Series B, C, D, F, O, Q, R, S, U, W, X, 8 and 9

Installation and Operating Manual

Electric

switch mechanisms

and housings

Magnetrol®

UNPACKING

Unpack the instrument carefully. Make sure all components have been removed from the foam protection. Inspect all components for damage. Report any concealed damage to the carrier within 24 hours. Check the contents of the carton/crates against the packing slip and report any discrepancies to Magnetrol. Check the nameplate model number to be sure it agrees with the packing slip and purchase order. Check and record the serial number for future reference when ordering parts.

CE 0038 0344

These units are in conformity with the provisions of:

1. Directive 2014/34/EU for equipment or protective system intended for use in potentially explosive atmospheres. EC-type examination certificate number ISSeP09ATEX024X (Ex d units; applied standards IEC60079-0:2011 and EN 60079-1:2007) or ISSeP01ATEX027X (Ex i units; applied standards EN50014+A1+A2:1999, EN50020:1994, EN50284:1999).
2. The PED directive 2014/68/EU (pressure equipment directive). Safety accessories per category IV module H1.

SPECIAL CONDITIONS FOR ATEX INTRINSICALLY SAFE USE

When the enclosure is made of aluminium, if it is mounted in an area where the use of category 1G apparatus is required, it must be installed such, that, even in the event of rare incidents, ignition sources due to impact and friction sparks are excluded.

PRINCIPLE OF OPERATION

Figures 1 & 2 illustrate the simple, reliable operating principle of a float level switch. Switching action is obtained through the use of a magnetic sleeve (4) and a float (3), displacer or flow sensing element and a switching mechanism (2). These two basic component assemblies are separated by a non-magnetic, pressure tight enclosing tube (5). The switch (2) and magnet (1) are assembled to a mechanism with a swinging arm which operates on precision stainless steel pivots.

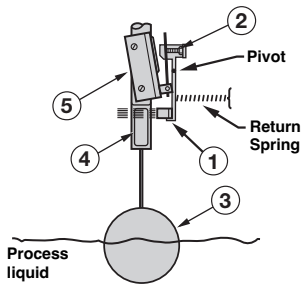


Figure 1
Rising level

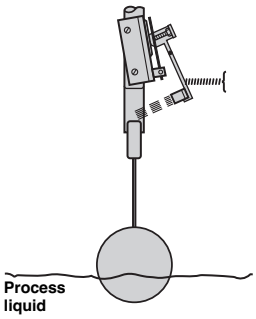


Figure 2
Falling level

As level of a liquid in a vessel rises (Figure 1), the float rides on the liquid surface moving the magnetic sleeve upward in the enclosing tube and into the field of the switch mechanism magnet. As a result, the magnet is drawn in tightly to the enclosing tube moving the switch adjusting screw and allowing the activating arm of the snap switch to move, making or breaking the electrical circuit. As the liquid level recedes (Figure 2), the float and magnetic sleeve moves downward until the switch magnet releases and is drawn outward, away from the enclosing tube by a tension spring. This in turn allows the activating arm of the snap switch to move, thus reversing switch action.

Switch mechanisms may include a single switch or multiple switches, depending on operational requirements and switching action desired.

DESCRIPTION

Magnetrol level controls are available with a range of different switch mechanisms—each designed for specific service conditions. A brief description of the individual switch mechanisms and their applications are given below.

Dry contact switches B, C, D, O, Q, S and U

- **Series B** switches are general purpose with a maximum liquid temperature rating of +120 °C (+250 °F), see Figure 3.
- **Series C** switches are general purpose with a maximum liquid temperature rating of +230 °C (+450 °F), see Figure 3.
- **Series D** switches are designed for DC current applications with a maximum liquid temperature rating of +120 °C (+250 °F), see Figure 3.
- **Series O** switches are general purpose with a maximum liquid temperature rating of +150 °C (+300 °F), used only in model C10 and C15 units, see Figure 3.
- **Series Q** switches are general purpose with a maximum liquid temperature rating of +120 °C (+250 °F), used only in model C10 and C15 units, see Figure 3.
- **Series S** switches are general purpose with a maximum liquid temperature rating of +290 °C (+550 °F), or designed for DC current applications with a maximum liquid temperature of +120 °C (+250 °F), used only in model B40 units, see Figure 4. (= Grp IV switch mech)
- **Series U** switches have gold alloy contacts and are suitable for applications with a maximum liquid temperature of +120 °C (+250 °F).

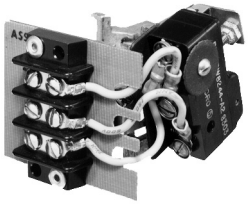


Figure 3
Series B, C, D, O, Q and U

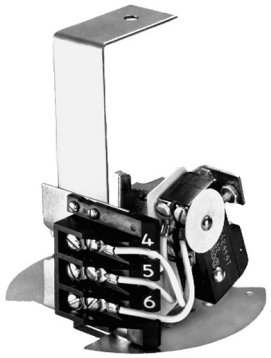


Figure 4
Series S = Grp IV switch mech

Dry contact hermetically sealed switches W and X

Hermetically sealed switches are for use in special applications where hermetically sealed contacts are required.

- **Series W** switches are suitable for applications with a maximum liquid temperature of +230 °C (+450 °F).
- **Series X** switches have gold-plated contacts and are suitable for applications with a maximum liquid temperature of +230 °C (+450 °F).

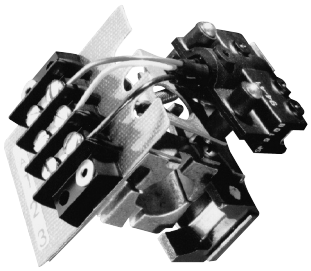


Figure 5
Series W & X

Dry contact high temperature switches F, R, 8 and 9

- **Series 8 and F** switches are hermetically sealed and designed for high temperature applications up to +400 °C (+750 °F), see Figure 6.
- **Series R** switches are designed for the highest temperature applications up to +540 °C (+1000 °F) , see Figure 7.
- **Series 9** switches are hermetically sealed and designed for the highest temperature applications up to +540 °C (+ 1000 °F), see Figure 8.

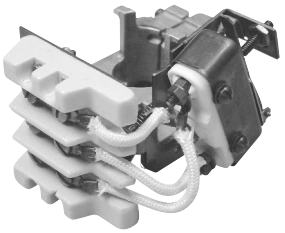


Figure 7
Series R

Figure 6
Series 8 & F

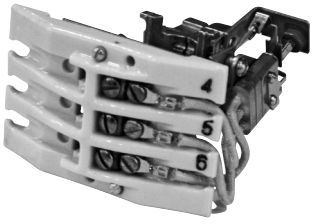


Figure 8
Series 9

MOUNTING

Replacing the complete switch mechanisms

CAUTION: Before attempting to remove a switch mechanism, be certain to pull disconnect switch or otherwise assure that electrical circuit through control is de-energized.

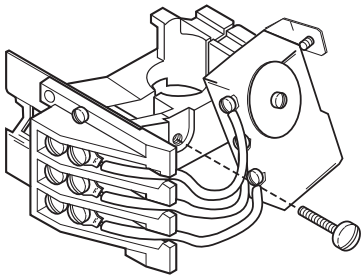


Figure 9
Mounting screw

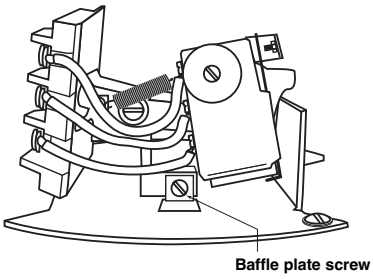


Figure 10
Baffle plate screw

1. Remove the switch housing cover (see page 15 and up).
2. Disconnect wiring from supply side of terminal block on switch mechanism. Note and record lead wire terminal locations.
3. Loosen screw in split mounting clamp until mechanism slides freely on enclosing tube, refer to Figure 9.
4. Remove small round head screw securing lower switch mechanism to baffle plate, refer to Figure 10.
5. Slide switch mechanism off of enclosing tube. If mechanism is to be reused, ensure that it is placed on a clean surface, free of metallic particles that may be attracted to the switch magnet.
6. Loosen mounting screw so that switch frame will fit over e-tube. Install switch mechanism by sliding it over the enclosing tube. Slide mechanism down until the bottom of the frame and terminal block are resting on the baffle plate. The baffle plate should be resting on the hub of the housing base.
7. Install and tighten baffle plate screw so that the switch mechanism may not be separated from the baffle plate. Tighten the mechanism mounting screw so that the mechanism is firmly clamped to the enclosing tube.
8. Swing magnet assembly in and out by hand, checking carefully for any signs of binding.
9. Reattached supply-side wiring to the terminal block.
10. Reinstall the switch housing cover (see page 15 and up).
11. Reconnect power supply and test switch action under operating conditions.

Replacing the switches only

1. Disconnect control from power supply.
2. Remove the switch housing cover (see page 15 and up).
3. Disconnect switch leads from terminal block. Note and record terminal connections of switch to be replaced.
4. Remove two mounting screws holding existing switch, refer to Figure 11.
5. Remove existing switch and install replacement switch in the same position, tightening mounting screws securely.

   NOTE: For proper operation of the replacement switch, it must actuate in the middle portion of the pivoted magnet's swing.

6. Check switch action and adjust as follows:
   a. Slowly rotate the pivoted magnet by hand, back and forth through its angle of swing, listening closely for the actuating click of the switch in each direction.
   b. Check to see if there is equal overtravel of magnet in its swing after the switch click in either direction.
   c. If switch actuation is not correct, change adjustment of actuating screw using a 1⁄16" hexagon key wrench, refer to Figure 11.

   NOTE: If a single switch is being replaced on a DPDT mechanism, lever of second switch must be depressed and held to allow for the audible adjustment of new switch, as described above.

   d. With new switch in adjustment, release lever of second switch and perform fine-tuning of both switches to provide simultaneous actuation (clicks).
7. Reinstall the switch housing cover (see page 15 and up).
8. Reconnect power supply and test switch action by varying liquid level in the vessel or by "gently blowing down" float chamber.

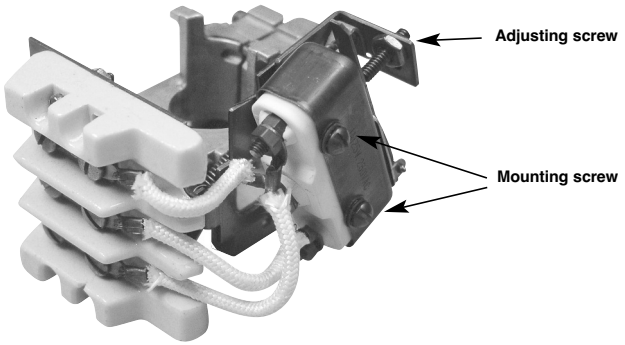


Figure 11

Vibration service adjustment

Level controls are frequently used in applications where vibration is encountered, such as on scrubbers or compressors. Switch mechanisms may require repositioning to prevent unwanted magnet movement. This position is usually best at right angles to the direction of vibration. The direction of vibration may be determined by the arrangement of connections to the vessel or the vessels mounting method. Accordingly, the vibration will tend to be in one direction only.

Upon determining the vibration direction, switch mechanism(s) may be rotated from an incorrect position (as shown in Figure 12, illustration is shown as looking at a control from above), to a correct position as follows:

CAUTION: Before attempting to remove a switch mechanism, be certain to pull disconnect switch or otherwise assure that electrical circuit through control is de-energized.

1. Disconnect control from power supply.
2. Remove the switch housing cover (see page 15 and up).
3. Loosen screw in split mounting clamp until mechanism turns freely on enclosing tube, refer to Figure 9 on page 4.
4. Rotate entire mechanism and bottom baffle plate together to the correct position.

CAUTION: Be certain power supply wires retain some slack at new position. Do not pull wires taut.

NOTE: Amount of rotation required will vary with each installation and may not be as much as shown in illustration.

5. Check action of switch magnet at new position. When magnet vibrates from side to side, instead of front to back, correct position has been attained.
6. Tighten clamp screw on switch mechanism.
7. Reinstall the switch housing cover (see page 15 and up).
8. Reconnect power supply and test switch action under operating conditions.

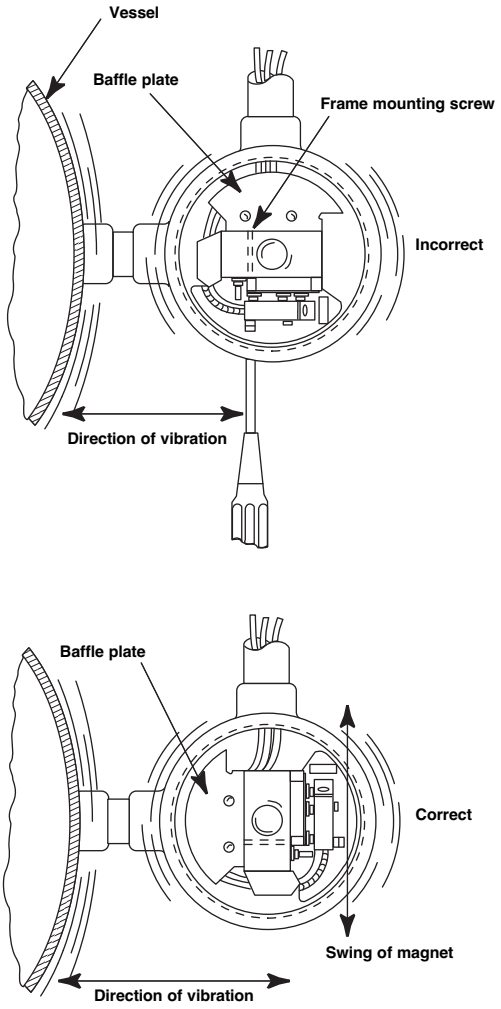


Figure 12
Rotation of switch mechanism in vibration

WIRING

Caution: All units are shipped from the factory with the enclosing tube tightened and the switch housing set screw locked to the enclosing tube. Failure to loosen the set screw prior to repositioning the supply and output connections may cause the enclosing tube to loosen, resulting in possible leakage of the process liquid or vapor.

The units are shipped with the cable entry of the switch housing placed 90° opposite the tank connections to simplify installation in most cases. If the location of the cable entry on the level switch is appropriate to the installation, proceed to Step 4 to begin wiring the unit. If another configuration is desired, the switch housing can be easily rotated by first following Steps 1, 2, and 3.

1. Loosen set screw(s) at base of switch housing. Refer to Figure 13.
2. Switch housing may be rotated 360° to allow correct positioning of cable entry.
3. Tighten set screw(s) at base of switch housing.
4. Unscrew and remove switch housing cover. The threads have been lubricated to facilitate removal.

Caution: DO NOT attempt to unscrew cover of ATEX explosion proof housings before loosening locking screw in cover (Figure 13 - ATEX cast aluminium) or base (Figure 14 - ATEX cast iron) of housing. ALWAYS retighten locking screw after replacing cover.

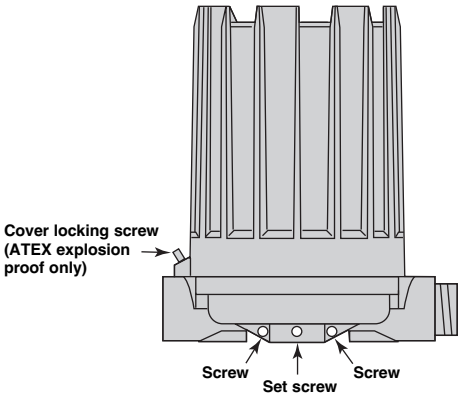


Figure 13
Cast aluminium switch housing

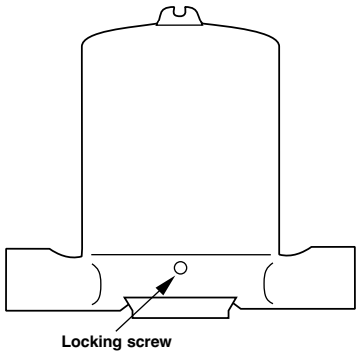


Figure 14
ATEX cast iron switch housing

NOTE: For supply connections use wire with a minimum rating of 75 °C, as required by process conditions. Use a minimum of 14 AWG wire for power and ground field wires. On high temperature applications (above 120 °C [250 °F] at mounting flange or bushing), high temperature wire should be used between control and first junction box located in a cooler area.

5. The switch terminals are located next to the cable entry to facilitate wiring. Bring supply wires through cable entry. Route extra wire around enclosing tube under the baffle plate, and connect them to the proper terminals. Refer to the wiring diagram.
6. Dress wiring to ensure no interference or contact with the switch actuation arm, or replacement of switch housing cover.

NOTE: Observe all applicable electrical codes and proper wiring procedures.

Prevent moisture seepage into the enclosure by installing approved cable glands.

Caution: For units with explosion proof housing, do not power the unit until the cable gland is sealed and the enclosure cover is screwed down securely.

7. Replace housing cover and retighten locking screw in case of ATEX explosion proof housing.
8. Test switch action by varying liquid level in the tank or vessel.

NOTE: If switch mechanism fails to function properly, check vertical alignment of control housing.

9. Check cover to base fit to be certain gasketed joint is tight. A positive seal is necessary to prevent infiltration of moisture laden air or corrosive gasses into switch housing.

WIRING

Circuits shown are for direct-acting level switches and are reversed in side mounting float-in-tank models, which utilize a reversing float pivot.

SPDT terminal connections

Single float with one switch or single stage displacer

1. Rising level closes contacts 5 & 6, see Figure 15.
2. Falling level closes contacts 4 & 5.
3. Wiring Diagram is reversed (high level actuation becomes low level actuation, etc.) when this switch mechanism is used on side mounted float switches employing a reversing pivot (Models B40, T52, T62, T63, T64, etc.).

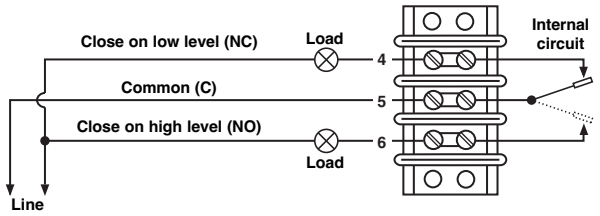


Figure 15
Single float with one switch or single stage displacer

Single float with two switches or dual stage displacer

1. Rising level closes contacts 5 & 6 and 2 & 3, see Figure 16.
2. Falling level closes contacts 4 & 5 and 1 & 2.
3. Wiring diagram is reversed (high level actuation becomes low level actuation, etc.) when this switch mechanism is used on side mounted float switches employing a reversing pivot. (Model T67).
4. On units with tandem floats, the top float operates the bottom mechanism while the bottom float actuates the top mechanism (Model T21).

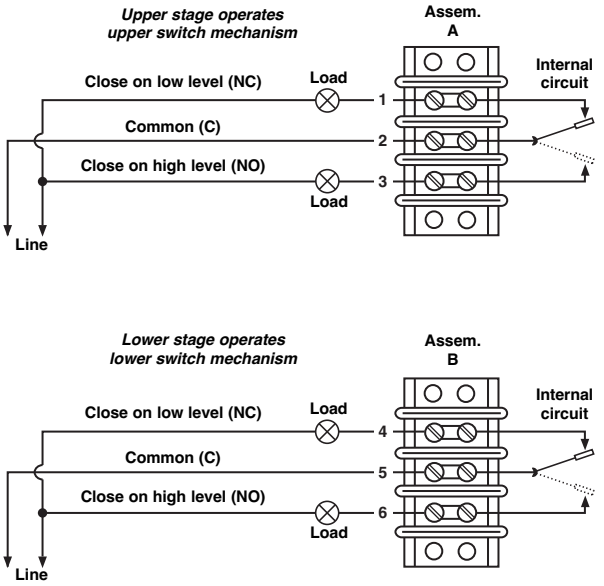


Figure 16
Single float with two switches or dual stage displacer

Single float with three switches or three stage displacer

1. Rising level closes contacts 5 & 6 and 2 & 3, see Figure 17.
2. Falling level closes contacts 4 & 5 and 1 & 2.
3. Unit is shipped with switches positioned for proper function. Do not change switch spacing.

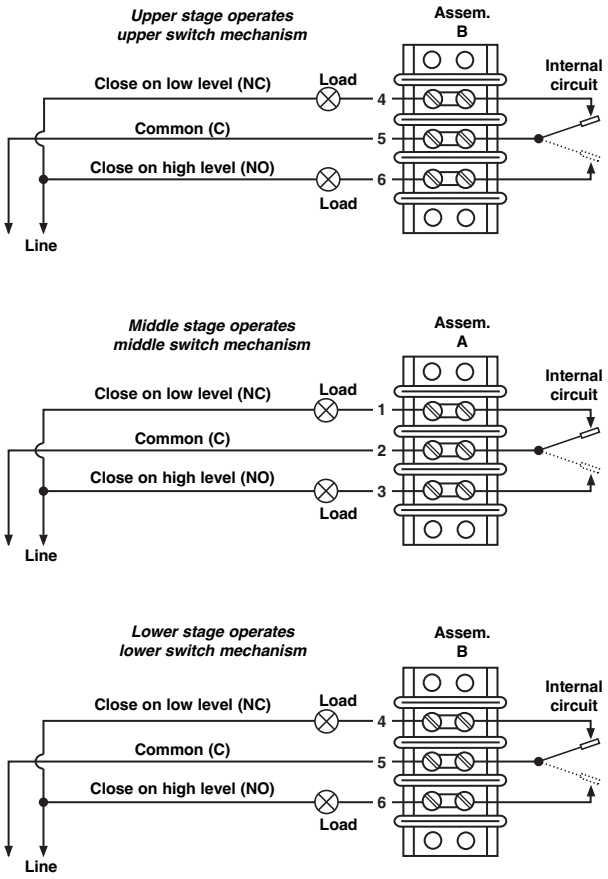


Figure 17
Single float with three switches or three stage displacer

DPDT terminal connections

Single float with one switch or single stage displacer

1. Rising level closes contacts 5 & 6 and 2 & 3, see Figure 18.
2. Falling level closes contacts 4 & 5 and 1 & 2.
3. Double pole action is obtained by simultaneous operation of the right and left side single pole double throw switches.
4. Wiring diagram is reversed (close on high becomes close on low, etc.) when this switch mechanism is used on side mounted float switches employing a reversing pivot. (Models B40, T52, T62, T63, T64 etc.)

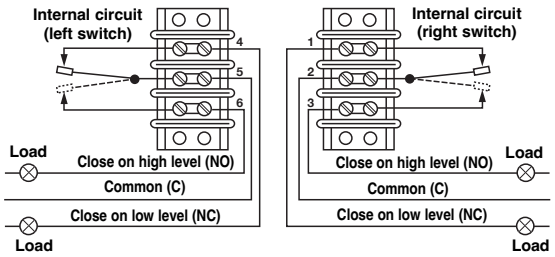


Figure 18
Single float with one switch or single stage displacer

Single float with two switches or dual stage displacer

1. Rising level closes contacts 5 & 6 and 2 & 3, see Figure 19.
2. Falling level closes contacts 4 & 5 and 1 & 2.
3. Double pole action is obtained by simultaneous operation of the right and left side single pole switches.
4. Wiring diagram is reversed (close on high becomes close on low, etc.) when this switch mechanism is used on side mounted float switches employing a reversing pivot. (Model T67).
5. On units with tandem floats, the top float operates the bottom mechanism while the bottom float actuates the top mechanism. (Model T21).

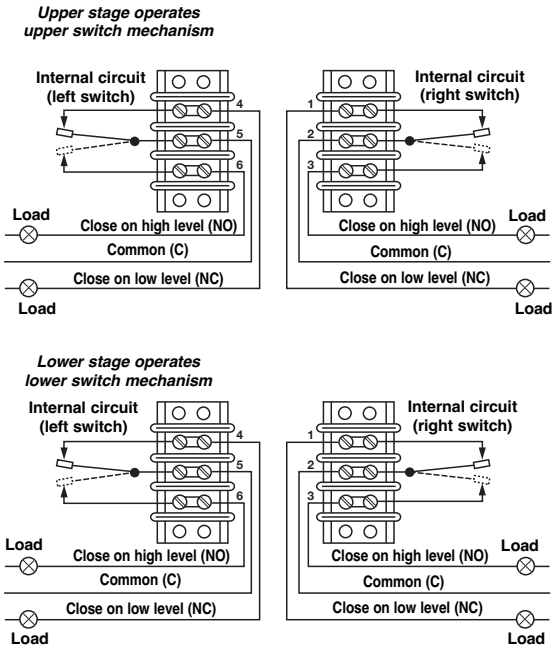


Figure 19
Single float with two switches or dual stage displacer

Three Stage Displacer

1. Rising level closes contacts 5 & 6 and 2 & 3, see Figure 20.
2. Falling level closes contacts 4 & 5 and 1 & 2.
3. Double pole action is obtained by simultaneous operation of the right and left side single pole switches.

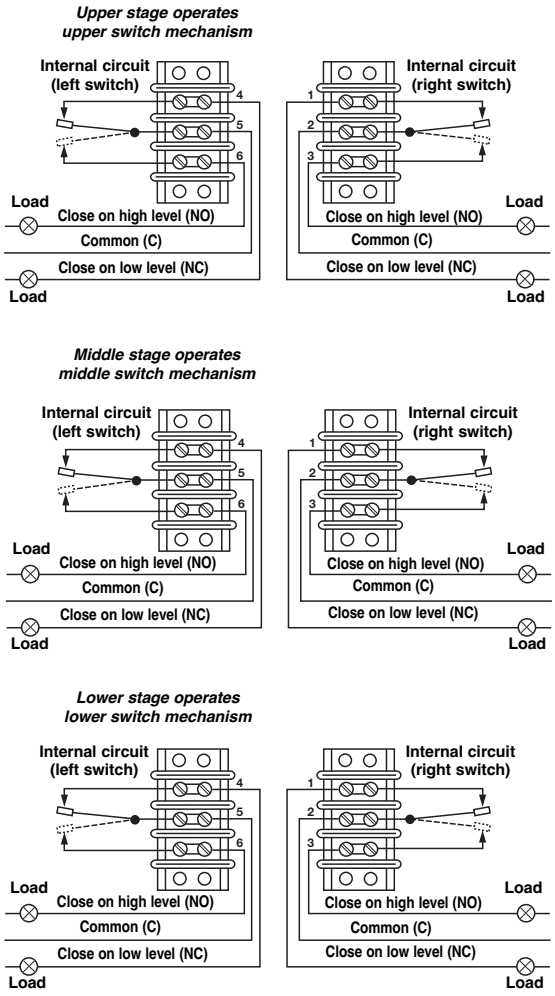


Figure 20
Three stage displacer

PREVENTIVE MAINTENANCE

Inspect switch mechanisms, terminals and connections regularly. Proof test interval to be determined by application requirements (required reliability, operating conditions, site requirements, etc).

Inspect switch mechanisms, terminals and connections

1. Dry contact switches should be inspected for excessive wear on actuating lever or misalignment of adjustment screw at point of contact between screw and lever. Such wear can cause false switch actuating levels
2. DO NOT operate your control with defective or maladjusted switch mechanisms.
3. Level controls may sometimes be exposed to excessive heat or moisture. Under such conditions, insulation on electrical wiring may become brittle, eventually breaking or peeling away. The resulting “bare” wires can cause short circuits.

   NOTE: Check wiring carefully and replace at the first sign of brittle insulation.

4. Vibration may sometimes cause terminal screws to loosen. Check all terminal connections to be certain that screws are tight.

   NOTE: Spare switches should be kept on hand at all times.

SWITCHES

Switch ratings

SWITCH SERIES	SWITCH TYPE	Process① Temperature range °C (°F)	LOAD	RATING					
				Volts AC			Volts DC		
				120	240	480	24	120	240
B	Micro	-40 to +120 (-40 to +250)	Non-Inductive Amp	15.00	15.00	15.00	6.00	0.50	0.25
			Inductive Amp	15.00	15.00	15.00	5.00	0.05	0.03
C	Micro	-40 to +230 (-40 to +450)	Non-Inductive Amp	15.00	15.00	15.00	6.00	1.00	0.50
			Inductive Amp	15.00	15.00	15.00	5.00	0.05	0.03
D	Micro	-40 to +120 (-40 to +250)	Non-Inductive Amp	10.00	–	–	10.00	10.00	1.50 min 3.00 max
			Inductive Amp	3.80	–	–	–	2.20	–
F	Hermetic	-45 to +400 (-50 to +750)	Resistive Amp	2.50	–	–	4.00②	0.30	–
			Inductive Amp	2.50	–	–	2.00②	0.10	–
O	Micro	-40 to +150 (-40 to +300)	Non-Inductive Amp	15.00	15.00	15.00	6.00	1.00	0.50
			Inductive Amp	15.00	15.00	15.00	5.00	0.05	0.03
Q	Micro	-40 to +120 (-40 to +250)	Non-Inductive Amp	15.00	15.00	15.00	6.00	0.50	0.25
			Inductive Amp	15.00	15.00	15.00	5.00	0.05	0.03
R	Micro	-40 to +540 (-40 to +1000)	Non-Inductive Amp	1.00	1.00	–	1.00	0.40	–
			Inductive Amp	1.00	1.00	–	1.00	0.40	–
S	Micro VAC-applications	-40 to +290 (-40 to +550)	Non-Inductive Amp	15.00	15.00	15.00	–	1.00	0.50
			Inductive Amp	15.00	15.00	15.00	–	0.50	–
S	Micro VDC-applications	-40 to +120 (-40 to +250)	Non-Inductive Amp	10.00	–	–	10.00	10.00	1.50 min 3.00 max
			Inductive Amp	3.80	–	–	–	2.20	–
U	Micro (Gold contacts)	-40 to +120 (-40 to +250)	Non-Inductive Amp	1.00	–	–	1.00②	–	–
			Inductive Amp	1.00	–	–	0.50②	–	–
W	Hermetic (Silver contacts)	-45 to +230 (-50 to +450)	Non-Inductive Amp	1.00	1.00	–	3.00③	0.50	–
			Inductive Amp	–	0.40	–	1.50③	–	–
X	Hermetic (Gold contacts)	-45 to +230 (-50 to +450)	Non-Inductive Amp	0.50	0.50	–	0.50	0.50	–
			Inductive Amp	–	–	–	–	–	–
8	Hermetic	-45 to +400 (-50 to +750)	Non-Inductive Amp	1.00	–	–	3.00	–	–
			Inductive Amp	1.00	–	–	1.00	–	–
9	Hermetic	-45 to +540 (-50 to +1000)	Non-Inductive Amp	–	–	–	0.50	–	–
			Inductive Amp	–	–	–	0.50	–	–

① Max. Process Temperature based on +40 °C (+100 °F) ambient temperature.
② 28 VDC.

REPLACEMENT SWITCH MECHANISMS

Magnet strength

Switch mechanisms are provided with different strength magnets as determined by the characteristics of the level switch. A red or yellow dot is visible on each magnet. When ordering replacement switch mechanisms, be certain to determine the color dot on the magnet. For these types of switches, the last 3 digits of the model number identify the switch and magnet used on the control. The correct magnet dot color may be chosen by finding those 3 digits of your model number in the chart. Any model numbers preceded with an "X" are specially modified controls. Contact the factory for replacement part numbers.

Partn°: ☐☐☐–☐☐☐☐–☐☐☐ **Serial n°:** ☐☐☐☐☐☐–☐☐–☐☐☐

Digit in partn°: X 1 2 3 – 4 5 6 7 – 8 9 10

See nameplate, always provide complete partn° and serial n° when ordering spares.

X = product with a specific customer requirement

EXPEDITE SHIP PLAN (ESP)

Several parts are available for quick shipment, within max. 1 week after factory receipt of purchase order, through the Expedite Ship Plan (ESP).
Parts covered by ESP service are conveniently grey coded in the selection tables.

Yellow dot magnet replacement mechanisms

Switch Series	8th, 9th & 10th Digit	Switch Contacts	Set points	Bottom Mech	Middle Mech	Top Mech	Switch Only
B	BAB, BAQ, BA9, BC9, BH9, BKB, BKQ, BK5, BK9, BU5, B2B, B2Q	SPDT	1	089-7401-104	-	-	089-7101-020
	BBB, BBN, BD9, BLB, BL5, BL9, BV5, B4B, B4N		2		-	089-7401-103	
	BCB, BE9, BMB, BM9, B6B, B65, B75		3		089-7401-103	089-7401-104	
	BB9, BDB, BDQ, BD5, BF9, BJ9, BNB, BNQ, BN9, BW5, B8B, B8Q	DPDT	1	089-7401-122	-	-	089-7101-020
	BEB, BEN, BG9, BOB, BO5, BP9, BY5, B1B, B1N		2		-	089-7401-122	
C	CAB, CAQ, CAS, CAT, CA9, CC9, CH9, CKB, CKQ, CK5, CK9, CU5, C2B, C2Q, C2S, C2T	SPDT	1	089-7401-110	-	-	089-7101-022
	CBB, CBT, CD9, CLB, CL5, CL9, CV5, C4B, C4T		2		-	089-7401-109	
	CCB, CE9, CMB, CM9, C6B, C65, C75		3		089-7401-109	089-7401-110	
	CB9, CDB, CDQ, CDS, CDT, CD5, CF9, CJ9, CNB, CNQ, CN9, CW5, C8B, C8Q, C8S, C8T	DPDT	1	089-7401-125	-	-	089-7101-022
	CEB, CET, CG9, COB, CO5, CP9, CY5, C1B, C1T		2		-	089-7401-125	
D	DAB, DAQ, DA9, DC9, DH9, DKB, DKQ, DK5, DK9, DU5, D2B, D2Q	SPDT	1	089-7401-106	-	-	089-7101-024
	DBB, DD9, DLB, DL5, DL9, DV5, D4B		2		-	089-7401-105	
	DCB, DE9, DMB, DM9, D6B, D65, D75		3		089-7401-105	089-7401-106	
	DB9, DDB, DDQ, DD5, DF9, DJ9, DNB, DNQ, DN9, DW5, D8B, D8Q	DPDT	1	089-7401-123	-	-	089-7101-024
	DEB, DG9, DOB, DO5, DP9, DY5, D1B		2		-	089-7401-123	
F	FAB, FAQ, FA9, FCB, FC9, FH9, FKB, FKQ, FK5, FK9, FU5, F2Q	SPDT	1	089-7401-095	-	-	089-7101-041
	FBB, FD9, FFB, FLB, FL5, FL9, FV5		2		-	089-7401-096	
	FB9, FDB, FDQ, FD5, FF9, FGB, FJ9, FNB, FNQ, FN9, FW5, F8Q	DPDT	1	089-7401-098	-	-	089-7101-041
	FEB, FG9, FHB, FOB, FO5, FP9, FY5		2		-	089-7401-098	
	FMB, FM9, FSB, FWB, FY9	SPDT Group IV	1	089-7401-218	-	-	089-7101-041
	FHM, FM5, FN5		1	089-7401-214	-	-	
	FE9, FTB, FVB, FYB, FZ9	DPDT Group IV	1	089-7401-220	-	-	
	FJM, FP5, FZ5		1	089-7401-216	-	-	

REPLACEMENT SWITCH MECHANISMS

Yellow dot magnet replacement mechanisms

Switch Series	8th, 9th & 10th Digit	Switch Contacts	Set points	Bottom Mech	Middle Mech	Top Mech	Switch Only
O	OCB, OMB, O6B	SPDT	3	089-7401-110	089-7401-109	089-7401-110	089-7101-022
	OEB, OKB, O1B	DPDT	3	089-7401-125	089-7401-125	089-7401-125	
Q	QCB, QMB, Q6B	SPDT	3	089-7401-104	089-7401-103	089-7401-104	089-7101-020
	QEB, QKB, Q1B	DPDT	3	089-7401-122	089-7401-122	089-7401-122	
R	RA9, RC9, RH9, RKB, RKQ, RK5, RK9, RU5, R1B, R1M, R1Q, R1Y, R2B, R2Q	SPDT	1	089-7401-179	-	-	089-7101-045
	RD9, RLB, RL5, RL9, RV5, R3B, R3M, R4B		2		-	089-7401-178	
	RB9, RDB, RDM, RDQ, RDY, RF5, RF9, RGB, RJ9, RNB, RNQ, RN5, RN9, R8Q	DPDT	1	089-7401-181	-	-	089-7101-045
	REB, REM, RG5, RG9, RHB, ROB, RO5, RP9		2		-	089-7401-181	
	RW9, RYB, RY9, R5B, R6B	SPDT Group IV	1	089-7401-203	-	-	089-7101-045
	RW5, RY5, R5M		1	089-7401-180	-	-	
	RFB, RJB, RM9, RSB, RS9	DPDT Group IV	1	089-7401-204	-	-	089-7101-045
	RJM, RM5, RS5		1	089-7401-182	-	-	
S (AC Volt)	SAB, SA9, SH9, SKB, S2B	SPDT Group IV	1	089-7401-161	-	-	089-7101-022
	SAM			089-7401-126	-	-	
	SB9, SDB, SJ9, SNB, S8B	DPDT Group IV	1	089-7401-163	-	-	
	SDM			089-7401-128	-	-	
S (DC Volt)	SBB, SC9, SK9, SLB, S2R	SPDT Group IV	1	089-7401-162	-	-	089-7101-024
	SBM			089-7401-129	-	-	
	SEB, SF9, SN9, SOB, S8R	DPDT Group IV	1	089-7401-164	-	-	
	SEM			089-7401-127	-	-	
U	UAB, UAQ, UAS, UAT, UA9, UC9, UH9, UKB, UKQ, UK5, UK9, UU5, U2B, U2Q, U2S, U2T	SPDT	1	189-9109-901	-	-	189-9105-901
	UBB, UBT, UD9, ULB, UL5, UL9, UV5, U4B, U4T		2		-	189-9107-901	
	UCB, UE9, UMB, UM9, U6B, U65, U75		3		189-9107-901	189-9109-901	
	UB9, UDB, UDQ, UDS, UDT, UD5, UF9, UJ9, UNB, UNQ, UN9, UW5, U8B, U8Q, U8S, U8T	DPDT	1	189-9111-901	-	-	189-9105-901
	UEB, UET, UG9, UOB, UO5, UP9, UY5, U1B, U1T		2		-	189-9111-901	

REPLACEMENT SWITCH MECHANISMS

Yellow dot magnet replacement mechanisms

Switch Series	8th, 9th & 10th Digit	Switch Contacts	Set points	Bottom Mech	Middle Mech	Top Mech	Switch Only
W	WAB, WAQ, WAS, WAT, WA9, WC9, WH9, WKB, WKQ, WK5, WK9, WU5, W2B, W2Q, W2S, W2T	SPDT	1	089-7410-004	-	-	089-7411-001
	WBB, WBT, WD9, WLB, WL5, WL9, WV5, W4B, W4T		2		-	089-7410-003	
	WCB, WE9, WMB, WM9, W6B, W65, W75		3		089-7410-003	089-7410-004	
	WB9, WDB, WDQ, WDS, WDT, WD5, WF9, WJ9, WNB, WNQ, WN9, WW5, W8B, W8Q, W8S, W8T	DPDT	1	089-7410-005	-	-	089-7411-001
	WEB, WET, WG9, WOB, WO5, WP9, WY5, W1B, W1T		2		-	089-7410-005	
X	XAB, XAQ, XAS, XAT, XA9, XC9, XH9, XKB, XKQ, XK5, XK9, XU5, X2B, X2Q, X2S, X2T	SPDT	1	089-7412-004	-	-	089-7413-001
	XBB, XBT, XD9, XLB, XL5, XL9, XV5, X4B, X4T		2		-	089-7412-003	
	XCB, XE9, XMB, XM9, X6B, X65, X75		3		089-7412-003	089-7412-004	
	XB9, XDB, XDQ, XDS, XDT, XD5, XF9, XJ9, XNB, XNQ, XN9, XW5, X8B, X8Q, X8S, X8T	DPDT	1	089-7412-005	-	-	089-7413-001
	XEB, XET, XG9, XOB, XO5, XP9, XY5, X1B, X1T		2		-	089-7412-005	
8	8AB, 8AQ, 8A9, 8C9, 8H9, 8KB, 8KQ, 8K5, 8K9, 8U5, 82B, 82Q	SPDT	1	089-7401-185	-	-	037-4632-001
	8BB, 8D9, 8LB, 8L5, 8L9, 8V5, 84B		2		-	089-7401-186	
	8CB, 8E9, 8MB, 86B, 865, 875, 889		3		089-7401-186	089-7401-185	
	8B9, 8DB, 8DQ, 8D5, 8F9, 8J9, 8NB, 8NQ, 8N9, 8W5, 88B, 88Q	DPDT	1	089-7401-192	-	-	037-4632-001
	8EB, 8G9, 8OB, 8O5, 8P9, 8Y5, 81B		2		-	089-7401-192	
	8FB, 8SB, 8M9, 8Y9, 83B	SPDT Group IV	1	089-7401-206	-	-	037-4632-001
	8HM, 8M5, 8N5		1	089-7401-188	-	-	
	8GB, 8S9, 8TB, 8Z9, 87B	DPDT Group IV	1	089-7401-208	-	-	037-4632-001
	8JM, 8P5, 8Z5		1	089-7401-190	-	-	
9	9AB, 9AM, 9AQ, 9AY, 9A9, 9C9, 9H9, 9KB, 9KQ, 9K5, 9K9, 9U5, 92B, 92Q	SPDT	1	089-7401-198	-	-	037-4633-001
	9BB, 9BM, 9D9, 9LB, 9L5, 9L9, 9V5, 94B		2		-	089-7401-199	
	9CB, 9CM, 9E9, 9MB, 96B, 965, 975, 989		3		089-7401-199	089-7401-198	
	9B9, 9DB, 9DM, 9DQ, 9DY, 9D5, 9F9, 9J9, 9NB, 9NQ, 9N9, 9W5, 98B, 98Q	DPDT	1	089-7401-200	-	-	037-4633-001
	9EB, 9EM, 9G9, 9OB, 9O5, 9P9, 9Y5, 91B		2		-	089-7401-200	
	9FB, 9M9, 9SB, 9Y9, 93B	SPDT Group IV	1	089-7401-211	-	-	037-4633-001
	9HM, 9M5, 9N5		1	089-7401-201	-	-	
	9GB, 9S9, 9TB, 9Z9, 97B	DPDT Group IV	1	089-7401-212	-	-	037-4633-001
	9JM, 9P5, 9Z5		1	089-7401-202	-	-	

REPLACEMENT SWITCH MECHANISMS

Red dot magnet replacement mechanisms

Switch Series	8th, 9th & 10th Digit	Switch Contacts	Set points	Bottom Mech	Middle Mech	Top Mech	Switch Only
B	BAA, BAC, BAP, BCC, BHC, BKA, BKC, BKP, BK7, BU7, B2A, B2P	SPDT	1	089-7401-102	-	-	089-7101-020
	BBA, BBP, BDC, BLA, BLC, BL7, BV7, B4A, B4P		2		-	089-7401-101	
	BCA, BEC, BMA, BMC, B6A, B67, B77		3		089-7401-101	089-7401-102	
	BBC, BDA, BDP, BD7, BFC, BJC, BNA, BNC, BNP, BW7, B8A, B8P	DPDT	1	089-7401-121	-	-	089-7101-020
	BEA, BEP, BGC, BOA, BO7, BPC, BY7, B1A, B1P		2		-	089-7401-121	
C	CAA, CAC, CAL, CAP, CAX, CCC, CHC, CKA, CKC, CKP, CK7, CU7, C2A, C2L, C2P, C2X	SPDT	1	089-7401-108	-	-	089-7101-022
	CBA, CBX, CDC, CLA, CLC, CL7, CV7, C4A, C4X		2		-	089-7401-107	
	CCA, CEC, CMA, CMC, C6A, C67, C77		3		089-7401-107	089-7401-108	
	CBC, CDA, CDL, CDP, CDX, CD7, CFC, CJC, CNA, CNC, CNP, CW7, C8A, C8L, C8P, C8X	DPDT	1	089-7401-124	-	-	089-7101-022
	CEA, CEX, CGC, COA, CO7, CPC, CY7, C1A, C1X		2		-	089-7401-124	
F	FAA, FAC, FAP, FCA, FCC, FHC, FKA, FKC, FKP, FK7, FU7, F2P	SPDT	1	089-7401-093	-	-	089-7101-041
	FBA, FDC, FFA, FLA, FLC, FL7, FV7		2		-	089-7401-094	
	FBC, FDA, FDP, FD7, FFC, FGA, FJC, FNA, FNC, FNP, FW7, F8P	DPDT	1	089-7401-097	-	-	089-7101-041
	FEA, FGC, FHA, FOA, FO7, FPC, FY7		2		-	089-7401-097	
	FMA, FMC, FSA, FWA, FYC	SPDT GROUP IV	1	089-7401-217	-	-	089-7101-041
	FHD, FM7, FN7		1	089-7401-213	-	-	
	FEC, FTA, FVA, FYA, FZC	DPDT GROUP IV	1	089-7401-219	-	-	
	FJD, FP7, FZ7		1	089-7401-215	-	-	
U	UAA, UAC, UAL, UAP, UAX, UCC, UHC, UKA, UKC, UKP, UK7, UU7, U2A, U2L, U2P, U2X	SPDT	1	189-9108-901	-	-	189-9105-901
	UBA, UBX, UDC, ULA, ULC, UL7, UV7, U4A, U4X		2		-	189-9106-901	
	UCA, UEC, UMA, UMC, U6A, U67, U77		3		189-9106-901	189-9108-901	
	UBC, UDA, UDL, UDP, UDX, UD7, UFC, UJC, UNA, UNC, UNP, UW7, U8A, U8L, U8P, U8X	DPDT	1	189-9110-901	-	-	189-9105-901
	UEA, UEX, UGC, UOA, UO7, UPC, UY7, U1A, U1X		2		-	189-9110-901	

REPLACEMENT SWITCH MECHANISMS

Red dot magnet replacement mechanisms

Switch Series	8th, 9th & 10th Digit	Switch Contacts	Set points	Bottom Mech	Middle Mech	Top Mech	Switch Only
W	WAA, WAC, WAL, WAP, WAX, WCC, WHC, WKA, WKC, WKP, WK7, WU7, W2A, W2L, W2P, W2X	SPDT	1	089-7410-002	-	-	089-7411-001
	WBA, WBX, WDC, WLA, WLC, WL7, WV7, W4A, W4X		2		-	089-7410-001	
	WCA, WEC, WMA, WMC, W6A, W67, W77		3		089-7410-001	089-7410-002	
X	XAA, XAC, XAL, XAP, XAX, XCC, XHC, XKA, XKC, XKP, XK7, XU7, X2A, X2L, X2P, X2X	SPDT	1	089-7412-002	-	-	089-7413-001
	XBA, XBX, XDC, XLA, XLC, XL7, XV7, X4A, X4X		2		-	089-7412-001	
	XCA, XEC, XMA, XMC, X6A, X67, X77		3		089-7412-001	089-7412-002	
8	8AA, 8AC, 8AP, 8CC, 8HC, 8KA, 8KC, 8KP, 8K7, 8U7, 82A, 82P	SPDT	1	089-7401-183	-	-	037-4632-001
	8BA, 8DC, 8LA, 8LC, 8L7, 8V7, 84A		2		-	089-7401-184	
	8CA, 8EC, 8MA, 86A, 867, 877, 88C		3		089-7401-184	089-7401-183	
	8BC, 8DA, 8DP, 8D7, 8FC, 8JC, 8NA, 8NC, 8NP, 8W7, 88A, 88P	DPDT	1	089-7401-191	-	-	037-4632-001
	8EA, 8GC, 8OA, 8O7, 8PC, 8Y7, 81A		2		-	089-7401-191	
	8FA, 8SA, 8MC, 8YC, 83A	SPDT Group IV	1	089-7401-205	-	-	037-4632-001
	8HD, 8M7, 8N7		1	089-7401-187	-	-	
	8GA, 8SC, 8TA, 8ZC, 87A	DPDT Group IV	1	089-7401-207	-	-	037-4632-001
	8JD, 8P7, 8Z7		1	089-7401-189	-	-	
9	9AA, 9AC, 9AD, 9AP, 9AR, 9CC, 9HC, 9KA, 9KC, 9KP, 9K7, 9U7, 92A, 92P	SPDT	1	089-7401-193	-	-	037-4633-001
	9BA, 9BD, 9DC, 9LA, 9LC, 9L7, 9V7, 94A		2		-	089-7401-194	
	9CA, 9CD, 9EC, 9MA, 96A, 967, 977, 98C		3		089-7401-194	089-7401-193	
	9BC, 9DA, 9DD, 9DP, 9DR, 9D7, 9FC, 9JC, 9NA, 9NC, 9NP, 9W7, 98A, 98P	DPDT	1	089-7401-195	-	-	037-4633-001
	9EA, 9ED, 9GC, 9OA, 9O7, 9PC, 9Y7, 91A		2		-	089-7401-195	
	9FA, 9MC, 9SA, 9YC, 93A	SPDT Group IV	1	089-7401-209	-	-	037-4633-001
	9HD, 9M7, 9N7		1	089-7401-196	-	-	
	9GA, 9SC, 9TA, 9ZC, 97A	DPDT Group IV	1	089-7401-210	-	-	037-4633-001
	9JD, 9P7, 9Z7		1	089-7401-197	-	-	

REPLACEMENT SWITCH HOUSINGS (standard, NOT for use with group IV switch mechanism)

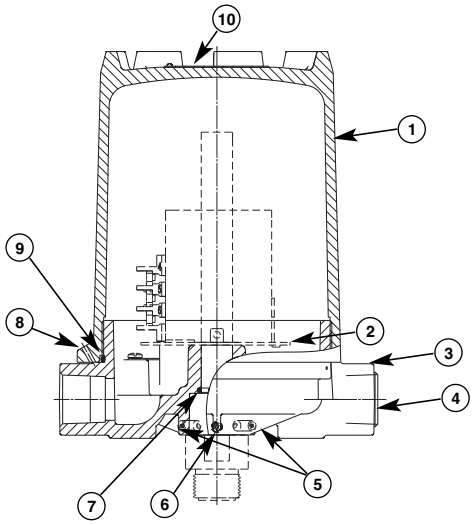
Switch housing replacement assemblies

When ordering replacement parts for an existing Magnetrol instrument, please specify:
1. Model and serial numbers of control.
2. Description and part number of replacement kit.

The proper replacement switch housing kit and parts can be determined by the last three characters of the model number.

Cast aluminum housings (short and tall)

Die cast aluminum TYPE 4X housing replacements are available for general purpose or weatherproof installations. Explosion proof NEMA 7/9 and ATEX housing replacements are available for hazardous atmosphere locations. Die cast aluminum housings are finished with a baked-on polyester powder coat paint.



1. Housing cover
2. Baffle plate
3. Housing base
4. Stopping plug
5. Base lock screw
6. Base lock screw
7. Base O-ring
8. Cover lock screw
9. Cover O-ring
10. Caution tag

Figure 21
Standard cast aluminium housing (short and tall)

Assemble / Disassemble instructions

1. Disconnect control from power supply before opening.
2. In case of ATEX Ex d approved housing, first unlock cover lock screw (8) before unscrewing the cover (1) counterclockwise. Lift housing cover straight upwards to avoid damaging the inside switch mechanism.
3. Replacement of housing base (3) and/or base O-ring (7).
   3.1 First remove housing cover (1) - see 1-2.
   3.2 Remove entire switch mechanism (see page 4).
   3.3 Loosen base lock screws (5) & (6).
   3.4 Slide housing base (3) of enclosing tube.
   3.5 O-ring (7) can be accessed/replaced.
4. Replace part and mount in opposite order.
5. Close housing cover (1) clockwise and tighten cover lock screw (8) in case of ATEX Ex d approved housing.

Replacement housing kits

Table with switch & housing model codes:

Column header	Data
Switch contacts	"SPDT" or "DPDT"
Housing height	"Short" or "Tall"

Housing type	Weatherproof (IP 66)	
Switch & housing code	e.g. B2Q, BAQ, B2P, BAP, ...	
Description	Kit contains part(s)	Replacement part
Cover kit for short housing	1, 9, 10	089-6582-034
Cover kit for tall housing	1, 9, 10	089-6582-031
Base kit for M20 x 1,5 cable entry	3, 4, 5, 6, 7, 9	089-6582-039
Base kit for 1" NPT-F cable entry	3, 4, 5, 6, 7, 9	089-6582-030
Cover 'O'-ring	9	012-2201-253
Base 'O'-ring	7	012-2201-116
Baffle plate	2	005-6657-001

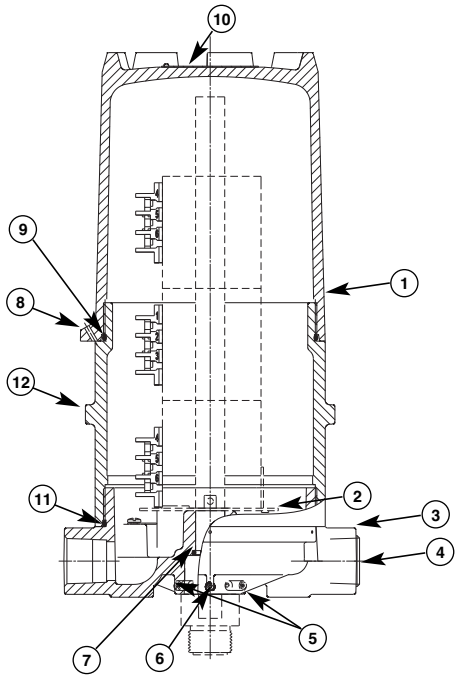
Housing type	ATEX Ex d, flameproof	
Switch & housing code	e.g. BH9, BA9, BHC, BAC, ...	
Description	Kit contains part(s)	Replacement part
Cover kit for short housing	1, 8, 9, 10	089-6582-035
Cover kit for tall housing	1, 8, 9, 10	089-6582-037
Base kit for M20 x 1,5 cable entry	3, 4, 5, 6, 7, 9	089-6582-040
Base kit for 1" NPT-F cable entry	3, 4, 5, 6, 7, 9	089-6582-041
Cover 'O'-ring	9	012-2201-253
Base 'O'-ring	7	012-2201-116
Baffle plate	2	005-6657-001

Housing type	ATEX Ex i, intrinsically safe	
Switch & housing code	e.g. C2S, CAS, C2L, CAL, ...	
Description	Kit contains part(s)	Replacement part
Cover kit for short housing	1, 9, 10	089-6582-036
Cover kit for tall housing	1, 9, 10	089-6582-038
Base kit for M20 x 1,5 cable entry	3, 4, 5, 6, 7, 9	089-6582-042
Base kit for 1" NPT-F cable entry	3, 4, 5, 6, 7, 9	089-6582-043
Cover 'O'-ring	9	012-2201-253
Base 'O'-ring	7	012-2201-116
Baffle plate	2	005-6657-001

Housing type	FM NEMA 7/9, explosion proof	
Switch & housing code	e.g. BKQ, BKP, BKB, BKA, ...	
Description	Kit contains part(s)	Replacement part
Cover kit for short housing	1, 9, 10	089-6582-034
Cover kit for tall housing	1, 9, 10	089-6582-031
Base kit for 1" NPT-F cable entry	3, 4, 5, 6, 7, 9	089-6582-030
Cover 'O'-ring	9	012-2201-253
Base 'O'-ring	7	012-2201-116
Baffle plate	2	005-6657-001

Extra tall cast aluminum housings

Die cast aluminum TYPE 4X housing replacements are available for general purpose or weatherproof installations. Explosion proof NEMA 7/9 housing replacements are available for hazardous atmosphere locations. Die cast aluminum housings are finished with a baked-on polyester powder coat paint.



1. Housing cover
2. Baffle plate
3. Housing base
4. Stopping plug
5. Base lock screw
6. Base lock screw
7. Base O-ring
8. Cover lock screw (not applicable)
9. Cover O-ring
10. Caution tag
11. Cover extension O-ring
12. Housing extension

Figure 22
Extra tall cast aluminium housing

Assemble / Disassemble instructions

1. Disconnect control from power supply before opening.
2. Unscrew the cover (1) and housing extension (12) counterclockwise and lift housing cover straight upwards to avoid damaging the inside switch mechanism.
3. Replacement of housing base (3) and/or base O-ring (7).
   3.1 First remove housing cover (1) and housing extension (12) - see 1-2.
   3.2 Remove entire switch mechanism (see page 4).
   3.3 Loosen base lock screws (5) & (6).
   3.4 Slide housing base (3) of enclosing tube.
   3.5 O-ring (7) can be accessed/replaced.
4. Replace part and mount in opposite order.
5. Close housing cover (1) and housing extension (12) clockwise.

Replacement housing kits

Table with switch & housing model codes:

Column header	Data
Switch contacts	"SPDT" or "DPDT"
Housing height	"X-Tall"

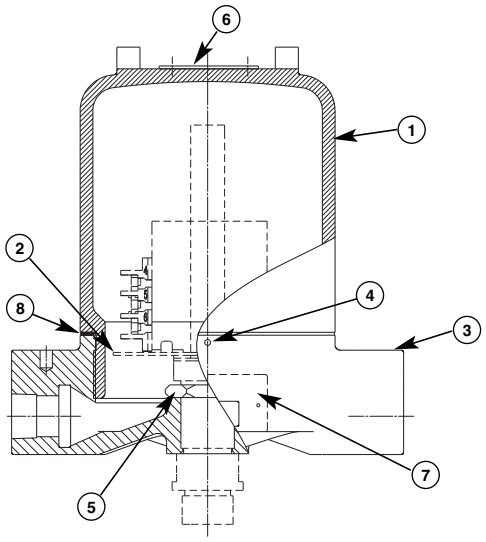
Housing type	Weatherproof (IP 66)	
Switch & housing code	e.g. 06B, 0CB, 01B, 0EB, ...	
Description	**Kit contains part(s)**	**Replacement part**
Cover kit for tall housing	1, 9, 10	089-6582-031
Housing extension	12	004-9175-002
Base kit for M20 x 1,5 cable entry	3, 4, 5, 6, 7, 11	089-6582-039
Base kit for 1" NPT-F cable entry	3, 4, 5, 6, 7, 11	089-6582-030
Cover extension 'O'-ring	11	012-2201-253
Cover 'O'-ring	9	012-2201-253
Base 'O'-ring	7	012-2201-116
Baffle plate	2	005-6657-001

Housing type	FM NEMA 7/9, explosion proof	
Switch & housing code	0MB, 0KB, QMB, QKB	
Description	**Kit contains part(s)**	**Replacement part**
Cover kit for tall housing	1, 9, 10	089-6582-031
Housing extension	12	004-9175-002
Base kit for 1" NPT-F cable entry	3, 4, 5, 6, 7, 11	089-6582-030
Cover extension 'O'-ring	11	012-2201-253
Cover 'O'-ring	9	012-2201-253
Base 'O'-ring	7	012-2201-116
Baffle plate	2	005-6657-001

REPLACEMENT SWITCH HOUSINGS (standard, NOT for use with group IV switch mechanism)

Cast iron housings

Cast iron ATEX Exd housing replacements are available for hazardous atmosphere locations. The cast iron cover and base are finished with an epoxy paint.



1. Housing cover
2. Baffle plate
3. Housing base
4. Cover lock screw
5. Base lock nut
6. Caution tag
7. Nameplate
8. Cover gasket

Figure 23
Standard cast iron housing

Assemble / Disassemble instructions

1. Disconnect control from power supply before opening.
2. First unlock cover lock screw (4) before unscrewing the cover (1) counterclockwise.
3. Lift housing cover straight upwards to avoid damaging the inside switch mechanism.
4. Replacement of housing base (3).
   4.1 First remove housing cover (1) - see 1-3.
   4.2 Remove entire switch mechanism (see page 4).
   4.3 Loosen base lock nut (5) counterclockwise.
   4.4 Unscrew housing base (3) counterclockwise.
5. Replace and mount in opposite order.
6. Close housing cover (1) clockwise and tighten cover lock screw (4).

Replacement housing kits

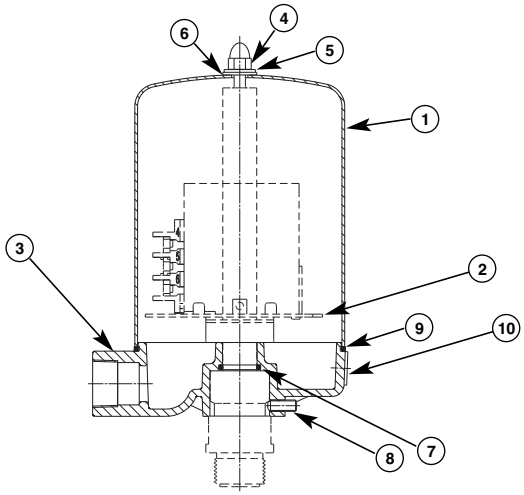
Table with switch & housing model codes:

Column header	Data
Switch contacts	"SPDT" or "DPDT"
Housing height	"Tall"

Housing type	ATEX Ex d, flameproof	
Switch & housing code	e.g. BK5, BU5, BK7, BU7, ...	
Description	**Kit contains part(s)**	**Replacement part**
Cover kit	1, 6, 8	189-9122-001
Base kit for M20 x 1,5 cable entry	3, 4, 5, 7	189-9126-002
Base kit for 3/4" NPT-F cable entry	3, 4, 5, 7	189-9126-001
Cover gasket	8	012-1301-005
Baffle plate assembly	2	036-5303-003

Aluminium / Carbon steel housings

Carbon steel TYPE 4X switch housings are available for general purpose and weatherproof installations. The housing base is cast from aluminum while the cover is made from cold rolled steel. The housings are finished with a baked-on polyester powder coat paint.



1. Housing cover
2. Baffle plate
3. Housing base
4. Acorn nut
5. Washer
6. Seal washer
7. Base O-ring
8. Base lock screw
9. Cover O-ring
10. Nameplate

Figure 24
Standard aluminium /carbon steel housing (short and tall)

Assemble / Disassemble instructions

1. Disconnect control from power supply before opening.
2. Loosen acorn nut (4) or cover screw (model F10 & F50) and remove washers (5) & (6). Lift housing cover straight upwards to avoid damaging the inside switch mechanism.
3. Replacement of housing base (3) and/or base O-ring (7).
   3.1 First remove housing cover (1) - see 1-2.
   3.2 Remove entire switch mechanism (see page 4).
   3.3 Loosen base lock screw (8).
   3.4 Slide housing base (3) of enclosing tube.
   3.5 O-ring (7) can be accessed/replaced.
4. Replace part and mount in opposite order.
5. Replace housing cover (1), reinstall washers (6) & (5) and fix with acorn nut (4) or cover screw (model F10 & F50).

Replacement housing kits

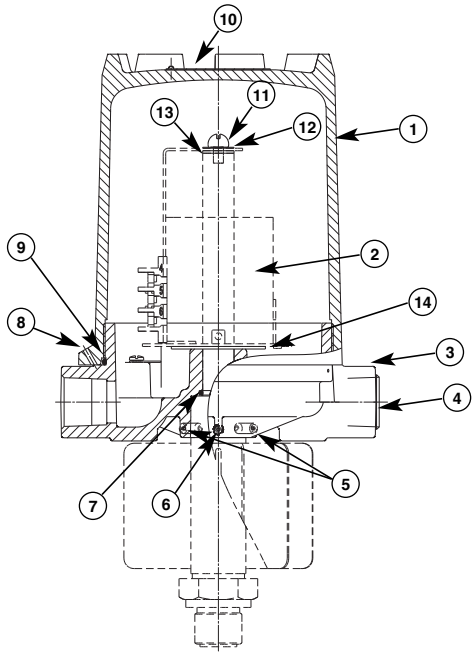
Table with switch & housing model codes:

Column header	Data
Switch contacts	"SPDT" or "DPDT"
Housing height	"Short" or "Tall"

Housing type	Weatherproof (IP 65)	
Switch & housing code	e.g. R1Y, R1M, R3M, RDY, ...	
Description	**Kit contains part(s)**	**Replacement part**
Cover kit for short housing	1, 4, 5, 6, 7, 9	189-6509-001
Cover kit for tall housing	1, 4, 5, 6, 7, 9	189-6510-001
Base kit for 3/4" NPT-F cable entry	3, 7, 8, 9, 10	089-6505-003
Washer + '0'-ring kit	4, 5, 6, 7, 9	189-6508-001
Cover '0'-ring	9	012-1318-001
Base '0'-ring	7	012-2201-116
Baffle plate assembly	2	036-5303-003

Cast aluminum housings

Die cast aluminum TYPE 4X housing replacements are available for general purpose or weatherproof installations. Explosion proof NEMA 7/9 and ATEX housing replacements are available for hazardous atmosphere locations. Die cast aluminum housings are finished with a baked-on polyester powder coat paint.



1. Housing cover
2. Switch mechanism
3. Housing base
4. Stopping plug
5. Base lock screw
6. Base lock screw
7. Base O-ring
8. Cover lock screw
9. Cover O-ring
10. Caution tag
11. Screw
12. Lock washer
13. Top insulator
14. Base insulator

Figure 25
Cast aluminium housing for use with group IV switch mechanism (high temp.)

Assemble / Disassemble instructions

1. Disconnect control from power supply before opening.
2. In case of ATEX Ex d approved housing, first unlock cover lock screw (8) before unscrewing the cover (1) counterclockwise. Lift housing cover straight upwards to avoid damaging the inside switch mechanism (2).
3. Replacement of switch mechanism (2) and/or insulators (13) & (14).
   - 3.1 First remove housing cover (1) - see 1-2.
   - 3.2 Loosen screw (11), remove lock washer (12) and lift switch mechanism (2).
   - 3.3 Reinstall/Replace insulators (13) & (14) and mount in opposite order.
4. Replacement of housing base (3) or base O-ring (7).
   - 4.1 First remove housing cover (1) and switch mechanism (2) – see 1-3.
   - 4.2 Loosen base lock screws (5) & (6).
   - 4.3 Slide housing base (3) of enclosing tube.
   - 4.4 O-ring (7) can be accessed/replaced.
5. Replace part and mount in opposite order.
6. Close housing cover (1) clockwise and tighten cover lock screw (8) in case of ATEX Ex d approved housing.

Replacement housing kits

Table with switch & housing model codes:

Column header	Data
Switch contacts	"SPDT Grp IV" or "DPDT Grp IV"
Housing height	"Tall"

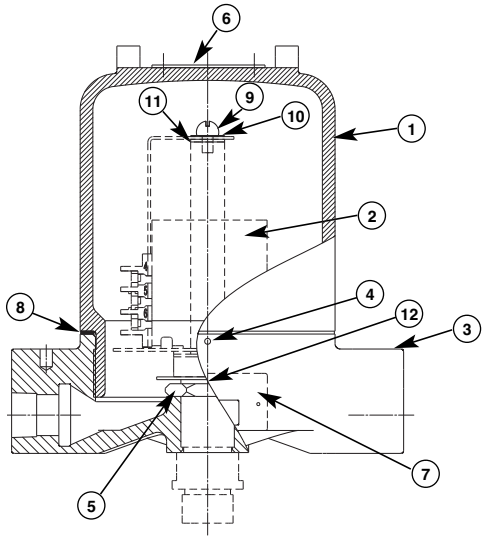
Housing type	Weatherproof (IP 66)	
Switch & housing code	e.g. FWB, FMB, FWA, FMA, ...	
Description	Kit contains part(s)	Replacement part
Cover kit	1, 9, 10	089-6582-031
Base kit for M20 x 1,5 cable entry	3, 4, 5, 6, 7, 9	089-6582-039
Base kit for 1" NPT-F cable entry	3, 4, 5, 6, 7, 9	089-6582-030
Cover 'O'-ring	9	012-2201-253
Base 'O'-ring	7	012-2201-116
Screw	11	010-1402-015
Lock washer	12	010-3101-003
Ring gasket	13	012-1301-013
Base insulator	14	012-9307-001

Housing type	ATEX Ex d, flameproof	
Switch & housing code	e.g. FY9, FM9, FYC, FMC, ...	
Description	Kit contains part(s)	Replacement part
Cover kit	1, 8, 9, 10	089-6582-037
Base kit for M20 x 1,5 cable entry	3, 4, 5, 6, 7, 9	089-6582-040
Base kit for 1" NPT-F cable entry	3, 4, 5, 6, 7, 9	089-6582-041
Cover 'O'-ring	9	012-2201-253
Base 'O'-ring	7	012-2201-116
Screw	11	010-1402-015
Lock washer	12	010-3101-003
Ring gasket	13	012-1301-013
Base insulator	14	012-9307-001

Housing type	FM NEMA 7/9, explosion proof	
Switch & housing code	e.g. FSB, FSA, FTB, FTA, ...	
Description	Kit contains part(s)	Replacement part
Cover kit	1, 9, 10	089-6582-031
Base kit for 1" NPT-F cable entry	3, 4, 5, 6, 7, 9	089-6582-030
Cover 'O'-ring	9	012-2201-253
Base 'O'-ring	7	012-2201-116
Screw	11	010-1402-015
Lock washer	12	010-3101-003
Ring gasket	13	012-1301-013
Base insulator	14	012-9307-001

Cast iron housings

Cast iron ATEX Exd housing replacements are available for hazardous atmosphere locations. The cast iron cover and base are finished with an epoxy paint.



1. Housing cover
2. Switch mechanism
3. Housing base
4. Cover lock screw
5. Base lock nut
6. Caution tag
7. Nameplate
8. Cover gasket
9. Screw
10. Lock washer
11. Top insulator
12. Base insulator

Figure 26
Cast iron housing for use with group IV switch mechanism (high temp.)

Assemble / Disassemble instructions

1. Disconnect control from power supply before opening.
2. First unlock cover lock screw (4) before unscrewing the cover (1) counterclockwise. Lift housing cover straight upwards to avoid damaging the inside switch mechanism (2).
3. Replacement of switch mechanism (2) and/or insulators (11) & (12).
   - 3.1 First remove housing cover (1) - see 1-2.
   - 3.2 Loosen screw (9), remove lock washer (10) and lift switch mechanism (2).
   - 3.3 Reinstall/Replace insulators (11 & 12) and mount in opposite order.
4. Replacement of housing base (3).
   - 4.1 First remove housing cover (1) and switch mechanism (2) – see 1-3.
   - 4.2 Loosen base lock nut (5) counterclockwise.
   - 4.3 Unscrew housing base (3) counterclockwise.
5. Replace part and mount in opposite order.
6. Close housing cover (1) clockwise and tighten cover lock screw (4).

Replacement housing kits

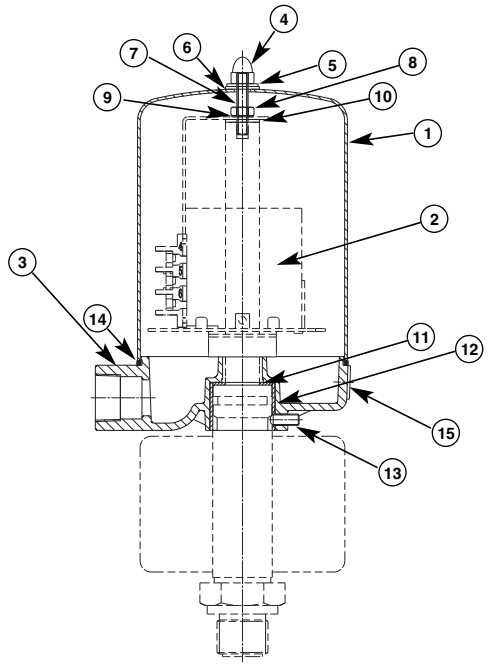
Table with switch & housing model codes:

Column header	Data
Switch contacts	"SPDT Grp IV" or "DPDT Grp IV"
Housing height	"Tall"

Housing type	ATEX Ex d, flameproof	
Switch & housing code	e.g. FN5, FM5, FN7, FM7, ...	
Description	**Kit contains part(s)**	**Replacement part**
Cover kit	1, 6, 8	189-9122-001
Base kit for M20 x 1,5 cable entry	3, 4, 5, 7	189-9126-002
Base kit for 3/4" NPT-F cable entry	3, 4, 5, 7	189-9126-001
Cover gasket	8	012-1301-005
Screw	9	010-1402-015
Lock washer	10	010-3101-003
Ring gasket	11	012-1301-013
Base insulator	12	012-9307-001

Aluminium / Carbon steel housings

Carbon steel TYPE 4X switch housings are available for general purpose and weatherproof installations. The housing base is cast from aluminum while the cover is made from cold rolled steel. The housings are finished with a baked-on polyester powder coat paint.



1. Housing cover
2. Switch mechanism
3. Housing base
4. Acorn nut
5. Washer
6. Seal washer
7. Stud
8. Hex nut
9. Lock washer
10. Top insulator
11. Base insulator
12. Base insulator
13. Base lock screw
14. Cover O-ring
15. Nameplate

Figure 27
Aluminium /carbon steel housing for use with group IV switch mechanism

Assemble / Disassemble instructions

1. Disconnect control from power supply before opening.
2. Loosen acorn nut (4) and remove washers (5) & (6). Lift housing cover straight upwards to avoid damaging the inside switch mechanism (2).
3. Replacement of switch mechanism (2) and/or top insulator (10).
   - 3.1 First remove housing cover (1) - see 1-2.
   - 3.2 Loosen hex nut (8), remove lock washer (9) and lift switch mechanism (2).
   - 3.3 Reinstall/Replace top insulator (10) and mount in opposite order.
4. Replacement of housing base (3) and/or base insulators (11) & (12).
   - 4.1 First remove housing cover (1) and switch mechanism (2) – see 1-3.
   - 4.2 Loosen base lock screw (13).
   - 4.3 Slide housing base (3) of enclosing tube.
   - 4.4 Base insulators (11) & (12) can be accessed/replaced.
5. Replace part and mount in opposite order.
6. Replace housing cover (1), reinstall washers (6) & (5) & fix with acorn nut (4).

Replacement housing kits

Table with switch & housing model codes:

Column header	Data
Switch contacts	"SPDT Grp IV" or "DPDT Grp IV"
Housing height	"Tall"

Housing type	Weatherproof (IP 65)	
Switch & housing code	e.g. FHM, FHD, FJM, FJD, ...	
Description	**Kit contains part(s)**	**Replacement part**
Cover kit	1, 4, 5, 6, 14	189-6510-001
Base kit for 3/4" NPT-F cable entry	3	002-6101-736
Washer, insulation + 'O'-ring kit	4, 5, 6, 10, 11, 12, 14	189-6508-002
Base lock srew	13	010-1202-007
Cover 'O'-ring	14	012-1318-001

SWITCH AND HOUSING MODEL CODES

The following charts identify the switch and housing model codes used with the buoyancy products. The eighth, ninth and tenth digit combinations may be used to identify the type and number of switches, number of contacts, switch magnet strength as well as housing type, size and options.

Weather proof (IP 66)		Weather proof (IP 65)	ATEX - IP 66						FM	Magnet dot color	Set points	Switch contacts	Housing height	Switch type
			II 2G Ex d IIC T6 Gb				II 1G EEx ia IIC T6		NEMA 7/9					
Cast aluminium		Carbon steel	Cast aluminium		Cast iron		Cast aluminium		Cast alu					
M20x1.5	1" NPT	3/4" NPT	M20x1.5	1" NPT	M20x1.5	3/4" NPT	M20x1.5	1" NPT	1" NPT					
B2Q	BAQ	-	BH9	BA9	-	-	-	-	BKQ	Yellow	1	SPDT	Short	Dry contact
B2P	BAP	-	BHC	BAC	-	-	-	-	BKP	Red				
B2B	BAB	-	BK9	BC9	BK5	BU5	-	-	BKB	Yellow			Tall	
B2A	BAA	-	BKC	BCC	BK7	BU7	-	-	BKA	Red				
B4B	BBB	-	BL9	BD9	BL5	BV5	-	-	BLB	Yellow	2	SPDT	Tall	
B4A	BBA	-	BLC	BDC	BL7	BV7	-	-	BLA	Red				
B6B	BCB	-	BM9	BE9	B65	B75	-	-	BMB	Yellow	3	SPDT	Tall	
B6A	BCA	-	BMC	BEC	B67	B77	-	-	BMA	Red				
B8Q	BDQ	-	BJ9	BB9	-	-	-	-	BNQ	Yellow	1	DPDT	Short	
B8P	BDP	-	BJC	BBC	-	-	-	-	BNP	Red				
B8B	BDB	-	BN9	BF9	BD5	BW5	-	-	BNB	Yellow			Tall	
B8A	BDA	-	BNC	BFC	BD7	BW7	-	-	BNA	Red				
B1B	BEB	-	BP9	BG9	BO5	BY5	-	-	BOB	Yellow	2	DPDT	Tall	
B1A	BEA	-	BPC	BGC	BO7	BY7	-	-	BOA	Red				
C2Q	CAQ	-	CH9	CA9	-	-	C2S	CAS	CKQ	Yellow	1	SPDT	Short	Dry contact
C2P	CAP	-	CHC	CAC	-	-	C2L	CAL	CKP	Red				
C2B	CAB	-	CK9	CC9	CK5	CU5	C2T	CAT	CKB	Yellow			Tall	
C2A	CAA	-	CKC	CCC	CK7	CU7	C2X	CAX	CKA	Red				
C4B	CBB	-	CL9	CD9	CL5	CV5	C4T	CBT	CLB	Yellow	2	SPDT	Tall	
C4A	CBA	-	CLC	CDC	CL7	CV7	C4X	CBX	CLA	Red				
C6B	CCB	-	CM9	CE9	C65	C75	-	-	CMB	Yellow	3	SPDT	Tall	
C6A	CCA	-	CMC	CEC	C67	C77	-	-	CMA	Red				
C8Q	CDQ	-	CJ9	CB9	-	-	C8S	CDS	CNQ	Yellow	1	DPDT	Short	
C8P	CDP	-	CJC	CBC	-	-	C8L	CDL	CNP	Red				
C8B	CDB	-	CN9	CF9	CD5	CW5	C8T	CDT	CNB	Yellow			Tall	
C8A	CDA	-	CNC	CFC	CD7	CW7	C8X	CDX	CNA	Red				
C1B	CEB	-	CP9	CG9	CO5	CY5	C1T	CET	COB	Yellow	2	DPDT	Tall	
C1A	CEA	-	CPC	CGC	CO7	CY7	C1X	CEX	COA	Red				
D2Q	DAQ	-	DH9	DA9	-	-	-	-	DKQ	Yellow	1	SPDT	Short	DC voltage dry contact
D2B	DAB	-	DK9	DC9	DK5	DU5	-	-	DKB				Tall	
D4B	DBB	-	DL9	DD9	DL5	DV5	-	-	DLB		2	SPDT	Tall	
D6B	DCB	-	DM9	DE9	D65	D75	-	-	DMB		3			
D8Q	DDQ	-	DJ9	DB9	-	-	-	-	DNQ		1	DPDT	Short	
D8B	DDB	-	DN9	DF9	DD5	DW5	-	-	DNB				Tall	
D1B	DEB	-	DP9	DG9	DO5	DY5	-	-	DOB		2	DPDT	Tall	
F2Q	FAQ	-	FH9	FA9	-	-	-	-	FKQ	Yellow	1	SPDT	Short	High temp. herm. sealed dry contact
F2P	FAP	-	FHC	FAC	-	-	-	-	FKP	Red				
FCB	FAB	-	FK9	FC9	FK5	FU5	-	-	FKB	Yellow			Tall	
FCA	FAA	-	FKC	FCC	FK7	FU7	-	-	FKA	Red				
FFB	FBB	-	FL9	FD9	FL5	FV5	-	-	FLB	Yellow	2	SPDT	Tall	
FFA	FBA	-	FLC	FDC	FL7	FV7	-	-	FLA	Red				
FWB	FMB	FHM	FY9	FM9	FN5	FM5	-	-	FSB	Yellow	1	SPDT Grp IV	Tall	
FWA	FMA	FHD	FYC	FMC	FN7	FM7	-	-	FSA	Red				
F8Q	FDQ	-	FJ9	FB9	-	-	-	-	FNQ	Yellow	1	DPDT	Short	
F8P	FDP	-	FJC	FBC	-	-	-	-	FNP	Red				
FGB	FDB	-	FN9	FF9	FD5	FW5	-	-	FNB	Yellow			Tall	
FGA	FDA	-	FNC	FFC	FD7	FW7	-	-	FNA	Red				
FHB	FEB	-	FP9	FG9	FO5	FY5	-	-	FOB	Yellow	2	DPDT	Tall	
FHA	FEA	-	FPC	FGC	FO7	FY7	-	-	FOA	Red				
FYB	FVB	FJM	FE9	FZ9	FP5	FZ5	-	-	FTB	Yellow	1	DPDT Grp IV	Tall	
FYA	FVA	FJD	FEC	FZC	FP7	FZ7	-	-	FTA	Red				
O6B	OCB	-	-	-	-	-	-	-	OMB	Yellow	3	SPDT	X-Tall	Dry contact for C10/C15
O1B	OEB	-	-	-	-	-	-	-	OKB			DPDT		
Q6B	QCB	-	-	-	-	-	-	-	QMB		3	SPDT		
Q1B	QEB	-	-	-	-	-	-	-	QKB			DPDT		
R2Q	R1Q	R1Y	RH9	RA9	-	-	-	-	RKQ	Yellow	1	SPDT	Short	High temp. dry contact
R2B	R1B	R1M	RK9	RC9	RK5	RU5	-	-	RKB				Tall	
R4B	R3B	R3M	RL9	RD9	RL5	RV5	-	-	RLB		2	SPDT	Tall	
R6B	R5B	R5M	RY9	RW9	RY5	RW5	-	-	RYB		1	SPDT Grp IV		
R8Q	RDQ	RDY	RJ9	RB9	-	-	-	-	RNQ		1	DPDT	Short	
RGB	RDB	RDM	RN9	RF9	RN5	RF5	-	-	RNB				Tall	
RHB	REB	REM	RP9	RG9	RO5	RG5	-	-	ROB		2	DPDT	Tall	
RJB	RFB	RJM	RS9	RM9	RS5	RM5	-	-	RSB		1	DPDT Grp IV		
S2B	SAB	SAM	SH9	SA9	-	-	-	-	SKB	Yellow	1	SPDT Grp IV	Tall	Dry contact for B40
S8B	SDB	SDM	SJ9	SB9	-	-	-	-	SNB			DPDT Grp IV		
S2R	SBB	SBM	SK9	SC9	-	-	-	-	SLB		1	SPDT Grp IV		
S8R	SEB	SEM	SN9	SF9	-	-	-	-	SOB			DPDT Grp IV		

SWITCH AND HOUSING MODEL CODES

Weather proof (IP 66)		Weather proof (IP 65)	ATEX - IP 66						FM	Magnet dot color	Set points	Switch contacts	Housing height	Switch type
			II 2G Ex d IIC T6 Gb				II 1G EEx ia IIC T6		NEMA 7/9					
Cast aluminium		Carbon steel	Cast aluminium		Cast iron		Cast aluminium		Cast alu					
M20x1.5	1" NPT	3/4" NPT	M20x1.5	1" NPT	M20x1.5	3/4" NPT	M20x1.5	1" NPT	1" NPT					
U2Q	UAQ	-	UH9	UA9	-	-	U2S	UAS	UKQ	Yellow	1	SPDT	Short	Dry gold contact
U2P	UAP	-	UHC	UAC	-	-	U2L	UAL	UKP	Red				
U2B	UAB	-	UK9	UC9	UK5	UU5	U2T	UAT	UKB	Yellow			Tall	
U2A	UAA	-	UKC	UCC	UK7	UU7	U2X	UAX	UKA	Red				
U4B	UBB	-	UL9	UD9	UL5	UV5	U4T	UBT	ULB	Yellow	2	SPDT	Tall	
U4A	UBA	-	ULC	UDC	UL7	UV7	U4X	UBX	ULA	Red				
U6B	UCB	-	UM9	UE9	U65	U75	-	-	UMB	Yellow	3	SPDT	Tall	
U6A	UCA	-	UMC	UEC	U67	U77	-	-	UMA	Red				
U8Q	UDQ	-	UJ9	UB9	-	-	U8S	UDS	UNQ	Yellow	1	DPDT	Short	
U8P	UDP	-	UJC	UBC	-	-	U8L	UDL	UNP	Red				
U8B	UDB	-	UN9	UF9	UD5	UW5	U8T	UDT	UNB	Yellow			Tall	
U8A	UDA	-	UNC	UFC	UD7	UW7	U8X	UDX	UNA	Red				
U1B	UEB	-	UP9	UG9	UO5	UY5	U1T	UET	UOB	Yellow	2	DPDT	Tall	
U1A	UEA	-	UPC	UGC	UO7	UY7	U1X	UEX	UOA	Red				
W2Q	WAQ	-	WH9	WA9	-	-	W2S	WAS	WKQ	Yellow	1	SPDT	Short	Herm. sealed dry silver contact
W2P	WAP	-	WHC	WAC	-	-	W2L	WAL	WKP	Red				
W2B	WAB	-	WK9	WC9	WK5	WU5	W2T	WAT	WKB	Yellow			Tall	
W2A	WAA	-	WKC	WCC	WK7	WU7	W2X	WAX	WKA	Red				
W4B	WBB	-	WL9	WD9	WL5	WV5	W4T	WBT	WLB	Yellow	2	SPDT	Tall	
W4A	WBA	-	WLC	WDC	WL7	WV7	W4X	WBX	WLA	Red				
W6B	WCB	-	WM9	WE9	W65	W75	-	-	WMB	Yellow	3	SPDT	Tall	
W6A	WCA	-	WMC	WEC	W67	W77	-	-	WMA	Red				
W8Q	WDQ	-	WJ9	WB9	-	-	W8S	WDS	WNQ	Yellow	1	DPDT	Short	
W8B	WDB	-	WN9	WF9	WD5	WW5	W8T	WDT	WNB				Tall	
W1B	WEB	-	WP9	WG9	WO5	WY5	W1T	WET	WOB	Yellow	2	DPDT	Tall	
X2Q	XAQ	-	XH9	XA9	-	-	X2S	XAS	XKQ	Yellow	1	SPDT	Short	Herm. sealed dry gold contact
X2P	XAP	-	XHC	XAC	-	-	X2L	XAL	XKP	Red				
X2B	XAB	-	XK9	XC9	XK5	XU5	X2T	XAT	XKB	Yellow			Tall	
X2A	XAA	-	XKC	XCC	XK7	XU7	X2X	XAX	XKA	Red				
X4B	XBB	-	XL9	XD9	XL5	XV5	X4T	XBT	XLB	Yellow	2	SPDT	Tall	
X4A	XBA	-	XLC	XDC	XL7	XV7	X4X	XBX	XLA	Red				
X6B	XCB	-	XM9	XE9	X65	X75	-	-	XMB	Yellow	3	SPDT	Tall	
X6A	XCA	-	XMC	XEC	X67	X77	-	-	XMA	Red				
X8Q	XDQ	-	XJ9	XB9	-	-	X8S	XDS	XNQ	Yellow	1	DPDT	Short	
X8B	XDB	-	XN9	XF9	XD5	XW5	X8T	XDT	XNB				Tall	
X1B	XEB	-	XP9	XG9	XO5	XY5	X1T	XET	XOB	Yellow	2	DPDT	Tall	
82Q	8AQ	-	8H9	8A9	-	-	-	-	8KQ	Yellow	1	SPDT	Short	High temp. herm. sealed dry contact
82P	8AP	-	8HC	8AC	-	-	-	-	8KP	Red				
82B	8AB	-	8K9	8C9	8K5	8U5	-	-	8KB	Yellow			Tall	
82A	8AA	-	8KC	8CC	8K7	8U7	-	-	8KA	Red				
84B	8BB	-	8L9	8D9	8L5	8V5	-	-	8LB	Yellow	2	SPDT	Tall	
84A	8BA	-	8LC	8DC	8L7	8V7	-	-	8LA	Red				
86B	8CB	-	889	8E9	865	875	-	-	8MB	Yellow	3	SPDT	Tall	
86A	8CA	-	88C	8EC	867	877	-	-	8MA	Red				
83B	8FB	8HM	8Y9	8M9	8N5	8M5	-	-	8SB	Yellow	1	SPDT Grp IV	Tall	
83A	8FA	8HD	8YC	8MC	8N7	8M7	-	-	8SA	Red				
88Q	8DQ	-	8J9	8B9	-	-	-	-	8NQ	Yellow	1	DPDT	Short	
88P	8DP	-	8JC	8BC	-	-	-	-	8NP	Red				
88B	8DB	-	8N9	8F9	8D5	8W5	-	-	8NB	Yellow			Tall	
88A	8DA	-	8NC	8FC	8D7	8W7	-	-	8NA	Red				
81B	8EB	-	8P9	8G9	8O5	8Y5	-	-	8OB	Yellow	2	DPDT	Tall	
81A	8EA	-	8PC	8GC	8O7	8Y7	-	-	8OA	Red				
87B	8GB	8JM	8S9	8Z9	8P5	8Z5	-	-	8TB	Yellow	1	DPDT Grp IV	Tall	
87A	8GA	8JD	8SC	8ZC	8P7	8Z7	-	-	8TA	Red				
92Q	9AQ	9AY	9H9	9A9	-	-	-	-	9KQ	Yellow	1	SPDT	Short	High temp. herm. sealed dry contact
92P	9AP	9AR	9HC	9AC	-	-	-	-	9KP	Red				
92B	9AB	9AM	9K9	9C9	9K5	9U5	-	-	9KB	Yellow			Tall	
92A	9AA	9AD	9KC	9CC	9K7	9U7	-	-	9KA	Red				
94B	9BB	9BM	9L9	9D9	9L5	9V5	-	-	9LB	Yellow	2	SPDT	Tall	
94A	9BA	9BD	9LC	9DC	9L7	9V7	-	-	9LA	Red				
96B	9CB	9CM	989	9E9	965	975	-	-	9MB	Yellow	3	SPDT	Tall	
96A	9CA	9CD	98C	9EC	967	977	-	-	9MA	Red				
93B	9FB	9HM	9Y9	9M9	9N5	9M5	-	-	9SB	Yellow	1	SPDT Grp IV	Tall	
93A	9FA	9HD	9YC	9MC	9N7	9M7	-	-	9SA	Red				
98Q	9DQ	9DY	9J9	9B9	-	-	-	-	9NQ	Yellow	1	DPDT	Short	
98P	9DP	9DR	9JC	9BC	-	-	-	-	9NP	Red				
98B	9DB	9DM	9N9	9F9	9D5	9W5	-	-	9NB	Yellow			Tall	
98A	9DA	9DD	9NC	9FC	9D7	9W7	-	-	9NA	Red				
91B	9EB	9EM	9P9	9G9	9O5	9Y5	-	-	9OB	Yellow	2	DPDT	Tall	
91A	9EA	9ED	9PC	9GC	9O7	9Y7	-	-	9OA	Red				
97B	9GB	9JM	9S9	9Z9	9P5	9Z5	-	-	9TB	Yellow	1	DPDT Grp IV	Tall	
97A	9GA	9JD	9SC	9ZC	9P7	9Z7	-	-	9TA	Red				

Notes

IMPORTANT

SERVICE POLICY

Owners of Magnetrol products may request the return of a control; or, any part of a control for complete rebuilding or replacement. They will be rebuilt or replaced promptly. Magnetrol International will repair or replace the control, at no cost to the purchaser, (or owner) ***other than transportation cost*** if:

a. Returned within the warranty period; and,
b. The factory inspection finds the cause of the malfunction to be defective material or workmanship.

If the trouble is the result of conditions beyond our control; or, is **NOT** covered by the warranty, there will be charges for labour and the parts required to rebuild or replace the equipment.
In some cases, it may be expedient to ship replacement parts; or, in extreme cases a complete new control, to replace the original equipment before it is returned. If this is desired, notify the factory of both the model and serial numbers of the control to be replaced. In such cases, credit for the materials returned, will be determined on the basis of the applicability of our warranty.
No claims for misapplication, labour, direct or consequential damage will be allowed.

RETURNED MATERIAL PROCEDURE

So that we may efficiently process any materials that are returned, it is essential that a “Return Material Authorisation” (RMA) form will be obtained from the factory. It is mandatory that this form will be attached to each material returned. This form is available through Magnetrol’s local representative or by contacting the factory. Please supply the following information:

1. Purchaser Name
2. Description of Material
3. Serial Number and Ref Number
4. Desired Action
5. Reason for Return
6. Process details

Any unit that was used in a process must be properly cleaned in accordance with the proper health and safety standards applicable by the owner, before it is returned to the factory.
A material Safety Data Sheet (MSDS) must be attached at the outside of the transport crate or box.
All shipments returned to the factory must be by prepaid transportation. Magnetrol ***will not accept*** collect shipments.
All replacements will be shipped Ex Works.

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