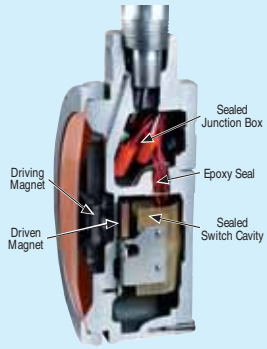
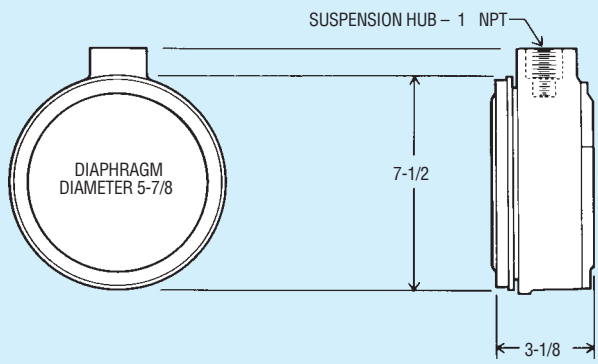
Explosion-Proof Ultra Mag™ Level Switches

For Powder & Bulk Solids

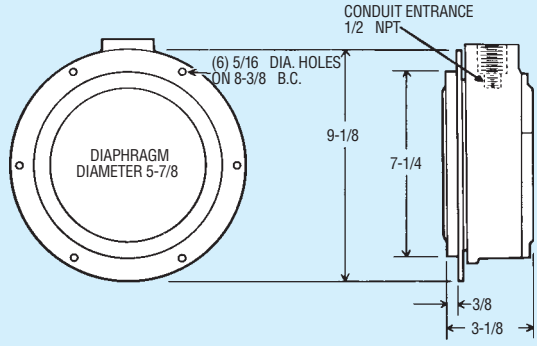


U.S. Patent #3,368,173, 3,349,203 Canadian Patent #801,168; 821,621



Suspension mounting

U.S. Patent #3,368,173, 3,349,203 Canadian Patent #801,168; 821,621



Flange mounting

A unique, patented **Magnetic Linkage** isolates the electrical compartment from controlled product, reducing maintenance and improving sensitivity. The sealed switch compartment and sealed leads yield the utmost in reliable operation. A wide selection of diaphragms and switches are available with choices of flange or suspension mounting to fit your specific application. The dry level Ultra-Mag™ Level Switch is extremely sensitive and very economical. The magnetic linkage makes this simple explosion-proof diaphragm switch the most rugged and reliable level control for a variety of products (see cut-away above).

Mounting Selection: A choice of either suspension or flange mounting is available to match your application. Flange mounting is the best choice for control of low or intermediate level in vessels containing granular product that does not "bridge", "rathole", or otherwise build up on vessel walls. Choose suspension mounting for high level in vessels and for better operation with "bridging" product. See next page for more information on suspension and flange mounting kits. Note that the mounting configuration is represented by the letter "S" for suspension or "F" for flange which is the second digit in the part number on the next page.

Diaphragm Selection: A wide variety of diaphragms are available to match product bulk density, flowability, abrasiveness and temperature requirements while providing maximum sensitivity. The best choice for vessels subject to pressure or vacuum is "breathable" fabric (**P Series**), requiring no venting. Non-porous elastomer (**G Series**) type diaphragms are the best choice for more abrasive product and broader temperature range applications. Venting is always required with the G series and if used in pressurized vessels, venting to the tank atmosphere is required to allow pressure equalization. A slide rule "Diaphragm Selector" is available from the factory to help you choose the diaphragm best suited to your application.

SPECIFICATIONS

Service: Compatible powder or bulk solids.
Wetted Materials:
Mounting Flange: See model chart. Aluminum or 304 SS.
Diaphragm: See model chart. Urethane, Buna-N, PTFE, Silicone Rubber, Polyester, Fluoroelastomers, White Buna-N (food grade), or EPDM.
Temperature Limits: Depends on diaphragm material, see model chart. Standard switch: -40 to 185°F (-40 to 85°C), High temperature switch: -40 to 350°F (-40 to176°C).
Pressure Limit: 60 psig (4.14 bar).
Enclosure Rating: General purpose or weatherproof and explosion-proof. See model chart.
Switch Type: See model chart.
Electrical Rating: See model chart.
Electrical Connections: 18 gage solid core, 600 volt TEW 105°C, style 1015. Epoxy sealed at conduit entrance. 12″ (304.8 mm) long.
Conduit Connection: 1/2″ female NPT.
Process Connection: For flanged models standard is 8-3/8″ (212.725 mm) diameter bolt hole circle.
Mounting Orientation: Flange mount or suspend depending on model.
Set Point Adjustment: Internal screw.
Weight: 7 lb (3.18 kg).
Options: Suspension kits and flange adapter rings.
Agency Approvals: UL and CSA.

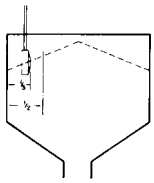
Proximity Ultra Mag™ Level Switch

Diaphragm Selection Guide

Product	Suggested Diaphragm*	Product	Suggested Diaphragm*	Product	Suggested Diaphragm*
Abrasive	3D	Gravel	3D	Sand, Foundry Prepared	5A
Aggregate	3D	Iron Ore, Crushed	3D	Sand, Shake Out	3D
Alumina	3D	Kaolin Clay	3D	Sawdust, Dry	6G
Ash, Dry	3D	Lime, Hydrated	5A	Sea Coal	3D
Baking Powder	7B	Lime, Stone	3D	Sesame Seed	3D
Baking Soda	7B	Oats	4B	Shale, Crushed	3D
Barite	3D	Peanuts in Shell	7A	Silica, Flour	3D
Bark, Ground	6G	Peanuts, Shelled	3D	Sludge, Sewage Dried	1A
Barley, Ground or Meal	17	Perlite	7A	Sludge, Sewage, Ground	1A
Barley, Whole	4B	Phosphate, Rock	3D	Soda Ash	3D
Beans, Edible,	4B	Polyethylene Powder	7A	Soybeans, Cracked	3D
Bentonite	3D	Polyethylene Resin	17	Soybean, Flake	7A
Bond, Foundry	17	Polypropylene Fluff	7A	Soybean, Flour,	7A
Carbon Black	7A	Polypropylene Powder	7A	Soybean Meal	3D
Cement, Klinker	8A	Polypropylene Resin	17	Soybean, Whole	3D
Cement, Portland	4B	Polystyrene Beads	3D	Sugar Beets, Whole	6H
Chips, Hogged Fuel	6G	Pot Ash	3D	Sugar Refined	7B
Coal	3D	Powdered Metal	3D	Sunflower Seed	7A
Compost	5A	Powdered Ore	3D	Taconite Pellets	3D
Core Sand, Foundry	3D	PVC Powder	7A	Talcum Powder	3D
Corn, Shelled	8A	PVC Resin	17	Walnut Shells, Crushed	3D
Diatomaceous Earth	7A	Rice	17	Wheat	8A
Drill Mud	3D	Rye	3D	Wheat, Wet	5A
Flour	7B	Salt	3D	Wood, Chips	6G
Fly Ash	3D	Sand, Dry	3D	Wood, Dust	6G
Glass Batch	3D	Sand, Dry Silica	3D		

*Diaphragm codes become 4th and 5th characters in model number.

Suspension Mounting is normally used for high level monitoring in vessels. For product over 20 pounds/cu. ft., the level switch (diaphragm face) should be located about ⅛ of the distance from the vessel wall to the point of entry of the product. For product less than 20 pounds/cu. ft., the unit should be located closer to the point of entry of the product, about ½ the distance from the vessel wall to the point of entry. Pressure required to depress the diaphragm and trip the switch is in the range of 5-15 oz in the horizontal direction (perpendicular to the diaphragm). Suspension mounting provides the easiest vertical adjustment capability, greatest sensitivity and best maintenance conditions.



Suspension Assembly Kits: Pre-assembled kits are available from the factory, or you can build your own kits using standard pipe fittings shown in our Proximity Bill of Materials (Form No. 101). Pipes and fittings are normally galvanized steel, but aluminum and stainless steel pipes and fittings are available. Units pictured on the previous page are secured to a steel cover plate that rests on a rectangular steel flange welded into the top of the vessel. Aluminum and stainless coverplates and flanges are also available. Standard 48" long x 1" pipe provides working depth (WD) up to 48". Longer pipe (to provide greater WD) is available. GS Series switches have upper (L_1 = 28" standard) and lower (L_2 = 20" standard) 1" pipes, with a tee (for stilling pot) in between. A stilling pot is required to equalize pressure and keep dirt from building up behind the diaphragm. PS series require a ½" conduit in 1" suspension pipe for explosion-proof applications. The ½" conduit (56" standard length) is a standard part of the GS series assembly.

Aluminum Flange Adapter Rings

Model No.	Tank OD	Model No.	Tank OD
126-009	15"	126-016	84"
126-010	30"	126-017	96"
126-011	36"	126-018	10'
126-012	42"	126-019	12'
126-013	48"	126-020	14'
126-014	60"	126-021	24'
126-015	72"		

Note: OD = Outside Diameter

Complete Model Chart

Consult factory for pricing on UltraMag™ switches

PREFIX - Certification
- E X = Explosion-proof (UL & CSA) Class I, Div I & II, Groups C & D; Class II, Div I & II, Groups E, F, & G.
- X = Explosion-proof (CSA) Class II, Div I & II, Groups F & G.
- = General Purpose (No Code)

1ST DIGIT-Basic Magnetic Pressure Sensing Series
- G = Elastomeric Diaphragm-Venting required*. (Diaphragms 1A - 8A)
- P = Breathable Fabric Diaphragm-No venting required. (Diaphragms 16 & 17 only)

2ND DIGIT-MOUNTING (Top = Suspension/Side=Flanged)
- S = Suspended (G series require suspension vent fittings)* Subtract 10 lbs./cu. ft.-greater sensitivity.
- F = Flanged, Aluminum standard
- T = Flanged, 304 SS

3RD DIGIT-HOUSING MATERIAL
- D = Aluminum
- A = Aluminum, Anodized
- E = Aluminum, Epoxy Coated

4TH & 5TH DIGITS-DIAPHRAGM MATERIAL (TEMPERATURE) (BULK DENSITY)
- G 1 A = Fluoroelastomer, black, .025″ thick, (25 to 300°F), (>30 lbs/cu. ft.)
- G 2 A = Neoprene, black, .025″ thick, (-30 to 220°F), (>30 lbs/cu. ft.)
- G 3 D = Urethane, .031" thick, (10 to 150°F), (>30 lbs./cu. ft.)
- G 3 E = Urethane, orange, .062″ thick, (10 to 150°F), (>90 lbs/cu. ft.)
- P 3 F = Urethane, "3D" elastomer w/bumper for removable overlays, orange, (10 to 150°F), (>90 lbs/cu. ft.)
- P G 4 B = Buna-N, black, .020" thick, (-20 to 212°F), (20 to 90 lbs./cu. ft.)
- G 5 A = PTFE/Glass on Sil Rubber, .024" thick, (-40 to 350°F), (>35 lbs./cu. ft.)
- G 6 D = Silicone Rubber, gray, .062″ thick, (-40 to 350°F), 15 to 30 lbs/cu. ft.)
- G 6 E = Silicone Rubber on Glass, red, .032″ thick, (-40 to 350°F), (>90 lbs/cu. ft.)
- G 6 G = "6C" w/Urethane overlay, (-40 to 350°F), (wood chips diaphragm with "A2")
- G 6 H = "6C" w/bumper for removable overlays 901-120, -132, -134, gray, (-40 to 350°F), (>90 lbs/cu. ft.)
- G 7 A = Silcone Rubber on Glass (White), .015" thick, (-40 to 350°F), (5 to 40 lbs./cu. ft.)
- G 7 B = Buna-N (Food Applications-white), .060" thick, (-20 to 212°F), (30 to 90 lbs./cu. ft.)
- G 8 A = EPDM, black, .036" thick, (-40 to 275°F), (40 to 90 lbs./cu. ft.)
- P 1 6 = Polyester Filter Fabric, white, 150 micron permeability, (-30 to 275°F), (30 to 90 lbs./cu. ft.)
- P 1 7 = Polyester Nitex, white, 15 micron permeability (-30 to 275°F), (30 to 90 lbs./cu. ft.)

6TH DIGIT-SWITCH TYPE
- A = Standard, SPDT, 15A @ 125, 250 VAC
- T = High Temp, SPDT, 5A @ 125, 250 VAC; 24 VDC(**)
- V = High vibration, SPDT, 15A @ 125, 250 VAC
- G = Gold contacts, SPDT, 1A @ 125 VAC, ½ A @ 24 VDC

SUFFIX-SPECIAL CONTROLS
- -A1 = D/P with Diaphragm cover plate
- -A2 = Wood Chip Control (with "6G" diaphragm only)
- -A3 = High sensitivity actuator (for very light product)

E X G S D 3 D A = EXAMPLE MODEL NUMBER*

* GS - G series suspended controls require suspension vent fittings.
(**)Non-UL/CSA listed

Note: The "EX" prefix must he added to the 6-digit model number for "explosion-proof standard". General purpose units do not require the "EX" or other prefix. See the "Complete Model Chart" on this page.

Model Number
GSD3DA
GFD3DA
PSD16A
PFD16A

Suspension Assembly Kits

"P" and "G" Series Suspension Assembly Kits	
Model Number	**Description**
901-409	"P Series Suspension Assembly includes 1/2″ pipe (56″ Std length), 1″ pipe (48″ Std length), 1″ pipe coupling, 1-1/2 NPT strain relief on 1″ pipe. Galvanized mild steel pipe, explosion proof, standard.
901-412	"G" Series Suspension Assembly includes 1/2″ pipe (56″ Std length), watertight strain relief and 1″ coupling, upper 1″ pipe (28″ Std length), lower 1″ pipe (20″ Std length), strain relief with 1-1/2″ NPT, 1″x1″x1″ Tee, 1″ Street Ell and 1″ pipe-4″ long Stilling Pot. Galvanized steel pipe, explosion proof, standard.
Specials include aluminum or stainless steel assemblies. Flange port and cover assemblies are sold separately. CONSULT FACTORY for details.	