1/2" x 1 1/2"
  - ◆ Tamper Proof
  - ◆ Screw terminals
  - ◆ Hermetically sealed
- ◆ Surface mount magnetic contact
- ◆ Plated contacts resist sticking or freezing
- ◆ Covers, spacers and mounting hardware included
  - ◆ Switches and magnets available separately
  - ◆ Colors: white, brown and gray
  - ◆ Private labeling available
  - ◆ Lifetime Warranty



129 switch and case



129 magnet, case and spacer

| <u>Part Numbers</u> |                    |                  |
|---------------------|--------------------|------------------|
|                     | <u>Closed Loop</u> | <u>Open Loop</u> |
| Standard Gap 1/2"+  | 129A               | 129B             |
| Wide Gap 1"+        | 129AWG             | 129BWG           |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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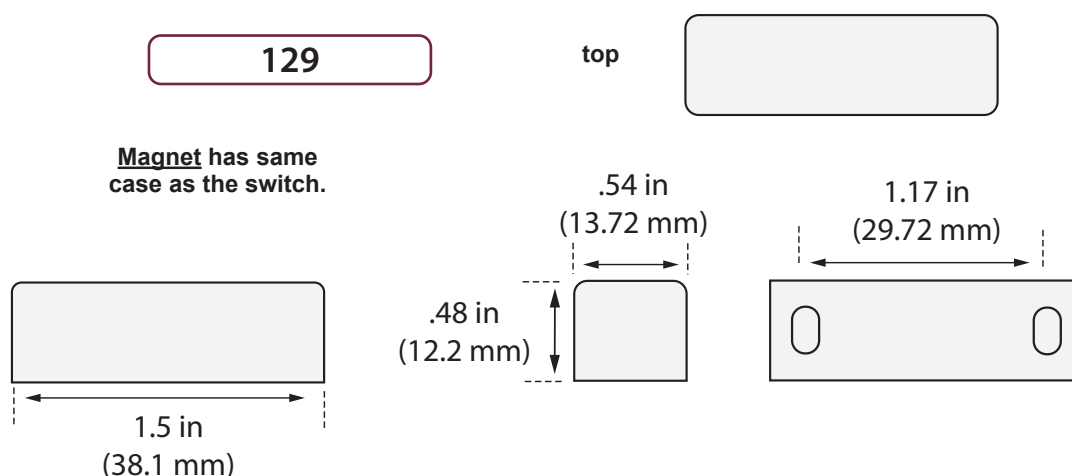
# 1 1/2" Miniature Surface Mount Switch Set

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## INSTALLATION APPLICATIONS

The GRI 12 9style switch set is designed for those installations where a more aesthetic profile is required. The attractive snap-on cover makes the 129 perfect for residential and light commercial applications. The cover also comes with knockout points if the wiring requires surface mount. The base is designed for taking the wire out directly into the wall if needed. Available in standard and wide gap, white, brown and gray. The 129 set comes in both open and closed loop with all mounting hardware included.



### GRI PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type | Electrical Configuration | Reed Form | Max. Initial Contact Resistance (Ω) | Max. Contact Rating (W) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|-----------|--------------------------|-----------|-------------------------------------|-------------------------|------------------------------|----------------------------|
| 129A        | Closed    | N/O                      | A         | .150                                | 10                      | 160                          | .400                       |
| 129AWG      | Closed    | N/O                      | A         | .150                                | 10                      | 160                          | .400                       |
| 129B        | Open      | N/C                      | B         | .140                                | 5                       | 175                          | .250                       |
| 129BWG      | Open      | N/C                      | B         | .140                                | 5                       | 175                          | .250                       |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# 2" Miniature Surface Mount Switch Set

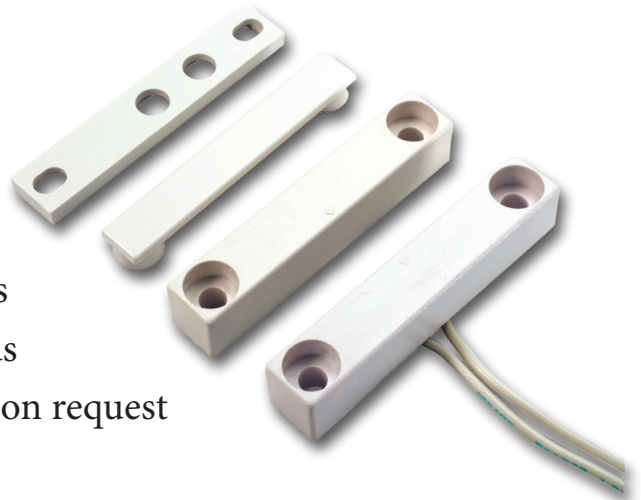
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## 1100 Series



- ◆ 1"+ standard gap
- ◆ Surface mount magnetic contact for residential and light commercial applications
- ◆ Screw Mount      ◆ 12" 22 AWG leads
- ◆ Longer leads, zip cords or jacketed cable upon request
- ◆ Hermetically sealed
- ◆ Plated contacts resist sticking or freezing
- ◆ Attractive covers, spacers, double stick tape and mounting hardware included
- ◆ Built-in E.O.L Resistors and Diodes upon request
- ◆ Supervisory loops upon request
- ◆ Colors: white, brown and gray
- ◆ Private labeling upon request
- ◆ Lifetime Warranty



| <u>Part Numbers</u> |                    |                  |             |
|---------------------|--------------------|------------------|-------------|
|                     | <u>Closed Loop</u> | <u>Open Loop</u> | <u>SPDT</u> |
| Standard Gap 1"+    | 1100A              | 1100B            | 1100C       |
| Wide Gap 1 1/2"+    | 1100AWG            | 1100BWG          | 1100CWG     |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# 2" Miniature Surface Mount Switch Set

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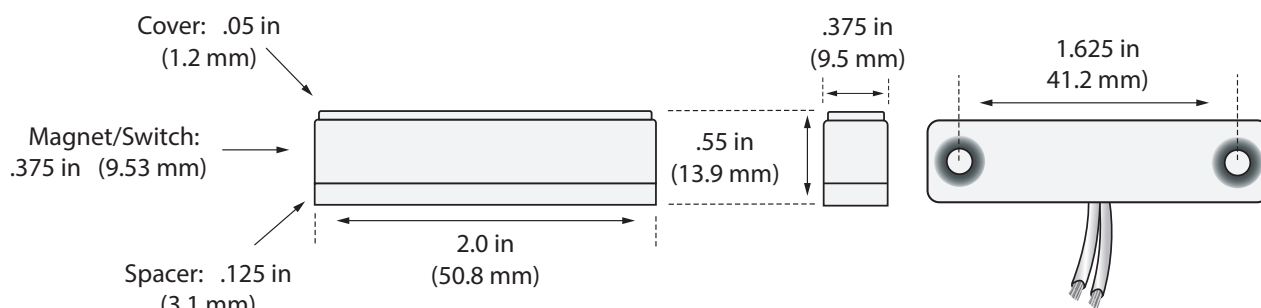


## INSTALLATION APPLICATIONS

The GRI 1100 series offers the installer convenience and versatility with its smaller size and attractive design allowing it to be used in both residential or commercial applications. With its standard gap of over 1" and a wide gap of 1 1/2"+, the 1100 gives even more options for usage. Packaged with covers, spacers and applicable mounting hardware.

**1100**

**Magnet** has same case as switch.



### GRI PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type   | Electrical Configuration | Reed Form | Max. Initial Contact Resistance ( $\Omega$ ) | Max. Contact Rating (W) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|-------------|--------------------------|-----------|----------------------------------------------|-------------------------|------------------------------|----------------------------|
| 1100A       | Closed      | N/O                      | A         | .150                                         | 10                      | 200                          | .500                       |
| 1100AWG     | Closed      | N/O                      | A         | .150                                         | 10                      | 200                          | .500                       |
| 1100B       | Open        | N/C                      | B         | .140                                         | 5                       | 175                          | .250                       |
| 1100BWG     | Open        | N/C                      | B         | .140                                         | 5                       | 175                          | .250                       |
| 1100C       | Open/Closed | SPDT                     | C         | .140                                         | 5                       | 175                          | .250                       |
| 1100CWG     | Open/Closed | SPDT                     | C         | .140                                         | 5                       | 175                          | .250                       |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# 2 1/2" Commercial Surface Mount Switch Set

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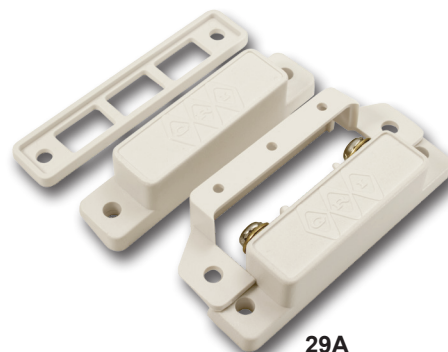


## 28 / 29 / 29P Series

- ◆ This versatile series sets the Industry Standard for Commercial and Light Industrial applications
  - ◆ Surface mount magnetic contact
  - ◆ Screw down flanges
- ◆ 24" #22AWG 2 conductor jacketed lead on 29PA
  - ◆ Concealed screw terminals on 28 series
  - ◆ Side screw terminals on 29 series
  - ◆ Longer leads on 29PA upon request
  - ◆ Hermetically sealed
- ◆ Plated contacts resist sticking or freezing
- ◆ Covers, spacers and mounting hardware included
- ◆ Built in E.O.L. Resistors and Diodes upon request
- ◆ Supervisory loops and dummy terminals upon request
  - ◆ Switches and magnets available separately
  - ◆ Colors: white, brown and gray
  - ◆ Private labeling upon request
  - ◆ Lifetime Warranty



28A



29A



29PA C€

| Part Numbers     |                    |                  |             |             |
|------------------|--------------------|------------------|-------------|-------------|
|                  | <u>Closed Loop</u> | <u>Open Loop</u> | <u>SPDT</u> | <u>DPDT</u> |
| Standard Gap     | 28A                | 28B              | 28C         |             |
| up to 1" and     | 29A                | 29B              | 29C         |             |
| 5/8" on steel    | 29PA } C€          | 29PB             | 29PC        | 29PD        |
| Wide Gap         | 28AWG              | 28BWG            | 28CWG       |             |
| up to 1 1/2" and | 29AWG              | 29BWG            | 29CWG       |             |
| 3/4" on steel    | 29PAWG             | 29PBWG           | 29PCWG      | 29PDWG      |
| Extra Wide Gap   | 28AXWG             | 28BXWG           | 28CXWG      |             |
| up to 2" and     | 29AXWG             | 29BXWG           | 29CXWG      |             |
| 1" on steel      | 29PAXWG            | 29PBXWG          | 29PCXWG     |             |

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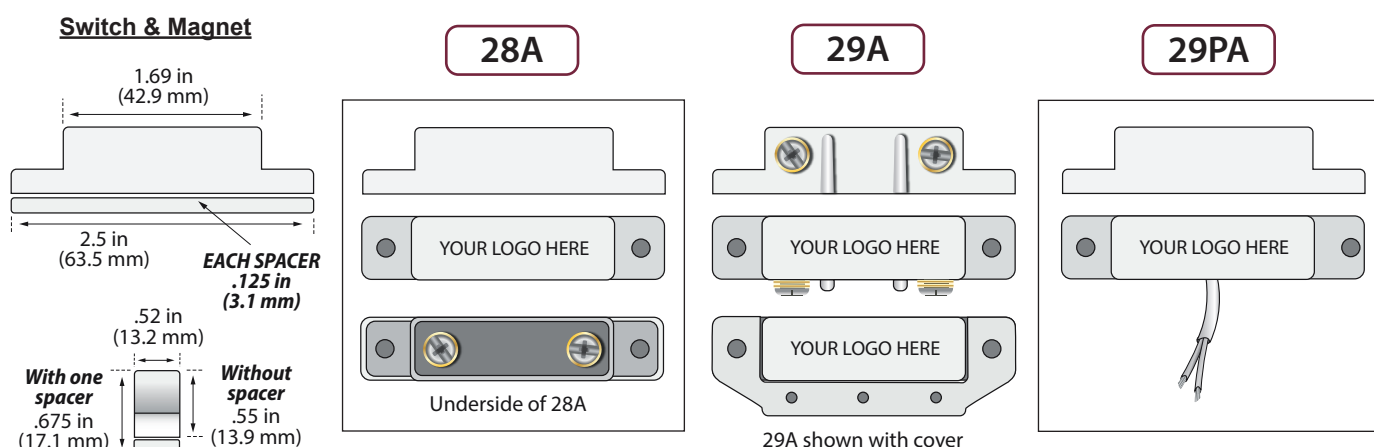
# 2 1/2" Commercial Surface Mount Switch Set



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## INSTALLATION APPLICATIONS

This series offers a standard gap of 1 inch, a wide gap of up to 1 1/2" and an extra wide gap of 2 inches and can be installed on a steel surface with a minimum gap penalty. The "P" style is a pre-wired switch with 2 feet of conductor cable. A broad range of mounting brackets are also available. See spec. sheet in accessory section of our catalog.



### GRI PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type   | Electrical Configuration | Reed Form | Max. Initial Contact Resistance (Ω) | Max. Contact Rating (W) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|-------------|--------------------------|-----------|-------------------------------------|-------------------------|------------------------------|----------------------------|
| 28A         | Closed      | N/O                      | A         | .150                                | 10                      | 160                          | .400                       |
| 28AWG       | Closed      | N/O                      | A         | .150                                | 10                      | 160                          | .400                       |
| 28AXWG      | Closed      | N/O                      | A         | .150                                | 10                      | 160                          | .400                       |
| 29A         | Closed      | N/O                      | A         | .150                                | 10                      | 160                          | .400                       |
| 29AWG       | Closed      | N/O                      | A         | .150                                | 10                      | 160                          | .400                       |
| 29AXWG      | Closed      | N/O                      | A         | .150                                | 10                      | 160                          | .400                       |
| 29PA        | Closed      | N/O                      | A         | .150                                | 10                      | 160                          | .400                       |
| 29PAWG      | Closed      | N/O                      | A         | .150                                | 10                      | 160                          | .400                       |
| 29PAXWG     | Closed      | N/O                      | A         | .150                                | 10                      | 160                          | .400                       |
| 28B         | Open        | N/C                      | B         | .140                                | 5                       | 175                          | .250                       |
| 28BWG       | Open        | N/C                      | B         | .140                                | 5                       | 175                          | .250                       |
| 28BXWG      | Open        | N/C                      | B         | .140                                | 5                       | 175                          | .250                       |
| 29B         | Open        | N/C                      | B         | .140                                | 5                       | 175                          | .250                       |
| 29BWG       | Open        | N/C                      | B         | .140                                | 5                       | 175                          | .250                       |
| 29BXWG      | Open        | N/C                      | B         | .140                                | 5                       | 175                          | .250                       |
| 29PB        | Open        | N/C                      | B         | .140                                | 5                       | 175                          | .250                       |
| 29PBWG      | Open        | N/C                      | B         | .140                                | 5                       | 175                          | .250                       |
| 29PBXWG     | Open        | N/C                      | B         | .140                                | 5                       | 175                          | .250                       |
| 28C         | Open/Closed | SPDT                     | C         | .140                                | 5                       | 175                          | .250                       |
| 28CWG       | Open/Closed | SPDT                     | C         | .140                                | 5                       | 175                          | .250                       |
| 28CXWG      | Open/Closed | SPDT                     | C         | .140                                | 5                       | 175                          | .250                       |
| 29C         | Open/Closed | SPDT                     | C         | .140                                | 5                       | 175                          | .250                       |
| 29CWG       | Open/Closed | SPDT                     | C         | .140                                | 5                       | 175                          | .250                       |
| 29CXWG      | Open/Closed | SPDT                     | C         | .140                                | 5                       | 175                          | .250                       |
| 29PC        | Open/Closed | SPDT                     | C         | .140                                | 5                       | 175                          | .250                       |
| 29PCWG      | Open/Closed | SPDT                     | C         | .140                                | 5                       | 175                          | .250                       |
| 29PCXWG     | Open/Closed | SPDT                     | C         | .140                                | 5                       | 175                          | .250                       |
| 29PD        |             | DPDT                     | CX2       | .140                                | 5                       | 175                          | .250                       |
| 29PDWG      |             | DPDT                     | CX2       | .140                                | 5                       | 175                          | .250                       |

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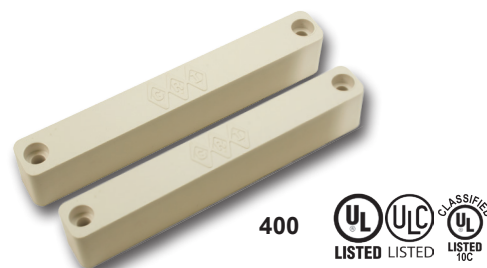
# 4" Commercial and Industrial Surface Mount Switch Set

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## 400 / 410 / 410P Series

- ◆ Surface mount magnetic contact
- ◆ 400 has concealed terminals
- ◆ 410 has standard terminals on side of contact
- ◆ 410P has 36" 2 conductor vinyl jacketed cable
- ◆ Covers and mounting hardware included
- ◆ Built in E.O.L. Resistors & Diodes upon request
- ◆ Colors: white, brown and gray
- ◆ Private labeling upon request
- ◆  Indicates U.L. 10C Fire Rating
- ◆ Lifetime Warranty



**8299-G Mounting Kit**  
Includes S412P-G, M-402,  
brackets and hardware



| Part Numbers                 |                    |                  |             |             |
|------------------------------|--------------------|------------------|-------------|-------------|
|                              | <u>Closed Loop</u> | <u>Open Loop</u> | <u>SPDT</u> | <u>DPDT</u> |
| Standard Gap<br>up to 1 1/2" | 400                | 401              | 402         |             |
|                              | 410                | 411              | 412         |             |
|                              | 410P               | 411P             | 412P        | 413P        |
| Wide Gap<br>up to 3 1/4"     | 400WG              | 401WG            | 402WG       |             |
|                              | 410WG              | 411WG            | 412WG       |             |
|                              | 410PWG             | 411PWG           | 412PWG      | 413PWG      |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# 4" Commercial and Industrial Surface Mount Switch Set

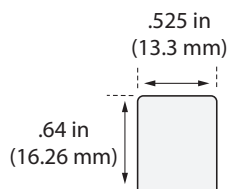
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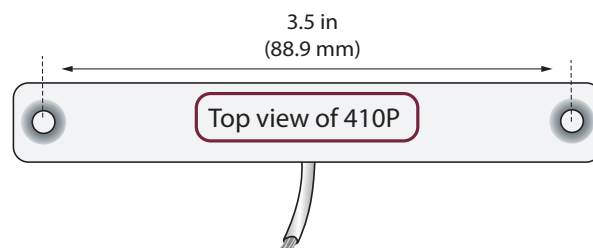
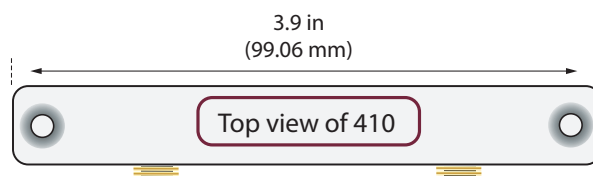
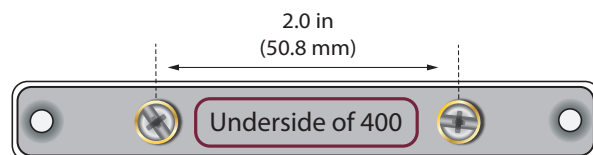
## INSTALLATION APPLICATIONS

The GRI series of commercial and industrial switch sets offer the installer two choices: The 400 incorporates hidden terminals, inset into the recessed back to provide tamper resistant installations. The 410 has the standard terminals located on the side of the switch. Both options give the installer a regular gap of 1 1/2" while the wide gap version is 3", which cover the various types of steel door and frame conditions found at every commercial and industrial site. Spacers and mounting hardware are included with the set. The 410P version offers two feet of vinyl jacketed cable. A mounting bracket kit, PN #82-99-G is also available. The kit includes a S412P-G with M-402, S-200 & 4175 brackets and mounting hardware.

### Switch



**Magnets have same case as switch.**



### GRI PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type   | Electrical Configuration | Reed Form | Max. Initial Contact Resistance (Ω) | Max. Contact Rating (W) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|-------------|--------------------------|-----------|-------------------------------------|-------------------------|------------------------------|----------------------------|
| 400         | Closed      | N/O                      | A         | .150                                | 10                      | 160                          | .400                       |
| 400WG       | Closed      | N/O                      | A         | .150                                | 10                      | 160                          | .400                       |
| 410         | Closed      | N/O                      | A         | .150                                | 10                      | 160                          | .400                       |
| 410WG       | Closed      | N/O                      | A         | .150                                | 10                      | 160                          | .400                       |
| 410P        | Closed      | N/O                      | A         | .150                                | 10                      | 160                          | .400                       |
| 410PWG      | Closed      | N/O                      | A         | .150                                | 10                      | 160                          | .400                       |
| 401         | Open        | N/C                      | B         | .140                                | 5                       | 175                          | .250                       |
| 401WG       | Open        | N/C                      | B         | .140                                | 5                       | 175                          | .250                       |
| 411         | Open        | N/C                      | B         | .140                                | 5                       | 175                          | .250                       |
| 411WG       | Open        | N/C                      | B         | .140                                | 5                       | 175                          | .250                       |
| 411P        | Open        | N/C                      | B         | .140                                | 5                       | 175                          | .250                       |
| 411PWG      | Open        | N/C                      | B         | .140                                | 5                       | 175                          | .250                       |
| 402         | Open/Closed | SPDT                     | C         | .140                                | 5                       | 175                          | .250                       |
| 402WG       | Open/Closed | SPDT                     | C         | .140                                | 5                       | 175                          | .250                       |
| 412         | Open/Closed | SPDT                     | C         | .140                                | 5                       | 175                          | .250                       |
| 412WG       | Open/Closed | SPDT                     | C         | .140                                | 5                       | 175                          | .250                       |
| 412P        | Open/Closed | SPDT                     | C         | .140                                | 5                       | 175                          | .250                       |
| 412PWG      | Open/Closed | SPDT                     | C         | .140                                | 5                       | 175                          | .250                       |
| 413P        |             | DPDT                     | CX2       | .140                                | 5                       | 175                          | .250                       |
| 413PWG      |             | DPDT                     | CX2       | .140                                | 5                       | 175                          | .250                       |

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## ***Table of Contents***

### ***Commercial Industrial Switches***

***Miniature Aluminum Commercial 4460 Series***

***Aluminum Industrial Wide Gap 4400 Series***

***Special Purpose Pull Apart 4704 / 4714 Series***

***Armored Disconnect Cable***





# Miniature Aluminum Commercial Switch Set

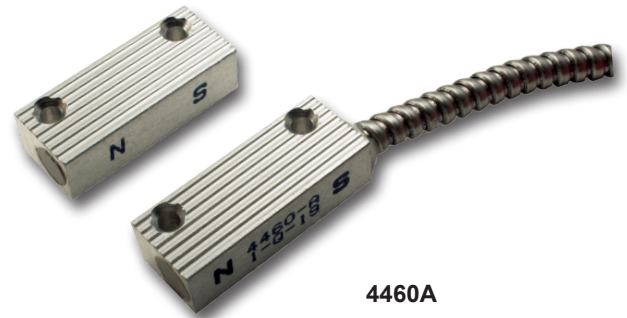


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## 4460 Series



- ◆ Wide gap standard at 1"+
- ◆ Miniature size of 1.5" L x 5/8" W
- ◆ Heavy duty extruded aluminum
- ◆ Available with 18" jacketed or armored cable
  - ◆ Custom lead length available
- ◆ Closed loop, Open loop, SPDT & DPDT
- ◆ Recommended for institutional use



The GRI 4460 Series is a compact, nice looking and extremely rugged switch set offered with or without armored cable that looks like it belongs when installed and not added as an after thought.

The 4460 series switch sets are resistant to nuisance vandalism and will blend in to the friendlier and more decorative atmosphere of today's institution whether it be health care or an education facility.

A robust working gap and mounting versatility make the GRI 4460 a top choice where good looks and adaption to a rough environment are required.

| Part Numbers      |                    |                  |               |               |
|-------------------|--------------------|------------------|---------------|---------------|
|                   | <u>Closed Loop</u> | <u>Open Loop</u> | <u>SPDT</u>   | <u>DPDT</u>   |
| Standard Gap 1"   | 4460<br>4460A      |                  | 4462<br>4462A | 4463<br>4463A |
| Standard Gap 3/4" |                    | 4461<br>4461A    |               |               |

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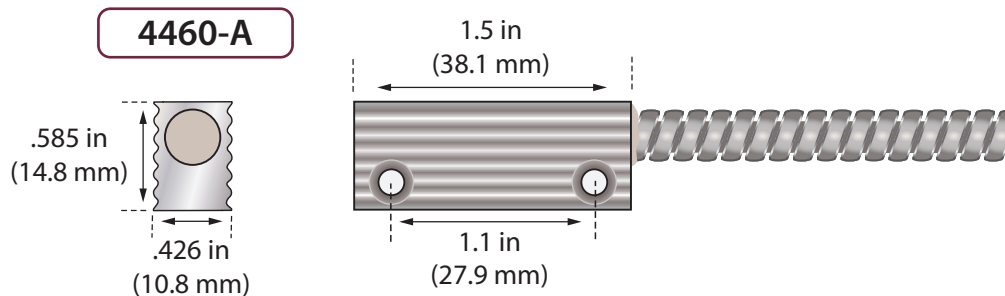
# Industrial Surface Mount Switch Set

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## INSTALLATION APPLICATIONS

The GRI 4460 series of contacts are miniature, low profile, extruded aluminum switches intended for installations in commercial and industrial applications where a rugged, encapsulated wide gap contact is required. Idea for institutional use such as hospitals, schools, minimum detention facilities, etc. The 4460 and 4460A both offer the installer a 1" plus working gap for loose fitting doors, gates, etc. Available in closed loop, open loop, SPDT and DPDT, this series of contacts can be purchased with 19" of jacked wire leads or armored cable. Since the 4460 series is polarity sensitive, the poles are printed on the magnet case to indicated mounting direction. Mounting hardware and spacers provided with switch set. Optional S-44 mounting bracket sold separately.



**Magnets have same case as switch.**

### GRI PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type   | Electrical Configuration | Reed Form | Max. Initial Contact Resistance ( $\Omega$ ) | Max. Contact Rating (W) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|-------------|--------------------------|-----------|----------------------------------------------|-------------------------|------------------------------|----------------------------|
| 4460        | Closed      | N/O                      | A         | .150                                         | 10                      | 200                          | .500                       |
| 4460A       | Closed      | N/O                      | A         | .150                                         | 10                      | 200                          | .500                       |
| 4461        | Open        | N/C                      | B         | .140                                         | 5                       | 175                          | .250                       |
| 4461A       | Open        | N/C                      | B         | .140                                         | 5                       | 175                          | .250                       |
| 4462        | Open/Closed | SPDT                     | C         | .140                                         | 5                       | 175                          | .250                       |
| 4462A       | Open/Closed | SPDT                     | C         | .140                                         | 5                       | 175                          | .250                       |
| 4463        | Open/Closed | DPDT                     | CX2       | .140                                         | 5                       | 175                          | .250                       |
| 4463A       | Open/Closed | DPDT                     | CX2       | .140                                         | 5                       | 175                          | .250                       |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# Aluminum Industrial Wide Gap Switch Set

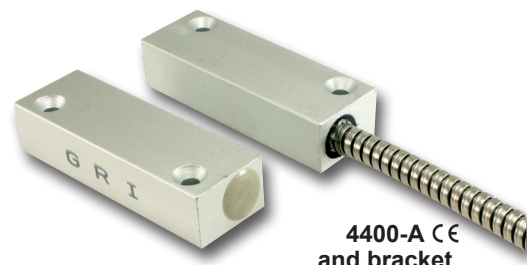
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## 4400 Series



- ◆ S-12 bracket included
- ◆ Ideal for securing chain link gates, overhead garage doors, safes and walk in freezer doors
- ◆ Weather resistant rugged aluminum housing
- Switches operate within a range of -40°F to 257°F
- ◆ 4400 has 36" 2 conductor vinyl jacked cable
- ◆ 4400-A comes with 36" armored cable
- ◆ Built in E.O.L. resistors and diodes upon request
- ◆ Supervisory loops available upon request
- ◆ Switches and magnets available separately
- ◆ Spacers available, PN 5226
- ◆ Lifetime Warranty



4400-A C€  
and bracket



Other mounting kits  
also available. Please  
call factory for more  
information.

**8450-3 Gate Mounting Kit**  
Includes 4402-A switch set,  
brackets and hardware



### Part Numbers

|                   | <u>Closed Loop</u> | <u>SPDT</u> | <u>DPDT</u> |
|-------------------|--------------------|-------------|-------------|
| Standard Gap 2.5" | 4400               | 4402        |             |
|                   | 4400-A } C€        | 4402-A      | 4405-A      |

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# Aluminum Industrial Wide Gap Switch Set

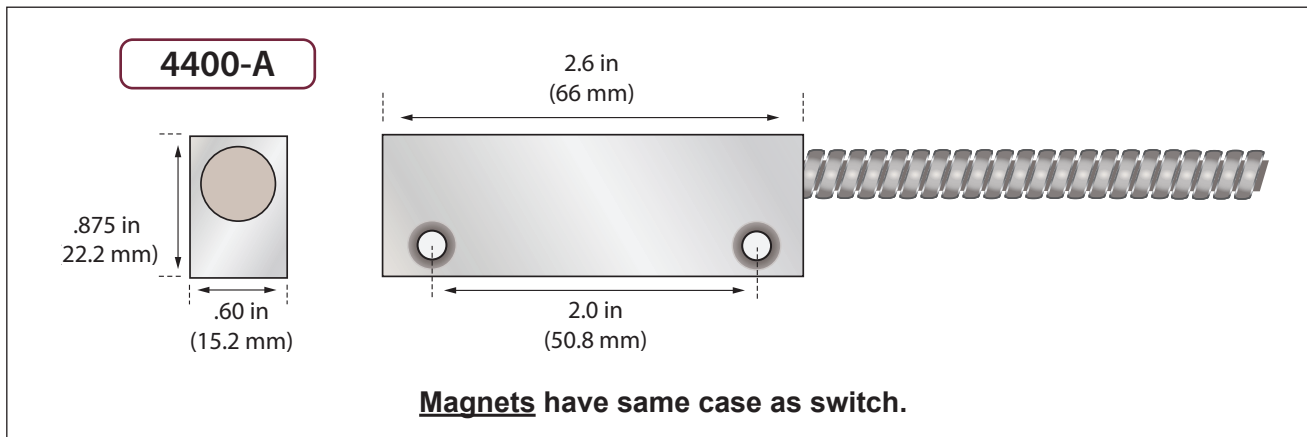
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## INSTALLATION APPLICATIONS

GRI's 4400 switch series is a heavy duty surface mounted industrial grade contact. A weather resistant rugged aluminum housing and a variety of optional mounting brackets make it ideal for securing chain link gates, overhead garage doors, safes or walk-in freezer doors.

A standard 3 foot length of stainless steel cable is offered as is a vinyl jacketed CL-2 type cable. Custom cable lengths of either type are available by special request. A case spacer, PN 5226 can also be ordered as a separate mounting accessory. Switch sets include all other mounting hardware. A mounting kit, PN#8297 is also available for garage door track mounting. The kit includes a 4402-A switch set, brackets and mounting hardware.



### GRI PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type   | Electrical Configuration | Reed Form | Max. Initial Contact Resistance ( $\Omega$ ) | Max. Contact Rating (W) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|-------------|--------------------------|-----------|----------------------------------------------|-------------------------|------------------------------|----------------------------|
| 4400        | Closed      | N/O                      | A         | .150                                         | 10                      | 200                          | .500                       |
| 4400-A      | Closed      | N/O                      | A         | .150                                         | 10                      | 200                          | .500                       |
| 4402        | Open/Closed | SPDT                     | C         | .140                                         | 5                       | 175                          | .250                       |
| 4402-A      | Open/Closed | SPDT                     | C         | .140                                         | 5                       | 175                          | .250                       |
| 4405-A      | Open/Closed | DPDT                     | CX2       | .140                                         | 5                       | 175                          | .250                       |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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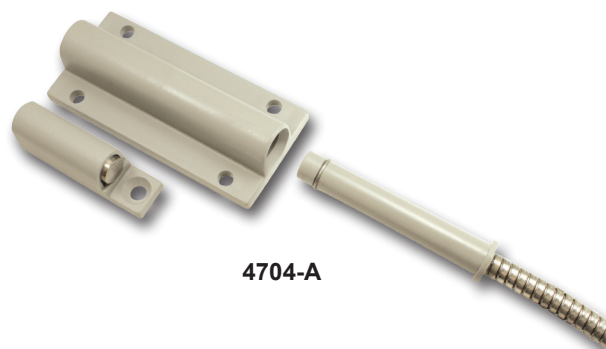
# Special Purpose Pull Apart Switch Set

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## 4704 / 4714 Series

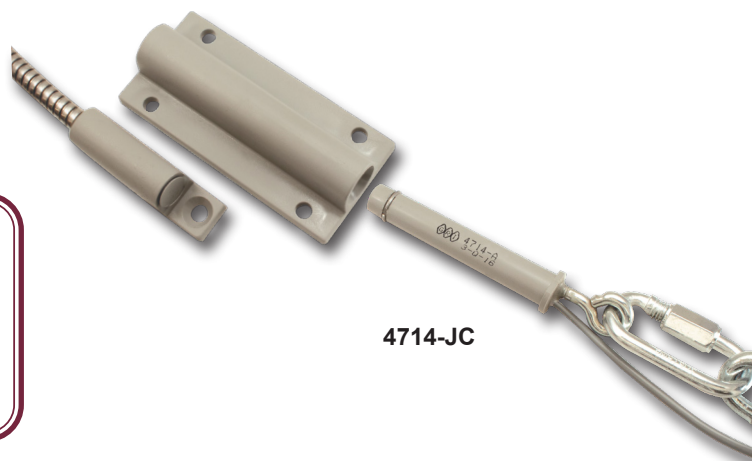
- ◆ Pull apart surface mount reed switch
  - ◆ Great for marinas, truck docks as well as portable merchandise
  - ◆ Heavy duty 4714 series for improved durability
- ◆ Standard 36" jacketed or armored cable
  - ◆ Custom lead lengths are available upon request
  - ◆ Available with PVC coated stainless steel cable
- ◆ Armored disconnect cable available, see GRI catalog under Specialty Section
- ◆ Supervisory loops available upon request
  - ◆ Available in gray
  - ◆ Lifetime Warranty



4704-A



4714-A



4714-JC

### Part Numbers

|                           |                  |
|---------------------------|------------------|
| Jacketed Cable            | 4704<br>4714     |
| Jacketed Cable with chain | 4714-JC          |
| Armored Cable             | 4704-A<br>4714-A |

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# Special Purpose Pull Apart Switch Set

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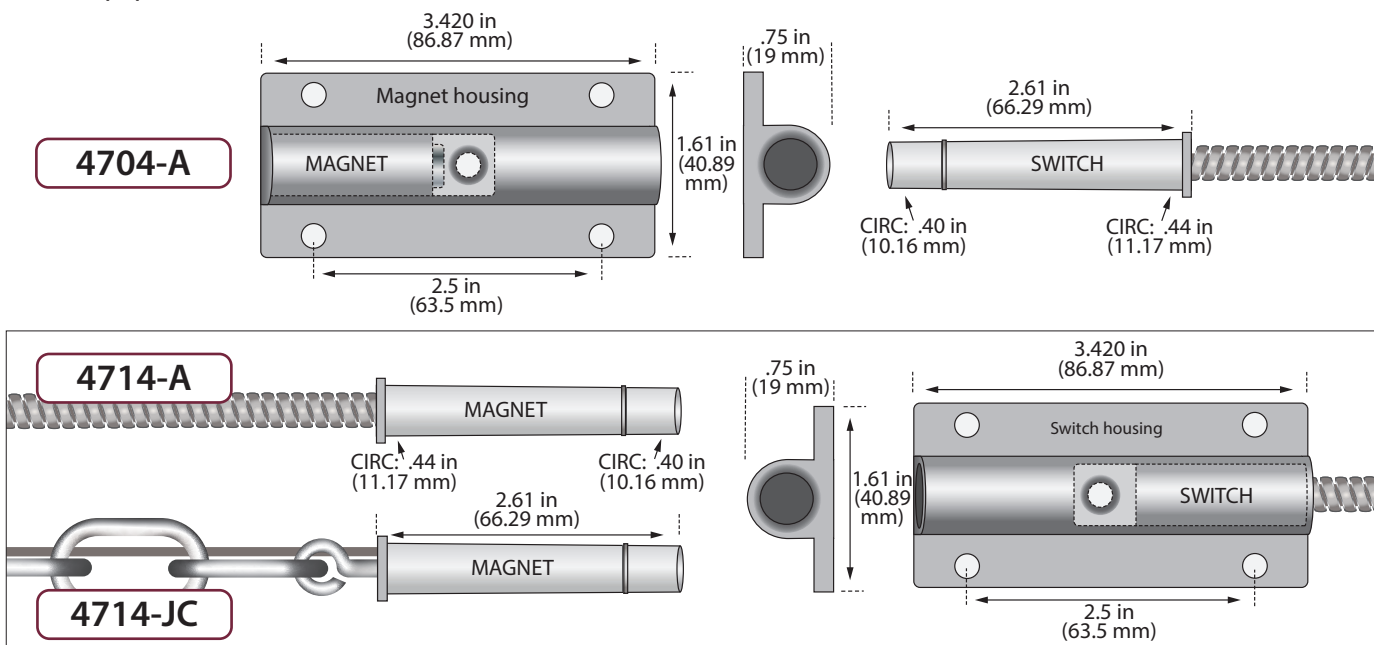


## INSTALLATION APPLICATIONS

The 4704/4714 series was designed for problem security applications where the free movement of an object would make it impossible to utilize a standard magnetic proximity device. The 4704-A consists of three major parts, an actuating magnet housing, the switch probe and the probe receptacle. The 4704-A can be used in place of standard surface mount switches to protect badly worn or ill fitting roll up doors, swinging gates or expanding metal curtains. Also excellent for vehicle protection to prevent unauthorized movement, operation or theft of any mobile object that can be towed, driven or otherwise moved such as tractor truck trailers, motor boats or recreational vehicles.

The 4714 series heavy duty pull apart switch has the same features and options as the 4704, however the switch has been moved into the mounted side of the unit, improving durability. The actuation magnet is now in the probe along with a supervisory loop. The supervisory loop, consisting of 2 conductor wire, is placed through 1/4" armored cable or woven through links of a 3/16" chain. Both options available with custom lead and supervisory loop lengths.

The 4704/4714 series is designed to protect equipment, merchandise or objects where it is impossible to secure utilizing conventional devices. Possible examples are golf carts, tires, lawn equipment, motorcycles and ATVs and rental equipment.



### GRI PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type   | Electrical Configuration | Reed Form | Max. Initial Contact Resistance (Ω) | Max. Contact Rating (W) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|-------------|--------------------------|-----------|-------------------------------------|-------------------------|------------------------------|----------------------------|
| 4704        | Open/Closed | SPDT                     | C         | .140                                | 5                       | 175                          | .250                       |
| 4704-A      | Open/Closed | SPDT                     | C         | .140                                | 5                       | 175                          | .250                       |
| 4714        | Open/Closed | SPDT                     | C         | .140                                | 5                       | 175                          | .250                       |
| 4714-A      | Open/Closed | SPDT                     | C         | .140                                | 5                       | 175                          | .250                       |
| 4714-JC     | Open/Closed | SPDT                     | C         | .140                                | 5                       | 175                          | .250                       |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# Armored Disconnect Cable

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## Armored Cable Extension with Connectors

- ◆ Quick connect / disconnect feature
- ◆ For use with GRI Pull apart switch sets
- ◆ Saves time and labor



8230-25

### Armored Cable Part Numbers

|         |                                                                        |
|---------|------------------------------------------------------------------------|
| 8235-3  | 4704A with 3' #5702 armored cable with male connector                  |
| 8237-3  | 3' #5702 armored with male connector                                   |
| 8230-25 | 25' #5702 armored cable with one male and one female connectors        |
| 8231-3  | 3' #5702 armored cable with female connector                           |
| 8307-3  | 4704A with 3' #8278 coated armored cable with one male connector       |
| 8316-3  | 3' #8278 coated armored cable with male connector                      |
| 8310-25 | 25' #8278 coated armored cable with one male and one female connectors |
| 8311-3  | 3' #8278 coated armored cable with female connector                    |

### Accessory Part Numbers

|      |                                                                           |
|------|---------------------------------------------------------------------------|
| 8868 | Water resistant armored cable electrical knock-out junction box connector |
| 8979 | Water resistant armored cable electrical junction box connector           |
| 8949 | Steel cable clamp - .25 diameter                                          |
| 8950 | Steel cable clamp - .312 diameter                                         |
| 8681 | Nylon cable clamp - .25 diameter                                          |
| 7412 | Nylon cable clamp - .312 diameter                                         |



**Steel cable clamp**  
8949 - .25 dia.  
8950 - .312 dia



**Nylon cable clamp**  
86381 - .25 dia  
7412 - .312 dia.



8868/8979

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# Armored Disconnect Cable

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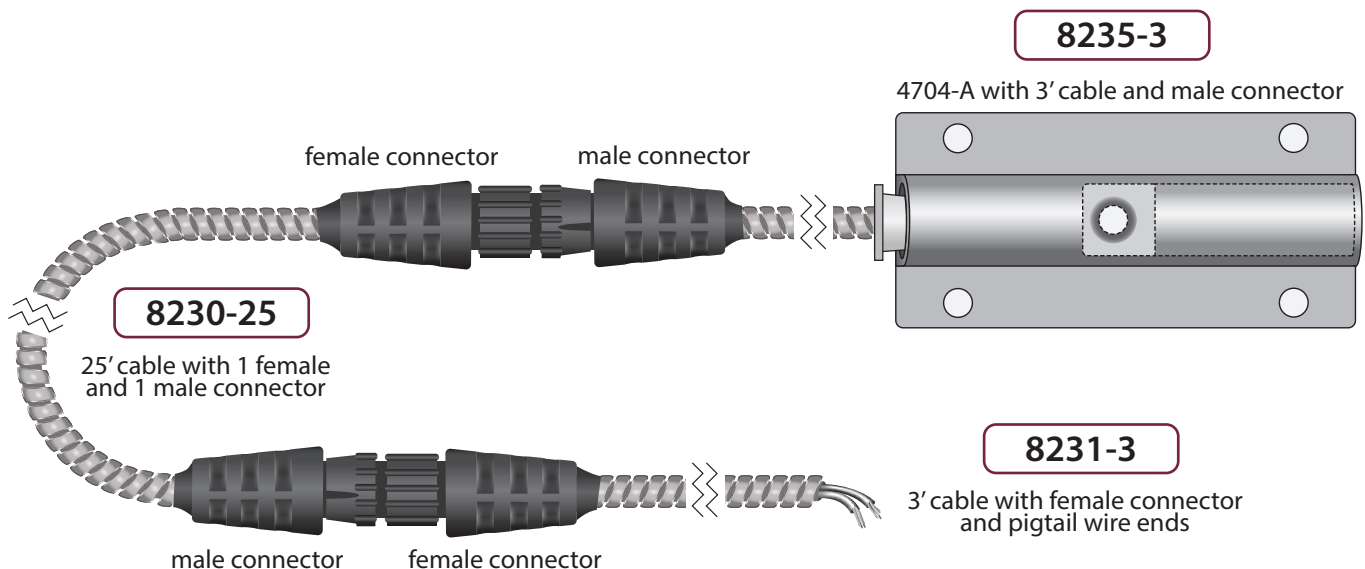
## INSTALLATION APPLICATIONS

The GRI Armored Cable Extensions with Connectors were designed for use with the GRI Pull Apart switch sets, but can be used with a variety of our industrial and overhead contacts.

For applications where a longer cable run is necessary, the 25' extensions offer a clean and simple solution. The GRI 8235-3 and 8231-3 together make a couple security loop with armored cable.

By putting the GRI 8230-25 extensions between the 8235-3 and 8231-3, the overall length increases in 25' lengths, and allows a disconnect close to the piece of equipment you wish to remove rather than pulling cable through every item and stringing back again. For a bicycle display, golf carts, lawn equipment, truck docks or any movable merchandise, run the cable in a manner that secures the products and wire to a zone on the security panel. Thread the cable through spokes, wheels and other natural openings to secure the products.

When the alarm zone is armed and there is a compromise in the line either by cutting, disconnecting or pulling apart, an alarm condition will exist.



### GRI PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type   | Electrical Configuration | Reed Form | Max. Initial Contact Resistance ( $\Omega$ ) | Max. Contact Rating (W) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|-------------|--------------------------|-----------|----------------------------------------------|-------------------------|------------------------------|----------------------------|
| 4704        | Open/Closed | SPDT                     | C         | .140                                         | 5                       | 175                          | .250                       |
| 4704-A      | Open/Closed | SPDT                     | C         | .140                                         | 5                       | 175                          | .250                       |
| 4714        | Open/Closed | SPDT                     | C         | .140                                         | 5                       | 175                          | .250                       |
| 4714-A      | Open/Closed | SPDT                     | C         | .140                                         | 5                       | 175                          | .250                       |
| 4714-JC     | Open/Closed | SPDT                     | C         | .140                                         | 5                       | 175                          | .250                       |

**WARRANTY:** One year warranty against workmanship, material and factory defects.

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***Industrial Overhead Door 200 / 250 Series***

***Industrial Extended Gap 200WG / 250WG Series***

***Commercial Overhead Door 4110 4482 Series***

***Mini Curtain Door 4612 Series***

***Concrete Concealed 4510 Series***

***Industrial Track Mount 4700-A Series***



# Miniature Overhead Door Switch Set

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## 4532 / 4532 L Series



- ◆ Low cost
- ◆ Miniature floor mount
- ◆ Universal magnet for mounting flexibility
  - ◆ Cast aluminum casing for harsh environments
  - ◆ 24" armored cable standard
- ◆ Longer leads available upon request
- ◆ Mounting hardware included
  - ◆ Optional "L" bracket
  - ◆ For loose overheads
  - ◆ Hermetically sealed
- ◆ Plated contacts resist sticking or freezing
  - ◆ Built-in E.O.L. Resistors and Diodes upon request
- ◆ Switches and magnets available separately
  - ◆ Lifetime Warranty



4532



4532L

### Part Numbers

|                  | <u>Closed Loop</u> | <u>Open Loop</u> | <u>SPDT</u> | <u>DPDT</u> |
|------------------|--------------------|------------------|-------------|-------------|
| Gap up to 2 1/2" | 4532               | 4532B            | 4532C       | 4532D-36    |
| Gap up to 2 1/2" | 4532L              | 4532LB           | 4532CL      | 4532DL-36   |

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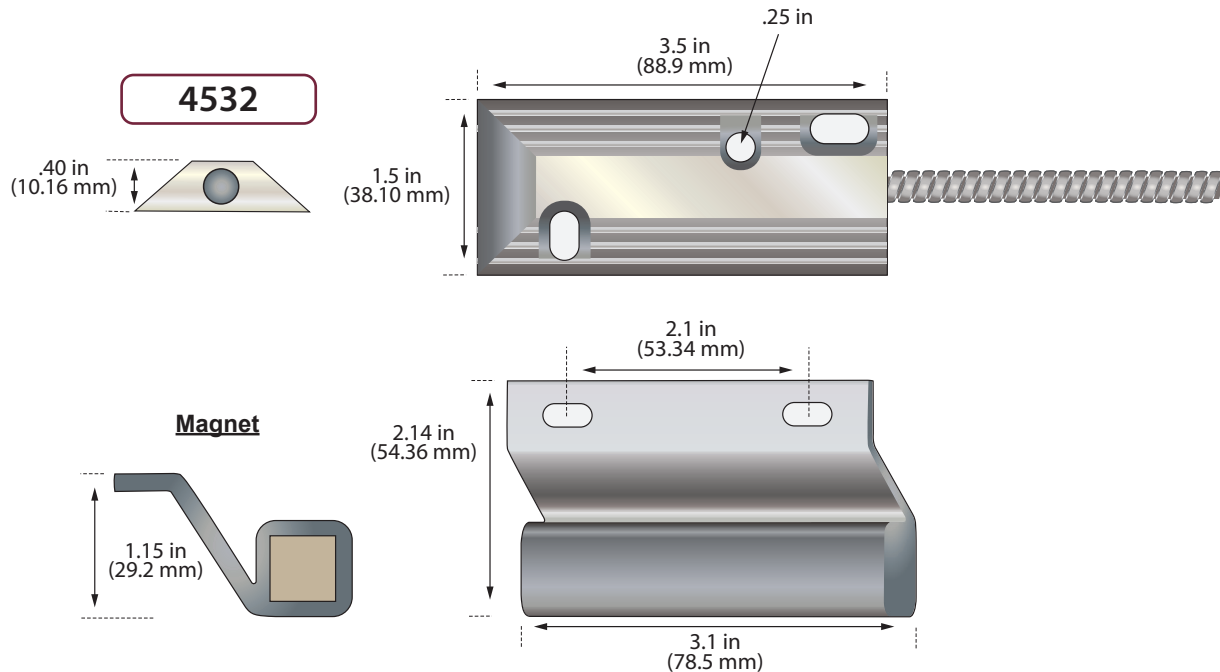
# Miniature Overhead Door Switch Set

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## INSTALLATION APPLICATIONS

The 4532 is a miniature, low-profile reed switch in cast aluminum for durability in harsh environments. The 4532 features a wide working gap of up to 3" with two feet of heavy-duty armored cable for protection from the elements and a versatile universal magnet which can be mounted at various angles for those difficult installations. The 4532 is also available with an optional "L" bracket. Order part number 4532L for this option. The 4532 is shipped as a set but can be packaged separately. A 1/4" masonry bit is required for lead anchor installation.



### GR I PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type   | Electrical Configuration | Reed Form | Max. Initial Contact Resistance ( $\Omega$ ) | Max. Contact Rating (W) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|-------------|--------------------------|-----------|----------------------------------------------|-------------------------|------------------------------|----------------------------|
| 4532        | Closed      | N/O                      | A         | .150                                         | 10                      | 200                          | .500                       |
| 4532L       | Closed      | N/O                      | A         | .150                                         | 10                      | 200                          | .500                       |
| 4532B       | Open        | N/C                      | B         | .140                                         | 5                       | 175                          | .250                       |
| 4532LB      | Open        | N/C                      | B         | .140                                         | 5                       | 175                          | .250                       |
| 4532C       | Open/Closed | SPDT                     | C         | .140                                         | 5                       | 175                          | .250                       |
| 4532CL      | Open/Closed | SPDT                     | C         | .140                                         | 5                       | 175                          | .250                       |
| 4532D       |             | DPDT                     | CX2       | .140                                         | 5                       | 175                          | .250                       |
| 4532DL-36   |             | DPDT                     | CX2       | .140                                         | 5                       | 175                          | .250                       |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# Industrial Overhead Door Switch Set

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## 200 / 250 Series

- ◆ Extruded aluminum floor or wall mount switch
  - ◆ Screw mount
  - ◆ #22AWG in 36" stainless steel armored cable
    - ◆ Longer leads upon request
    - ◆ Longer leads available upon request
    - ◆ Hermetically sealed
  - ◆ Plated contacts resist sticking or freezing
- ◆ Built-in E.O.L. Resistors and Diodes upon request
  - ◆ Supervisory loops available upon request
  - ◆ Switches and magnets available separately
  - ◆ Lifetime Warranty



200-36



250-36

|             | Part Numbers                 |                            |             |             |
|-------------|------------------------------|----------------------------|-------------|-------------|
|             | <u>Closed</u><br><u>Loop</u> | <u>Open</u><br><u>Loop</u> | <u>SPDT</u> | <u>DPDT</u> |
| Floor Mount |                              |                            |             |             |
| Gap 2 1/2"  | 200-36                       | 210-36                     | 220-36      | 230-36      |
| Gap 3"      | 200-36HD                     |                            |             |             |
| Wall Mount  |                              |                            |             |             |
| Gap 2 1/2"  | 250-36                       | 260-36                     | 270-36      | 280-36      |
| Gap 3"      | 250-36HD                     |                            |             |             |

## INSTALLATION APPLICATIONS

The GRI 200 series is referenced and produced as an industrial grade floor mount switch. Primarily used for the protection of overhead doors where the operation of heavy motorized traffic would make it impossible to use any type of a plastic encapsulated switch. The 200 housing is extruded from a 6063 T5 aluminum material and tested to withstand a crushing force of 20,000 pounds or 10 tons without harming or causing failure of the delicate reed switch. All mounting hardware, including lead anchors, are provided as well as a mounting bracket for the actuating magnet. A 1/4" masonry bit is required for lead anchor installation.

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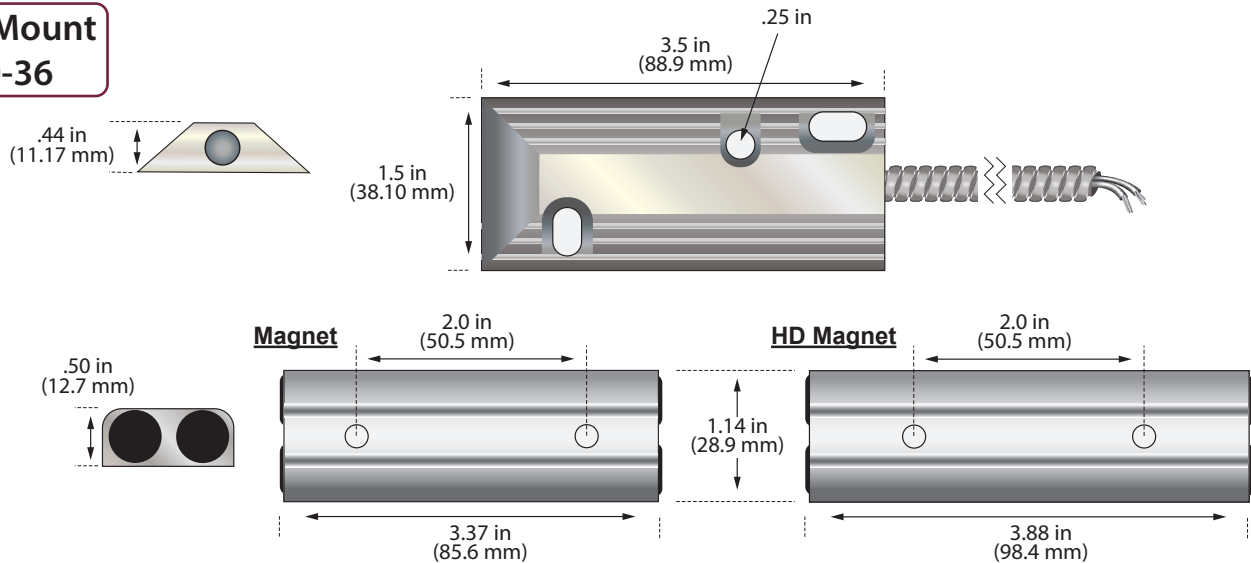
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# Industrial Overhead Door Switch Set

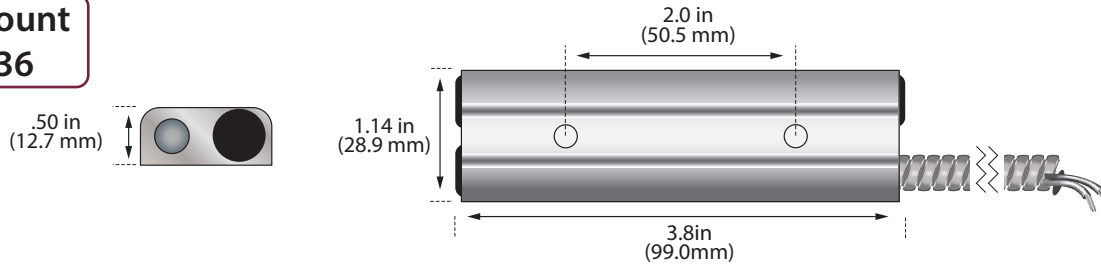
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## Floor Mount 200-36



## Wall Mount 250-36



### GRI PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type   | Electrical Configuration | Reed Form | Max. Initial Contact Resistance (Ω) | Max. Contact Rating (W) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|-------------|--------------------------|-----------|-------------------------------------|-------------------------|------------------------------|----------------------------|
| 200-36      | Closed      | N/O                      | A         | .150                                | 10                      | 200                          | .500                       |
| 200-36HD    | Closed      | N/O                      | A         | .150                                | 10                      | 200                          | .500                       |
| 250-36      | Closed      | N/O                      | A         | .150                                | 10                      | 200                          | .500                       |
| 250-36HD    | Closed      | N/O                      | A         | .150                                | 10                      | 200                          | .500                       |
| 210-36      | Open        | N/C                      | B         | .140                                | 5                       | 175                          | .250                       |
| 260-36      | Open        | N/C                      | B         | .140                                | 5                       | 175                          | .250                       |
| 220-36      | Open/Closed | SPDT                     | C         | .140                                | 5                       | 175                          | .250                       |
| 270-36      | Open/Closed | SPDT                     | C         | .140                                | 5                       | 175                          | .250                       |
| 230-36      |             | DPDT                     | CX2       | .140                                | 5                       | 175                          | .250                       |
| 280-36      |             | DPDT                     | CX2       | .140                                | 5                       | 175                          | .250                       |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# Industrial Extended Gap Overhead Door Switch Set

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## 200WG / 250WG Series



- ◆ Extruded aluminum floor or wall mount switch
  - ◆ Screw mount
- ◆ 7 1/2" switch length standard
  - ◆ #22AWG in 36" stainless steel armored cable
    - ◆ Screw mount
    - ◆ Hermetically sealed
- ◆ Custom switch and lead lengths available
- ◆ Plated contacts resist sticking or freezing
- ◆ Built-in Resistors and Diodes upon request
- ◆ Supervisory loops available upon request
- ◆ Switches and magnets available separately
  - ◆ Lifetime Warranty



250-36WG

### Part Numbers

|                  | <u>Closed Loop</u>  |
|------------------|---------------------|
| Floor Mount      | 200-36WG            |
| Wall Mount       | 250-36WG            |
| Gap: up to 3.25" | Travel: up to 6.25" |

## INSTALLATION APPLICATIONS

The new GRI extended gap series was specifically developed in response to installer request for a magnetic contact that would work on loose fitting, worn or damaged overhead doors. The GRI 250WG has an expanded area of activation which was designed for doors that don't return to the exact or approximate position upon closure.

Ideally, the installer should determine total travel from left to right and from front to back. Locating the center position in both directions should determine the best placement of the switch.

Standard switch length is 7 1/2" with a 36" armored cable lead, but switch and lead can be custom ordered in any length required. All mounting hardware including lead anchors is provided as well as 1 mounting bracket for the actuating magnet. A 1/4" masonry bit is required for lead anchor installation.

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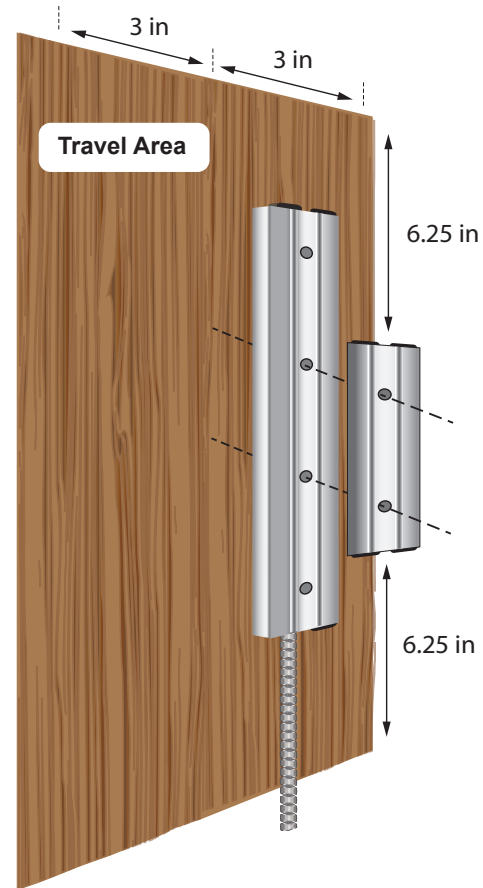
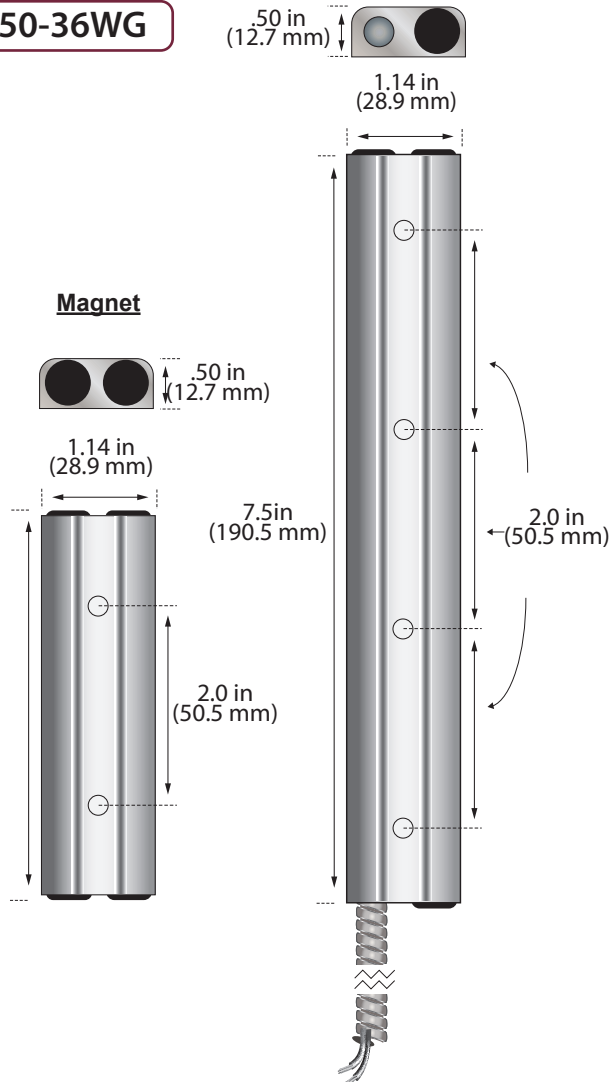


# Industrial Extended Gap Overhead Door Switch Set

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**250-36WG**



**GRI PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:**

| Part Number | Loop Type | Electrical Configuration | Reed Form | Max. Initial Contact Resistance ( $\Omega$ ) | Max. Contact Rating (W) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|-----------|--------------------------|-----------|----------------------------------------------|-------------------------|------------------------------|----------------------------|
| 200-36WG    | Closed    | N/O                      | A         | .150                                         | 10                      | 200                          | .500                       |
| 250-36WG    | Closed    | N/O                      | A         | .150                                         | 10                      | 200                          | .500                       |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# Commercial Overhead Door Switch Set

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## 4110 / 4482 Series

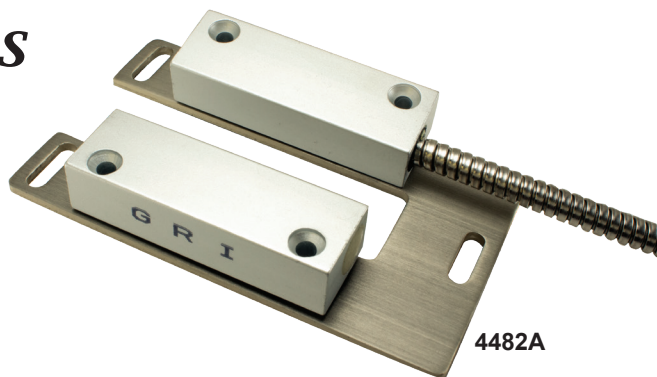
- ◆ Latch type door protection
- ◆ Vane switch shunt
- ◆ Cost effective
- ◆ Easy installation
- ◆ Armored or jacketed cable

The GRI 4110 Series is basically a "vane" switch for use on storage units with overhead doors and latch type locks. Intended to be mounted on a roll up type door channel, the 4110 will not allow the alarms system to arm unless the bolt or latch, which serves as a "shunt" between the reed switch and magnet, is in a locked position. Removal or tampering of the bolt or latch removes the shunting effect and an alarm will be activated when the circuit is opened.

Installation notes: Remember, this is a switch that operates on the principles of magnetism. Things with iron will affect how the switch operates. The majority of overhead doors have iron or particles of iron in them. Non-ferrous (no iron) based spacers must be used to insulate the switch from the rail. Isolate (insulate) the 4110 at least 1/4 inch from the mounting rail, the GRI S-41 mounting bracket is suggested. Not doing so will create an unstable environment for the switch and may generate false alarms and other erratic signals. GRI 4110 is to be installed on the slotted channel (side rail) in such a way that when the door is locked, the sliding bolt will pass directly between the uprights of the switch. The locking bolt must have iron in it in order to "block" the magnetic path on the door switch.

The 4110 series is available with 18" stainless steel armored cable (4110A) or 18" jacketed cable (4110). It is a low profile, extruded aluminum switch mounted on an aluminum plate. Optional mounting kit available. All necessary mounting hardware is also provided.

For door applications with larger tracks, GRI now offers a larger heavy duty vane switch. The 4482 has 36" jacketed cable and the 4482A has 36" armored cable. Overall dimensions for the 4482 are 4.5" x 2.75" x .75". Mounting plate and hardware provided.



4482A



4110A



4110-Kit  
4110A-Kit

Includes S-41 bracket  
and mounting hardware

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# Miniature Overhead Door Switch Set

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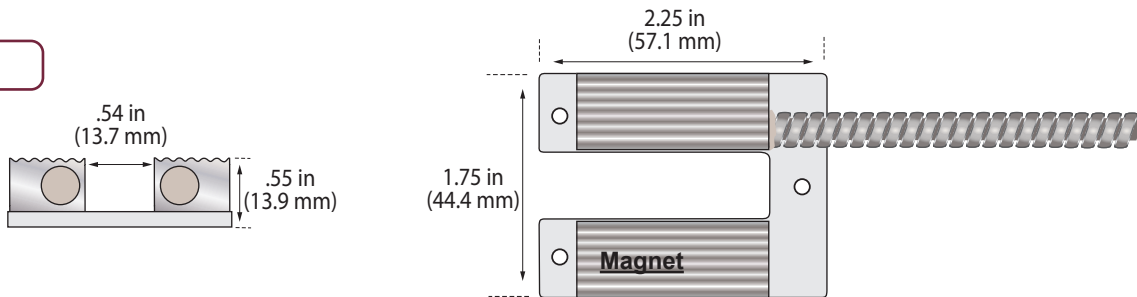
## INSTALLATION APPLICATIONS

Now you can confirm the locking bolt position on a roll up or other overhead door. The GRI 4110 uses a simple magnetic blocking principal in this specialized security switch. Doors using a latching type flat bolt, which extends through a slot in the channel on the doors edge, can now both lock the door and verify to the alarm that the door is locked and in the closed position.

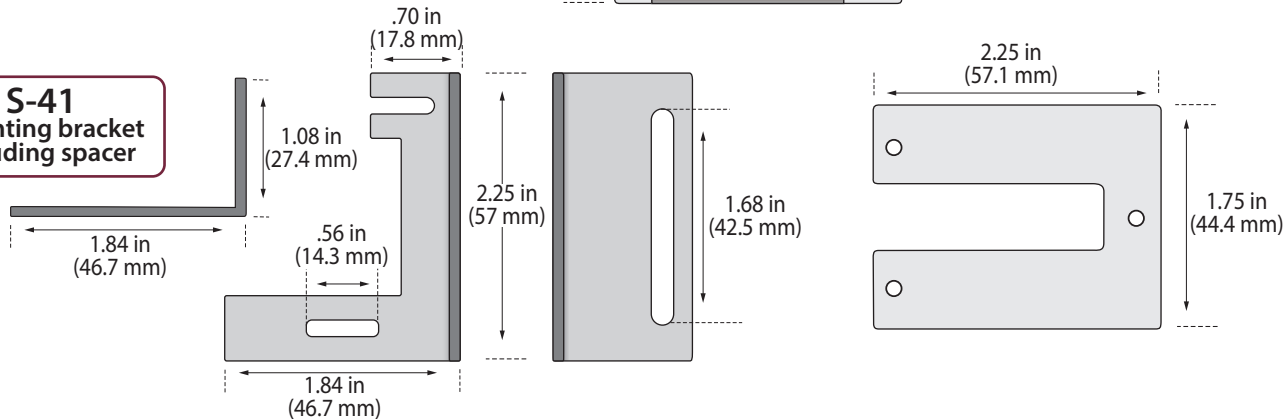
The GRI 4110 is to be installed on the slotted channel in such a way that when the door is locked, the bolt will pass between the uprights of the switch.

**Important Note:** Mounting screws are installed front inside of the track and will not interfere with the wheels.

### 4110A



### S-41 Mounting bracket including spacer



### GRI PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type   | Electrical Configuration | Reed Form | Max. Initial Contact Resistance ( $\Omega$ ) | Max. Contact Rating (W) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|-------------|--------------------------|-----------|----------------------------------------------|-------------------------|------------------------------|----------------------------|
| 4110        | Closed      | N/O                      | B         | .140                                         | 5                       | 175                          | .250                       |
| 4110A       | Closed      | N/O                      | B         | .140                                         | 5                       | 175                          | .250                       |
| 4112        | Open/Closed | SPDT                     | C         | .140                                         | 5                       | 175                          | .250                       |
| 4112A       | Open/Closed | SPDT                     | C         | .140                                         | 5                       | 175                          | .250                       |
| 4482        | Open/Closed | SPDT                     | C         | .140                                         | 5                       | 175                          | .250                       |
| 4482A       | Open/Closed | SPDT                     | C         | .140                                         | 5                       | 175                          | .250                       |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# Mini Curtain Door Switch

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## 4612 Series

- ◆ Adjustable travel
- ◆ Reversible probe assembly
- ◆ Left or right installation
- ◆ Install probe top or bottom
- ◆ Magnet mounts in door channel
- ◆ Mounting hardware included



### Application Notes:

GRI has solved the curtain door installation problem with the 4612 Curtain Door Series. The 4612 resolves the left or right side installation problem and gives the installer the ability to be quite clever with making this switch and magnet suitable for the installation. GRI's unique probe design allows the switch to be inserted either from the top of the switch or the bottom allowing access determined by the application.

### Part Numbers

Up to 2" Gap

Closed Loop  
4612

SPDT  
4613

### Part Notes:

Replacement nylon cable clamps .437 x .525 x .375 x .140 (GRI part number 7548) and screws are socket set 1/4-20 x 3/8 knurled cup point (GRI part number 7704).

## INSTALLATION APPLICATIONS

The GRI Mini Curtain Door Switch should be mounted as close to the edge of the curtain door as possible. Mount the switch on the door rail channel. Pay close attention to the operation of the contact and allow for adequate gap and travel for your particular installation.

Close the door. Temporarily mount the magnet with tape in one of the door indentations. Now slowly roll the door up completely to make sure the magnet does not hinder the door's operation in any way. Close the door while again checking for interference. Now you can adjust the magnet for travel and gap. You can alter how much opening distance is required to trigger the alarm by moving this powerful magnet closer to or further away from the switch. This flexible installation technique solves a host of problems ranging from the new, tightly tuned doors to loose fitting, worn or damaged doors. When the magnet is placed properly, permanently mount the magnet by using the plastic clamps and screws that are provided or use rivets.

*Continued on reverse.*

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# Miniature Overhead Door Switch Set

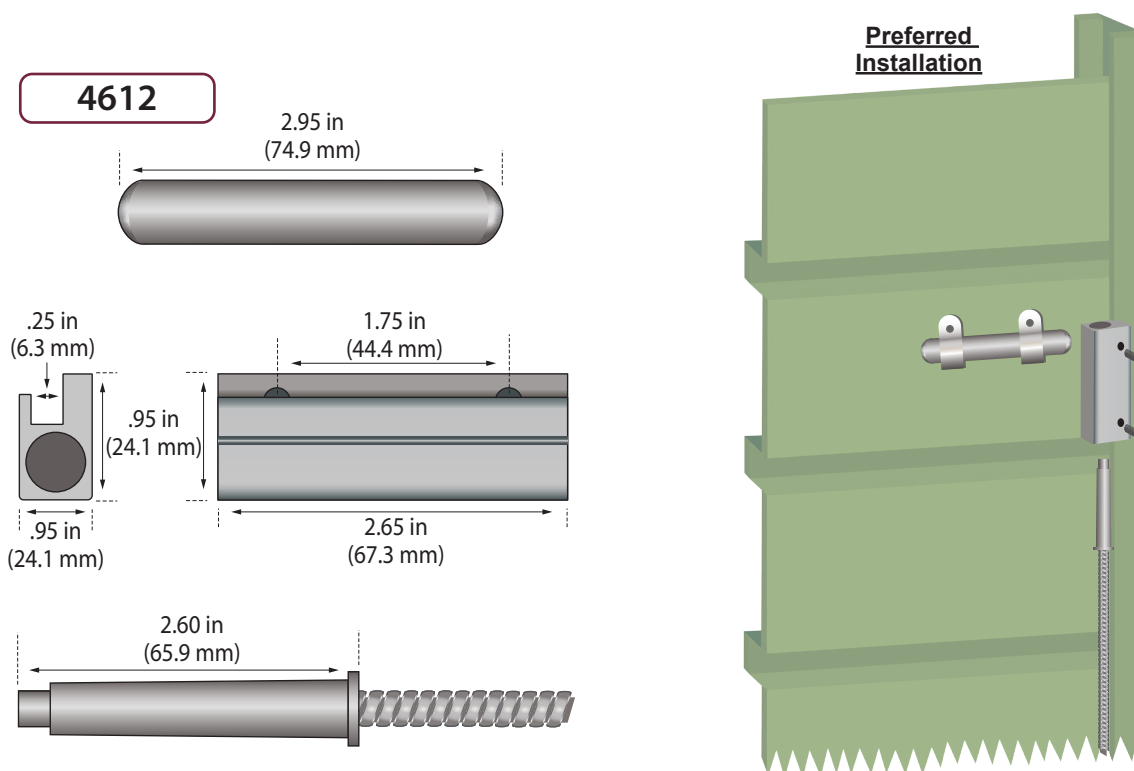
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Continued from front.

Attach wires and test again by opening/closing the door. If cable guides are necessary GRI suggests using the empty switch case for the 4612, part number C-4612.

**Important Tech Note:** For best performance and operation of this product, the magnet must be positioned at one end or other of the switch. **Do NOT position the magnet in the middle of the switch.**



## GRI PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type   | Electrical Configuration | Reed Form | Max. Initial Contact Resistance ( $\Omega$ ) | Max. Contact Rating (W) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|-------------|--------------------------|-----------|----------------------------------------------|-------------------------|------------------------------|----------------------------|
| 4612        | Closed      | N/O                      | A         | .150                                         | 10                      | 160                          | .400                       |
| 4613        | Open/Closed | SPDT                     | C         | .140                                         | 5                       | 175                          | .250                       |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# Concrete Concealed Switch

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## 4510 Series

- ◆ Switch protected from heavy equipment
  - ◆ Two Alnico magnet styles
  - ◆ 3" stainless steel armored cable
  - ◆ Mounting hardware included

Perhaps the best way to protect overhead door contacts from industrial motorized traffic like forklifts and large trucks is to recess or bury them into the concrete floor, allowing vehicles of this type to safely pass over them totally unaffected.

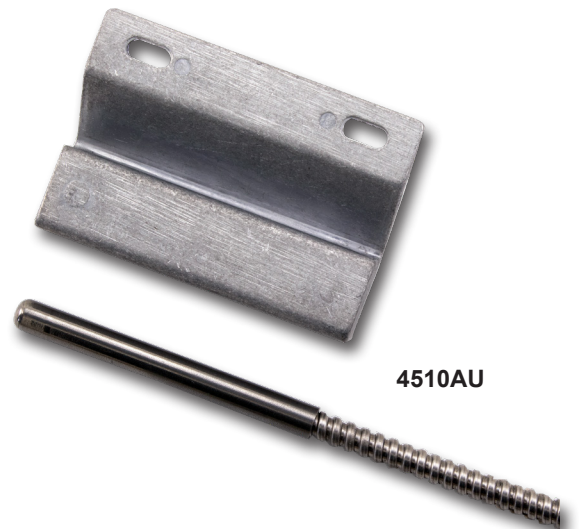
The GRI 4510 switch series has been designed from the ground up, so to speak, for just such an application. The 4510 series features all stainless steel construction for maximum resistance to corrosion and has a wide working gap for those loose or badly worn overhead doors.

### Part Numbers

|        |            |      |
|--------|------------|------|
| 4510A  | 3 1/2" Gap | SPDT |
| 4510AU | 3 1/2" Gap | SPDT |



4510A



4510AU

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# Concrete Concealed Switch

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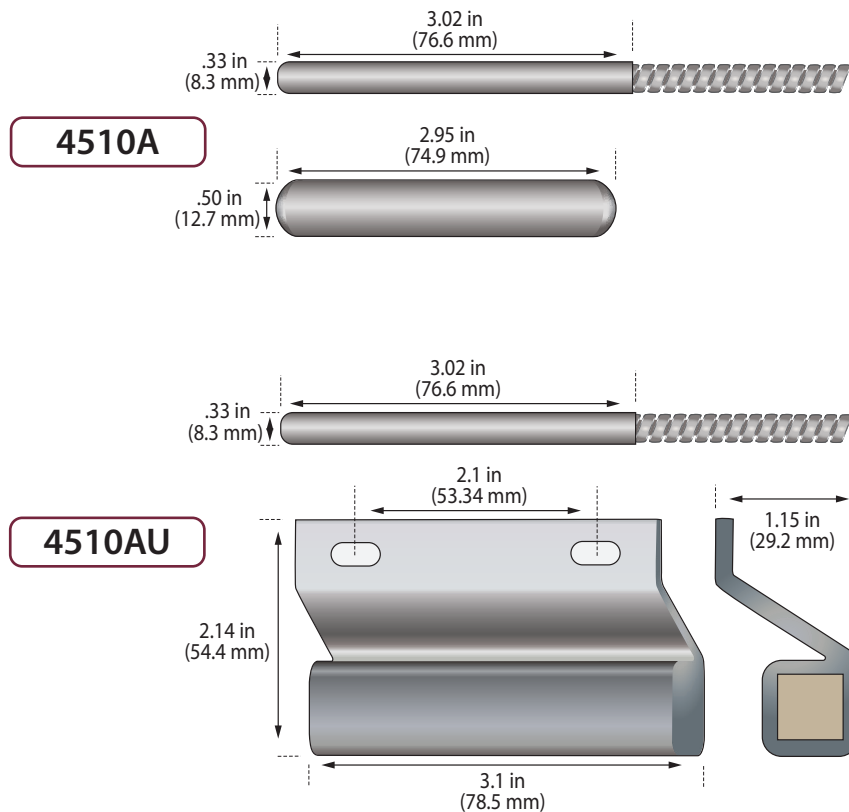


## INSTALLATION APPLICATIONS

To best visualize the installation process, it is recommended we temporarily mount the magnet to the door. Remember to choose a mounting point that will require a minimum amount of concrete removal.

Place switch on floor, testing the position of the switch to magnet. It is recommended that 1" to 1 1/4" be used as the operational distance. Making this switch position with a marker, we can now begin chipping out concrete.

A channel approximately 1/2" to 3/4" deep and 1/2" wide will be sufficient. Place the switch in the opening and retest to confirm adequate gap. Apply concrete patch to contain and cover magnetic door switch and cable. Retest for positive operation by opening and closing the overhead door.



### GRI PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type Closed | Electrical Configuration | Reed Form | Max. Initial Contact Resistance ( $\Omega$ ) | Max. Contact Rating (W) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|------------------|--------------------------|-----------|----------------------------------------------|-------------------------|------------------------------|----------------------------|
| 4510A       | Open/Closed      | SPDT                     | C         | .140                                         | 5                       | 175                          | .250                       |
| 4510AU      | Open/Closed      | SPDT                     | C         | .140                                         | 5                       | 175                          | .250                       |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# Industrial Track Mount Switch Set

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## 4700-A Series

- ◆ Reversible probe assembly
  - ◆ Left or right installation
  - ◆ Reversible cable exit
- ◆ 3 ft. armored cable standard
- ◆ Multi position adjustable magnet bracket
  - ◆ Close loop or SPDT
- ◆ Hinge design for tighter clamping to track
  - ◆ Up to 3" gap
- ◆ Fits channels from 1.75" up to 4"
  - ◆ Self drilling screws included for easy installation
- ◆ Contacts are on the channel and not where they can get damaged on the floor
  - ◆ No special tools required for installation



The GRI 4700-A Series Industrial Track Mount Switches are designed to eliminate false alarms from standard floor switches getting damaged by fork lifts and other equipment. The contacts are moved up onto the track and out of the way of equipment.

The 4700-A Series switches are designed to be easy to install and very adjustable. They can attach to a wide range of track sizes and only require tightening one or two screws to install the contacts. It can be installed on either side of the door and the cable exit can be reversed to simplify installation.

And adjustable magnet bracket extends the reach on particularly difficult installations and self drilling screws shorten installation times. Also with a gap of up to 3 inches, doors that wear and get misaligned are not a problem.

### Part Numbers

| Track Size     | Closed Loop | SPDT     | DPDT     |
|----------------|-------------|----------|----------|
| 1.75" to 2.75" | 4700-A      | 4701-A   |          |
| 2.5" to 4"     | 4700-AXL    | 4701-AXL | 4705-AXL |
| Gap up to 3"   |             |          |          |

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# Industrial Track Mount Switch Set

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## INSTALLATION APPLICATIONS

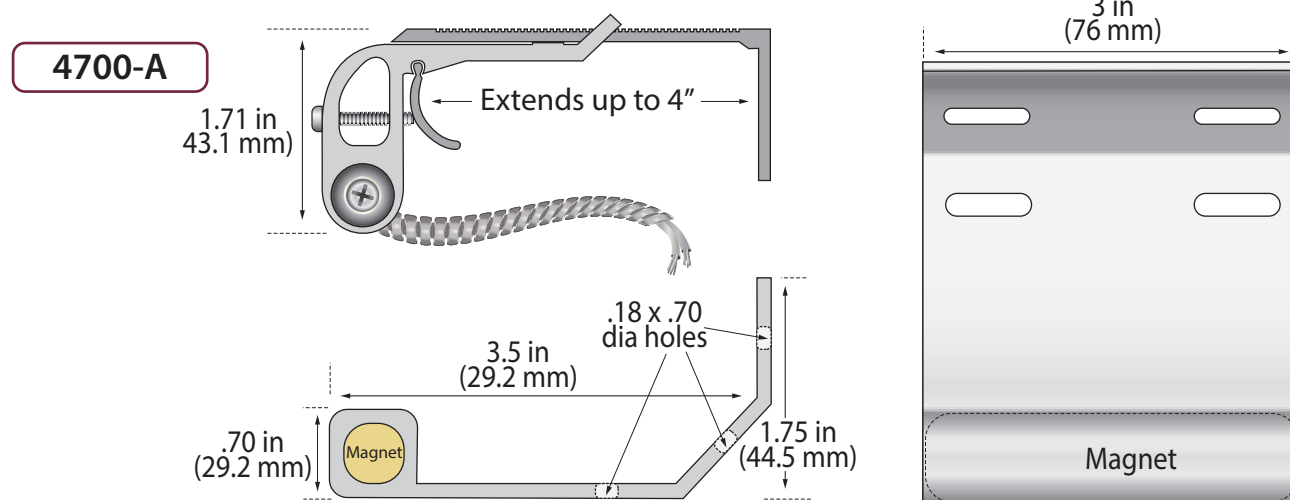
Select a location on the channel that will be out of the way during normal use of the door. The switch can be located anywhere along the channel. This location should also have a matching location on the door when it is in the closed position that the magnet can be attached to.

If necessary reverse the armored cable by removing the screw opposite the cable and moving the probe to the opposite side of the switch. Then just reinstall the screw.

Before assembling the switch, back out the hex head screw until the end is flush with the switch body. Assemble the switch by sliding the hinge plate into the slot on the switch and inserting the L shaped bracket into the other slot on the switch. (XL version: Install the countersink screw and nut through switch body and L shaped bracket. Snug nut up letting L shaped bracket still slide.) Optional: Install piece of double stick tape on the inside of short side of L shaped bracket to prevent movement from the track vibration.) Then squeeze the switch assembly around the channel making sure the switch locks into a slot on the L shaped bracket. (XL version: Tighten the nut making sure that the switch stays in the slot on the L shaped bracket.) Then just tighten the hex head screw to firmly attach switch to channel.

The magnet is installed by locating a position on the door that will be out of the way as the door is opened and closed. The magnet should be placed vertically and so that it will stay in range of the switch as the door wears or moves around. There are multiple mounting positions on the magnet bracket in order to make finding the mounting position easier.

**Hand tighten screws. Do not over tighten.**



### GRI PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type   | Electrical Configuration | Reed Form | Max. Initial Contact Resistance ( $\Omega$ ) | Max. Contact Rating (W) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|-------------|--------------------------|-----------|----------------------------------------------|-------------------------|------------------------------|----------------------------|
| 4700-A      | Closed      | N/O                      | A         | .150                                         | 10                      | 160                          | .400                       |
| 4701-A      | Open/Closed | SPDT                     | C         | .140                                         | 5                       | 175                          | .250                       |
| 4700-AXL    | Closed      | N/O                      | A         | .150                                         | 10                      | 160                          | .400                       |
| 4701-AXL    | Open/Closed | SPDT                     | C         | .140                                         | 5                       | 175                          | .250                       |
| 4705-AXL    | Open/Closed | DPDT                     | CX2       | .140                                         | 5                       | 175                          | .250                       |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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Biased Aluminum Industrial 4400AB / 4402AB***

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***Level 2 Dry-Contact Output GR2720***

***Level 2 Recessed ANSI Digital Output GR2721***

***Level 2 Small Footprint Digital Output GR2722 Series***

***Level 2 Standard Footprint Digital Output GR2723***

### ***MAGNASPHERE SWITCHES***

***3/8" Mini Recessed MS20RS Series***

***3/8" Recessed MS2020 Series***

***3/8" Flanged MS20F / MS20-OF Series***

***1/2" Recessed MS150 Series***

***3/4" Recessed Steel Door MS180 / MS184 / MS 8080-T***

***Surface Mount MS28A / MS29A / MS29P***

***Aluminum Industrial MS4400 Series***

***Special Purpose Pull Apart MS4702 Series***



# *Biased High Security Switch Sets Overview*

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- ◆ Biased high security in a variety of switch case styles
  - ◆ 12" leads #22AWG
- ◆ Jacketed or armored cable on industrial switches
- ◆ Longer leads, zip cord or jacketed cable upon request
  - ◆ Mounting hardware included
- ◆ Built-in E.O.L. Resistors and Diodes upon request
  - ◆ Colors: white, brown or gray
  - ◆ Lifetime Warranty
- ◆ Other configurations available - call factory

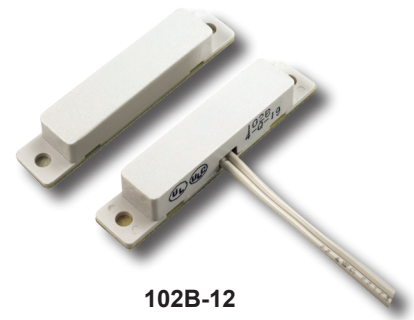
Standard operation of a reed switch deals with the magnetic attraction of two paddles when introduced to a magnetic field.

"Biased for high security" begins as a single pole double throw reed switch that is biased into an opposite condition. We begin with one open leg and one closed leg, but in the biasing operation we reverse the open to closed and the closed to open using just enough magnetic field strength to hold them in the opposite positions. We have now created what we refer to as a double tripping switch that can be actuated only inside a specific window of operation. If you bring an actuation magnet towards the switch, notice that at some point dependent on the size of the actuation magnet towards the switch, at some point the switch will release. So the biasing operation has created a maximum distance and a minimum distance of actuation - a "window". At approximately the center of this window, should a compromising magnet be added, the effect would be similar to moving the actuation magnet to the inside limit of the window and the switch would release creating an alarm.

Continued on back



B4040-12



102B-12



B29-C

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# *Biased High Security Switch Sets Overview*

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**4400AB**



**B200-36**



**B250-36**

As to polarity sensitivity, placement of the biasing magnet inside the switch case is by orientation of the north and south pole in line with the longitudinal axis of the actual reed switch. The magnet must be of sufficient strength to overcome and hold the spring tension separating the reed contacts to maintain closure. Arming the field of the actuation magnet negates, or some experts say, opposes that of the biasing magnet, and the contacts are forced apart. In effect, we have applied both a pulling and pushing force to the contact surfaces and established a delicate balance. In doing so, the switch becomes additionally sensitive to compromise which would require the correct north and south approach plus the correct distance adjustment of the compromising magnet (most likely of a different size) to match field strengths. The increased level of security is highly dependent on the polarity and the polarity sensitivity build into this application.

To get a clearer picture, mount your switch to a fixed position. Slowly move the magnet toward the switch and mark the outside actuation point (the make). Now, continue moving toward the switch and mark the inside release point (the break) to establish the window mentioned earlier. Hold the actuation magnet at a point between these two lines. Have an assistant attempt to compromise with an additional magnet. This magnet would likely be a different size and strength than the actuation magnet. Full compromise will require positioning of the additional magnet without interruption of the initial make and then removal of the original actuation magnet again, without interruption to the initial make.

Positioning and relationship of the switch to the actuation magnet are critical. The closer the actuation magnet is to the inside release point of the actuation window, the more difficult the compromise will be.

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# Biased Aluminum Industrial Switch Set

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## 4400AB / 4402AB

- ◆ 1/2" to 2" gap
- ◆ 36" armored cable
- ◆ Weather resistant rugged aluminum housing
  - ◆ Longer leads available upon request
  - ◆ Mounting hardware included
- ◆ Built-in EOL resistors and diodes upon request
  - ◆ Supervisory loops upon request
  - ◆ Lifetime Warranty



4400AB CE  
and bracket

### Part Numbers

|                       | <u>Closed Loop</u> | <u>SPDT</u> |
|-----------------------|--------------------|-------------|
| Standard Gap 1/2 - 2" | 4400AB } C €       | 4402AB      |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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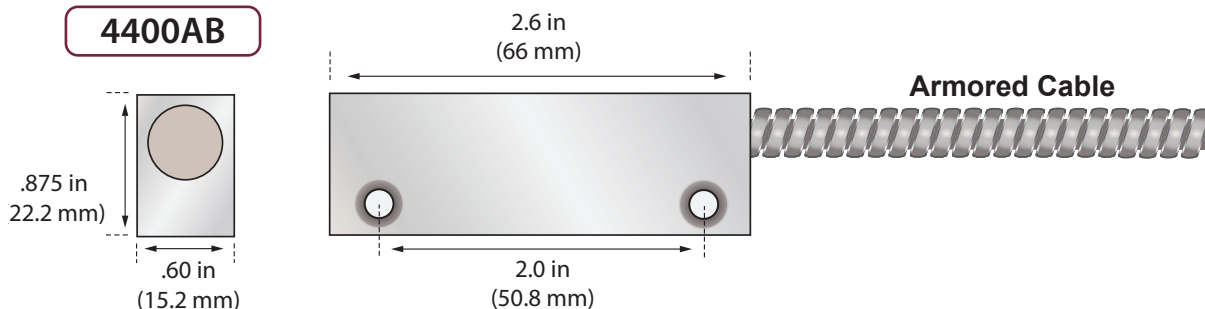


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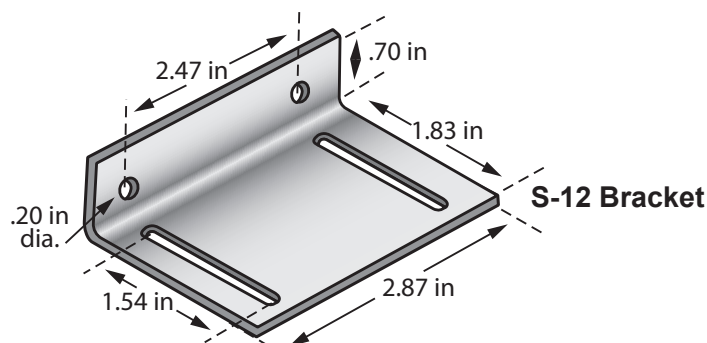


# Biased Aluminum Industrial Switch Set

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**Magnets have same case as switch.**



## GRI PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type   | Electrical Configuration | Reed Form | Max. Initial Contact Resistance ( $\Omega$ ) | Max. Contact Rating (W) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|-------------|--------------------------|-----------|----------------------------------------------|-------------------------|------------------------------|----------------------------|
| 4400AB      | Closed      | N/O                      | A         | .140                                         | 5                       | 175                          | .250                       |
| 4402AB      | Open/Closed | SPDT                     | C         | .140                                         | 5                       | 175                          | .250                       |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# Triple Biased High Security

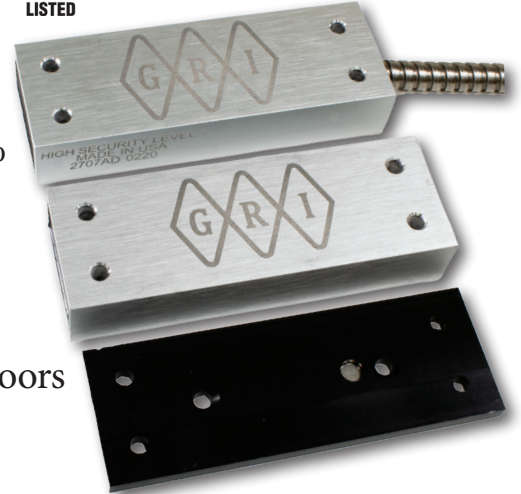
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## GR2707 Series



- ◆ High security Level 1
- ◆ Alignment:  $\pm .125"$
- ◆ Sensing air gap:  $.125$  to  $.500"$   $\pm 20\%$
- ◆ 36" stainless steel armored cable
- ◆ Temperature rated  $-35^{\circ}$  to  $+70^{\circ}$  C
- ◆ Resistant to magnetic tamper and defeat
- ◆ Rated for indoor and outdoor use
- ◆ Inward/outward swinging, protected/non-protected doors
- ◆ Dry-contacts compatible with legacy alarm panels and interface systems
- ◆ Industry standard footprint & mounting hole locations
- ◆ Optional L and Z brackets and spacers available



Tamper Plate and  
3 Spacers included

The GR2707 series high security switches are built with three C form reeds making them resistant to magnetic tamper and defeat. For added security, magnetic field tamper and pry tamper are standard features. Each GR2707 contact and actuation magnet set is factory compensated for the effects of steel.

The GR2707 Series can be used to protect doors in high security locations; airports, biotechnology labs and other medical research settings, warehouses, manufacturing plants, jewelry stores, banks, data processing centers, military bases, ammunition depots and energy-generation facilities.

The GR2707-A is configured in a SPDT configuration using three C form reeds. The GR2707-AD contains six C form reeds wired in a DPDT configuration. A supervisory loop with magnetic tamper feature is included in both models. A pry tamper connection for the 24 hour loop is included with both models.

## INSTALLATION INSTRUCTIONS

The GR2707 series sensor and tamper plate will be mounted to the door frame, close to the gap, without door interference. The tamper plate magnet must be oriented to match the target engraved on the sensor. The actuator will be mounted below the sensor with respect to the mounting orientation best suited for direction of door swing. Be sure to aim the engraved targets at each other once fully installed. Spacers may be used for alignment purposes.

The following installation method is recommended: Bring the actuator towards the sensor until the closed loop is activated. Use a multi-meter or similar device to detect open/closed states. Continue moving the actuator another  $0.125"$  to  $0.250"$  towards sensor to provide adequate magnetic overdrive.

Mounting conditions, such as type of substrate, lateral alignment, thickness of the metal substrate, etc. may alter gap distance.

**Note: Intended to be powered by a UL 603 Listed, power limited supply.**

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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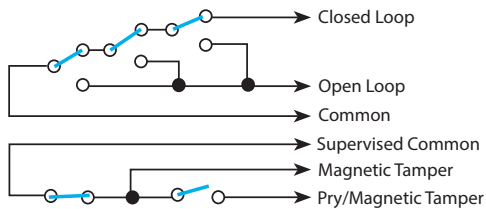
# Triple Biased High Security

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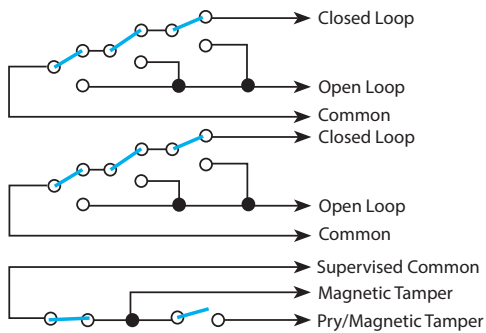
## GR2707-A SPDT Wiring Diagram

Closed Loop White  
Open Loop Red/White  
Common Silver/White  
Supervised Common Yellow/White  
Magnetic Tamper Green/White  
Pry/Magnetic Tamper Blue/White

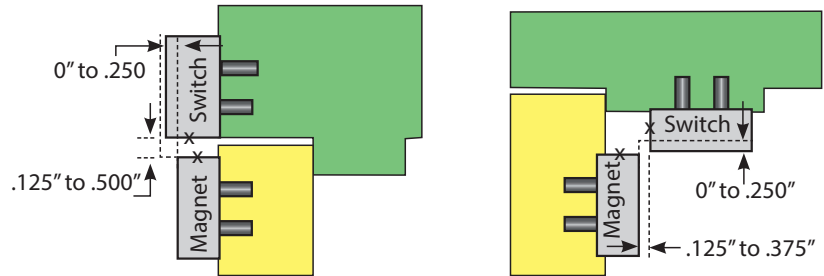


## GR2707-AD DPDT Wiring Diagram

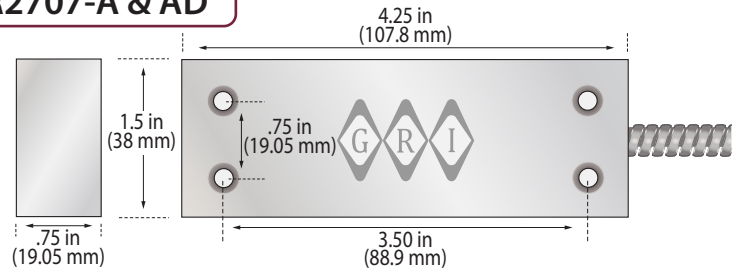
Closed Loop (1) White  
Open Loop (1) Red/White  
Common (1) Silver/White  
Closed Loop (2) White/Black  
Open Loop (2) Red/Black  
Common (2) Black  
Supervised Common Yellow/White  
Magnetic Tamper Green/White  
Pry/Magnetic Tamper Blue/White



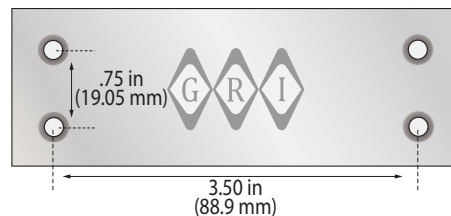
## Installation Plans:



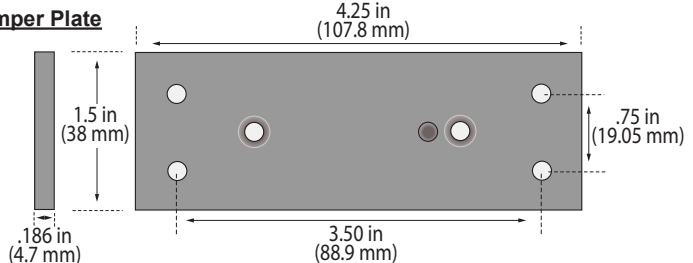
## GR2707-A & AD



## Magnet Part # M-2707



## Tamper Plate



## GRI PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type   | Electrical Configuration | Max. Contact Rating (W) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|-------------|--------------------------|-------------------------|------------------------------|----------------------------|
| GR2707-A    | Open/Closed | SPDT                     | 3                       | 30                           | .25                        |
| GR2707-AD   | Open/Closed | DPDT                     | 3                       | 30                           | .25                        |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# High Security Level 2 Dry-Contact

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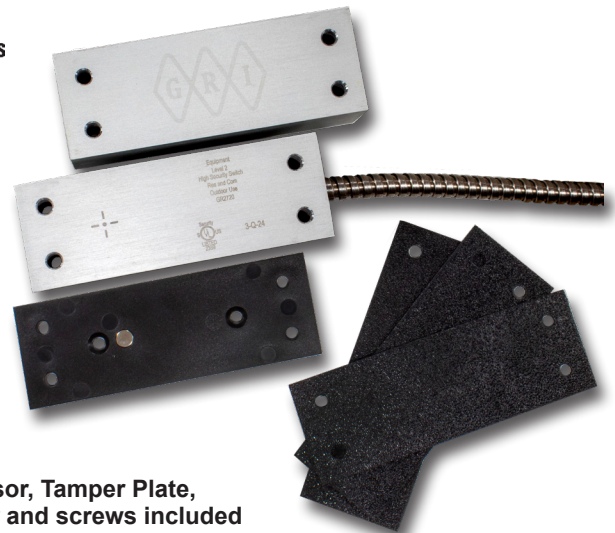


## GR2720 High Security (Level 2)

DRY-CONTACT OUTPUT



- ◆ UL634 Level 2 Certified
- ◆ ULC/ORD-C634 Level 2 Certified
- ◆ Wood or metal mounting
- ◆ Insensitive to vibration and shock
- ◆ Temperature rated -35° to +70° C
- ◆ Sensing air gap: 0 to 3/16"
- ◆ Resistant to tamper and defeat



Sensor, Tamper Plate,  
Actuator and screws included

The GR2720 uses reliable solid state sensing methods to monitor entries to high security locations. It has been tested to one of the highest security specifications, UL 634 Level 2. With solid state technology there are no moving parts, so the switch can reliably operate for millions of operations. The GR2720 includes pry and magnetic tampering protection. It is immune to shock and vibration that cause false alarms on other switch types. It is also resistant to lightning, static shock and radio frequencies.

The GR2720 has an industry standard footprint for easy retrofitting. It can be used on both wood and steel doors. Each switch set comes with switch, actuator, tamper plate and mounting hardware for easy installation.

The GR2720 can be used to protect doors in high security locations; airports, biotechnology labs and other medical research settings, warehouses, manufacturing plants, jewelry stores, banks, data processing centers, military bases, ammunition depots, nuclear power plants, government facilities and energy-generation facilities.

## INSTALLATION INSTRUCTIONS

The GR2720 sensor and tamper plate will be mounted to the door frame, close to the gap, without door interference. If the tamper plate is not installed, the sensor will only display a tamper state. For proper operation, the tamper plate must be mounted using the screws provided taking care to ensure that the magnet aligns with engraved target on the rear face of the sensor. The actuator will be mounted directly below the sensor. Be sure to aim the engraved targets at each other once fully installed. The sensor and actuator can be mounted on an inward or outward swinging door.

For steel mounting surfaces, mount the sensor and actuator at the edge of the mounting surface or slightly overhanging the edge of the mounting surface. This is particularly important when the air gap between the sensor and the actuator is small. False tamper indications may occur if this is not done.

The operating gap must not be greater than 3/16".

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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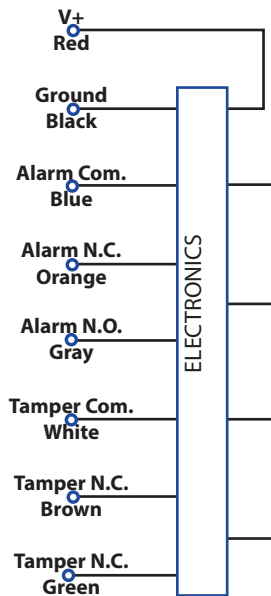
# High Security Level 2 Dry-Contact

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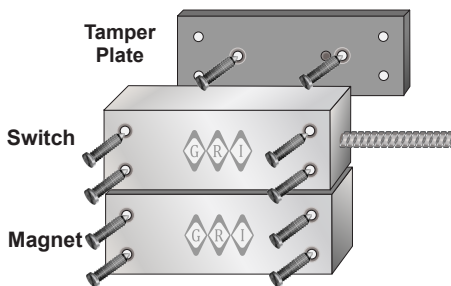


## GR2720 Wiring Diagram

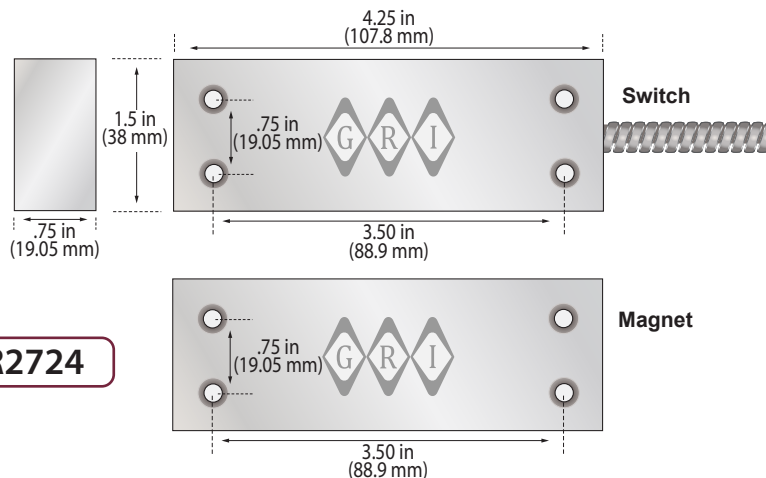
Red Power  
Black Ground  
Blue Output 1 (Alarm)  
White Output 2 (Tamper)



## Component View

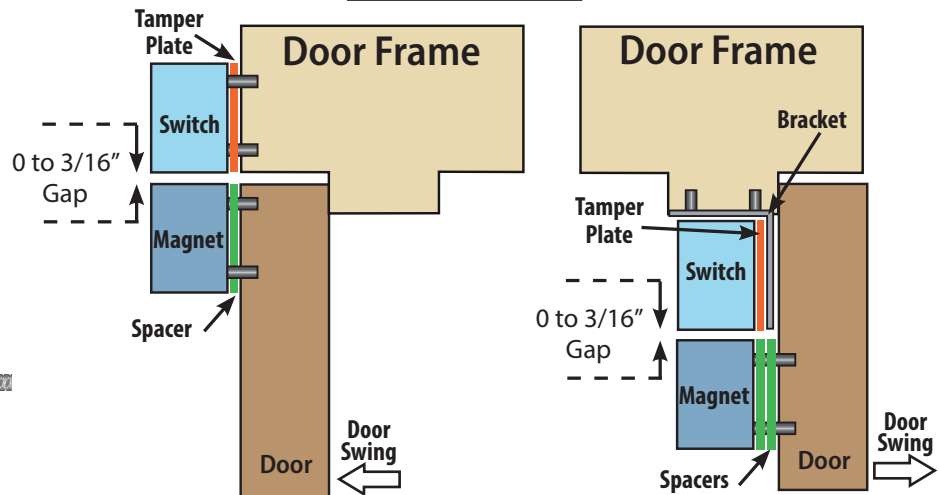


## Dimensions



GR2724

## Installation Plans



## State Diagram

| STATE     | ORANGE | GRAY   | BROWN  | GREEN  |
|-----------|--------|--------|--------|--------|
| Secure    | Open   | Closed | Open   | Closed |
| Insecure  | Closed | Open   | Open   | Closed |
| Tamper    | Open   | Closed | Closed | Open   |
| Alignment | Closed | Open   | Closed | Open   |

## General Specifications

|                   |                 |                      |               |
|-------------------|-----------------|----------------------|---------------|
| Sensing Air Gap   | 0 to 3/16"      | Min. Insulation Res. | 1000 MOhm     |
| Lateral Alignment | 3/16"           | Input Voltage        | 7 to 25.2 VDC |
| Max Current       | 0.5 A Resistive | Input Current        | 60mA, max     |
| Max Voltage       | 60VDC           |                      |               |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# High Security Level 2 Recessed ANSI

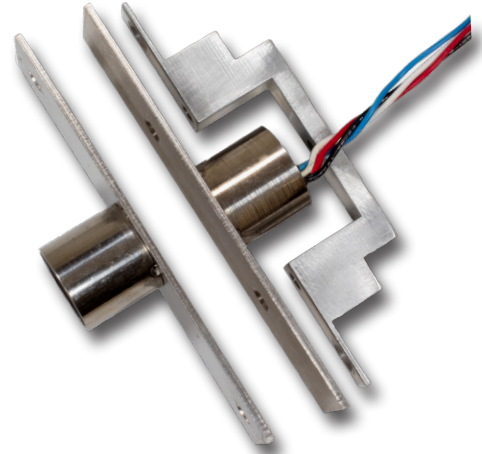
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## GR2721 High Security (Level 2) Recessed ANSI DIGITAL OUTPUT



- ◆ UL634 Level 2 Certified
- ◆ ULC/ORD-C634 Level 2 Certified
- ◆ Wood or metal mounting
- ◆ Insensitive to vibration and shock
- ◆ Temperature rated -35° to +70° C
- ◆ Sensing air gap: 0 to 3/16"
- ◆ Resistant to tamper and defeat



Sensor, Tamper Plate, Actuator  
and screws included

The GR2721 uses reliable solid state sensing methods to monitor entrances to high security locations. It has been tested to one of the highest security specifications, UL 634 Level 2. With solid state technology there are no moving parts, so the switch can reliably operate for millions of operations. The GR2721 includes pry and magnetic tampering protection. It is immune to shock and vibration that cause false alarms on other switch types. It is also resistant to lightning, static shock and radio frequencies.

The GR2721 fits industry standard ANSI recessed door cutout. It can be used on both wood and steel doors. Each switch set comes with switch, actuator, tamper plate and mounting hardware for easy installation. The GR2721 also has a unique output for misalignment.

The GR2721 can be used to protect doors in high security locations; airports, biotechnology labs and other medical research settings, warehouses, manufacturing plants, jewelry stores, banks, data processing centers, military bases, ammunition depots, nuclear power plants, government facilities and energy-generation facilities.

## INSTALLATION INSTRUCTIONS

The GR2720 sensor and tamper plate will be mounted to the door frame, close to the gap, without door interference. If the tamper plate is not installed, the sensor will only display a tamper state. For proper operation, the tamper plate must be mounted using the screws provided taking care to ensure that the magnet aligns with engraved target on the rear face of the sensor. The actuator will be mounted directly below the sensor. Be sure to aim the engraved targets at each other once fully installed. The sensor and actuator can be mounted on an inward or outward swinging door.

For steel mounting surfaces, mount the sensor and actuator at the edge of the mounting surface or slightly overhanging the edge of the mounting surface. This is particularly important when the air gap between the sensor and the actuator is small. False tamper indications may occur if this is not done.

The operating gap must not be greater than 3/16".

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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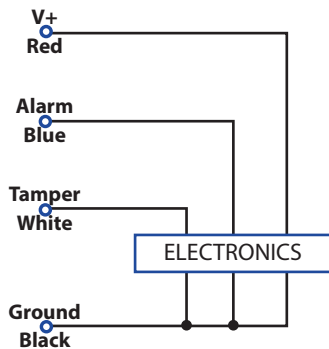
# High Security Level 2 Recessed ANSI

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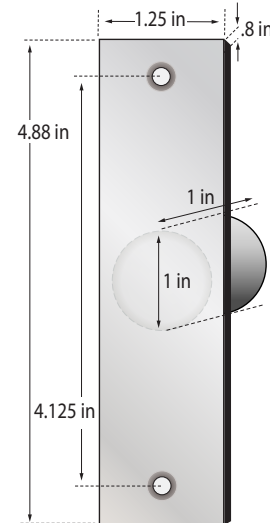
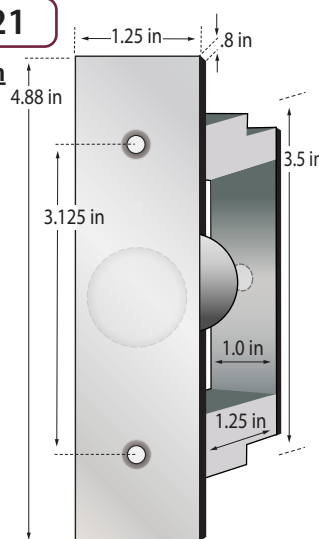
## GR2721 Wiring Diagram

Red Power  
Black Ground  
Blue Output 1 (Alarm)  
White Output 2 (Tamper)



## GR2721

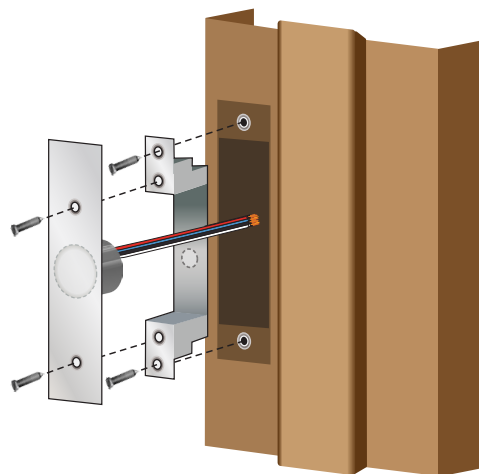
### Switch



## Actuator (Magnet) View with Door Cutout



## Sensor (Switch) View with Frame Cutout



## General Specifications

|                   |                 |                      |               |
|-------------------|-----------------|----------------------|---------------|
| Sensing Air Gap   | 0 to 3/16"      | Max. Power           | 6 W Resistive |
| Lateral Alignment | 3/16"           | Max. Leakage Current | 10 $\mu$ A    |
| Max Current       | 0.2 A Resistive | Input Voltage        | 4 to 25.2 VDC |
| Max Voltage       | 30VDC           | Input Current        | 20mA, max.    |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# High Security Level 2 Small Footprint

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**GR2722** SECURITY 

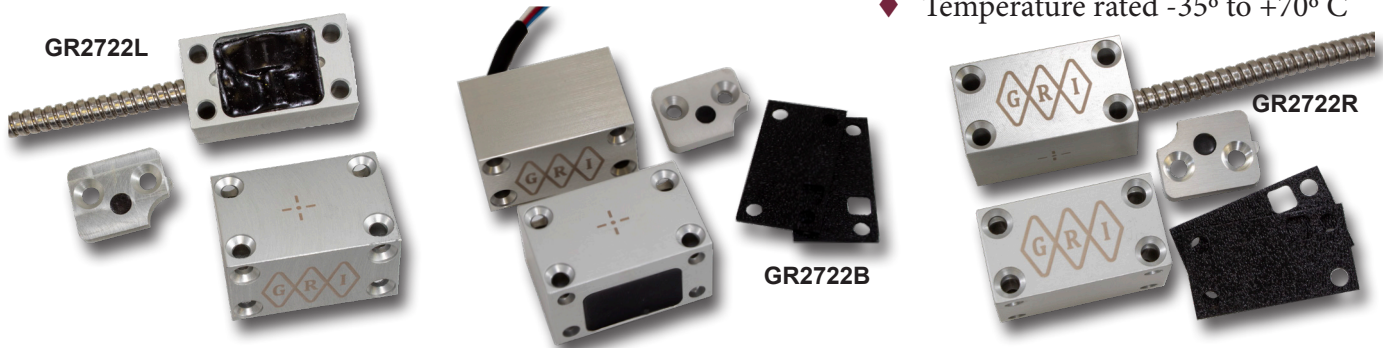
*High Security (Level 2)*

*Small Footprint*

*Left, Back and Right Cable Exits*

DIGITAL OUTPUT

- ◆ UL634 Level 2 Certified
- ◆ ULC/ORD-C634 Level 2 Certified
- ◆ Small Footprint
- ◆ Wood or Metal Mounting
- ◆ Insensitive to vibration and shock
- ◆ Alignment: 3/16"
- ◆ Sensing air gap: 0 to 3/16"
- ◆ Temperature rated -35° to +70° C



The GR2722 uses reliable solid state sensing methods to monitor entries to high security locations. It has been tested to one of the highest security specifications, UL 634 Level 2. With solid state technology there are no moving parts, so the switch can reliably operate for millions of operations. The GR2722 includes pry and magnetic tampering protection. It is immune to shock and vibration that cause false alarms on other switch types. It is also resistant to lightning, static shock and radio frequencies.

The GR2722 has a small footprint which makes it aesthetically appealing while still providing a high level of security. It can be used on both wood and steel doors. Each switch set comes with switch, actuator, tamper plate and mounting hardware for easy installation.

The GR2720 can be used to protect doors in high security locations; airports, biotechnology labs and other medical research settings, warehouses, manufacturing plants, jewelry stores, banks, data processing centers, military bases, ammunition depots nuclear power plants, government facilities and energy-generation facilities.

## INSTALLATION INSTRUCTIONS

The GR2722 sensor and tamper plate will be mounted to the door frame, close to the gap, without door interference. If the tamper plate is not installed, the sensor will only display a tamper state. For proper operation, the tamper plate must be mounted using the screws provided taking care to ensure that the magnet aligns with engraved target on the rear face of the sensor. The actuator will be mounted directly below the sensor. Be sure to aim the engraved targets at each other once fully installed. The sensor and actuator can be mounted on an inward or outward swinging door.

For steel mounting surfaces, mount the sensor and actuator at the edge of the mounting surface or slightly overhanging the edge of the mounting surface. This is particularly important when the air gap between the sensor and the actuator is small. False tamper indications may occur if this is not done.

The operating gap must not be greater than 3/16".

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

**GEORGE RISK INDUSTRIES, INC.**

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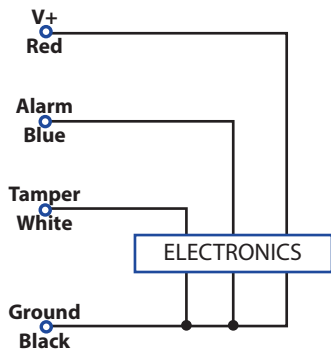
# High Security Level 2 Small Footprint

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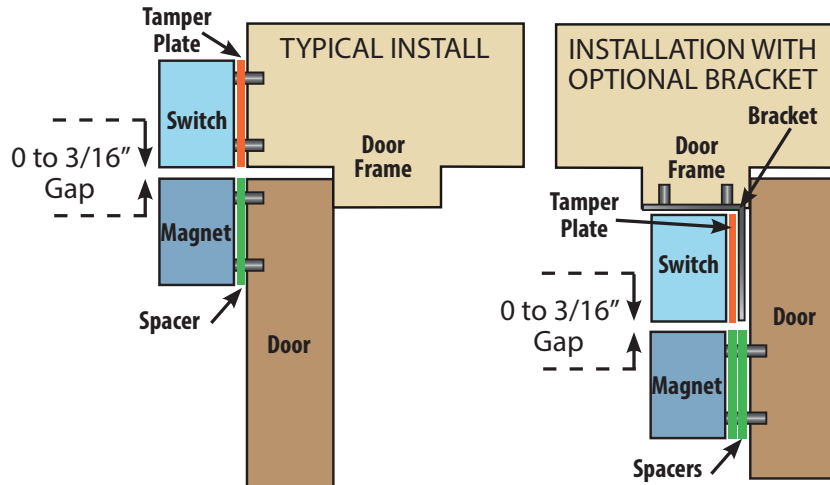


## GR2722 Wiring Diagram

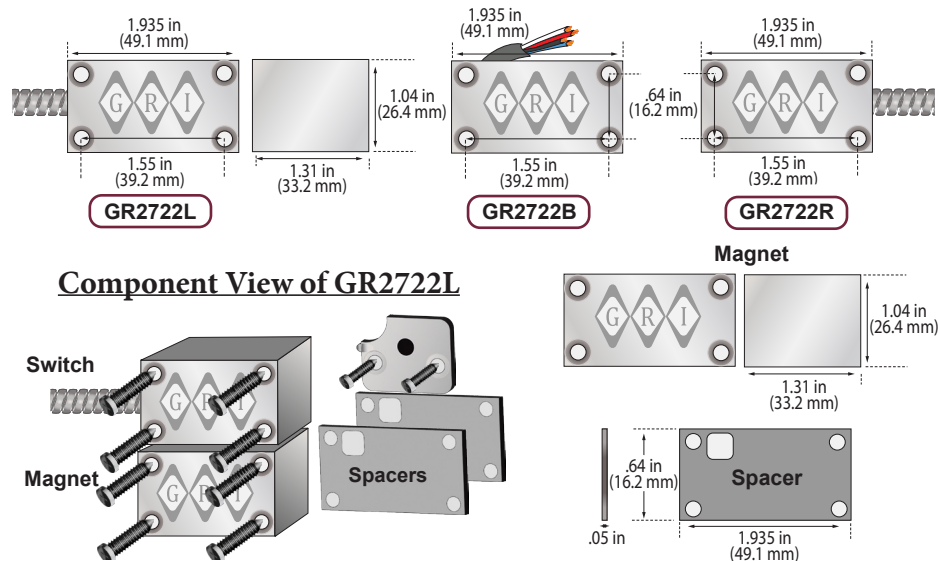
Red Power  
Black Ground  
Blue Output 1 (Alarm)  
White Output 2 (Tamper)



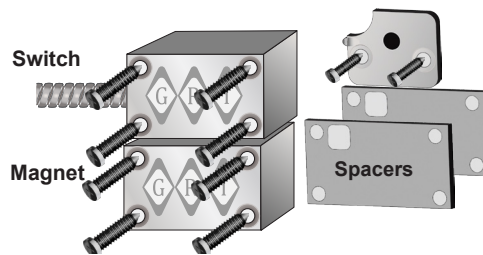
## Installation Plans



## Dimensions



## Component View of GR2722L



## General Specifications

Sensing Air Gap 0 to 3/16"  
Lateral Alignment 3/16"  
Max Current 0.2 A Resistive  
Max Voltage 30VDC

Max. Power  
Max. Leakage Current  
Input Voltage  
Input Current

6 W Resistive  
10  $\mu$ A  
4 to 25.2 VDC  
20mA, max

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# High Security Level 2 Standard Footprint

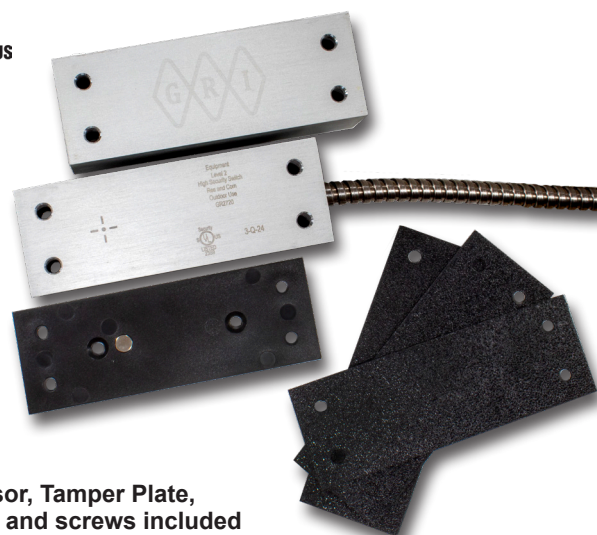
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## GR2723 High Security (Level 2) Standard Footprint DIGITAL OUTPUT



- ◆ UL634 Level 2 Certified
- ◆ ULC/ORD-C634 Level 2 Certified
  - ◆ Wood or metal mounting
- ◆ Insensitive to vibration and shock
- ◆ Temperature rated -35° to +70° C
- ◆ Sensing air gap: 0 to 3/16"
- ◆ Resistant to tamper and defeat



Sensor, Tamper Plate,  
Actuator and screws included

The GR2723 uses reliable solid state sensing methods to monitor entries to high security locations. It has been tested to one of the highest security specifications, UL 634 Level 2. With solid state technology there are no moving parts, so the switch can reliably operate for millions of operations. The GR2723 includes pry and magnetic tampering protection. It is immune to shock and vibration that cause false alarms on other switch types. It is also resistant to lightning, static shock and radio frequencies.

The GR2723 has an industry standard footprint for easy retrofitting. It can be used on both wood and steel doors. Each switch set comes with switch, actuator, tamper plate and mounting hardware for easy installation.

The GR2723 can be used to protect doors in high security locations; airports, biotechnology labs and other medical research settings, warehouses, manufacturing plants, jewelry stores, banks, data processing centers, military bases, ammunition depots, nuclear power plants, government facilities and energy-generation facilities.

## INSTALLATION INSTRUCTIONS

The GR2723 sensor and tamper plate will be mounted to the door frame, close to the gap, without door interference. If the tamper plate is not installed, the sensor will only display a tamper state. For proper operation, the tamper plate must be mounted using the screws provided taking care to ensure that the magnet aligns with engraved target on the rear face of the sensor. The actuator will be mounted directly below the sensor. Be sure to aim the engraved targets at each other once fully installed. The sensor and actuator can be mounted on an inward or outward swinging door.

For steel mounting surfaces, mount the sensor and actuator at the edge of the mounting surface or slightly overhanging the edge of the mounting surface. This is particularly important when the air gap between the sensor and the actuator is small. False tamper indications may occur if this is not done.

The operating gap must not be greater than 3/16".

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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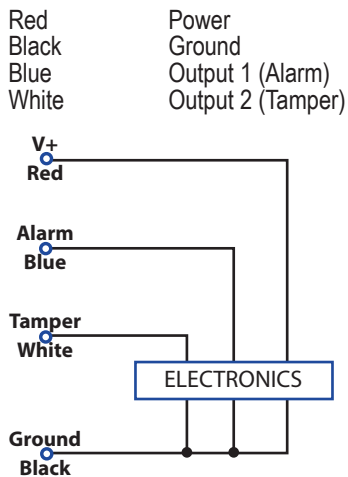
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# High Security Level 2 Standard Footprint

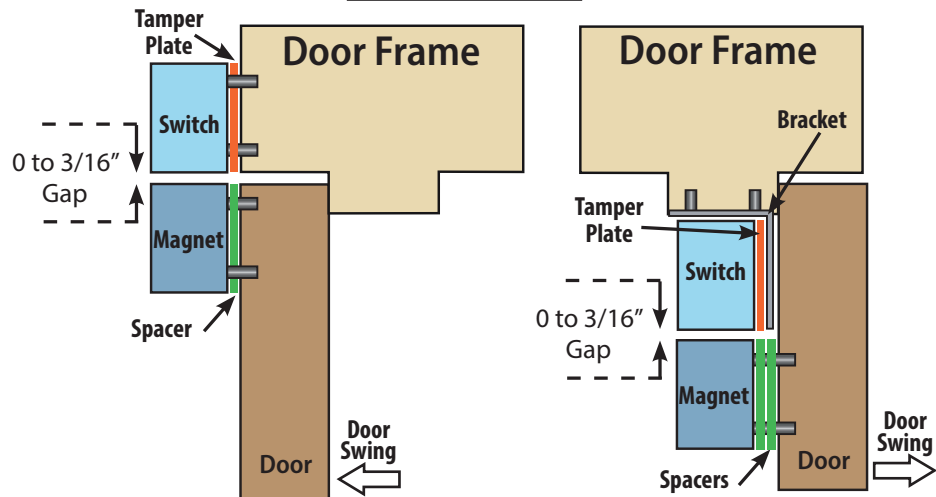
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## GR2723 Wiring Diagram



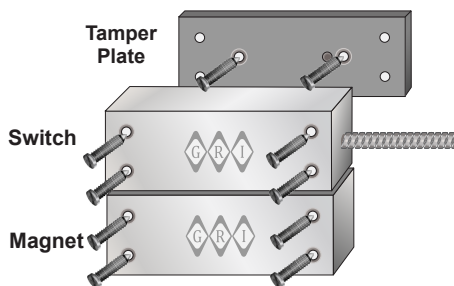
## Installation Plans



## State Diagram:

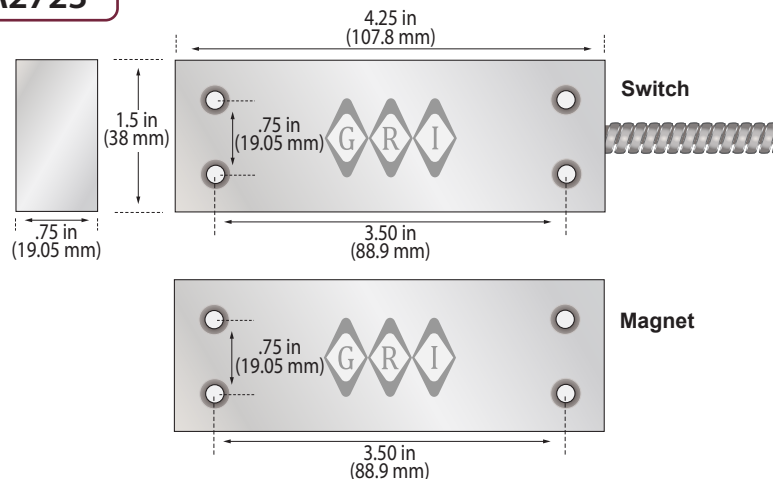
| STATE     | BLUE WIRE | WHITE WIRE |
|-----------|-----------|------------|
| Secure    | Closed    | Closed     |
| Insecure  | Open      | Closed     |
| Tamper    | Closed    | Open       |
| Alignment | Open      | Open       |

## Component View



## GR2723

## Dimensions



## General Specifications

|                   |                 |                      |               |
|-------------------|-----------------|----------------------|---------------|
| Sensing Air Gap   | 0 to 3/16"      | Max. Power           | 6 W Resistive |
| Lateral Alignment | 3/16"           | Max. Leakage Current | 10 $\mu$ A    |
| Max Current       | 0.2 A Resistive | Input Voltage        | 4 to 25.2 VDC |
| Max Voltage       | 30VDC           | Input Current        | 20mA, max.    |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# *3/8" Mini Recessed Magnasphere*

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## *Miniature 3/8" Recessed Switch Set with Magnasphere Technology MS20RS-12 / MS20RS-T*

- ◆ Higher level of security
- ◆ Spherical magnetism
- ◆ Resistant to magnetic tamper and defeat
- ◆ Hermetically sealed
- ◆ Longer leads, zip cord or jacketed cable upon request
- ◆ Built-in E.O.L. Resistors and Diodes upon request
- ◆ Switches and magnets available separately
- ◆ Colors: white, brown or gray
- ◆ Lifetime Warranty
- ◆ Standard Gap 3/8"



MS20RS-12



MS20RS-T

## **INSTALLATION APPLICATIONS**

The GRI recessed "shortie" switch set is designed for applications with a 3/8" press to fit set is needed, but space limitations will not allow for a full length set to be installed. Just 5/8" long, the installer is able to protect openings with the MS20RS-12 that otherwise would have to be secured with more visible surface mount configurations.

## **CONSTRUCTION**

Magnasphere's® patented technology utilizes the principal of Spherical Magnetism. The heart of the switch is a magnetic sphere, or ball contact. This sphere is housed in a durable metal housing. Completing the switch is a seal that contains the contacting electrode, insulated from the magnetic perimeter by a time proven ceramic to metal bond.

Continued on back

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# 3/8" Mini Recessed Magnasphere

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The case or seal provides the second contact point required to complete the electrical circuit.

The seal/electrode cap is welded to the housing in an inert atmosphere providing a hermetically sealed contact.

## OPERATION

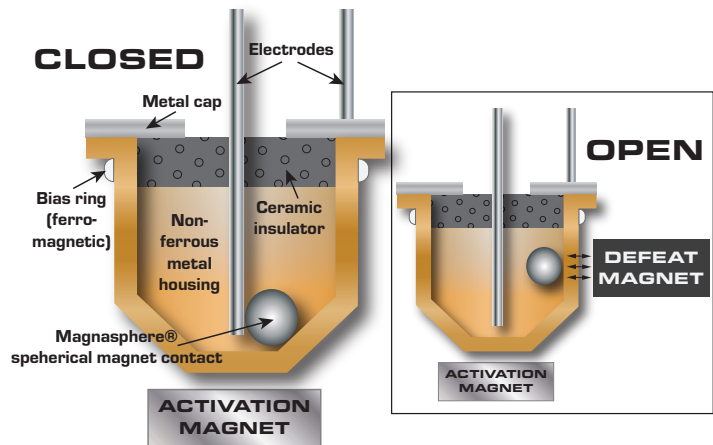
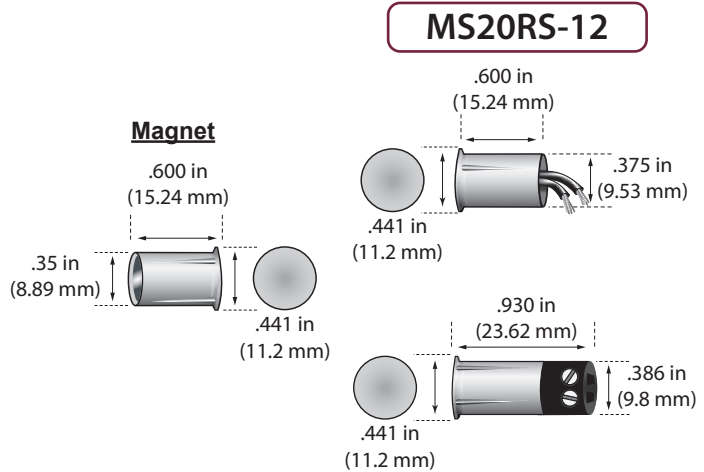
In the normally open position, the magnetic sphere is attracted to the ferromagnetic portion of the seal cap, away from the electrode. Because of this attraction the switch may be positioned in any orientation and will remain open.

When the actuator magnet approaches the switch from the end of the switch opposite the electrode, the magnetic ball is attracted to this field, and "snaps" to the bottom of the case, making contact with the electrode and case, closing the switch.

Unlike a reed switch that responds to a magnet within a global activation zone, the Magnasphere® switch responds to a magnet only within a restricted zone. A magnet outside the zone pulls the ball off center electrode to open the switch.

## PRINCIPLES OF SPHERICAL MAGNETISM:

Finite element analysis shows magnetic flux paths of the Magnasphere® magnetic ball contact. The spherical shape is not polarity sensitive and will be attracted to either pole of the actuating magnet.



### GRI PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type | Electrical Configuration | Reed Form | Max. Initial Contact Resistance (Ω) | Max. Contact Rating (W) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|-----------|--------------------------|-----------|-------------------------------------|-------------------------|------------------------------|----------------------------|
| MS20RS-12   | Closed    | N/O                      | A         | .400                                | 5                       | 250 AC/DC                    | .180*                      |
| MS20RS-T    | Closed    | N/O                      | A         | .400                                | 5                       | 250 AC/DC                    | .180*                      |

\*Higher maximum switching current ratings available.

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# *3/8" Recessed Magnasphere*

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## *3/8" Recessed Switch Set with Magnasphere Technology MS2020-12 / MS2020-T*

- ◆ Higher level of security
- ◆ Spherical magnetism
- ◆ Resistant to magnetic tamper and defeat
- ◆ Hermetically sealed
- ◆ Longer leads, zip cord or jacketed cable upon request
- ◆ Built-in E.O.L. Resistors and Diodes upon request
- ◆ Switches and magnets available separately
- ◆ Colors: white, brown or gray
- ◆ Lifetime Warranty
- ◆ Standard Gap 3/8"



MS2020-12



MS2020-T

## **INSTALLATION APPLICATIONS**

GRI's 3/8" recessed press to fit contacts can be installed in many different positions to accommodate a variety of applications. The switch and magnet can be mounted end-to-end within an imaginary arc around the switch, or parallel to the switch. The switch and magnet should never form a "T" configuration when installed.

## **CONSTRUCTION**

Magnasphere's® patented technology utilizes the principal of Spherical Magnetism. The heart of the switch is a magnetic sphere, or ball contact. This sphere is housed in a durable metal housing. Completing the switch is a seal that contains the contacting electrode, insulated from the magnetic perimeter by a time proven ceramic to metal bond.

Continued on back

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# 3/8" Recessed Magnasphere

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The case or seal provides the second contact point required to complete the electrical circuit.

The seal/electrode cap is welded to the housing in an inert atmosphere providing a hermetically sealed contact.

## OPERATION

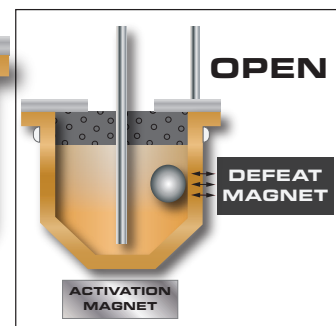
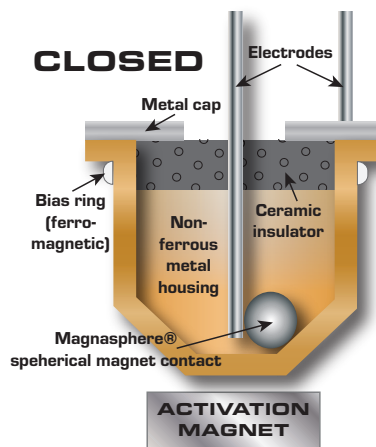
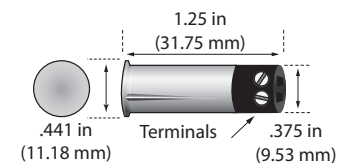
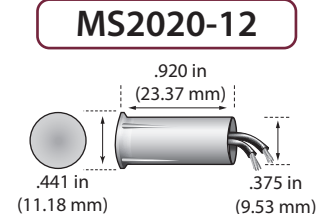
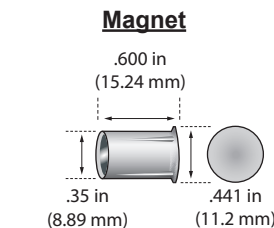
In the normally open position, the magnetic sphere is attracted to the ferromagnetic portion of the seal cap, away from the electrode. Because of this attraction the switch may be positioned in any orientation and will remain open.

When the actuator magnet approaches the switch from the end of the switch opposite the electrode, the magnetic ball is attracted to this field, and "snaps" to the bottom of the case, making contact with the electrode and case, closing the switch.

Unlike a reed switch that responds to a magnet within a global activation zone, the Magnasphere® switch responds to a magnet only within a restricted zone. A magnet outside the zone pulls the ball off center electrode to open the switch.

## PRINCIPLES OF SPHERICAL MAGNETISM:

Finite element analysis shows magnetic flux paths of the Magnasphere® magnetic ball contact. The spherical shape is not polarity sensitive and will be attracted to either pole of the actuating magnet.



### GRI PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type | Electrical Configuration | Reed Form | Max. Initial Contact Resistance (Ω) | Max. Contact Rating (W) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|-----------|--------------------------|-----------|-------------------------------------|-------------------------|------------------------------|----------------------------|
| MS2020-12   | Closed    | N/O                      | A         | .400                                | 5                       | 250 AC/DC                    | .180*                      |
| MS2020-T    | Closed    | N/O                      | A         | .400                                | 5                       | 250 AC/DC                    | .180*                      |

\*Higher maximum switching current ratings available.

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# *3/8" Recessed Flanged Magnasphere*

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## *Recessed 3/8" Flanged Switch Set with Magnasphere Technology MS20F-12 / MS20-OF*

- ◆ Higher level of security
- ◆ Spherical magnetism
- ◆ Resistant to magnetic tamper and defeat
- ◆ Hermetically sealed
- ◆ Round or oval screw down flange
- ◆ Built-in E.O.L. Resistors and Diodes upon request
- ◆ Switches and magnets available separately
- ◆ Colors: white, brown or gray, black
- ◆ Lifetime Warranty
- ◆ Standard Gap 3/8"



MS20F-12



MS20-OF-12

## **INSTALLATION APPLICATIONS**

The MS20F and MS20-OF series are a flush mount design that enable the installer to combine the security of a screw mount flanged switch with the concealment of a press fit switch. They have been used in hollow aluminum frames where inadequate material depth will not reliably retain a press fit switch and in holes that have been drilled or have somehow become slightly oversized. Mounting hardware provided.

## **CONSTRUCTION**

Magnasphere's® patented technology utilizes the principal of Spherical Magnetism. The heart of the switch is a magnetic sphere, or ball contact. This sphere is housed in a durable metal housing. Completing the switch is a seal that contains the contacting electrode, insulated from the magnetic perimeter by a time proven ceramic to metal bond.

Continued on back

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# 3/8" Recessed Flanged Magnasphere

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The case or seal provides the second contact point required to complete the electrical circuit.

The seal/electrode cap is welded to the housing in an inert atmosphere providing a hermetically sealed contact.

## OPERATION

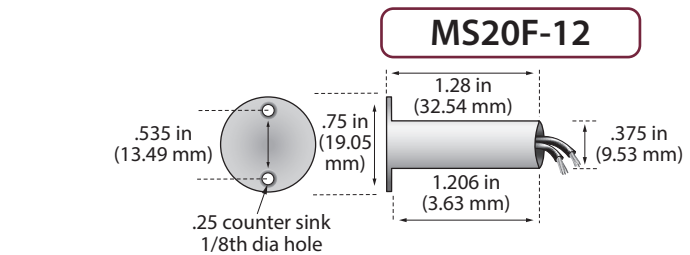
In the normally open position, the magnetic sphere is attracted to the ferromagnetic portion of the seal cap, away from the electrode. Because of this attraction the switch may be positioned in any orientation and will remain open.

When the actuator magnet approaches the switch from the end of the switch opposite the electrode, the magnetic ball is attracted to this field, and "snaps" to the bottom of the case, making contact with the electrode and case, closing the switch.

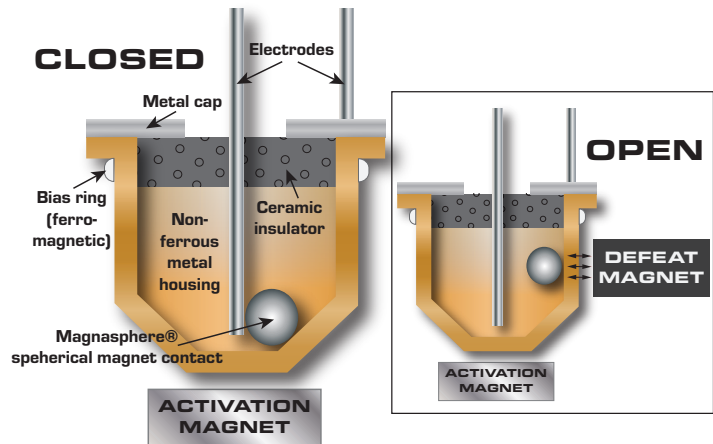
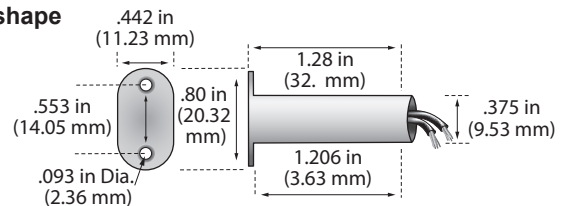
Unlike a reed switch that responds to a magnet within a global activation zone, the Magnasphere® switch responds to a magnet only within a restricted zone. A magnet outside the zone pulls the ball off center electrode to open the switch.

## PRINCIPLES OF SPHERICAL MAGNETISM:

Finite element analysis shows magnetic flux paths of the Magnasphere® magnetic ball contact. The spherical shape is not polarity sensitive and will be attracted to either pole of the actuating magnet.



**Magnets match switch in size and shape**



### GRI PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type | Electrical Configuration | Reed Form | Max. Initial Contact Resistance (Ω) | Max. Contact Rating (W) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|-----------|--------------------------|-----------|-------------------------------------|-------------------------|------------------------------|----------------------------|
| MS20F-12    | Closed    | N/O                      | A         | .400                                | 5                       | 250 AC/DC                    | .180*                      |
| MS20-OF-12  | Closed    | N/O                      | A         | .400                                | 5                       | 250 AC/DC                    | .180*                      |

\*Higher maximum switching current ratings available.

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# *1/2" Recessed Magnasphere*

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## *Recessed 1/2" Switch Set with Magnasphere Technology MS150-12 / MS150-T*

- ◆ Higher level of security
- ◆ Spherical magnetism
- ◆ Resistant to magnetic tamper and defeat
- ◆ Hermetically sealed
- ◆ Designed for hollow core doors and windows
  - ◆ Hole size allows for extra wire, etc.
- ◆ Installs firmly in wood, vinyl and aluminum
  - ◆ Press or snap fit
- ◆ Built-in E.O.L. Resistors and Diodes upon request
- ◆ Switches and magnets available separately
- ◆ Colors: white, brown or gray, black
  - ◆ Lifetime Warranty
  - ◆ Standard Gap 3/8"



MS150-12



MS150-T

## **INSTALLATION APPLICATIONS**

Larger than 3/8" but smaller than 3/4", GRI introduces their innovative switch design, the 1/2" diameter, flush mount MS150-12. This is in response to requests from our customers for a switch that would give them additional "working room" for extra wire, E.O.L. resistors, etc., yet would install in the popular hollow core windows. The GRI MS150-12 is a 1/2" diameter contact, manufactured from a special polyvinyl material with a unique collar design that will "press-fit" into wooden or vinyl clad windows with a "snap-in" fit for hollow core vinyl or aluminum windows. The GRI MS150-12 is paired with a matching 1/2" magnet case to offer the installer up to a 1/2" gap. The MS150 switch can also be paired with any of the wide selection of GRI magnets to help resolve difficult installation applications, such as our MF-875. Patent Pending.

Continued on back

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# 1/2" Recessed Magnasphere

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## CONSTRUCTION

Magnasphere's® patented technology utilizes the principal of Spherical Magnetism. The heart of the switch is a magnetic sphere, or ball contact. This sphere is housed in a durable metal housing. Completing the switch is a seal that contains the contacting electrode, insulated from the magnetic perimeter by a time proven ceramic to metal bond.

The case or seal provides the second contact point required to complete the electrical circuit.

The seal/electrode cap is welded to the housing in an inert atmosphere providing a hermetically sealed contact.

## OPERATION

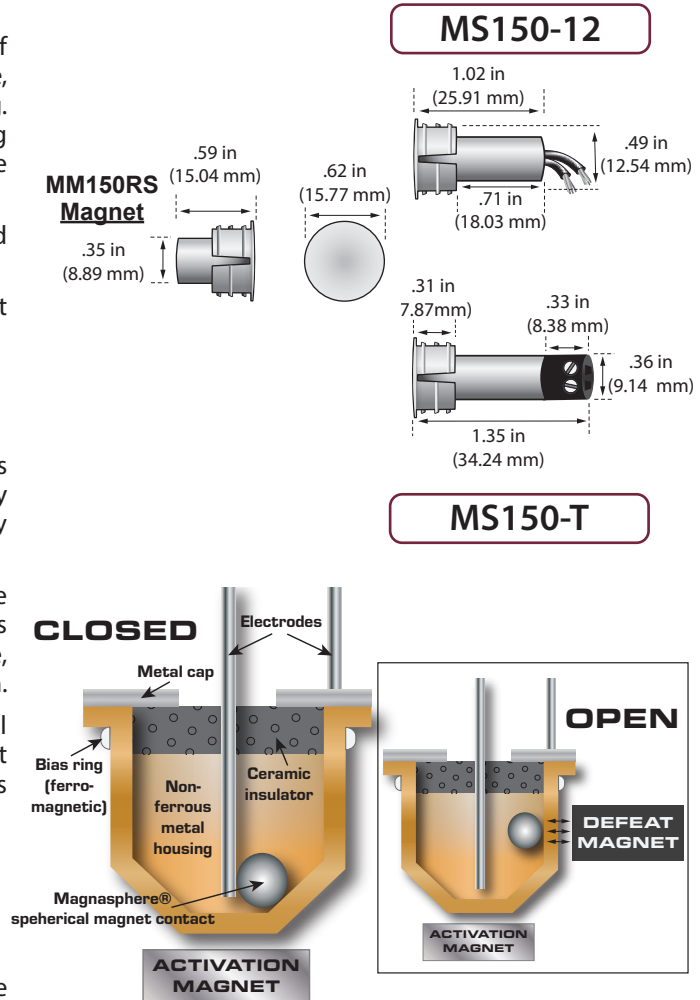
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When the actuator magnet approaches the switch from the end of the switch opposite the electrode, the magnetic ball is attracted to this field, and "snaps" to the bottom of the case, making contact with the electrode and case, closing the switch.

Unlike a reed switch that responds to a magnet within a global activation zone, the Magnasphere® switch responds to a magnet only within a restricted zone. A magnet outside the zone pulls the ball off center electrode to open the switch.

## PRINCIPLES OF SPHERICAL MAGNETISM:

Finite element analysis shows magnetic flux paths of the Magnasphere® magnetic ball contact. The spherical shape is not polarity sensitive and will be attracted to either pole of the actuating magnet.



### GRI PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type | Electrical Configuration | Reed Form | Max. Initial Contact Resistance (Ω) | Max. Contact Rating (W) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|-----------|--------------------------|-----------|-------------------------------------|-------------------------|------------------------------|----------------------------|
| MS150-12    | Closed    | N/O                      | A         | .400                                | 5                       | 250 AC/DC                    | .180*                      |
| MS150-T     | Closed    | N/O                      | A         | .400                                | 5                       | 250 AC/DC                    | .180*                      |

\*Higher maximum switching current ratings available.

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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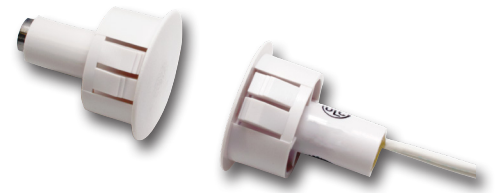
# *3/4" Recessed Steel Door Magnasphere*

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## *Recessed 3/4" Steel Door Switch Set with Magnasphere Technology MS180-12 / MS184-12 MS8080-T*

- ◆ Higher level of security
- ◆ Spherical magnetism
- ◆ Resistant to magnetic tamper and defeat
- ◆ Hermetically sealed
- ◆ Built-in E.O.L. Resistors and Diodes upon request
- ◆ Switches and magnets available separately
- ◆ Colors: white, brown or gray, black
- ◆ Custom lead lengths upon request
- ◆ Lifetime Warranty
- ◆ Standard Gap 3/8"



MS180-12



MS8080-T

## **INSTALLATION APPLICATIONS**

The GRI MS180-12 is the industry standard 3/4" diameter recessed steel door switch set with 12" leads. MS184-12 is 1" diameter recessed steel door switch set with 12" leads.

## **CONSTRUCTION**

Magnasphere's® patented technology utilizes the principal of Spherical Magnetism. The heart of the switch is a magnetic sphere, or ball contact. This sphere is housed in a durable metal housing. Completing the switch is a seal that contains the contacting electrode, insulated from the magnetic perimeter by a time proven ceramic to metal bond.

Continued on back

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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KIMBALL, NE 69145

WWW.GRISK.COM



1-800-445-5218  
1-800-523-1227  
(308) 235-4645  
FAX (308) 235-3561  
E-MAIL: sales@grisk.com



# 3/4" Recessed Steel Door Magnasphere

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The case or seal provides the second contact point required to complete the electrical circuit.

The seal/electrode cap is welded to the housing in an inert atmosphere providing a hermetically sealed contact.

## OPERATION

In the normally open position, the magnetic sphere is attracted to the ferromagnetic portion of the seal cap, away from the electrode. Because of this attraction the switch may be positioned in any orientation and will remain open.

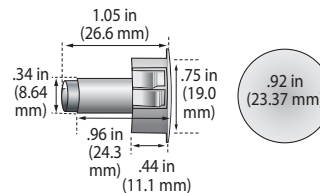
When the actuator magnet approaches the switch from the end of the switch opposite the electrode, the magnetic ball is attracted to this field, and "snaps" to the bottom of the case, making contact with the electrode and case, closing the switch.

Unlike a reed switch that responds to a magnet within a global activation zone, the Magnasphere® switch responds to a magnet only within a restricted zone. A magnet outside the zone pulls the ball off center electrode to open the switch.

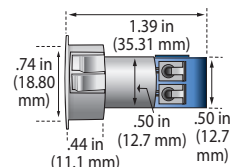
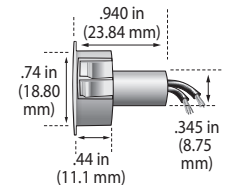
## PRINCIPLES OF SPHERICAL MAGNETISM:

Finite element analysis shows magnetic flux paths of the Magnasphere® magnetic ball contact. The spherical shape is not polarity sensitive and will be attracted to either pole of the actuating magnet.

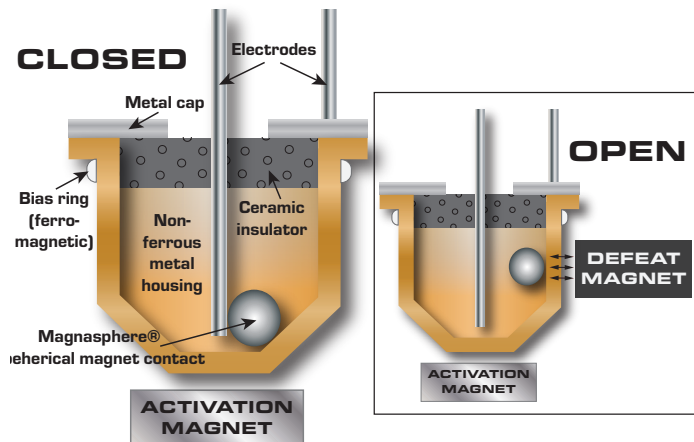
**Magnet**



**MS180-12**



**MS8080-T**



### GR I PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type | Electrical Configuration | Reed Form | Max. Initial Contact Resistance (Ω) | Max. Contact Rating (W) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|-----------|--------------------------|-----------|-------------------------------------|-------------------------|------------------------------|----------------------------|
| MS180-12    | Closed    | N/O                      | A         | .400                                | 5                       | 250 AC/DC                    | .180*                      |
| MS180-T     | Closed    | N/O                      | A         | .400                                | 5                       | 250 AC/DC                    | .180*                      |

\*Higher maximum switching current ratings available.

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# Surface Mount Magnasphere

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## Surface Mount Switch Set with Magnasphere Technology MS28A / MS29A / MS29P

- ◆ Higher level of security
- ◆ Spherical magnetism
- ◆ Resistant to magnetic tamper and defeat
  - ◆ Hermetically sealed
  - ◆ Screw down flanges
- ◆ Concealed terminals on MS28
- ◆ Built-in E.O.L. Resistors and Diodes upon request
- ◆ Switches and magnets available separately
  - ◆ Colors: white, brown or gray
  - ◆ Private labeling upon request
  - ◆ Lifetime Warranty
  - ◆ Standard Gap 3/8"



MS28A



MS29A



MS29PA

## INSTALLATION APPLICATIONS

This series offers a standard gap of 1/2" and can be installed on a steel surface with a minimum gap penalty. The "P" style is a pre-wired switch with 2 feet of conductor cable. A broad range of mounting brackets are also available. (see spec sheet in accessory section of the GRI full line catalog.)

## CONSTRUCTION

Magnaspere's® patented technology utilizes the principal of Spherical Magnetism. The heart of the switch is a magnetic sphere, or ball contact. This sphere is housed in a durable metal housing. Completing the switch is a seal that contains the contacting electrode, insulated from the magnetic perimeter by a time proven ceramic to metal bond.

Continued on back

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# Surface Mount Magnasphere

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The case or seal provides the second contact point required to complete the electrical circuit.

The seal/electrode cap is welded to the housing in an inert atmosphere providing a hermetically sealed contact.

## OPERATION

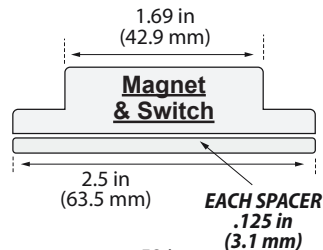
In the normally open position, the magnetic sphere is attracted to the ferromagnetic portion of the seal cap, away from the electrode. Because of this attraction the switch may be positioned in any orientation and will remain open.

When the actuator magnet approaches the switch from the end of the switch opposite the electrode, the magnetic ball is attracted to this field, and "snaps" to the bottom of the case, making contact with the electrode and case, closing the switch.

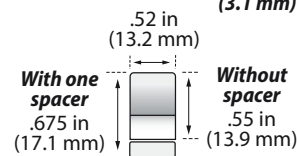
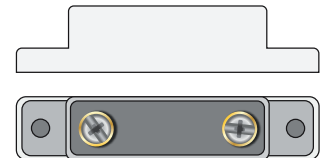
Unlike a reed switch that responds to a magnet within a global activation zone, the Magnasphere® switch responds to a magnet only within a restricted zone. A magnet outside the zone pulls the ball off center electrode to open the switch.

## PRINCIPLES OF SPHERICAL MAGNETISM:

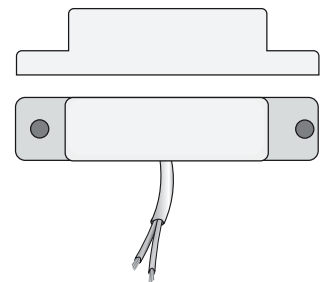
Finite element analysis shows magnetic flux paths of the Magnasphere® magnetic ball contact. The spherical shape is not polarity sensitive and will be attracted to either pole of the actuating magnet.



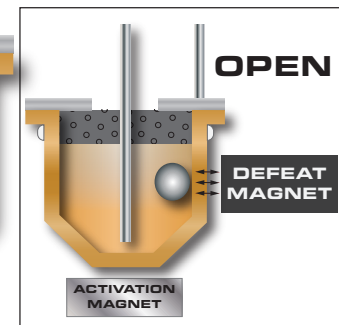
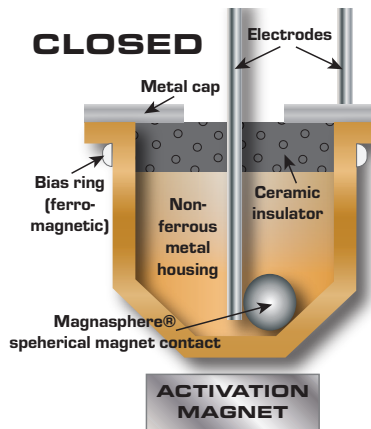
MS28A



MS29PA



MS29A



### GRI PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type | Electrical Configuration | Reed Form | Max. Initial Contact Resistance ( $\Omega$ ) | Max. Contact Rating (W) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|-----------|--------------------------|-----------|----------------------------------------------|-------------------------|------------------------------|----------------------------|
| MS28A       | Closed    | N/O                      | A         | .400                                         | 5                       | 250 AC/DC                    | .180*                      |
| MS29A       | Closed    | N/O                      | A         | .400                                         | 5                       | 250 AC/DC                    | .180*                      |
| MS29PA      | Closed    | N/O                      | A         | .400                                         | 5                       | 250 AC/DC                    | .180*                      |

\*Higher maximum switching current ratings available.

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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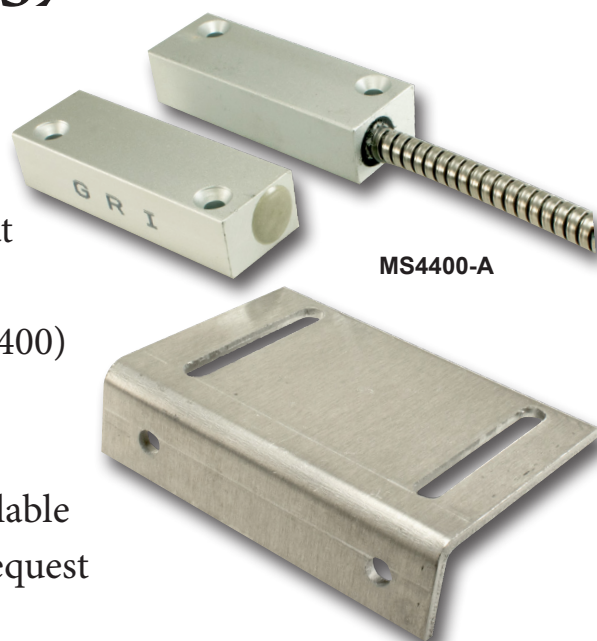
# *Aluminum Industrial Magnasphere*

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## *Aluminum Industrial Switch Set with High Security Magnasphere Technology MS4400 Series*

- ◆ Higher level of security
- ◆ Spherical magnetism
- ◆ Resistant to magnetic tamper and defeat
- ◆ Hermetically sealed
- ◆ 36" 2-conductor vinyl jacketed cable (MS4400)
- ◆ 36" armored cable (MS4400-A)
- ◆ Mounting hardware included
- ◆ Variety of optional mounting brackets available
- ◆ Built-in E.O.L. Resistors and Diodes upon request
- ◆ Lifetime Warranty
- ◆ Standard Gap 3/8"



## **INSTALLATION APPLICATIONS**

GRI's MS4400 switch series is a heavy duty, weather resistant high security industrial grade contact. As with all high security contacts the gap is significantly reduced. We recommend this switch for solid fitting doors, vaults and safes; and space #5226 if mounting on steel; and that the switch and magnet be metered for maximum gap. Please call factory for further installation instructions.

## **CONSTRUCTION**

Magnaspere's® patented technology utilizes the principal of Spherical Magnetism. The heart of the switch is a magnetic sphere, or ball contact. This sphere is housed in a durable metal housing. Completing the switch is a seal that contains the contacting electrode, insulated from the magnetic perimeter by a time proven ceramic to metal bond.

Continued on back

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# Aluminum Industrial Magnasphere

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The case or seal provides the second contact point required to complete the electrical circuit.

The seal/electrode cap is welded to the housing in an inert atmosphere providing a hermetically sealed contact.

## OPERATION

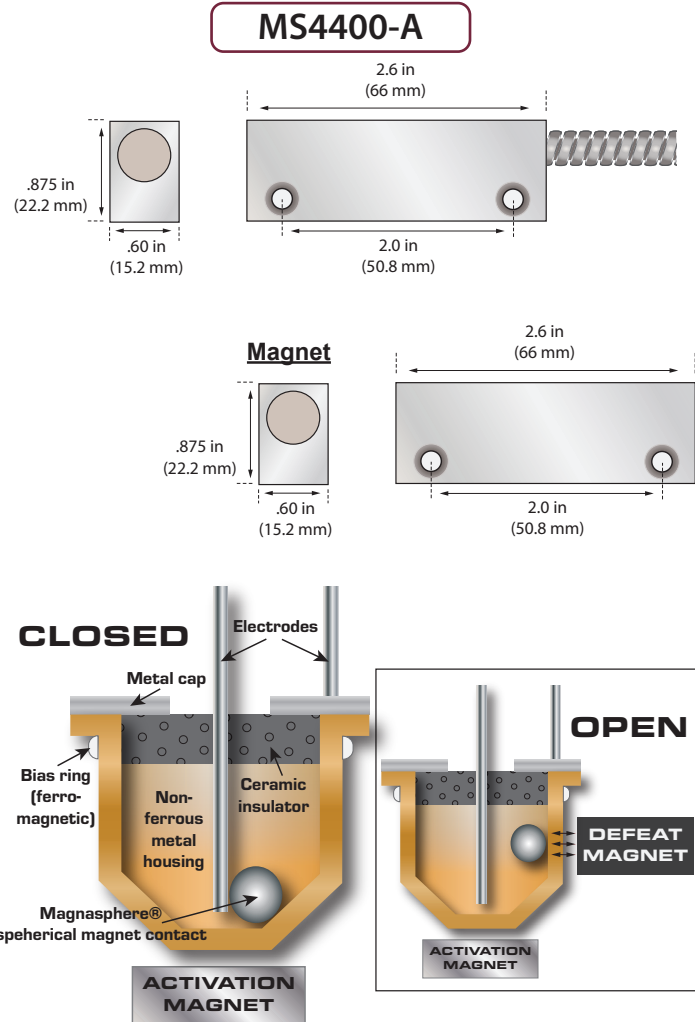
In the normally open position, the magnetic sphere is attracted to the ferromagnetic portion of the seal cap, away from the electrode. Because of this attraction the switch may be positioned in any orientation and will remain open.

When the actuator magnet approaches the switch from the end of the switch opposite the electrode, the magnetic ball is attracted to this field, and "snaps" to the bottom of the case, making contact with the electrode and case, closing the switch.

Unlike a reed switch that responds to a magnet within a global activation zone, the Magnasphere® switch responds to a magnet only within a restricted zone. A magnet outside the zone pulls the ball off center electrode to open the switch.

## PRINCIPLES OF SPHERICAL MAGNETISM:

Finite element analysis shows magnetic flux paths of the Magnasphere® magnetic ball contact. The spherical shape is not polarity sensitive and will be attracted to either pole of the actuating magnet.



### GRI PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type | Electrical Configuration | Reed Form | Max. Initial Contact Resistance ( $\Omega$ ) | Max. Contact Rating (W) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|-----------|--------------------------|-----------|----------------------------------------------|-------------------------|------------------------------|----------------------------|
| MS4400      | Closed    | N/O                      | A         | .400                                         | 5                       | 250 AC/DC                    | .180*                      |
| MS4400-A    | Closed    | N/O                      | A         | .400                                         | 5                       | 250 AC/DC                    | .180*                      |

\*Higher maximum switching current ratings available.

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# *Special Pull Apart Magnasphere*

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## *Special Purpose Pull Apart Switch Set with Magnasphere Technology MS4702 / MS4702-A*

- ◆ Higher level of security
- ◆ Spherical magnetism
- ◆ Resistant to magnetic tamper and defeat
  - ◆ Hermetically sealed
  - ◆ Heavy duty for improved durability
- ◆ Great for marinas, truck docks and any portable merchandise
  - ◆ 3 foot jacketed or armored cable
  - ◆ Custom lead lengths upon request
  - ◆ Armored disconnect cable available
  - ◆ Gray only
  - ◆ Lifetime Warranty



MS4702 / MS4702A

### INSTALLATION APPLICATIONS

The GRI MS4702-A has three parts; the switch probe, the switch receptacle and the magnet. The MS4702-A is designed for use when standard surface mount security switches won't work due to swinging gates, free moving objects, vehicle protection, worn gates/doors or expanding metal curtains. Now you can protect products and property that is kept outdoors such as recreation vehicles, golf carts, lawn mowers, ladders, truck tractor trailers, motor boats, ATV's or a host of rental equipment. To use the Pull Apart, attach the probe receptacle to a solid surface and anchor it well. Position the receptacle and switch probe so that the probe can pull out of the receptacle easily. Don't connect it at a right angle or upside down This will delay and/or alter the switch's ability to react to tampering and theft. Connect the appropriate zone from the alarm panel to the switch probe. Thread the armored cable through the item to be protected and insert the probe into the receptacle.

### CONSTRUCTION

Magnasphere's® patented technology utilizes the principal of Spherical Magnetism. The heart of the switch is a magnetic sphere, or ball contact. This sphere is housed in a durable metal housing. Completing the switch is a seal that contains

Continued on back

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# Special Pull Apart Magnasphere

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the contacting electrode, insulated from the magnetic perimeter by a time proven ceramic to metal bond.

The case or seal provides the second contact point required to complete the electrical circuit.

The seal / electrode cap is welded to the housing in an inert atmosphere providing a hermetically sealed contact.

## OPERATION

In the normally open position, the magnetic sphere is attracted to the ferromagnetic portion of the seal cap, away from the electrode. Because of this attraction the switch may be positioned in any orientation and will remain open.

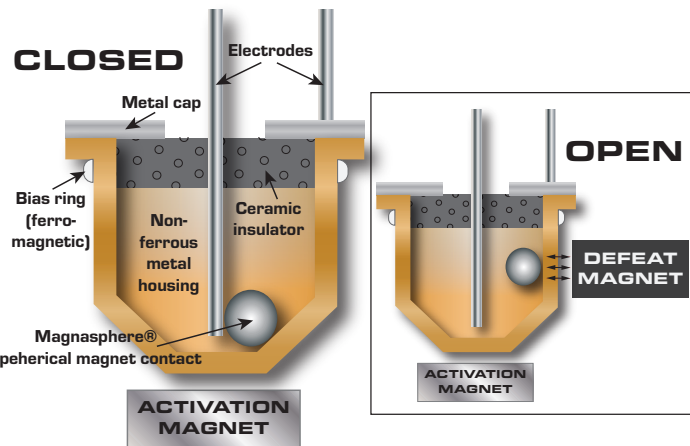
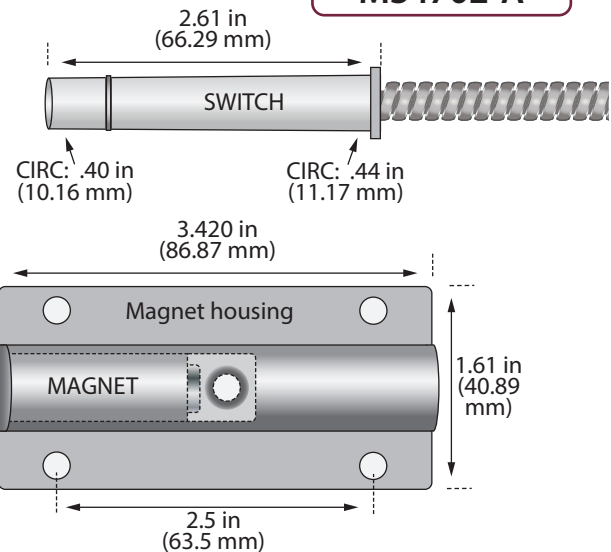
When the actuator magnet approaches the switch from the end of the switch opposite the electrode, the magnetic ball is attracted to this field, and "snaps" to the bottom of the case, making contact with the electrode and case, closing the switch.

Unlike a reed switch that responds to a magnet within a global activation zone, the Magnasphere® switch responds to a magnet only within a restricted zone. A magnet outside the zone pulls the ball off center electrode to open the switch.

## PRINCIPLES OF SPHERICAL MAGNETISM:

Finite element analysis shows magnetic flux paths of the Magnasphere® magnetic ball contact. The spherical shape is not polarity sensitive and will be attracted to either pole of the actuating magnet.

MS4702-A



### GRI PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type | Electrical Configuration | Reed Form | Max. Initial Contact Resistance ( $\Omega$ ) | Max. Contact Rating (W) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|-----------|--------------------------|-----------|----------------------------------------------|-------------------------|------------------------------|----------------------------|
| MS4702      | Closed    | N/O                      | A         | .400                                         | 5                       | 250 AC/DC                    | .180*                      |
| MS4702-A    | Closed    | N/O                      | A         | .400                                         | 5                       | 250 AC/DC                    | .180*                      |

\*Higher maximum switching current ratings available.

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Recessed ANSI Door Switch  
Concealed Hinged Door Switch DPS70R  
Engraved Wall Plates  
Tilt Sensor 4561/ RoHS Tilt Sensor 4561R  
Omni-Directional Tilt Sensor ODTS-1  
HVAC Kit / Omni-Directional HVACO Kit  
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Call Button CB-20  
On Glass Shock Sensor GB-550  
ShockTec SG-2  
Touch Sensor CT-3  
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Wire Trip Switch WT-01  
Door Alert Closed Loop  
Door Monitor 290 Series  
Garage Door Monitor DM-1  
Timed Electronic Shunt SB-2000**



# Dual Function Switches

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## AA / AC Series

- ◆ Security to access control
- ◆ Security to relays
- ◆ Security to recorders
- ◆ Access to VCR for CCTV timers
- ◆ Security to pool alarms
- ◆  Indicates U.L. 10C fire rating



## APPLICATION NOTES:

The AA & AC switches can be used in numerous security applications where you need to isolate input from two different pieces of equipment that require a signal from the same source.

The GRI "Combo" series switches are dual function reed contacts that monitor two separate functions.

By combining two reeds in one package, either two "A" forms or one "C" form, GRI offers the installer savings in labor cost along with a wide choice of switch designs for multiple applications.

Other configurations including wide gaps are available. Please contact that factory for further information.

### Part Numbers

| Surface Mount |          | Recessed | U.L. 10C<br>Fire Rated |
|---------------|----------|----------|------------------------|
| AA1100        | AC29P-A  | AA180-A  | AA180                  |
| AC1100        | AA410P   | AC180-A  | AC180                  |
| AA200         | AC410P   | AA2020   | AA184                  |
| AC200         | AA410P-A | AC2020   | AC184                  |
| AA250         | AC410P-A |          |                        |
| AC250         | AA4400   |          |                        |
| AA29P         | AC4400   |          |                        |
| AC29P         | AA4400-A |          |                        |
| AA29P-A       | AC4400-A |          |                        |

*AA denotes 2 A form reeds.  
AC denotes 1 A form reed and 1 C form reed.  
Other configurations available.  
-A after part # denotes armored cable.  
All come with standard 36 inch leads.*

### Wire Code:

|             | 1st (A)     | 2nd (A)      |
|-------------|-------------|--------------|
| AA          | Red/Black   | Green/White  |
|             |             |              |
| (A) Circuit | (C) Circuit |              |
| AC          | Black/Blue  | White - C    |
|             |             | Red - N.C.   |
|             |             | Green - N.O. |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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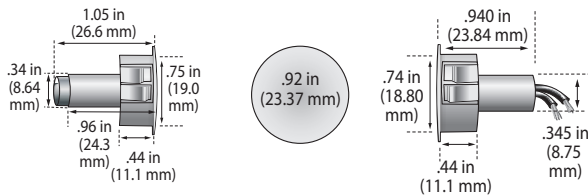
WWW.GRISK.COM



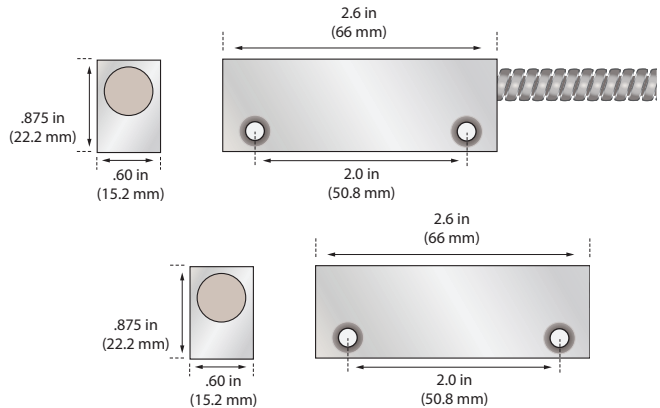
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# Dual Function Switches

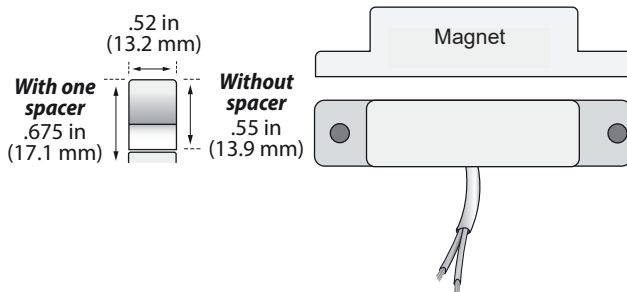
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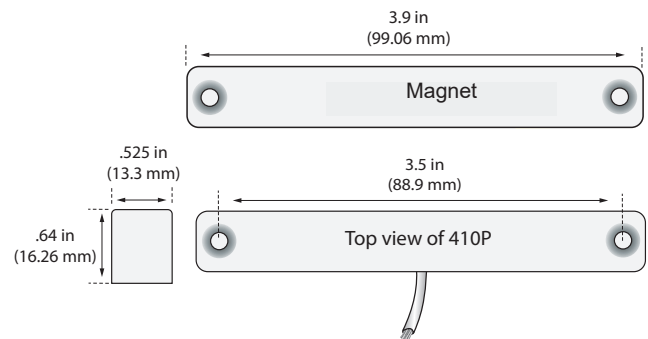
**AA/AC180**



**AA/AC4400-A**



**AA/AC29P**



**AA/AC410P**

## GRI PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type   | Electrical Configuration | Reed Form | Max. Initial Contact Resistance (Ω) | Max. Contact Rating (W) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|-------------|--------------------------|-----------|-------------------------------------|-------------------------|------------------------------|----------------------------|
| A           | Closed      | N/O                      | A         | .150                                | 10                      | 160                          | .400                       |
| C           | Open/Closed | SPDT                     | C         | .140                                | 5                       | 175                          | .250                       |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# High Current Contact Switches

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- ◆ Hermetically sealed solid tungsten contacts
- ◆ Capable of extended operation applications in extreme environments with aluminum case and high temperature wire
- ◆ Capable of switching power loads between three and 100 Watts
- ◆ 18 AWG wire to accommodate higher current loads (gray only)
- ◆ Excellent match for applications needing a reed switch to activate higher voltage components; lights, blower motors, light industrial air compressors, home water fountains, pumps, etc.
- ◆ Available in a variety of switch styles

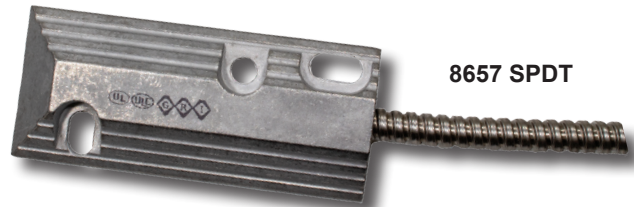
8180 HP-W SPDT



8709HP SPDT



8657 SPDT



10645 SPDT



## HS-634 Reed Specifications

|                        |                   |
|------------------------|-------------------|
| Power                  | 100 Watts Maximum |
| Switching Current      | 120 VAC Maximum   |
| Switching Current      | 3 Amp Maximum     |
| Operating Temperatures | -40°F to 257°F    |
| C-Form Reed            | SPDT              |

**Note:** Not for use on electrical 110 AC applications.

## Part Numbers

*Call factory for other available parts and part numbers with this reed.*

**WARRANTY:** One year warranty against workmanship, material and factory defects.

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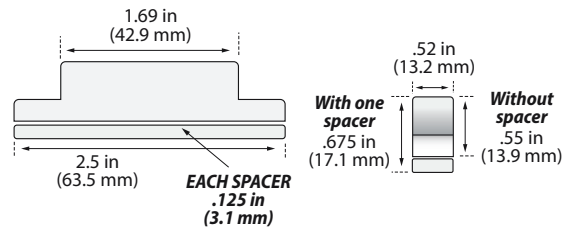


# High Current Contact Switches

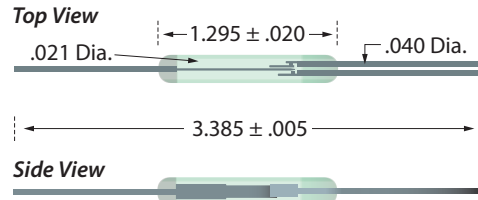
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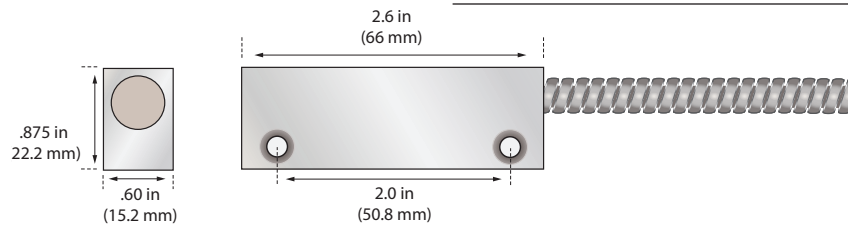
## 8180 HP-W SPDT



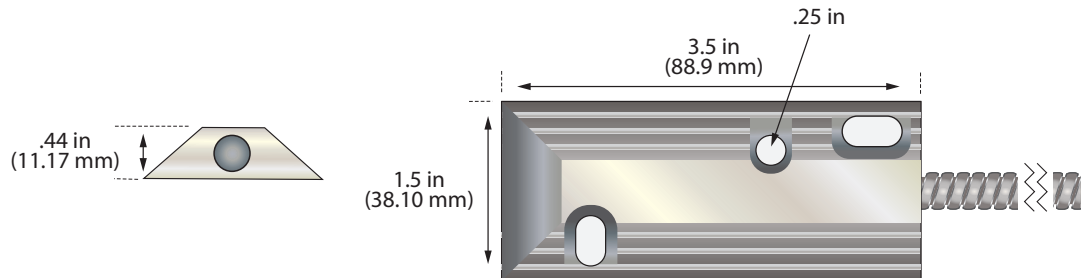
## HSR-634 Reed



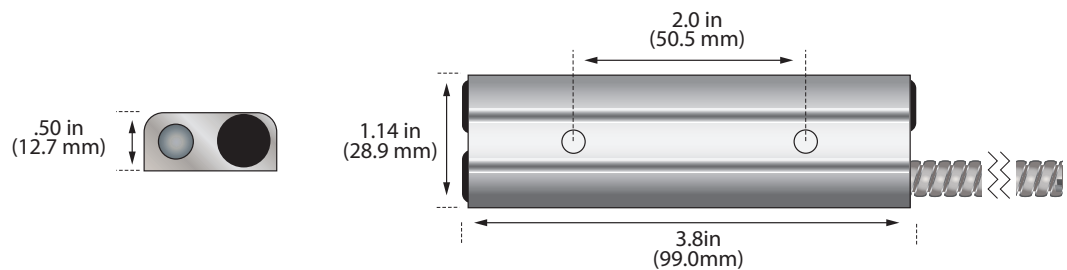
## 8709HP



## 8657 SPDT



## 10645 SPDT



### GRI PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type   | Electrical Configuration | Max. Contact Rating (W) | Max. Switching Voltage (VAC) | Max. Switching Current (A) |
|-------------|-------------|--------------------------|-------------------------|------------------------------|----------------------------|
| HS-634      | Open/Closed | SPDT                     | 3                       | 120                          | 3                          |

**WARRANTY:** One year warranty against workmanship, material and factory defects.

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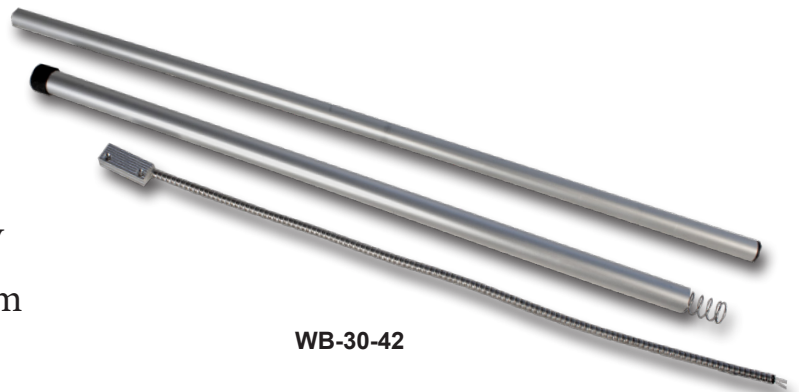
# Alarmed Window Bar

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## Window Bar Series

- ◆ Fits windows 30" - 42"
- ◆ No cutting required
- ◆ Removes easily in emergency
- ◆ Reinforced extruded aluminum
- ◆ Protects 24 - 7



WB-30-42

GRI's Alarmed Window Bars will fit windows from 30" to 42" wide with no cutting required. If window is higher than 14", to or more Window Bars may be used. The GRI Window Bars protect both sides of a sliding window even when open without triggering an alarm and can be connected to a 24 hour zone. When the bar is dislodged an alarm is activated. The GRI Alarmed Window Bars are easy to removed during an emergency and will work with both hard wired or wireless systems. The bars are designed to fit the window one way and are difficult to be installed incorrectly. The reinforced extruded aluminum will not sag or flex in high temperatures.

The various ways in which the GRI Window Bar may be mounted are: on the window frame, inside the window frame and on most angled window frames.

### Part Numbers

WB-30-42

WB-ASB (Angled Bracket Kit)

**WARRANTY:** One year warranty against workmanship, material and factory defects.

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# Alarmed Window Bar

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## INSTALLATION INSTRUCTIONS FOR WB-30-42:

### LIST OF COMPONENTS

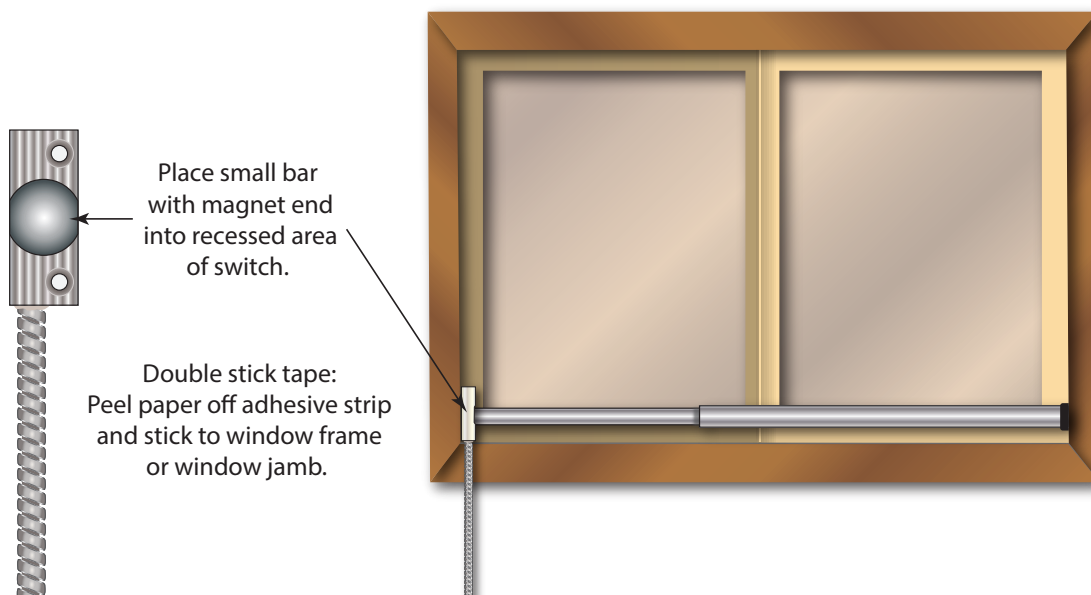
|                             |                                 |                                 |
|-----------------------------|---------------------------------|---------------------------------|
| 1 - spring                  | 1 - 20" round bar 3/4" diameter | 1 - 8504 switch                 |
| 2 - #4 x 1 screws           | 1 - 24" round bar 5/8" diameter | 1 - M-5065 magnet (in 5/8" bar) |
| 2 - #6 x 1" self-tap screws | 2 - nylon clamps                | 1 - non-slip end cap            |

The GRI Window Bars should be installed no more than 6 inches apart and no more than 6 inches from the top and bottom of the window frame. On a 14" high window, the bar should be vertically centered.

Test switch before installing by using a continuity tester or a similar device. With the leads of the switch connected to the tester, place a magnet next to switch. The contacts of the switch will open and close as the magnet is moved within range of the switch. Mount Window Bar into selected area of window, making certain it is spaced correctly as noted above. Place small end of bar into recessed area of switch. Remove backing from double stick tape on switch and install on window frame or jamb. See diagram #1. Now that the Window Bar has been installed, test the switch again.

For angled window mounting, order WB-ASB bracket kit.

**Note:** Instructions should be given on removal of barrier bars to all residents of building where window bars are in use. The Window Bar is removed by grasping the ends of the bar and pushing them to the center and pulling the bar out of the window.



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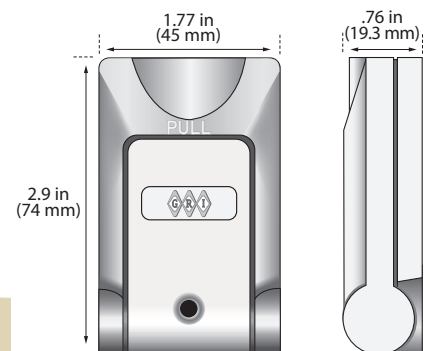
# Panic Switch

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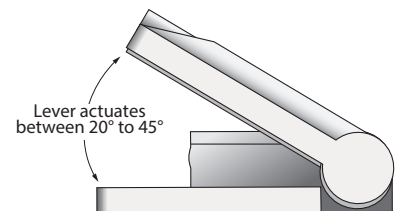
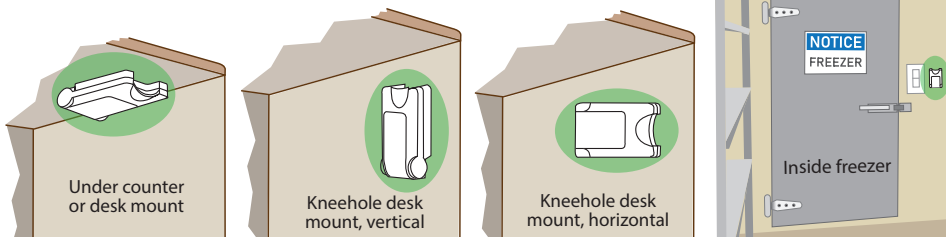


## GR3045 Series *UL pending*

- ◆ Easy installation
- ◆ Mounts underneath or on the side of desk or counter
  - ◆ Mounts horizontal or vertical
- ◆ Smooth housing prevents accidental clothing damage
  - ◆ Actuating lever designed for finger tip
- ◆ Reed contacts reset when lever is in closed position
  - ◆ Closed Loop and SPDT outputs available
- ◆ Cold temp versions for refrigerators and freezers
- ◆ Latching and Non-Latching LED indicator available
- ◆ Screw terminals and 12 ft. jacketed leads available
- ◆ Available in white



Suggested mounting options.



### Part Numbers

|          | LED                    | Loop        | Terminal             | Operating Temperature          |
|----------|------------------------|-------------|----------------------|--------------------------------|
| GR3040   | Latching-Red           | Open/Closed | 5 screw terminals    | 32°F to 140°F (0°C to 60°C)    |
| GR3040CT | Latching-Red           | Open/Closed | 12 ft jacketed leads | -40°F to 140°F (-40°C to 60°C) |
| GR3045   | No LED                 | Closed Loop | 2 screw terminals    | 32°F to 140°F (0°C to 60°C)    |
| GR3045CT | No LED                 | Closed Loop | 12 ft jacketed leads | -40°F to 140°F (-40°C to 60°C) |
| GR3046   | No LED                 | Open/Closed | 3 screw terminals    | 32°F to 140°F (0°C to 60°C)    |
| GR3046CT | No LED                 | Open/Closed | 12 ft jacketed leads | -40°F to 140°F (-40°C to 60°C) |
| GR3050   | Latching-Red/Green     | Open/Closed | 5 screw terminals    | 32°F to 140°F (0°C to 60°C)    |
| GR3055   | Non Latching-Red/Green | Open/Closed | 5 screw terminals    | 32°F to 140°F (0°C to 60°C)    |

**WARRANTY:** One year warranty against workmanship, material and factory defects.

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# Panic Switch

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## INSTALLATION

### MOUNTING INSTRUCTIONS

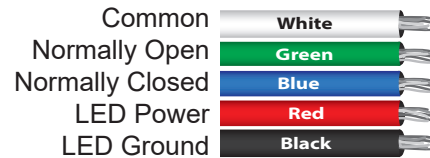
1. Determine the best mounting position so that the panic switch can be easily found and reached in an emergency, but that will not attract attention when the user activates the switch. Typical locations are on the underside of a counter top, on the side of a knee hole of a desk, in a hallway or bedroom, or near an entryway. The unit can be mounted horizontally or vertically and should be mounted low enough so that a person could reach it from the floor. Three inches of clearance above the mounting surface is required so that the lever can be fully opened.
2. Temporarily place the switch where it will be mounted and mark the screw locations.
3. Drill pilot holes or start the screws to make installing screws easier.
4. **Terminal Version:** Connect the wires to the terminals per the wiring instructions before mounting switch.
5. After wiring is complete, install screws through the switch housing and firmly secure in place.
6. **Leaded Version:** After securing switch in place, run wire cable as needed and connect wires per the wiring instructions.
7. Test unit by pulling the lever and then closing it again.

### WIRING INSTRUCTIONS

The switch circuit is not latching on all versions and will re-activate when the lever is closed. The LED circuit is either latching or non-latching. To reset the latching version, LED power must be disconnected. Adding a switch in series with the LED power to one or more Panic Switches is an easy way to reset all the latched switches.

#### WIRING DIAGRAM FOR LEADED VERSIONS

##### GR3040CT



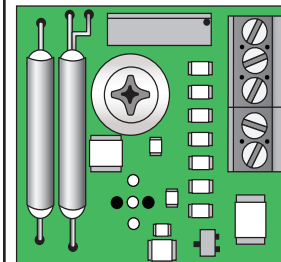
##### GR3045CT



##### GR3046CT



#### WIRING DIAGRAM FOR TERMINAL VERSIONS



Normally Closed  
Normally Open  
Common  
LED Ground  
LED Power

#### GRI PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type   | Electrical Configuration | Reed Form | Max Initial Contact Resistance | Max Contact Rating (W) | Max Switching Voltage (VDC) | Max Switching Current (A) |
|-------------|-------------|--------------------------|-----------|--------------------------------|------------------------|-----------------------------|---------------------------|
| GR3040      | Open/Closed | SPDT                     | C         | 0.140                          | 5                      | 175                         | 0.250                     |
| GR3040CT    | Open/Closed | SPDT                     | C         | 0.140                          | 5                      | 175                         | 0.250                     |
| GR3045      | Closed Loop | N/O                      | A         | 0.150                          | 10                     | 160                         | 0.500                     |
| GR304CT     | Closed Loop | N/O                      | A         | 0.150                          | 10                     | 160                         | 0.500                     |
| GR3046      | Open/Closed | SPDT                     | C         | 0.140                          | 5                      | 175                         | 0.250                     |
| GR3046CT    | Open/Closed | SPDT                     | C         | 0.140                          | 5                      | 175                         | 0.250                     |
| GR3050      | Open/Closed | SPDT                     | C         | 0.140                          | 5                      | 175                         | 0.250                     |
| GR3055      | Open/Closed | SPDT                     | C         | 0.140                          | 5                      | 175                         | 0.250                     |

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# Hold-Up Switch

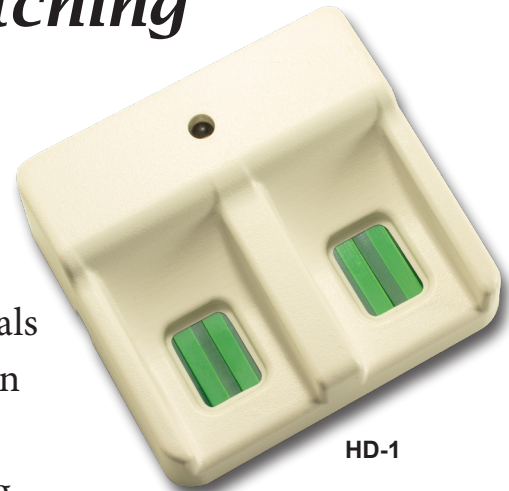
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## HD-1 Latching / Non-Latching



- ◆ Silent operation
- ◆ Tamper resistant
- ◆ Low profile
- ◆ End of line resistor terminals
- ◆ LED indicates armed state & alarm condition
- ◆ No moving parts
- ◆ No reset key to lose
- ◆ Jumper determines latching or non-latching



HD-1

The GRI Hold-Up Devices can be installed in fast food restaurants, banks, mini-marts, health care facilities, jewelry stores or any installation that calls for an absolutely silent emergency alarm. The unique design features a glowing green LED to indicate an armed state. To insure against accidental tripping, both finger pads must be touched simultaneously. When this occurs, the LED glows red and the zone will go into the alarm condition. To reset to the armed condition of the latching option, simply touch the left finger pad. An accidental bump or touch will not trigger the GRI Hold-Up Devices. CT technology allows even an operator wearing gloves to activate sensor. Perfect Hold-Up Devices for fast food restaurants.

### OPERATION PARAMETERS:

Normally closed loop configuration.

12 volts DC required for operation at installation.

Silent operation.

Modern case design for installation above or below a counter or tabletop.

Easy installation: Hookup zone wires and mount on surface. Mounting screws included.

### Specifications:

#### **Relay Contacts:**

|                  |                |
|------------------|----------------|
| Relay Type       | Solid State    |
| Relay Current    | 0.25 amp       |
| Relay Resistance | 4.ohms typical |

#### **Regulated Power Supply Requirements:**

|         |              |
|---------|--------------|
| Voltage | 12 volts DC  |
| Current | 25 milliamps |

**WARRANTY:** One year warranty against workmanship, material and factory defects.

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# Hold-Up Switch

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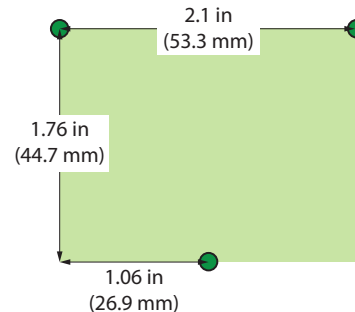


## INSTALLATION INSTRUCTIONS FOR HD-1:

- 1) Drill a hole pattern as indicated using a #32 drill.
- 2) Connect power lines (+12 volts DC and Ground) to holdup terminal block. Then connect zone wires to Common and Z lines to security panel. If using an E.O.L. resistor, place one end to the resistor on Z and the other end on EOL.
- 3) Mount unit base in desired position using the three, 3/4 inch pan head screws provided. Snap cover onto base.
- 4) Apply power to the unit. The armed state for both latching and non-latching hold-up options is indicated by the green LED being illuminated.

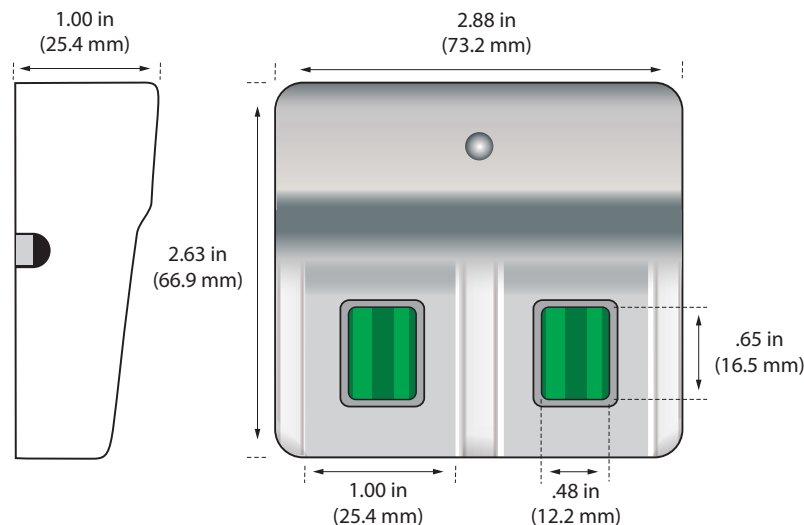
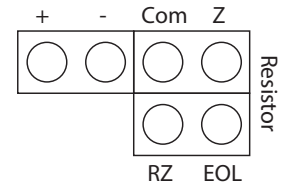
When both pads are touched at the same time, the armed green light will go out and the zone will be put into an alarm condition indicated by the red LED.

The non-latching option unit will automatically reset the output once the pads are released. To reset the output on the latching option, touch the left finder pad. Note that the LED will always latch red after going into the alarm and must be reset.



### JUMPER SETTING

-  Non-Latching
-  Latching



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# Quick Disconnect Cord



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## QDC-20

- ◆ Weather pack nylon connectors environmentally sealed to withstand exposure to temperature and moisture
- ◆ Mounting cases potted with epoxy
  - ◆ Idea for transferring power across gates, overhead doors and other openings where a standard switch will not work due to loose fitting, worn or damaged doors
- ◆ Reinforcement steel cables with plastic coating to prevent scratching
  - ◆ Heavy duty 18AWG two conductor cable
  - ◆ Overall length approximately 20 inches
- ◆ Connectors only fit together one way and mount easily with three screws
  - ◆ QDC-20 can be installed in-line for multiple door openings
- ◆ *QDCW-20 has 12" 8AWG two conductor cable leads instead of screw terminals to prevent corrosion in harsh environments*



| <u>Part Number</u> | <u>Max Switching Voltage (VDC)</u> | <u>Max Switching Current (A)</u> |
|--------------------|------------------------------------|----------------------------------|
| QDC-20             | 200                                | 2 Amps                           |
| QDCW-20            | 200                                | 2 Amps                           |

**WARRANTY:** One year warranty against workmanship, material and factory defects.

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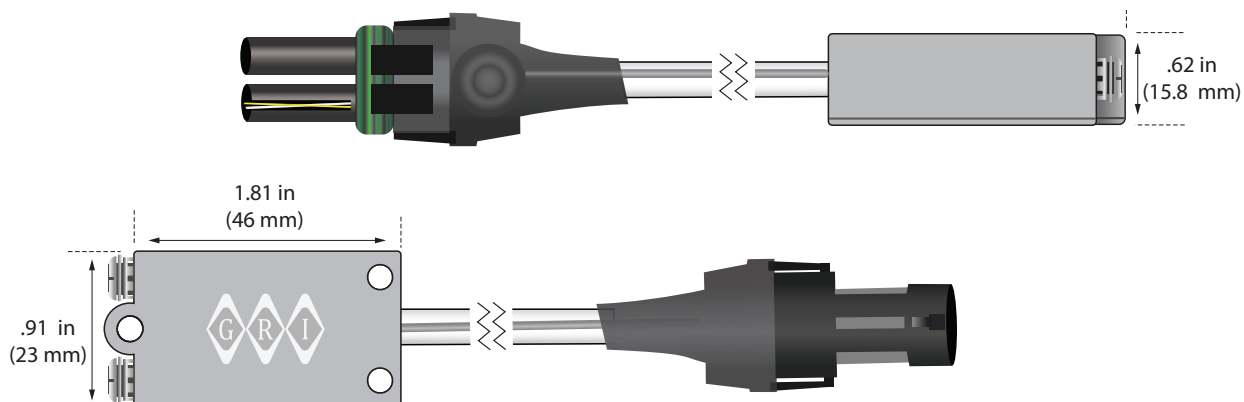
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# Quick Disconnect Cord

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QDC-20



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# Service Repair Connector

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## SRC-12

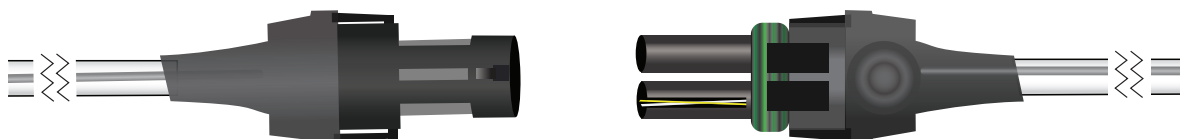
*Rugged, Fast and Simple*

- ◆ Weather pack nylon connectors environmentally sealed to withstand exposure to temperature and moisture
- ◆ 12" two conductor cable



SRC-12

This connector is used in the agricultural and industrial industries for outdoor use. Ideal for use on HVAC and other applications for removal of equipment for service and repair.



| <u>Part Number</u>       | <u>Max Switching<br/>Voltage (VDC)</u> | <u>Max Switching<br/>Current (A)</u> |
|--------------------------|----------------------------------------|--------------------------------------|
| SRC-12                   | 200                                    | 2 Amps                               |
| <u>Temperature Range</u> | -40°F to 257°F                         | -40°C to 125°C                       |

**WARRANTY:** One year warranty against workmanship, material and factory defects.

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# Recessed ANSI Switch

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## ANSI Switch

- ◆ UL Listed
- ◆ Optimum concealment application
  - ◆ One inch gap on S.P.D.T.
  - ◆ 36" jacketed cable lead, custom lengths available
- ◆ Easy install replaces standard ANSI stainless steel door plate
- ◆ Covert installation enhances resistance to tampering or compromise



### Part Number

229  
229PD

SPDT  
DPDT

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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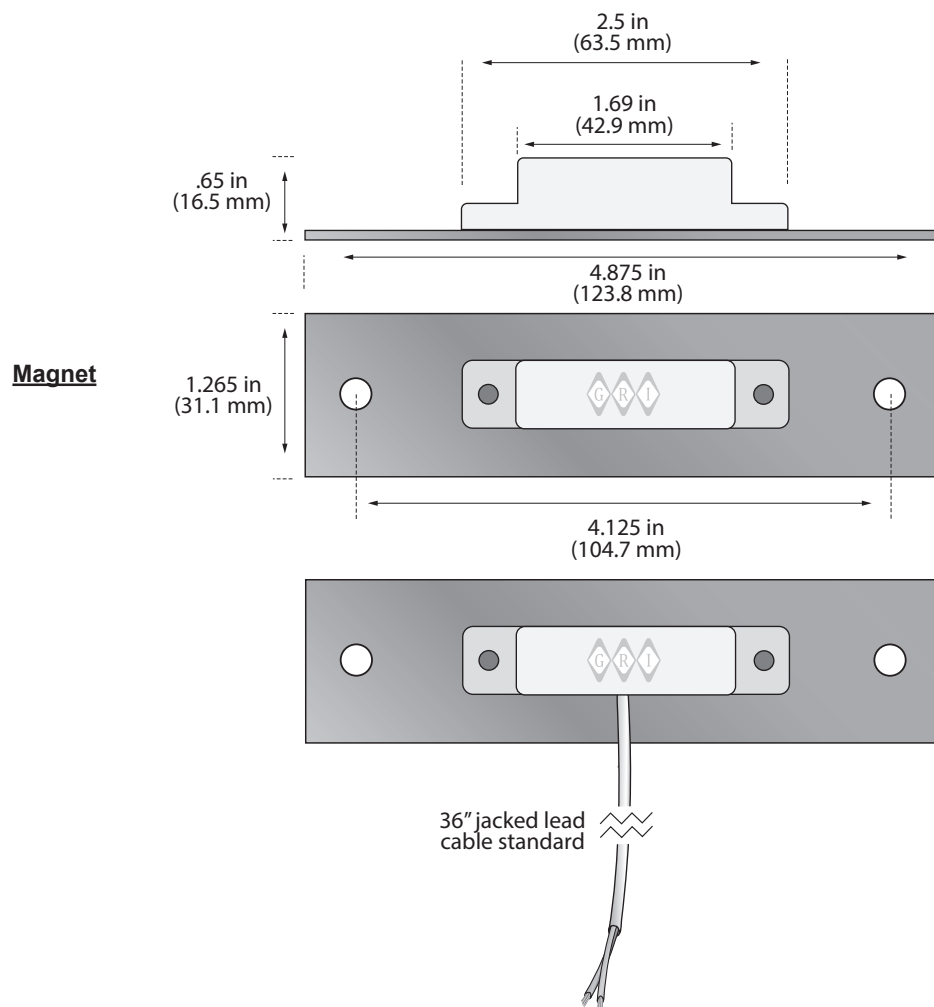
163

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# Recessed ANSI Switch

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## GRI PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type   | Electrical Configuration | Reed Form | Max. Initial Contact Resistance ( $\Omega$ ) | Max. Contact Rating (W) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|-------------|--------------------------|-----------|----------------------------------------------|-------------------------|------------------------------|----------------------------|
| 229         | Open/Closed | SPDT                     | C         | .140                                         | 5                       | 175                          | .250                       |
| 229PD       | Open/Closed | DPDT                     | C         | .140                                         | 5                       | 175                          | .250                       |

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# Concealed Contact Hinged Door Positioning Switch

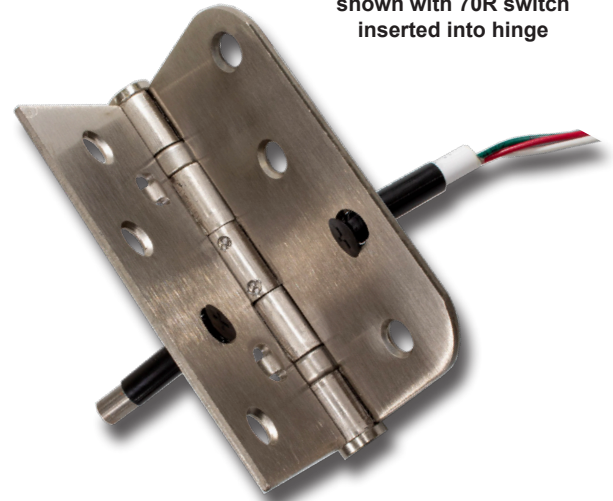
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## DPS70R

- ◆ Looks like a standard screw head
- ◆ Snaps in and locks into place in existing screw hole in hinge
  - ◆ Simple patented design
  - ◆ Paintable fake screw head blends in
  - ◆ Standard SPDT
  - ◆ Allow for all access control hardware to be in a central location
- ◆ Alarm contact and REX wires can all be located in a small section of the door
- ◆ Switch is a high grade GRI 70R Series
- ◆ Tested by Warnock Hersey in a burn test for standard doors and frames rated up to 3 hours
- ◆ Use only a non-ferrous pivots and hinges

- Tested and listed for use on up to 3 hour fire rated doors and frames.
- Available standard as SPDT (DPS70R)
- Anywhere you have a hinge, you can have a contact.
- Patented, unique, cost saving design. Patent # 6,724,285.
- Remove one of the center screws on each side, snap in housing, insert switch and magnet (see instruction included with product).
- Installs in just minutes, stays securely in place.
- Simple, U.L. listed, inexpensive design.
- Can be painted to match your hinge.



DPS70R  
shown with 70R switch  
inserted into hinge

### Included:

- 2 adapters (1 for magnet, 1 for switch)
- 70R switch and magnet set (hinges not included).
- 5 sets per bag.

See DPS70R specs in 50R Recessed Switch section of catalog or website.



DPS70R  
close up of  
adapters



**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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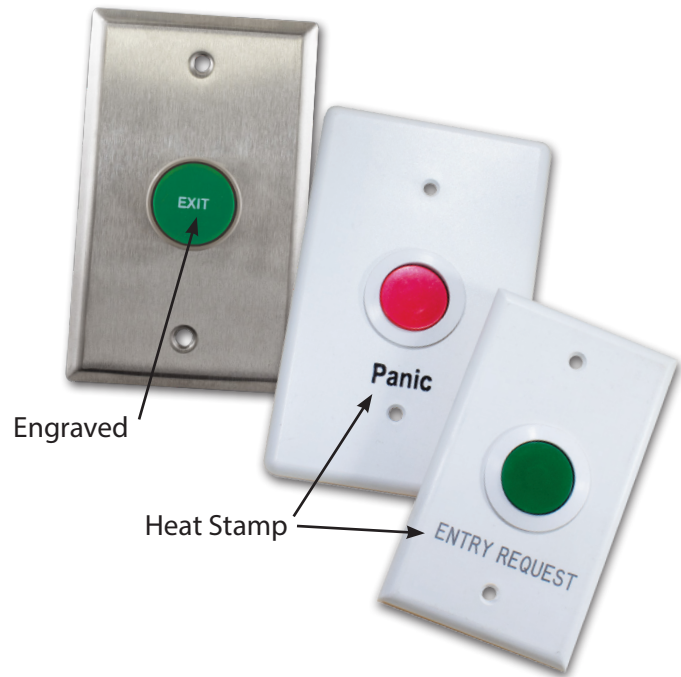


# Engraved Wall Plates

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- ◆ Button and collar available in white, black, red, green and blue
- ◆ Custom engraving or heat stamp
- ◆ Available in surface mount, small and oversized recessed single gang white plastic
- ◆ Oversized plate fits standard single gang box
- ◆ Surface mount has hole in back of box for switch wires



## Part Numbers

### Dimensions

Small Recessed  
Oversized Recessed  
Surface Mount

2.66" W x 4.46" L  
3.38" W x 5.41" L  
3.38" W x 5.41" L x 1.57" D

### SPDT

PP-30  
PP-32  
PP-34

## GRI PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type   | Electrical Configuration | Reed Form | Max. Initial Contact Resistance ( $\Omega$ ) | Max. Contact Rating (W) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|-------------|--------------------------|-----------|----------------------------------------------|-------------------------|------------------------------|----------------------------|
| PP-30       | Open/Closed | SPDT                     | C         | .100                                         | 5                       | 175                          | .250                       |
| PP-32       | Open/Closed | SPDT                     | C         | .100                                         | 5                       | 175                          | .250                       |
| PP-34       | Open/Closed | SPDT                     | C         | .100                                         | 5                       | 175                          | .250                       |

*Special: \$15 set up fee, \$0.12 per character.*

**WARRANTY:** One year warranty against workmanship, material and factory defects.

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# Engraved Wall Plates

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- ◆ Standard or Custom Design    ◆ Momentary On / Off Action    ◆ Alternate Push On / Push Off Action
- ◆ Custom Design    ◆ Engraving and Silk Screening    ◆ Stainless Steel or White Plastic



| <u>Part Number</u> | <u>Description</u>                                                                                                                                    |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| SP 13              | Single gang stainless steel plate with red / green LED's / optional static lens with "D" hole.<br>Also available in white plastic.                    |
| SP 17              | Single gang stainless steel plate with one *red panic button with guard ring.<br>Also available in white plastic.                                     |
| NSP 17             | Narrow gang stainless steel plate with one button (your choice of button color and engraving).                                                        |
| SP 18              | Single gang stainless steel plate with one *red panic button and one **green general purpose button with guard ring. Also available in white plastic. |
| SP 20              | Single gang stainless steel plate with red / green LED's / optional static lens.<br>Also available in white plastic.                                  |

\* Momentary action reed switch with normally open contacts (red panic button).

\*\* Alternate action switch with normally open contact (green general purpose button).

## Other Models Available - Ask your GRI Representative

|            |                                   |
|------------|-----------------------------------|
| Series PP  | Single gang plastic plate         |
| Series SP  | Single gang stainless steel plate |
| Series DSP | Double gang stainless steel plate |
| Series DPP | Double gang plastic plate         |

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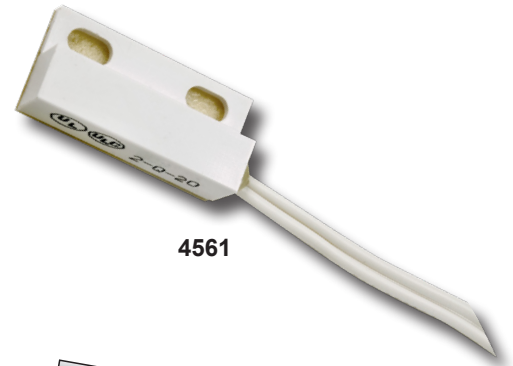
# Tilt Sensor

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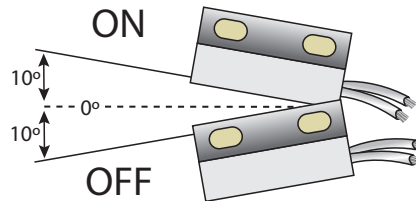
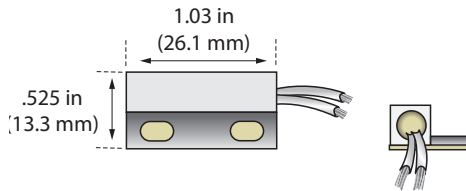


## 4561

- ◆ Attractive miniature profile
- ◆ Senses movement or removal of museum pieces, paintings, valuable art objects
- ◆ Senses tampering or movement of equipment covers
  - ◆ Signals an alarm if equipment is moved



4561



The GRI Tilt Sensor for a variety of applications where accurate detection of tampering is critical. The GRI 4561 was designed for use in a closed or open loop zone. The switch is incredibly durable and is hermetically sealed. Operation is based on the tilting of the sensor more than 10°. Using the wires as a reference point, tilt the switch toward the wires and the circuit is closed. Tilting away from the wires opens the circuit. The GRI 4561 Tilt Sensor is very precise and accurately assures long reliable service in adverse environments.

**Additional Applications:** May be used on computer equipment as well as television or other valuables in hotels or apartments. Use as a tamper switch on hood convenience lights or as a hatch open indicator. The GRI 4561 Tilt Sensor can be used in any situation where the movement or removal of objects must be monitored. The GRI 4561 can be mounted with either screws or adhesive.

### Specifications: Ratings

#### AC Rating

.5 Amps at 30 Volts AC  
.25 Amps at 120 Volts AC  
.2 Amps at 240 Volts AC

#### DC Rating

.5 Amps at 30 Volts DC  
.2 Amps at 120 Volts DC  
.1 Amps at 240 Volts DC

**WARRANTY:** One year warranty against workmanship, material and factory defects.

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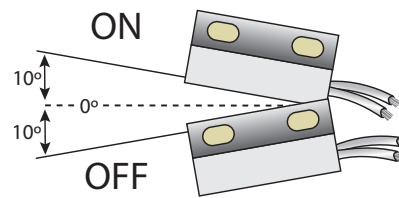
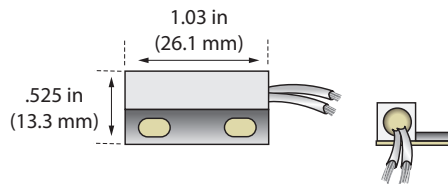
# Tilt Sensor RoHS Compliant

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## 4561R

- ◆ Attractive miniature profile
- ◆ Senses movement or removal of museum pieces, paintings and valuable art
- ◆ Senses tampering or movement of equipment covers
- ◆ Signals an alarm if equipment is moved



The GRI RoHS Tilt Switch fits a variety of applications where accurate detection of tampering is critical. The GRI 4561R was designed for use in a closed or open loop zone. The switch is incredibly durable and is hermetically sealed. Operation is based on the tilting of the sensor more than 10°. Using the wires as a reference point, tilt the switch toward the wires and the circuit is closed. Tilting away from the wires opens the circuit.

**Additional Applications:** May be used on computer equipment as well as television or other valuables in hotels or apartments. The GRI 4561R Tilt Switch can be used in any situation where the movement or removal of objects must be monitored. Not recommended for HVAC or areas with vibration or shock. The GRI 4561R can be mounted with either screws or adhesive.

| <u>Specifications</u> |                    |           |
|-----------------------|--------------------|-----------|
| Ratings:              | Switching Voltage  | 60VAC Max |
|                       | Switching Current  | 0.25A Max |
|                       | Switching Capacity | 5VA Max   |

**WARRANTY:** One year warranty against workmanship, material and factory defects.

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# Omni-Directional Tilt Sensor

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## ODTS-1 & 2

- ◆ Operating Temperature  
-4°F to 140°F (-20°C to 60°C)
- ◆ Senses tilts in any direction of 15° or more
  - ◆ Only required on tilt sensor to detect tilts in any direction
    - ◆ 24" jacketed cable
- ◆ **ODTS-2 is encased in aluminum housing**
- ◆ Can be used to sense: tampering or removal of museum pieces paintings and valuable objects; removal of equipment covers; vandalism or theft of computers, televisions and other equipment; removal or opening of access doors and hatches

### DESCRIPTION:

The GRI Omni-Directional Tilt Sensor can sense tampering and removal of equipment and valuable objects. It senses movement by detecting tilts in any direction of more than 15°. Most tilt sensors on the market today only sense tilts in one direction. Being able to detect tilts in any direction with only one switch gives and added security and value.

### INSTRUCTIONS:

The ODTS-1 needs to be mounted on a surface so that the switch is level and the cable is coming out of the bottom of the case. When the switch is level the circuit is closed. Tilt the switch in any direction more than 15° and the circuit will open. The switch should be mounted with screws to assure proper operation and prevent false alarms.

**Note: If you have any other mounting or case requirements or need a different operating angle, contact GRI.**

**NOT FOR SALE IN CALIFORNIA.**

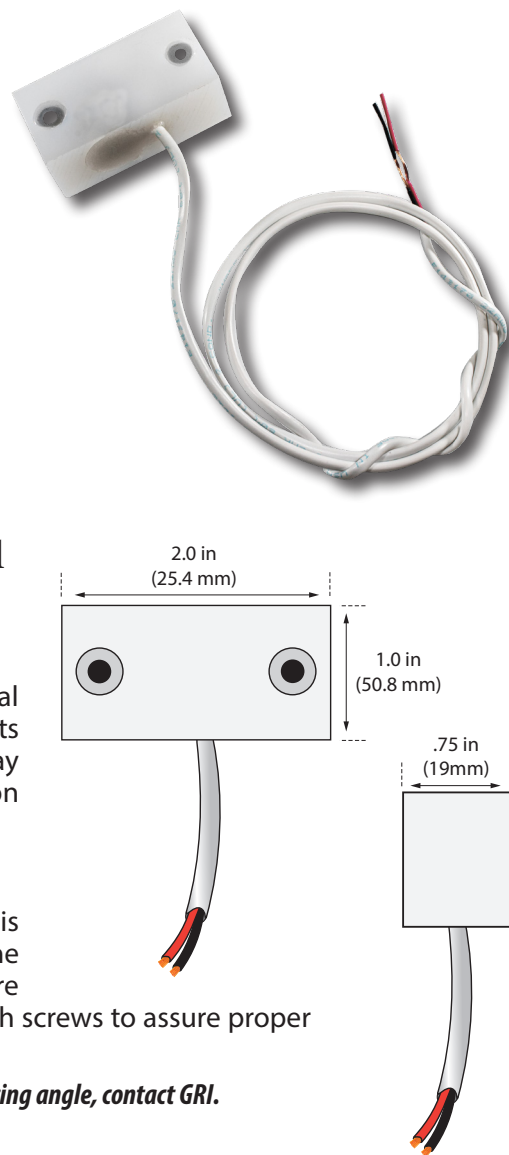
### GRI PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type | Electrical Configuration | Max. Contact Resistance (Ω) | Max. Contact Rating (VA) | Max. Switching Voltage (VAC) | Max. Switching Current (A) | Operating Angle |
|-------------|-----------|--------------------------|-----------------------------|--------------------------|------------------------------|----------------------------|-----------------|
| ODTS-1      | Closed    | n/c                      | 5                           | 200                      | 120                          | 1.5                        | 15°±3°          |
| ODTS-2      | Closed    | n/c                      | 5                           | 200                      | 120                          | 1.5                        | 15°±3°          |

**WARRANTY:** One year warranty against workmanship, material and factory defects.

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# HVAC Kit

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## HVAC Kit

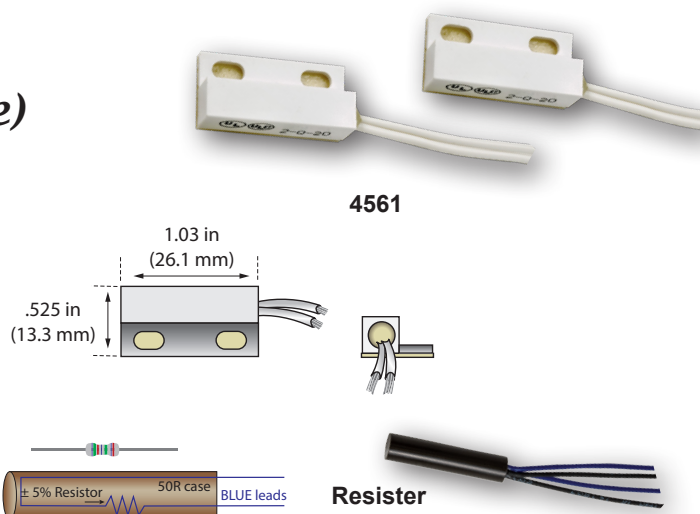
*HVAC-(specified resistor value)*

*Example: HVAC-2.2K*

*HVAC-5.6K*

### Included

- 2 - 4561 Tilt Sensors
- 1 - Specified resistor pack w/72" leads
- 4 - 4" nylon wire ties



### HVAC KIT:

The HVAC Kit is designed to help prevent loss of air conditioning coils on homes and commercial building by the use of two or more 4561 Tilt Switches and panel specific Resistor R1-72# (resistor value, i.e. 2.2).

### INSTALLATION:

The two or more Tilt Switches are placed in opposite corners of the covers of the air conditioner and wired in series in a closed loop as a tamper of the cover (optional reed switch can be added). If the cover is tipped or removed you will get an alarm signal. An all weather disconnect plus for servicing the unit may be added. (See 4561 Tilt cut sheet for installation.)

The R1-72-# resistor will be epoxied somewhere in the air conditioner so not to interfere with the operation of the unit. Taking one of the wires one way and one wire the other, loop the wires through the coils of the unit and non-moving parts using wire ties. If the wire is cut or disconnected the resistor value shows a loss to the panel and you have an alarm condition. You may want to put an all weather connector for service of unit on this zone, if not, you can wire the R1-72-# to the security panel.

### OVERVIEW:

The resistor is your security device as it is looped through the air conditioner or any object you would like to secure by epoxying the R1-72-# to the unit. Use plastic ties to secure the wire to the unit and any part of the unit that you can go through or around. You want the R1-72-# wired so that it can't be removed from the air conditioner without being cut or disconnected, this is your EOL. That is what is giving you supervision of the unit to the panel. The Tilt Switch is just one more step to help you secure the unit. You can also add GRI reed switches (4460A) to the cover if you like. For best results use two zones on your panel, if not, you can use one zone in series with all devices.

**WARRANTY:** One year warranty against workmanship, material and factory defects.

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# HVAC Kit Omni-Directional

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## HVACO Kit

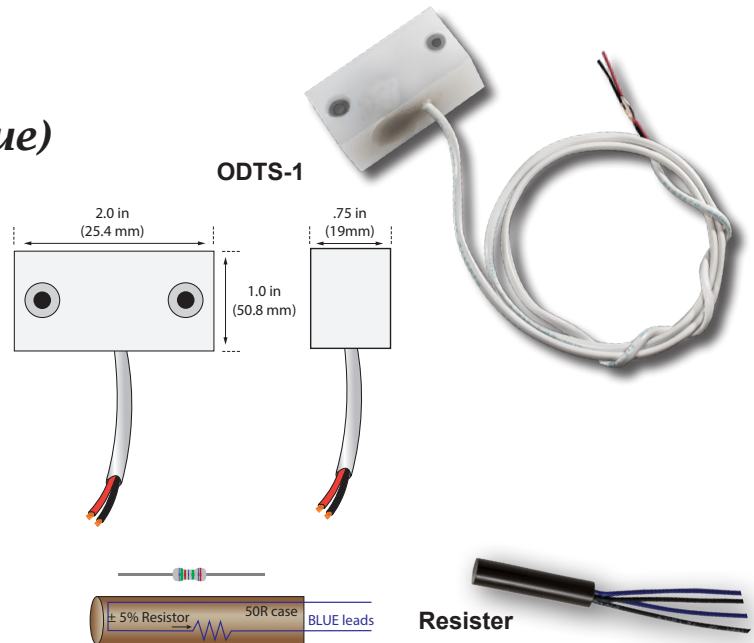
*HVACO (specified resistor value)*

**Example: HVAC-2.2K**

**HVAC-5.6K**

### Included

- 1 - ODTS-1 Omni-Directional Tilt Sensor w/24" Jacketed Cable
- 1 - Specified resistor pack w/72" leads
  - 4 - 4" nylon wire ties



### HVAC KIT:

The HVACO Kit is designed to help prevent loss of air conditioning coils on homes and commercial building by the use of one ODTS-1 Tilt Switch and panel specific resistor R1-72-# (resistor value, i.e. 2.2).

### INSTALLATION:

The ODTS-1 needs to be mounted inside the cover of the air conditioner and wired in series in a closed loop as a tamper of the cover (optional reed switch can be added). If the cover is tipped or removed you will get an alarm signal. An all weather disconnect plus for servicing the unit may be added. (See 4561 Tilt cut sheet for installation.)

The R1-72-# resistor will be epoxied somewhere in the air conditioner so not to interfere with the operation of the unit. Taking one of the wires one way and one wire the other, loop the wires through the coils of the unit and non-moving parts using wire ties. If the wire is cut or disconnected the resistor value shows a loss to the panel and you have an alarm condition. You may want to put an all weather connector for service of unit on this zone, if not, you can wire the R1-72-# to the security panel.

### OVERVIEW:

The resistor is your security device as it is looped through the air conditioner or any object you would like to secure by epoxying the R1-72-# to the unit. Use plastic ties to secure the wire to the unit and any part of the unit that you can go through or around. You want the R1-72-# wired so that it can't be removed from the air conditioner without being cut or disconnected, this is your EOL. That is what is giving you supervision of the unit to the panel. The Tilt Switch is just one more step to help you secure the unit. You can also add GRI reed switches (4460A) to the cover if you like. For best results use two zones on your panel, if not, you can use one zone in series with all devices.

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# Home Nurse Call System

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## NC-20 Series

- ◆ Instant alarm
- ◆ Signaling device
- ◆ Self contained
- ◆ Local alarm and flashing LED
- ◆ 2 Form C relays
- ◆ Microprocessor controlled
- ◆ Low battery indicator



NC-20  
NC-21 Instant On

### APPLICATION:

The NC-20 Series is designed as a signaling device for use as a self contained Home Nurse Call System. The GRI Model NC-20 will sound a local alarm and flash LED indicator, should anyone press the supplied (GRI CB-20) Call Button. The GRI NC-20 is also equipped with a form C relay output connections for use with external signaling devices.

### DESCRIPTION:

The GRI Home Nurse Call System uses a microprocessor to monitor the open loop momentary push button (Call Button), the reset/cancel button, the supply voltage and provides control for sounder, LED and relay outputs. The Nurse Call System is set to alarm the instant the Call Button is depressed. Other features for the NC-20 would include and adjustable sounder volume, power/alarm LED indicator, low battery indicator and (2 form C relay) contacts for control of external devices.

The NC-20 and NC-21 have two form C relay contacts that will close or open on alarm for signal output. On the NC-20, once the alarm sounds, you will have a 60 second delay before tripping the relays so the caregiver has time to reset the alarm before the other device, such as a security control, phone dialer or remote sounder, is triggered. On the NC-21 the alarm sounds and the relays trip, so the caregiver can respond as soon as the button is pushed. This allows for other devices to be tripped, such as remote sounder, light or control panel in another location to inform the caregiver of the patient's needs. This give you two options; 60 second delay with the NC-20 and the instant on with the NC-21 to interface with up to two other devices at the same time as needed.

**WARRANTY:** One year warranty against workmanship, material and factory defects.

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# Home Nurse Call System

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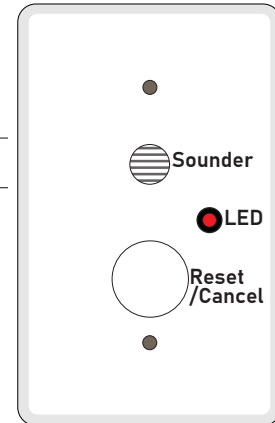


**NC-20  
& NC-21**

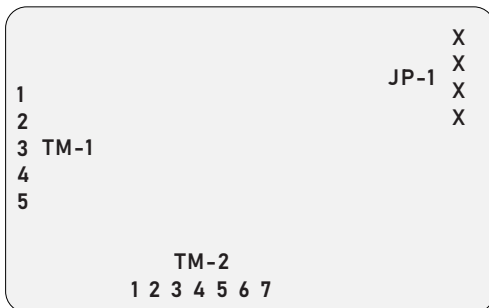
## INSTALLATION WIRING DIAGRAM

for multiple call buttons

If more than one Call Button is used, the switches should be connected in parallel.



## TERMINAL CONNECTIONS AND JUMPERS



| <u>TERMINAL BLOCK TM1</u> |                           | <u>JUMPER / NO JUMPER</u>           |             |
|---------------------------|---------------------------|-------------------------------------|-------------|
| 1                         | External Power (+)        | <div><div>X</div><div>X</div></div> | Full Volume |
| 2                         | Ground                    | <div><div>X</div><div>X</div></div> |             |
| 3                         | Remote Reset/Delay Switch | <div><div>X</div><div>X</div></div> |             |
| 4                         | Call Button -             | <div><div>X</div><div>X</div></div> |             |
| 5                         | Call Button +             | <div><div>X</div><div>X</div></div> | 3/4 Volume  |
|                           |                           | <div><div>X</div><div>X</div></div> |             |
|                           |                           | <div><div>X</div><div>X</div></div> |             |
|                           |                           | <div><div>X</div><div>X</div></div> |             |
|                           |                           | <div><div>X</div><div>X</div></div> |             |
| <u>TERMINAL BLOCK TM2</u> |                           |                                     |             |
| 1                         | Relay N/O                 | <div><div>X</div><div>X</div></div> | 1/2 Volume  |
| 2                         | Relay Common              | <div><div>X</div><div>X</div></div> |             |
| 3                         | Relay N/C                 | <div><div>X</div><div>X</div></div> |             |
| 4                         | Relay N/O                 | <div><div>X</div><div>X</div></div> |             |
| 5                         | Relay Common              | <div><div>X</div><div>X</div></div> |             |
| 6                         | Relay N/C                 | <div><div>X</div><div>X</div></div> |             |

It is suggested that applied voltage not exceed 15 VDC and surge protection, such as the GRI SC-1 Current Sensor, be used between the power supply and all GRI Low Voltage Alarms using eternal power.

**NOTE: Unit will function at minimum 5VDC at a very limited sounder volume. This power level is considered total battery failure.**

## SPECIFICATIONS

|                            |                                |                            |           |
|----------------------------|--------------------------------|----------------------------|-----------|
| Battery Type               | Standard 9 Volt                | Relay Contacts             |           |
| Battery Life               | Approximately 3-6 months       | Nominal Switching Capacity | 2A 30 VDC |
| External Power             | 9 to 12 VDCa                   | Max Switching Power        | 60 Watts  |
| Max. Input Power           | 40 mA                          | Max Switching Current      | 2 Amps    |
| Recommended External Power | 12V DC 500 mA Regulated Output |                            |           |
| Low Battery Mode           | 6.5V DC                        |                            |           |
| Sounder Rated              | 85 dB at 10 ft. (3.5 M)        |                            |           |
| Switch                     | Open Loop                      |                            |           |

**WARRANTY:** One year warranty against workmanship, material and factory defects.

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# Call Button

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## CB-20 Series

- ◆ Nurse call for medical facilities
- ◆ Panic switch for the elderly
- ◆ Mechanical type call button
  - ◆ Momentary
- ◆ Button legend engraving available
- ◆ Supervisory loops available upon request
  - ◆ 10' two conductor #22AWG vinyl jacketed lead standard
  - ◆ Optional 10' two conductor #18AWG heavy duty jacketed lead



CB-20

### Part Number

#### Open Loop

CB-20

CB-20HD

#### Momentary Action

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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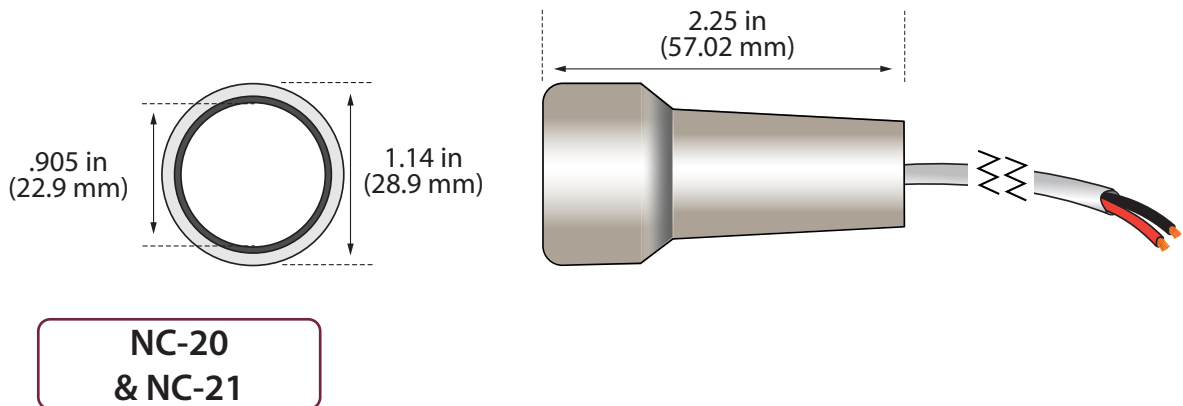
# Call Button

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## INSTALLATION APPLICATIONS

Ideal for any situation, the GRI CB-20 is a hand held, mechanical Call Button, designed for use in medical facilities such as hospitals, assisted living and nursing homes to alert the staff to emergency situations with residents. They are also designed for use in residential bedrooms, baths, workrooms and other areas where some type of annunciation may be required, particularly where elderly persons' health needs are a concern. This momentary call button has ten feet of #22AWG, standard 2 conductor or optional #18AWG, heavy-duty jacketed cable for more commercial type usage. The CB-20 can be mounted into a wall plate at installation or hooked onto a wall for easy access. The button can be engraved per your request: Emergency, Help or Panic for example.



### GRI PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type | Electrical Configuration | Reed Form | Max. Initial Contact Resistance ( $\Omega$ ) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|-----------|--------------------------|-----------|----------------------------------------------|------------------------------|----------------------------|
| CB-20       | Open      | SPST N/O                 | Momentary | .100                                         | 12                           | .100                       |
| CB-20HD     | Open      | SPST N/O                 | Momentary | .100                                         | 12                           | .100                       |

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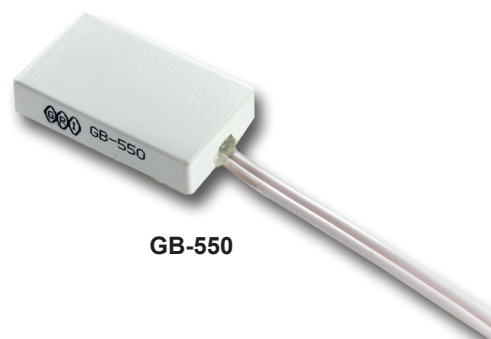
# Glass Guard Open Loop

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## On Glass Shock Sensor

- ◆ Low profile    ◆ Mounts directly on glass
- ◆ Hermetically sealed    ◆ Latching
- ◆ Security panel operations only
- ◆ Reverse polarity protected
- ◆ Extreme UV resistant tape



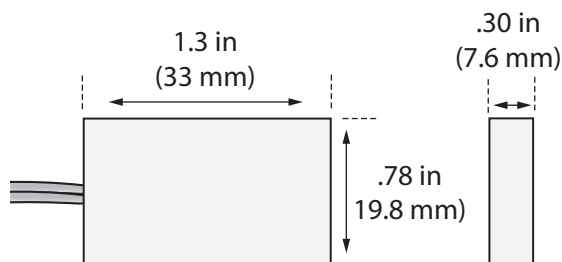
GB-550

When glass breaks and/or shatters, shock waves are sent in a multitude of direction. The GRI Glass Break Sensor is designed to detect those shock waves. The sensor is sensitive to shock waves from the glass it is attached to while ignoring the rumbling of vehicle traffic, noisy airplanes or nearby train crossings. The GB-550 covers both small and large window, both narrow and wide. This device will detect shock waves of shattering glass on a radius measuring approximately 10' from the GB-550. Power for the device comes from the alarm panel zone power. The glass break sensor will momentarily close when it detects glass breaking. The petite size and elegance of the device makes it simple to install with double faced 3M UV resistant tape.

### INSTALLATION:

Mount the Glass Guard near a corner of the window, preferably 1 ½" to 2" from the corner. The Glass Guard will monitor a window that is 10' diagonally measured.

The Glass Guard is powered from the alarm system control panel. The Glass Guard has two wires, one is gold colored and the other is silver colored. **IMPORTANT:** Attach the gold colored wire to the positive side of the zone from the control panel. Attach the silver colored wire to the negative side of the zone from the control panel.



**TAPE APPLICATION:** To apply the tape to the glass, make sure the surface of the glass is thoroughly cleaned with denatured alcohol or a similar IPA/water mixture. Wipe the glass surface, let it dry completely and then apply the tape/Glass Guard to the cleaned glass. **WARNING!!! This is a powerful adhesive tape. Be very careful where you stick the tape. There won't be a second chance.**

#### Part Numbers: GB-550 and GB-GB-550-B GB-550 Glass Guard Electrical Specifications

|                    |                 |
|--------------------|-----------------|
| Voltage:           | 10 Volts DC Max |
| Switching current: | 14 mA           |
| On Resistance:     | 85 Ohm Max      |

**Intended for Security Panel Operations ONLY!**

**Important Note:** The loop response must be programmed for a fast response (under 40 ms)

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# ShockTec SG-2

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- ◆ Solid state Piezo electric sensor
- ◆ Digital Microprocessor with Intelligent Digital Signal Processing
- ◆ Tri-color LED enables accurate and reliable calibration, with “over-sensitive” and “under-sensitive” indications
- ◆ Gross attack detection
- ◆ Encapsulated bi-morph piezo electric sensor
  - ◆ Dual stage adjustment potentiometer
  - ◆ Cover anti-tamper protection
- ◆ Compatibility with most control panels



SG-2 is a digital shock detector that provides reliable 24-hour perimeter protection. A break-in is detected as soon as the intruder attempts to force, smash, drill or even saw through the protected window, door, wall or roof. ShockTec employs an advanced digital microprocessor to analyze the vibration signal received from the piezo electric sensor. A unique feature of SG-2 is digital sampling of the signal simultaneously in two separate channels, each channel amplified at a different gain. This provides an extremely wide dynamic range of the sampled signal enabling precise measurement and analysis of the shock signal.

## THREE OPERATIONAL MODES:

The LED of the SG-2 has three operational modes. The NC alarm contacts are non-latching in all modes of operation. On alarm activation, the alarm contacts open the circuit for 2-5 seconds.

### 1. Normal Operation Mode

- No voltage is applied to the LED Terminal. The LED illuminates while the ALARM contact is open in response to an input signal.
- GREEN indicates an alarm condition
- RED is an “under-sensitive” indication
- ORANGE is an “over-sensitive” indication.

### 2. Any to Latch Mode

12V is applied to the LED terminal causing it to be inhibited. Upon removal of the 12V the detector switches to a Normal Operation Mode and a continuously flashing ORANGE LED indicates if an alarm is detected (Alarm memory). Reapplication of 12V resets the latch (Alarm memory) and extinguishes the LED.

### 3. First to Latch Mode

12V is applied to the LED terminal via a 47K resistor (see Figure 2) causing it to be inhibited. Operation is the same as in Any to Latch Mode with the exception that only the first detector to detect an alarm is indicated by a continuous flashing ORANGE LED, whereas any subsequent detector is indicated by a steady ORANGE LED.

**WARRANTY:** One year warranty against workmanship, material and factory defects.

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# ShockTec SG-2

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## DETECTION RANGE\*

| Surface<br>Radius | Brick Wall   | Steel        | Wood            | Concrete       | Plywood     | Glass           |
|-------------------|--------------|--------------|-----------------|----------------|-------------|-----------------|
|                   | 8 ft / 2.5 m | 9.8 ft / 3 m | 11.4 ft / 3.5 m | 4.9 ft / 1.5 m | 13 ft / 4 m | 11.4 ft / 3.5 m |

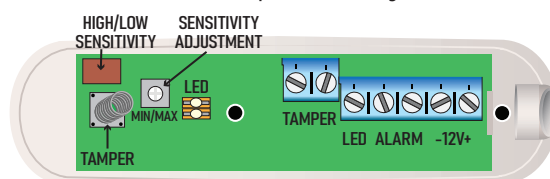
\*The above values are typical and are subject to practical testing, which must be performed for each installation. In some environments, these values may differ from the values listed above.

## TECHNICAL SPECIFICATIONS

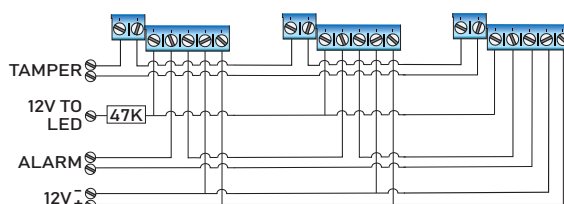
|                                        |                                                                                              |
|----------------------------------------|----------------------------------------------------------------------------------------------|
| Supply voltage                         | 9V - 16V DC                                                                                  |
| Current drain                          | 8.5 mA Typical (17 mA Max)                                                                   |
| Operational temperature                | -20°C to +55°C (-4°F to 131°F)                                                               |
| Storage temperature                    | -20°C to +60°C (-4°F to 140°F)                                                               |
| Maximum humidity                       | 95% non-condensing                                                                           |
| Sensitivity settings                   | Dual stage potentiometer                                                                     |
| Tri-color LED indicator                | Orange: Over-sensitive<br>Green: Alarm & correct calibration<br>Red: Under-sensitive         |
| Relay contact ratings:                 |                                                                                              |
| Alarm relay                            | 100mA at 24VDC, NC, Opto relay                                                               |
| Tamper relay                           | 500mA at 24VDC, NC                                                                           |
| Time relay open in alarm               | 2.5 seconds                                                                                  |
| Latching modes                         |                                                                                              |
| Max. # of units on Any Latch loop      | 80                                                                                           |
| Max. # of units on First to Latch loop | 10                                                                                           |
| False alarm protection                 | Digital microprocessor signal processing and noise reduction circuits with max. ground plane |
| Electrostatic discharge                | No false alarms up to 8kV                                                                    |
| RF immunity                            | According to EN 50130-4                                                                      |
| Enclosure material                     | Flame retardant ABS                                                                          |
| Enclosure dimensions                   | 25x28x95mm - detector                                                                        |

## TERMINAL WIRING

|        |                                                  |
|--------|--------------------------------------------------|
| -12V+  | 12V power connection, reverse polarity protected |
| ALARM  | NC Alarm output contact                          |
| LED    | Connection for +12V remote latch control signal  |
| TAMPER | NC Anti-Tamper and Anti-Magnet contact           |

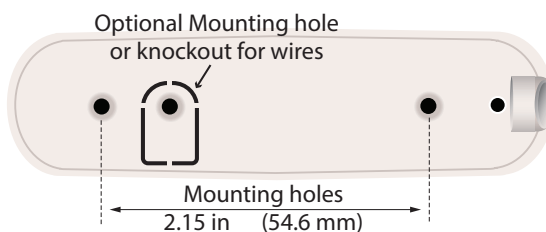
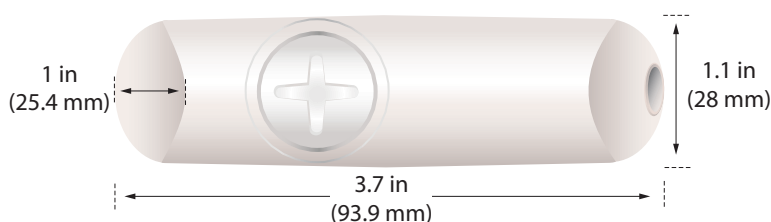


## MULTIPLE UNIT CONNECTION PROCEDURE DIAGRAM



Please refer to Installation Instructions for complete directions and specifications.

## SG-2



**WARRANTY:** One year warranty against workmanship, material and factory defects.

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# Touch Sensor

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## CT-3

- ◆ 2 Amp
- ◆ Touch Momentary On
  - ◆ No moving parts
  - ◆ Vandal resistant, solid
  - ◆ Thru-hole mounting
  - ◆ C<sup>2</sup>T technology
  - ◆ Custom engraving



CT3

Using a unique C<sup>2</sup>T Technology, the GRI Touch Sensor can sense and respond to the slightest human touch. The CT3 was developed by GRI to replace mechanical switch applications. The CT3 can be mounted on metallic and non-metallic surfaces. Metal surfaces cannot exceed 1 square foot and cannot be grounded. The CT3 comes in a very cost effective package frequently costing less than the mechanical switch being replaced. Applications include industrial panels, appliance control, access systems, corrections facilities, light switches, elevator buttons, etc. Custom applications are encouraged and welcomed at GRI. The CT3 is blank and can be custom engraved.

### Relay Output

CT3-2-1

12-24 VDC

Momentary Touch Sensor

C Form Relay

2 Amp

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# Touch Sensor

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## INSTALLATION:

Drill a 7/8" hole. Insert the nut and tighten until finger tight.

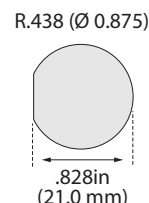
**NOTE: If more secure mounting is required, see diagram for D-hole dimensions.**

Insert the switch, connecting the red wire to 12 to 24VDC. Connect the black wire to the power ground.

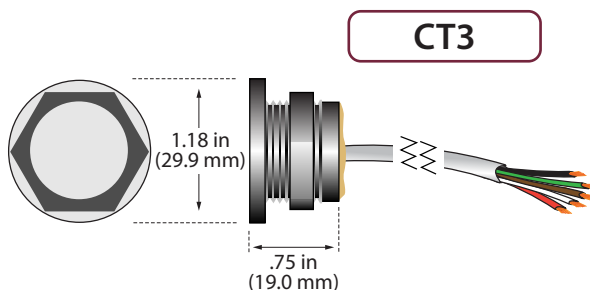
**CAUTION: Do not mount switch to grounded metal surfaces. Do not hook white or green wires to AC type signal or source.**

Test the switch by arming the zone and then touch switch.

### D-hole Diagram



CT3-2-1 Relay normally de-energized: when touched relay energizes: when release relay de-energizes. White is the relay common, green is normally closed and brown is normally open.



### Specifications

Five-wire touch switch, 12-24 VDC, ground, common, N/O, N/C

Touch activated by human hand.

Low current draw.

Output rated at 2 amp.

New Advanced C<sup>2</sup>T technology.

**CAUTION: DO NOT MOUNT ON A GROUNDED METAL SURFACE!**

INPUT Voltage : 12 to 24VDC max.  
Current : 28 mA max.

RELAY Voltage : 25 volts DC max.  
Current : 2 amp  
Power : 50 watts

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# Vent Switch

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## VS Series

- ◆ Eliminates double magnets
- ◆ Aids in preventing false alarms
- ◆ Linear travel of 6-8 inches
- ◆ Air gap of 1/2" to maintain continuous linear travel
- ◆ Standard switch length 6" or 8"
- ◆ Custom lengths available
- ◆ 36" zip lead standard or screw terminals
- ◆ No need to disarm systems when opening or closing windows
- ◆ Available in white and brown

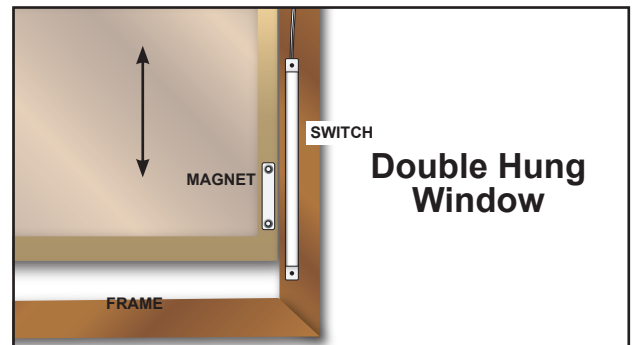


The unique invention has been designed in response to requests from installers for a switch that would allow window venting of four to six inches before breaking contact and creating an alarm condition.

The GRI Vent Switch will allow the homeowner to arm his system and at the same time permit venting of any window on which the Vent Switch has been installed.

A slider of double hung window can be opened or closed while the GRI vent switch maintains an extended zone of actuation of approximately six inches at 1/2 air gap.

Prior to actual installation it is highly recommended that the installer become familiar with the operation of this switch during a bench test session. A continuity checker would work well in determining the overall area of activation. It is suggested that the homeowner be instructed in its actual operation to prevent an owner-induced alarm. Patent Pending.



**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# Vent Switch

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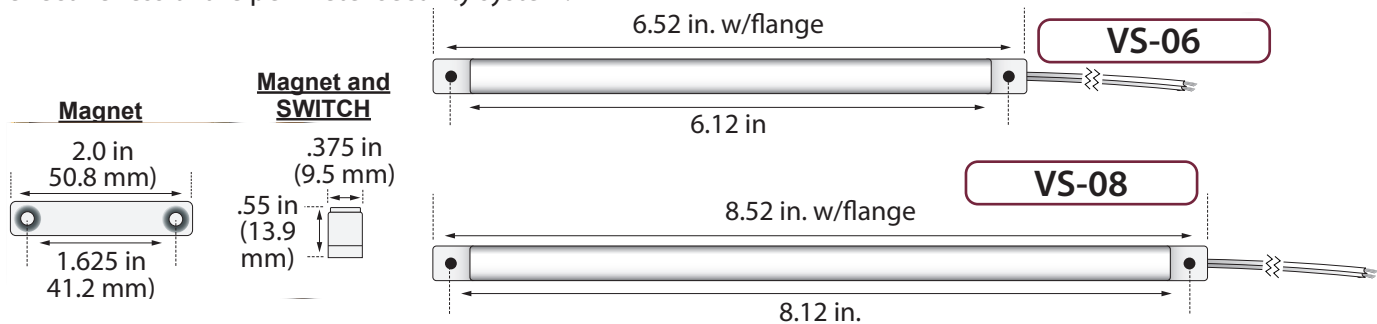


## INSTALLATION:

The Vent Switch is unique because it will allow a linear movement of the actuator magnet, parallel to the reed switch, of up to 6 inches, depending on model, while maintaining a constantly closed circuit. The linear travel is based upon a maximum air gap distance of half an inch between the switch and magnet.

It is recommended that the switch be located and mounted first, preferably in a position furthest away from the opening, to prevent reach through compromise. Please note the vent switch can be positioned similar to a double magnet set-up. This will allow the homeowner to open and close the window protected by the Vent Switch without having to disarm and rearm the system to reposition the window.

We are confident that the and reliability of the Vent Switch will long be appreciated by the homeowner. Proper instruction by the installer will eliminate the chance of an owner-induced alarm and maintain the maximum effectiveness of the perimeter security system.



### Part Numbers

1/2" Air Gap  
6" Linear Travel

Closed Loop  
VS-06  
VS-06T

Open Loop  
VSB-06

1/2" Air Gap  
8" Linear Travel

VS-08  
VS-08T

VSB-08

### GR I PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type | Electrical Configuration | Reed Form | Initial Contact Resistance (Ω) | Max. Contact Rating | Max. Switching Voltage (V) | Max. Switching Current |
|-------------|-----------|--------------------------|-----------|--------------------------------|---------------------|----------------------------|------------------------|
| VS-06       | Closed    | N/O                      | A         | .150                           | 10                  | 200                        | .500                   |
| VS-06T      | Closed    | N/O                      | A         | .150                           | 10                  | 200                        | .500                   |
| VS-08       | Closed    | N/O                      | A         | .150                           | 10                  | 200                        | .500                   |
| VS-08T      | Closed    | N/O                      | A         | .150                           | 10                  | 200                        | .500                   |
| VSB-06      | Open      | N/C                      | B         | .140                           | 5                   | 175                        | .250                   |
| VSB-08      | Open      | N/C                      | B         | .140                           | 5                   | 175                        | .250                   |

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# Wire Trip Switch

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## WT-01

- ◆ Use in windows, crawl spaces and attics
  - ◆ Not susceptible to insects and temperature extremes like PIRS
    - ◆ Covers unusual openings
    - ◆ Environmentally seals contacts
- ◆ Eliminates false alarms and nuisance service calls
  - ◆ Magnetically plunger actuated
    - ◆ No blade to corrode
  - ◆ Replaces older mechanical trip
    - ◆ Longer service life
    - ◆ Vibration free
    - ◆ Install and forget
- ◆ Available with screw terminals



WT-01

The WT-01 is made to cover openings where a normal switch won't adequately cover the opening like basement windows, attics, crawl spaces, or any other unusual opening. It can be used in places where PIR's would be troublesome due to insects and temperature extremes. Wire or string is criss-crossed across the opening. Then if the wire is pushed out of the way or cut the switch will trigger the alarm panel.

**WARRANTY:** One year warranty against workmanship, material and factory defects.

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# Wire Trip Switch

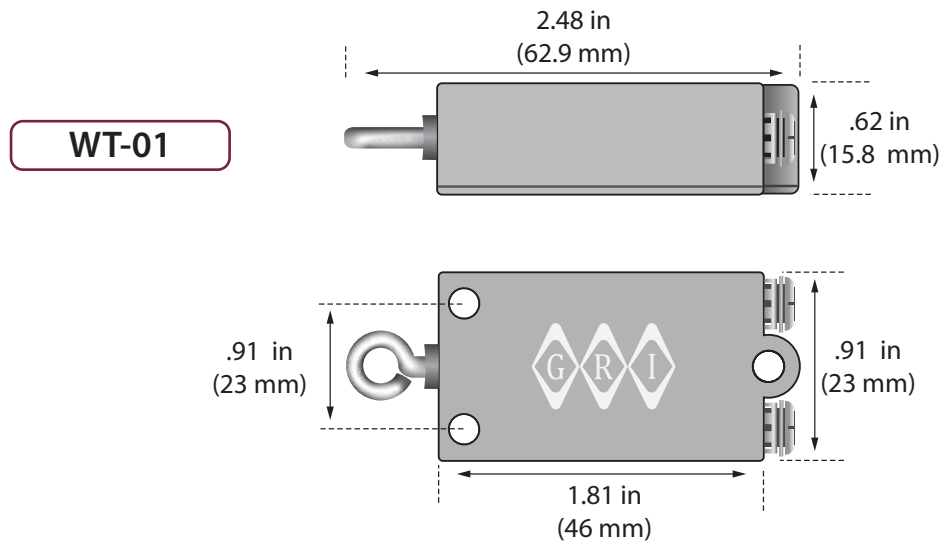
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## INSTALLATION INSTRUCTION

The wire or string needed for this switch is not supplied. Select a light weight cord and plan for enough length so that the opening can be criss-crossed enough times to adequately cover the opening. The wire or string should be light enough so that it will not impede exiting in case of emergency. If opening is an emergency exit, consult local fire inspectors before installing.

Select locations for switch and end hook and secure them in place with screws. Add eye hooks or similar hooks so that wire will criss-cross the opening. Tie the wire (or string) to the eye hook on the switch and run wire through other hooks to the last hook. With a meter attached to the terminals of the switch pull on the wire until the plunger is in the middle of the closed range of the switch. Then tie the wire to the end hook. Some types of cord will stretch over time so adjustments may need to be made to prevent false alarms. Adjustments can be made after the string is tied to the end hook by loosening the screw and sliding the end hook.



### GRI PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type | Electrical Configuration | Reed Form | Max. Initial Contact Resistance ( $\Omega$ ) | Max. Contact Rating (W) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|-----------|--------------------------|-----------|----------------------------------------------|-------------------------|------------------------------|----------------------------|
| WT-01       | Closed    | N/O                      | B         | .150                                         | 10                      | 160                          | .400                       |

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# Door Alert Annunciator

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## Closed Loop

- ◆ Sounds instantly when door opens
- ◆ Choice of 2, 4 or 6 second sounding time
  - ◆ Choice of three volume settings
  - ◆ Remote sounders available
- ◆ Monitors one or more openings
  - ◆ Surface mount or recessed
  - ◆ SPDT relay output
  - ◆ Standard color is white
- ◆ Battery powered and/or external power



The GRI Door Alert Annunciator is designed to signal customer entry into a business establishment. A closed loop magnet reed switch activates the Door Alert. It can be set by the installer for a two, four or six second sounding time. Offered in a recessed version (easily mounted in a single gang box) or as a surface mount version. Both units can be powered by an external 12 volt DC power source or 9 volt battery.

*NOTE: Unit will function at minimum 7 VDC at a very limited sounder volume. This power level is considered total battery failure.*

*CAUTION: To prevent a memory failure or circuit damage, external power source must not exceed 15 VDC.*

### Part Number

|         |                                                    |
|---------|----------------------------------------------------|
| DA-1    | Recessed Door Alert Annunciator - Closed Loop      |
| DA-2    | Surface Mount Door Alert Annunciator - Closed Loop |
| PAAR-RS | Recessed Remote Sounder                            |
| PAAR-SS | Surface Mount Remote Sounder                       |

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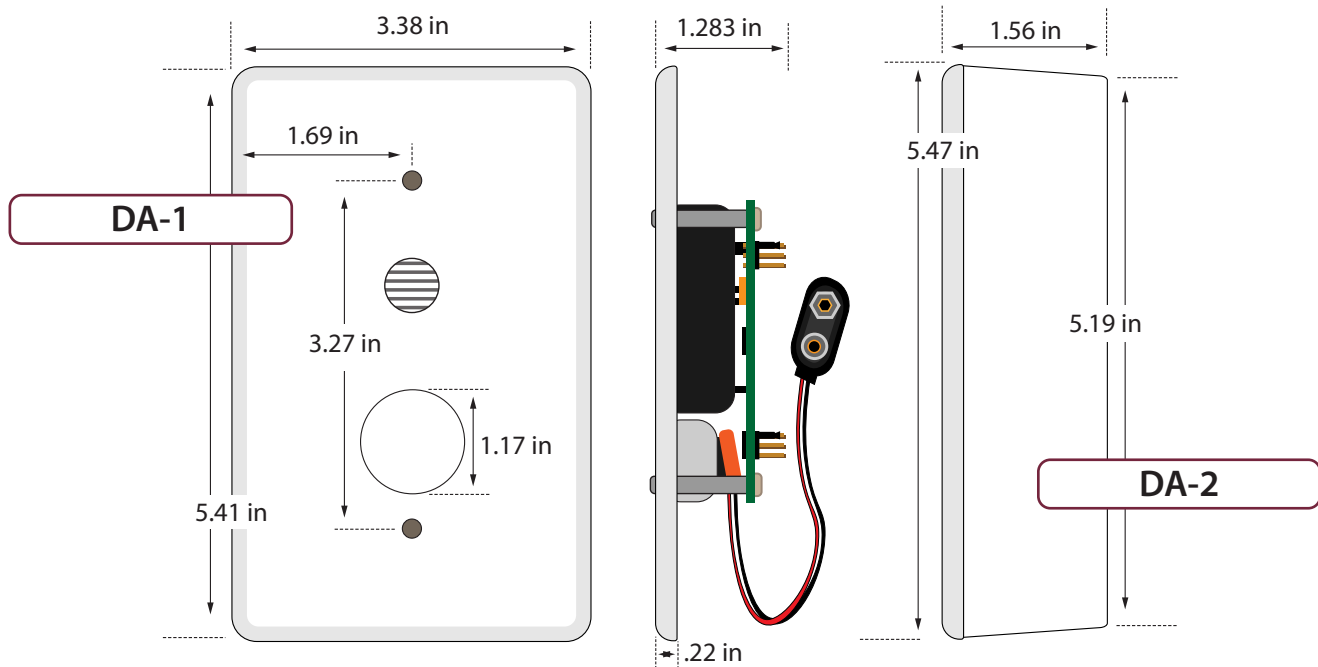


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# Door Alert Annunciator

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## INSTALLATION INSTRUCTIONS:

The GRI Door Alert Annunciator monitors an entry by sounding instantly when the door is opened. It will sound for two, four or six seconds (jumper selectable) and can be wired to a 12 volt external power source or a 9 volt battery. Remote sounders can be added to cover isolated areas such as a stock room. If two doors are present, such as a regular door and a screen door, it is suggested that the switch be placed on the outermost door to allow the regular door to remain open for ventilation when desired. Using this method, the GRI Door Alert Annunciator will continue to monitor the entry way.

When two or more separate doors are to be monitored by installing individual switch sets on each door, the GRI Door Alert Annunciator will detect each door opening. CLOSED LOOP switches are required when installing the DA-1 and DA-2 Door Alert Annunciator. Contact your GRI Distributor for the necessary switches or call the factory for more information.

The recessed version of the GRI Door Alert Annunciator is designed to fit into a single gang outlet box. The surface mount version can be easily mounted on an existing structure.

For custom options, please consult the factory.

**WARRANTY:** One year warranty against workmanship, material and factory defects.

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# Door Monitor

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- ◆ Monitors Entry / Exits
- ◆ Reprogrammable delay/shunt time
- ◆ Alarm sounding auto reset capable
- ◆ Surface or flush mount models
- ◆ Remote sounders and control options
- ◆ External or battery powered



290-1



290-2

The GRI 290 Series Door Monitors have been designed to monitor access points leading to or from a controlled area, thus preventing doors from being accidentally left open or purposely propped open for extended periods of time. The 290 Series Door Monitors are fully self-contained alarm systems that can be mounted locally or remotely to monitor an access door using a simple closed loop magnetic reed switch. A perfect solution for that single exit door at the end of a long hallway or that isolated doorway everyone seems to forget about.

The GRI 290-1 and 290-2 can be operated with a 12 volt externally supplied DC power source or battery only. With an external power supply a battery can be used to perform a backup function should the external source fail. Both power sources have been designed to maintain a minimum sound pressure level of 85 dB.

*NOTE: Unit will function at minimum 5 VDC at a very limited sounder volume. This power level is considered total battery failure.*

*CAUTION: To prevent a memory failure or circuit damage, external power source must not exceed 15 VDC.*

## Part Number

290-1  
290-2

Recessed Door Monitor, Closed Loop  
Surface Mount Door Monitor, Closed Loop

**WARRANTY:** One year warranty against workmanship, material and factory defects.

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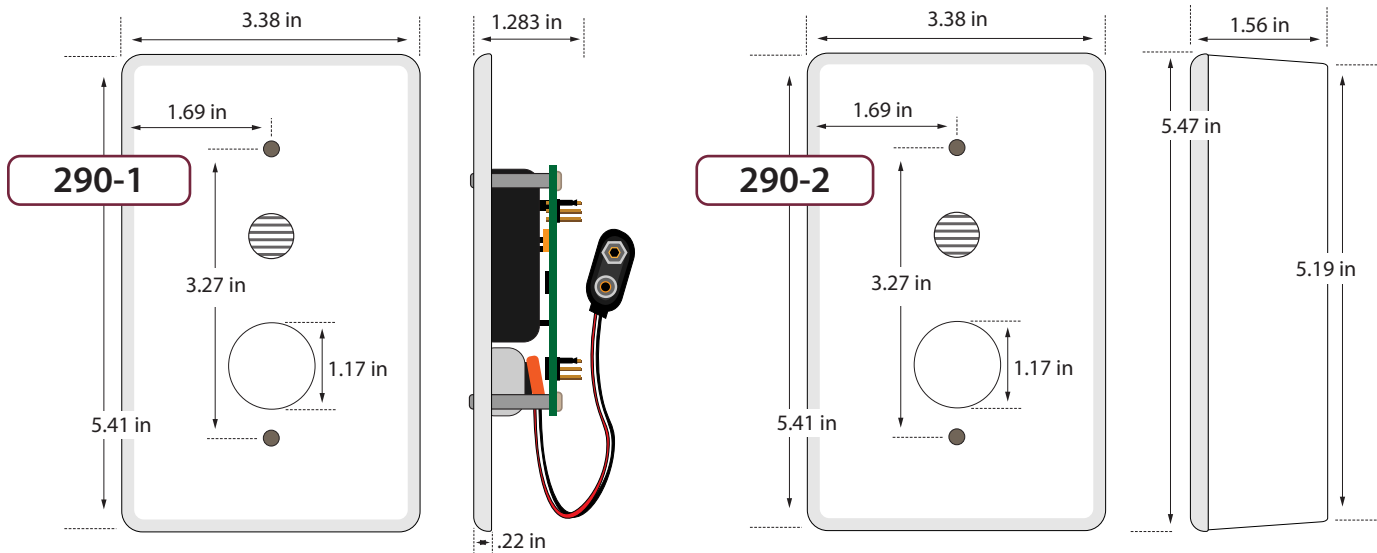
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# Door Monitor

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## INSTALLATION INSTRUCTIONS:

The GRI 290 Series Door Monitor mounts easily to the wall next to any door which allows to or from a controlled area. Using a closed loop magnetic reed switch, the unit will detect and announce an open access door by sounding a loud continuous alarm upon expiration of the delay time set. A surface mount and a recessed mount model are offered. Both incorporate a built-in shunt deactivation button to extend door open time without alarm sounding. Although the 290 Series Door Monitor cannot be turned off, this feature will simply deactivate the alarm function for the maximum time limit chosen. During this time span, the door must be closed before the alarm sounds. Once the alarm is sounding it can be silenced by closing the door, if the auto reset function has been chosen. If the auto reset is not chosen, the deactivation button must also be depressed. The sounder cannot be disabled by simply holding down the deactivation button. If multiple openings lead to the area, the GRI 290 Series alarms can monitor all by installing closed loop switches wired in series. In this way, any opening will be detected. Auxiliary Normally Open shunt/deactivation buttons or switches can also be wired to utilize the timed shunt feature. Additional remote sounders may be wired in to extend sounder range. Please contact your GRI factory representative for additional information or custom software options.

Capable of multiple setting for a delay/shunt time, the 290 Series Alarms can be configured by simple jumper placement to program the desired function. Jumper placement and function descriptions are as shown in the following table.

00 = 90 second delay / Aux output follows alarm  
00X = 60 second delay / Aux output follows alarm  
0X0 = 30 second delay / Aux output follows alarm  
X00 = 15 second delay / Aux output follows alarm

There is also a jumper setting which allows the auxiliary output to follow the door with auto reset.

To change or reconfigure delay/shunt time, first disconnect all power sources, reposition the jumpers and reapply power. Initially two beeps should be heard to confirm power up. Within 15 seconds a third beep should be heard to confirm reprogramming is complete.

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# Door?Man

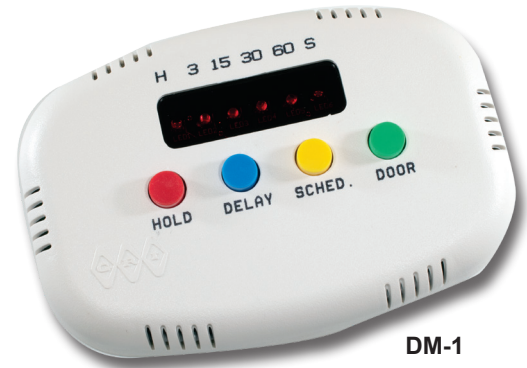
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## DM-1 Garage Door Monitor

*Ever leave the house and wonder,  
"Did I shut the garage door?"*

- ◆ Monitors the position of the garage door and automatically closes after a preset delay (3, 15, 30 or 60 minute delay)
- ◆ Hold function to keep door open
- ◆ Sounder alerts that the door is about to close
- ◆ Can be scheduled to close same time every day
- ◆ Alarm panel relay contact to indicate that the door tried to shut, but something was in its path
  - ◆ Easy to install with simple hand tools
  - ◆ Power supply, contact switch, mounting bracket and wire all included
  - ◆ Residential and commercial appliances



DM-1

Many home burglaries are committed through a garage door left open or unlocked.

### Newspaper Headlines

*"Suspect entered through open garage."*

*"Thefts, burglaries sky rocket as burglars look for open garage doors, unlocked entrances."*

*"Deputies investigating string of burglaries through garages."*

### Included (see below)

- |                       |                     |
|-----------------------|---------------------|
| • Door?Man DM-1       | • 50 FEET WIRE      |
| • 6973 POWER SUPPLY   | • DOUBLE STICK TAPE |
| • S-12 L BRACKET      | • SCREWS            |
| • 29A WIDE GAP SWITCH |                     |



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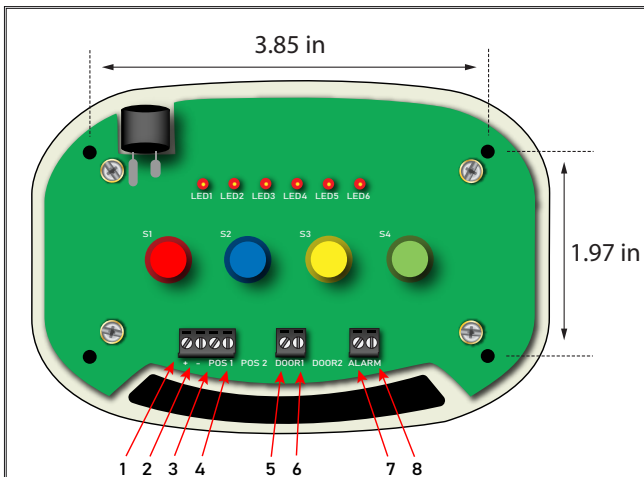


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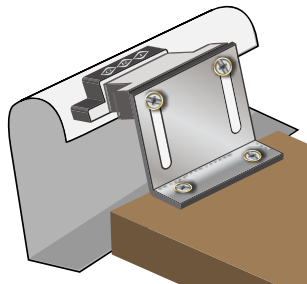
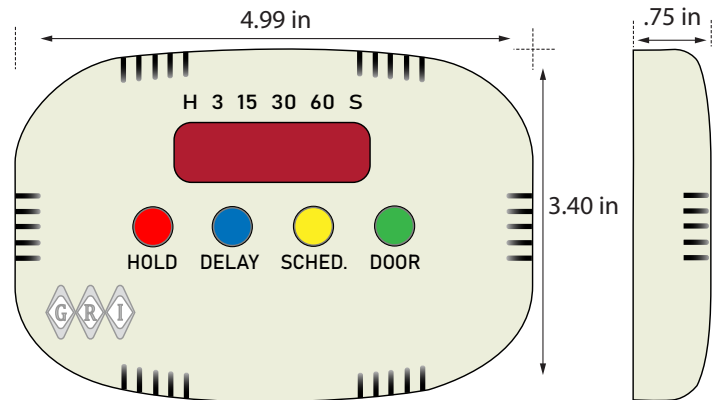
# Door?Man

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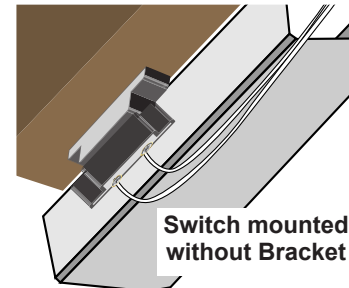


## Door?Man Connections

1. Power (positive) Black wire with white stripe from power supply.
2. Power (negative) Black wire with no stripe from power supply
3. Door Switch (29AWG)
4. Door Switch (29AWG)
5. Open/Close Switch from garage door opener
6. Open/Close Switch from garage door opener
7. Aux. Relay
8. Aux. Relay



Switch mounted  
with Bracket



Switch mounted  
without Bracket

## OPERATING INSTRUCTIONS:

### Set Delay

- Decide length of delay.
- Press and hold delay button until selected time delay is displayed.

### Set Schedule

• Decide what time you would like the door to close every day. For example: 5 p.m. Starting with the door closed press the schedule button at 5 p.m. until it beeps. The door will now make sure it is closed at 5 p.m. every day, or at whatever time is initially chosen. For the next 8 hours, if the door is opened, it will close after 3 minutes.

### Hold

- If the garage door needs to be left open for an extended period of time, open the door and press hold.
- Reminder will beep every 30 minutes while the door is open.
- To turn of the hold feature, close the garage door and the Door?Man returns to previously set time.

**CAUTION:** The Door?Man must be used in conjunction with garage door openers that comply with the latest government safety requirements including automatic reversing mechanisms and obstacle detection.

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# SB-2000 / SB-2001

- 

is set. Examples of this are letting  
of the SB-2000 are that there are  
ay be located near the door to be

The SB-2000 is powered by an external power supply with optional battery backup.

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# Timed Electronic Shunt Switch

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## INSTALLATION:

**RECESSED VERSION (SB-2000):** The recessed version of the Shunt Switch is designed to fit in a single gang utility box. Run the wires from the door sensor switch(es) into the utility box. Attach the wires to terminal TM1 pins 2(-) and 7(+) (See Figure 3). Connect positive side of the control panel to pin 7 and the negative side to pin 2.

Using an external 12 volt DC supply, run the wires from the power source to the unit and attach the positive voltage to pin 1 and ground to pin 2 of terminal TM1. If battery backup is desired, install a standard 9 volt battery in the battery holder on the back of the Shunt Switch. The LED will flash twice during power up, and then a third time 5 seconds later indicating a successful diagnostics test. Finally, insert the Shunt Switch into the utility box with the button toward the bottom and the LED toward the top. Secure wall plate with two screws provided.

**SURFACE MOUNT VERSION (SB-2001):** Remove the Shunt Switch from the surface mount case. A knockout is provided on the back of the case for wire access. Attach the surface mount case directly to the wall, or it may be mounted to cover a single gang electrical box. Attach the door switch wires to terminal TM1 pins 2(-) and 7(+) (See Figure 3). Connect positive side of the control panel to pin 7 and the negative side to pin 2. Using an external 12 volt DC supply, run the wires from the power source to the alarm unit and attach the positive voltage to pin 1 and ground to pin 2 of terminal TM1. If battery backup is desired, connect a standard 9 volt battery to the battery connector. The LED toward the top. Secure face plate with the two screws provided.

**SETTING SHUNT TIME:** Set the duration of the shunt by moving the black jumper to the position(s) desired corresponding to the number of seconds preferred (See Table 1). Each time jumper(s) are moved, reprogramming will require a power down and a power up to complete reprogramming. Loss or removal of power without repositioning of jumper(s) will maintain unit at original setting upon power up. Repositioning jumper(s) without power down and power up steps will not change original time settings until first power up is accomplished. To power down, disconnect battery and/or external power source. To power up, reconnect battery and/or external power source.

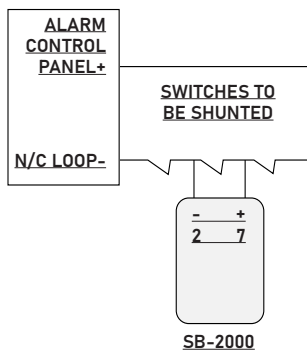


Figure 1. Wiring Diagram

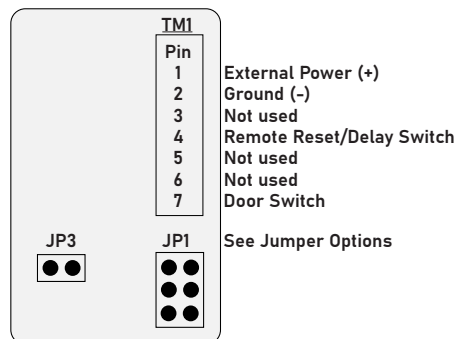


Figure 2. Terminal Connections & Jumpers

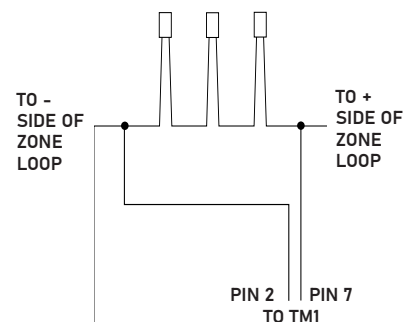


Figure 3. Devices to be shunted

**WARRANTY:** One year warranty against workmanship, material and factory defects.

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## ***Table of Contents*** ***Environmental Monitoring***

***Humidity Sensor H8800***

***Temperature Sensor T8800***

***Fixed Temperature Sensor T8000***

***Water Sensor with Relay Contact 2500 / 2600***

***Fluid Sensor with Relay Contact 2650***

***Surface Mount Water Sensor 2800***

***Absence of Water Detector 2808***

***Liquid Level Detector 2826 / 2826FS***

***Home Water Leak Alarm System WS-20***

***Water Valve Shutoff WVS***

***Water Moccasin Sensor Strip with Relay Contact***



# Humidity Sensor

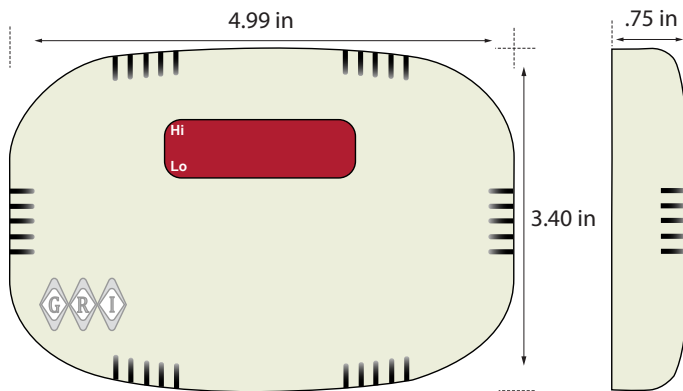
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## H8800 Series

- ◆ Low cost
- ◆ Non-volatile memory
- ◆ Single sensor or a Remote probe up to 500 ft.

The H8800 from GRI is a single sensor programmable humidity monitory security device. Unlike its first cousin, the T8800, used for temperature sensing, the H8800 has one sensor to detect and report relative humidity. The single humidity sensor is housed in the appliance (H8800) or it can be ordered with a remote probe (H8800R). The memory in the H8800 is non-volatile.



### Part Numbers

|        |                       |                   |
|--------|-----------------------|-------------------|
| H8800  | C Form relay output   | On Board Sensor   |
| H8800R | C Form relay output   | With Remote Probe |
| H88R   | Replacement Probe     |                   |
| 8065   | RTD - 12 Power Supply |                   |

The range of the H8800 is 5% humidity to 95% humidity (+ or -5%)  
 Min - Max Temp Range Without Humidity Probe  
 Min - Max Temp Range With Humidity Probe  
 Max distance for Probe from H8800 with 22 AWG wire  
 Operates with 10 VDC Min to 14 VDC Max



H8800



H8800R

-23°C to 80°C (-10°F to 176°F)  
 -40°C to 85°C (40°F to 185°F)  
 500 Feet

**WARRANTY:** One year warranty against workmanship, material and factory defects.

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# Humidity Sensor

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## INSTALLATION INSTRUCTIONS:

To open the H8800, insert a flat blade screwdriver between the cover and the back plate and twist the screwdriver to open the H8800. Mount the H8800 in the required location using the provided screws. Four holes have been pre-drilled on the back mounting plate for installation convenience. There is also a mounting pattern template provided with the printed instructions. Route wires to the device as necessary from behind the H8800.

**REMEMBER!** It is important to avoid lights, motors, ballast transformers, fans and electromagnetic devices when routing and pulling wires to this device.

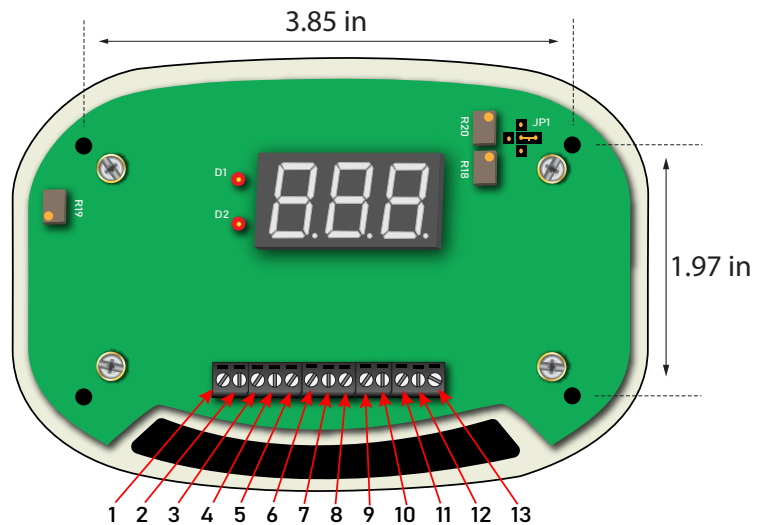
## CONNECTION DESCRIPTION:

Connect DC power to terminals 1(+) and 2(-). Observe polarity. **WARNING!** If you are using a power supply other than the RTD/12 (GRI PN#8065), be certain that the power is regulated. The use of unapproved power supplies will void the warranty. GRI's technical support team can provide information. Call 800-445-5218.

There are two (2) jumpers in the H8800. JP1 is used to direct programming to the high/low limit humidity thresholds. JP1 has multiple pins for the jumper during set up. With the center pin used as the center of a clock, place the jumper at 12 o'clock to adjust the High Limit. Place the jumper at 6 o'clock to adjust the Low Limit. Placing the jumper at 9 o'clock position is for standard operating of the device. The 3 o'clock position is NOT used in the field.

R18 Low Limit Adjustment

R20 High Limit Adjustment



### H8800 Probe Connections

1. Power (positive) See notes regarding compatible power supplies other than those supplied by GRI
2. Power (negative)
3. Relay Low Limit Common
4. Relay Low Limit Opens on Alarm
5. Relay Low Limit Closes on Alarm
6. Relay High Limit Common
7. Relay High Limit Opens on Alarm
8. Relay High Limit Closes on Alarm
9. Probe (brown)
10. Probe (white)
11. Probe (green)
12. Probe (black)
13. Probe (red)

**WARRANTY:** One year warranty against workmanship, material and factory defects.

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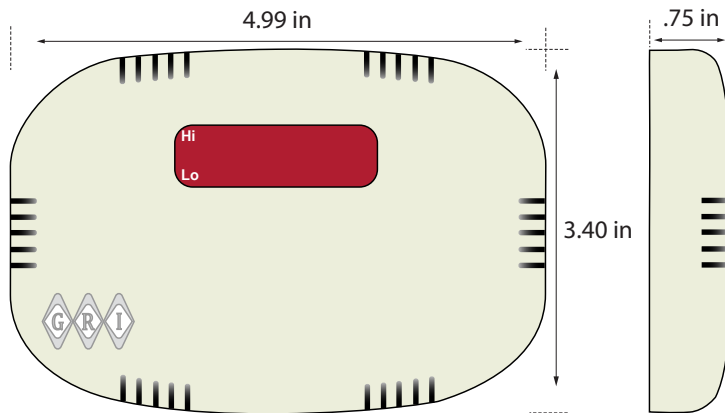
# Temperature Sensor

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## T8800 Series

- ◆ Low cost
- ◆ Non-volatile memory
- ◆ Two versions: single on board sensor or a remote probe up to 500'
- ◆ Programmable Hi & Low alarms
- ◆ T8800R probe can be submerged in liquid or installed in a freezer



T8800



T88000R

### Part Numbers

|        |                       |                        |
|--------|-----------------------|------------------------|
| T8800  | C Form relay output   | On Board Sensor only   |
| T8800R | C Form relay output   | With Remote Probe only |
| T88R   | Replacement Probe     |                        |
| 8065   | RTD - 12 Power Supply |                        |

The T8800 is a single sensor programmable temperature monitoring security device. **The T8800 has only one sensor.** The single temperature sensor is housed in the appliance (T8800) or can be ordered with a connected remote probe (T8800R). The memory in the T8800 is non-volatile because all temp trip limits are set with a small screw driver. No typical software program is required. **Simple to set!**

Min - Max Temp Range      Without Probe  
 Min - Max Temp Range      With Probe  
 Max distance for Probe from T8800 with 22 AWG wire  
 Operates with 10 VDC Min to 15 VDC Max  
 65 Milliamps in Alarm

-23°C to 80°C (-10°F to 176°F)  
 -40°C to 85°C (40°F to 185°F)  
 500 Feet

55 Milliamps in Standby

**WARRANTY:** One year warranty against workmanship, material and factory defects.

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# Temperature Sensor

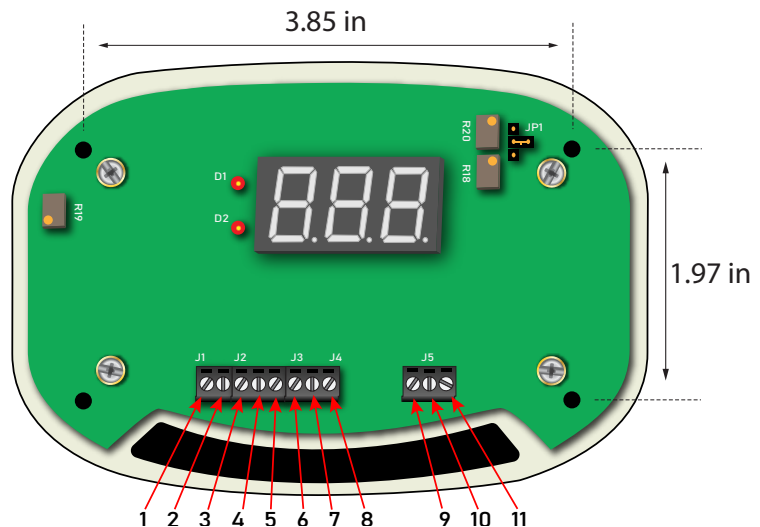
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## INSTALLATION INSTRUCTIONS:

To open the T8800, insert a flat blade screwdriver between the cover and the back plate and twist the screwdriver to open the T8800. Mount the T8800 in the required location using the provided screws. Four holes have been pre-drilled on the back mounting plate for installation convenience. There is also a mounting pattern template provided with the printed instructions. Route wires to the device as necessary from behind the T8800.

**REMEMBER!** It is important to avoid lights, motors, ballast transformers, fans and electromagnetic devices when routing and pulling wires to this device.



## CONNECTION DESCRIPTION:

Connect DC power to terminals 1(+) and 2(-). Observe polarity. **WARNING:** If you are using a power supply other than the RTD/12 (GRI PN#8065), be certain that the power is regulated. The use of unapproved power supplies will void the warranty. GRI's technical support team can provide information. Call 800-445-5218.

There are two (2) jumpers in the T8800. JP1 is used to direct programming to the high/low limit thresholds. JP2 converts the unit from Celsius to Fahrenheit. JP1 has multiple pins for the jumper during set up. With the center pin used as the center of a clock, place the jumper at 12 o'clock to adjust the High Limit. Place the jumper at 6 o'clock to adjust the Low Limit. Placing the jumper at 3 o'clock position is for standard operating of the device.

There are three (3) adjustable pots (potentiometers) with the T8800. R19 on the far left side of the T8800 is used to adjust the temperature baseline for the unit. This control can be used to bring the T8800 in the same range of operation as other temperature sensors in the same room.

- R18 Low Limit Adjustment
- R19 Adjust/Calibrate Temperature Baseline
- R20 High Limit Adjustment

### T8800 Probe Connections

1. Power (positive)
2. Power (negative)
3. Relay Low Limit Common
4. Relay Low Limit Opens on Alarm
5. Relay Low Limit Closes on Alarm
6. Relay High Limit Common
7. Relay High Limit Opens on Alarm
8. Relay High Limit Closes on Alarm
9. Probe (green)
10. Probe (black)
11. Probe (red)

**WARRANTY:** One year warranty against workmanship, material and factory defects.

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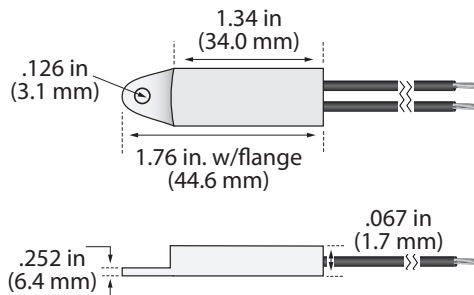
# Fixed Temperature Sensors

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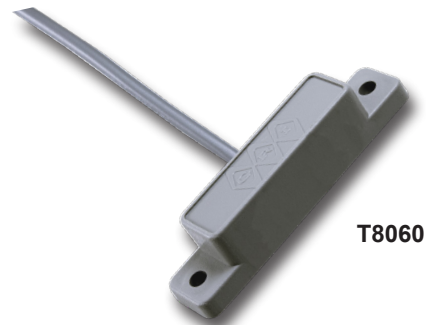


## T8000 Series

- ◆ General temperature monitoring
- ◆ Low cost protection     ◆ Easy to install
- ◆ Small, unobtrusive surface mount
- ◆ Fixed temperature sensors:  
32°F, 41°F, 50°F, 70°F and 140°F



T8000



T8060

For those property owners who are concerned about frozen water pipes bursting, fluctuating greenhouse temperatures, vacation homes in cold climates or any unattended structure where a fixed temperature is crucial, the GRI T8000 series of fixed temperature sensors provides the proper protection. The T8000 series can be used in computer rooms, walk-in coolers, and similar places where the monitoring of temperature is needed.

Prior to connecting the temperature sensor determine the monitoring application. When the ambient temperature goes below the trip temperature limit, the contacts will open. Is the temperature above or below the trip temperature? Are you monitoring a cold environment to warn you of heating condition or are you monitoring a warm environment that is critical of colder temperatures? Now make the appropriate connection to your alarm control panel as an open or closed loop for detections. Here's why.

The sensors are pre-set with a temperature limit. When the ambient temperature goes below the trip temperature limit, the switch configuration will change. The T8070 is designed for network operation center rooms, main computer distribution facilities, head ends for CCTV and file server rooms.

### MAXIMUM GENERAL SPECIFICATIONS:

| Contact Rating (W) | Voltage Rating Max (VDC) |
|--------------------|--------------------------|
| 100 MA             | 48                       |

**WARRANTY:** One year warranty against workmanship, material and factory defects.

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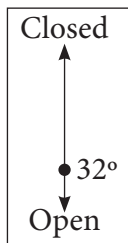
# Fixed Temperature Sensor

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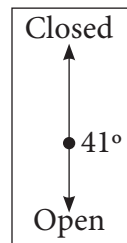
## **T8000 Electrical Specifications**      **0°C/32°F**

|                        |                                     |
|------------------------|-------------------------------------|
| Contact Arrangement    | SPST                                |
| Switch Action          | CLOSED above Activation Temperature |
| Maximum Temperature    | 115°C / 239°F                       |
| Activation Temperature |                                     |
| Nom.                   | 0°C (32.0°F)                        |
| Max.                   | 4°C (39°F)                          |
| Min.                   | -4°C (25°F)                         |
| Max. Reset Temperature |                                     |
| Max.                   | 4°C (39°F)                          |
| Min.                   | 0°C (32.0°F)                        |
| Tolerance              | +/-4°C(+/-7.2°F)                    |
| Lead Lengths           | 6" #20AWG Leads                     |



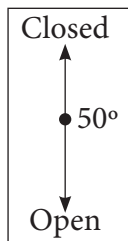
## **T8005 Electrical Specifications**      **5°C/41°F**

|                        |                                     |
|------------------------|-------------------------------------|
| Contact Arrangement    | SPST                                |
| Switch Action          | CLOSED above Activation Temperature |
| Maximum Temperature    | 64°C / 147°F                        |
| Activation Temperature |                                     |
| Nom.                   | 5°C (41.0°F)                        |
| Max.                   | 9°C (48°F)                          |
| Min.                   | 1°C (34°F)                          |
| Max. Reset Temperature |                                     |
| Max.                   | 8°C (46.4°F)                        |
| Min.                   | 5°C (41°F)                          |
| Tolerance              | +/-4°C(+/-7.2°F)                    |
| Lead Lengths           | 6" #20AWG Leads                     |



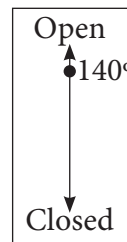
## **T8050 Electrical Specifications**      **10°C / 50°F**

|                        |                                     |
|------------------------|-------------------------------------|
| Contact Arrangement    | SPST                                |
| Switch Action          | CLOSED above Activation Temperature |
| Maximum Temperature    | 70°C / 158°F                        |
| Activation Temperature |                                     |
| Nom.                   | 10°C (50°F)                         |
| Max.                   | 14°C (57°F)                         |
| Min.                   | 6°C (43°F)                          |
| Max. Reset Temperature |                                     |
| Max.                   | 14°C (57°F)                         |
| Min.                   | 10°C (50°F)                         |
| Tolerance              | +/-4°C(+/-7.2°F)                    |
| Lead Lengths           | 6" #20AWG Leads                     |



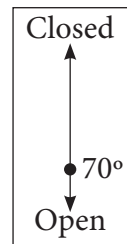
## **T8060 Electrical Specifications**      **60°C / 140°F**

|                        |                                   |
|------------------------|-----------------------------------|
| Contact Arrangement    | SPST                              |
| Switch Action          | OPEN above Activation Temperature |
| Maximum Temperature    | 115°C / 239°F                     |
| Activation Temperature |                                   |
| Nom.                   | 60°C (140°F)                      |
| Max.                   | 64°C (147°F)                      |
| Min.                   | 56°C (133°F)                      |
| Max. Reset Temperature |                                   |
| Max.                   | 64°C (147°F)                      |
| Min.                   | 60°C (140°F)                      |
| Tolerance              | +/-4°C(+/-7.2°F)                  |
| Lead Lengths           | 36" Two conductor jacketed leads  |



## **T8070 Electrical Specification**      **21°C / 70°F**

|                        |                                     |
|------------------------|-------------------------------------|
| Contact Arrangement    | SPST                                |
| Switch Action          | CLOSED above Activation Temperature |
| Maximum Temperature    | 81°C / 117°F                        |
| Activation Temperature |                                     |
| Nom.                   | 021°C (70°F)                        |
| Max.                   | 24°C (75°F)                         |
| Min.                   | 18°C (65°F)                         |
| Max. Reset Temperature |                                     |
| Max.                   | 24°C (75°F)                         |
| Min.                   | 21°C (70°F)                         |
| Tolerance              | +/-3°C(+/-6°F)                      |
| Lead Lengths           | 6" #20AWG Leads                     |



*GRI recommends that you do  
NOT use double faced tape.*

**WARRANTY:** One year warranty against workmanship, material and factory defects.

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# Water Sensor with Relay Contact

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- ◆ Will detect any conductive non-flammable liquid
- ◆ Ideal anywhere water damage could occur
- ◆ Automatic reset      ◆ 6 ft jacketed lead standard
- ◆ Custom lead length available
- ◆ Available in 5 VDC, 12 VDC and 24 VDC
- ◆ Closed and Open loop versions

Undetected water damage, such as that caused by leaking pipes or corroded water heaters, cost homeowners tens of thousands of dollars each year. Such repairs are time consuming and costly to correct. Applications could include computer room sub-floor areas, telephone equipment rooms, bathrooms, laundry rooms, any areas adjacent to a water storage tank or piping. Also evaporative air conditions, drip pans, overflows and/or drains.

Using no mechanical parts, the GRI Water Sensors are triggered by a moisture bridge across the sensor contacts. The GRI Water Sensors can be installed to detect a layer of water as minute as 1/16 of an inch in depth.

**The 2600 Closed Loop Sensors** use an external power source to energize a built-in relay contact so battery power is not recommended. Used in a closed loop configuration, an alarm condition will occur when moisture is detected, or if power to the sensor is lost, and if the sensor should fail. The relay output can be wired directly to any alarm panel or can be used to actuate an external device, i.e. transmitter, annunciator, etc.

In sump pumps and areas of high humidity, GRI recommends a low sensitivity version: 2600-LS, 2600T-LS.

**The 2500 Open Loop Sensors** use an external power source which will energize a built-in relay contact when water is detected. With the configuration the sensors are not fail safe. The relay output can be wired directly to any alarm panel or can be used to actuate an external device, i.e. transmitter, annunciator, etc.



## Part Numbers

### Closed Loop

2600/2600T  
2600-LS/2600T-LS  
2600T-P  
2605  
2624/2624T  
2600K  
2600T-PHS

### Open Loop

2500/2500T  
2600T-P  
2505  
2524/2524T  
2500K  
2600T-PHS

### Configuration

Normally Closed for a closed loop circuit 12 Volts DC  
Normally Closed for a closed loop circuit 12 Volts DC low sensitivity  
Remote sensor with 36" leads (works with 2600T and 2500T)  
Normally Closed for a closed loop circuit 5 Volts DC  
Normally Closed for a closed loop circuit 24 Volts DC  
Normally Closed for a closed loop circuit 12 Volts DC (w/1-2600T-PHS sensor)  
Remote sensor case with terminal connections for 2600K and 2500K

### Configuration

Normally Open for an open loop circuit 12 Volts DC  
Remote sensor with 36" leads (works with 2500T and 2600T)  
Normally Open for an open loop circuit 5 Volts DC  
Normally Open for an open loop with 24 Volts DC  
Normally Open for an open loop circuit 12 Volts DC (w/1 - 2600T-PHS sensor)  
Remote sensor case with terminal connections for 2500K and 2600K

**WARRANTY:** One year warranty against workmanship, material and factory defects.

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# Water Sensor with Relay Contact

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## INSTALLATION INSTRUCTIONS:

GRI 2505, 2605, 2600, 2524, and 2624 Water Sensors: When connecting these sensors to the panel, the red wire is connected to the positive side of the positive side of the auxiliary power supply and the black wire is connected to the negative. The green and white wires can then be connected to the pre-selected Closed Loop zone. A resistor can be connected in series with either the green or white wire for those panels that require end-of-line resistors.

GRI 2500T, 2524T, 2624T, 2500K and 2600K Sensors: Provide a means of detecting water in difficult to monitor locations, such as under carpets and in drop ceiling panels. This is accomplished by mounting 1 or more 2600T-P or 2600T-PHS's in various locations around the area to be monitored, then run the sensor wires to the terminal screws on the 2600T or 2624T. These can then be wired for power as described above the 2600 Water Sensor. The 2500T and 2600T include two 2600T-P sensors. (A maximum of ten 2600T-P's can be connected to each 2600T.) The 2500K and 2600K include one 2600T-PHS sensor.

After installation these units should be tested with a damp sponge or paper towel and inspected annually. If there is any corrosion or damage the sensor should be replaced.

### Closed Loop Specifications

#### Power Requirements:

|                        |             |
|------------------------|-------------|
| 2600 Operating Voltage | 12 Volts DC |
| 2605 Operating Voltage | 5 Volts DC  |
| 2624 Operating Voltage | 24 Volts DC |
| Operating Current      | 12 mA       |

#### Wire Contacts:

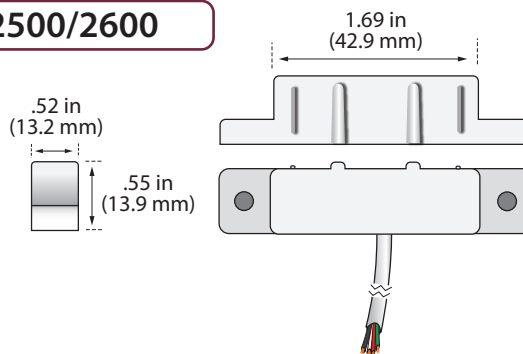
|            |               |
|------------|---------------|
| Red Wire   | +12 Volts DC  |
| Black Wire | -Ground       |
| Green Wire | Relay Contact |
| White Wire | Relay Contact |

#### Contact Characteristics:

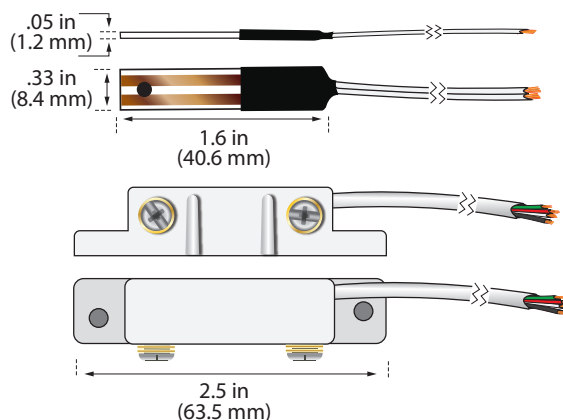
|                    |            |
|--------------------|------------|
| Contact Resistance | 100mΩ      |
| Switching Voltage  | 30 VDC Max |
| Switching Current  | 500 mA Max |
| Power              | 250 mW Max |

\*Note: Battery power not recommended.

### 2500/2600



### 2500T/2600T



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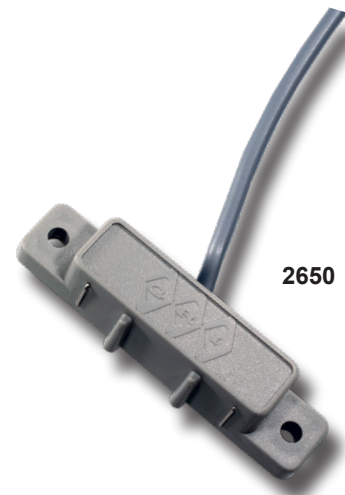
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# *Fluid Sensor with Relay Contact*

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- ◆ Will detect any conductive non-flammable liquid
  - ◆ Ideal anywhere liquid detection is required
  - ◆ Automatic reset
  - ◆ Available in gray only
- ◆ 6 foot jacketed lead standard
- ◆ Custom lead length available
  - ◆ 24 Volt AC sensor



Using no mechanical parts, the GRI Sensors are triggered by a moisture bridge across the sensor contacts. The GRI Sensor can be installed to detect a layer of liquid as minute as 1/16 of an inch in depth.

These sensors use an external power source to energize a built-in relay contact (battery power is not recommended.) Used in an active SPDT configuration, an alarm condition will occur when moisture is detected, power to the sensor is lost or if the sensor should fail. The relay output can be wired directly to a control panel or can be used to actuate an external device, i.e. transmitter, annunciator, etc., and can be used to monitor evaporative air conditioners, drip pans, overflows and/or drains.

**WARRANTY:** One year warranty against workmanship, material and factory defects.

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KIMBALL, NE 69145

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# Fluid Sensor with Relay Contact

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## INSTALLATION INSTRUCTIONS:

GRI 2650: The 2650 is used to detect the presence of fluid and to provide a relay output for signal or control of an external device. The switch operates on 24 Volts AC and functions as a Normally Open or Normally Closed Sensor. The red and black wires power the switch while the orange, white and green wires are the relay output wires.

After installation these units should be tested with a damp sponge or paper towel and inspected annually. If there is any corrosion or damage the sensors should be replaced.

### 2650 Open Loop Specifications

#### Power Requirements:

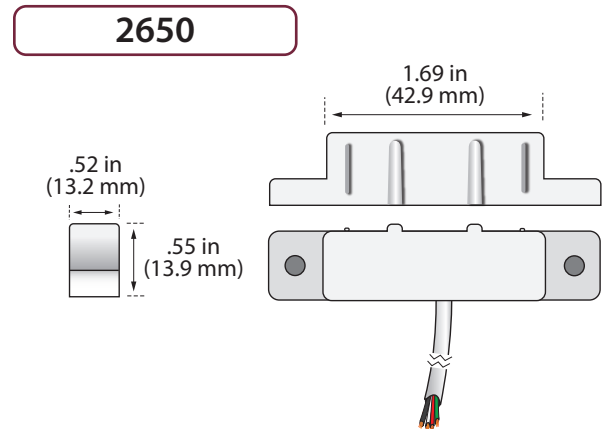
|                   |             |
|-------------------|-------------|
| Operating Voltage | 24 Volts AC |
| Operating Current | 12 mA       |

#### Wire Contacts:

|             |               |
|-------------|---------------|
| Red Wire    | 24 V AC       |
| Black Wire  | 24 V AC       |
| Green Wire  | C Form        |
| White Wire  | Relay Contact |
| Orange Wire | N.C. }        |
|             | C }           |
|             | N.O. }        |

#### Contact Characteristics:

|                                  |                    |
|----------------------------------|--------------------|
| Initial Contact Resistance, Max. | 100mΩ              |
| Normally Switching Capacity      | 1 A 30 V DC        |
| (resistive load)                 | 0.3 A 125 V AC     |
| Max. Switching Power             | 30 W               |
| (resistive load)                 | 37.5 V A           |
| Max. Switching Voltage           | 110 V DC. 125 V AC |
| Max. Switching Current           | 1 A                |



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# Surface Mount Water Contact

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- ◆ Will detect any conductive non-flammable liquid
- ◆ Ideal anywhere water damage could occur
  - ◆ Automatic reset
  - ◆ 6 foot jacketed lead standard
  - ◆ Custom lead length available
- ◆ For maximum protection we recommend using the 2600 4-wire sensor



Undetected water damage, such as that caused by leaking pipes or corroded water heaters, cost homeowners tens of thousands of dollars each year. Such repairs are time consuming and costly to correct. Applications could include computer room sub-floor areas, telephone equipment rooms, bathrooms, laundry rooms, any areas adjacent to a water storage tank or piping. Also evaporative air conditioners, drip pans, overflows and/or drains.

Using no mechanical parts, the GRI Water Sensors are triggered by a moisture bridge across the sensor contacts. The GRI Water Sensors can be installed to detect a layer of water a minute as 1/16 of an inch in depth.

Requiring only two wires for signal and power, the GRI 2800 Water Sensor utilizes an open collector electronic trigger. The sensor stimulates a simple dry closure. It can be used to activate a remote signaling device or it can be wired directly to most alarm panels and some wireless transmitters.

The GRI Water Sensors will continue to protect against troublesome and costly water leaks for years to come.

## Part Numbers

### **Configuration**

**2800** Normally Open for an open loop circuit  
5-24 Volts DC

## 2800 Open Loop Specifications

### **Power Requirements:**

|                                   |               |
|-----------------------------------|---------------|
| Operating Voltage (min./max.)     | 5-24 Volts DC |
| Standby Current (at max. voltage) | 10 uA         |
| Alarm Current (max.)              | 400 mA        |

### **Wire Contacts:**

|            |                |
|------------|----------------|
| Red Wire   | +5-24 Volts DC |
| Black Wire | - Ground       |

### **Contact Characteristics:**

|          |               |
|----------|---------------|
| Contacts | Normally Open |
|----------|---------------|

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# Surface Mount Water Contact

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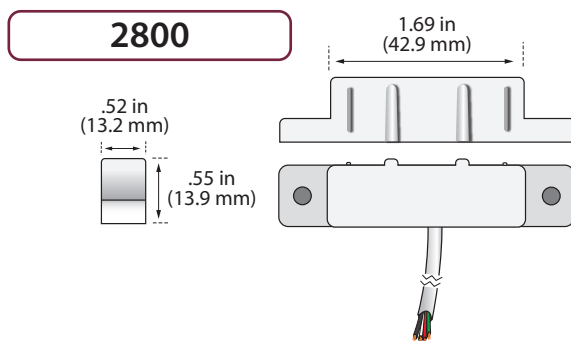
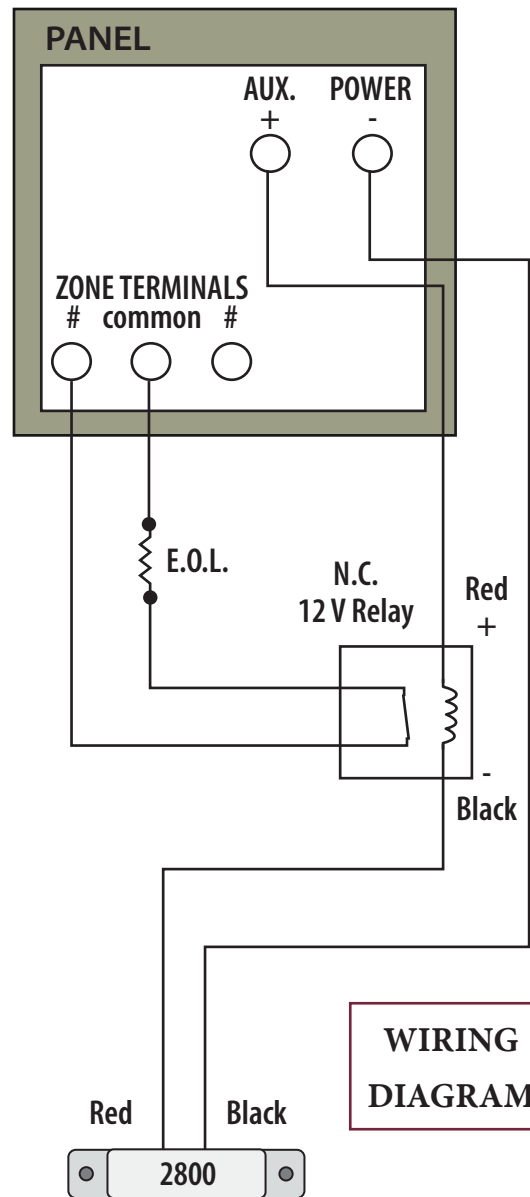
## INSTALLATION INSTRUCTIONS:

### MINIMUM 5 VDC REQUIRED

*THIS IS AN EXTREMELY IMPORTANT TECHNICAL ADVISORY FROM GRI: If there is insufficient power to properly operate this device, the ability of the security system to sense the presence of water will be compromised.* The 2800 is a normally open switch for an open loop application. The 2800 requires a DC operating voltage on the zone loop of a 5VDC minimum to a maximum 24VDC. *If there is an EOL resistor installed, measure to confirm the 5 VDC minimum for the zone loop.* (In the even the panel does not provide the minimum DC voltage, refer to the drawing at the right for installation.) After installation, these units should be tested with a damp sponge or paper towel and inspected annually. If there is any corrosion or damage the sensor should be replaced.

### FOR INSTALLATION TO THE CONTROL PANEL

Select the open loop where the switch will be connected. The switch must be connected with the correct polarity. If the panel terminal strip is not marked, zone polarity can be determined by using a test volt meter. *The panel must be capable of producing a minimum of 5 Volts DC under load to the sensor.* Connect the red lead to the positive side of the panel zone and the black lead to the returning negative side. (If the panel does not provide minimum power for the 2800 use the wiring diagram at the right showing the use of a sensitive relay board and the auxiliary power from the BACP.)



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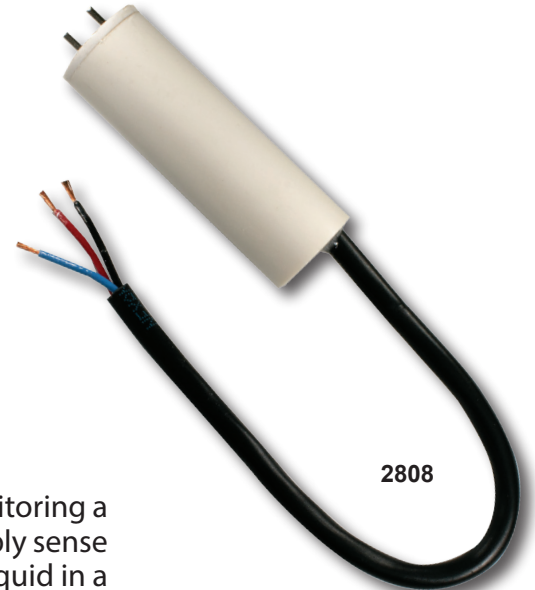
# Absence of Water Detector

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## 2808 Series

- ◆ Senses the lack of or presence of any non-volatile liquid
- ◆ Microprocessor controlled
- ◆ Submersible and fully self contained
- ◆ 12" cable



The GRI 2808 Absence of Water Detector is targeted for monitoring a fluid level height. This submersible sensor can safely and reliably sense and respond to the absence of or presence of a non-volatile liquid in a wide range of environmental conditions.

The GRI 2808 series of water detectors are microprocessor controlled devices that produce an AC signal between two stainless steel probes. Depending on the conductivity measured between the two probes, a set of internal relay contacts will be latched in an open or closed position.

Sensor life span is optimized by periodically sampling for liquid at set timed intervals. Conductivity sampling between the two probes once every 2.5 minutes are used in the Standard Self Powered 2808 allowing for a 4-year expectancy. A sampling rate of once every 10 seconds is used with the Externally Powered 2808-12V providing a 15+ year life expectancy. Instantaneous triggering and custom sampling rates are also available on request.

External connections are made through the included 12 inches of direct burial cable allowing for up to a foot of total submersion, burial or harsh environmental exposure. Custom cable lengths are also available on request.

### Part Numbers

2808

2808-12V

Self powered / 2.5 minute sample rate / C form relay output

External 12VDC / 30 second sample rate / C form relay output

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# Absence of Water Detector

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## INSTALLATION INSTRUCTIONS:

The GRI Absence of Water Detector is installed by mounting the unit so that sensor probes are located at the unit so that sensor probes are located at the desired fluid level position. Insertion of the 2808 into the liquid will confirm that mounting point as the minimum liquid level height. Mounting the 2808 above and out of the liquid will confirm that mounting point as the maximum liquid level height. The latching C form relay output will set upon first initial sampling after mounting, and maintain that set during subsequent samplings up to and until a change in status occurs. At that time, the C form relay will reset, signaling that change. The device is secured in place using the provided plastic strap. Connections to the relay contact wires are made using a suitable wire connector. Note: Watertight connectors may be needed if connector location will be submerged.

These detectors should be inspected and tested annually. If there is damage the detector should be replaced.

### Specifications

#### 2808-12V Only

Operating Voltage 9 Volts DC - 28 Volts DC

Operating Current 7 mA nominal

#### 2808 and 2808-12V

Operating Temperature: 70 C to -40C

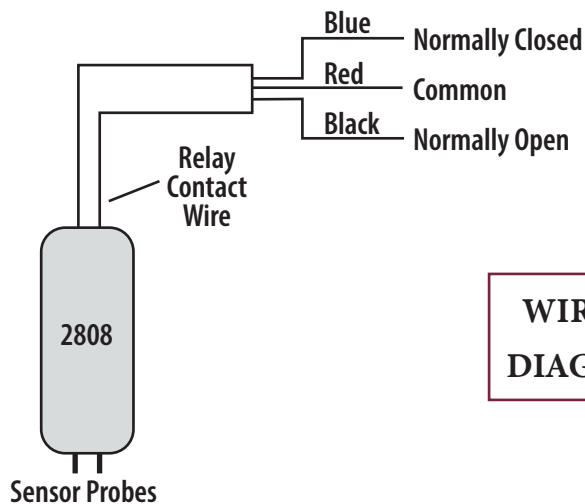
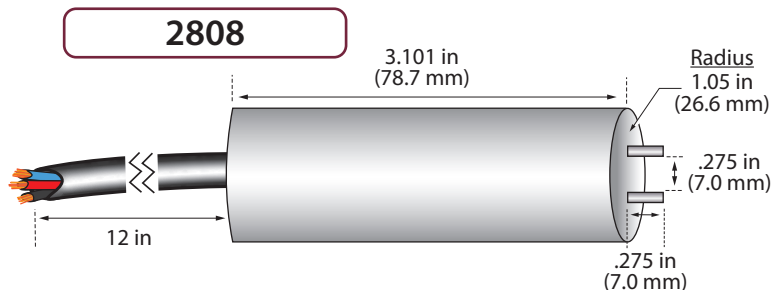
#### Contact Rating:

Nominal Switching Capacity 2A @ 30VDC

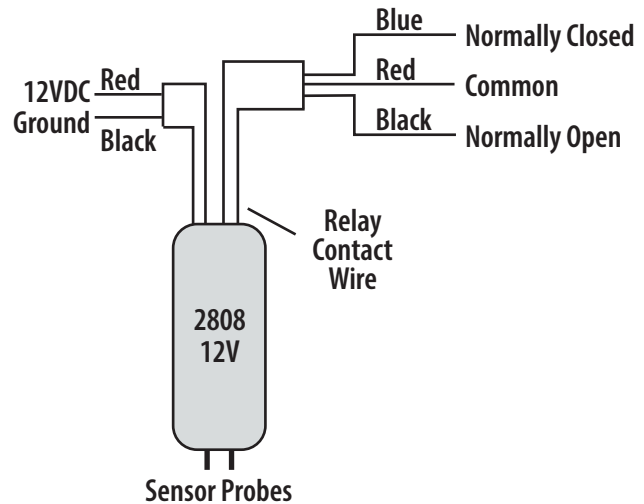
Max. Switching Power 60 W

Max. Switching Voltage 220 VDC

Max. Switching Current 2 A



### WIRING DIAGRAM



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# Liquid Level Detector

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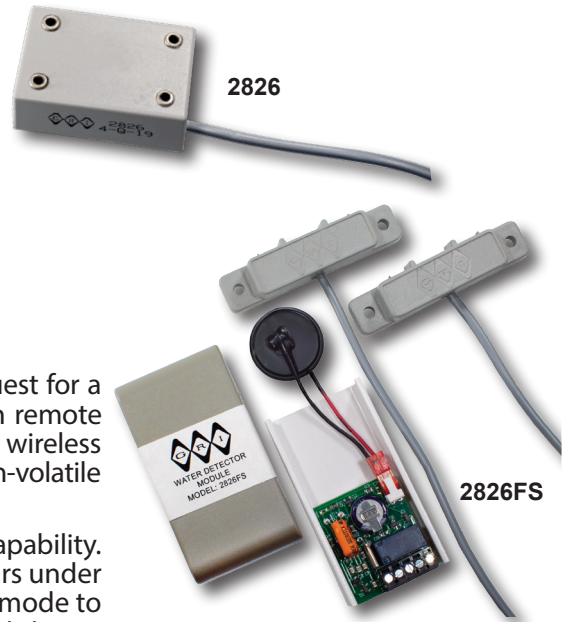
## 2826 / 2826FS

- ◆ Detects non-volatile liquids
- ◆ For use with wireless transmitters
  - ◆ Installs easily
  - ◆ C Form relay contacts
  - ◆ Fail safe version available

### APPLICATION:

The GRI 2826 detector was designed in response to a direct request for a small electronic sensor capable of detecting non-volatile liquids in remote hard to reach locations. The sensor, in conjunction with your favorite wireless transmitter, can be used to detect and report the encroachment of non-volatile liquids into an isolated sensitive location.

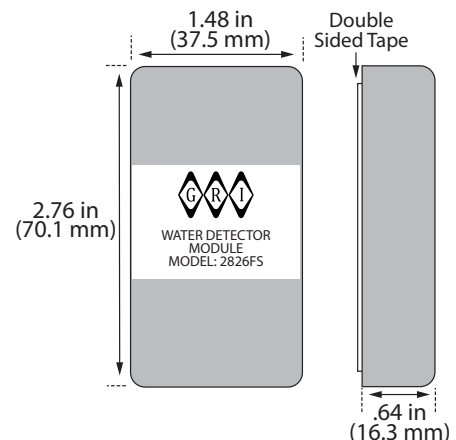
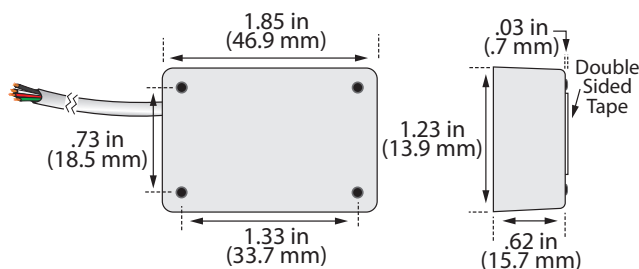
The new 2826FS from GRI provides remote probes plus a **fail safe** capability. When the on board battery expends the last of its power, 3 to 5 years under normal conditions, the 2826FS automatically places itself in a safe mode to help prevent danger to devices, properly and/or people. This **safe** mode keeps the zone assigned to the 2826FS in an alarm condition. This causes an authorized person or an alarm technician to physically inspect the 2826FS and replace the battery, prior to resettling and re-arming the system.



### DESCRIPTION:

The GRI 2826 detector is an internally powered, microprocessor controlled device that samples the conductivity between any two adjacent sensor points located on the bottom of the device. Power consumption is less than 1 micro-amp while in the standby mode. This allows for an extended duty cycle.

Relay contacts are latched in an open or closed position based on the conductivity measured between the sensors. External wire connections are provided to allow access to the C form relay contacts for output control of an external device.



**WARRANTY:** One year warranty against workmanship, material and factory defects.

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# Liquid Level Detector

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## INSTALLATION INSTRUCTIONS

### 2826 Liquid Level Detector

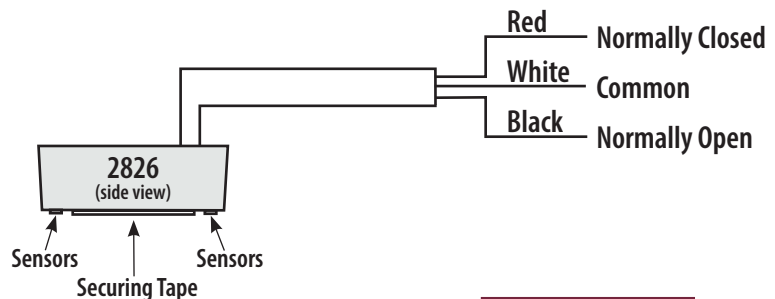
To install the GRI 2826 detector, place the unit where liquid is most likely to accumulate. Clean and dry the desired placement location. A smooth surface is preferable and preparing surface by using an alcohol wipe is recommended. Remove protective paper from double sided tape, then stick the unit to the cleaned surface.

To connect the 2826 detector wires to an external device, see the installation instructions for that device.

Use the white and red wires for a closed loop circuit, or the white and black wires for an open loop circuit. After installation these units should be tested with water and inspected annually. If there is any corrosion or damage the sensor should be replaced.

#### Specifications

|                                               |                               |
|-----------------------------------------------|-------------------------------|
| Ave. Duty Cycle at Manufacturer Contact Wires | Approx. 5 years<br>22 ga. 36" |
| <b>Contact Rating:</b>                        |                               |
| Nominal Switching Capacity                    | 2A @ 30VDC                    |
| Max. Switching Power                          | 60 W                          |
| Max. Switching Voltage                        | 220 VDC                       |
| Max. Switching Current                        | 2 A                           |



## WIRING DIAGRAMS

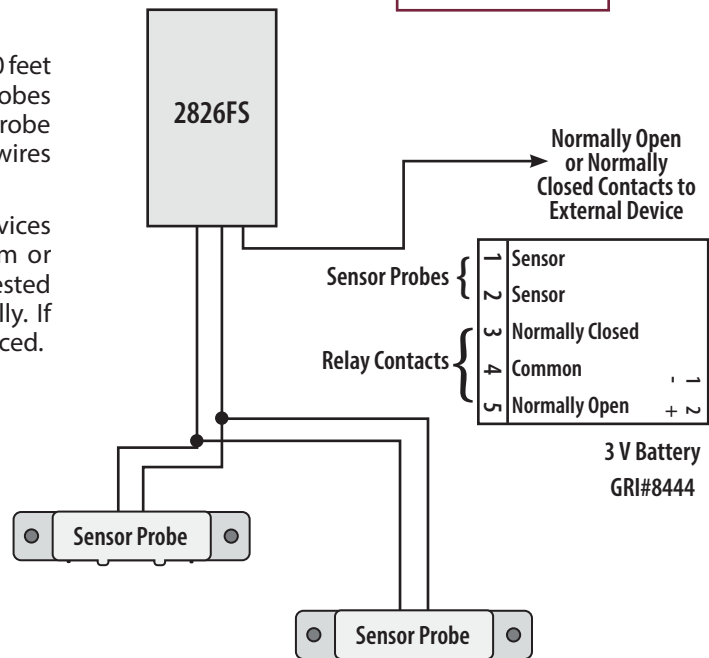
### 2826FS Liquid Level Detector

Mount the 2826FS detector relay on a wall no more than 100 feet from desired location to be monitored. Mount the sensor probes at locations where liquid pooling is most likely to occur. Run probe wires from sensor probes to the detector relay and connect wires to sensor terminals. Wire all sensor probes in parallel.

Use the relay contact terminals to connect to external devices such as wireless transmitters or connect directly to alarm or controller systems. After installation these units should be tested with a damp sponge or paper towel and inspected annually. If there is any corrosion or damage the sensor should be replaced.

#### Specifications

|                                        |                 |
|----------------------------------------|-----------------|
| Probe with 36" leads                   | GRI #2826-P     |
| Battery with connector                 | GRI #8444       |
| Battery life                           | Approx. 4 years |
| <b>Contact Rating:</b>                 |                 |
| Nominal Switching Capacity             | 2A @ 30VDC      |
| Max. Switching Power                   | 60 W            |
| Max. Switching Voltage                 | 220 VDC         |
| Max. Switching Current                 | 2 A             |
| Max. Number Sensor Probe               | 10              |
| Max. Wire length for detector to probe | 100 foot        |



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# Home Water Leak Alarm System

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## WS-20

- ◆ Instant alarm
- ◆ Signaling device
- ◆ Self contained
- ◆ Local alarm and flashing LED
- ◆ Low battery indicator
- ◆ 6' Jacketed lead
- ◆ Form C relay
- ◆ Additional sensors, PN WS-20-240-S  
(20' jacketed lead, max. wire run 106 ft.)  
Up to 6 sensors per unit



### APPLICATION:

The WS-20 is designed as a signaling device for use as a self contained Home Water leak Alarm System. The Model WS-20 will sound a local alarm and flash and LED indicator, should water come in contact with the WS-20 water sensor.

### DESCRIPTION:

The Home Water Leak Alarm System uses a microprocessor to monitor a Water Sensor, a Cancel Button, Supply Voltage and provides control for a Sounder, LED indicator and a Form C Relay. The Water Alarm System is set to alarm the instant water is bridged across the two stainless steel wire straps on the water sensor. The sounder will continue to sound until the reset/cancel button is depressed. Other features for the eWS-20 would include an adjustable sounder volume, power/alarm LED indicator, a latching relay and low battery signal.

### INSTALLATION INSTRUCTIONS:

The WS-20 Home Water Leak Alarm System mounts easily to walls or most any clean flat surface with the supplied double stick tape or mounting screws. The Alarm Sounder box should be mounted about 4 to 5 feet off the ground at the location water leaks are most likely to occur. Avoid locations where spraying or splashing water could come in contact with the Sounder box.

The Water Sensor should be mounted in a location where water pooling or spraying from a leaking appliance will most likely occur. The stainless steel wire straps should be at least 1/16th above any flooring surface. The sensor can be mounted to a wall with stainless steel straps facing down or the sensor can be mounted to the floor surface.

A 9-volt alkaline battery can then be connected to the battery strap or the unit can be powered from an external 12 VDC power supply, connected to the + and - terminals.

**WARRANTY:** One year warranty against workmanship, material and factory defects.

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# Home Water Leak Alarm System

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## OPERATION:

After installation, proper operation is confirmed by verifying the following conditions:

### Normal Condition

1. A short periodic flash from the green LED indicates Normal Operation in dry conditions.
2. While in normal operating condition, depressing the cancel button will place the unit in a standby condition (sensor disabled). This will be indicated by continually flashing green LED. The unit will remain in this condition for approximately 1 minute then will reset back to Normal Operation.
3. While in the standby condition, a second depression of the cancel button will cause the device to perform a battery test. If the battery voltage is low, the unit will sound a low battery annunciation (3 short beeps 3 times). Immediately after the battery test the unit returns to normal operation. If battery voltage is not low, the unit returns to normal operation without the low battery annunciation.

### Alarm Condition

4. Testing the alarm is performed by holding a damp paper towel or sponge across the two stainless steel wire straps on the sensor until the unit enters the alarm mode. This mode is indicated by a continually annunciating sounder and continually flashing red LED.
5. While in alarm condition, depressing the cancel button will silence the annunciator and place the unit into either an alarm standby condition (sensor still sensing water), or places the unit back to normal operation (sensor not sensing water). If the sensor is still sensing water and the unit enters the alarm standby mode, an alarm standby annunciation will be sounded (6 short peeps 1 time).
6. When in the alarm standby condition, this will be indicated by a slow continuous flashing red LED, and a periodic sounding of the alarm standby annunciation. Depressing the cancel button while in the alarm standby mode will only cause re-sounding of the alarm standby annunciation. The unit will automatically return to normal operation only after the sensor no longer senses water.

After installation these units should be tested with a damp sponge or paper towel and inspected annually. If there is any corrosion or damage the sensor should be replaced.

### Specifications

|                            |                         |
|----------------------------|-------------------------|
| Battery Type               | 9 Volt Alkaline         |
| Battery Life (approximate) | 6 months                |
| Recommended External Power | 9 to 12 VDC @ 100 mA    |
| Low Battery Mode           | 6.5 VDC                 |
| Sounder Rated              | 85 dB at 10 ft. (3.5 M) |
| Wire Run                   | 106' Maximum            |

### Relay Contacts

|                            |            |
|----------------------------|------------|
| Nominal Switching Capacity | 2A @ 30VDC |
| Max. Switching Power       | 60 Watts   |
| Max. Switching Current     | 2 Amps     |

### Terminal TM1

- 1 External 12 VDC
- 2 Ground (-)
- 3 Remote Reset
- 4 Sensor Black Wire
- 5 Sensor White Wire
- 6 Sensor Red Wire

### Terminal TM2

- 1 Relay N/O
- 2 Relay Common
- 3 Relay N/C

### Sounder Volume

| Control                             | JP-1        |
|-------------------------------------|-------------|
| <input checked="" type="checkbox"/> | Full Volume |
| <input checked="" type="checkbox"/> |             |
| <input checked="" type="checkbox"/> |             |
| <input checked="" type="checkbox"/> |             |
| <input checked="" type="checkbox"/> | 3/4 Volume  |
| <input checked="" type="checkbox"/> |             |
| <input checked="" type="checkbox"/> |             |
| <input checked="" type="checkbox"/> |             |
| <input checked="" type="checkbox"/> | 1/2 Volume  |
| <input checked="" type="checkbox"/> |             |

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# Water Valve Shutoff

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## WVS

- ◆ Monitors flooding from leaking or broken water line
- ◆ Automatic control of main water supply line
- ◆ Form C Relay output for external monitoring devices
- ◆ Visual and audible status indicators
- ◆ Automatic self testing
- ◆ Covers large area when used with multiple sensors
- ◆ Low voltage design with battery backup



The GRI Water Valve Shutoff System was designed as a flood prevention device. This system utilizes an electronic controller to provide automatic control of an electronic water valve that is installed in the main water supply line. The controller continually monitors water sensors that are placed in areas where flooding from water line breaks are most likely to occur; washing machine, hot water heater, sinks, dishwasher.

When water is sensed by the water sensor, the sensor will signal the controller of the presence of water. The controller then automatically powers the electronic valve and signals it to close. Once the controller senses that the valve is in the closed position, the controller will then trigger the C Form relay that can be used to signal a remote monitoring device, such as an alarm panel or auto dialer. While in this alarm condition, the controller will annunciate an audible alarm and flash an alarm indication LED. The controller will stay in this alarm condition with the valve closed up until the reset button is depressed. When the reset is depressed while in the alarm mode, the controller will either open the valve and return to the normal monitoring mode or if the sensor still senses the presence of water, the controller will annunciate an alarm condition and the valve remains in the closed position.

At any time, the position of the valve is open, a press and hold will cause the valve to close. If the valve is closed, a press and hold will open the valve.

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# Water Valve Shutoff

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## WVS

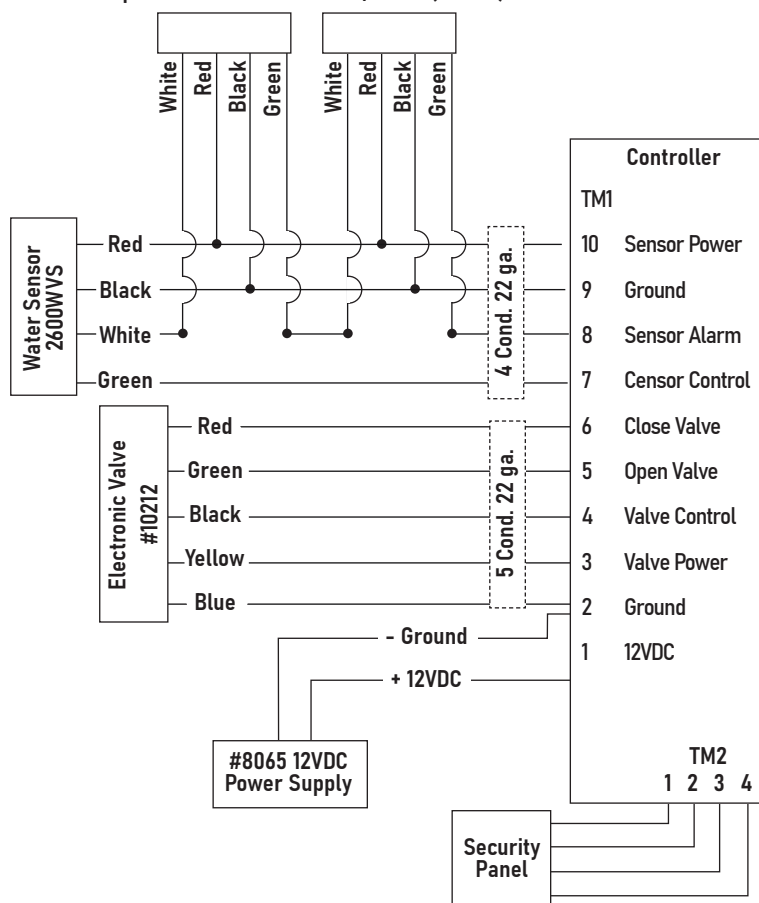
The GRI Water Valve Shutoff System was also designed to monitor itself. The controller periodically checks for a signal sent to the controller from both the water sensor and the electronic valve. If either signal is missing or incorrect, the controller will enter a trouble mode. When a trouble occurs a trouble annunciation is sounded and a flashing LED will be displayed. Four green LED flashes indicate a trouble with the water sensors and four red LED flashes indicate a trouble with the valve. Common troubles include loose or broken connecting wires or improper installation.

Another self test feature is a monthly cycling of the electronic valve. Once a month the controller will automatically close and reopen the valve to prevent corrosion buildup inside the valve and to physically check for proper operation of the electronic valve. A trouble condition will be displayed if the test fails.

Prior to installation GRI recommends performing a bench test on the WVS to become familiar with the proper wiring and operation of the unit.

And adequate bench test would consist of connecting the valve assembly, 2600WVS and power supply directly to the controller and check for proper valve control operation.

Optional Not Included: 2600/2600T (max. 5)



### Items Included:

- |                                 |         |
|---------------------------------|---------|
| 1 Electronic Controller         |         |
| 1 Electronic Water Valve        |         |
| 1 Water Sensor                  | 2600WVS |
| 1 12 VDC Regulated Power Supply | 8065    |
| 9 Connectors                    |         |

### Optional Items:

- |                     |            |
|---------------------|------------|
| 2600 Water Switches | 2600/2600T |
|---------------------|------------|

### Specifications

|                   |                   |
|-------------------|-------------------|
| Operation Voltage | 9 to 12 VDC       |
| Max. Voltage      | 13.5 VDC          |
| Average Current   | 55 mA w/5 sensors |
| Max. Current      | 300 mA            |
| Backup Battery    | 9 V Alkaline      |

### Valve

|           |        |
|-----------|--------|
| Pipe Size | 1" NPT |
| Height    | 4 1/2" |
| Width     | 3 1/4" |
| Length    | 3 1/4" |

### Relay Contacts

|                             |                    |
|-----------------------------|--------------------|
| Contact Resistance          | 100 mOhms          |
| Max. Switching Power        | DC 30 W - AC 60 VA |
| Max. Switching Volts        | 60 VDC - 120 VAC   |
| Max. Switching Current      | 2 Amps DC/AC       |
| Max. Water Sensors          | 5                  |
| Max. Wire Length to Sensors | 200 ft.            |
| Max. Wire Length to Valve   | 50 ft.             |

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(308) 235-4645  
FAX (308) 235-3561  
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# Water Moccasin Sensor Strip with Relay Contact

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- ◆ 2600 Water sensor built into a 10 foot mesh water strip sensor for perimeter or large area flood detecting
- ◆ Idea for basements, computer server rooms, water pipes, attics or anywhere water damage could occur
  - ◆ Automatic reset
  - ◆ 12 VDC closed loop
- ◆ Up to five, 10 foot extension probes with the WM10-P



WM2600-10

Undetected water damage, such as that caused by leaking pipes or corroded water heaters, cost homeowners tens of thousands of dollars each year. Such repairs are time consuming and costly to correct. Applications could include computer room sub-floor areas, telephone equipment rooms, bathrooms, laundry rooms, any areas adjacent to a water storage tank or piping. Also evaporative air conditioners, drip pans, overflows and/or drains.

Using no mechanical parts, the GRI Water Sensors are triggered by a moisture bridge across the sensor contacts.

The 2600 Closed Loop Sensors use an external power source to energize a built-in relay contact so battery power is not recommended. Used in a closed loop configuration, an alarm condition will occur when moisture is detected, or if power to the sensor is lost, and if the sensor should fail. The relay output can be wired directly to any alarm panel or can be used to actuate an external device, i.e. transmitter, annunciator, etc.

## Part Numbers

|           |                                                       |
|-----------|-------------------------------------------------------|
| WM2600-10 | Normally closed for a closed loop circuit 12 Volts DC |
| WM10-P    | 10 ft. extension probe series connected               |

The WM10-P is a ten foot extension probe which can be wired to the WM2600-10 or used with the GRI 2600T, 2500T or 2826FS for wireless detection.

## Specifications

### **Power Requirements**

|                   |             |
|-------------------|-------------|
| Operation Voltage | 12 Volts DC |
| Operating Current | 10 mA       |

### **Wire Connections**

|       |               |
|-------|---------------|
| Red   | +12 Volts DC  |
| Black | - Ground      |
| Green | Relay Contact |
| White | Relay Contact |

### **Contact Characteristics**

|                    |                  |
|--------------------|------------------|
| Contact Resistance | 100 mOhms        |
| Switching Voltage  | 200 Volts DC Max |
| Switching Current  | 500 mA Max       |
| Carry Current      | 1 Amp Max        |
| Power              | 10 VA Max        |

### **Temperatures**

|                       |                |
|-----------------------|----------------|
| Operating Temperature | -40°C to +75°C |
| Storage Temperature   | -40°C to +85°C |
| Polyester Mesh        | +125°C Max     |

### **WM10-P Extension Probes**

|                  |       |
|------------------|-------|
| Series Connected | 5 Max |
|------------------|-------|

### **WM10-P Specifications**

|               |                              |
|---------------|------------------------------|
| Wire          | 2 Conductor 22 ga PVC Jacket |
| Temperature   | -70°C Min to +125°C Max      |
| Mesh Material | Polyester                    |
| Length        | 10 feet                      |

**WARRANTY:** One year warranty against workmanship, material and factory defects.

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## INSTALLATION INSTRUCTIONS

**WM2600-10** For installation to an alarm panel, the red wire is connected to the auxiliary 12 volt supply and the black wire is connected to negative. The green and white wires can then be connected to any preselected closed loop terminal. A resistor can be connected in series with either the green or white wire for those panels that require end-of-the line resistance.

For area flood detecting, this sensor can be installed by securing the supplied cable ties to the mesh stripping then mount the cable tie to floor or wall base board to the area to be monitored using the supplied screws.

For water pipe leak detecting, the sensor can be installed by securing the mesh stripping to the water pipe with either the supplied cable tie or water proof tape. For horizontal installed pipe the mesh should be secured along the bottom of the pipe, and for vertical piping the mesh should spiral around the pipe.

## INSTALLATION INSTRUCTIONS

**WM2600-10** Series connecting the WM10-P to another WM10-P is done by connecting the 2 conductor cable of one probe to the 2 conductor cable of another probe with the provided connectors. Start by slipping the included 5" piece flexible mesh and the two 1/4" pieces of shrink tubing over the end of the first WM10-P. Crimp the cables red wire of the first probe to the red wire of the second probe with one of the provided connectors and then crimp the black wires together with the other connector, crimp tight with pliers to insure good connections. If additional WM10-Ps will be added to the strip follow the above same procedure to the end of the second extension probe. Repeat same procedure for up to 5 extension probes per strip.

Test probe assembly by either connecting the starting cable to a pre-installed working water switch, and we the farthest end of strip with water and check for proper switch operation. Or test probe assembly with an ohm meter for good continuity between the red wire of one end of strip, to the red wire on the other end. A good connection would read less than one ohm. Repeat continuity test on black wires then check for an open circuit between the red and black wires. After testing, slide each 5" piece flexible mesh over installed connectors, overlap ends of flexible mesh and secure by heating the two 1/4" pieces of shrink tubing at both ends.

### Connecting the WM10-P to a GRI Water Switch

**WM2600-10 Water Switch** To connect the WM10-P to a WM2600-10 follow the same procedure above for connecting WM10-P to another WM10-P.

**2600T and 2500T Water Switch** To connect the WM10-P to either a 2600T or 2500T connect probe cable end to water switch terminal screws, red wire to one terminal and the black wire to the other terminal, polarity does not matter.

**2826FS Water Switch** To connect the WM10-P to 2826FS, connect probe cable end to water switch terminal block. Red wire to terminal block pin 1 and the black wire to terminal block pin 2.

*\* All water switches should be installed per manufacture instructions and should be annually tested with water from farthest end of extension probes. If there is any corrosion or damage the sensors should be replaced.*

**WARRANTY:** One year warranty against workmanship, material and factory defects.

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## ***Table of Contents Electrical Products***

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***Current Sensor CS Series***

***Low Voltage Switching Device LVSD***

***Power Supplies and Regulators***

***Power Transfer Device PTD-1***

***Junction Box 6600***



# Power Transfer Device with Custom Lengths .218 Diameter

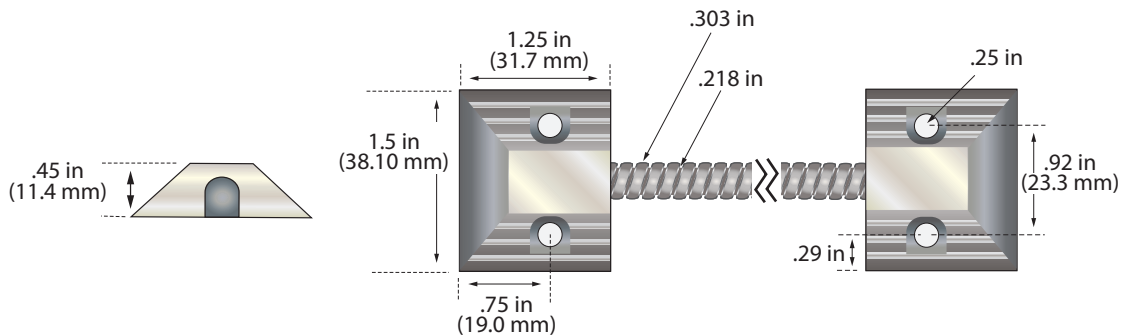
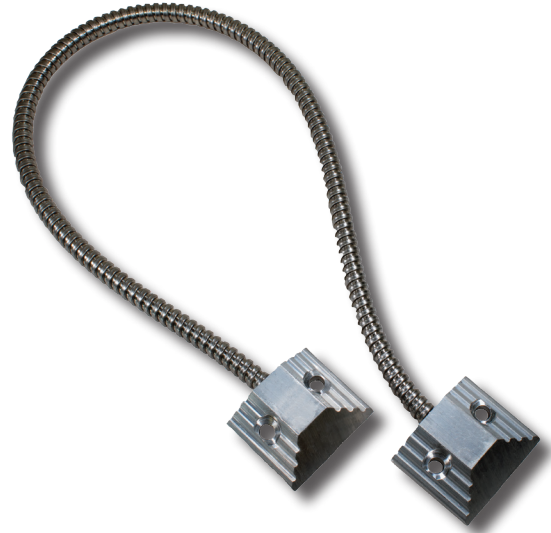
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**REGULAR  
SIZE**

## PTDC

- ◆ Heavy duty aluminum ends
- ◆ 8296 Stainless steel armored cable
- ◆ 0.218" / 5.55mm inside diameter
- ◆ 0.303" / 7.77mm outside diameter
  - ◆ Includes mounting screws
  - ◆ Twist lock cable into ends
  - ◆ Secure with #832 set screws (use 5/64 allen wrench)
- ◆ Custom armored cable lengths upon request



| <u>Part Numbers</u> |        |                 |                  |
|---------------------|--------|-----------------|------------------|
|                     | Length | Inside Diameter | Outside Diameter |
| PTDC (ends only)    |        |                 |                  |
| PTDC-7              | 7"     | 0.218"/5.55mm   | 0.303" /7.77mm   |
| PTDC-12             | 12"    | 0.218"/5.55mm   | 0.303" /7.77mm   |
| PTDC-18             | 18"    | 0.218"/5.55mm   | 0.303" /7.77mm   |
| PTDC-24             | 24"    | 0.218"/5.55mm   | 0.303" /7.77mm   |
| PTDC-36             | 36"    | 0.218"/5.55mm   | 0.303" /7.77mm   |

**8296 estimated wire allowance: Six 22 gauge stranded,  
2 each, 2 & 3 conductor, 1 each 4-6 conductor.**

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# Power Transfer Device with Custom Lengths .313" Diameter

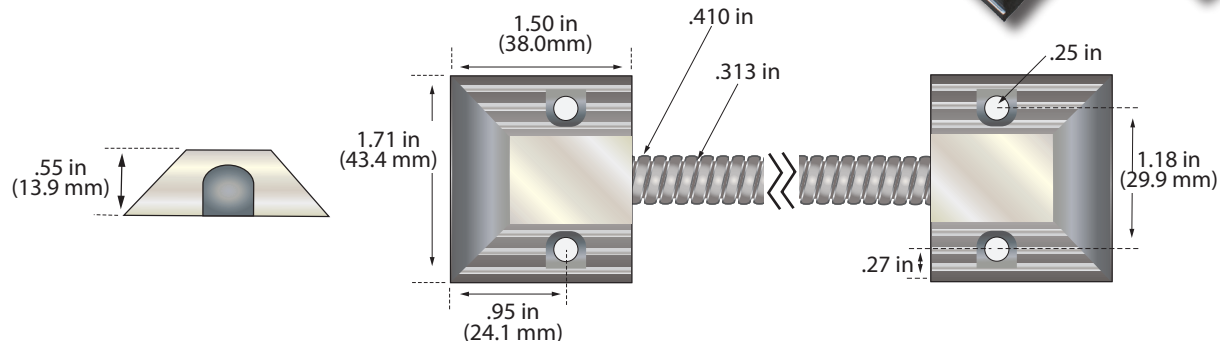
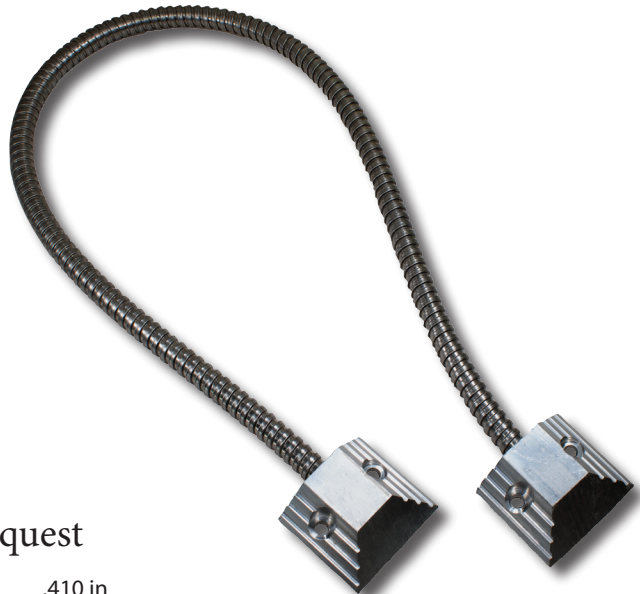


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**LARGE  
SIZE**

## PTDCL

- ◆ Heavy duty aluminum ends
- ◆ 8449 Stainless steel armored cable
- ◆ 0.313" / 7.94mm inside diameter
- ◆ 0.410" / 10.91mm outside diameter
  - ◆ Includes mounting screws
  - ◆ Twist lock cable into ends
  - ◆ Secure with #832 set screws (use 5/64 allen wrench)
- ◆ Custom armored cable lengths upon request



### Part Numbers

|                   | Length | Inside Diameter | Outside Diameter |
|-------------------|--------|-----------------|------------------|
| PTDCL (ends only) |        |                 |                  |
| PTDCL-7           | 7"     | 0.313"/7.94mm   | 0.410" /10.91mm  |
| PTDCL-12          | 12"    | 0.313"/7.94mm   | 0.410" /10.91mm  |
| PTDCL-18          | 18"    | 0.313"/7.94mm   | 0.410" /10.91mm  |
| PTDCL-24          | 24"    | 0.313"/7.94mm   | 0.410" /10.91mm  |
| PTDCL-36          | 36"    | 0.313"/7.94mm   | 0.410" /10.91mm  |

**8449 estimated wire allowance: Ten 22 gauge stranded,  
5 each, 2 conductor, 4 each 3 conductor  
3 each 4/5 conductor, 2 each 6 conductor**

**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# Current Controller CC-01

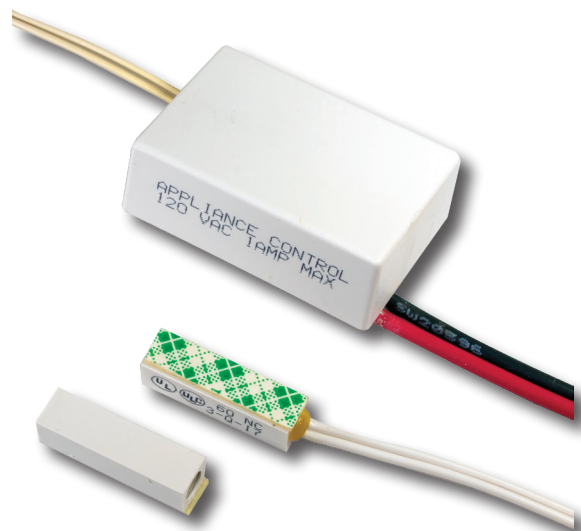
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## CC-01



- ◆ U.L and U.L.C. Listed
- ◆ Designed for lamp switching
- ◆ Use for walk-in closets, pantries and cabinets
  - ◆ Automatic AC voltage switching system
  - ◆ Monitors the state of a low voltage switch connected to the door



The GRI Current Controller is an encapsulated circuit with connecting wires to AC power, a light fixture and door monitor switch. A microprocessor circuit is safely isolated from the 120 volts AC. This control signal through the door switch will control the AC power to the light fixture. The GRI Current Controller is designed to fit into an electrical junction box along with the connecting wires.

**NOTE: Open loop switch required. GRI 60-12 included. Also available with recessed switch: CC-01-3030-T, CC-01-RB-02, or with no switch CC-01 NS, call factory for other options.**

### Specifications

|                         |         |
|-------------------------|---------|
| Maximum Input Voltage   | 125 VAC |
| Maximum Output Current  | 1 A     |
| Maximum Output Power    | 125 VA  |
| Recommended Output Load | 60 VA   |
| Door Switch Voltage     | 3 VDC   |
| Door Switch Current     | 3 uA    |

**WARRANTY:** One year warranty against workmanship, material and factory defects.

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# Current Controller CC-01

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## INSTALLATION INSTRUCTIONS:

### Installing the Door Sensor

**NOTE:** Open loop sensor required (included).

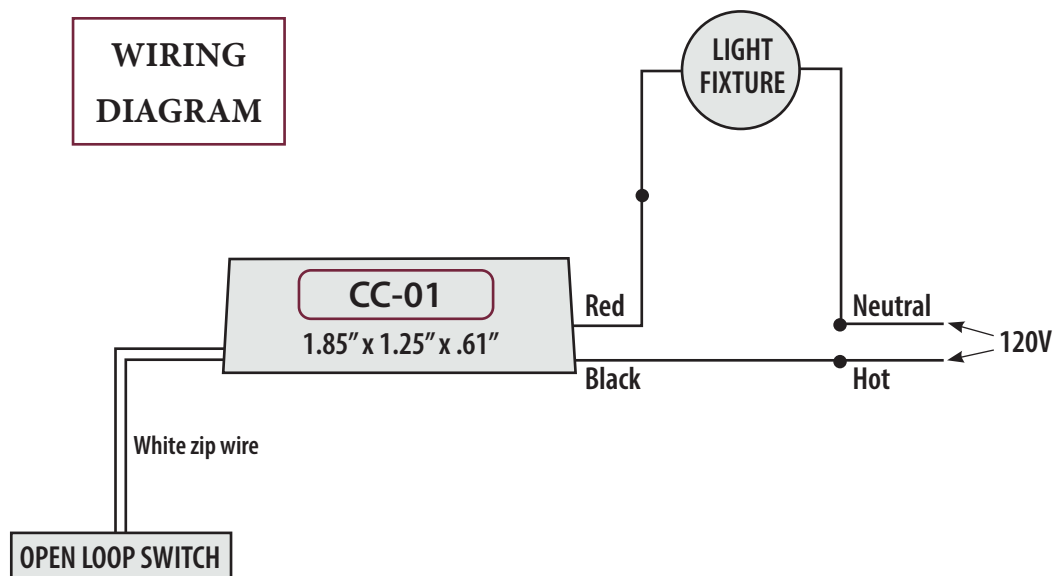
Install the switch on the door, according to the manufacturers installation instructions. Run wires from the door switch to the electrical junction box.

### Installing the GRI Current Controller

**NOTE:** The installation of the GRI Current Controller must be performed by a licensed Electrician.

**CAUTION:** Remove branch power before installing CC-01.

Run light fixture wires from the light fixture to the electrical junction box. Run electrical wires from branch circuit to the electrical junction box. Connect the white zip wire from CC-01 to the door switch wires using the supplied blue wire connectors. Connect the red wire from CC-01 to the hot wire of the light fixture. The other light fixture wire is connected to neutral using the supplied wire connectors. Connect the black wire from CC-01 to the electrical hot wire from the AC branch using the supplied yellow wire connectors. After all the connections have been made, the CC-01 can be placed into the electrical junction box. Secure the box lid and reapply power to the branch circuit.



**WARRANTY:** One year warranty against workmanship, material and factory defects.

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# Current Sensor CC15

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## CC15



- ◆ U.L and U.L.C. Listed
- ◆ 15 Amp switching
- ◆ Designed for appliance control
- ◆ Used in environmental control and lighting systems
- ◆ Controlled with low voltage applications
- ◆ Custom programming options available



## APPLICATION:

The GRI CC15 Current Controller is an automatic current switching device. This device was designed to be used primarily for switching appliance and lighting systems, such as area lighting, LED lighting and environmental control units. It operates by monitoring the state of a low voltage switch that can be placed in remote locations such as a door or window. Therefore the appliance can be controlled by an opening or closing of that door or window.

## DESCRIPTION:

The GRI CC15 Current Controllers are 15 Amp general purpose relay circuits that can be controlled remotely with any normally open dry contact switch. It comes with an enclosure that can be attached to or into an approved electrical junction box. It also comes with connecting wires and hardware for connecting to a power source, an appliance load and for the remote switch (switch not included). The low voltage switch circuit for this device is an electrically isolated battery powered (battery included), with a microprocessor controlled input. It can be switched from remote locations up to 1000 feet away using low voltage wiring applications.

### Part Numbers

|             |            |
|-------------|------------|
| CC15-230VAC | CC15-24VDC |
| CC15-115VAC | CC15-12VDC |
| CC15-24VAC  |            |

### OPEN LOOP SWITCH REQUIRED.

**GRI has a complete line of open loop switches to meet your applications.**

### Specifications

#### High Voltage

|                       |                 |
|-----------------------|-----------------|
| Contact Rating        | 15 Amp          |
| Maximum Current       | 16 Amps         |
| Coil Power            | .76 VA (Typ)    |
| Operating Temperature | -20° C to 70° C |

#### Low Voltage

|                |              |
|----------------|--------------|
| Voltage        | 3 VDC        |
| Max. Voltage   | 5 VDC        |
| Supply Current | .25 uA(Typ)  |
| Battery Life   | Min. 5 years |

**WARRANTY:** One year warranty against workmanship, material and factory defects.

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# Current Sensor CC15

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## INSTALLATION INSTRUCTIONS:

**NOTE: The installation of the GRI Current Controller must be performed by a licensed Electrician.**

The GRI CC15-115 CC15-230 enclosure must be attached on to, or into a UL approved electrical junction box.

### **1. Remove plastic knock out**

Determine the best knock out hole for the high voltage wires that provide the best fit when secured properly to the electrical junction box. Knock out the plastic using a large screw driver or needle nose pliers. Next remove plastic from top side of enclosure for the low voltage wires.

### **2. Install battery, circuit board, lid and pretest**

Connect battery to circuit board (observing voltage polarity). Install conduit nipple through CC15 enclosure. Insert wires through the appropriate knock outs, and then attach the lid with the provided screws.

Pretest by simulating the on and off signal by connecting and disconnecting the two ends of the low voltage wires. Listen for a relay activation (clicking sound). If the relay cannot be heard, DO NOT INSTALL. Check the battery, return or contact manufacturer at 800-445-5218.

### **3. Attach CC15 enclosure to electrical junction box**

**CAUTION: Remove all power entering the electrical junction box before connecting or disconnecting the GRI CC15.**

Attach boxes together using the supplied conduit nipple and lock nut.

### **4. Connect the circuit wires**

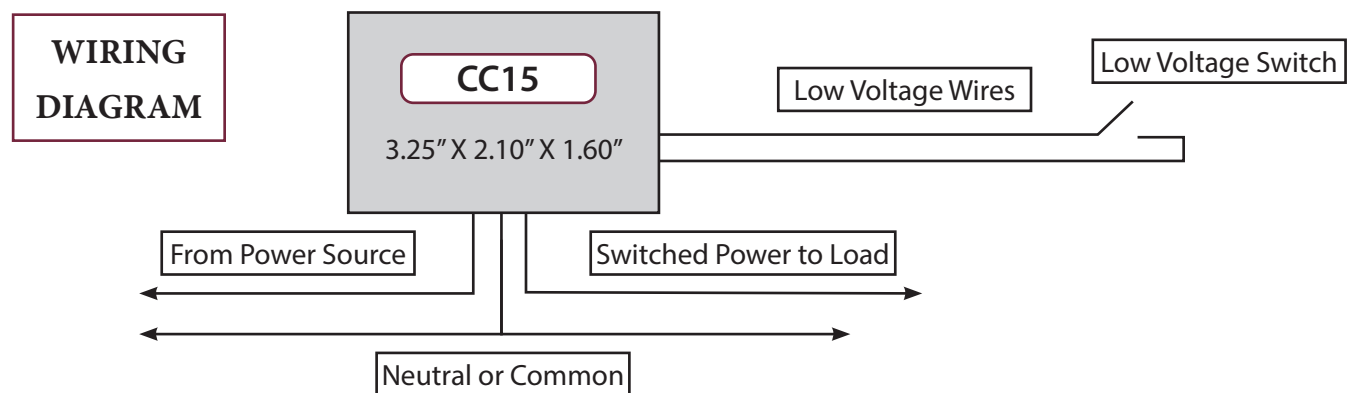
Attach the CC15 High Voltage wires cording with the diagram shown for each CC15 model number. Use the supplied wire connectors to make the connections.

The Low Voltage wires can then be attached to a normally open low voltage dry contact switch.

Contact Factory for optional input switching or programmable control 800-445-5218.

Reapply power to junction box and test for power at load with a switch closure.

**NOTE: The installation of the GRI CC15-115 and CC15-230 must be performed by a licensed Electrician.**



**WARRANTY:** One year warranty against workmanship, material and factory defects.

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# Current Sensors

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## CS Series

- ◆ Fails safe with excessive current
- ◆ Micro-weld switch protection
- ◆ Channels voltage above 60 V to ground
- ◆ Available in recessed and surface styles
- ◆ Plus heat shrink for In-line installations



Two things cause switch failure:

- 1) Excessive Current: Switch protected from excessive current by Quick Blow fuse. Maximum reed switch rating is .5 amp. = 500 mA switching. If current exceeds .5 amp. fuse will blow. In Fail Safe condition, switch must be replaced.
- 2) High Voltage: SIDActor threshold 60 AC/DC Volts. If voltage exceeds 60 volts, SIDActor will clamp down, channeling any voltage above 60 directly to ground but will not cause switch device to fail or mis-operate and will continue to work.

The new sensors can be purchased with the protection built directly into your reed switch protection plus minimum and maximum zone protection. When using the CS-1, it should be installed directly in front of the contact(s).

### Part Numbers

|               |           |          |          |
|---------------|-----------|----------|----------|
| Heat Shrink:  | CS-1      |          |          |
| Fused Switch: | CS2020-12 | CS2020-T | CS100-12 |
|               | CS29A     | CS4400   | CS400    |
|               | CS200-36  |          |          |

|                    |                   |
|--------------------|-------------------|
| <b>CIRCUIT</b>     | Fuse and SIDActor |
| Internal Fuse      | .500 A            |
| Break Over Voltage | 60 to 100 Volts   |

### GRI PRODUCTS MEET OR EXCEED THESE MINIMUM GENERAL SPECIFICATIONS:

| Part Number | Loop Type | Electrical Configuration | Reed Form | Max. Initial Contact Resistance ( $\Omega$ ) | Max. Contact Rating (W) | Max. Switching Voltage (VDC) | Max. Switching Current (A) |
|-------------|-----------|--------------------------|-----------|----------------------------------------------|-------------------------|------------------------------|----------------------------|
| CS400       | Closed    | N/O                      | A         | .100                                         | 10                      | 100                          | .500                       |
| CS4400-A    | Closed    | N/O                      | A         | .100                                         | 10                      | 100                          | .500                       |
| CS100-12    | Closed    | N/O                      | A         | .100                                         | 10                      | 100                          | .500                       |
| CS29A       | Closed    | N/O                      | A         | .100                                         | 10                      | 100                          | .500                       |
| CS2020-12   | Closed    | N/O                      | A         | .100                                         | 10                      | 100                          | .500                       |
| CS2020-T    | Closed    | N/O                      | A         | .100                                         | 10                      | 100                          | .500                       |
| CS200-36    | Closed    | N/O                      | A         | .100                                         | 10                      | 100                          | .500                       |

**WARRANTY:** One year warranty against workmanship, material and factory defects.

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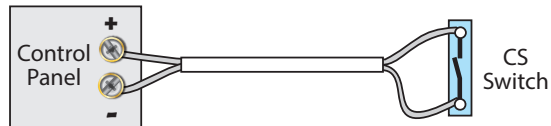
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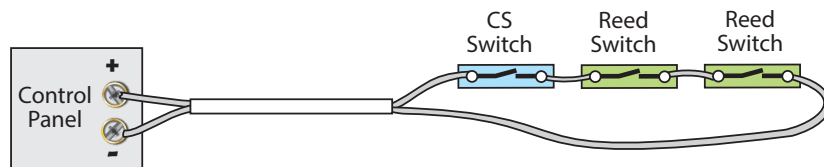
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## SWITCH AND ZONE PROTECTION

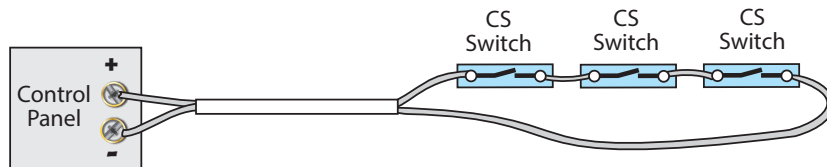
### CURRENT PROTECTION SWITCH



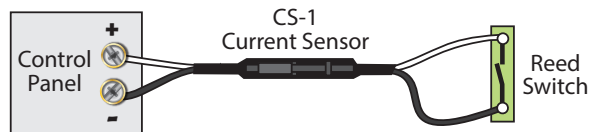
### MINIMUM ZONE PROTECTION



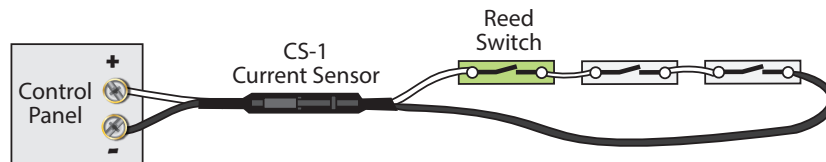
### MAXIMUM ZONE PROTECTION



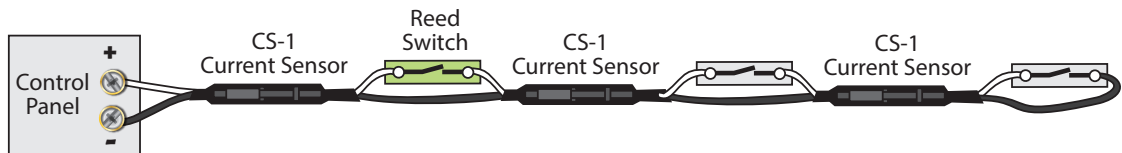
### SWITCH PROTECTION WITH CS-1



### MINIMUM ZONE PROTECTION WITH CS-1



### MAXIMUM ZONE PROTECTION WITH CS-1



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# Low Voltage Switching Device

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## LVSD / LEDSD

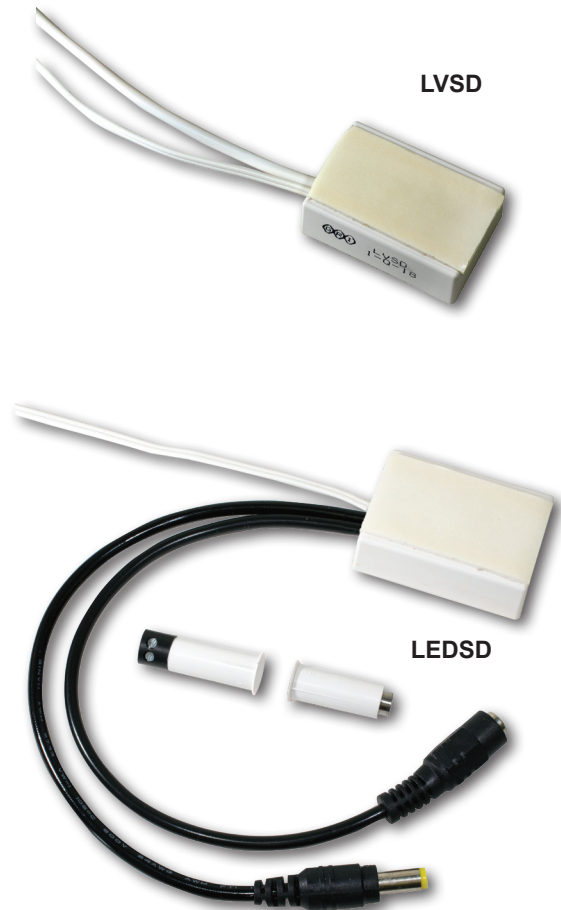
- ◆ 2 Amps switching
- ◆ Light gauge wire uses
- ◆ Designed for appliance control
- ◆ Used in environmental control and lighting systems
- ◆ Controlled with low voltage applications
- ◆ Custom programming options available

**The GRI Low Voltage Switching Device (LVSD)** is a 2 Amp 12/24 VDC controller with connecting wires for connecting to a DC Power Source, a DC Load and a Dry Contact Switch. This GRI Controller is designed to switch up to 2 Amps of DC power with a C form relay that will power devices such as small motors, relays, fans, sirens, strobes and LED lights, and capable of switching from long distances using small gauge wire and most any proximity switch or dry contact device. **Open loop switch required, not included.** GRI has a complete line of open loop switches to meet your applications.

**The GRI LED Switch Device (LEDSD)** is a 2 Amp 12/24 VDC controller with 2.1 mm x 5.5 mm connectors for use with LED Lighting (rope, strip, track and more). Ideal for cabinets and display cases, CCTV cameras, closets, pantries, etc. Includes 3030-T. Open loop switch required.

### Specifications

|                          |             |
|--------------------------|-------------|
| Max. Input Voltage       | 28 VDC      |
| Min. Input Voltage       | 9 VDC       |
| Max. Output Current      | 2A at 30V   |
| Max. Output Power        | 60 W        |
| Max. Current Consumption | 65 mA       |
| Switch Input             | Open Loop   |
| Max. Switch Distance     | 200 ft.     |
| LED Green Flash          | Turning On  |
| LED Red Flash            | Turning Off |



### Part Numbers

|       |                               |
|-------|-------------------------------|
| LVSD  | Low Voltage Switching Device  |
| LEDSD | LED Lighting Switching Device |

**WARRANTY:** One year warranty against workmanship, material and factory defects.

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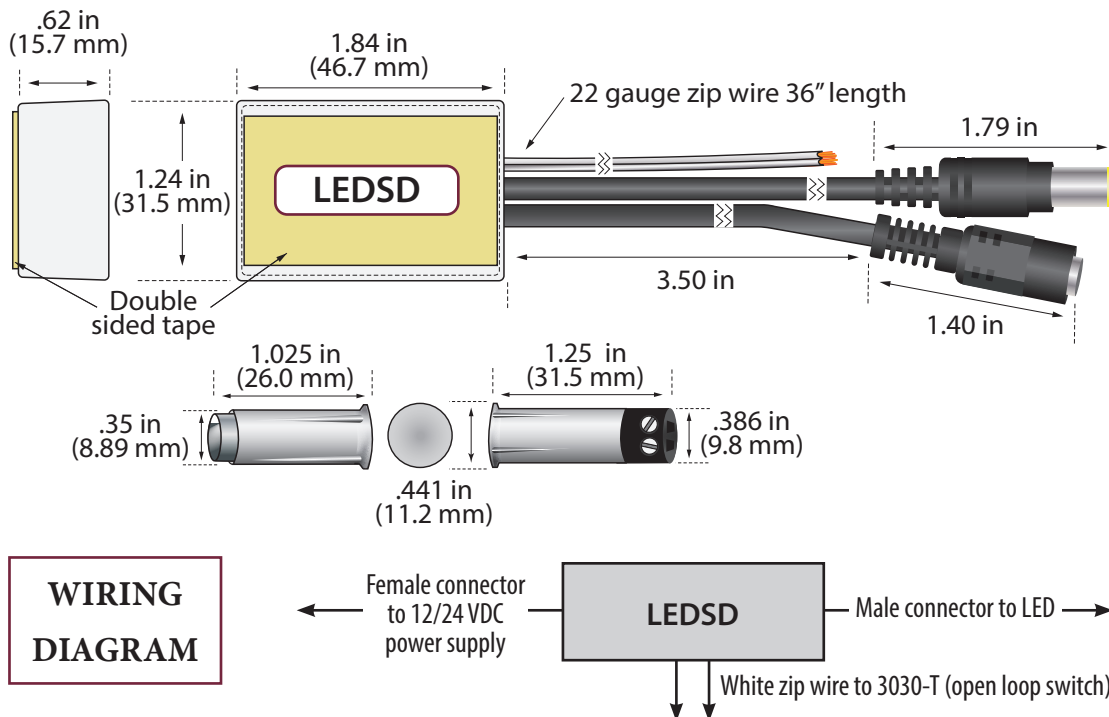
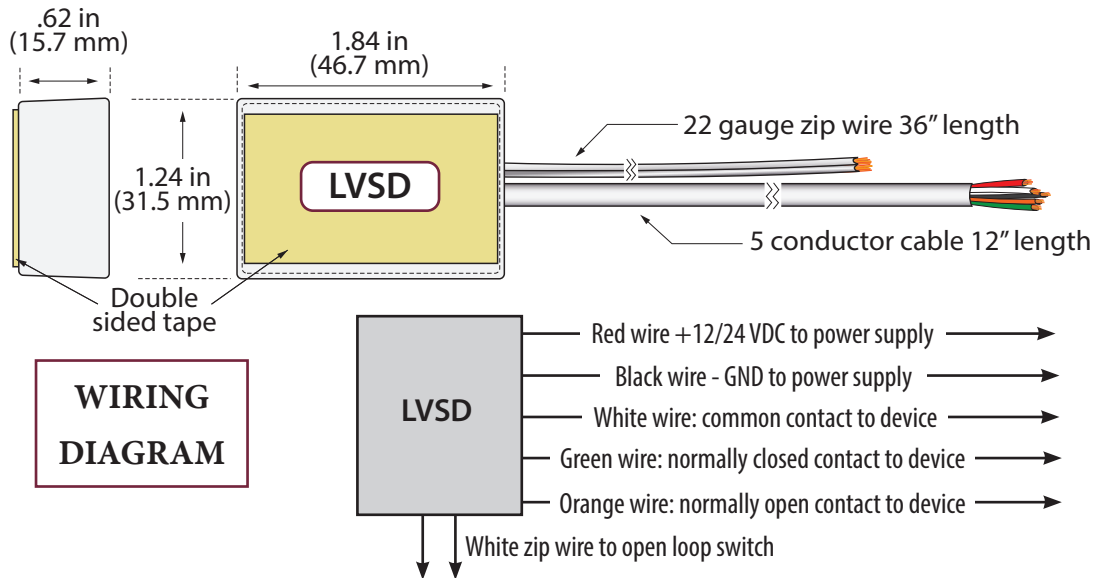
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# Low Voltage Switching Device

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**WARRANTY:** One year warranty against workmanship, material and factory defects.

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# Power Supplies and Regulators

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## 8065R

The GRI 8065R is a Class II U.L. 12V DC Regulated 500 mA Power Supply with red LED indicator for power supervision, and built in cable strain relief. It comes with a mounting tab and mounting screw. **For use with the PAA GRI Pool Access Alarm Series.**



## 6973

Standard applications capable of utilizing a non-regulated plug-in AC to DC power supply can best use the model 6973 to convert 110V AC to a non-regulated 9V DC at 50 mA output.



**WARRANTY:** One year warranty against workmanship, material and factory defects.

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# Power Transfer Device

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## PTD-1

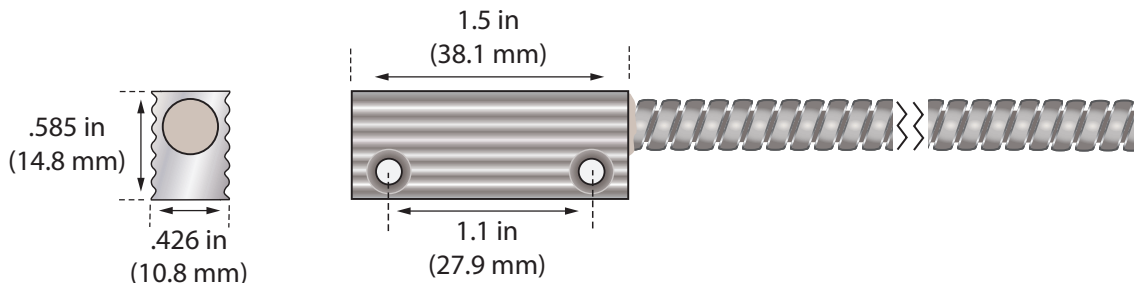
- ◆ 18" armored cable
- ◆ 180° door opening
- ◆ Metal end caps and ferrules
- ◆ Holds wire up to .180" diameter
- ◆ PTD-1-36 available with 36" cable



The GRI PTD-1 Power Transfer Device provides a reliable and attractive method for routing the electrical power from the door into the door frame when installing electric mortise locks or other electrical devices.

The PTD-1 comes complete with 18" of armored cable which provides for a 180° door opening. Also, GRI includes metal end caps and ferrules along with all mounting hardware.

The armored cable allows for up to .180" wire diameter.



**WARRANTY:** Lifetime warranty against workmanship, material and factory defects.

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# Junction Box

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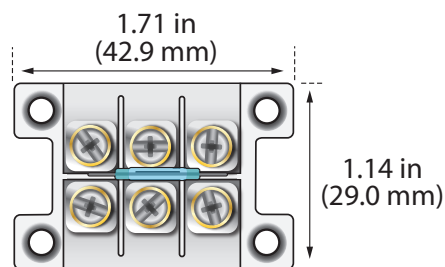
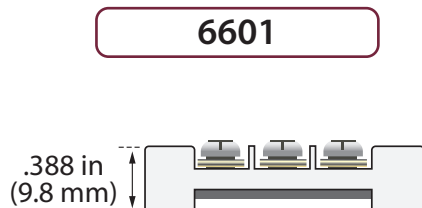


## 6600 / 6601

- ◆ Wire capture terminals
- ◆ Reed tamper
- ◆ Barrier wall design to prevent shorting
- ◆ Provides for wire concealment
- ◆ Expert appearing installation
- ◆ Private labeling available

### Part Numbers

- |             |                                                                                                                                                                       |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>6600</b> | <b>6 Terminal junction box with cover</b><br>Wire capture style terminals<br>Box size: 1 7/8" L x 1 1/4" W x 5/8" H<br>Includes 4 - #4 x 1 flathead screws            |
| <b>6601</b> | <b>6 Terminal junction box with tamper and cover</b><br>Wire capture style terminals<br>Box size: 1 7/8" L x 1 1/4" W x 5/8" H<br>Includes 4 - #4 x 1 flathead screws |



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## ***Table of Contents Pool Access Alarms***

***ETL Listed Pool Access Alarm PAA***

***Pool Access Alarm Remote for PAA***

***Plug In Power Supplies***

***Closed Loop Pool Access Alarm DPARM***

***Gate Mount Pool Access Alarm GT10***



# ETL Listed Pool Access Alarm

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PAA 

- ◆ ETL tested to be in compliance with standard safety, UL 2017, and Florida Building Commission Code requirements, per ETL listing number 3035022
- ◆ Exceeds operational requirements of model barrier codes
  - ◆ Microprocessor controlled
  - ◆ Monitors entry to pool and spa areas
- ◆ Options set by jumpers include closed or open loop, instant on or 7 second delay alarm, and 15 or 7 second adult shunt
  - ◆ Child resistant button guard built in
  - ◆ Surface or flush mount models
- ◆ Capable of 2 year life with Ultralife 9 Volt Lithium Battery U9VLJPPF
- ◆ May be hard wired to remote 12 Volt 500 mA regulated power source (GRI 8065R). Applied voltage must not exceed 15 VDC

The new GRI Pool Access Alarm was designed as an aid in the prevention of unattended access to a pool/spa area by a small child. Monitoring all doors or windows with closed loop or open loop magnetic reed switches, the Pool Access Alarm will sound an alarm should anyone too small to manage the adult pass through feature attempt access to the pool/spa area. For maximum protection all movable openings should be protected in such a manner by the GRI Pool Access Alarm.

The PAA can be operated with an on-board 9 volt lithium battery or with a 12 volt externally supplied DC power source, in which case the battery will perform a back-up function should the externally supplied source fail for any reason. Both power sources have been designed to maintain a minimum sound pressure level of 85db at 10'. Should the battery voltage drop below 8.3 Volts, a low battery mode will be initiated and the unit will beep approximately every 50 seconds. Battery must be replaced at this time.

It is suggested that some type of surge protection, such as the GRI CS-1 Current Sensor, be used between the power supply and the PAA.

*Note: Unit will function at a minimum 5VDC at a very limited sounder volume. This power level is considered total battery failure.*

**WARNING: THIS IS NOT A LIFE SAVING DEVICE.**

**WARRANTY:** One year limited warranty against workmanship, material and factory defects.

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PAA



PAA-S

## Part Numbers

|       |                                 |
|-------|---------------------------------|
| PAA   | Recessed Pool Access Alarm      |
| PAA-S | Surface Mount Pool Access Alarm |

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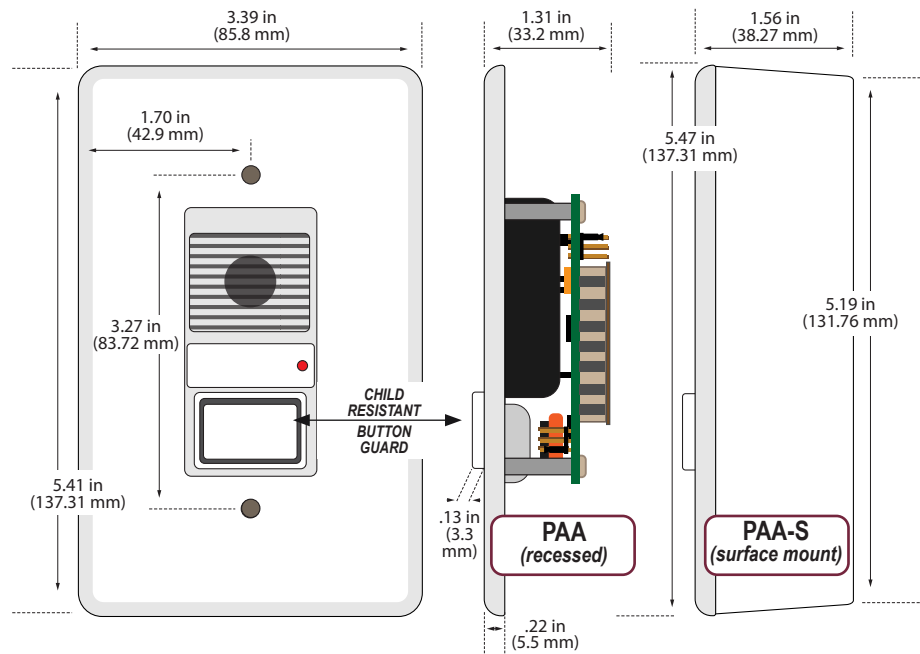
# ETL Listed Pool Access Alarm

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## INSTALLATION:

The GRI Pool Access Alarm mounts easily to the wall by any door which allows access to the pool/spa area. Using a magnetic reed switch, the unit will detect and announce an open access by sounding a loud continuous alarm. Two timed options are offered: a maximum seven (7) second delay mode prior to sounding upon door opening, or an instant alarm sounding upon activation. **A surface mount and a recessed mount model are offered with two timed options.**



All versions incorporate a built-in pass through feature and deactivation button to allow adult access without alarm sounding. Although the Pool Access Alarm cannot be turned off, this feature will simply deactivate the alarm function for a maximum of fifteen (15) seconds. During this time span the adult must exit and close the door before the alarm sounds. Once the alarm is sounding, it can not be silenced by simply closing the door. The deactivation button must also be depressed. The sounder cannot be disabled by holding down the deactivation button.

If a screen is present on the opening giving access to the pool, a second magnetic reed switch should be mounted on it and both switches wired in parallel or series depending upon the magnetic reed switches. This configuration will allow the door to be open for ventilation since the unit will activate only when both the screen and the door or window are opened.

If multiple openings lead to the area, the GRI Pool Access Alarm can monitor all by installing closed loop switches which are wired in series or open loop switches in parallel. In this way, any opening will be detected by the GRI Pool Access Alarm. A single deactivation button can also be wired at each opening to utilize the pass through feature. A maximum of eight remote sounders can be wired to one PAA/PAAS for extra sound coverage. Please contact your local GRI Distributer for information on remote options. Part numbers and wiring diagrams are available from the factory.

**WARRANTY:** One year limited warranty against workmanship, material and factory defects.

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# Pool Access Alarm Remote

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## REMOTE SOUNDER:

A remote sounder, Model PAAR-RS or PAAR-SS can be added to all GRI Pool Access Alarms to increase the area that the alarm can be heard. Tested to 2017 Audibility Standards as per ITS, Report #J20041913-001.

## REMOTE SHUNT BUTTON:

If two doors are to be monitored by a GRI Pool Access Alarm/Door Alert, a remote shunt button, Model PAAR-RB or PAAR-SB can be added. The Pool Access Alarm is mounted next to one door and the remote button by the other. Either button will cause the door alert to go into its shunt mode.

## REMOTE SOUNDER AND SHUNT BUTTON:

A remote sounder and shunt button combination unit, Model PAAR-RSB or PAAR-SSB can be added to additional exits. This will not only extend sounder coverage, but also provide the adult pass through feature and alarm shunt control functions to each remote location chosen.

*Note: A maximum of eight remote sounders can be wired to one PAA/PAAS for extra sound coverage.*

**WARNING: THIS IS NOT A LIFE SAVING DEVICE.**

### Part Numbers

|          |                                                                           |
|----------|---------------------------------------------------------------------------|
| 084-1    | Recessed remote button - all weather stainless steel                      |
| 084-2    | Steel surface mount - all weather remote button, stainless steel screws   |
| 084-3    | Plastic surface mount - all weather remote button, stainless steel screws |
| PAAR-RB  | Recessed button only                                                      |
| PAAR-RS  | Recessed sounder only                                                     |
| PAAR-RSB | Recessed sounder and button                                               |
| PAAR-SB  | Surface mount button only                                                 |
| PAAR-SS  | Surface mount sounder only                                                |
| PAAR-SSB | Surface mount sounder and button                                          |



PAAR-RS



PAAR -RB



PAAR -SSB

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# POOL ACCESS REMOTE OPTIONS

## EXTERNAL SOUNDER

An external sounder, Model PAAR-RS or PAAR-SS, can be added to this unit to increase the area that the alarm can be heard. See Installing Options #1.

## EXTERNAL SHUNT BUTTON

If two doors are to be monitored by this pool access alarm, an external shunt button, Model PAAR-RB or PAAR-SB, can be added. In this configuration, the Pool Access Alarm can be by one door and the external button by the other door and either button will cause the Door Alert to go into its shunt mode. See Installing Options #2.

## EXTERNAL SOUNDER AND SHUNT BUTTON

An External Sounder and Shunt Button Combination Remote Unit, Model PAAR-RSB or PAA-SSB can also be added to additional exits. This will not only extend sounder coverage, but also provide the adult pass thru feature and alarm shunt control functions to each remote location chosen. See Installing Options #3.

## INSTALL OPTIONS

### 1. EXTERNAL SOUNDER OPTION:

This option is provided so that an external sounder can be attached to the Pool Access Alarm and the alarm will be heard over a greater area. Mount the Remote Sounder in a position selected following the same basic instruction given for mounting the main Pool Access Alarm. Run a three (3) conductor cable from the sounder to the Pool Access Alarm. The power for this unit is coming from the main unit so no periodic checks must be made of this unit. The main unit will warn of low battery or power for the entire system. Up to four remotes can be added to Pin 3 and an additional four remotes on Pin 7 of the Pool Access Alarm.

### 2. EXTERNAL SHUNT BUTTON:

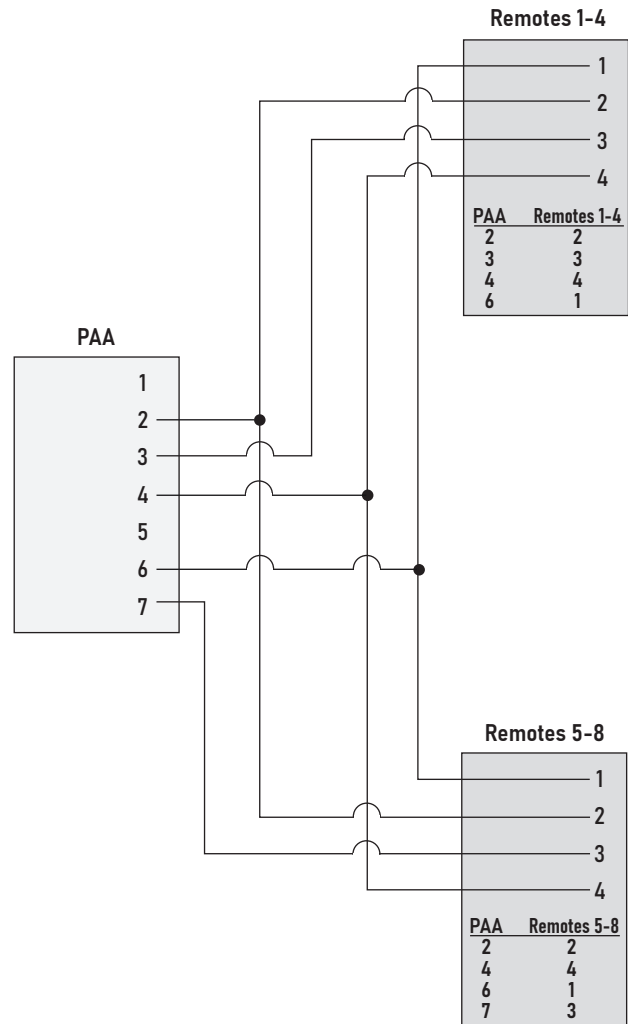
This option is provided so that an external shunt button will preform the same function as shunt button on the Pool Alarm. Mount the unit in a position selected following the same basic instructions given for mounting the Pool Access Alarm. Run a pair of wires to the Pool Alarm. Attach the wires to the Pool Access Alarm Pin 2 and Pin4. It does not matter which wire goes in which location.

### 3. EXTERNAL SOUNDER AND SHUNT BUTTON:

This option combines the Remote Sounder and Shunt Button into one remote unit. Mount the unit in a position selected following the same basic instructions given for mounting the main Pool Alarm. The power for this unit is coming from the main unit so no periodic checks must be made of this unit. The main unit will warn of low battery or power for the entire system. Up to four remotes can be added to Pin 3 and an additional four remotes on Pin 7 of the Pool Access Alarm.

## WIRING SPECIFICATIONS:

For connection of optional remote equipment and door contact switches a Belden CAT5 CL2 or equivalent cable is recommended. For the connection of the 12-volt power supply to the alarm unit a Belden 18-2 CL2-CMR 300v 60° or equivalent wire is recommended. In all cases installer should reference current local N.E.C. code, and or code requirements set forth by local housing authority or code enforcement jurisdiction.



**WARRANTY:** One year against workmanship, material and factory defects. Proof of Purchase required with return.

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### DISCLAIMER

The GRI PAA is not a life saving device. Its' intent is to serve strictly as a monitoring device on doors and windows to help prevent unattended access to pool or spa areas.

# Plug In Power Supplies

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## 8065R

The GRI 8065R is a Class II U.L. 12V DC Regulated 500 mA Power Supply with red LED indicator for power supervision, and built in cable strain relief. It comes with a mounting tab and mounting screw. **For use with the PAA GRI Pool Access Alarm Series.**



8065R

## 6973

Standard applications capable of utilizing a non-regulated plug-in AC to DC power supply can best use the model 6973 to convert 110V AC to a non-regulated 9V DC at 50 mA output.



6973

**WARRANTY:** One year limited warranty against workmanship, material and factory defects.

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# *Closed Loop Pool Access Alarm*

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## ***DPARM***

- ◆ Exceeds operational requirements of model barrier codes
- ◆ Battery power and/or external power source
  - ◆ Instant on or 7 second delay
  - ◆ Microprocessor controlled
  - ◆ Low battery alert
  - ◆ Surface or recessed models
  - ◆ SPDT relay output available
- ◆ Remote sounders and buttons available



### **APPLICATION:**

The GRI Pool Access Alarm is designed as an aid to detect unsupervised access to a pool/spa area by a small child. Monitoring a door or window with a magnetic reed switch(es), the Pool Access Alarm will sound an alarm should anyone too small to manage the adult pass through feature tries to enter the pool/spa area. For maximum protection all movable openings should be protected in such a manner by the GRI Pool Access Alarm. The self contained surface mounted alarm may easily be mounted to the wall of any structure or mounted inside a single gang utility box.

### **DESCRIPTION:**

The GRI Pool Access Alarm uses a microprocessor to monitor the Closed Loop magnetic reed switch(es), shunt/cancel button, and supply voltage, and to provide the timing options. The Pool Access Alarm is set to alarm instantly if the protected door is opened before pressing the shunt/cancel button. Model DPARM-D is set to an initial seven second delay. In which case, alarm will wait 7 seconds upon door opening before alarming. In all cases, depressing the shunt/cancel button will provide a maximum 15 second window of alarm deactivation and automatically reset upon expiration.

***WARNING: THIS IS NOT A LIFE SAVING DEVICE.***

### **Part Numbers**

DPARM  
DPARM-D

Pool Access Alarm - Instant On - Closed Loop  
Pool Access Alarm - 7 Second Delay - Closed Loop

**WARRANTY:** One year limited warranty against workmanship, material and factory defects.

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# Closed Loop Pool Access Alarm

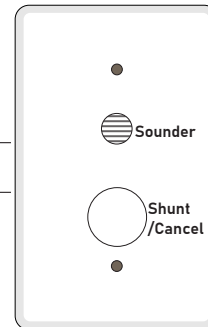
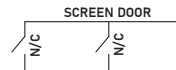
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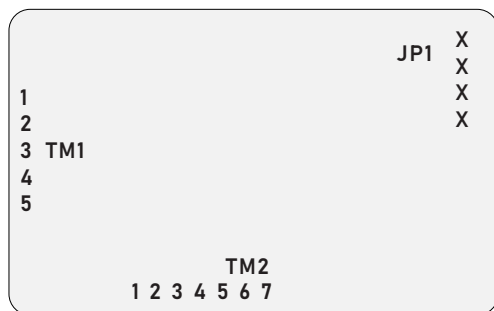
## INSTALLATION WIRING DIAGRAM

### Single door with screen

If there is a screen door, a switch should be installed on it as well. The switches should be connected in parallel as in Figure 1. In this configuration the Door Alert/Pool Alarm will only activate if both doors are open.



## TERMINAL CONNECTIONS AND JUMPERS



| TERMINAL BLOCK TM1 |                           |
|--------------------|---------------------------|
| 1                  | External Power (+)        |
| 2                  | Ground                    |
| 3                  | Remote Reset/Delay Switch |
| 4                  | Not Used                  |
| 5                  | Door Contact              |

| TERMINAL BLOCK TM2 |                        |
|--------------------|------------------------|
| 1                  | Remote Sounder Control |
| 2                  | Remote Power           |
| 3                  | Not Used               |
| 4                  | Relay N/O              |
| 5                  | Relay Common           |
| 6                  | Relay N/C              |
| 7                  | Ground                 |

## Sounder Volume Control JP-1

|                                     |             |
|-------------------------------------|-------------|
| <input checked="" type="checkbox"/> | Full Volume |
| <input checked="" type="checkbox"/> |             |
| <input checked="" type="checkbox"/> |             |
| <input checked="" type="checkbox"/> |             |
| <input checked="" type="checkbox"/> |             |
| <input checked="" type="checkbox"/> | 3/4 Volume  |
| <input checked="" type="checkbox"/> |             |
| <input checked="" type="checkbox"/> |             |
| <input checked="" type="checkbox"/> |             |
| <input checked="" type="checkbox"/> | 1/2 Volume  |

It is suggested that surge protection, such as the GRI CS-1 Current Sensor, be used between the power supply and all GRI Pool Alarms using external power.

**NOTE: Unit will function at minimum 5VDC at a very limited sounder volume. This power level is considered total battery failure.**

## SPECIFICATIONS

|                  |                                             |
|------------------|---------------------------------------------|
| Battery Type     | Standard 9 Volt                             |
| Battery Life     | Approximately 3-6 months                    |
| External Power   | 12 DC 500 mA Output                         |
|                  | Applied Voltage must not exceed 15 Volts DC |
| Low Battery Mode | 6.5V DC                                     |
| Mounting Height  | Ref. Local Code                             |
| Sounder Rated    | 85 dB at 10 ft. (3.5 M)                     |
| Switch           | Closed Loop                                 |

## Relay Contacts

|                            |           |
|----------------------------|-----------|
| Nominal Switching Capacity | 2A 30 VDC |
| Max Switching Power        | 60 Watts  |
| Max Switching Current      | 2 Amps    |

## DISCLAIMER

The GRI Door Alert/Pool Alarm is not a life saving device. Its' intent is to serve strictly as a monitoring device on doors and windows to help prevent unattended access to pool spa area.

**WARRANTY:** One year limited warranty against workmanship, material and factory defects.

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# Gate Mount Pool Alarm

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## GT10

- ◆ Closed Loop
- ◆ Microprocessor controlled
- ◆ Weather resistant for outdoor use
- ◆ Instant on or 7 sec. delay models available
- ◆ Low Battery Indicator
- ◆ Closed Loop 410P switch set with 5 ft. 2 conductor cable



The GRI Gate Mount Pool Alarm was designed as an aid for prevention of an unattended access to a pool/spa area by a small child. Monitoring all gates with Closed Loop magnetic reed switches, the Gate Mount Pool Alarm will sound an alarm should anyone too small to manage the adult pass through feature attempt access to the pool/spa area. For maximum protection all movable openings should be protected in such a manner by the GRI Gate Mount Pool Alarm.

The GT10-2 and GT10-4 can be operated independently with an on-board 9 volt battery or with a 12 volt externally supplied DC power source. Both power sources have been designed to maintain a maximum sound pressure level of 85db at 10'. Estimated battery life is approximately 180 days based on no alarm soundings during that time lapse. Should the battery voltage drop below 7 volts, a low battery mode will be initiated and the unit will sound 3 beeps approximately every 30 minutes for one to two weeks prior to total battery failure. Battery must be replaced at this time, and the cause of the power failure determined and restored.

**NOTE:** Unit will function at a minimum 5VDC at a very limited sounder volume. This power level is considered total battery failure.

**CLEANING:** Periodic cleaning of sounder and box are required to maintain sound level.

**CAUTION:** To prevent a memory failure or circuit damage, external power source not to exceed 15VDC.

**WARNING:** Environmental conditions, such as wind, may affect the sound level.

**WARNING: THIS IS NOT A LIFE SAVING DEVICE.**

### Part Numbers

GT10-2  
GT10-4

Gate Mount Pool Alarm - 7 Second Delay - Closed Loop  
Gate Mount Pool Alarm - Instant On - Closed Loop

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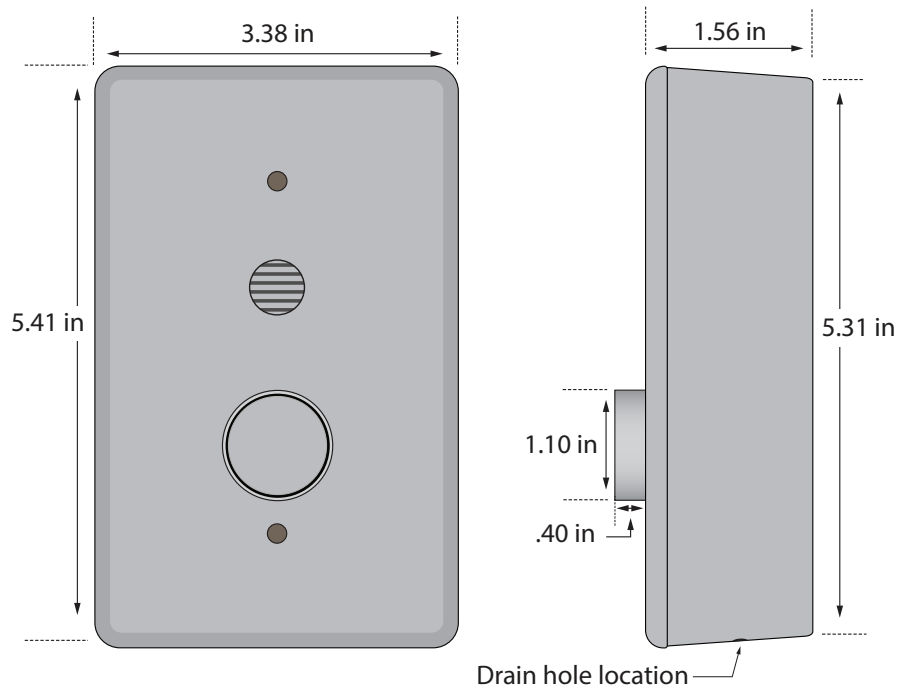


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# Gate Mount Pool Access Alarm

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## INSTALLATION INSTRUCTIONS:

The GRI Gate Mount Pool Access Alarm mounts easily to the fence by any gate which allows access to the pool/spa area. Using a Closed Loop magnetic reed switch, the unit will detect and announce an open access by sounding a loud continuous alarm. Two timed options are offered: a maximum 7 second delay mode prior to sounding upon gate opening, or an instant alarm sounding upon activation. Both versions incorporate a built-in pass through feature shunt button to allow adult access without alarm sounding. Although the Gate Mount Pool Access Alarm cannot be turned off, this feature will simply deactivate the alarm function for a maximum of 15 seconds. During this time span the adult must exit and close the gate before the alarm sounds. Once the alarm is sounding it cannot be silenced by simply closing the gate. The shunt button must also be depressed. The sounder cannot be disabled by holding down the shunt button.

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***Dummy Plugs***

***Recessed Adapters***

***Pre-Wire Plugs***

***Accessories***



# Bulk Stainless Steel Armored Cable

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GRI offers three different stainless steel SquareLok armored cable sizes and is capable of producing our commercial and industrial switches with special length leads to fit our customers' requirements. The cable is also available by the foot; strung or unstrung. Contact your GRI Distributor or call factory for more information and quotes.



8868 / 8979



**Steel  
Cable Clamp**  
CL8949 - .25 dia.  
CL8950 - .312 dia.



**Nylon  
Cable Clamp**  
CL8681 - 1/4" dia.  
CL7412 - 5/16" dia.  
CL7548 - 7/16" dia.

## SquareLok (SL)



SquareLok tubing is produced from a continuous metal strip, and is held in position by locking one leg of one profile over the leg of the adjacent profile.

### Bulk Stainless Steel Armored Cable Part Numbers

| Part Number | Size  | Inside Diameter | Outside Diameter | Coiling Diameter | Weight      | Breaking Load |
|-------------|-------|-----------------|------------------|------------------|-------------|---------------|
| 5702        | 3/16" | 0.188           | 0.266"           | 1.750"           | 0.036 lb/ft | 185 lbs       |
|             | 5mm   | 4.76mm          | 6.76mm           | 44.45mm          | 0.054 kg/m  | 84 kgs        |
| 8296        | 7/32" | 0.218"          | 0.303"           | 1.750"           | 0.042 lb/ft | 210 lbs       |
|             | 5.5mm | 5.55mm          | 7.7mm            | 44.45mm          | 0.63 kg/m   | 96 kgs        |
| 8449        | 5/16" | 0.313"          | 0.410            | 2.000"           | 0.065 lb/ft | 220 lbs       |
|             | 8mm   | 7.94mm          | 10.91mm          | 50.80mm          | 0.095 kg/m  | 100 kgs       |

Dimensional tolerance is +/- 0/0008 inches (.2mm). Breaking load may vary 10%. Other sizes available upon request.

### Armored Cable Accessories Part Numbers

| Part # | Description                                                                                 |
|--------|---------------------------------------------------------------------------------------------|
| 8868   | Water resistant armored cable electrical knock-out junction box connector. Fits 5702 & 8296 |
| 8979   | Water resistant armored cable electrical junction box connector. Fits 8449                  |
| CL8949 | Steel cable clamp - .25 diameter                                                            |
| CL8950 | Steel cable clamp - .312 diameter                                                           |
| CL8681 | Nylon cable clamp - 1/4" diameter                                                           |
| CL7412 | Nylon cable clamp - 5/16" diameter                                                          |
| CL7548 | Nylon cable clamp - 7/16" diameter                                                          |

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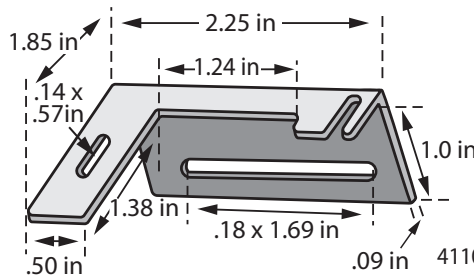
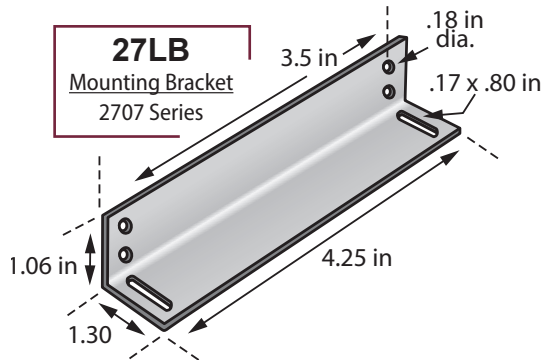
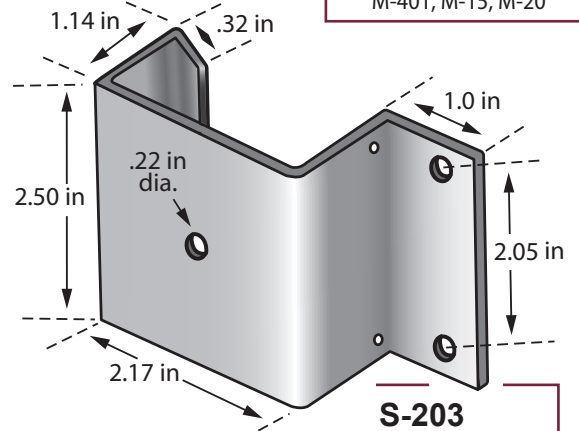
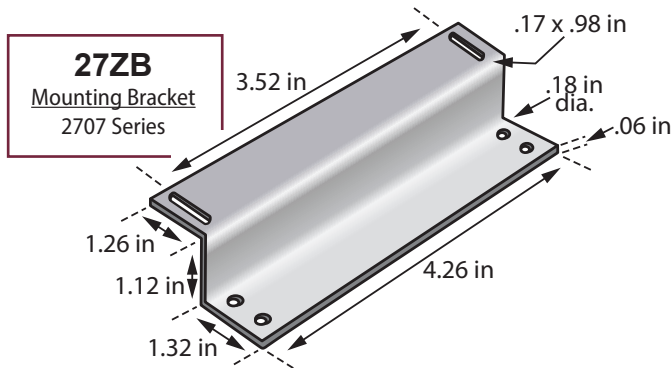
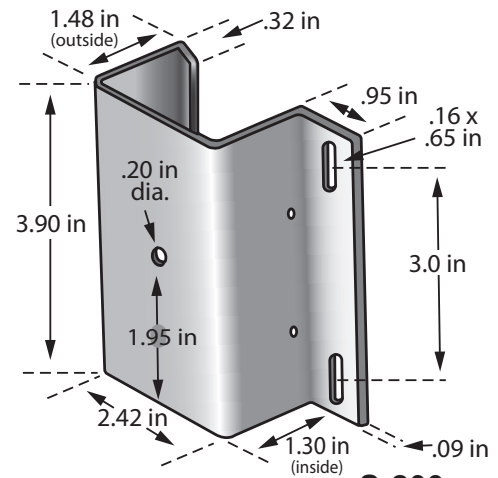
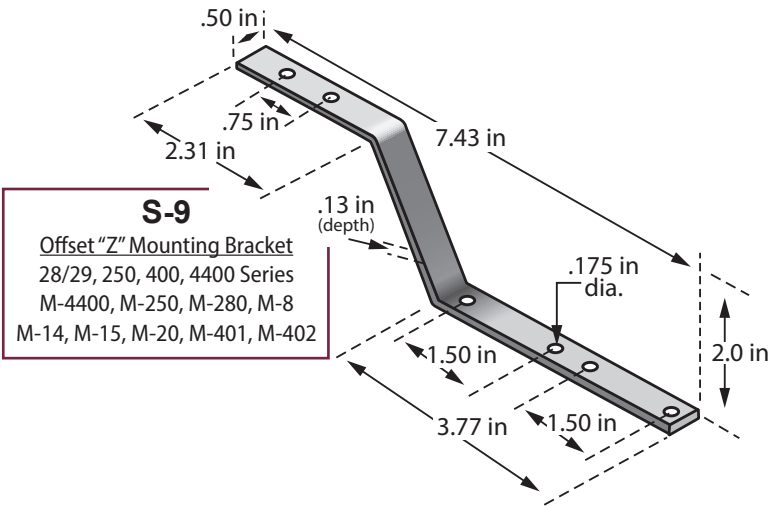


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# Brackets

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# Brackets

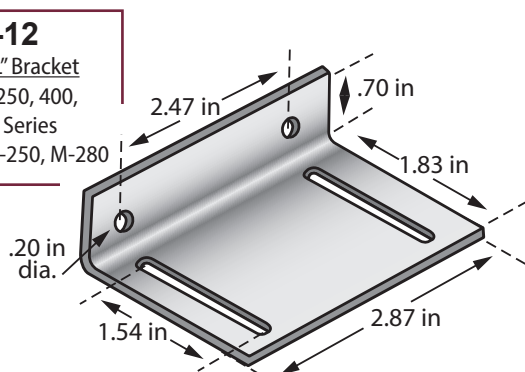
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## S-12

Short "L" Bracket  
28/29, 250, 400,  
4400 Series

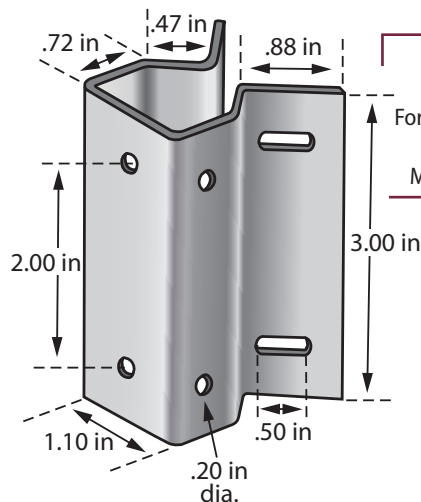
M-4400, M-250, M-280



## S-202

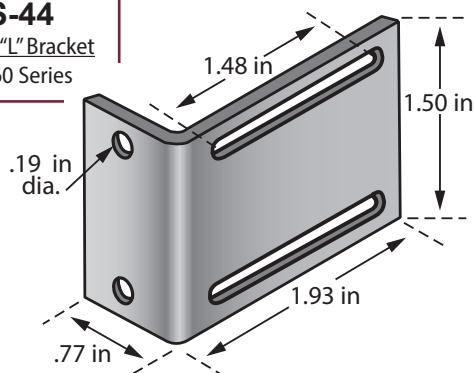
Small Fence Bracket

For 1 3/8" - 2 1/2" dia. post  
250, 4400 Series  
M-4400, M-250, M-280



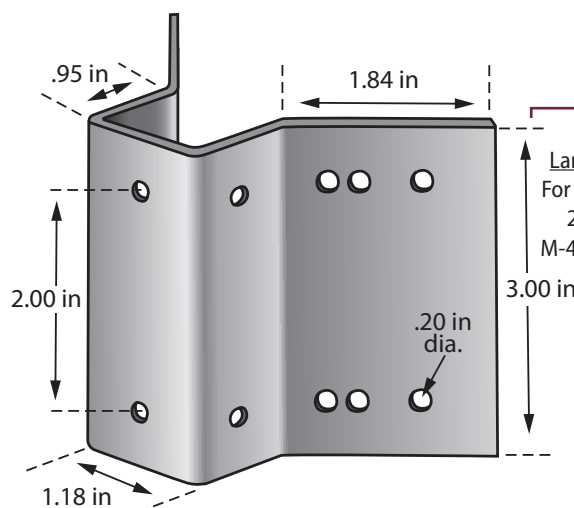
## S-44

Small "L" Bracket  
4460 Series



## S-201

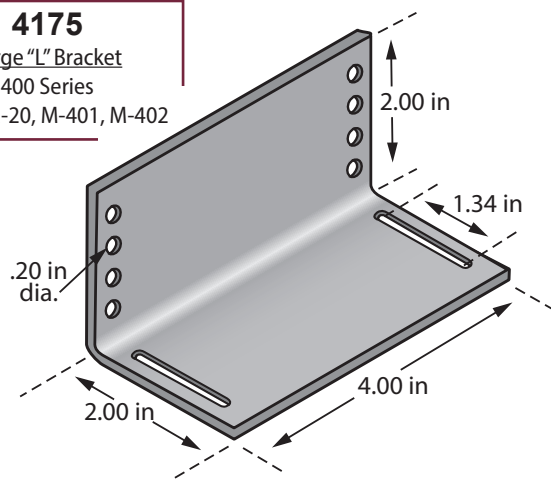
Large Fence Bracket  
For 2 1/2" - 4" dia post  
250, 4400 Series  
M-4400, M-250, M280



## 4175

Large "L" Bracket  
400 Series

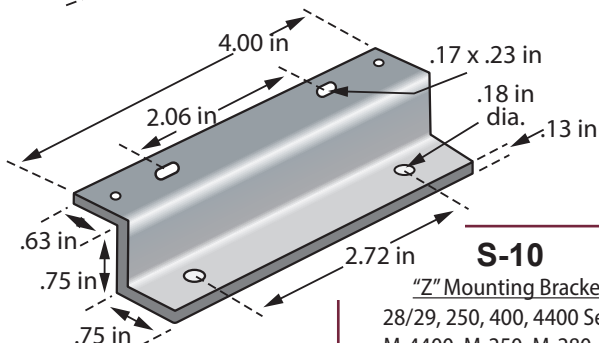
M-15, M-20, M-401, M-402



## S-10

"Z" Mounting Bracket

28/29, 250, 400, 4400 Series  
M-4400, M-250, M-280, M-8  
M-14, M-15, M-20, M-401, M-402



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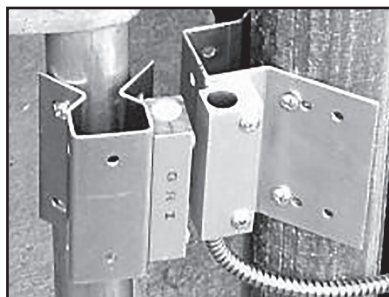
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# Track and Gate Mounting Kits

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## 8450-3 Combination Post Mount

Part No. 8450-3 consists of:

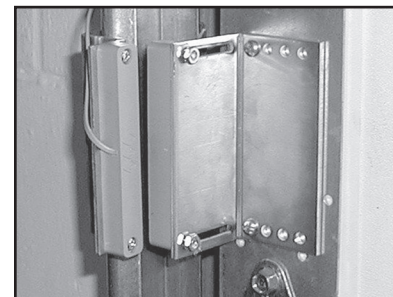
- 1 - S4402A
- 1 - M-4400
- 1 - S-202 1/3" - 2 1/2" dia. fence gate post bracket
- 1 - S-201 2 1/4" - 4" dia. fence gate post bracket
- 4 - #699 nut, 6-32 x 5/16 Hex - Zinc
- 4 - #4186 washer, #6 external lock - zinc fed. Screw 1322
- 4 - 4209 screw, 6-32 x 3/4 PH PHIL (200L) machine screw - zinc
- 8 - #735 screw, 8 x 1 self tap combo pan head type A steel/zinc plate



## 8297 Industrial Track Mount

Part No. 8297 consists of:

- 1 - 4402-A switch set which includes S-12 small "L" bracket
- 1 - S-203 Garage door track bracket
- 4 - #699 nut, 6-32 x 5/16 Hex - zinc
- 4 - #4186 washer, #6 external lock - zinc fed. screw 1322
- 4 - #4209 screw, 6-32 x 3/4 PH PHIL (200L) machine screw-zinc
- 2 - #735, 8 x 1 self tap combo pan head type A steel/zinc plate
- 2 - 6 x 1/2 pan head screws



## 8299-G Economy Track Mount

Part No. 8299-G consists of:

- 1 - S412P-G
- 1 - M-402-G
- 1 - S-200 Garage door track bracket
- 1 - 4175 large "L" bracket
- 4 - #699 nut, 6-32 x 5/16 Hex - zinc
- 4 - #4186 washer, #6 external lock-zinc fed. Screw 1322
- 4 - #4209 screw, 6-32 x 3/4 PH PHIL (200L) machine screw-zinc
- 2 - #735 screw, 8 x 1 self tap combo pan head type A steel/zinc plate
- 2 - #6231 screw, 6 x 3/4 sheet metal combo pan head (for 1100) 40/B

## 8450-1 Fits 1 1/4" - 4" Fence Gate Posts

Part No. 8450-1 consists of:

- 1 - S4402A
- 1 - M-4400
- 1 - S-201 2 1/4" - 4" dia. fence gate post bracket
- 4 - #699 nut, 6-32 x 5/16 Hex - Zinc
- 4 - #4186 washer, #6 external lock - zinc fed. Screw 1322
- 4 - 4209 screw, 6-32 x 3/4 PH PHIL (200L) machine screw - zinc
- 8 - #735 screw, 8 x 1 self tap combo pan head type A steel/zinc plate

## 8450-2 Fits 1 3/8" - 2 1/2" Fence Gate Posts

Part No. 8450-2 consists of:

- 1 - S4402A
- 1 - M-4400
- 1 - S-202 1/3" - 2 1/2" dia. fence gate post bracket
- 4 - #699 nut, 6-32 x 5/16 Hex - Zinc
- 4 - #4186 washer, #6 external lock - zinc fed. Screw 1322
- 4 - 4209 screw, 6-32 x 3/4 PH PHIL (200L) machine screw - zinc
- 8 - #735 screw, 8 x 1 self tap combo pan head type A steel/zinc plate

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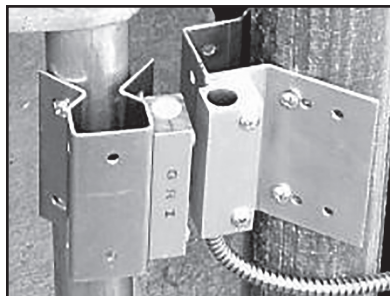
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# Track and Gate Bracket Kits

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## Switches Not Included



### 8450-3-Kit Combination Post Mount

Part No. 8450-3-Kit consists of:

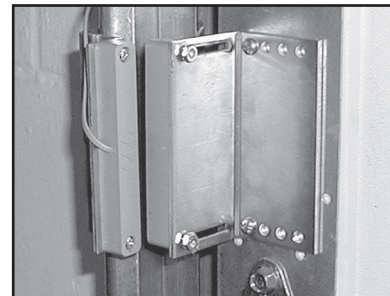
- 1 - S-202 1/3" - 2 1/2" dia. fence gate post bracket
- 1 - S-201 2 1/4" - 4" dia. fence gate post bracket
- 4 - #699 nut, 6-32 x 5/16 Hex - Zinc
- 4 - #4186 washer, #6 external lock - zinc fed. Screw 1322
- 4 - 4209 screw, 6-32 x 3/4 PH PHIL (200L) machine screw - zinc
- 8 - #735 screw, 8 x 1 self tap combo pan head type A steel/zinc plate



### 8297-Kit Industrial Track Mount

Part No. 8297-Kit consists of:

- 1 - S-12 small "L" bracket
- 1 - S-203 Garage door track bracket
- 4 - #699 nut, 6-32 x 5/16 Hex - zinc
- 4 - #4186 washer, #6 external lock - zinc fed. screw 1322
- 4 - #4209 screw, 6-32 x 3/4 PH PHIL (200L) machine screw-zinc
- 2 - #735, 8 x 1 self tap combo pan head type A steel/zinc plate
- 2 - 6 x 1/2 pan head screws



### 8299-G-Kit Economy Track Mount

Part No. 8299-G-Kit consists of:

- 1 - S-200 Garage door track bracket
- 1 - 4175 large "L" bracket
- 4 - #699 nut, 6-32 x 5/16 Hex - zinc
- 4 - #4186 washer, #6-32 x 3/4 PH PHIL (200L) machine screw - zinc
- 2 - #735 screw, 8 x 1 self tap combo pan head type A steel/zinc plate
- 2 - #6231 screw, 6 x 3/4 sheet metal combo pan head (for 1100) 40/B

### 8450-1-Kit Fits 1 1/4" - 4" Fence Gate Posts

Part No. 8450-1-Kit consists of:

- 1 - S-201 2 1/4" - 4" dia. fence gate post bracket
- 4 - #699 nut, 6-32 x 5/16 Hex - Zinc
- 4 - #4186 washer, #6 external lock - zinc fed. Screw 1322
- 4 - 4209 screw, 6-32 x 3/4 PH PHIL (200L) machine screw - zinc
- 8 - #735 screw, 8 x 1 self tap combo pan head type A steel/zinc plate

### 8450-2-Kit Fits 1 3/8" - 2 1/2" Fence Gate Posts

Part No. 8450-2-Kit consists of:

- 1 - S-202 1/3" - 2 1/2" dia. fence gate post bracket
- 4 - #699 nut, 6-32 x 5/16 Hex - Zinc
- 4 - #4186 washer, #6 external lock - zinc fed. Screw 1322
- 4 - 4209 screw, 6-32 x 3/4 PH PHIL (200L) machine screw - zinc
- 8 - #735 screw, 8 x 1 self tap combo pan head type A steel/zinc plate

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# Mighty Mag

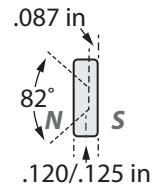
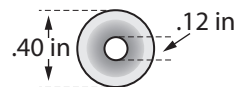
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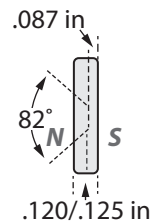
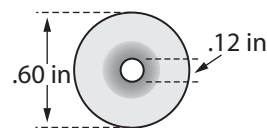
## Rare Earth Magnets



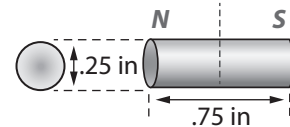
**MM-400**  
3/8" Dia. x 1/8"



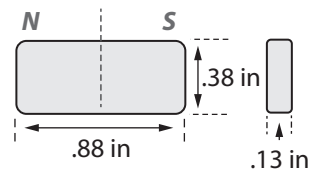
**MM-600**  
5/8" Dia. x 1/8"



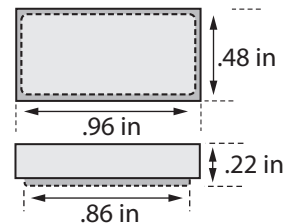
**MM-10**  
1/4" Dia. x 3/4"



**MMF-875**  
1/8" x 3/8" x 7/8"



**CMMF-875**  
In case  
.22" x .46" x .96"



GRI does not guarantee exact measurements.

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# Mighty Mag

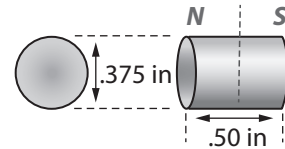
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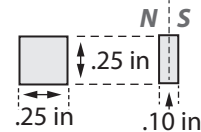
## Rare Earth Magnets



**MM-375**  
3/8" Dia. x 1/2"



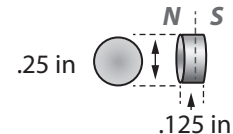
**MM-25**  
1/4" x 1/4" x .100"



**MM-45**  
.19" x .45" x .23"



**MMR-25**  
1/4" Dia. x 1/8"



### Also Available:

**MM-9**  
1/4" x 1/2"

**MM-12**  
1/4" x 1"

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# Alnico V Bare Magnets

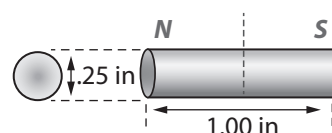
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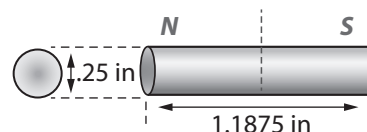
- ◆ Pole end of magnets are painted (towards switch)
- ◆ Bare magnets available in bags of 100
- ◆ Other sizes available - please call with your needs
- ◆ All sizes are approximate. GRI does not guarantee exact measurements



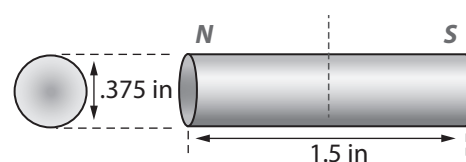
**M-12**  
1/4" Dia. x 1"



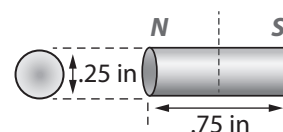
**M-13**  
1/4" Dia. x 1 3/16"



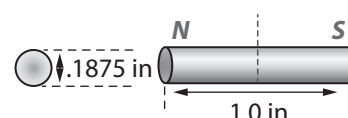
**M-16**  
3/8" Dia. x 1 1/2"



**M-10**  
1/4" Dia. x 3/4"



**M-19**  
3/16" Dia. x 1"



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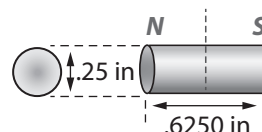


# Alnico V Bare Magnets

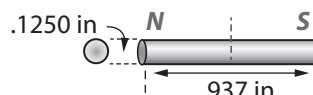
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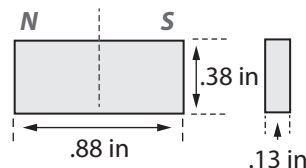
**M-17**  
1/4" Dia. x 5/8"



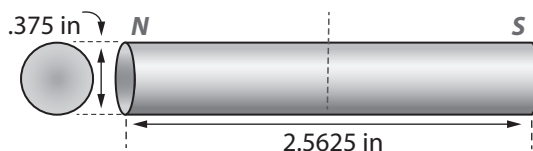
**M-5278**  
1/8" Dia. x .937"



**MF-875**  
1/8" x 3/8" x 7/8"



**M-3938**  
3/8" Dia. x 2 9/16"



## Also Available:

**M-2759**  
3/8" x 5/8"

**M-3226**  
3/8" x 3/8"

**M-4718**  
3/8" x 1"

**M-4742**  
3/8" x 3/4"

**M-7547**  
.450" x 2.500"

**M-8540**  
1/2" x 3"

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# Magnets in Cases



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- ◆ Dimensions given apply to the case size
- ◆ Magnets available in bags of 100
- ◆ White, brown or gray

**M-5RS**  
3/8" x 5/8"  
stubby, recessed



**MM-9RS**  
3/8" x 5/8"  
stubby, recessed



**M-5**  
3/8" Dia.  
press fit, recessed



**M-5F**  
3/8" Dia.  
flanged, recessed



**M-6RF**  
1/4" press-fit, recessed



**M-180**  
3/4" Dia.  
Steel door, recessed



**M-180WG**  
3/4" Dia.  
Steel door, recessed



**M-184**  
1" Dia.  
Steel door, recessed



**M-184WG**  
1" Dia.  
Steel door, recessed



**M-500**  
1/4" x 1/4" x 7/8"  
macro surface mount



**M-505**  
3/16" x 1/4" x 1"  
super mini, surface mount



**M-7**  
1/4" Sq. x 1"  
adhesive back,  
surface mount



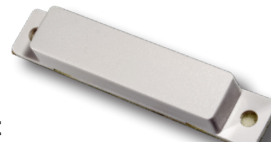
**M-7F**  
1/4" x 1/4" x 1"  
surface mount, adhesive  
back w/breakaway flange



**M-110,  
MM-910**  
1/4" x 3/8" x 1 1/2"  
mini adhesive, surface mount



**M-100,  
MM-900**  
1/4" x 3/8" x 2"  
mini screw mount



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# Magnets in Cases

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**CMF-875**  
.22 x .46" x .96"



**M-1100**  
3/8" x 3/8" x 2"  
screw mount, surface mount



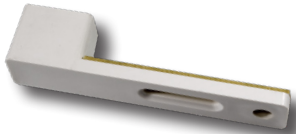
**M-8, M-14**  
1/2" x 1/2" x 2 1/2"  
screw mount, surface mount



**M-15, M-20, M-401, M-402**  
1/2" x 1/2" x 4"  
screw mount, surface mount



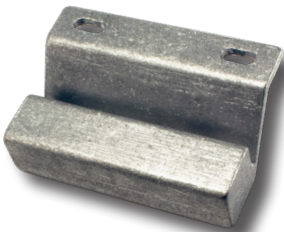
**M-SASH**  
Base: 2.56"L x .450"W x .125"D  
Case: .510"L x .450"W x .595"D



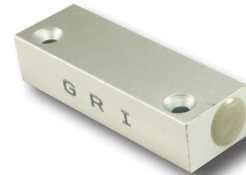
**M-250**      **M-280**  
3 2/4" x 1 1/8"      3 2/4" x 1 1/8"  
extruded case, wall mount



**M4532**  
3.10" x 2.14  
industrial aluminum  
housing



**M-4400**  
2 1/2" x 7/8" x 1/2"  
industrial rugged  
aluminum case



Also  
Available:

M-150 | MM-150RS | M-129 | M-4460 | M-4612 | M-4704

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# Channel Magnets

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## MC-25

- ◆ The MC-25 is designed to be mounted in the track of aluminum windows & sliders
  - ◆ Rare Earth Magnet
- ◆ Fits most aluminum tracks
- ◆ Grippers hold magnet in place
- ◆ No drilling required
- ◆ 1/2" gap when paired with GRI's 3/8" press-to-fit contacts
- ◆ Arrow marks polarity; point arrow toward switch



MC-25



## GR1840

*UL pending*

- ◆ The GR1840 oval metal door neodymium channel magnet is designed to be mounted in the top channel of a metal entry/exit door
- ◆ The magnet can be rotated to fit either wide or narrow top channels



GR1840

## MC-180



- ◆ The MC-180 is designed to be mounted in the top channel of a metal door
- ◆ Legs of the magnet case can be clipped to accommodate a more shallow channel



MC-180

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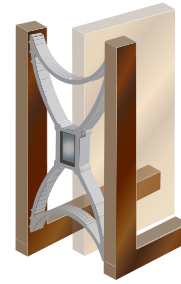
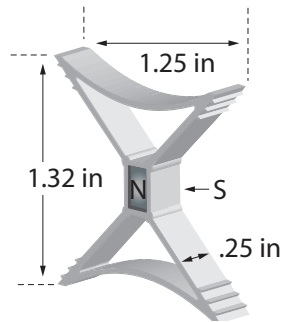
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# Channel Magnets

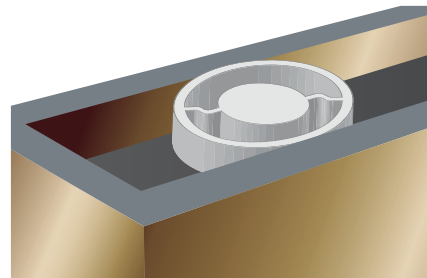
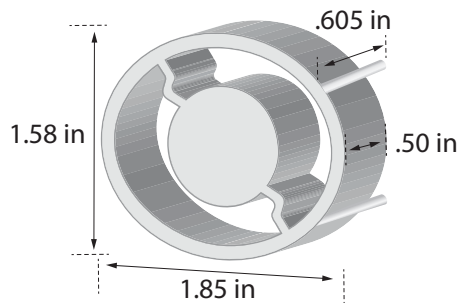
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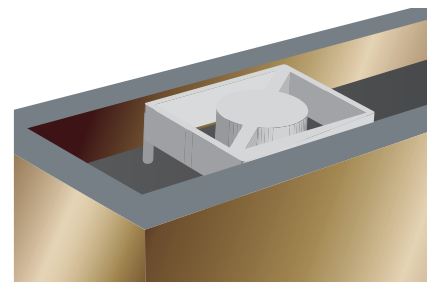
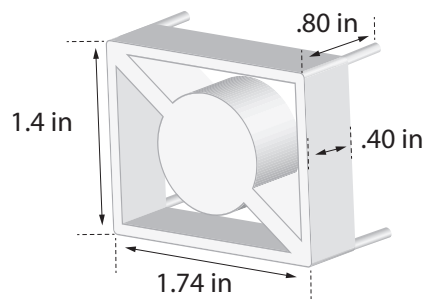
**MC-25**



**GR1840**



**MC-180**



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# *E-Z Duct Raceway*

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## *Wire & Cabling Raceway & Connectors for Low Voltage Applications*

- ◆ 3/8" x 3/8" Mini Raceway
- ◆ 5/8" x 1/2" Raceway
- ◆ 5/8" x 1 1/4" Raceway
- ◆ Adhesive backing
- ◆ Mounting screw holes
- ◆ White (W) or brown (B)
- ◆ 6 ft. lengths
- ◆ UV stabilizer
- ◆ Flame retardant PVC & ABS UL 94-V-0



E-Z RA



E-Z OC



E-Z DC (5/8th only)



E-Z IC



E-Z TEE



E-Z EC



E-Z SP



E-Z SB



E-Z 58 SG



E-Z 75 DG

**WARRANTY:** One year warranty against workmanship, material and factory defects.

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# E-Z Duct Raceway

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E-Z Duct is GRI's product line of wire and cabling raceway and connectors for low voltage applications. Manufactured by GRI, this line of high quality, two piece surface raceway features 5/8" x 1/2" or 5/8" x 1 1/4", six foot lengths of PVC 94V-O, with adhesive backing and pre-drilled mounting screw holes for quick installation. The raceway can be purchased in bags of 6 or in bulk boxes of 50 pieces. GRI offers a variety of connectors in flame retardant ABS plastic. These connectors are available in bags of 6 of one type or a combo pack of 2 each. Call factory or visit one of our Distributors for ordering information.

## Part Numbers

| Part #     | Quantity     | Description                                                                       | Length           | Color          |
|------------|--------------|-----------------------------------------------------------------------------------|------------------|----------------|
| E-Z 38-W   | Bag of 10    | 3/8" x 3/8" Raceway                                                               | six foot lengths | white only     |
| E-Z 58 50  | Box of 50    | 5/8" x 1/2" Raceways                                                              | six foot lengths |                |
| E-Z 58 6   | Bag of 6     | 5/8" x 1/2" Raceway                                                               | six foot lengths |                |
| E-Z 58 DUO | Bag of 6     | 6 E-Z 58 sticks to fit into 3 E-Z 75 covers                                       | six foot lengths | white or brown |
| E-Z 58 IC  | Bag of 6     | Inside corner                                                                     |                  |                |
| E-Z 58 OC  | Bag of 6     | Outside corner                                                                    |                  |                |
| E-Z 58 SP  | Bag of 6     | Splices                                                                           |                  |                |
| E-Z 58 RA  | Bag of 6     | Right angles                                                                      |                  |                |
| E-Z 58 TEE | Bag of 6     | Tee                                                                               |                  |                |
| E-Z 58 EC  | Bag of 6     | End cap                                                                           |                  |                |
| E-Z 58 DC  | Bag of 6     | Drop ceiling                                                                      |                  |                |
| E-Z 58 COM | Combo Pack   | 2 each: inside corner, outside corner, splice/coupling, right angle, tee, end cap |                  |                |
| E-Z 58 SG  | One Box      | Junction box: W - 3.50" x H - 5.20" x D - 2"                                      |                  | white or red   |
| E-Z 75 50  | Bag of 50    | 5/8" x 1 1/4" Raceway                                                             | six foot lengths |                |
| E-Z 75 6   | Bag of 6     | 5/8" x 1 1/4" Raceway                                                             | six foot lengths |                |
| E-Z 75 IC  | Bag of 6     | Inside corner                                                                     |                  |                |
| E-Z 75 OC  | Bag of 6     | Outside corner                                                                    |                  |                |
| E-Z 75 SP  | Bag of 6     | Splices                                                                           |                  |                |
| E-Z 75 RA  | Bag of 6     | Right angles                                                                      |                  |                |
| E-Z 75 TEE | Bag of 6     | Tee                                                                               |                  |                |
| E-Z 75 EC  | Bag of 6     | End cap                                                                           |                  |                |
| E-Z 75 COM | Combo Pack   | 2 each: inside corner, outside corner, splice/coupling, right angle, tee, end cap |                  |                |
| E-Z 75 DG  | One Box      | Junction box: W - 5" x H - 5" x D - 2"                                            |                  | white or red   |
| E-Z SB     | One Box      | Smoke box: W - 5.50" diameter (fits both E-Z 58 and E-Z 75)                       |                  |                |
| E-Z 7553   | 12 Yard Roll | 1/2" x 1/16" double coat foam tape                                                |                  |                |

**WARRANTY:** One year warranty against workmanship, material and factory defects.

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# E-Z Duct Raceway Quarter Round

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## Quarter Round Wire & Cabling Raceway & Connectors for Low Voltage Applications

- ◆ 1" Quarter round
- ◆ One piece extrusion; hinged and interlocking
- ◆ Ideal for hiding wire along floorboards and corner
- ◆ White only    ◆ 6 ft. lengths    ◆ UV stabilizer
- ◆ Splice has knock outs for E-Z 38, E-Z 58 & E-Z 75
  - ◆ Flame retardant PVC & ABS UL 94-V-0
- ◆ 12 Yard roll 1/2" x 1/16" double coat foam tape.  
Sold separately PN#E-Z 7553



E-Z QR 6-W  
Closed



E-Z QR 6-W  
Open



E-Z QR SP-W



E-Z QR OC-W



E-Z QR IC-W

### Part Numbers

| Part #       | Quantity     | Description                                            | Length           | Color      |
|--------------|--------------|--------------------------------------------------------|------------------|------------|
| E-Z QR 6-W   | Bag of 6     | 1" Quarter round, not taped or drilled                 | six foot lengths | white only |
| E-Z 7553     | 12 yard roll | 1/2" x 1/16" double coat foam tape                     |                  |            |
| E-Z QR IC-W  | Bag of 6     | Inside corner quarter round                            |                  |            |
| E-Z OC-W     | Bag of 6     | Outside corner quarter round                           |                  |            |
| E-Z SP-W     | Bag of 6     | Splice/ coupling quarter round                         |                  |            |
| E-Z QR COM-W | Combo Pack   | 2 each: inside corner, outside corner, splice/coupling |                  |            |

**WARRANTY:** One year warranty against workmanship, material and factory defects.

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# Spacers & Covers

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## Spacers

**S-129**  
Spacer for 129



**5226**  
Spacer for 4400  
series



**S-28**  
Spacer for 29 & 28  
Series, standard  
screw surface  
mount



**S-40**  
Spacer for 4460  
series



**S-23**  
Spacer for roller  
ball, dome switch  
& flanged push  
button switch



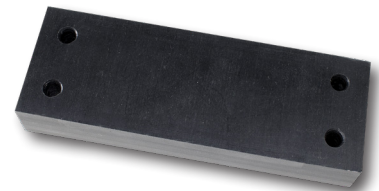
**S-27T**  
Thin spacer for  
2707 Series



**S-11**  
Spacer for 1100,  
100 series



**S-27C**  
Case size spacer  
for 2707 Series



**S-15**  
Spacer for 400 & 410 Series,  
industrial surface mount



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# *Spacers & Covers*

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## *Covers*

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**S-222**  
Cover for 29 series



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**5229**  
International cover  
for 29 series



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**C-129**  
Cover for 129  
series



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**C-11**  
Cover for 1100  
series



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**S-111**  
Cover for 100-TC  
series



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# Empty Cases

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- ◆ Available in white, brown or gray
- ◆ Empty cases available in bags of any amount up to 100

**C-5**  
3/8" press fit



**C-7F**  
1/4" x 3/16"  
mini surface mount  
flange & adhesive  
backing



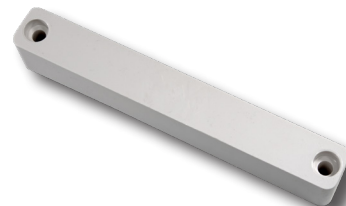
**C-5F**  
3/8" flanged  
recessed



**C-8**  
1/2" x 1/2" x 4"  
surface mount



**C-15**  
1/2" x 1/2" x 4"  
industrial surface  
type



**C-6RF**  
1/4" flanged  
recessed



**C-1100**  
3/8" x 3/8" x 2"  
surface mount



**C-7**  
1/4" x 1"  
mini surface mount  
adhesive backing



**C-4460**  
1.5" x 5/8"  
surface mount



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# Dummy Plugs

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◆ Reusable

◆ White or black (unless otherwise noted)

◆ Available in bags of 100



DP-1.25



DP-750



DP-562



DP-500



DP-20RS

## Part Numbers

|         |                                                          |
|---------|----------------------------------------------------------|
| DP-20RS | 3/8" diameter, white or brown                            |
| DP-50RF | 1/4" diameter, round flanged, white or brown             |
| DP-250  | 1/4" diameter, white or black                            |
| DP-375  | 3/8" diameter, self locking                              |
| DP-500  | 1/2" diameter, self locking                              |
| DP-562  | 9/16" diameter, self locking                             |
| DP-625  | 5/8" diameter, self locking                              |
| DP-750  | 3/4" diameter, self locking                              |
| DP-875  | 7/8" diameter, self locking                              |
| DP-1.0  | 1" diameter, self locking                                |
| DP-1.25 | 1 1/4" diameter, self locking                            |
| 6726    | 1.093" diameter, for electrical box knockouts, gray only |

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# *Recessed Adaptors*

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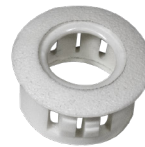
- ◆ 3/8" machined holes
- ◆ Self-locking
- ◆ Reusable - great for testing
- ◆ Snap-in - Snap out
- ◆ White or black (unless otherwise noted)
- ◆ Available in bags of 100



A-1.25



A-1.0



A-625



A-562

## Part Numbers

|        |                                                                  |
|--------|------------------------------------------------------------------|
| A-562  | 9/16" diameter with 3/8" hole                                    |
| A-625  | 5/8" diameter with 3/8" hole                                     |
| PA-75  | 3/4" diameter with 3/8" hole, available in white, brown and gray |
| A-87   | 7/8" diameter with 3/8" hole                                     |
| A-1.0  | 1" diameter with 3/8" hole                                       |
| A-1.25 | 1 1/4" diameter with 3/8 hole                                    |

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# Pre-Wire Plugs

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- ◆ Reusable
- ◆ Perfect for pre-wiring
- ◆ Cost effective
- ◆ White or black (unless otherwise noted)
- ◆ Available in bags of 100



PW-1.0



PW-75



PW-625



PW-500



PW-50RF



PW-375

## Part Numbers

|         |                                                                                       |
|---------|---------------------------------------------------------------------------------------|
| PW-20   | 3/8" diameter x 1 3/4" L, white or brown                                              |
| PW-20RS | 3/8" diameter x 1" L, white or brown                                                  |
| PW-50RF | 1/4" diameter x 2" L, round flanged, white or brown                                   |
| PW-375  | 3/8" diameter x 9/16" L, self locking, white, brown or black                          |
| PW-500  | 1/2" diameter x 1" L, self locking                                                    |
| PW-625  | 5/8" diameter x 1 1/16" L, self locking                                               |
| PW-75   | 3/4" diameter x 1 1/2" L, self locking                                                |
| PW-875  | 7/8" diameter x 1" L, self locking                                                    |
| PW-1.0  | 1" diameter x 1 1/16" L, self locking                                                 |
| PW-1.25 | 1 1/4" diameter x 1 1/16" L, self locking                                             |
| PW-150  | 1/2" diameter x 1 1/2" L, white or brown                                              |
| PW-SM   | 1 1/4" L x 1/4" W, white, surface mount                                               |
| PW-1.OH | 1" diameter, white or black, hooked for sheetrock for home theater or home automation |

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# Accessories

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## Bushing



5358

### Part Numbers

|      |        |
|------|--------|
| 7175 | 3/4"   |
| 7174 | 7/8"   |
| 7128 | 1"     |
| 8515 | 1.375" |
| 5358 | 1 3/4" |
| 5228 | 2"     |
| 7666 | 2 1/2" |

Available in black only.

## Plug



6726

### Part Numbers

|      |    |
|------|----|
| 5227 | 2" |
| 6726 | 1" |

Available in gray only.

## Wire Run Plug



7834

### Part Numbers

|        |                  |
|--------|------------------|
| CB-75  | 3/4" diameter    |
| CB-875 | 7/8" diameter    |
| CB-1.0 | 1" diameter      |
| 7834   | 1 3/32" diameter |

Available in black only.

## Double Sided Tape

### Part Numbers

|       |                           |
|-------|---------------------------|
| T-1   | 1" wide, black only       |
| T-1/2 | 1/2" wide, white or black |
| T-3/8 | 3/8" wide, white or black |
| T-1/4 | 1/4" wide, white or black |

Available in 1 yard, 5 yard and 10 yard rolls.

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## ***GRI Competitor Switch Comparison***

| GRI        | GE/Sentrol | Flair          | Honeywell      | Amseco   | Aleph   | Tane            |
|------------|------------|----------------|----------------|----------|---------|-----------------|
| 500        |            |                |                | AMS-59   |         |                 |
| 501        |            |                |                |          |         |                 |
| 502        |            |                |                | AMS-7D   |         | TANE MICROTANE  |
| 503        |            |                |                |          |         |                 |
| 4405       |            |                |                |          |         |                 |
| 4461       |            |                |                |          |         |                 |
| 4473       |            | VIP48A 942C    | 944TSP         |          |         |                 |
| 4473       |            | PFC40-1A 94-2C | 944TSP         |          |         |                 |
| 4613       | 2304A      |                |                |          |         | TANE-98Bi LG-36 |
| 4714       |            |                |                |          |         |                 |
| 5088       |            |                | MPS99WG        |          |         |                 |
| 8297       |            | 1000-65SG      |                |          |         |                 |
| 8299       |            | 1000-37SZ      |                |          |         |                 |
| 100-12     | 1038       |                | PR-20445 / 949 |          |         |                 |
| 100-12WG   | 1038       |                |                |          |         |                 |
| 100-T      | 1138T      | VIP100         | 945T           |          | DC-2531 | TANE-60         |
| 100-TC     | 1138T      |                | PAL-T          |          |         | TANE-50         |
| 100-TCWG   | 1138T      |                |                |          |         |                 |
| 100-TWG    |            |                |                |          |         |                 |
| 101-12     |            |                |                |          |         |                 |
| 101-12WG   |            |                |                |          |         |                 |
| 101-T      |            |                |                |          |         | TANE-61         |
| 101-TC     |            |                |                |          |         |                 |
| 101-TWG    |            |                |                |          |         |                 |
| 102-12     |            |                |                |          |         |                 |
| 102-12WG   |            |                |                |          |         |                 |
| 102B-12    |            |                |                |          |         |                 |
| 1100A-12   |            | LMS28          |                | AMS-51CV |         | TANE-55         |
| 1100A-12WG |            |                |                |          |         |                 |
| 1100B-12   |            | LMS27          |                |          |         | TANE-56B        |
| 1100B-12WG |            |                |                |          |         |                 |
| 1100C-12   |            | LMS29          |                |          |         | TANE-57C        |
| 1100C-12WG |            |                |                |          |         |                 |
| 110-12     | 1035       | VIP88 /LMS88   | 945            |          | PS-1541 |                 |
| 110-12WG   | 1035W      |                |                |          |         |                 |



## ***GRI Competitor Switch Comparison***

| GRI        | GE/Sentrol | Flair         | Honeywell | Amseco | Aleph | Tane    |
|------------|------------|---------------|-----------|--------|-------|---------|
| 110-T      |            | VIP100-1      | MPS80     |        |       |         |
| 110-TWG    |            |               |           |        |       |         |
| 111-12     |            | LMS87         |           |        |       |         |
| 111-12WG   |            |               |           |        |       |         |
| 111-T      |            |               |           |        |       |         |
| 111-TWG    |            |               |           |        |       |         |
| 112-12     |            | LMS89         |           |        |       |         |
| 112-12WG   |            |               |           |        |       |         |
| 112B-12    |            |               |           |        |       |         |
| 120RST-12  |            | VIP48A 94-2C  | MPS73WG   |        |       |         |
| 120T-12    |            | VIP48A 94-2C  | MPS73WG   |        |       |         |
| 120T-12WG  |            | VIP48-1A 942C | MPS73WG   |        |       |         |
| 120T-12XWG |            |               | MPS73WG   |        |       |         |
| 129A       |            |               | 940       |        |       | GP-23   |
| 129AWG     |            |               |           |        |       |         |
| 129B       |            |               |           |        |       | GP-24   |
| 129BWG     |            |               |           |        |       |         |
| 130T-12    |            |               |           |        |       |         |
| 130T-12WG  |            |               |           |        |       |         |
| 130T-12XWG |            |               |           |        |       |         |
| 140T-12    |            |               |           |        |       |         |
| 140T-12WG  |            |               |           |        |       |         |
| 140T-12XWG |            |               |           |        |       |         |
| 150-12     |            |               |           |        |       | TANE-06 |
| 150-12WG   |            |               |           |        |       |         |
| 150MF-12   |            |               |           |        |       |         |
| 150MF-12WG |            |               |           |        |       |         |
| 150RS-12   |            |               |           |        |       |         |
| 150RS-T    |            |               |           |        |       |         |
| 150-T      |            |               |           |        |       |         |
| 150-TWG    |            |               |           |        |       |         |
| 160-12     |            |               |           |        |       |         |
| 160-12WG   |            |               |           |        |       |         |
| 160MF-12   |            |               |           |        |       |         |
| 160MF-12WG |            |               |           |        |       |         |

## ***GRI Competitor Switch Comparison***

| GRI        | GE/Sentrol | Flair             | Honeywell | Amseco     | Aleph | Tane     |
|------------|------------|-------------------|-----------|------------|-------|----------|
| 170-12     |            |                   |           |            |       |          |
| 170-12WG   |            |                   |           |            |       |          |
| 170MF-12   |            |                   |           |            |       |          |
| 170MF-12WG |            |                   |           |            |       |          |
| 175-12     |            |                   |           |            |       |          |
| 180-12     | 1078C      | VIP48-1 / PFC48-1 | MPS70WG   | AMS-25A    |       | SD-70AL  |
| 180-12WG   | 1078CW     |                   | MPS70WG   | AMS-26A    |       |          |
| 180MC-12   | 1078C1     |                   | MPS70WG   |            |       |          |
| 180RS-12   |            | VIP48 / PFC48     | MPS70WG   |            |       | SD-70    |
| 184-12     | 1078       | MSS100-6          | 947       |            |       | SD-80AL  |
| 184-12WG   | 1078W      |                   | 947       |            |       |          |
| 184MC-12   | R1078      |                   | 947       |            |       |          |
| 184RS-12   |            | MSS100-6          | 947       |            |       | SD-80    |
| 185-12     |            | PFC41-1           |           |            |       | SD-71BAL |
| 185-12WG   |            |                   |           |            |       |          |
| 185MC-12   |            |                   |           |            |       |          |
| 189-12     |            | MSS100-1          |           |            |       | SD-81AL  |
| 189-12WG   |            |                   |           |            |       |          |
| 189MC-12   |            |                   |           |            |       |          |
| 190-12     | 1076C      | PFC42-1           |           | AMS-25B    |       | SD-72CAL |
| 190-12WG   | 1076CW     |                   |           | AMS-26B    |       |          |
| 190MC-12   |            |                   |           |            |       |          |
| 194-12     | 1076       | MSS100-4          |           |            |       | SD-82CAL |
| 194-12WG   | 1076W      |                   |           |            |       |          |
| 194MC-12   |            |                   |           |            |       |          |
| 195-12     |            | PFC42Y            |           |            |       | SD-74CAL |
| 195-12WG   |            |                   |           |            |       |          |
| 195-MC-12  |            |                   |           |            |       |          |
| 199-12     | 1076D      |                   |           |            |       | SD-84CAL |
| 199-12WG   |            |                   |           |            |       |          |
| 199-MC-12  |            |                   |           |            |       |          |
| 200-36     |            | 1000-75           |           |            |       |          |
| 200-36HD   |            |                   |           |            |       |          |
| 200-36WG   |            | 1000-38Z          |           | ODC-59A-HG |       |          |
| 200L-36    |            |                   |           |            |       |          |

## ***GRI Competitor Switch Comparison***

| GRI        | GE/Sentrol | Flair             | Honeywell      | Amseco     | Aleph   | Tane           |
|------------|------------|-------------------|----------------|------------|---------|----------------|
| 2020-12    | 1075       | VIP94-2 / RMS94Y  | 951WG          | AMS-21     | DC-1621 | STB-10         |
| 2020-12WG  | 1075W      |                   |                |            | PS-1624 |                |
| 2020-60    |            |                   | 944            |            |         |                |
| 2020-60WG  |            |                   | 944W           |            |         |                |
| 2020-T     | 1025T      | VIP94-2T          | 944T           | AMS-T21    | DC-2611 | STB-3/8TC      |
| 2020-TWG   | 1075TW     |                   |                |            |         |                |
| 2020-TXWG  | 1065TW     |                   |                |            |         |                |
| 20F-12     | 1072       | RMS56K            |                | AMS-22     | PS-1631 |                |
| 20F-12WG   | 1072W      |                   |                |            |         |                |
| 20RS-12    | 1125       | VIP94-1 / RMS94-2 | 951WG / MPS9WG | AMS-17     | DC-1651 | Mini-10 /      |
| STB-10     |            |                   |                |            |         |                |
| 20RS-12XWG | 1125W      |                   | MPS95WG        |            |         | STB-10 WG      |
| 20RS-60WG  |            |                   | 951            |            |         |                |
| 20RS-T     | 1125T      | VIP94-2T          | 944T           | AMS-T17    | DC-2611 | STB-3/8TC      |
| 20RS-TWG   | 1125TW     |                   |                |            |         | STB - 3/8 TCWG |
| 210-36     |            |                   |                |            |         |                |
| 2120-12    | 1275       |                   |                |            |         |                |
| 2120-12WG  | 1275W      |                   |                |            |         |                |
| 2130-12    | 1276       |                   |                |            |         |                |
| 2130-12WG  | 1276W      |                   |                |            |         |                |
| 2140-12    | 1277       |                   |                |            |         |                |
| 2140-12WG  | 1277W      |                   |                |            |         |                |
| 220-36     |            |                   |                |            |         |                |
| 230-36     |            |                   |                |            |         |                |
| 250-36     |            |                   |                |            |         |                |
| 250-36HD   |            |                   |                |            |         |                |
| 250-36WG   |            |                   |                | ODC-59A-HG |         |                |
| 260-36     |            |                   |                |            |         |                |
| 270-36     |            |                   |                |            |         |                |
| 270-36HD   |            |                   |                |            |         |                |
| 280-36     |            |                   |                |            |         |                |
| 28A        |            | 1020-24           |                | AMS-59     |         |                |
| 28AWG      |            |                   |                |            |         |                |
| 28AXWG     |            |                   |                |            |         |                |
| 28B        |            | 1020-22           |                |            |         |                |

## ***GRI Competitor Switch Comparison***

| GRI        | GE/Sentrol | Flair                | Honeywell | Amseco             | Aleph | Tane    |
|------------|------------|----------------------|-----------|--------------------|-------|---------|
| 28BWG      |            |                      |           |                    |       |         |
| 28BXWG     |            |                      |           |                    |       |         |
| 28C        |            | 1020-34              |           |                    |       |         |
| 28CWG      |            |                      |           |                    |       |         |
| 28CXWG     |            |                      |           |                    |       |         |
| 29A        | 1085T      | VIP39 / 1000-24      |           | AMS-39 / AMS-39CVS |       | SM-35   |
| 29AWG      | 1085TW     |                      | 7939WG    |                    |       |         |
| 29AXWG     | 1082TW     |                      |           |                    |       |         |
| 29B        | 1086T      | 1000-22              |           |                    |       | SM-35 B |
| 29BWG      |            |                      |           |                    |       |         |
| 29BXWG     |            |                      |           |                    |       |         |
| 29C        | 1087T      | 1000-34              | 7939-2    | AMS-39B            |       | SM-35 C |
| 29CWG      | 1087TW     |                      |           |                    |       |         |
| 29CXWG     | 1084TW     |                      |           |                    |       |         |
| 29PA       | 1082       | 1000-24S             |           |                    |       |         |
| 29PAWG     | 1085       |                      |           |                    |       |         |
| 29PAXWG    | 1082       |                      |           |                    |       |         |
| 29PB       | 1086       | 1000-22S             |           |                    |       |         |
| 29PBWG     | 1086       |                      |           |                    |       |         |
| 29PBXWG    |            |                      |           |                    |       |         |
| 29PC       | 1084       | 1000-34S             |           |                    |       |         |
| 29PCWG     | 1087       |                      |           |                    |       |         |
| 29PCXWG    | 1084       |                      |           |                    |       |         |
| 29PD       | 1084       | 1000-24SY            |           |                    |       |         |
| 29PDWG     | 1084       |                      |           |                    |       |         |
| 3030-12    | 1071       | RMS93-2              |           |                    |       |         |
| 3030-12WG  | 1071W      |                      |           |                    |       |         |
| 3030-12XWG | 1066W      |                      |           |                    |       |         |
| 30F-12     | 1073       | RMS60K               |           |                    |       |         |
| 30F-12WG   | 1073W      |                      |           |                    |       |         |
| 30F-12XWG  | 1073W      |                      |           |                    |       |         |
| 30RS-12    |            | RMS93-2              |           |                    |       | STB-11  |
| 400        | 1045T      | VIP1000-37 / 1020-37 | 950       |                    |       |         |
| 400P       |            |                      |           |                    |       |         |
| 400WG      | 1042TW     |                      |           |                    |       |         |

## ***GRI Competitor Switch Comparison***

| GRI        | GE/Sentrol | Flair                | Honeywell | Amseco   | Aleph   | Tane     |
|------------|------------|----------------------|-----------|----------|---------|----------|
| 401        |            | 1020-58              |           |          |         |          |
| 401WG      |            |                      |           |          |         |          |
| 402        | 1047T      | 1020-47              |           |          |         |          |
| 402WG      | 1044TW     |                      |           |          |         |          |
| 4040-12    | 1070       | RMS95-2 / RMS95Y     |           |          | PS-1622 |          |
| 4040-12WG  | 1070W      |                      |           |          |         |          |
| 4040-12XWG | 1067W      |                      |           |          |         |          |
| 4040-60    |            |                      | 944-2GY   |          |         |          |
| 40F-12     | 1074       | RMS70K               |           |          | PS-1632 |          |
| 40F-12XWG  | 1074W      |                      |           |          |         |          |
| 40FB-12    | 1074H      |                      |           |          |         |          |
| 40FB-12    |            |                      |           |          |         |          |
| 40FB-12    | 1074H      |                      |           |          |         |          |
| 40RS-12    |            | RMS95-2              |           |          |         |          |
| 410        | 1045T      | VIP1000-37 / 1000-37 |           | AMS-T10C |         |          |
| 410P       | 1045       | VIP1000-37S/1000-37S | 7945      | AMS-37L  |         | SM-20 WG |
| 410PWG     | 1045W      |                      |           |          |         | SM-20 WG |
| 410WG      | 1042TW     |                      |           |          |         |          |
| 411        |            | 1000-58              |           |          |         |          |
| 4110       |            | 1900-98              |           |          |         |          |
| 4110A      |            | 1900-98              |           |          |         |          |
| 4110A-KIT  |            |                      |           |          |         |          |
| 4110-KIT   |            |                      |           |          |         |          |
| 4112       |            | 1900-96              |           |          |         |          |
| 4112A      |            | 1900-96              |           |          |         |          |
| 411P       |            | 1000-58S             |           |          |         | SM-21 WG |
| 411PWG     |            |                      |           |          |         | SM-21 WG |
| 411WG      |            |                      |           |          |         |          |
| 412        | 1047T      | 1000-47              |           | AMS-37B  |         |          |
| 412P       |            | 1000-47S             | 7945-2    |          |         |          |
| 412PWG     |            |                      |           |          |         |          |
| 412WG      | 1044TW     |                      |           |          |         |          |
| 413P       |            |                      |           |          |         |          |
| 413PWG     |            |                      |           |          |         |          |
| 4400       |            |                      |           |          |         | MET-200  |

## ***GRI Competitor Switch Comparison***

| GRI       | GE/Sentrol         | Flair                  | Honeywell            | Amseco                 | Aleph   | Tane         |
|-----------|--------------------|------------------------|----------------------|------------------------|---------|--------------|
| 4400-A    | 2505A-L            | 1000-65                |                      |                        |         | MET-200AR 36 |
| 4400AB    |                    |                        |                      |                        |         |              |
| 4402      | 2507-L20           |                        |                      |                        |         | MET-201      |
| 4402-A    | 2507A-L            | 1000-64Y               |                      |                        |         | MET-201AR    |
| 4402AB    | 2507AH-L           |                        |                      |                        |         |              |
| 4405-A    | 2507AD-L           | 1000-65Y               |                      |                        |         |              |
| 4460      |                    |                        |                      |                        |         |              |
| 4460A     |                    |                        |                      |                        |         |              |
| 4460A-36  |                    |                        |                      |                        |         |              |
| 4461A     |                    |                        |                      |                        |         |              |
| 4462      |                    |                        |                      |                        |         |              |
| 4462A     |                    |                        |                      |                        |         |              |
| 4463A     |                    |                        |                      |                        |         |              |
| 4473RS    |                    | VIP48A 942C            | 944TSP               |                        |         |              |
| 4510A     |                    |                        |                      |                        |         |              |
| 4510AU    |                    |                        |                      |                        |         |              |
| 4532      | 2202A-L & 2202AU   | VIP1000-98Z/1000-98Z   | 957                  | ODC-56A                |         |              |
| 4532-36   | 2205A-L & 2205AU-L |                        |                      |                        |         |              |
| 4532B     |                    | 1000-96Z               |                      |                        |         |              |
| 4532C     | 2204A-L & 2204AU   | 1000-96Z               |                      | ODC-56B                |         |              |
| 4532CL    | 2204A-L & 2204AU   | 1000-96L               |                      | ODC-59B                | PS-2022 | MET-46-18    |
| 4532D-36  | 2207AD-L           |                        |                      |                        |         |              |
| 4532DL-36 | 2207AD-L           |                        |                      |                        |         |              |
| 4532L     | 2202A-L & 2202AU-L | VIP1000-98L / 1000-98L | 958 / MPS51C / MPS52 | ODC-59A / ODC-59A-MINI | PS-2023 | MET-44-18    |
| 4532L-36  | 2205A-L & 2205AU-L |                        |                      | ODC-59A-36             |         | MET-44-36    |
| 4532LB    |                    | 1000-96L               |                      |                        |         | MET-45-18    |
| 4612      | 2302A              |                        |                      |                        |         | TANE-96Bi-36 |
| 4700-A    | 2315A              | 1000-50SG              |                      |                        |         | TANE-66      |
| 4700-AXL  | 2325A              |                        |                      |                        |         |              |
| 4701-A    | 2317A              | 1000-73SG              |                      |                        |         | TANE-68      |
| 4701-AXL  | 2327A              |                        |                      |                        |         |              |
| 4704      | 2105               |                        |                      |                        |         |              |
| 4704-A    | 2105A              | PA1000-81              |                      |                        | DC-4511 |              |
| 4714-A    |                    |                        |                      |                        |         |              |
| 4714-JC   |                    |                        |                      |                        |         |              |



## ***GRI Competitor Switch Comparison***

| GRI             | GE/Sentrol | Flair              | Honeywell | Amseco         | Aleph   | Tane       |
|-----------------|------------|--------------------|-----------|----------------|---------|------------|
| 50-12           |            | LMS13-1            |           | AMS-10S        |         | SS-40      |
| 50-12WG         |            |                    |           |                |         |            |
| 505             |            | LMS11              |           | AMS-59 / AMS-9 |         | SS-40      |
| 505WG           |            |                    |           |                |         |            |
| 506             |            |                    |           | AMS-7D         |         |            |
| 506WG           |            |                    |           |                |         |            |
| 5088RS          |            | VIP94-1A MN123787  | MPS99WG   |                |         |            |
| 5088RS-T        |            |                    |           |                |         |            |
| 5088RS-TWG      |            |                    |           |                |         |            |
| 5088RSWG        |            |                    | MPS99WG   |                |         |            |
| 5088-T          |            |                    |           |                |         |            |
| 5088-TWG        |            |                    |           |                |         |            |
| 5088WG          |            |                    | MPS99WG   |                |         |            |
| 50F-12-BA       |            | VIP130-1 / LMS13-1 |           |                | DC-1561 | FM-102     |
| 50F-12WG-BA     |            | VIP130-1           | 943WG     |                |         |            |
| 50R-12          | 1055       | VIP68 / RMS68-2    | PR-20421  | AMS-20         | TAP-15  | PB-53TC    |
| 50R-12WG        | 1055W      |                    |           |                |         |            |
| 50R-60          |            |                    | 941       |                |         |            |
| 50RF-12         | 1015       |                    | PR-20421  |                |         | RFM-25     |
| 50RS-12         | 1058       | RMS68-1            |           |                | DC-1631 | Mini-15    |
| 50RS-12WG       | 1058       |                    |           | AMS-10C        |         | Mini-15 w/ |
| Bare 1/4" v .79 |            |                    |           |                |         |            |
| 50RS-12XWG      | 1058       |                    |           |                |         |            |
| 55F-12-BA       |            | VIP130-2 / LMS13-2 |           | AMS-10C        |         | FM-106     |
| 55F-12WG-BA     |            | VIP130-2           |           |                |         |            |
| 60-12           |            | LMS12              |           |                |         | SS-41B     |
| 60-12WG         |            |                    |           |                |         |            |
| 60F-12-BA       |            | LMS12-1            |           |                |         | FM-103     |
| 60F-12WG-BA     |            |                    |           |                |         |            |
| 60R-12          | 1052       | RMS71-2 / RMS71-2  |           |                |         | TAP-16B    |
| 60R-12WG        | 1052W      |                    |           |                |         |            |
| 60RF-12         | 1016       |                    |           |                |         | RFM-26B    |
| 60RF-12WG       | 1016W      |                    |           |                |         |            |
| 65F-12-BA       |            | LMS12-2            |           |                |         | FM-107B    |
| 65F-12WG-BA     |            |                    |           |                |         |            |

## ***GRI Competitor Switch Comparison***

| GRI         | GE/Sentrol | Flair             | Honeywell | Amseco   | Aleph   | Tane            |
|-------------|------------|-------------------|-----------|----------|---------|-----------------|
| 700CL-12    |            | VIP120-2          |           |          |         | TANE PILL       |
| 700EL-12    |            |                   |           | AMS-59   |         | TANE-PILL SL    |
| 700-T       |            |                   |           | AMS-T10C |         | TANE-PILL TC    |
| 70-12       |            | LMS14             |           |          |         | SS-42C          |
| 70-12WG     |            |                   |           |          |         |                 |
| 701CL-12    |            |                   |           |          |         | TANE PILL OL    |
| 701EL-12    |            |                   |           | AMS-7D   |         | TANE-PILL SL OL |
| 70F-12-BA   |            | LMS14-1           |           |          |         | FM-104          |
| 70F-12WG-BA |            |                   |           |          |         |                 |
| 70FB-12     |            |                   |           |          |         |                 |
| 70R-12      | 1053       | RMS69-2 / RMS69-2 |           |          | PS-1612 | TAP-17C         |
| 70R-12WG    | 1053W      |                   |           |          |         |                 |
| 70RB-12     |            |                   |           |          |         |                 |
| 70RF-12     | 1017       |                   |           |          |         | RFM-27C         |
| 70RF-12WG   | 1017W      |                   |           |          |         |                 |
| 75F-12-BA   |            | LMS14-2           |           |          |         |                 |
| 75F-12WG-BA |            |                   |           |          |         |                 |
| 75FB-12     | 1034H      |                   |           |          |         |                 |
| 8080RS-T    |            | PFC40             |           |          |         |                 |
| 8080-T      | 1078CT     | PFC40             | 947-75T   |          |         | TANE - 3/4 TC   |
| 8080-TMC    |            |                   | 947-75T   |          |         |                 |
| 8080-TWG    | 1078CTW    | PFC40-1           | 947-75T   |          |         |                 |
| 8484RS-T    |            |                   |           |          |         |                 |
| 8484-T      |            |                   |           |          |         |                 |
| 8484-TMC    |            |                   |           |          |         |                 |
| 8484-TWG    |            |                   |           |          |         |                 |
| 8585-T      |            |                   |           |          |         | TANE - 3/4 BTC  |
| 8585-TMC    |            |                   |           |          |         |                 |
| 8585-TWG    |            |                   |           |          |         |                 |
| 8989-T      |            |                   |           |          |         |                 |
| 8989-TMC    |            |                   |           |          |         |                 |
| 8989-TWG    |            |                   |           |          |         |                 |
| B180-12     | 1076C      |                   |           |          |         |                 |
| B180-12     |            |                   |           |          |         |                 |
| B190-12     |            |                   |           |          |         |                 |

## ***GRI Competitor Switch Comparison***

| GRI       | GE/Sentrol | Flair            | Honeywell  | Amseco  | Aleph | Tane      |
|-----------|------------|------------------|------------|---------|-------|-----------|
| B190-12   | 1076CH     |                  |            |         |       |           |
| B190-12WG |            |                  |            |         |       |           |
| B194-12   |            |                  |            |         |       |           |
| B194-12   | 1076H      |                  |            |         |       |           |
| B200-36   |            |                  |            |         |       |           |
| B200-36   | 2207AH     |                  |            |         |       |           |
| B220-36   |            |                  |            |         |       |           |
| B229      |            |                  |            |         |       |           |
| B250-36   |            |                  |            |         |       |           |
| B28A      |            |                  |            |         |       |           |
| B29A      |            |                  |            |         |       |           |
| B29C      | 1087TH     |                  |            |         |       |           |
| B29C      | 1087TH     |                  |            |         |       |           |
| B29PA     |            |                  |            |         |       |           |
| B29PB     |            |                  |            |         |       |           |
| B400      |            |                  |            |         |       |           |
| B402      | 1047TH     |                  |            |         |       |           |
| B402      | 1047TH     |                  |            |         |       |           |
| B4040-12  |            |                  |            |         |       |           |
| B412P     | 1047H      |                  |            |         |       |           |
| B412P     | 1047H      |                  |            |         |       |           |
| B4460A    |            |                  |            |         |       |           |
| B4510-A   |            |                  |            |         |       |           |
| B4510-AU  |            |                  |            |         |       |           |
| B4532C    | 2207AH     |                  |            |         |       |           |
| B70-12    |            |                  |            |         |       |           |
| DS-01     | 3005       | VIP99-1          |            | AMS-20  |       | TANE-22   |
| DS-01T    |            | VIP99-1T         | 956RPT     |         |       | TANE-22TC |
| DS-03     | 3007       |                  |            | RSW-21B |       |           |
| DS-03     | 3007       |                  |            | RSW-21B |       |           |
| GB-550    |            |                  |            | GSC-20N |       |           |
| HD-1      |            |                  | 270R / 268 | HUB-T   |       |           |
| MS150-12  |            |                  |            |         |       |           |
| MS150-T   |            | VIP70            |            |         |       |           |
| MS180-12  |            | VIP70T / M-PFC33 |            |         |       |           |

## ***GRI Competitor Switch Comparison***

| GRI          | GE/Sentrol | Flair               | Honeywell | Amseco | Aleph   | Tane                   |
|--------------|------------|---------------------|-----------|--------|---------|------------------------|
| MS184-12     |            |                     |           |        |         |                        |
| MS2020-12    |            | VIP52               |           |        |         |                        |
| MS2020-T     |            | VIP52T              |           |        |         |                        |
| MS20F-12     |            |                     |           |        |         |                        |
| MS20-OF-12   |            |                     |           |        |         |                        |
| MS20RS-12    |            | M-RMS93-2           |           |        |         |                        |
| MS20RS-T     |            | VIP76 / M-RMS33     |           |        |         |                        |
| MS28A        |            |                     |           |        |         |                        |
| MS29A        |            | M-1000-22           |           |        |         |                        |
| MS29PA       |            |                     |           |        |         |                        |
| MS4400-A     |            | M-1000-63           |           |        |         |                        |
| MS4702       |            |                     |           |        |         |                        |
| MS4702A      |            |                     |           |        |         |                        |
| MS8080-T     |            | M-PFC33             |           |        |         |                        |
| MS8236-3     |            |                     |           |        |         |                        |
| MS8307-3     |            |                     |           |        |         |                        |
| N120T-12     |            | VIP48N              |           |        |         |                        |
| N120T-12WG   |            |                     |           |        |         |                        |
| N150-12      |            |                     |           |        |         | TANE-05DM              |
| N150-12WG    |            |                     |           |        |         |                        |
| N150RS-12    |            |                     |           |        |         |                        |
| N150RS-12WG  |            |                     |           |        |         |                        |
| N150RS-T     |            |                     |           |        |         |                        |
| N150RS-TWG   |            |                     |           |        |         |                        |
| N150-T       | 50         |                     |           |        |         |                        |
| N150-TWG     |            |                     |           |        |         |                        |
| N2020-12     |            | VIP94-2N            |           |        |         |                        |
| N2020-12WG   |            |                     |           |        |         |                        |
| N2020-T      |            | VIP94-2TN           | 944TRE    |        |         |                        |
| N2020-TWG    |            |                     |           |        |         |                        |
| N20RS-12     |            | VIP94-1N / RMS94-2N | PRO51BTM  |        | DC-1671 | STB-10 DM / MINI-10 DM |
| N20RS-12WG   |            |                     |           |        |         | STB - 10 WG /          |
| MINI - 10 WG |            |                     |           |        |         |                        |
| N20RS-T      |            | VIP94-2TN           |           |        | DC-2612 |                        |
| N20RS-TWG    |            |                     |           |        |         |                        |

## ***GRI Competitor Switch Comparison***

| GRI               | GE/Sentrol | Flair    | Honeywell | Amseco  | Aleph | Tane             |
|-------------------|------------|----------|-----------|---------|-------|------------------|
| N2120-12          |            |          |           |         |       |                  |
| N2120-12WG        |            |          |           |         |       |                  |
| N30RS-12          |            | RMS93-2N |           |         |       |                  |
| N40RS-12          |            | RMS95-2N |           |         |       |                  |
| N4473             |            | PFC40-1N |           |         |       |                  |
| PB-100            |            |          |           |         |       |                  |
| PB-100T           |            |          |           |         |       |                  |
| PB-101            |            |          |           |         |       |                  |
| PB-101T           |            |          |           |         |       |                  |
| PB-102            |            |          |           |         |       |                  |
| PB-2020           |            | VIP70    |           | PSW-21  |       | Tane 3/8 ASH     |
| PB-2020-T         |            | VIP70T   |           |         |       |                  |
| PB-3030           |            |          |           |         |       | Tane 3/8 ASH0.C. |
| PBF-100           |            | VIP52    |           |         |       | PB-52            |
| PBF-100T          |            | VIP52T   | 955PST    |         |       | PB-52TC          |
| PBF-101           |            |          |           |         |       | PB-53            |
| PBF-101T          |            |          |           |         |       | PB-53TC          |
| PBF-102           |            |          |           |         |       |                  |
| PBF-2020          |            | VIP76    |           | PSW-22  |       |                  |
| PBF-2020-T        |            |          |           |         |       |                  |
| PBF-3030          |            |          |           |         |       |                  |
| QDC-20            |            |          |           | QDC-2   |       |                  |
| RB-01             |            |          |           | AMS-20  |       | RB-32            |
| RB-02             |            |          |           |         |       | RB-33            |
| RB-03             |            |          |           | RSW-21B |       | RB-34            |
| TS-01 (w/o shunt) |            |          |           | TSW-2T  |       |                  |
| TS-01S (w/shunt)  |            |          |           |         |       |                  |
| TS-02             |            |          |           |         |       |                  |
| TS-20             |            |          |           |         |       |                  |
| TS-30             |            |          |           |         |       |                  |
| TS-40             |            |          |           |         |       |                  |
| TSC-20            |            | VIP78    |           |         |       |                  |
| TSC-30            |            |          |           |         |       |                  |
| TSC-40            |            |          |           |         |       |                  |
| TSW-01(w/o shunt) |            |          |           | PSW-1   |       |                  |

## GRI Competitor Switch Comparison

[illegible]

