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**WARNING**

Conoflow's products are designed and manufactured using materials and workmanship required to meet all applicable industry standards. The use of these products should be confined to services specified and/or recommended in the Conoflow catalogs, instructions or by Conoflow application engineers (i.e. exceeding pressure/temperature rating or using device for services other than those specified).

To avoid personal injury or equipment damage due to misuse or misapplication of a product, it is necessary to select the proper materials of construction and pressure/temperature ratings which are consistent with performance requirements.

## INSTRUCTION AND MAINTENANCE MANUAL GB2700 - GB2800 Auxiliary Manual Actuators

### PRINCIPLE OF OPERATION

- 1) Drawing PL6-3 (6" (152 mm) Diameter Handwheel)  
GB2700 (1500 lbs. Stem thrust, small handwheel)
- 2) Drawing PL6-4 (18" (457 mm) Diameter Handwheel)  
GB2800 (4000 lbs. Stem thrust, large handwheel)
- 3) Drawing A6-15 Dimensional Data

- NOTES: 1. Up to 4" (102 mm) Stroke.  
2. Cannot be used on GB50 or GB55 Series.

The Auxiliary Manual Actuator permits manual operation during start-up or emergency periods. The Manual Actuator has a clutch mechanism to engage the handwheel during emergency conditions and to disengage the handwheel for normal (automatic) operation.

**Note: (Manual Actuator cannot be back-driven by the actuator and care must be taken to assure that unit is disengaged before operating automatically).**

### MANUAL OPERATION

For manual operation, the SUPPLY AIR MUST FIRST BE TURNED OFF AND THE EQUALIZING VALVE OPENED (see Dwg. A50-48 for piping schematic). This procedure is necessary to equalize the pressure across the piston of the cylinder actuator. The clutch (9) may now be **pushed into** the housing (23) and the handwheel (25) rotated to engage and move the rack (22) as required.

To return the cylinder actuator to normal (automatic) operation, the clutch (9) **must be pulled out** of the housing (23) to the index point so that the handwheel (25) is disengaged from the rack (22). With the clutch (9) disengaged, close the equalizing valve and turn on full supply air. The unit is now ready for normal automatic operation.

### MAINTENANCE

The Manual Actuator has a grease fitting (18) in the housing (23) to permit lubrication of the gears. Greasing this fitting approximately once a month will be sufficient to lubricate the gears.

A lubricant having penetration value of 430-470 and a melting point of 205 degrees F. is recommended. Typical lubricants meeting this requirement are:

Type	Manufacturer
#0 Extra Light	Continental Oil
Semi-Fluid Oil "E"	Gulf Company
Bearing Grease #00	Sinclair Company
Gargoyl Grease	Socony Company
#480	Sun Oil Company
Grease #608	

## PRINCIPLE OF OPERATION

The handwheel (25) is fixed to worm (5), which upon rotation of the handwheel (25), turns worm gear (16). The worm gear (16) is keyed to worm gear insert (34). Worm gear insert (34) is coupled to the shaft (33) by means of pin (37). The shaft (33) extends through (not attached to) the spur gear (14), and is attached to clutch (9) by means of a running key (10). The running key (10) allows the clutch (9) to be in either an open or engaged position, determined by two circular "V" Grooves in the clutch (9) near the indexing ball (11). Pushing the clutch (9) into the housing (23) to the index point engages the tongues of the clutch (9) with the tongues of the spur gear (14). Spur gear (14) teeth are meshed with the teeth of the rack (22). The rack stem of the unit being actuated. Engagement of the clutch (9), allows rotation of the handwheel (25) to move the rack (22) up or down as required.

When the clutch (9) is pulled out of the housing (23), the tongues of the clutch (9) are disengaged from the spur gear (14) allowing the spur gear (14) to rotate freely on the shaft (33). The cylinder actuator is then free to operate the rack (22) automatically without turning the handwheel (25).

## FIELD INSTALLATION OF AUXILIARY MANUAL ACTUATOR

The installation of the auxiliary manual actuator to a cylinder actuator in the field will require modification of the cylinder actuator to accommodate the manual operator rack (22) (Note: It is recommended that the factory be consulted) The air piping of the cylinder actuator must be modified to include the equalizing valve as shown in Drawing A50-48. Mounting of the Manual Actuator is performed in the following manner:

Engage the clutch (9) by pushing **into** the housing (23) to the index point. Remove the rack (22) from the manual actuator by rotating the handwheel (25) until the rack (22) can be pulled from the housing (23). Note that the teeth of the rack (22) face the handwheel (25) as the rack (22) is removed from the housing (23). Screw the male thread end of the rack (22) into the stem of the cylinder actuator until seated, then tighten with a wrench. With the teeth of the rack (22) facing the handwheel (25), place the bottom of the rack (22) into the **top** of the manual operator and slowly rotate the handwheel (25) to engage the teeth of the rack (22).

Rotate the handwheel (25) until flange of the manual actuator touches the bottom of the cylinder actuator. Line up the holes of the manual operator with the mounting holes of the cylinder actuator by rotating the manual actuator. Install 4 mounting bolts and tighten.

Install unit being actuated to manual actuator. Unit is now ready for operation.

### GB2700 — PARTS LIST

ITEM NO.	NO. REQ'D	DESCRIPTION	PART NO.
1	4	HEX HEAD CAPSCREW	6900151
2	1	ADAPTER	TABLE I
3	2	BEARING	6074736
4	1	BEARING	6075030
5	1	WORM	6005615
6	1	KEY	6168496
7	1	KEY	6168504
8	1	WORM SHAFT	6003578
9	1	CLUTCH SHAFT	6005714
10	1	KEY	6003628
11	1	BALL	6075170
12	1	DETENT SPRING	6004063
13	1	DETENT BODY	6004071
14	1	SPUR GEAR	6005722
15	1	KEY	6079024
16	1	WORM GEAR ALTERATION	6003586
17	1	BEARING	6074751
18	1	GREASE FITTING	6075311
19	2	LOCKNUT	6017628
20	1	RETAINING RING	6076137
21	1	SPACER	6009567
22	1	RACK	TABLE II
23	1	HOUSING	6006480
24	7	SPACER	6009559
25	1	HANDWHEEL	6004287
26	1	RETAINING RING	6076053
27	1	CAPSCREW, HEX HEAD	6900197
28	1	LOCKWASHER	6900331
29	1	WASHER	6900339
30	1	BEARING ALT.	6006522
31	1	LOCKWASHER	6076350
32	1	BEARING	6074744
33	1	SHAFT	6005698
34	1	WORM GEAR INSERT	6005730
35	1	BEARING	6075055
36	1	BEARING	6075063
37	1	PIN	6005706

**NOTE:**

THIS PARTS LIST COVERS UNITS HAVING 6"(152 mm) DIA. HANDWHEEL (ITEM 25) ONLY

### GB2800 — PARTS LIST

ITEM NO.	NO. REQ'D	DESCRIPTION	PART NO.
1	4	CAPSCREW, HEX HEAD	6900151
2	1	ADAPTER	TABLE I
3	2	BEARING	6074736
4	1	BEARING	6075030
5	1	WORM	6005615
6	1	KEY	6168496
7	1	KEY	6168504
8	1	WORM SHAFT	6003578
9	1	CLUTCH SHAFT	6005714
10	1	KEY	6003628
11	1	BALL	6075170
12	1	DETENT SPRING	6004063
13	1	DETENT BODY	6004071
14	1	SPUR GEAR	6005722
15	1	KEY	6079024
16	1	WORM GEAR ALTERATION	6003586
17	1	BEARING	6074751
18	1	GREASE FITTING	6075311
19	2	LOCKNUT	6017628
20	1	RETAINING RING	6076137
21	1	SPACER	6009567
22	1	RACK	TABLE II
23	1	HOUSING	6006480
24	1	SPACER	6210439
25	1	HANDWHEEL	6005904
26	1	RETAINING RING	6215743
27	1	CAPSCREW	6900197
28	1	LOCKWASHER	6900331
29	1	WASHER	6900339
30	1	BEARING ALTERATION	6006522
31	1	LOCKWASHER	6076350
32	1	BEARING	6074744
33	1	SHAFT	6005698
34	1	WORM GEAR INSERT	6005730
35	1	BEARING	6075055
36	1	BEARING	6075063
37	1	PIN	6005706
38	1	CAPSCREW	6900198
39	1	KEY	6202576
40	1	STEM EXTENSION	6210447
41	1	SOC SET SCREW (CUP PT.)	6900121

**NOTE:**

THIS PARTS LIST COVERS UNITS HAVING 18"(457 mm) DIA HANDWHEEL (ITEM 25) ONLY

WARNING – TECHNICAL DATA SUBJECT TO EAR CONTROLS

This document contains technical data whose export is restricted by the Export Administration Act of 1979, as amended (Title 50, U.S.C., App. 2401, et seq.) Violation of this export control law is subject to severe criminal penalties.

**GB2700 — DRAWING**

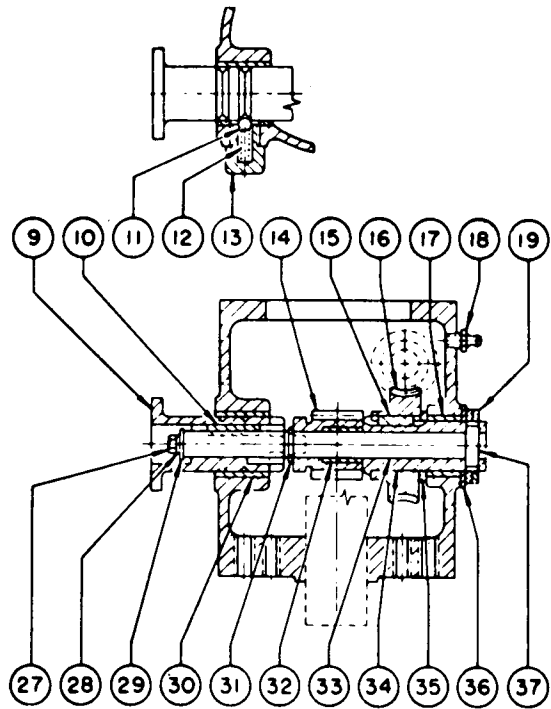
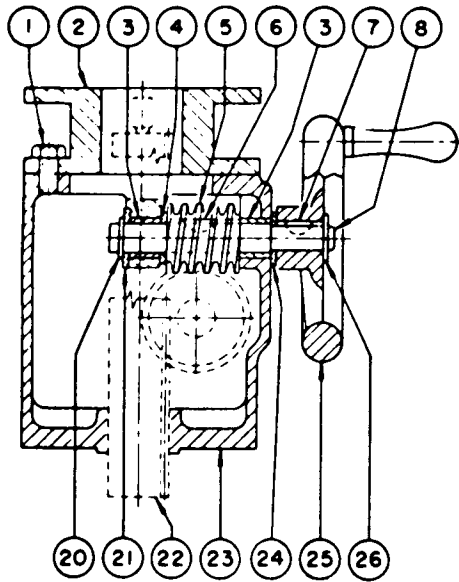
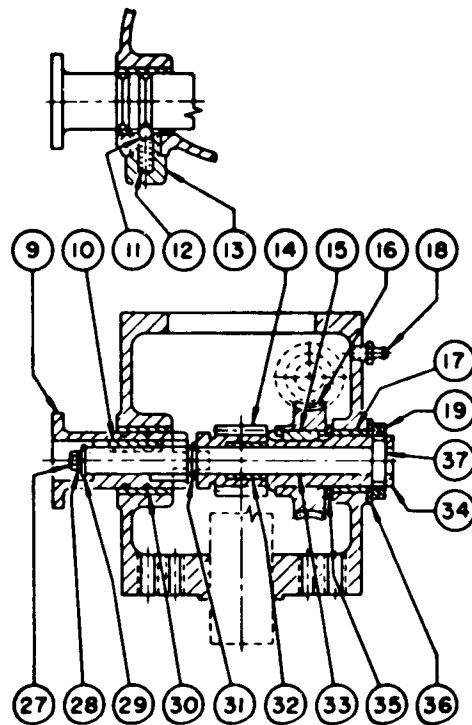
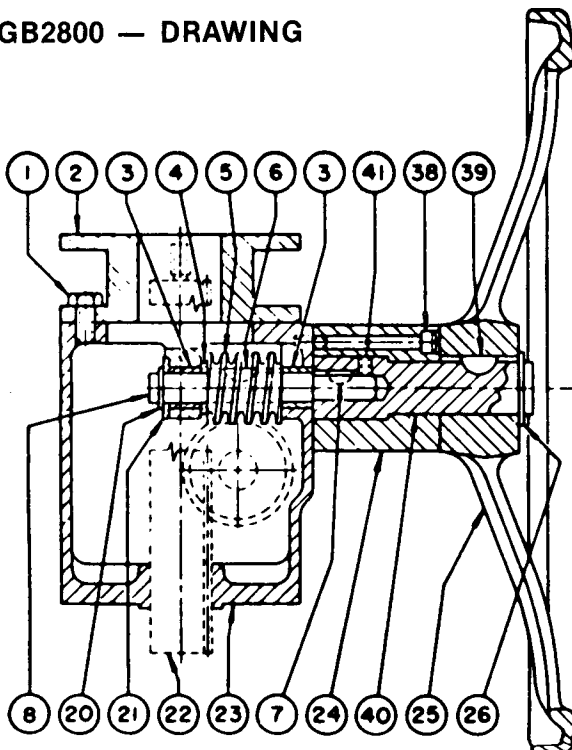


TABLE II	
ACTUATOR	PART NO.
GB52UC (6"(152 mm) BORE) For 1/2", 3/4" & 1" VALVES	6236749
<del>GB53UC (8"(203 mm) BORE) For 3" &amp; 4" VALVES</del>	<del>6005000</del>
GB54UC (10"(254 mm) BORE) For 3" & 4" VALVES	6005896
GB51 XC (4"(102mm) BORE)	6006464
ALL SERIES 50 ACTUATORS NOT LISTED ABOVE	6005953

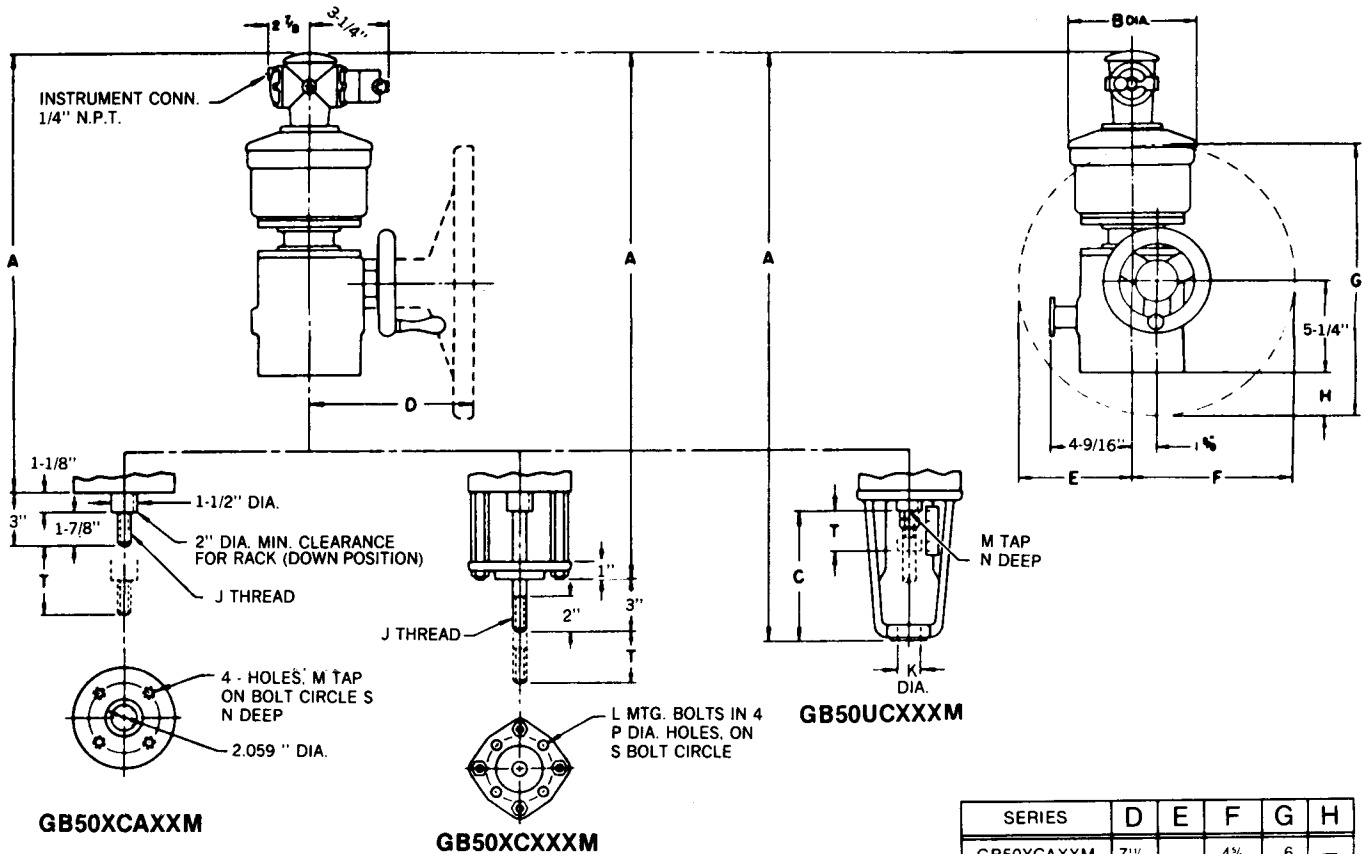
TABLE I	
ACTUATOR	PART NO.
GB51 (4"(102m) BORE)	6003552
<del>GB52 (6"(152 mm) BORE)</del>	
GB53 (8"(203 mm) BORE)	6003594
GB54 (10"(254 mm) BORE)	

**GB2800 — DRAWING**



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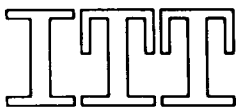


SERIES	D	E	F	G	H
GB50XCAXXM	7 <sup>1</sup> / <sub>8</sub> "	—	4 <sup>1</sup> / <sub>2</sub> "	6	—
GB50XCAXXR	9 <sup>1</sup> / <sub>2</sub> "	7 <sup>1</sup> / <sub>8</sub> "	10 <sup>1</sup> / <sub>2</sub> "	18	3 <sup>1</sup> / <sub>4</sub> "

NOTE: For Dimensional Conversion  
To Millimeter: Inch(es) x 25.4 = Millimeters (mm)

SMALL H-W	LARGE H-W	SIZE	A	B	C	J	K	L	M	N	P	S	T
GB51XCAXXM	GB51XCAXXR	4"	20 <sup>1</sup> / <sub>8</sub> "	5 <sup>1</sup> / <sub>8</sub> "	—	3/8 - 18	—	—	3/8 - 16	3/8	—	3 <sup>1</sup> / <sub>4</sub> "	3
GB51XCAXXM	GB51XCAXXR	4"	21 <sup>1</sup> / <sub>8</sub> "	5 <sup>1</sup> / <sub>8</sub> "	—	3/8 - 18	—	—	3/8 - 16	3/8	—	3 <sup>1</sup> / <sub>4</sub> "	4
GB52XCAXXM	GB52XCAXXR	6"	22 <sup>1</sup> / <sub>8</sub> "	7 <sup>1</sup> / <sub>8</sub> "	—	3/8 - 16	—	—	1/2 - 13	3/8	—	4 <sup>1</sup> / <sub>2</sub> "	4
GB53XCAXXM	GB53XCAXXR	8"	22 <sup>1</sup> / <sub>8</sub> "	9 <sup>1</sup> / <sub>8</sub> "	—	3/8 - 14	—	—	1/2 - 13	3/8	—	4 <sup>1</sup> / <sub>2</sub> "	4
GB54XCAXXM	GB54XCAXXR	10"	24 <sup>1</sup> / <sub>8</sub> "	11 <sup>1</sup> / <sub>8</sub> "	—	1/2 - 12	—	—	1/2 - 13	3/8	—	4 <sup>1</sup> / <sub>2</sub> "	4
GB51XCXXXM	GB51XCXXXR	4"	27	5 <sup>1</sup> / <sub>8</sub> "	—	3/8 - 18	—	3/8	—	—	1 <sup>1</sup> / <sub>2</sub> "	2 <sup>3</sup> / <sub>4</sub> "	3
GB51XCXXXM	GB51XCXXXR	4"	29	5 <sup>1</sup> / <sub>8</sub> "	—	3/8 - 18	—	3/8	—	—	1 <sup>1</sup> / <sub>2</sub> "	2 <sup>3</sup> / <sub>4</sub> "	4
GB52XCXXXM	GB52XCXXXR	6"	29 <sup>1</sup> / <sub>8</sub> "	7 <sup>1</sup> / <sub>8</sub> "	—	3/8 - 16	—	1/2	—	—	1 <sup>1</sup> / <sub>2</sub> "	3 <sup>1</sup> / <sub>4</sub> "	4
GB53XCXXXM	GB53XCXXXR	8"	30 <sup>1</sup> / <sub>8</sub> "	9 <sup>1</sup> / <sub>8</sub> "	—	3/8 - 14	—	1/2	—	—	1 <sup>1</sup> / <sub>2</sub> "	3 <sup>1</sup> / <sub>4</sub> "	4
GB54XCXXXM	GB54XCXXXR	10"	30 <sup>1</sup> / <sub>8</sub> "	11 <sup>1</sup> / <sub>8</sub> "	—	1/2 - 12	—	1/2	—	—	1 <sup>1</sup> / <sub>2</sub> "	3 <sup>1</sup> / <sub>4</sub> "	4
GB52UCXXXM	GB52UCXXXR	6"	26	7 <sup>1</sup> / <sub>8</sub> "	5 <sup>1</sup> / <sub>8</sub> "	—	1 <sup>1</sup> / <sub>8</sub> "	—	3/8 - 24	1	—	—	1
GB53UCXXXM	GB53UCXXXR	8"	28 <sup>1</sup> / <sub>8</sub> "	9 <sup>1</sup> / <sub>8</sub> "	7 <sup>1</sup> / <sub>8</sub> "	—	1 <sup>1</sup> / <sub>8</sub> "	—	1/2 - 20	1 <sup>1</sup> / <sub>8</sub> "	—	—	1 <sup>1</sup> / <sub>2</sub> "
GB54UCXXXM	GB54UCXXXR	10"	30	11 <sup>1</sup> / <sub>8</sub> "	7 <sup>1</sup> / <sub>8</sub> "	—	1 <sup>1</sup> / <sub>8</sub> "	—	3/8 - 18	1 <sup>1</sup> / <sub>8</sub> "	—	—	2 <sup>1</sup> / <sub>2</sub> "

For Certified Dimensional Drawing, Refer To A6-15.



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