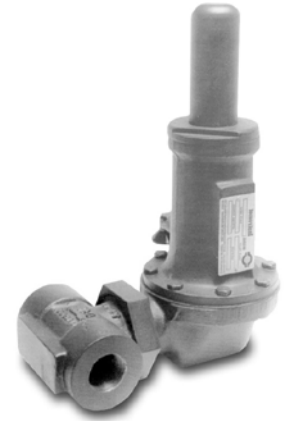


040 Series

Field Regulator
Inlet Pressure up to 82 bar
Nominal Diameter 1"



Commissioning Instructions

General Arrangements

Parts Lists

Maintenance Instructions

For: 041-C & 040-S Active regulators

041-CM & 040-SM Monitor regulators

040: Commissioning Instructions

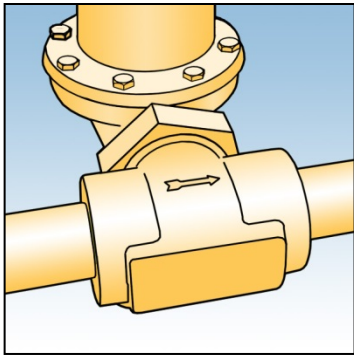


Fig. 1

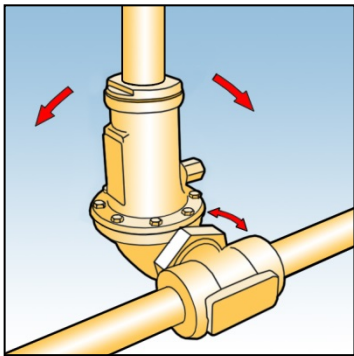


Fig. 2

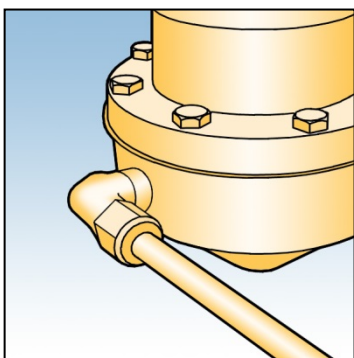


Fig. 3

FITTING REGULATOR INTO PIPEWORK

1. The unit should not be installed in a corrosive environment.
2. The ambient temperature (surface temperature) should be within the limits stated on the regulator catalogue.
3. Check the maximum allowable pressure on the regulator nameplate against the installation specification.
4. Remove the protection plugs from inlet and outlet ports.
5. Ensure that installation pipework, valve inlet and valve outlet are thoroughly clean. They must be free from moisture, pipe sealant and other debris.
6. The direction of gas flow must be the same as the arrows on the regulator body. See Fig. 1.
7. Install the regulator into pipework using jointing compound approved to national standards. Apply only to the male thread, and not to the female thread of the valve connection.
8. The regulator can be installed in either horizontal or vertical plane with the spring housing rotated through 360°, via the universal nut to the required working position. See Fig. 2. The inlet gas should be filtered to between 50 and 200 micron. The installation should be tested for leaks before bringing the regulator into service.
9. On the CM or SM (monitor) versions only the impulse (or control) line should be connected to the 1/4" NPT tapping, via a suitably sized compression fitting, in the lower diaphragm case. See Fig. 3. This line should be kept clean, unobstructed and protected against breakage. Ensure the downstream or remote tapping is sited to give a true pressure signal; avoid positioning it too close to other valves etc., or wherever there may be a high or low pressure pocket.
10. The regulator may be used at a temperature between -20°C and +50°C. For temperature beyond these limits contact Elster-Instromet UK Sales office or Sales Representative.

SETTING THE REGULATOR

11. To bring the regulator into service, remove top cap, loosen lock nut, turn adjusting screw anticlockwise (-) enough to release pressure on loading spring. See Fig. 4.
12. Against a closed outlet valve, open the inlet valve slowly. There will be a slight rise in outlet pressure until the regulator locks up.
13. Slowly wind the regulator adjusting screw clockwise (+) until the desired outlet pressure set point is reached.
14. Open the outlet valve and trim the regulator outlet pressure if necessary once normal flow rates have been achieved.
15. Tighten the lock nut and replace the top cap.
16. Commission downstream appliances.

040: Commissioning Instructions

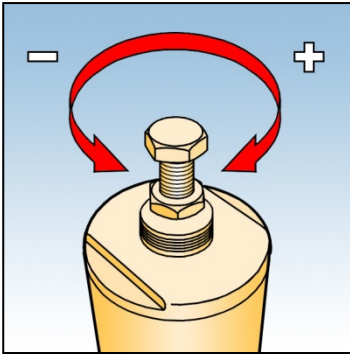


Fig. 4

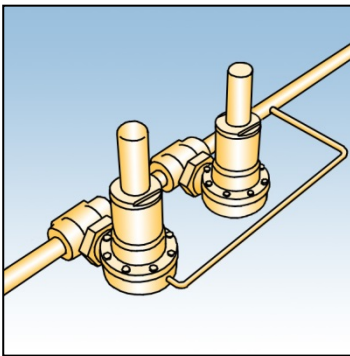


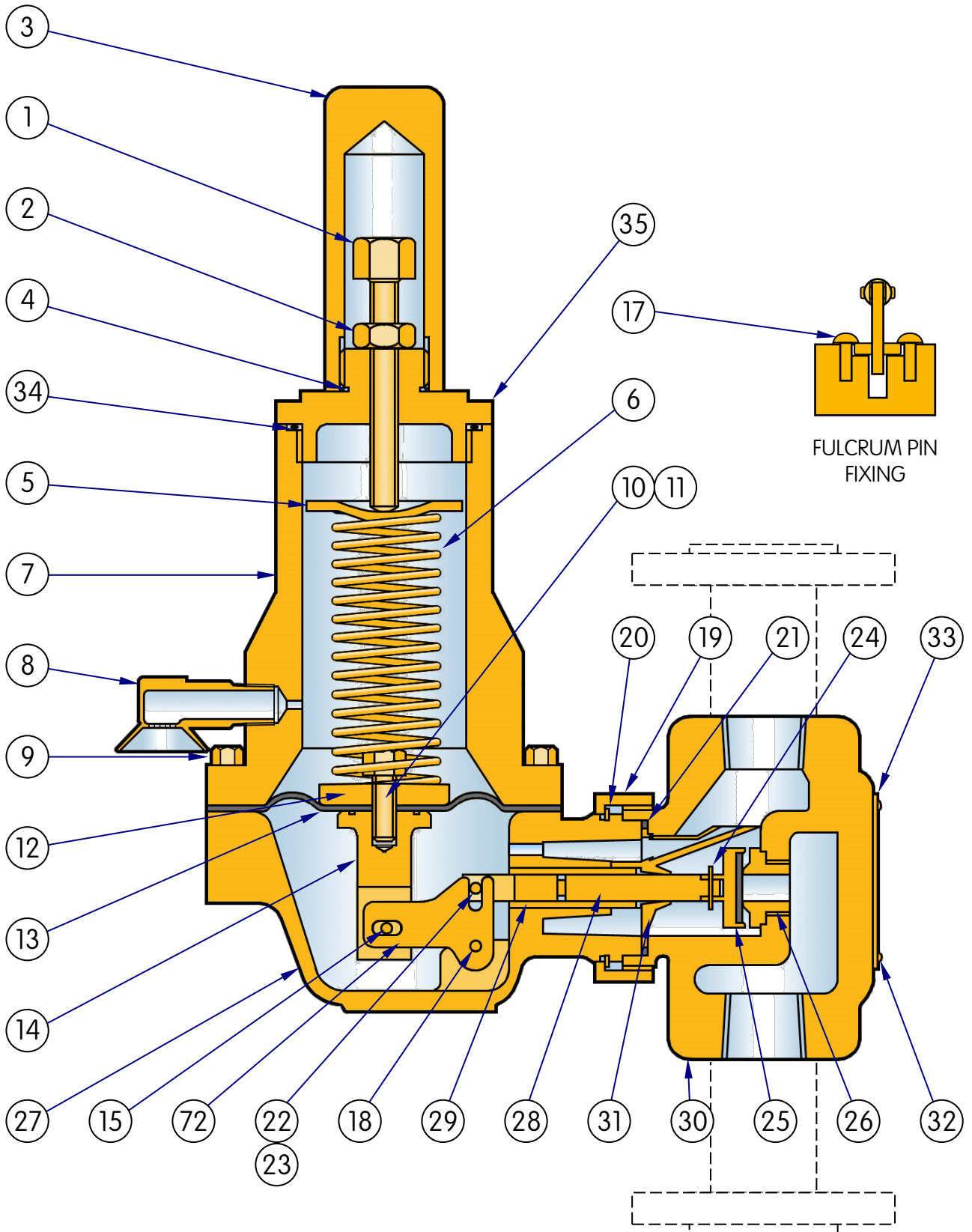
Fig. 5

SETTING A MONITOR / ACTIVE SYSTEM

1. Close inlet and outlet valves.
2. On the monitor regulator turn the adjusting screw clockwise (+) to fully compress loading spring.
3. On active regulator turn adjusting screw anticlockwise (-) to fully release pressure on loading spring.
4. Slowly open the inlet valve.
5. Turn the adjusting screw clockwise of the monitor regulator clockwise (+) until the desired monitor outlet pressure set point is reached, typically between 5% and 10% above active outlet pressure set point., dependant upon operating conditions.
6. Slowly open the outlet valve and, if necessary, trim the outlet pressure once normal flow rates have been achieved.
7. Slowly unwind (-) the active regulator adjusting screw until it takes over control, and set the desired outlet pressure.
8. The operation of the monitor regulator can always be checked by screwing down the adjusting screw of the active regulator until the monitor takes control. Always ensure that the active regulator is sufficiently adjusted so as not to interfere with the monitor control.
9. Ensure that there are no leaks and that all connections are tight.

040: General Arrangement

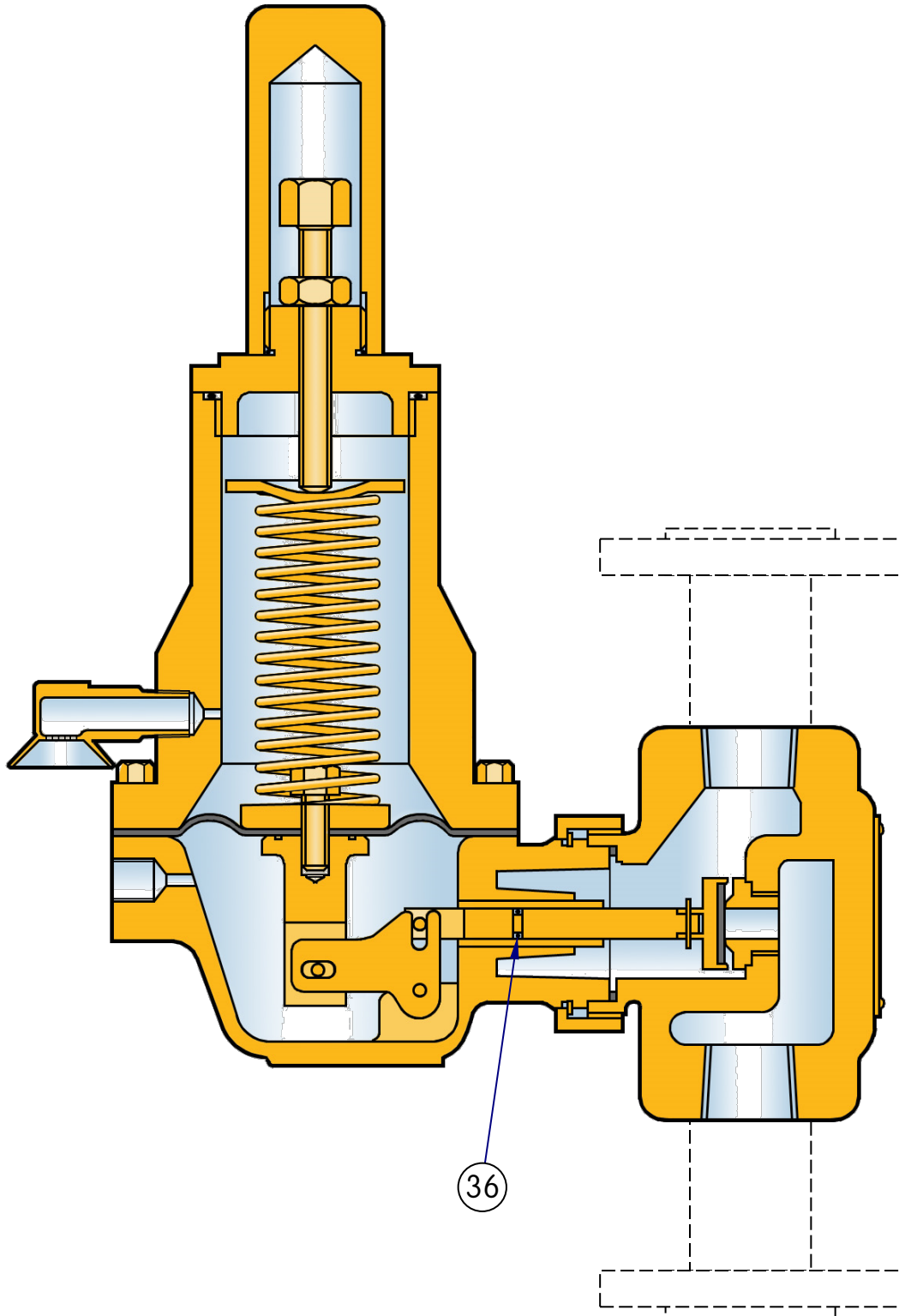
041-C and 040-S Direct Acting Regulator. Fig 6



040: General Arrangement

041-SM and 040-SM Monitor Acting Regulator. Fig 7

Un-numbered parts are as per Fig. 6



040: Parts List

ITEM	DESCRIPTION	PART NUMBER	USED ON				No. Off
			041-C	041-CM	040-S	040SM	
1	SPRING ADJUSTING SCREW	NFC3001/47	✓	✓	✓	✓	1
2	LOCK NUT	NFC3001/48	✓	✓	✓	✓	1
3	TOP CAP	NFC3001/22	✓	✓	✓	✓	1
4	'O' RING SEAL	BS/USA/025	✓	✓	✓	✓	* 1
5	TOP SPRING HOLDER	NFC3001/49	✓	✓	✓	✓	1
6	LOADING SPRING	SEE TABLE	✓	✓	✓	✓	1
7	TOP COVER (IRON)	XXXXXXXXXX	✓	✓	✗	✗	1
	TOP COVER (STEEL)	NFC3003/24S	✗	✗	✓	✓	1
8	BUG VENT	NFC3001/46	✓	✓	✓	✓	1
9	HEX HEAD BOLT - TOP COVER	NFC1001/07	✓	✓	✓	✓	8
10	HEX HEAD BOLT - DIAPHRAGM STEM	NFC3001/51	✓	✓	✓	✓	1
11	STAT-O-SEAL	NFC3001/29	✓	✓	✓	✓	* 1
12	DIAPHRAGM PLATE	NFC3004/01	✓	✓	✓	✓	1
13	DIAPHRAGM	NFC3001/52	✓	✓	✓	✓	* 1
14	DIAPHRAGM STEM	NFC3001/19	✓	✓	✓	✓	1
15	SELOC PIN	NFC3001/27	✓	✓	✓	✓	1
16	LEVER ARM	NFC3001/21P	✓	✓	✓	✓	1
17	SCREW - FULCRUM PIN	NFC3001/17	✓	✓	✓	✓	2
18	FULCRUM PIN	NFC3001/53	✓	✓	✓	✓	1
19	COUPLING NUT	NFC3001/15	✓	✓	✓	✓	1
20	CIRCLIP	NFC3001/16	✓	✓	✓	✓	1
21	TETRASEAL	NFC3001/54	✓	✓	✓	✓	* 1
22	OUTER SELOC PIN	NFC3001/55	✓	✓	✓	✓	1
23	INNER SELOC PIN	NFC3001/56	✓	✓	✓	✓	1
24	'R' CLIP	NFC3001/57	✓	✓	✓	✓	1
25	VALVE - STAINLESS STEEL, POLYURETHANE	NFC3002/40	✓	✓	✓	✓	* 1
26	ORIFICE	SEE TABLE	✓	✓	✓	✓	1
27	DIAPHRAGM CASE (IRON) - ACTIVE	NFC3001/25	✓	✗	✗	✗	1
	DIAPHRAGM CASE (STEEL) - ACTIVE	NFC3001/25S/C	✗	✗	✓	✗	1
	DIAPHRAGM CASE (IRON) - MONITOR	NFC3001/32	✗	✓	✗	✗	1
	DIAPHRAGM CASE (STEEL) - MONITOR	NFC3001/32S/C	✗	✗	✗	✓	1
28	VALVE STEM (BRASS)	NFC3001/64	✓	✓	✓	✓	1
	VALVE STEM (STAINLESS STEEL)	NFC3001/83	OPTION	OPTION	OPTION	OPTION	1
29	VALVE STEM BUSH (BRASS)	NFC3001/28	✓	✓	✓	✓	1
	VALVE STEM BUSH (STAINLESS STEEL)	NFC3001/82	OPTION	OPTION	OPTION	OPTION	1

040: Parts List

ITEM	DESCRIPTION	PART NUMBER	USED ON				No. Off
			041-C	041-CM	040-S	040SM	
30	BODY (IRON) SCREWED Rc1	NFC3001/66	OPTION	OPTION	✘	✘	1
	BODY (IRON) SCREWED 1" NPT	NFC3001/26	OPTION	OPTION	✘	✘	1
	BODY (STEEL) SCREWED Rc1	NFC3001/91	✘	✘	OPTION	OPTION	1
	BODY (STEEL) SCREWED 1" NPT	NFC3001/37	✘	✘	OPTION	OPTION	1
	BODY FLANGED ANSI150	MMN02515000040B	OPTION	OPTION	OPTION	OPTION	1
	BODY FLANGED ANSI300	MMN02530000040B	OPTION	OPTION	OPTION	OPTION	1
	BODY FLANGED ANSI600	MMN02560000040B	OPTION	OPTION	OPTION	OPTION	1
31	IMPULSE TUBE	NFC3001/65	✓	✓	✓	✓	1
32	NAMEPLATE	NFC3001/18	✓	✓	✓	✓	1
33	HAMMERDRIVE RIVITS	NFC3001/23	✓	✓	✓	✓	2
34	'O'RING SEAL	BS/USA/143	✓	✓	✓	✓	* 1
35	TOP BUSH	NFC3003/24S	✓	✓	✓	✓	1
36	'O'RING SEAL	BS/USA/010V	✘	✓	✘	✓	* 1

SPARES KITS

Spares kit contents are marked * on parts list

MODEL	SPARES KIT CODE
041-C & 040-S	RPP9
041CM & 040-SM	RPP10

040: Loading Springs and Orifices

Loading Springs

All springs are colour coded for ease of identification.

Part Number	Colour Code	Bar	PSIG
240-025-021-004	Yellow	0.2 – 0.83	3 - 12
240-025-021-014	Silver	0.69 – 1.72	10 – 25
240-025-021-024	White	1.38 – 4.14	20 – 60
240-025-021-034	Light Brown	3.45 – 8.6	50 – 125
240-025-021-044	Grey	6.90 – 13.79	100 – 200
*240-025-021-054	Dark Green	0.69 – 6.90	10 - 100

* General purpose spring.

Orifices

SIZE		Part Number	
ins	mm	Brass	Stainless Steel
1/8"	3.18	MFC3001/58	MFC3002/58
3/16"	4.76	MFC3001/59	MFC3002/59
1/4"	6.35	MFC3001/60	MFC3002/60
5/16"	7.94	MFC3001/61	MFC3002/61
3/8"	9.53	MFC3001/62	MFC3002/62
1/2"	12.70	MFC3001/63	MFC3002/63

040: Maintenance Instructions

Maintenance Instructions for:

041-C & 040-S Active regulators and
041-CM & 040-SM Monitor regulators

Dismantling Procedure:

1. Ensure the regulator is isolated and that all pipework has been fully vented.
2. Disconnect the impulse pipework - CM Monitor version only. The 041-C Active Regulator is internally impulsed via an impulse tube (31).
3. Remove the top cap (3) release the locknut (2) and wind the adjusting screw (1) anti-clockwise to reduce the loading spring tension.
4. Loosen and undo the coupling nut (19) and remove the diaphragm case (27) assembly from the regulator body (30). (The body (30) stays in the pipeline).
5. Check the orifice (26) in the body to ensure that the sealing face is not marked. If the orifice requires replacing unscrew from the body using a long reach 1" AF socket.
6. Unscrew and remove the top bush (35), together with "O" Ring seal (34), spring adjusting screw (1) and locknut (2).
7. Withdraw top spring holder (5) and loading spring (8).
8. Unscrew eight hexagon headed bolts (9) and remove the top cover (7) - noting vent position relative to case.
9. Unscrew the retaining bolt (10) and remove with statoseal (11).
10. Lift off diaphragm plate (12) and diaphragm (13).
11. To remove valve (25) withdraw 'R' clip (24) and slide valve from valve stem (28).

Note: Active regulators 041-C and 040-S should not require any further dismantling.

For monitor regulators 041-CM and 040-SM:

12. Remove fulcrum pin screws (17).
13. Lift fulcrum pin (18) from slot in diaphragm case (27) and slide out valve stem (28), together with lever arm (16) and diaphragm stem (14).
14. Remove 'O' ring seal (36).

040: Maintenance Instructions

Rebuilding Procedure:

The use of Molykote 111 "O" ring lubricant is recommended during the rebuild- unless for use with oxygen when no lubricant should be used.

For monitor regulators 041-CM and 040-SM:

1. Replace the "O" Ring (36) on valve stem (28).
2. Carefully reinsert valve stem (28) so as not to scratch the bore of the bush (29) as this may prevent the "O" ring from sealing.
3. Orientate lever arm (16) so that fulcrum pin (18) will fit in slot in diaphragm case (27).
4. Secure with screws (17).

For all units:

5. Onto the hex head bolt (10) assembly the statoseal (11),top diaphragm plate (12) and diaphragm (13), and screw to diaphragm stem (14). Ensure that holes around edge of diaphragm (13) align with similar holes in diaphragm case (27) before tightening. Do not over tightening.
6. Replace the top cover (7) - noting vent position relative to case, and secure it in place with eight bolts (9). Do not over tighten as damage could be caused to the diaphragm.
7. Slide valve (25) over end of valve stem (28) and replace 'R' clip (24).
8. If orifice (26) has been removed, a sealing agent such as Loctite Hydraulic Seal 542 should be applied to the orifice threads when refitting to body (30).
9. Replace Tetraseal (21) having applied silicone grease.
10. Refit lower case assembly (27) to regulator body (30) via coupling nut (19), taking care not to damage impulse tube (31) when aligning with slot in regulator body (30).
11. Place spring (6) and top spring holder (5) in top cover (7) sitting it squarely on diaphragm plate (12).
12. Having replaced 'O' ring seal (34) onto top bush (35), screw bush back into top cover (7) and tighten.
13. Ensure spring adjusting screw (1) is not in contact with top spring holder (5) until you are ready to re-commission the regulator, this will ensure that lock up occurs when the inlet gas is applied.
14. Finally grease and replace the "O" ring (4). Replace the cap (3) after commissioning.

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