Electronic-Control Valve

(Sizes 1½-14"; DN40-350)

Description

The Model 718-03 Electronic-Control Valve combines the advantages of an excellent modulating, line-pressure driven, and hydraulic control valve with the advantages of electronic control. The valve responds to signals from a controller BERMAD SUPER-BE (optional) according to the set values programmed into the controller.

Installation

1. Ensure enough space around the valve assembly for future maintenance and adjustments.
2. Prior to valve installation, flush the pipeline to insure flow of clean fluid through the valve.
3. For future maintenance, install Isolation gate valves upstream and downstream from Bermad control valve.
4. It is highly recommended to install a strainer Bermad model 70F upstream from the level control valve, to prevent debris from damaging valve operation.
5. Install the valve in the pipeline with the valve flow direction arrow in the actual flow direction. Use the lifting ring provided on the main valve cover for installing the valve.
6. For best performance, it is recommended to install the valve horizontally and upright. For different valve positions – consult Bermad.
7. Crosscheck solenoid specifications with design requirements and solenoid/coil label.
8. Electric design/wiring must be carried out by authorized electrical engineer/electrician and comply with Electrical Codes.
9. Pull and connect two 3-wired cables, from the control panel to the valve, for the solenoids actuation. Ensure approved cable protection. Confirm that the wires data meet solenoid specifications.
   Note: Energizing the solenoid coil when it is not fixed in its place, is dangerous and might burn the coil.
10. After installation carefully inspect/correct any damaged accessories, piping, tubing, or fittings.

Commissioning & Calibration

1. Confirm that cock valves [1]+[3] are open (handle parallel to cock-valve body).
2. Confirm that speed control needle valves [5A] & [5B] are open two turns.
3. According to solenoid type - Confirm that solenoids manual override operator (if exists) are on automatic mode or confirm that solenoids bypass cock valves (optional) are closed.
4. The model 718-03 is available in three different configurations:

Main Valve Configuration	Solenoid [S1]	Solenoid [S2]
L.P. – Last Position	N.C. – Normally Closed	N.C. – Normally Closed
N.C. – Normally Closed	N.O. – Normally Open	N.C. – Normally Closed
N.O. – Normally Open	N.C. – Normally Closed	N.O. – Normally Open

4.1. L.P. – Last Position Configuration

4.1.1. When neither of the solenoids is energized the main valve remains in its last position.

4.1.2. Energizing solenoid [S1] intermittently causes the main valve to close respectively until valve shuts drip tight.

4.1.3. Energizing solenoid [S2] intermittently causes the main valve to open respectively until fully open.

4.2. N.C. – Normally Closed Configuration

4.2.1. When neither of the solenoids is energized the main valve is closed drip tight.

4.2.2. Energizing solenoid [S1] continually causes the main valve to remain in its last position.

4.2.3. De-energizing solenoid [S1] periodically causes the main valve to close respectively.

4.2.4. Energizing solenoid [S2] intermittently, while energizing solenoid [S1] continually causes the main valve to open respectively until fully open.

4.3. N.O. – Normally Open Configuration

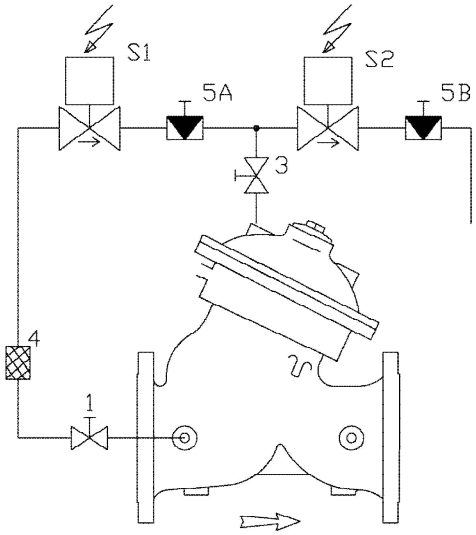
4.3.1. When neither of the solenoids is energized the main valve is fully open.

4.3.2. Energizing solenoid [S2] continually causes the main valve to remain in its last position.

4.3.3. De-energizing solenoid [S2] periodically causes the main valve to open respectively.

4.3.4. Energizing solenoid [S1] intermittently, while energizing solenoid [S2] continually causes the main valve to close respectively until valve shuts drip tight.

Control Drawing



PARTS LIST

1	2W Cock Valve
3	2W Cock Valve
4	Control Filter
5	Needle Valve
S	2W NC Solenoid

Trouble-Shooting

1. **Valve fails to Open:** Check for sufficient inlet pressure, create demand/flow, check cock valves status, confirm power supply to solenoid & confirm solenoid coil is not burned.
2. **Valve fails to Close:** Create demand/flow, confirm pilot setting, check needle & cock valves status, clean control filter & detect for clogged ports or fittings, confirm power supply to solenoid & confirm solenoid coil is not burned, check if any debris trapped in the main valve, confirm diaphragm is not leaking.

Preventative Maintenance

1. System operating conditions that effect on the valve should be checked periodically to determent the required preventative maintenance schedule.
2. Maintenance instructions:
   - 2.1. Tools required:
     - 2.1.1. Metric and imperial wrenches
     - 2.1.2. Anti seize grease
   - 2.2. Visual inspection to locate leaks and external damages
   - 2.3. Functional inspection including: closing, opening and regulation.
   - 2.4. Close upstream and downstream isolating valves (and external operating pressure when used).
   - 2.5. Once the valve is fully isolated vent pressure by loosening a plug or a fitting.
   - 2.6. Open the stud nuts and remove the actuator as one unit from the valve body. Disassemble necessary control tubs and wires.
   - 2.7. It is highly recommended to stock a reserve solenoid and an actuator assembly for each size. This allows disassemble the actuator and examine its parts carefully for signs of wear, corrosion, or any other abnormal conditions.
   - 2.8. Replace worn parts and all the Elastomers. Lubricate the bolts and studs threads with Anti seize grease.

Spare parts

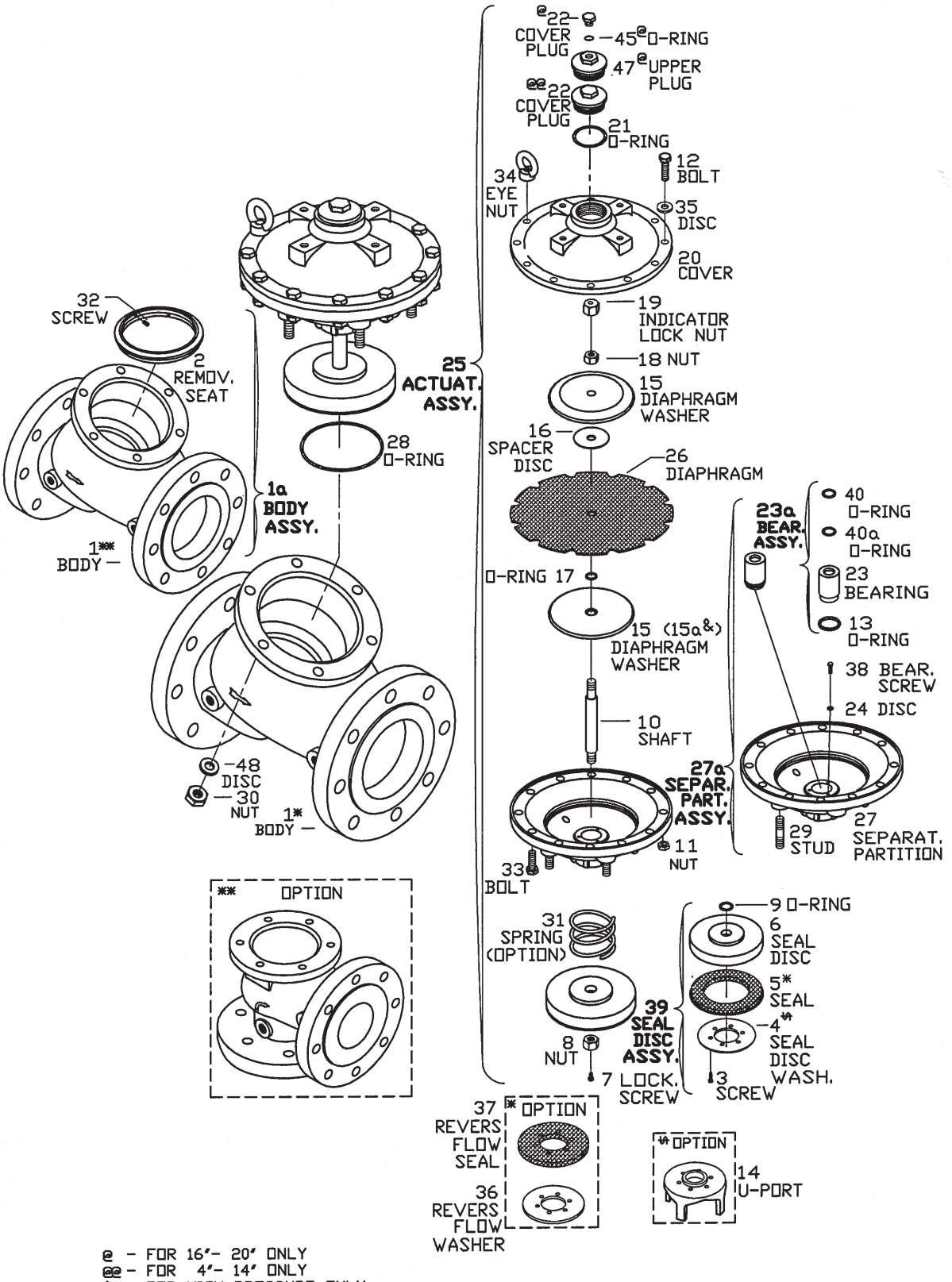
Bermad has a convenient and easy to use ordering guide for valve spare-parts and control system components. For solenoid valves refer to model and S/N on solenoid tags.

Pub # : IOMEW718-03	By: MB 07/10	Rev:	File name: IOMEW718-03_07_10

appliceng@bermad.com ● www.bermad.com

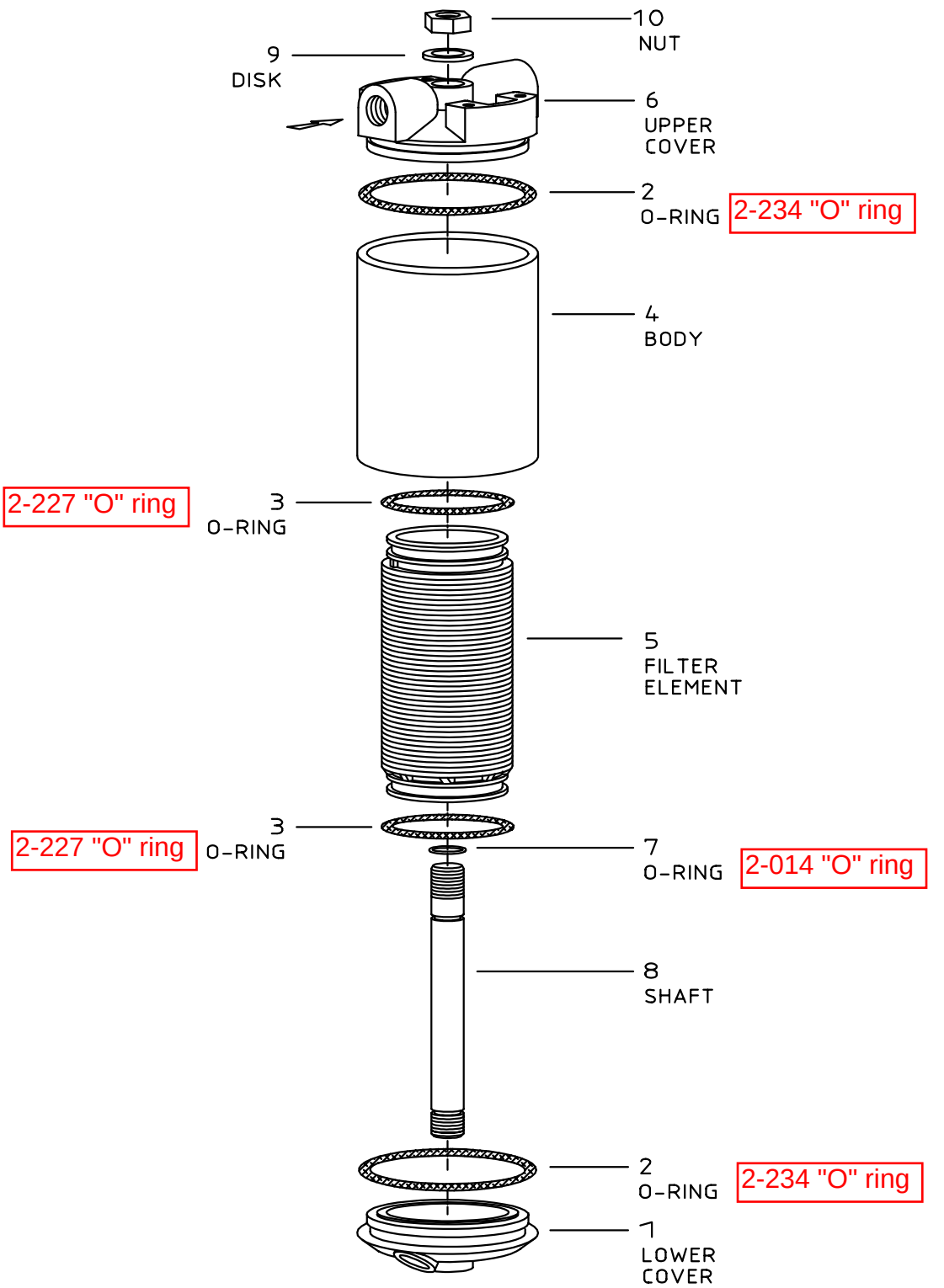
Diaphragm Actuated Basic Control Valves

Sizes: 4"-20"



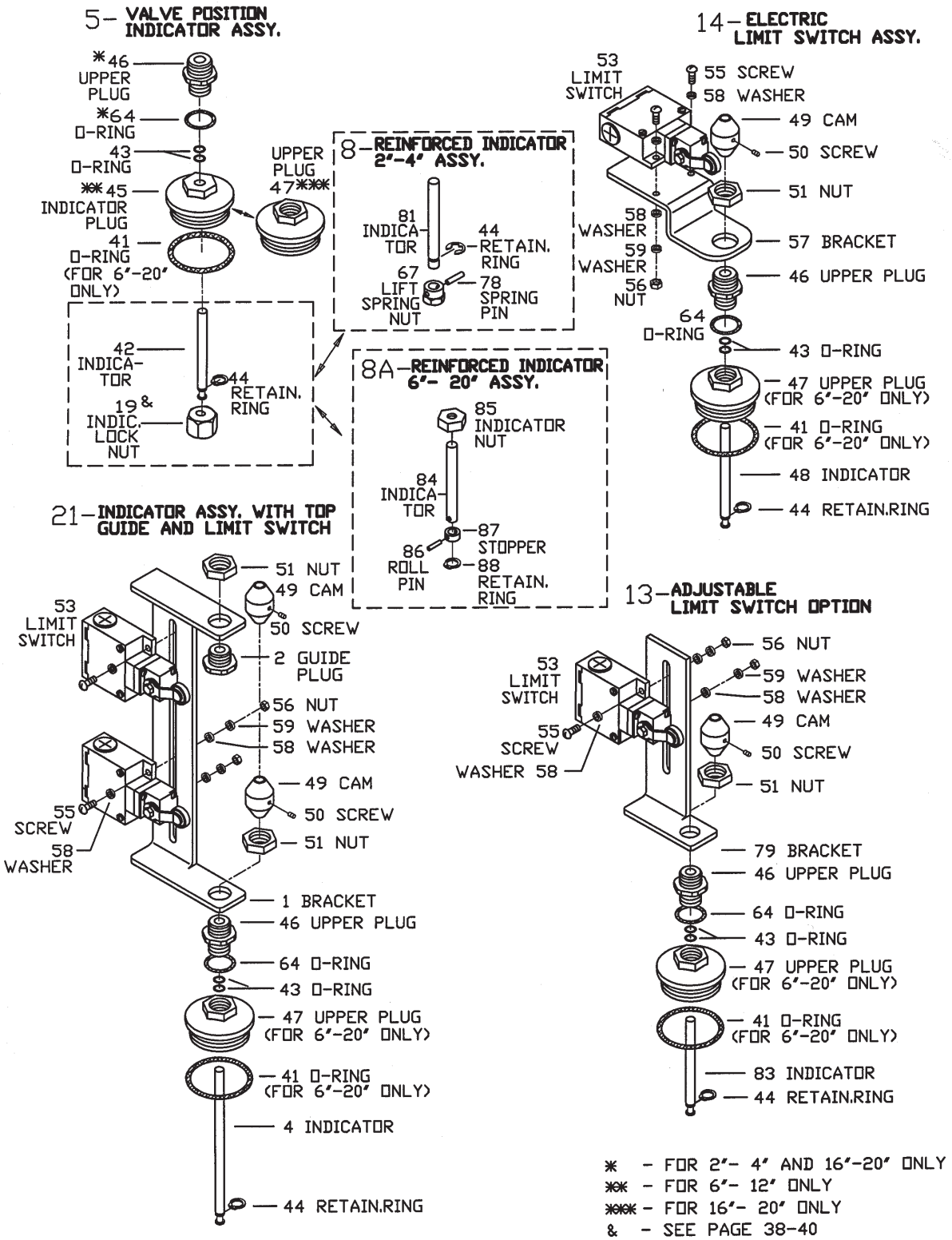
@ - FOR 16"- 20" ONLY
@@ - FOR 4"- 14" ONLY
& - FOR HIGH PRESSURE ONLY

Large Control Filter



Main Valves – Indicator Options

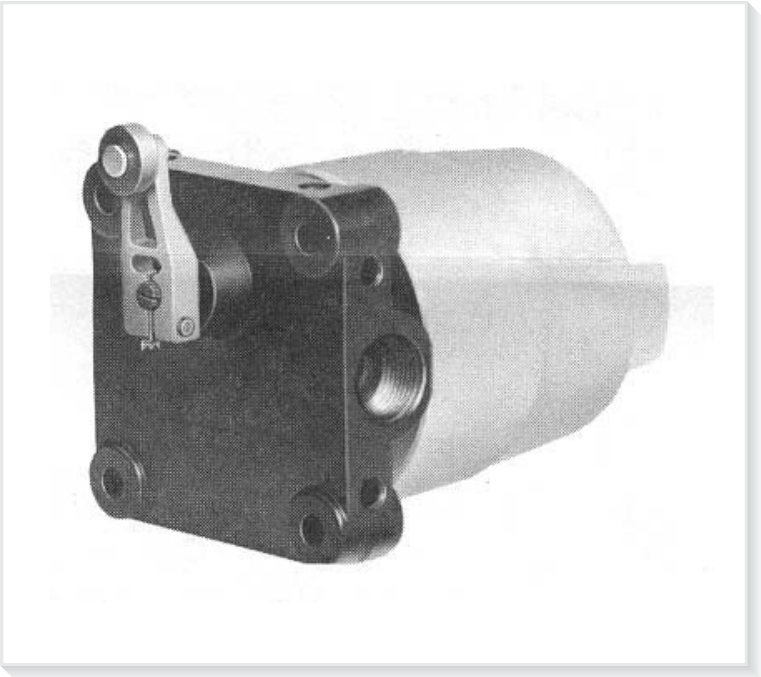
Sizes: 1 1/2"-20"



Valve Position Transmitter

Accessories

80CX switches have rugged bronze housings which are resistant to salt water and other corrosive environments. They comply with the NEMA 4X requirement for protection against corrosion, in addition to NEMA enclosure standards met by other CX switches. O-ring seals make the enclosure weather-proof, but are outside of required flame paths so explosion-proof requirements are maintained.



Features
- Watertight and dusttight for outdoor use
- Pertravel, overtravel and actuating sequence can be field adjusted without tools
- Roatary types convert in seconds to CW, CCW or both-way options

Adjusting Range
- Maximum 27 bar (400 psi)

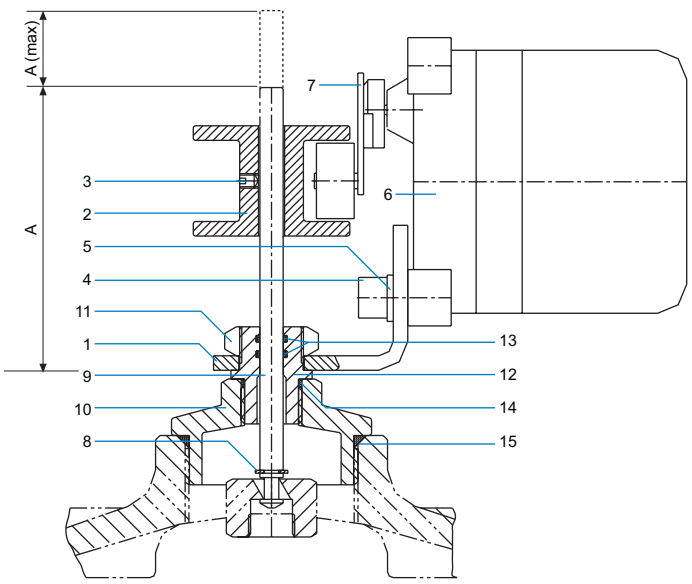
Temperature
- -25° to 85°C (-13° to 185°F)

Materials
- Housing: Cast Aluminum
- Bracket: Steel
- Adapter: Brass
- Stem: Stainless Steel
- Seals: Buna NBR Rubber
- Adapter: Brass
- Adapter: Brass

Output
- Standard: 4-20 Ma
- Optional Resistive Output:
  - 500 ohms ±10% - free position
  - 975 ohms max. - 105° rotation CW
  - 25 ohms min. - 105° rotation CCW
- 2W at 70°C (105°F) at full scale

Switches
- 2 SPDT
- UL/CSA rating
- 15 Amps 120, 240 or 480 VAC
- 5 Amps 125 VDC
- 25 Amps 250 VDC

Assembly Drawing



List of Parts

1	Bracket	ST 37
2	Guide	Brass
3	Screw	AISI 304
4	Screw	AISI 304
5	Disc	AISI 304
6	Positioner	Rugged Bronze
7	Lever Arm	AISI 304
8	Retaining Ring	AISI 316
9	Indicator	AISI 303
10	Upper Plug	Brass
11	Nut	Brass
12	Upper Plug	Brass
13	O-Ring	NBR
14	O-Ring	NBR
15	O-Ring	NBR

Pilot System Dimensions Valve Size A (max) - mm

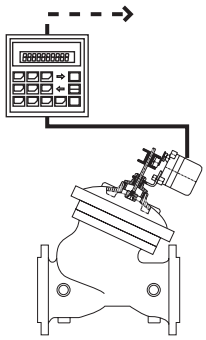
2”	2.5	3”	4”	6”	8”	10”	12”	14”	16”	20”
17	17	27	33	50	67	83	100	100	135	135

Enclosures

- NEMA 1, 3, 4, 4X, 6, 6P, 7, 9 and 13
- UL Listed:
  Class I, Div 1, Groups B (14CX, 16CX, 24CX, 26CX, 36CX and 84CX only, C and D
  Class II, Div 1, Groups E, F and G
- CSA Certified:
  Class I, Div 1, Groups B (14CX, 16CX, 24CX, 26CX, 36CX and 84CX only, C and D
  Class II, Div 1, Groups E, F and G

Typical Installation

The 18 X 10a Valve Position Transmitter can transmit to any controller; 4-20mA enables ,including the BE-11 & BE-12 electronic valve controller.

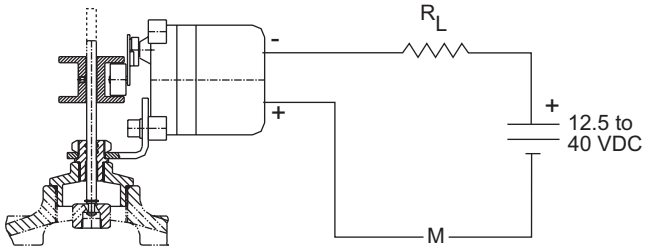


Wiring Diagram

The signal from the position sensing mechanism is converted to a two-wire 4 to 20 mA current output. The voltage compliance range is 12.5 to 40 VDC (12.5 is the transmitters voltage consumption). The required, but not supplied, maximum load resistance can be calculated using the following formula:

$$R_L \text{ Max} = \frac{\text{Vsupply} - 12.5}{0.020}$$

Current Output



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Honeywell

Installation and Service Instructions for CX Weather-Sealed Explosion-proof Switches

ISSUE 7
PK 88136

0518

⚠WARNING
IF USED IN APPLICATIONS CONCERNING HUMAN SAFETY

- Only use NC direct opening (“positive opening”/”positive break”) contacts, identified by the symbol ⊖.
- Do NOT use flexible/adjustable actuators. Only use actuators designed for safety applications.
- Do NOT defeat, tamper, remove, or bypass this switch.
- Hazardous voltage, disconnect power before servicing.
- Strictly adhere to all installation and maintenance instructions.
- Consult with local safety agencies and their requirements when designing a machine-control link, interface and all control elements that affect safety.

Failure to comply with these instructions could result in death or serious injury.

GENERAL INFORMATION

Sealed construction for Honeywell CX explosion-proof switches provides protection from the entry of water, dust and oil as defined in NEMA 3, 4, 4X, 6, 6P, 13, and IP66/IP67 as defined in IEC 529.

CX Series products with conduit types ¾-14NPT also meet the North American Hazardous Locations Designation: Class I, Group C and D; Class II, Groups E, F and G. CX listings beginning with numbers 14, 16, 24, 26, 36, or 84 (example: 14CX1) also meet Class I, Group B. These explosion-proof and weather-sealed switches are protected from flammable hydrocarbon atmospheres, metal dust, coal dust, and grain dust, and comply with UL Standard: UL 894 and UL 1203, CSA Standard: C22.2 no. 25-1966, C22.2 no. 30-M1986.

Select CX Series products also meet the European Hazardous Locations Designation: Categories II 2 G Ex d IIC T6 and II 2 D tD A21, KEMA 01ATEX2111X and complies with the European Directive on Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres (94/9/EC) commonly referred to as the ATEX Directive. Compliance with the Essential Health and Safety Requirements has been assured by compliance with EN60079-0: 2006, EN60079-1: 2004, EN61241-0: 2006 and EN61241-1: 2004. The European-approved products have a temperature range of –40 °C to 70 °C [–40 °F to 158 °F], and when used within the maximum voltage and current specified on the product will have no heating problems.

Notice: For ambient temperatures above 60 °C [140 °F], cables and cable glands suitable for a temperature of at least 80 °C [176 °F] shall be used. For use in potentially explosive atmospheres caused by the presence of flammable gases, fluids or vapors. The cable entry devices and the closing elements of unused apertures shall be of a certified flameproof type, suitable for the conditions of use and correctly installed. For use in potentially explosive atmospheres caused by the presence of combustible dust. The cable entry devices and the closing elements of unused apertures shall be of a certified flameproof type, suitable for the conditions of use and correctly installed. The minimum ingress protection requirement of IP6X according to EN 60529 must be satisfied. Refer to the Certificate IECEx TSA 06.0003X for conditions of safe use.

Application Note: Enclosures are based, in general, on the broad definitions outlined in NEMA standards. Therefore, it will be necessary for the user to determine that a particular enclosure is adequate when exposed to the specific conditions that might exist in intended applications. Except as might otherwise be noted, all references to products relative to NEMA enclosure types are based on MICRO SWITCH evaluation only.

IMPORTANT: Switches without shaft re-storing force do not have overtravel stops. On switches with potentiometers, use care to insure that overtravel does not exceed 125° in the application and during set-up.

LEVER POSITIONING

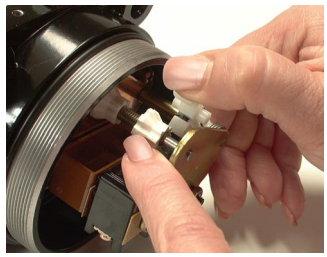
Loosen the screw with a 9/64 inch hexagon key wrench, move the lever to the desired position and securely tighten the screw until the "teller tab" can no longer be moved by hand. Then tighten the screw another 1/8 to 1/4 turn to assure that the lever is tight on the shaft. Hexagon key wrenches are provided in adjusting tool set LSZ4005 for this purpose.

CAM ADJUSTMENT

Pretravel, overtravel, and actuation sequencing can be adjusted and/or modified in the field. No tools are required.

To Adjust Plunger Types:

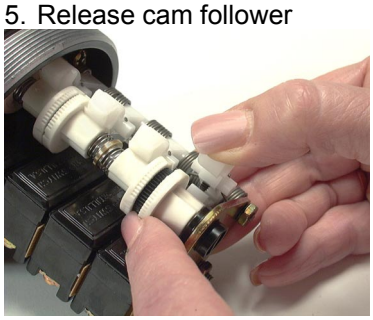
1. Lift cam follower.



2. Turn cam wheel to be adjusted to desired position. Each notch on the wheel represents a change in operation point of 0,116 mm (.0045 in.). Moving the cam wheel in the direction away from the base housing advances the operate point. Pretravel **decreases** and overtravel thereby **increases**. When positioning cams, be sure the cam follower is allowed to utilize the full rise of the cam. This is required to provide adequate overtravel and release travel of the basic switches.
   IMPORTANT: Do not use the set screw in the cam follower to adjust travel characteristics.
3. Release cam wheel.
4. Release cam follower.

To Adjust Rotary Types:

1. Lift cam follower.
2. Move cam wheel axially to disengage teeth on wheel from teeth on shaft disc.
3. Turn cam wheel to desired position. Turning in direction of shaft rotation advances operate point. Pretravel **decreases** and overtravel thereby **increases**. Each notch on the cam wheel represents an operating point change of 7°20'. The symbols on the cam wheel simplify changing rotation from clockwise to counterclockwise to center neutral, or vise versa. If the switch operates on clockwise **and** counterclockwise rotation, the pointer on the cam follower lines up with symbol △ or symbol ⚠ on the cam wheel. When symbol △ lines up, pretravel of 15° max. is obtained. When symbol ⚠ lines up, 80° max., pretravel is obtained. Operation is in the direction of the inclined surface of the symbol when ◿ or ◺ lines up with the pointer on the cam follower.
4. When cam wheel has been rotated to desired location, release cam wheel to engage with mating shaft disc.
5. Release cam follower



CX Wiring Methods

Honeywell recommends that conduit be installed per NEC articles 501-4 and 501-5.

REPLACEMENT PARTS

Replacement switch assemblies consist of the components subject to mechanical or electrical wear. They include basic switches, cam wheels, cam followers, and springs. The assemblies are factory adjusted to have the same operating characteristics as new complete switches.

How to Order

Catalog listings for complete switches can be converted to replacement switch assembly catalog listings as follows:

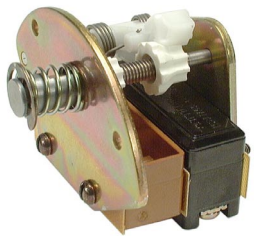
Momentary action rotary or plunger actuated switches with shaft or plunger restoring force: To order a replacement assembly, change the first digit in the catalog listing for a complete switch to **9** for rotary switches or to **10** for plunger switches.

For example, the replacement switch assembly for a **1**2CX5 rotary switch = **9**2CX5. The replacement switch assembly for a **3**6CX2 plunger switch = **10**6CX2.

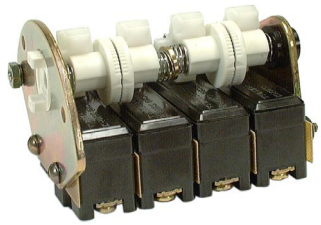
Maintained action rotary switches without shaft restoring force: To order a replacement assembly, change the first digit to a **9** and drop the first digit following the letters CX.

Example: **1**2CX**1**2=**9**2CX2

Printed circuit board (includes potentiometer) for 4-20 mA current output CX switches: **15PA261-CX**.



Plunger Switch Assembly



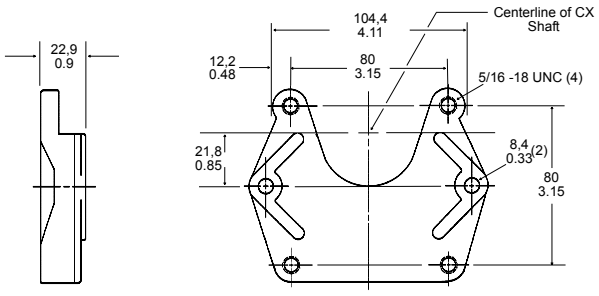
Rotary Switch Assembly

REPLACEMENT LEVERS

To order replacement levers, order the part number which is metal stamped on either the lever or the hub. **Only nonsparking levers can be used to retain the explosion-proof properties.**

MOUNTING ADAPTER —15PA148-CX

Available for adapting CX to existing 2 hole mount.

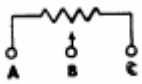


ANALOG POSITION-SENSING UNITS

1. **Resistive Output**

   Specifications:
   500 ohms ±10% in center (free position)
   975 ohms max. at 105° rotation clockwise (CW)
   25 ohms min. at 105° rotation CCW
   2 watts power at 70°C/150°F at full scale

   Wiring Diagram



2. **Current Output (4 to 20 mA)**

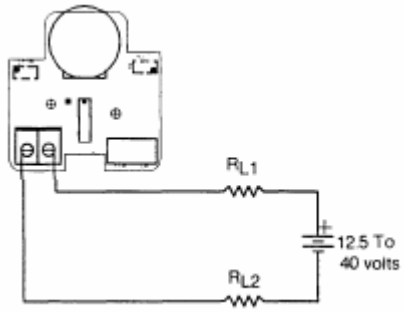
   The signal from the position-sensing unit is converted to a two-wire 4 to 20 mA current output.

   Specifications:
   Voltage compliance range: 12.5 to 40 VDC
   Maximum load resistance:

$$R_L max = \frac{V\ Supply - 12.5}{20\ mA}$$

   Current signal output: 4-20mA
   Span: Adjustable from 15° to 90° of angular rotation
   Null: 4 mA position may be set at any angular position

   Typical Wiring Connections:



ROTARY ACTUATION

Catalog Listing Prefix (*listing indicates replacement parts)	11CX, 21CX, 61CX, 71CX, 81CX, 281CX, 91CX*	12CX, 22CX, 62CX, 72CX, 82CX, 282CX, 92CX*	14CX, 24CX, 64CX, 74CX, 84CX, 284CX, 94CX*	16CX, 26CX, 66CX, 76CX, 86CX, 286CX, 96CX*	1172CX, 2172CX, 9172CX*
Pretravel, max.	15°	15°	30°	30°	15°
Differential Travel, max.	5°	10°	25°	20°	5°
Overtravel, min.	90°	90°	75°	75°	90°
Circuitry	Single-Pole Double-Throw	Single-Pole Double-Throw	Double-Pole Double-Throw	Single-Pole Double-Throw	(Gold Contact) Single-Pole Double-Throw
Electrical Ratings	UL/CSA Rating: L96 15 A, 120, 240, or 480 Vac. ⅛ Hp, 120 Vac; ¼ Hp, 240 Vac 0.5 A, 125 Vdc, 0.25 A, 250 Vdc.	UL/CSA Rating: L23 20 A, 120, 240, or 480 Vac. 1 Hp, 120 Vac; 2 Hp, 240 Vac 0.5 A, 125 Vdc, 0.25 A, 250 Vdc.	UL/CSA Rating: L59 10 A, 120 or 240 Vac. 0.3 A, 125 Vdc, 0.15 A, 250 Vdc.	UL/CSA Rating: L22 1 A, 125 Vac.	UL/CSA Rating: L22 1 A, 125 Vac

PLUNGER ACTUATION

Catalog Listing Prefix (*listing indicates replacement parts)	31CX, , 41CX, 101CX*	32CX, 42CX, 102CX*		36CX, 46CX, 106CX*	3172CX
Circuitry	Single-Pole Double-Throw	Single-Pole Double-Throw		Single-Pole Double-Throw	(Gold Contact) Single-Pole Double-Throw
Electrical Ratings	UL/CSA Rating: L96 15 A, 120, 240, or 480 Vac. ⅛ Hp, 120 Vac; ¼ Hp, 240 Vac 0.5 A, 125 Vdc, 0.25 A, 250 Vdc.	UL/CSA Rating: L23 20 A, 120, 240, or 480 Vac. 1 Hp, 120 Vac; 2 Hp, 240 Vac 0.5 A, 125 Vdc, 0.25 A, 250 Vdc.		UL/CSA Rating: L22 1 A, 125 Vac.	UL/CSA Rating: L22 1 A, 125 Vac
Pretravel, max.	2,5 mm [0.10 in]				
Differential Travel, max.	1 mm [0.04 in]			2 mm [0.08 in]	1 mm [0.04 in]
Overtravel, min.	4,75 mm [0.19 in]				

SETUP INSTRUCTIONS FOR UNITS WITH 2-WIRE ANALOG (4 TO 20 mA) OUTPUT

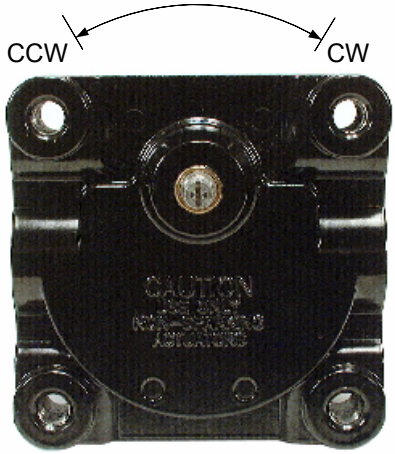


Figure 1. Shaft End View

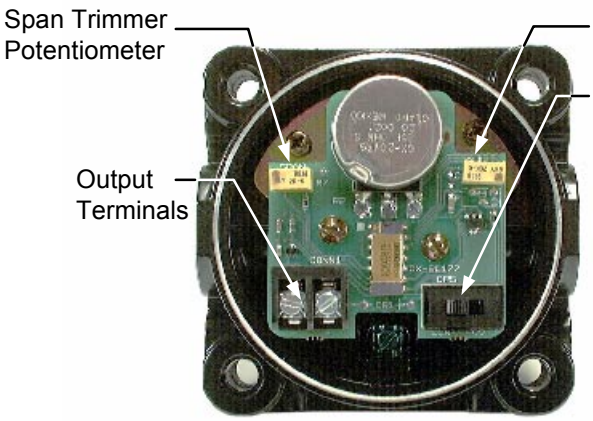


Figure 2. Rear View with Cover Removed

Procedure 1

1. Determine the position of the operating shaft as it relates to the valve and actuator (where the 4 mA output is required).
2. Remove cover and set the function switch to enable the output to be increased by counterclockwise (CCW) or clockwise (CW) motion of the shaft. Refer to figures 1 and 2.

Procedure 2

Reposition the shaft by using either Step 1 or 2, below.

Use step 1 if the function switch is set in the **CW** position.

1. Rotate operating shaft a quarter turn (90°) CCW and then a quarter turn CW (back to initial position).
   Next, rotate shaft a half (180°) turn CW and then a half turn CCW (back to initial position.)

Use Step 2 if the function switch is set in the **CCW** position.

2. Rotate operating shaft a quarter turn (90°) CW and then a quarter turn CCW (back to the initial position).
   Next, rotate shaft a half turn (180°) CCW and then a half turn CW (back to initial position).

Procedure 3

1. Wiring (See figure 3). Connect a 12.5 to 40 VDC (nominal) power supply to the positive (+) terminal. Connect an ammeter to the negative (-) terminal.

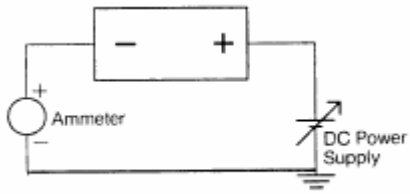


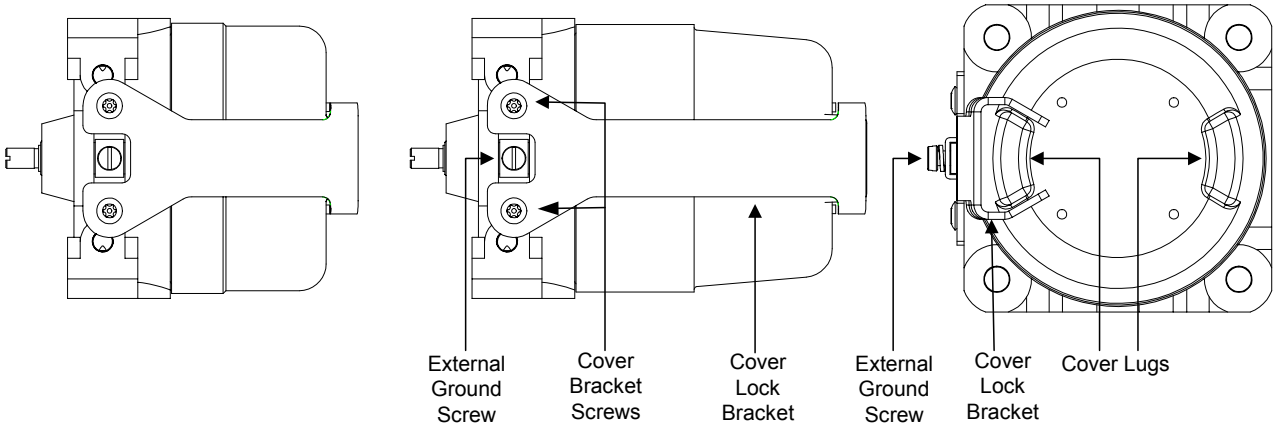
Figure 3. Wiring Diagram

2. Set shaft to position where 4 mA output is desired.
3. Adjust the null offset trimmer potentiometer (see figure 2) to generate 4 mA at this position. (Clockwise turn increases the output.)
4. Rotate shaft to position where 20 mA output is desired.
5. Adjust the span trimmer potentiometer (see figure 2) until output is 20 mA. (Clockwise turn increases output.)
6. Return shaft to initial position and check for 4 mA. Adjust offset null trimmer if necessary.
7. Return shaft to final position and check for 20 mA. Adjust span trimmer if necessary.

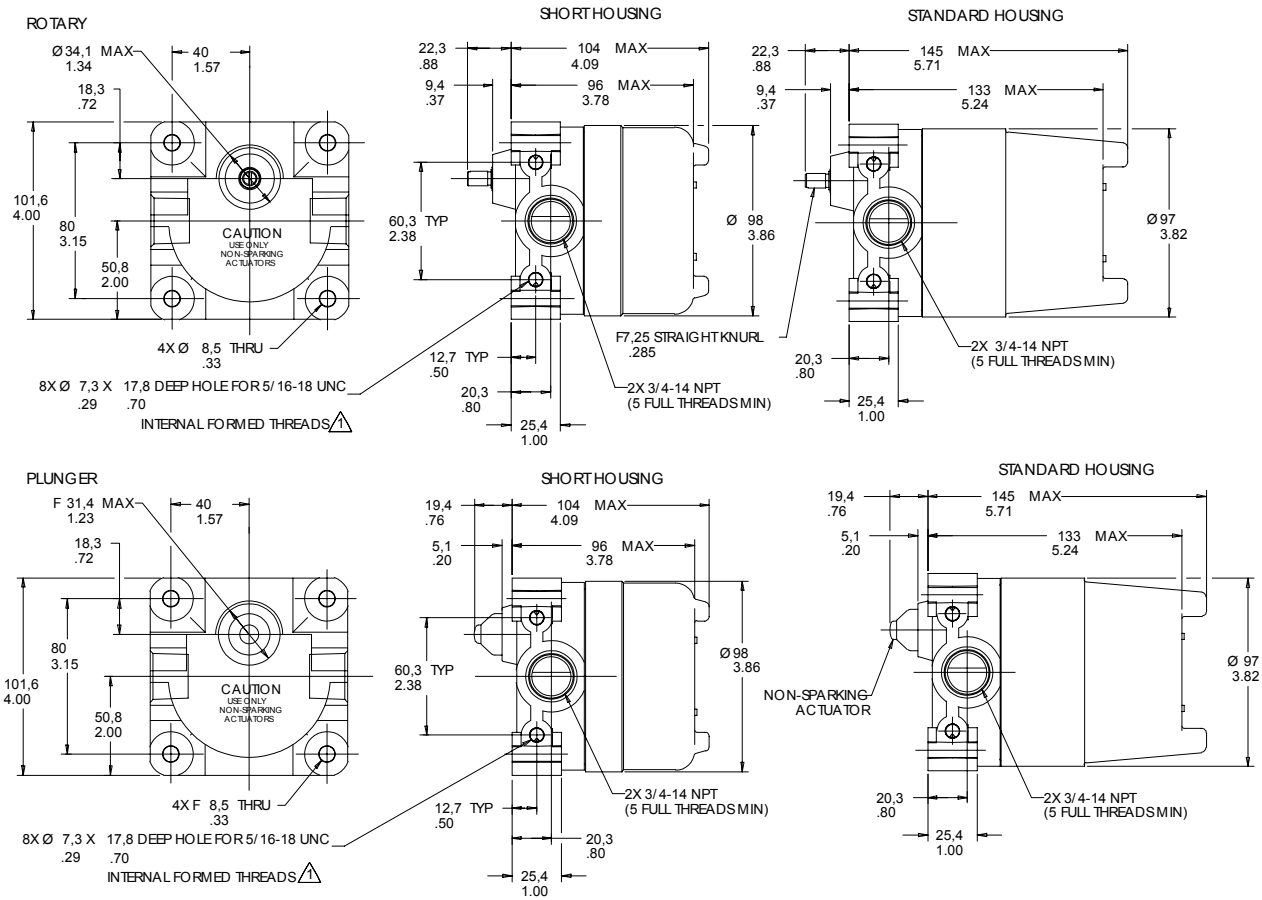
NOTE: Honeywell recommends repeating Procedure 3 after 50,000 operations.

ASSEMBLE COVER LOCK BRACKET FOR EUROPEAN COMPLIANCE

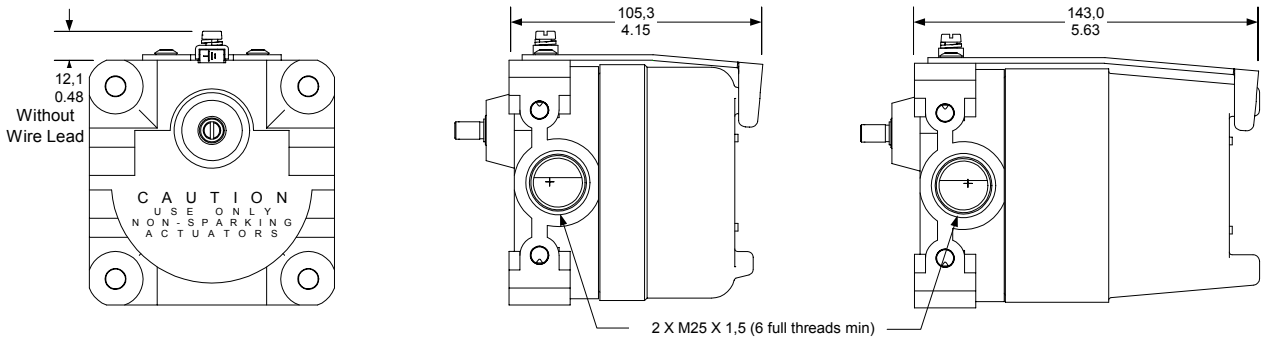
1. Make sure switch cover is tightened so a lug aligns with the external ground screw.
2. Remove bracket screws and special screwdriver bit from bag included in the box.
3. Fit top of bracket around lug on the cover.
4. Fit external ground screw into notch in bottom of bracket. Screw holes in the bottom of the bracket should align with screw holes in the housing on either side of the external ground screw.
5. Use included screwdriver bit to tighten screws into the holes.



MOUNTING DIMENSIONS (FOR REFERENCE ONLY)



1 THESE HOLES NOT FURNISHED ON 80CX SERIES



Honeywell

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A subsidiary of Honeywell Control Systems Ltd.,

Registered Office: Honeywell House,
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Registered No 217808 (England)

EC Declaration of Conformity

Honeywell Control Systems Ltd. hereby declare that the products identified below conform to the essential requirements of the EC Directive(s) listed below and that the products supplied are in conformity with the type described in any EC Type Examination Certificate (EC TEC) identified below.

Manufacturer: Honeywell International, MICRO SWITCH Division,
Chicago & Spring Streets, Freeport, Illinois,
IL 61032-4353, USA

Product: Limit Switch - CX
See KEMA report number 2106866 QUA/EMC and supplement

Directive (Amendments)	**Conformity Details**	
2004/108/EC (consolidated 89/336)	Standards applied:	BS EN 61326 1997 +A1, A2, A3
94/9/EC	Standards applied:	BS EN 60079-0 :2006 BS EN 60079-1 :2004 + A1 BS EN 61241-1:2004 +A1, A2 EN 61241-0:2006
	EC TEC No:	KEMA 01ATEX2111 X
	Notified Body:	KEMA Registered Quality B.V., Ultrechtsweg 310, 6812 AR Arnhem, Nederland.
	Provisions fulfilled:	1.0, 1.1, 1.2.1, 1.2.5, 1.2.7, 1.2.9, 1.3.1, 1.3.2, 1.3.4, 1.4, 2.2

Signed on behalf of Honeywell Control Systems Ltd. :

Frank Turnbull, S & C, Chief Technical Officer

DoC No: A352 **DoC Issue: 1** **DoC Date: 16/07/2007** **Page 1 of 1**

⚠WARNING
OPENING PRODUCTS HAZARD
DO NOT OPEN these products when energized or in a flammable gas atmosphere.
Failure to comply with these instructions could result in death or serious injury.

WARRANTY/REMEDY
Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship. Honeywell's standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgement or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items it finds defective.
The foregoing is buyer's sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Honeywell be liable for consequential, special, or indirect damages.
While we provide application assistance personally, through our literature and the Honeywell web site, it is up to the customer to determine the suitability of the product in the application.
Specifications may change without notice. The information we supply is believed to be accurate and reliable as of this printing. However, we assume no responsibility for its use.

⚠WARNING
IMPROPER CONDUIT THREAD USE
DO NOT USE any other conduit thread than the one identified on the product. Verify that the mating threaded fitting is identical with the conduit thread shown on the product nameplate.
Failure to comply with these instructions could result in death or serious injury.

SALES AND SERVICE
Honeywell serves its customers through a worldwide network of sales offices, representatives and distributors. For application assistance, current specifications, pricing or name of the nearest Authorized Distributor, contact your local sales office or:

E-mail: info.sc@honeywell.com

Internet: www.honeywell.com/sensing

Phone and Fax:

Asia Pacific	+65 6355-2828
	+65 6445-3033 Fax
Europe	+44 (0) 1698 481481
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July 2007

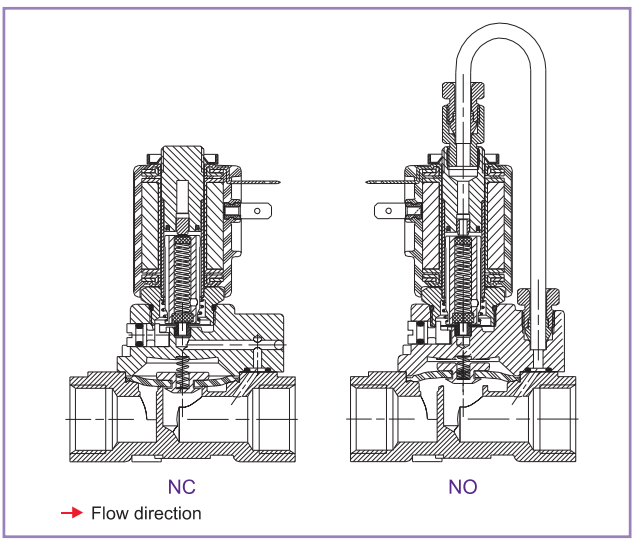
GEM-SOL Pilot Operated 1/4", 3/8", 1/2" 2/2 Way NC, NO

General Description

GEM-SOL Pilot Operated 2/2 way NC, NO solenoid valves are recommended for applications where high flow at high pressure is required.
They can be used in control and automation systems.
The typical applications are:
Industrial furnace, heating equipment, burners, oil and gas, autoclaves, dental equipment, instrumentation, car washers, machine industries and irrigation.

Notes

- The working pressure is 12 bar. Valves for higher pressure up to 20 bar are available.
- A minimum pressure of 0.5 bar is required for operation.
- 2W NO valves without tube are less manual override.
- To order valves manufactured to your specific requirements, please contact our technical sales department.
- Latch valves are available upon request.



How to Order

Example : GEM-S-2202V2-321

Is a GEM-SOL pilot operated, Brass 1/4" BSP, 2W NO, Viton seals, slot manual override, 24V AC 8W 60 Hz with connector.

GEM-S –	Body	Port	Function	Seals	Manual Override	– Voltage	Power	Connector
	Brass 2	1/4"BSP 20	2W NC 1	NBR N	None 0	W/out coil 0	No coil 0	without 0
	St.st 3	3/8"BSP 30	2W NO 2	VITON V	Slot 2	6 1	AC8W 50Hz 1	with 1
		1/2"BSP 40	2W NO 2a	EPDM E	Knob 3	12 2	AC8W 60Hz 2	with LED 2
		1/4"NPT 21	w/o tube*			24 3	DC10W 3	with bi color LED 3
		3/8"NPT 31				48 4		flying leads coil 4
		1/2"NPT 41				110 5		with 1/2" Hub 5
						120 6		
						230 7		
						240 8		
						other 9		

option 2a is without manual override

Technical Specifications

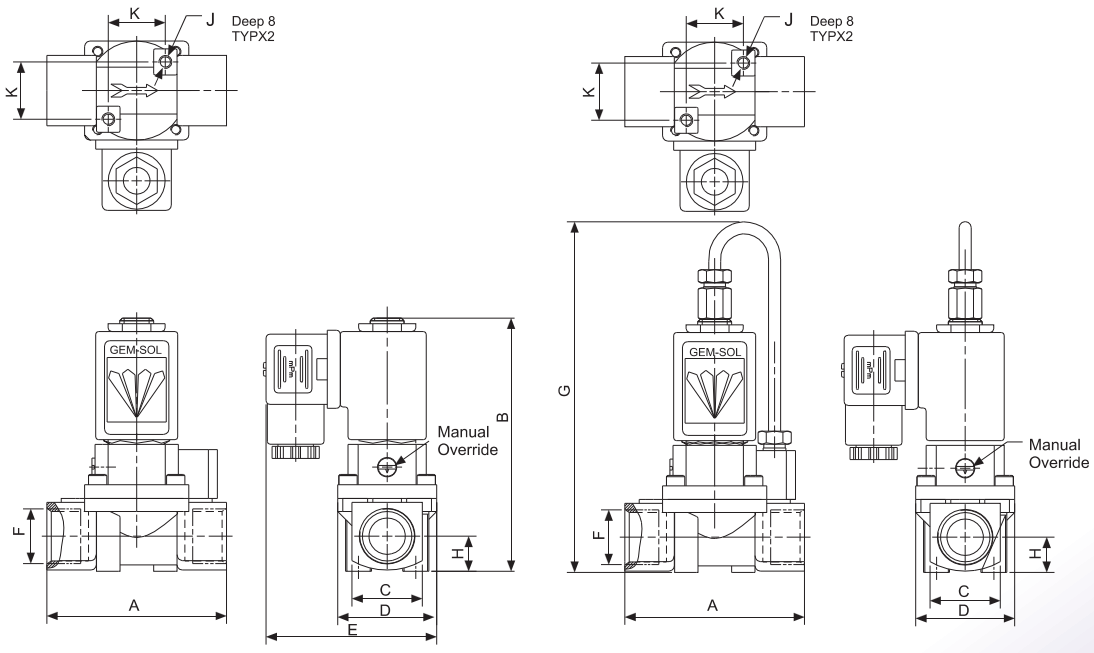
Function:	2/2 Way NC & NO
Ports size:	1/4", 3/8", 1/2" BSP & NPT
Pressure and flow:	See table
Temperature range:	Fluid: max 80°C
	Ambient: -10°C to 50°C
Manual Override:	Brass screw or brass finger knob
Materials in contact :	**Main valve :**
with fluid	Brass - hot stamping, upon request
	dezinced brass (Cz132), St.st.316
	Solenoid Operator:
	Stainless steel 300 & 400 series
	Seals:
	NBR, Viton, EPDM
Coil voltage:	All Baccara coils voltages ± 10%
	AC 8W
	DC 10W
	Protection class IP65 with connector

Pressure and flow table

Size	Orifice (mm)	Pressure	Kv(L/Min)
1/4"	8	0.5 - 20	12
3/8"	8		16
1/2"	12		35

Size	A	B	C	D	E	F	G	H	J	K	Weight with coil
1/4"-3/8"	58	89	22	32	62	1/4"-3/8"BSP/NPT	125	11	M5x0.8	22	466g
1/2"	70	95	27	38	70	1/2"BSP/NPT	135	13.5	M5x0.8	22	562g

Dimensions



GEM-SOL COIL

CE

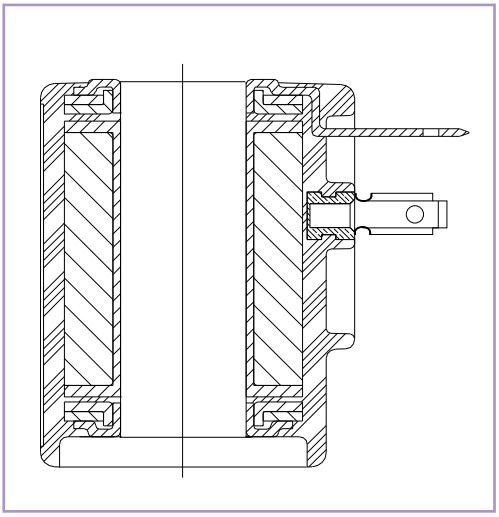
General Description

The GEM-SOL coil is designed to be mounted on the "operator" to set up a solenoid valve.

The coil, including its magnetic circuit, is encapsulated in high temperature resistant nylon to withstand humidity and heavy duty requirements.

Notes

- The coil should not be energized without being assembled on operator.
- All GEM-SOL coils are designed to operate at ±10% of normal voltage.
- Our engineering department is able to design coils to any special requirement, they can then be produced in any quantity specified.
- GEM-SOL coils are suitable to work at 100% ED, however when energizing AC8W or DC10W coils for a long time, the temperature developed may affect solenoid seals. Please consult our technical sales department to get further information on the use of lower power coils or Viton seals.
- For outdoor applications or when the coil is exposed to high humidity, we recommend the use of impregnated coils. Please contact our technical sales department for specific requirements.



How to Order

Example : GEM-B-341

Is a GEM-SOL Coil 24V AC 5.5W 50 Hz with connector.

GEM-B –	Voltage		Power		Connector	
	6	1	AC8W 50Hz	1	without	0
	12	2	AC8W 60Hz	2	with	1
	24	3	DC10W	3	with LED	2
	48	4	AC5.5W 50Hz	4	with bi color LED	3
	110	5	AC5.5W 60Hz	5	flying leads coil	4
	120	6	AC2.5W	6	with 1/2" Hub	5
	230	7	DC5.5W	7		
	240	8	DC3.5W	8		
	other	9				

Technical Specifications

Coil winding insulation:	H 180°
Temp Range:	-20°C to 150°C
Duty cycle:	100% ED. (Coil temp 70°C at 20°C ambient)
Protection:	IP65 with connector
Voltage range:	Standard industrial voltage 6 to 415VAC or DC
Voltage variation:	Nominal ±10%, over voltage category II
Power consumption:	AC - see table
	DC 10W, 5.5W, 3.5W
Electric connection:	AMP pins, DIN 46242, 2 poles + 1 earth
	2 flying leads, AWG18 300mm length
Junction box:	DIN 43650
Cable exit::	PG9 or 1/2" NPT
Assembly:	In any position
Fixing:	One nut G1/4" hexagonal 19mm
Weight:	100gr.

Power Consumption Table (AC)

Type	Inrush	Holding
8W	26VA-13W	16VA-8W
5.5W	16VA-8W	12VA
2.5	2.5W	2.5W

Dimensions