

**Blakeborough Control Valves****Installation, Operation & Maintenance Manual****A60, A61 Diaphragm Actuator (Side handwheel)****SAFETY**

**Safety** - consult Blakeborough publication 'Safety' before starting any maintenance work.

The valve and actuator should be handled and installed with care. Consult publication 'Good Installation Practices' for details.

Before any maintenance work it is essential to ensure that the actuator is isolated and depressurised.

**GENERAL**

In the 'normal' position (no air pressure on the diaphragm) the stem of the direct acting actuator is held in a fully retracted position by means of the spring. An increase in air pressure in the upper diaphragm chamber pushes the actuator stem assembly downwards and compresses the spring; decreasing the air pressure allows the spring to return the stem and diaphragm assembly back to its normal position.

- When mounted on pull-stem-to-open valves, the direct acting diaphragm actuator closes the valve upon increasing the air pressure in the upper diaphragm chamber.
- When mounted on push-stem-to-open valves, the direct acting diaphragm actuator opens the valve upon increasing the air pressure in the upper diaphragm chamber.

Raised metal pads on the yoke casting are provided for the mounting of accessories. All accessories should be removed before dismantling the actuator. Remove the actuator from the valve bonnet assembly as outlined in the basic instruction book covering the valve in use.

**SIDE HANDWHEEL DISASSEMBLY**

Stand the side handwheel on the yoke and clamp to a bench or the floor.

1. Handwheel part disassemble
  - 1) Unscrew nut (17) and spring washer (16), and remove handwheel (15).
  - 2) Remove the key (11).
2. Body and screw part disassemble

- 1) Unscrew nut (7), spring washer (8), stud (9) and remove body (1) set from the bottom flange (6).
- 2) Unscrew the cap screw (14).
- 3) Remove the warm wheel (4) out of the body (1) and remove taper bearing (2-1)
- 4) Remove screw (3) form the warm wheel (4)
- 5) Remove warm (13) & bearing (12) from the body.

3. Bottom Flange disassemble
  - 1) Remove taper bearing (2-2) from the bottom flange (6).
  - 2) Unscrew hexagon groove bolt (5) and remove bottom flange (6) from the yoke.
  - 3) Remove du bushing (10) from the bottom flange (6)

**SIDE HANDWHEEL ASSEMBLY**

Before assembling the side handwheel, inspect all bearing bushing, screw, washers and replace if necessary. And stand the yoke and clamp to a bench of the floor.

1. Bottom Flange assemble
  - 1) Place du bushing (10) into the bottom flange (6).
  - 2) Place bottom flange (6) on top of the yoke.
  - 3) Screw hexagon groove bolt (5)
  - 4) Place the taper bearing (2-2) onto the bottom flange (6).
2. Body and screw part assemble
  - 1) Fit the bearing (12) on the warm (13)
  - 2) Insert the warm (12) set into the body (1).
  - 3) Screw the cap screw (14).
  - 4) Fit the taper bearing (2-1) into the body (1).
  - 5) Let the warm wheel (4) into body (1) on the spin warm (13).
  - 6) Insert screw (3-1, 3-2) into warm wheel (4)
  - 7) Place body (1) set on the bottom flange (6)
  - 8) Screw the stud (9).
  - 9) Screw nut (7) together with the spring washer (8)
3. Hand wheel part assemble
  - 1) Fit the key (11) into the key hole on the warm (13).
  - 2) Fit the hand wheel (15) onto the warm (13).

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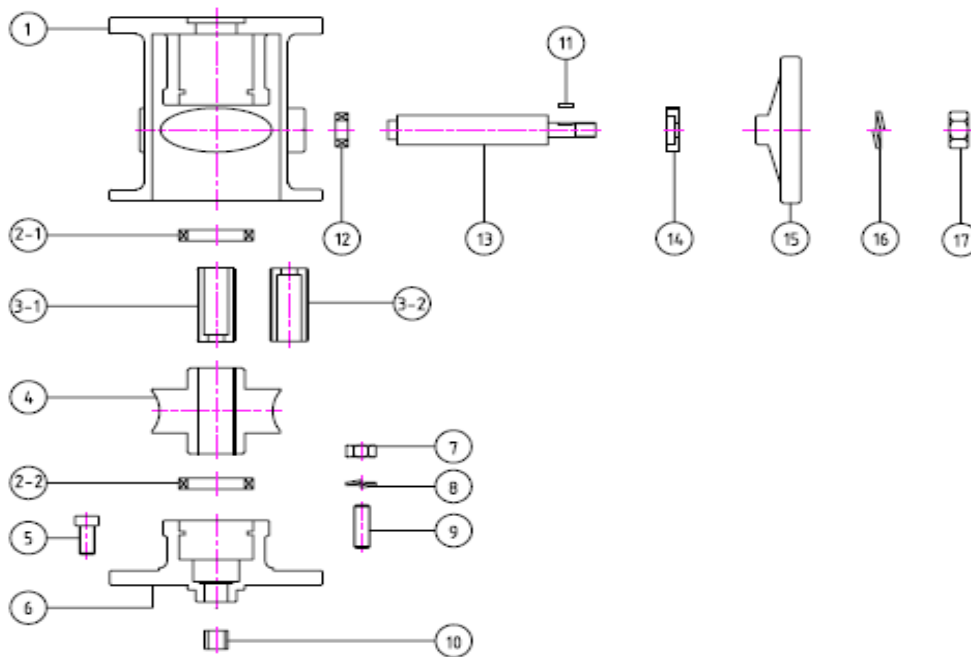
3) Screw nut (17) together with the spring washer (16).

And actuator assemble on top of the body (1)

[Refer to Actuator assemble]

**OPERATING & MAINTENANCE INSTRUCTIONS**  
**Diaphragm Actuator (Multi-spring)**

**SIDE HANDWHEEL PART DRAWING**



REF	DESCRIPTION	QUANTITY	
		850	1450
1	BODY	1	
2-1	TAPER BEARING (Top)	1	
2-2	TAPER BEARING (Bottom)	1	
3-1	SCREW (Reverse type)	1	
3-2	SCREW (Direct type)	1	
4	WORM WHEEL	1	
5	HEXAGON GROOVE BOLT	4	6
6	BOTTOM FLANGE	1	
7	NUT	4	
8	SPRING WASHER	4	
9	STUD	4	
10	DU BUSHING	1	
11	KEY	1	
12	BEARING	1	
13	WORM	1	
14	CAP SCREW	1	
15	HAND WHEEL	1	
16	SPRING WASHER	1	
17	NUT		1