

PUSH-BUTTON, KNOB, OR LEVER ACTUATED RELAYS WITH ORIFICES NO. 83939-F SERIES, 83939-G SERIES, 83939-H SERIES

GENERAL DESCRIPTION

These relays are two-position, three-ported, 3-way which can be manually (83939-H Series) or manually / pneumatically actuated (83839-F & -G Series). They have a connection which may be used to cancel the actuating pressure. These relays will perform various operations such as:

- (a) Supply and exhaust a control line.
- (b) Divert one supply to either one or two control lines.
- (c) Select either one of two lines to supply one control line.

They have no transient position which allows Ports C, NO, and NC to all be connected—that is, before Ports C and NO are connected, Port NC will be closed, and likewise, before Ports C and NC are connected, Port NO will be closed.

These features make these relays suitable in "Sequence" functions and may be used for many applications depending on installation.

SPECIFICATIONS

Construction: 83939-F & -G have aluminum body with nickel-plated, brass top. All have nickel-plated lock nuts (stainless steel available at extra cost); Elastomer coated, fabric diaphragms and gaskets; stainless steel and aluminum valve with resilient seat.

Supply Pressure: See Figure 3.

Maximum Pressure: See Figure 3.

Mounting: Panel (See Figure 1).

Dimensions: See Figure 1.

Connections: 1 / 8" -27 NPT

Approximate Shipping Weight:
83939-F and 83939-G Series19 ozs. (.539 kg)
83939-H Series1 lb. 12 ozs. (.794 kg)

Models Available:

83939 - X X X X

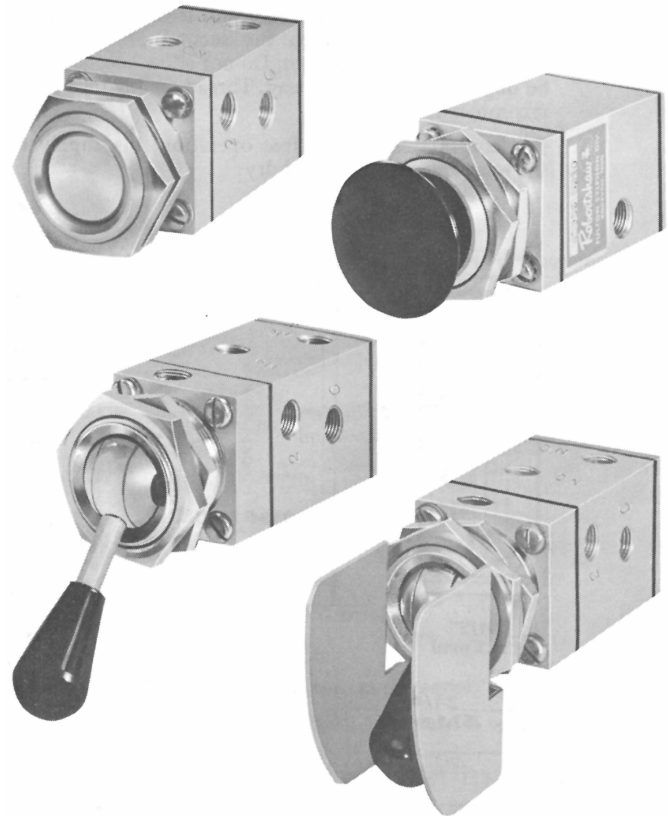
Suffix No.	Description
F	Push-Button
G	Knob
H	Lever

Desig.	Orifice Size
2	.028" Diameter
3	.014" Diameter

83939-F & G SERIES	
Desig.	Body Material
1	Aluminum
9	Stainless Steel

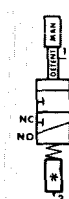
83939-H SERIES	
Desig.	Lever Guard
1	None
3	Supplied

Desig.	Orifice Position
1	Orifice Not Used
2	Orifice 1 to C
3	Orifice 1 to NC
4	Orifice 1 to NO

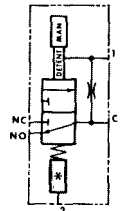


J.I.C. SYMBOLS

83939-F210, F211, F310, F311

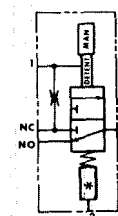


G210, G211, G310, G311
H210, H211, H212, H213
H310, H311, H312, H313

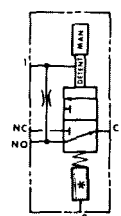


83939-F220, F221, F320, F321
G220, G221, G320, G321
H220, H221, H222, H223
H320, H321, H322, H323

83939-F230, F231, F330, F331



G230, G231, G330, G331
H230, H231, H232, H233
H330, H331, H332, H333



83939-F240, F241, F340, F341
G240, G241, G340, G341
H240, H241, H242, H243
H340, H341, H342, H343

*Air or Gas

ORDERING INFORMATION:

Specify Model Number

INSTALLATION

A. General

Tubing and fittings used to connect the relay must be free of chips, dirt, and moisture or other foreign material.

It is recommended that an "anti-seize" type thread compound be applied to the second or third male thread in moderate amount. Do not allow compound to be deposited inside the relay. Thread sealing tape is not recommended.

For continuous, trouble-free operation, the supply to the relay must be clean and dry.

B. Mounting

When installing the No. 83939-F, -G, or -H Series relay, care should be taken to prevent any foreign matter from entering the ports. Provisions should be made to prevent foreign matter from entering the ports which are left open to the atmosphere.

The relay may be installed in any position. The relay should be securely mounted by inserting through a 1-5/16" (33.4 mm) diameter hole in a panel. Panel thickness may be a maximum of 3/8" (9.53 mm) thick.

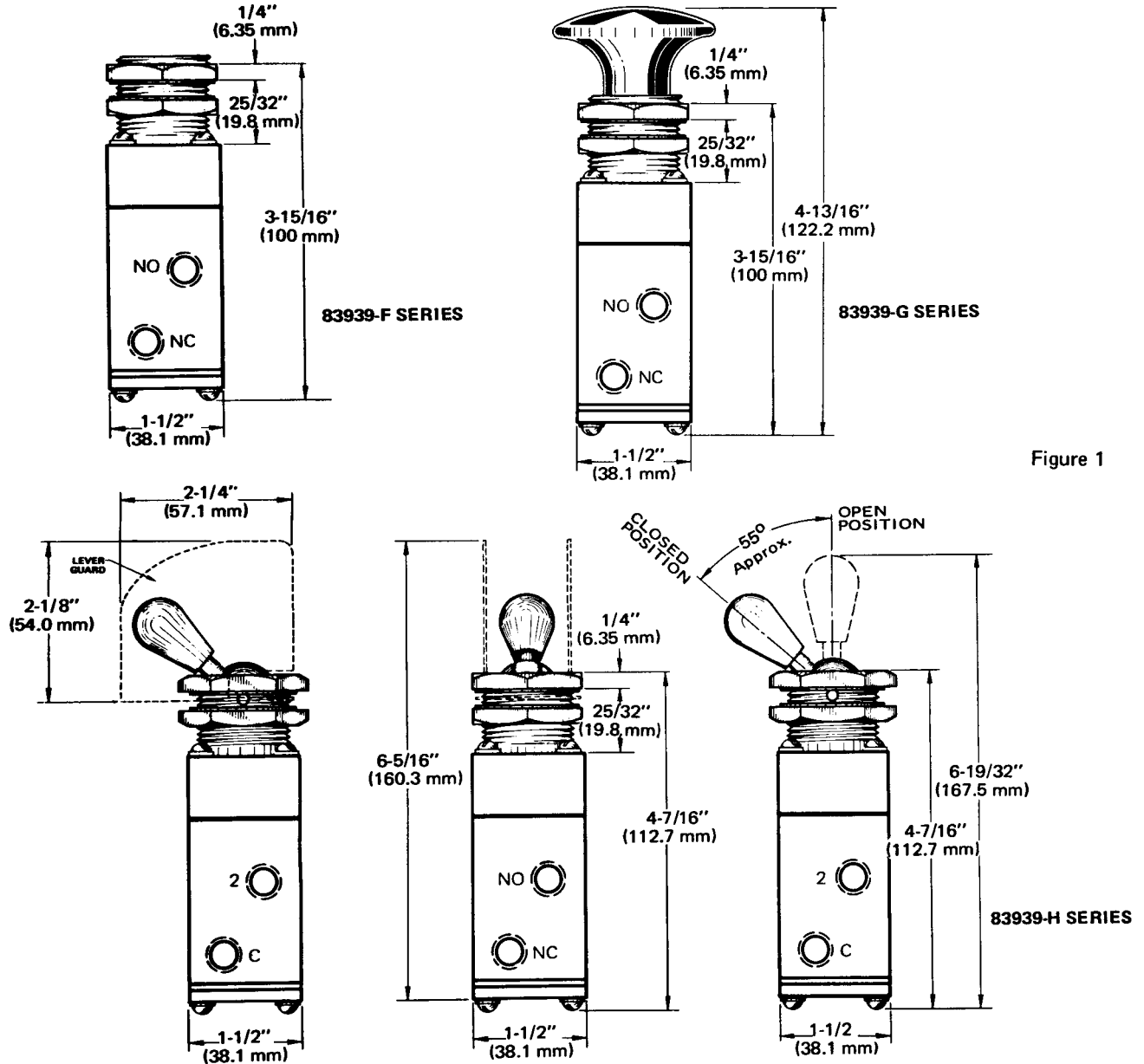


Figure 1

OPERATION

When the manual actuator is not engaged and no pressure is applied to the diaphragm through Port 1, Port C is connected through a hollow stem to Port NO while closed to Port NC.

When the manual actuator is engaged or a sufficient pressure is applied to the diaphragm through Port 1, the hollow stem moves down, closing Port NO to Port C. As the hollow stem moves

farther, it forces the lower poppet down, opening Port NC to Port C. NOTE: On the 83939-H Series, the manual actuator must be engaged.

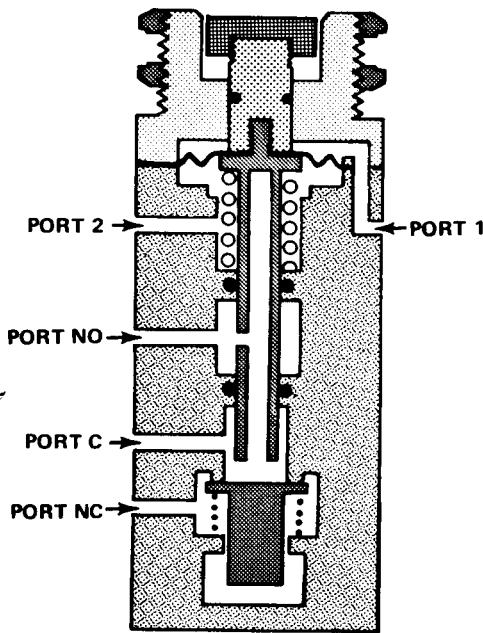
If it is desirable to have the relay remain open when the manual actuator is released, pressure should be applied to the diaphragm through Port 1.

If an equalizing pressure is applied to Port 2, it will nullify the effects of the pressure at Port 1 and allow the hollow stem to return to its original position. This allows the lower poppet to return and Port C is now connected to Port NO while closed to Port NC. Also, removal of the pressure at Port 1 or disengaging the manual actuator will create the same action.

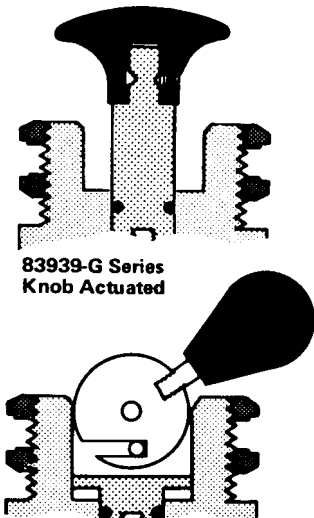
If an equalizing Pressure is applied through Port 2 prior to applying pressure through Port 1, the relay will not respond to pressure through Port 1 until the equalizing pressure through Port 2 is lost.

NOTE:

1. For orifice position, see "Models Available" on page one.
2. See Figure 4 for correct arrangement of the bottom diaphragm and gasket.



83939-F Series
Recessed Push-button Actuated



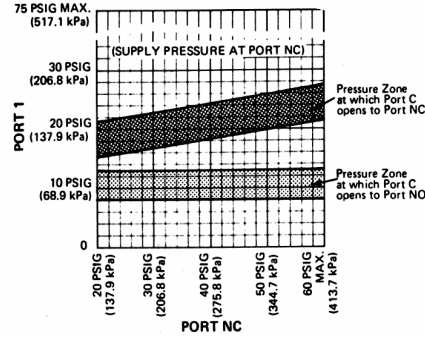
83939-G Series
Knob Actuated

83939-H Series
Lever Actuated

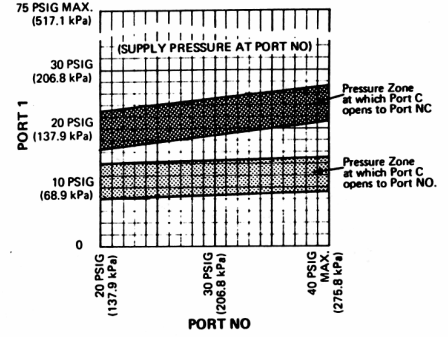
Figure 2

83939-F and 83939-G SERIES CAUTION: Do not exceed maximum pressures.

NOTE: Graphs A1 and B1 indicate Actuating Pressures (PORT 1) required to operate valve at various supply pressures

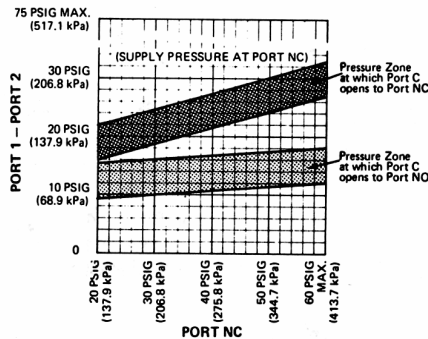


GRAPH A1

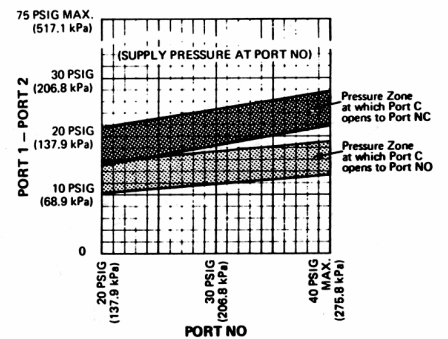


GRAPH B1

NOTE: Graphs C1 and D1 indicate Equalizing Pressure (PORT 2) required to cancel the Actuating Pressures (PORT 1) at various Supply Pressures.



GRAPH C1

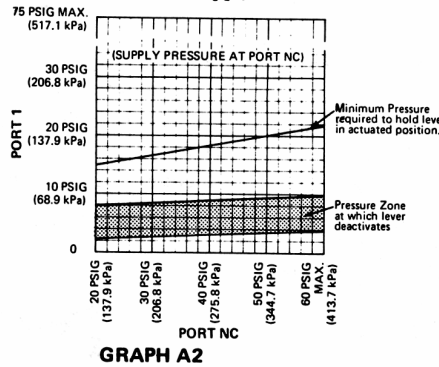


GRAPH D1

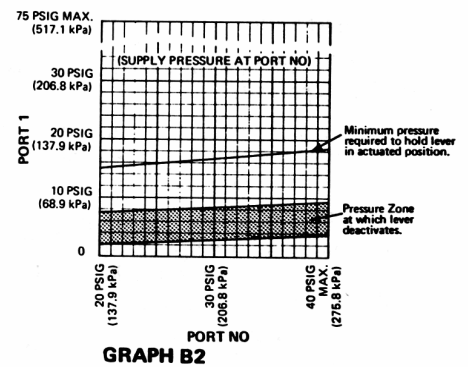
Figure 3A

83939-H SERIES CAUTION: Do not exceed maximum pressures.

NOTE: Graphs A2 and B2 indicate Actuating Pressures (PORT 1) required to operate valve at various Supply Pressures.

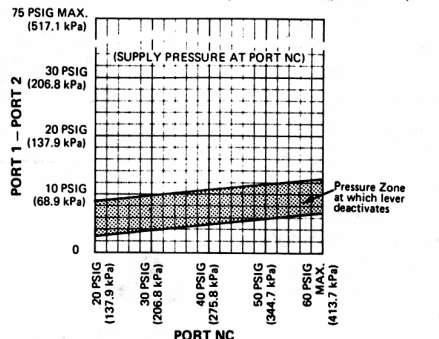


GRAPH A2

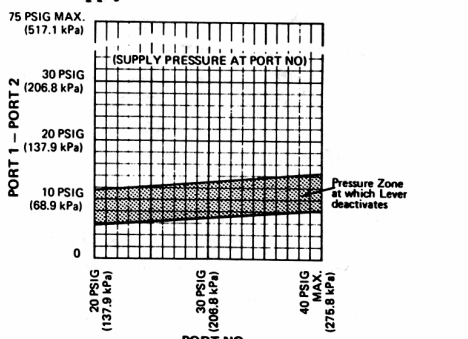


GRAPH B2

NOTE: Graphs C2 and D2 indicate Equalizing Pressure (PORT 2) required to cancel the Actuating Pressures (PORT 1) at various Supply Pressures.



GRAPH C2



GRAPH D2

Figure 3B

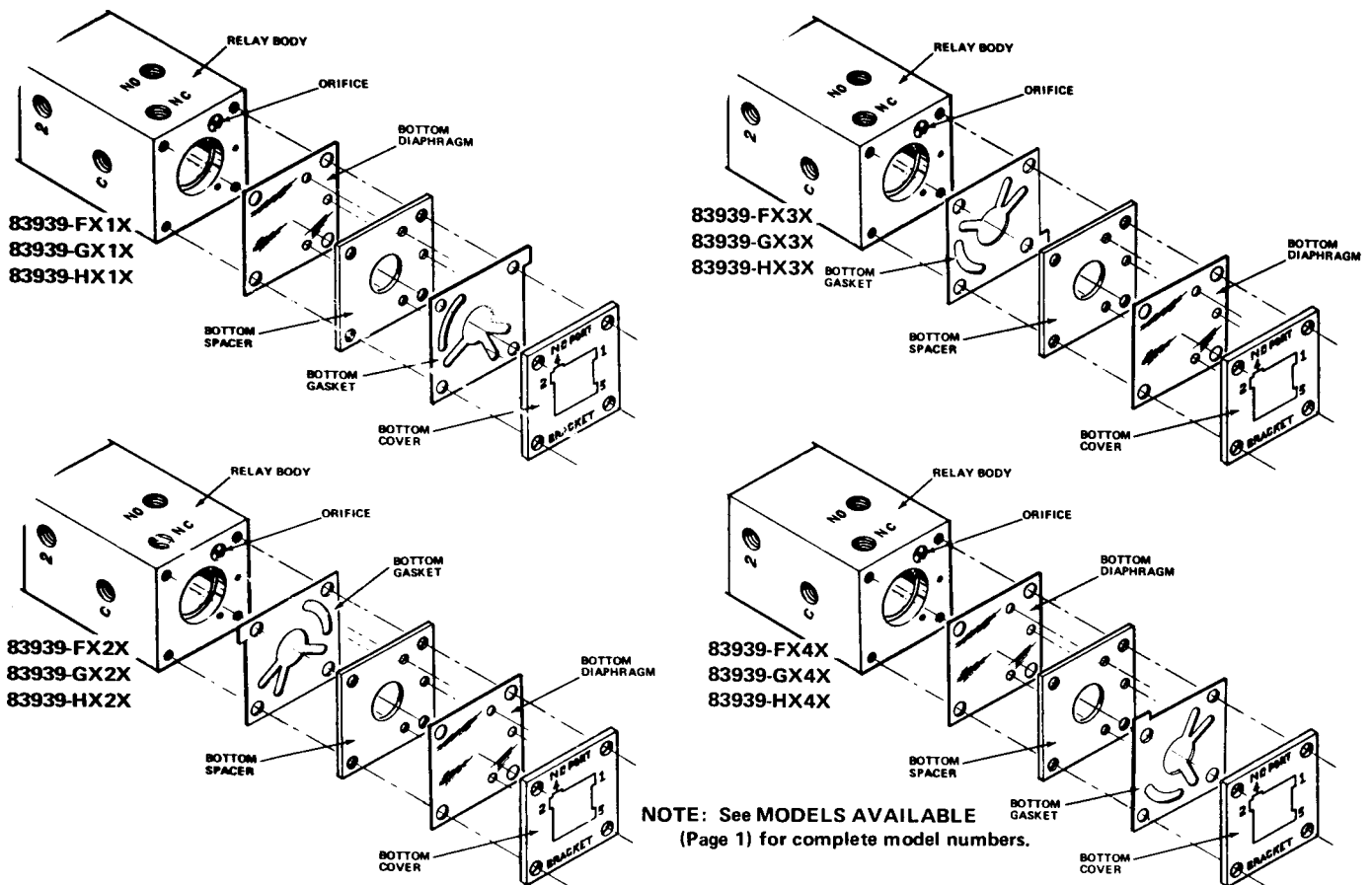


Figure 4

MAINTENANCE

WARNING: Observe CAUTION when disassembling-spring load forces present.

- A. If excessive leakage occurs at valve seats, remove bottom cover. Clean poppet and seat with a clean, dry cloth. (See Figure 5.)
- B. If relay does not function properly due to contamination by foreign matter, disassemble and clean all metal parts with non-flammable solvent and dry thoroughly.
- C. The orifice is removable by applying pressurized air to Port 1.

WARNING: The pressure should be initially applied at 3 psi (20.7 kPa) and slowly increased to a maximum of 30 psi (206.8 kPa). Care must be exercised to prevent the orifice from being ejected in a manner which would be injurious to personnel. Clean with a small diameter wire and pressurized air. In removal or replacement of orifice, care must be exercised not to nick or scratch sealing surfaces. "O"-ring must be inserted into relay body before orifice.

- D. After reassembly, check for external leakage. Retighten assembly screws as necessary. Gasket cement should not be used to seal leaks due to the possibility of plugging small passages and orifices and damaging the operational characteristics of the diaphragm.

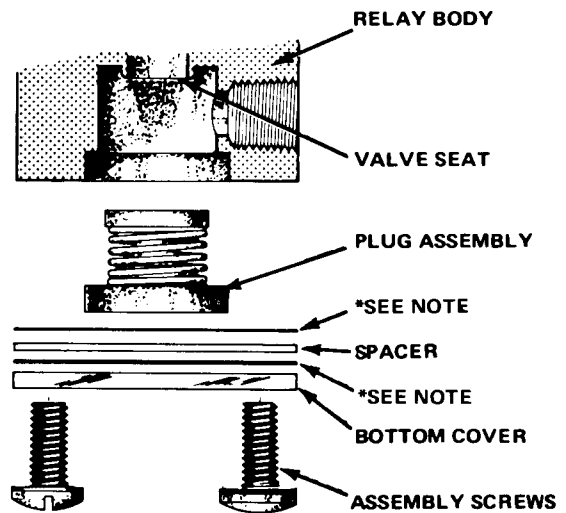
CAUTION:

If cleaning is required, do not subject "O"-rings, valve

poppets diaphragm or gasket to cleaning fluid, acetone, or any halogenated hydrocarbons such as vapor degrease liquids, etc. Clean only with a soft, dry cloth.

Upon reassembly, all "O"-rings are to be lubricated with a silicone-type lubricant.

Do not permit lubricant to get on poppet or valve seats.

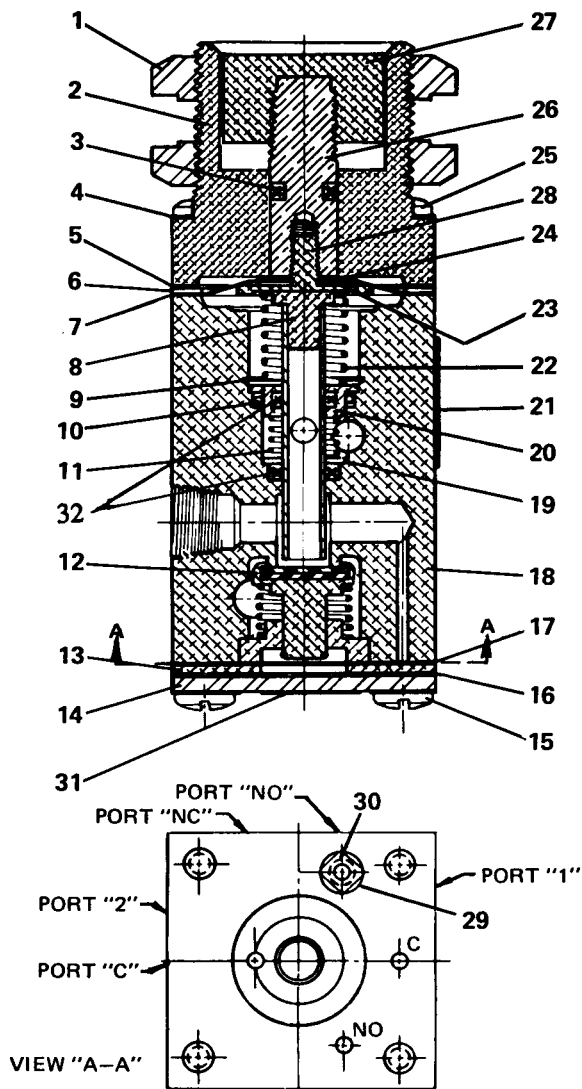


***NOTE:** See Figure 4 for correct positioning of the bottom diaphragm and gasket.

Figure 5

Parts List - 83939-F Series

Det. No.	No Req'd	Description	Part No.	
			Alum.	S.S.
1	2	Nut	25716-A2	
2	1	Cap	25708-B1	25708-B2
3	3	Quad Ring	36243-N0010	
4	8	Lockwasher	36600-L0609	
5	1	Gasket	33665-B1	
6	1	Spacer	33430-A2	
7	1	Diaphragm	24498-A5	
8	1	Head & Stem Assy	85013-C1	85013-C2
9	1	Retaining Ring	36605-A2	
10	1	"O"-Ring	36240-N0013	
11	1	Spring	33668-B1	
12	1	Plug Assembly	84895-A1	84895-A2
13	1	Spacer	33430-B2	
14	1	Cover	33666-A1	
15	4	Screw	33713-G1109	
16	1	See Tabulation	See Tabulation	
17	1	See Tabulation	See Tabulation	
18	1	Relay Body	31857-G1	31858-G2
19	2	Washer	33671-A2	
20	1	"O"-Ring Carrier	33667-B1	33667-B2
21	1	Nameplate	30036-G2	
22	1	Spring	27953-A1	
23	1	Washer	25711-A1	
24	1	Washer	25718-A1	
25	4	Screw	33713-H1609	
26	1	Stem	33433-B1	
27	1	Push Button	33434-A1	33434-A2
28	1	Stem Head	24605-E2	
29	1	Orifice	See Tabulation	
31	1	Decal	35173-A1	
32	2	"O"-Ring	36240-C0010	



83939-F X X X

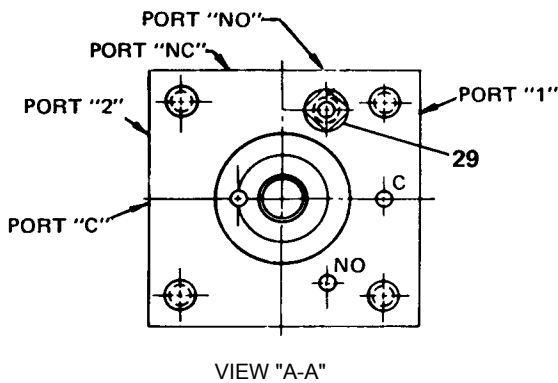
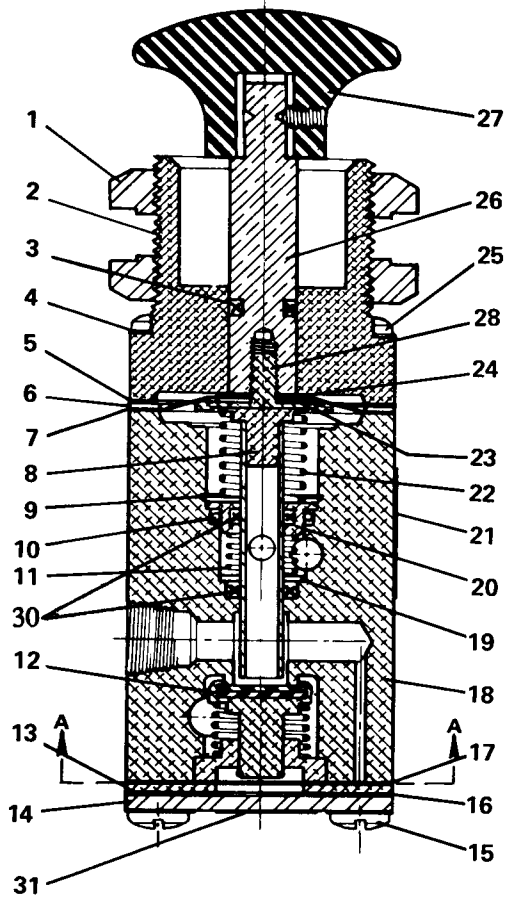
Det.29 Orifice		
Specify	Size	Part No.
2	.028"	31311-F3
3	.014"	31311-F4

Body	
Specify	Material
1	Aluminum
9	S. Steel

Specify	Orifice Position	Det. 16*	Det. 17*
1	Orifice Not Used	35868-C1 Gasket	24498-B2 Diaphragm
2	Orifice 1 to C	24498-B2 Diaphragm	35868-C1 Gasket
3	Orifice 1 to NC	24498-B2 Diaphragm	35868-C1 Gasket
4	Orifice 1 to NO	35868-C1 Gasket	24498-B2 Diaphragm

* Details 13, 14, 16, 17 and 18 should be assembled as shown in Fig. 4.

NOTE: For complete kit containing all "O"-Rings, gaskets, diaphragms and poppet to service one unit, order Repair Kit No. 82665-B1.



Parts List - 83939-G Series				
Det. No.	No Req'd	Description	Part No.	
			Alum.	S.S.
1	2	Nut	25716-A2	
2	1	Cap	25708-B1	25708-B2
3	3	Quad Ring	36243-N0010	
4	8	Lockwasher	36600-L0609	
5	1	Gasket	33665-B1	
6	1	Spacer	33430-A2	
7	1	Diaphragm	24498-A5	
8	1	Head & Stem Assy	85103-C1	85103-C2
9	1	Retaining Ring	36605-A2	
10	1	"O"-Ring	36240-N0013	
11	1	Spring	33668-B1	
12	1	Plug Assembly	84895-A1	84895-A2
13	1	Spacer	33430-B2	
14	1	Cover	33666-A2	
15	4	Screw	33713-G1109	
16	1	See Tabulation	See Tabulation	
17	1	See Tabulation	See Tabulation	
18	1	Relay Body	31857-G1	31857-G2
19	2	Washer	33671-A2	
20	1	"O"-Ring Carrier	33667-B1	33667-B2
21	1	Name Plate	30036-G2	
22	1	Spring	27953-A1	
23	1	Washer	25711-A1	
24	1	Washer	25718-A1	
25	4	Screw	33713-H1609	
26	1	Stem	35030-B1	
27	1	Knob	27509-A1	
28	1	Stem Head	34605-E2	
29	1	Orifice	See Tabulation	
30	2	"O"-Ring	36240-C0010	
31	1	Decal	35173-A1	

83939-G X X X

Det. 29 Orifice		
Specify	Size	Part No.
2	.028"	31311-F3
3	.014"	31311-F4

Body	
Specify	Material
1	Aluminum
9	S. Steel

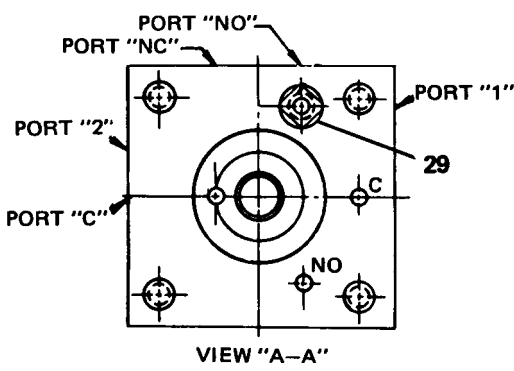
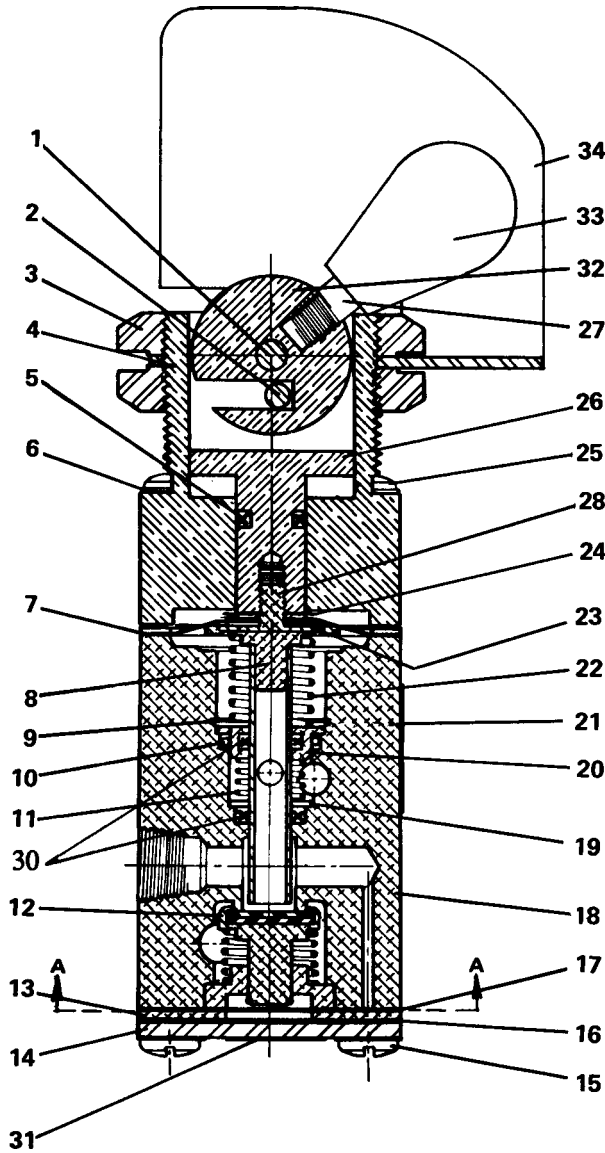
Specify	Orifice Position	Det. 16*	Det. 17*
1	Orifice Not Used	35868-C1 Gasket	24498-B2 Diaphragm
2	Orifice 1 to C	24498-B2 Diaphragm	35868-C1 Gasket
3	Orifice 1 to NC	24498-B2 Diaphragm	35868-C1 Gasket
4	Orifice 1 to NO	35868-C1 Gasket	24498-B2 Diaphragm

* Details 13, 14, 16, 17 and 18 should be assembled as shown in Fig. 4.

NOTE: For complete kit containing all "O"-Rings, gaskets, diaphragms and poppet to service one unit, order Repair Kit No. 82665-B1.

Parts List - 83939-H Series

Det. No.	No Req'd	Description	Part No.
1	1	Pin	25714-A1
2	1	Pin	25713-A1
3	2	Nut	25716-A2
4	1	Cap	25708-C1
5	3	Quad Ring	36243-N0010
6	8	Lockwasher	36600-L0609
7	1	Diaphragm	24498-A5
8	1	Head & Stem Assembly	85013-C1
9	1	Retaining Ring	36605-A2
10	1	"O"-Ring	36240-N0013
11	1	Spring	33668-B1
12	1	Plug Assembly	84895-A1
13	1	Spacer	33430-B2
14	1	Cover	33666-A2
15	4	Screw	33713-G1109
16	1	See Tabulation	See Tabulation
17	1	See Tabulation	See Tabulation
18	1	Relay Body	31857-G1
19	1	Washer	33671-A2
20	1	"O"-Ring Carrier	33667-B1
21	1	Name Plate	30036-G2
22	1	Spring	27953-A1
23	1	Washer	25711-A1
24	1	Washer	25718-A1
25	4	Screw	33713-H2109
26	1	Plunger	25707-A1
27	1	Stem	See Tabulation
28	1	Stem Head	24605-E2
29	1	Orifice	See Tabulation
30	2	"O"-Ring	36240-C0010
31	1	Decal	35173-A1
32	1	Cam	25706-A1
33	1	Knob	25715-A1
34	1	Lever Guard	See Tabulation



83939-H X X X

Det.29 Orifice		
Specify	Size	Part No.
2	.028"	31311F3
3	.014"	31311F4

Specify	Part Numbers		
	Lever Guard	Det.27, Stem	Det.34, Guard
1	None	25712-A1	-
3	Supplied	25712-B1	31734-A1

Specify	Orifice Position	Det. 16*	Det. 17*
1	Orifice Not Used	35868-C1 Gasket	24498-B2 Diaphragm
2	Orifice 1 to C	24498-B2 Diaphragm	35868-C1 Gasket
3	Orifice 1 to NC	24498-B2 Diaphragm	35868-C1 Gasket
4	Orifice 1 to NO	35868-C1 Gasket	24498-B2 Diaphragm

NOTE: For complete kit containing all "O"-Rings, gaskets, diaphragms and poppet to service one unit, order Repair Kit 82665-B1.

* Details 13,14, 16,17 and 18 should be assembled as shown in Fig. 4.

Robertshaw

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