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a member of the

**B**amford  
Group

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**Ajax**



## F. BAMFORD (INSTRUMENTS) LIMITED.

### INSTALLATION OPERATING AND MAINTENANCE INSTRUCTIONS FOR THE "AJAX" RANGE OF AJ SERIES ELECTRIC FLOW INDICATORS FITTED WITH A STANDARD INDUSTRIAL SWITCHBOX



The Bamford **Ajax** AJ series of Electric Flow Indicators are a generation of ruggedly constructed devices for automatic control and reliable protection of machinery and plant. The units can be mounted in horizontal, vertically upward or vertically downward attitudes. The functionally designed enclosure is standard on all models to meet the arduous conditions experienced in various sections of industry. Single or Double Switchbox versions are available. The standard precision snap action microswitch is a single pole double throw type; however, one or two Microswitches of different specifications may be fitted to provide versatility of switching circuits, which may be factory set or can be field adjustable. The Flow Indicator is specifically designed to warn instantly of a failure or change flow in liquid circuit. Based on simple principles, the flow-induced movement of a hinged flap is converted by eccentrically mounted bearings into a rocking motion of a vertical rod, which then pivots about a special double seal assembly and operates the Microswitch(s). The materials of construction can be configured to cater for the majority of liquids. All Flow Indicators are fitted with Toughened Soda Lime Glass viewing ports offering a visual indication of flow and condition of the actual liquid being used within the system, for added safety we can also supply a Double Glazed window arrangement.

1. For assembly and adjustment of the equipment please refer to the relevant General Arrangement Drawing.
2. Components to be incorporated into or used as replacement parts for the equipment shall be fitted by suitably trained personnel in accordance with the manufacturers documentation.

If the equipment is likely to come into contact with aggressive substances, then it is the responsibility of the user to take suitable precautions that prevent it from being adversely affected, thus ensuring that the type of protection provided by the equipment is not compromised.

**Aggressive Substances:** e.g. acidic liquids or gases that may attack metals, or solvents that may affect polymeric materials.

**Suitable precautions:** e.g. regular checks as part of routine inspections or establishing from the materials Data Sheets for its resistance to specific chemicals.

## INSTALLATION INSTRUCTIONS

Carefully unpack the instrument and clear any loose packing material which may have entered the inside of the body. Ensure that any blanking tape/plugs are removed from the pressure release holes in the offset adapter. Check with the order or delivery note to see if the instrument is arranged for horizontal, upward or downward flow. When mounted in a horizontal pipeline the switch housing must be positioned in the northern axis. If the instrument is of the flanged type, the mating flanges should be true parallel. Use a soft packing of cork or rubber or a corrugated metallic joint and tighten flange bolts evenly. If a stop valve is fitted in the circuit the instrument should be fitted after this.

Where possible It is recommended that the unit be fitted in the pipeline at a distance of at least ten times the pipe bore size up-stream and five times downstream from bends or other instruments to give effective operation.

**ENTRY INTO SWITCH HOUSING** - NOTE: If already wired and in service, **ISOLATE ELSEWHERE BEFORE OPENING.**

The switchbox is tapped M20 x 1.5P, an appropriate approved cable gland must be used.

## ELECTRICAL CONNECTIONS:





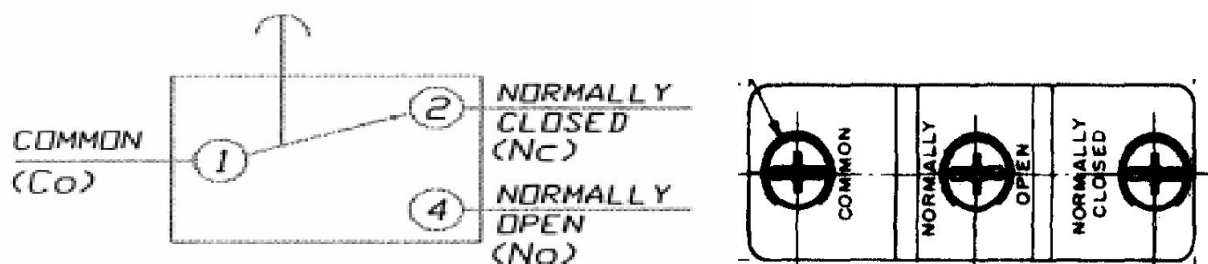
<b>ELECTRICAL DATA</b>	
<b>CONTACT ARRANGEMENT</b> <b>S P D T</b>	
<b>-L74-</b>	15A - 125, 250 OR 480 VAC, 2A - 600 VAC 1/8HP - 125 VAC; 1/4HP - 250 VAC 1/2A - 125 VDC; 1/4A - 250 VDC
-L288- -L306- -L315-	    16A 250V ~ T85 5E4

DIAGRAM OF CONNECTIONS



## **OPERATING INSTRUCTIONS**

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**ADJUSTMENT:** The following sequence should be adhered to for adjustment: -

Increase the liquid flow through the instrument to well above the safe minimum quantity (if out of the pipeline, operate the vane manually to simulate this condition). Rotate the adjustment screw (**Item 35**) anti-clockwise until the Microswitch is changing over at the higher flow. Now reduce the liquid flow to the trip setting required and adjust the Microswitch to the required setting - rotating the adjustment screw clockwise. Check the operation of the instrument and if satisfactory re-fit cover. **N.B.** to check that the micro switch has not been set below the minimum trip point of the instrument.

**DISMANTLING:** If the occasion arises for the instrument to be dismantled, the following sequence must be adhered to (If possible, removal from the pipeline makes the operation much more convenient). Remove the Switchbox Cover (**19**) and the two screws (**25**) on the Terminal Plate and withdraw the Switch Assembly. Now unscrew the Switchbox Anchor Bolts (**17**) and with the Switchbox removed the entire Sealing Assembly can be withdrawn but under no circumstances should this unit be further dismantled. Remove the Window Bezels (**Item 47**) and Windows (**Item 46**). Back off locknuts (**Item 5**) and unscrew (**Item 4**) pivots. The vane assembly can now be removed. Note: The vane spindles are handed and should not be reversed. When re-assembling, the reverse to this sequence must be followed. The pivots should be adjusted so that there is neither stiffness nor play in the vane.

The following tools are required for the above work:-

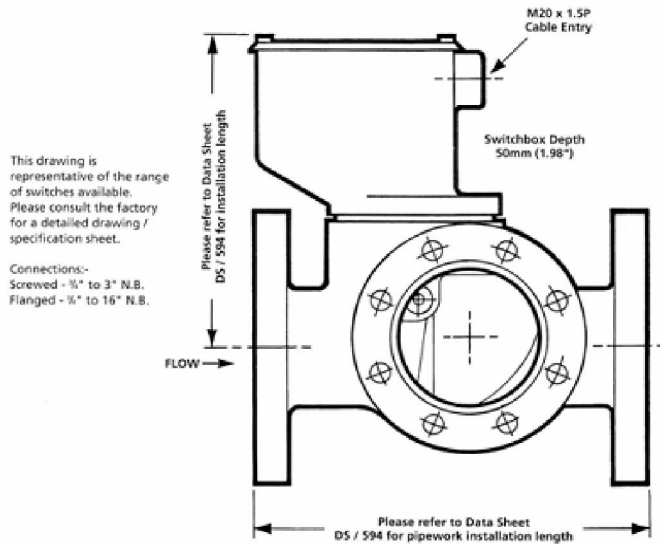
- (1) Small and Large Screwdrivers
- (2) 3/16" Tube Spanner
- (3) 1/4" or M6 Allen Key

## **MAINTENANCE INSTRUCTIONS**

All instruments are of proven reliability and robust construction and as such require minimal maintenance. However, in certain circumstances, and depending on the preventative maintenance schedule adopted, it may be necessary to check the condition of the window glasses and where practical remove and clean them. At the same time it would be advisable to fit a new set of window joints and also inspect the vane assembly for any signs of wear on the pivots and vane spindles, which could be detrimental to the smooth operation of the device. We would also suggest that the operating spindle and "O" ring seals are checked every 12 months and replaced every 5 years.

In conclusion, we are pleased to offer all recommended spare parts ex. stock and a 48 hour repair and refurbishing service.

## Dimension Drawing



**Screwed connections -**  
1/4" to 3" nom. Bore female  
BSP parallel or taper, NTP or API

**Flanged connections -**  
1/4" to 16" BST 'D', BST 'E', Class 150  
(flat or raised face)  
BS4505; DIN, NP6, NP10 or NP16  
(alternative flanges available).

**Maximum working pressure  
Standard version**  
All models – 7 BAR

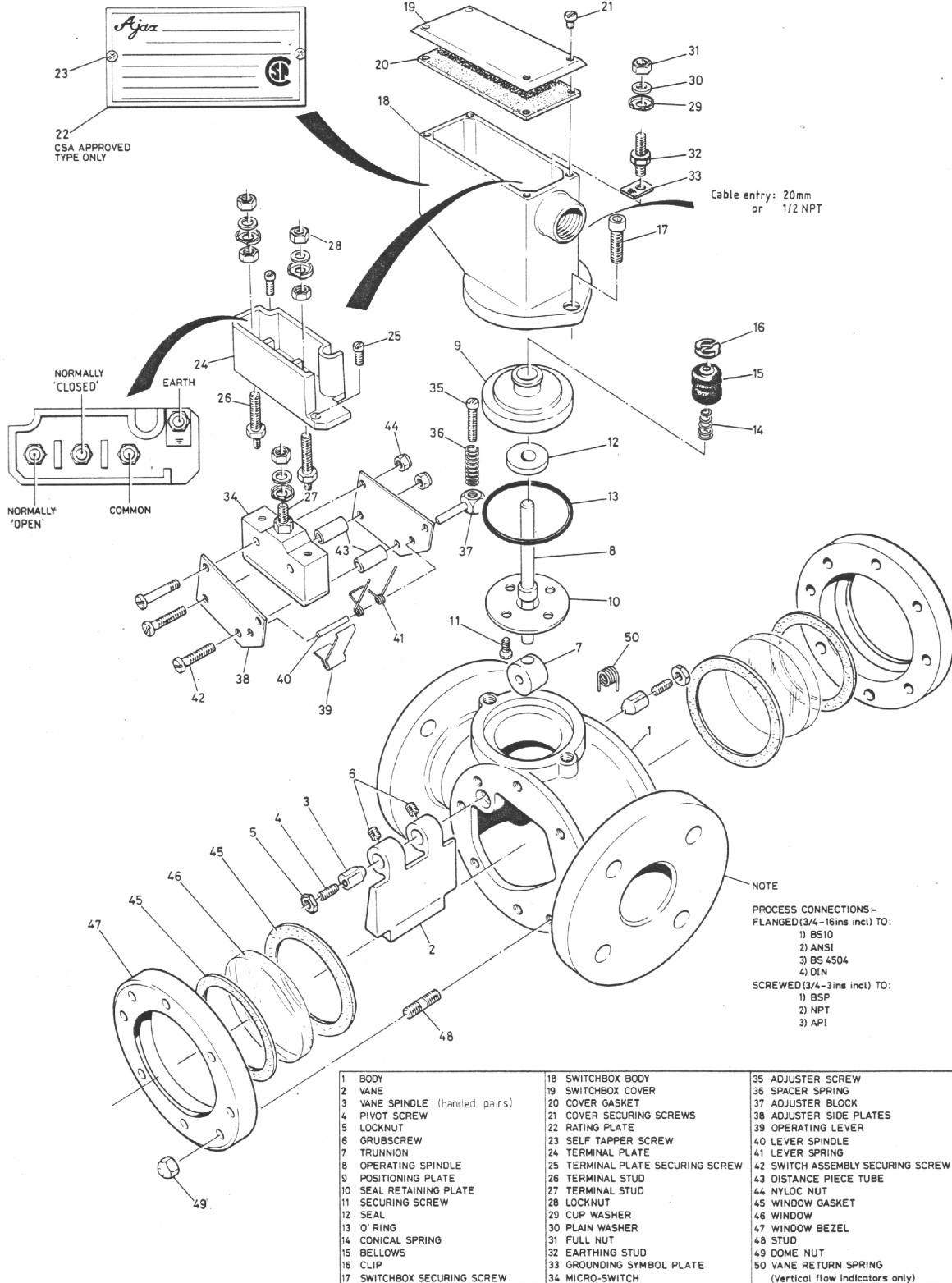
**Maximum working pressures  
High pressure version  
(screwed connections) -**  
1/4" to 2 1/2" nom. Bore – 28 BAR G  
3" nom. Bore 21 BAR. G

**Maximum working pressures  
High pressure version  
(flanged connections) -**  
1/4" to 2 1/2" nom. Bore – 28 BAR G  
3" nom. Bore 21 BAR. G  
4" nom. Bore 17.5 BAR. G  
5" & 6" nom. Bore 14 BAR. G  
7" to 16" nom. Bore 10 BAR. G

**Maximum working temperature**  
All models – 120°C

End of line or series resistors can be fitted if required

THE AJAX ELECTRIC FLOW INDICATOR



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