Bailey

SECTION
P92-32

PRODUCT INSTRUCTIONS

INSTALLATION OF BAILEY POSITIONER ON DIAPHRAGM ACTUATED CONTROL VALVE

KIT PART NOS. 7106166-□ AND 7106188-□

INDEX

This Instruction Section covers the installation of the Bailey Positioner on a diaphragm-actuated control valve equipped either with or without mounting bosses. For control valves with mounting bosses, use Positioner Kit Part No. 7106166-□; for valves without mounting bosses, use Positioner Kit Part No. 7106188-□

CROSS REFERENCE

Instrument or Equipment	Instruction Section
Bailey Positioner Applied to Diaphragm Actuated Valves	P92-9

BAILEY METER COMPANY • WICKLIFFE, OHIO 44092

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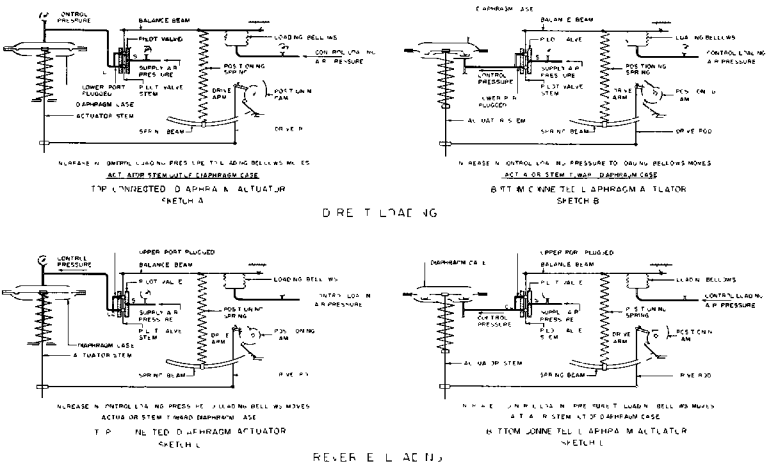


FIGURE 1 - Positioner Applied to Diaphragm Actuator

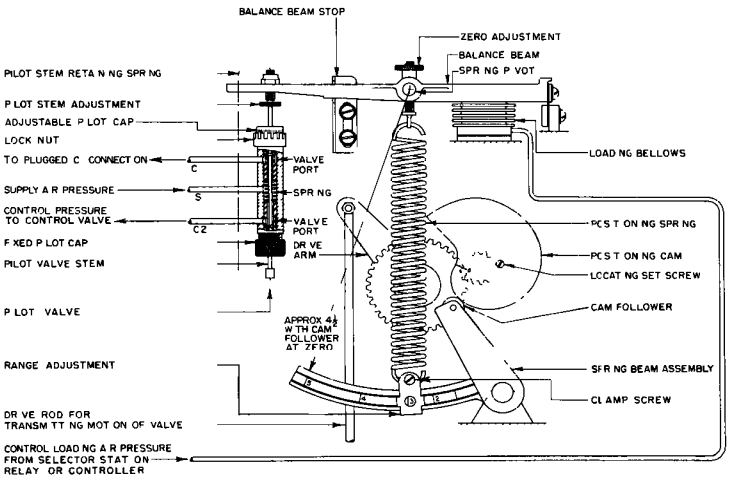


FIGURE 2 - Schematic of Positioner

ADAPTING POSITIONER FOR SERVICE

Before the Positioner is mounted on the Control Valve, it must be adapted to the particular Control Valve application To adapt the Positioner, first determine

(1) the type of diaphragm actuator (top or bottom connected),

(2) the type of loading required (direct or reverse as shown in Figure 1), and

(3) the rated travel (stroke) of the valve plug stem

Make the necessary changes to the Positioner assembly for the particular application as outlined below

Direct Loading

Direct loading is that arrangement whereby an increase in control loading pressure to the Positioner loading bellows produces an increase in control pressure to the diaphragm actuator

1 Top Connected Valve Actuator

a 3/4 or 1 INCH RATED TRAVEL· Positioner assembly satisfactory as shipped See applicable kit installation instructions below to mount Positioner on valve

b 1 1/2 or 2 INCH RATED TRAVEL Remove B 1/2 cam Do not remove locating set screw (Figure 2) Replace B 1/2 cam with B cam

2. Bottom-Connected Valve Actuator

a 3/4 or 1 INCH RATED TRAVEL Remove B 1/2 cam. Remove location set screw (Figure 2) and place screw in tapped hole in opposite side of cam hub Reassemble B-1/2 cam so opposite side faces outward.

b 1 1/2 or 2 INCH RATED TRAVEL Remove B-1/2 cam Remove location set screw (Figure 2) and place screw in tapped hole in opposite side of cam hub Replace B 1/2 cam with B cam Assemble B cam so opposite side faces outward.

Reverse Loading

Reverse loading is that arrangement whereby an increase in control loading pressure to the loading bellows produces a decrease in control pressure to the diaphragm actuator.

1 The Positioner is shipped for direct loading operation, to prepare the Positioner for reverse loading change the internal tubing arrangement as outlined below.

a. Refer to Figure 4, "Direct Loading" Remove tubing to valve block, elbow, and tee

b Assemble elbow into connection from which tee was removed. Connect loading bellows tubing to elbow Insert a 1/8 inch plug in connection from which elbow was removed. Tubing arrangement should look like Figure 4, Reverse Loading .

c Turn bypass valve to CLOSED-AUTO position (see Figure 3) Then remove bypass valve handle so this position cannot be changed

d Remove pilot stem retaining spring and pilot stem Remove three pilot valve mounting screws and separate pilot valve from pilot valve block (Figure 4).

e Refer to Figure 5 Remove plug disc from lower port connection of valve block and exchange it with O ring in upper port connection Reassemble pilot valve to valve block This provides the arrangement shown in Figure 1, Sketch C or D

f Make changes required for specific valve actuator and valve plug stem rated travels as noted in steps 2 and 3 below

2 Top Connected Valve Actuator

a. 3/4 or 1 INCH RATED TRAVEL. Remove B 1/2 cam Remove locating set screw (Figure 2) and place screw in tapped hole in other side of cam hub. Reassemble B-1/2 cam so opposite side faces outward

b 1-1/2 or 2 INCH RATED TRAVEL Remove B 1/2 cam Remove locating set screw (Figure 2) and place screw in tapped hole in other side of cam hub. Replace B 1/2 cam with B cam Assemble B cam so opposite side faces outward

3 Bottom Connected Valve Actuator

a 3/4 or 1 INCH RATED TRAVEL Perform step 1 (under "Reverse Loading") above. No other changes are required.

b 1-1/2 or 2 INCH RATED TRAVEL: Remove B-1/2 cam Do not remove locating set screw (Figure 2). Replace B-1/2 cam with B cam.

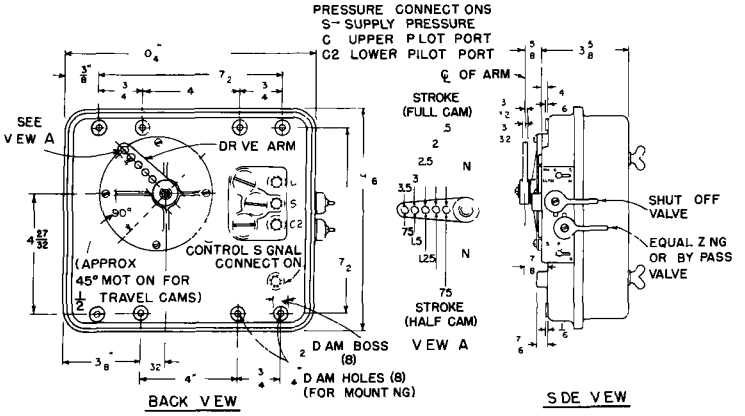


FIGURE 3 - Bailey Positioner

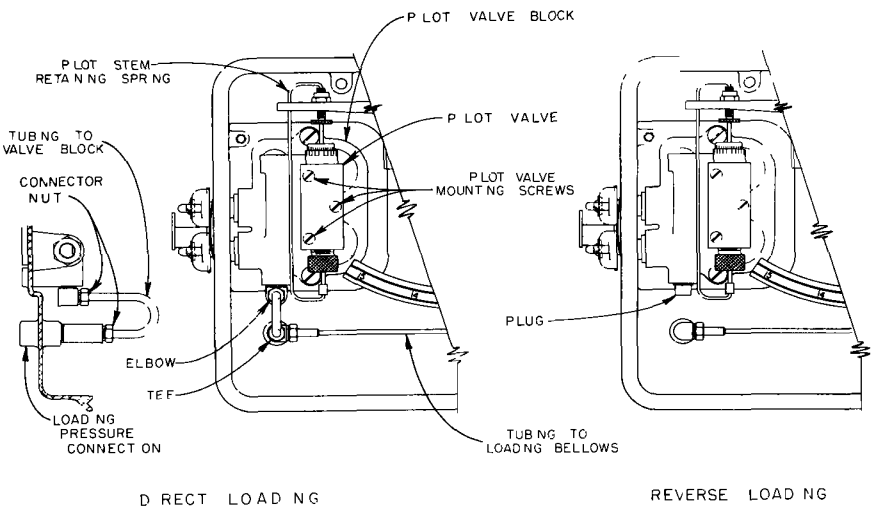


FIGURE 4 Positioner Internal Tubing for Direct and Reverse Loading

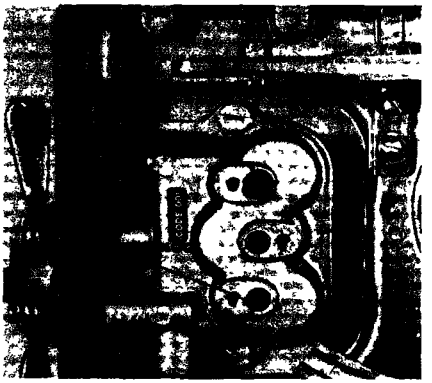


FIGURE 5 Internal View of Pilot Valve Showing Plug Disc Positions

MOUNTING POSITIONER

Positioner Kit No. 7106166-□ for Valves with Mounting Bosses

1. Refer to Figure 7. Secure bracket (3) to diaphragm yoke mounting bosses with cap screws (6) and lockwashers (7)

2. Assemble connecting link (8) to properly marked hole in Positioner drive arm with screw (9) and stop nut (13). Marked hole in drive arm should correspond to specific valve stem travel (stroke) for positioning cam used as explained below.

a. For a 3/4 or 1 inch stroke, assemble connecting link to hole marked .75 or 1 on HALF CAM STROKE line (see Figure 3).

b For a 1-1/2 or 2 inch stroke, assemble connecting link to hole marked 1.5 or 2 on FULL CAM STROKE line

3. Assemble Positioner and connecting link assembly (step 2 above) to mounting bracket (3) with screws (9) and lockwashers (10)

4. For a Bailey Actuator, attach stem clamp assembly (14, 16, 17, and 18) to valve plug stem *Use correct clamp (16) and clamp* plate (17) for specific valve plug stem (see Table B in Figure 7). Locate clamp assembly *so it does not interfere with stem travel, posi*tion indication, or stuffing box packing

5 For a Fisher Actuator, attach drive stud (28) and star lockwasher (29) to stem connector as shown in Figure 7.

6. For a Bailey Actuator, assemble adjustable drive arm (12) into clamp assembly far enough so it is secure and properly aligned with connecting link (8). Then remove clamp assembly from valve plug stem and, using 1/8-inch diameter drill, drill thru adjustable drive arm assembly (including connecting rod) and drive groov pin (19) in place to permanently hold adjustable drive arm. Reassemble clamp assembly to valve plug stem.

7. Adjust length of connecting link (8) so its lower end fits onto drive arm (12) for a Bailey Actuator or drive stud (28) for a Fisher Actuator. Make this adjustment when there is zero air pressure on the diaphragm actuator With zero air pressure on the actuator, the cam must be in its zero position (cam follower at zero mark on cam) for direct loading or in its 100% position (cam follower at 10 mark on cam) for reverse loading. If connecting link is too short, relocate valve plug stem clamp assembly, if link is too long, cut link to required length described in Figure 6.

NOTE This adjustment need not be final until all assembly is made and checked as outlined under "Adjustment Checks" in Instruction Section P92-9

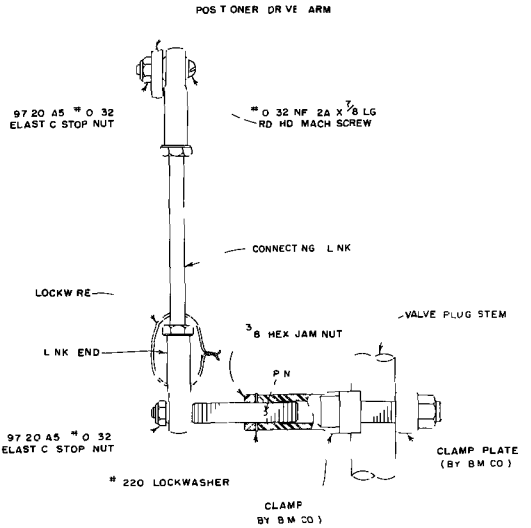


FIGURE 6 Adapting Connecting Link Pt No 5312449-4 to Positioner

8 Attach connecting link (8) to adjustable drive arm (12) for a Bailey Actuator or drive stud (28) for a Fisher Actuator with elastic stop nut (13) Insert wire (11) thru holes in connecting link to hold link in place

9 Connect tubing (4) as required between Positioner connection C2 and diaphragm case Assemble male connector (20) to Positioner connection S Connect supply (50 psig maximum) and control pressure lines to connections at side of Positioner case (Figure 3) After connections are made and air is supplied to Positioner, adjust control pressure to pressurize diaphragm actuator and check all tubing connections for leakage with a soapsuds solution

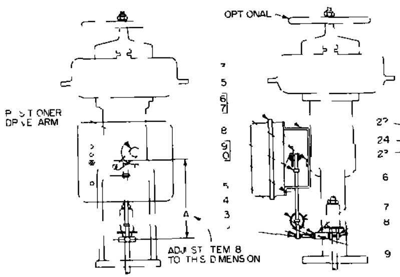
Positioner Kit No 7106188-□ for Valves without Mounting Bosses

1 Refer to Figure 7 Secure bracket (27) to diaphragm yoke using screws and nuts furnished

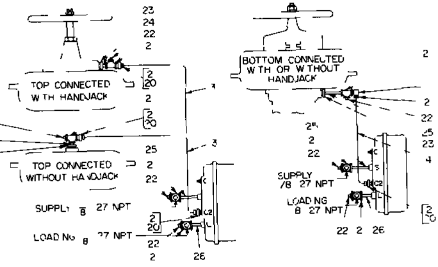
2 Perform steps 2 thru 9 as outlined above

ADJUSTMENTS

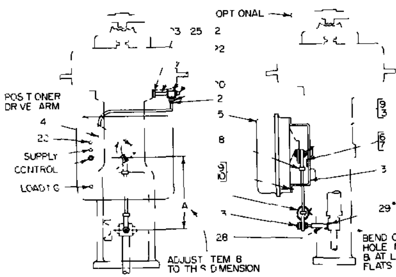
After installing the Positioner Kit, calibrate the Positioner for its particular application as outlined under "Adjustment and Calibration" in Instruction Section P92 9



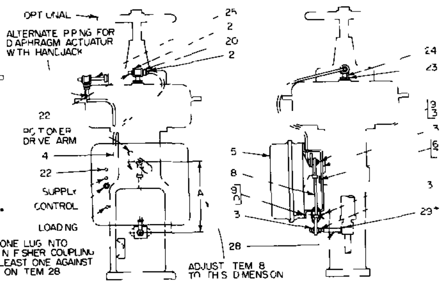
BA LE T P OR BOTTOM ONNECTED ACTUATCR APPL CAT ON
P S T ONER K T PART NJMBER 7 06 66 □



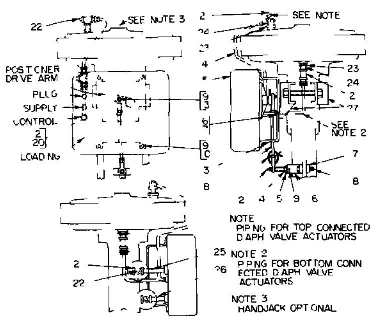
P P NG D AGRAM FOR BA LEY ACTUATOR APPL CAT ON
POS T ONER K T PART NUMBER 7 06 66 □



F SHER BOTTOM CONNECTED ACTUATOR APPL CAT ON
POS T ONER K T PART NUMBER 7 06 66 □



F SHER TOP CONNECTED ACTUATOR APPL CAT ON
POS T ONER K T PART NUMBER 7 06 66 □



NOTE
P P NG FOR TOP CONNECTED
D APH VALVE ACTUATORS

NOTE 2
P P NG FOR BOTTOM CONN
ECTED D APH VALVE
ACTUATORS

NOTE 3
HANDJACK OPT ONAL

BAILEY TOP OR BOTTOM CONNECTED ACTUATOR APPL CAT ON
POST ONER K T PART NUMBER 7 06 88 □

ITEM	PART NO	NAME
	95 56 2	ELBOW CONNECTOR
2	95 56 2	CONNECTOR NUT 2 REQD
3	53 692	MTG BRACKET
4	4 O D	COPPER TUBING 2 0 REQD
5	SEE TABLE A	POSITIONER
6	5 8 8x5 8	HEX HD CAP SCR 2 REQD
	2 8 00	SHKPF LOCKWASHER 2 REQD
8	SEE TABLE B	CONNECTING LINK
9	0 32x7 8	PAN HD SCR 5 REQD
0	2 0 00	SHKPF LKWASH 4 REQD
	32 DIAx8 3/4	WIRE
2	SEE TABLE A	ADJ DRIVE ARM
3	97 20 5	ELASTIC STOP NUT 2 REQD
4	3 8 24	HEX NUT
5	220 00	SHAKEPROOF LOCKWASHER
6	SEE TABLE B	CLAMP
7	SEE TABLE B	CLAMP PLATE
8	3 8 6x	2 HEX HD CAP SCR 2 REQD
9	8 DIAx5 8	TYPE GROOV P N
20	95 67 2	MALE CONNECTOR AS REQD
2	95 63	8 BRASS TEE AS REQD
22	222D25	PIPE PLUG AS REQD
23	4x 8	BRASS REDUCING BUSHING
24	95 27 6	BRASS NIPPLE AS REQD
25	95 27 8	BRASS NIPPLE AS REQD
26	95 27 3	BRASS NIPPLE AS REQD
27	53 3 30	MTG BRKT SEE TABLE A
28	53 9500	DRIVE STUD
29	53 9524	STAR LOCKWASHER
30	0 32	HEX NUT AS REQD

TABLE A

POSITIONER K T PART NO	RANGE PSI	ITEM 5	TEM 2	TEM 2
7 06 66	5 25 3 2	53 450 2	53 690	NONE
7 06 66 2	3 5	53 450 6	53 690	ONE
7106188	5 25 3 27	531 450 2	53 690	
7106 88 4	3 5	53 1450 5	53 690 2	

TABLE B

TEM NO	PART NUMBER	APPLICAT ON	DIMENS O A
6	53 2449 2 53 2499 6 53 2449 7 53 2499 4	BA LEY ACTUAT RS WITH BOSSES BA LEY ACTUATORS WITH BOSSES BAILEY ACTUATORS WITH BOSSES BAILEY ACTUATORS WITHOUT BOSSES AND ALL FISHER ACTUATORS	9 3 8 8 3 4 3 3 6 8 3 32 7 2
6	53 887 2 53 2499	BA LEY ACTUATOR 2 R 3 4 DIA STEM BA LEY A T ATOR DIA STEM	
	53 69 53 247	BAILEY ACTUATOR 2 OR 4 DIA STEM BA LEY ACTUATOR D A STEM	

FIGURE 7 - Positioner Kit Pt. No. 7106166-□ and Pt No. 7106188-□ Applied to Diaphragm Actuated Valves

BAILEY METER COMPANY DISTRICT OFFICES, U.S.A.

CALIFORNIA

San Francisco Code 415 — Phone 989 6140

Los Angeles Code 213 — Phone 283 1187

COLORADO

Denver Code 303 — Phone 757 5408

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Chicago Code 312 — Phone 427-7324

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BAILEY METER COMPANY LTD., CANADA

ALBERTA

Edmonton Code 403 — Phone 488 3436

BRITISH COLUMBIA

Vancouver Code 604 — Phone 731 3709

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Ottawa Code 613 — Phone 722-1373

Toronto Code 416 — Phone 444 8488

QUEBEC

Montreal Code 514 — Phone 489 3881

Bailey

Bailey Meter Company • Wickliffe, Ohio 44092

In Canada: Bailey Meter Company Limited, Montreal, Canada