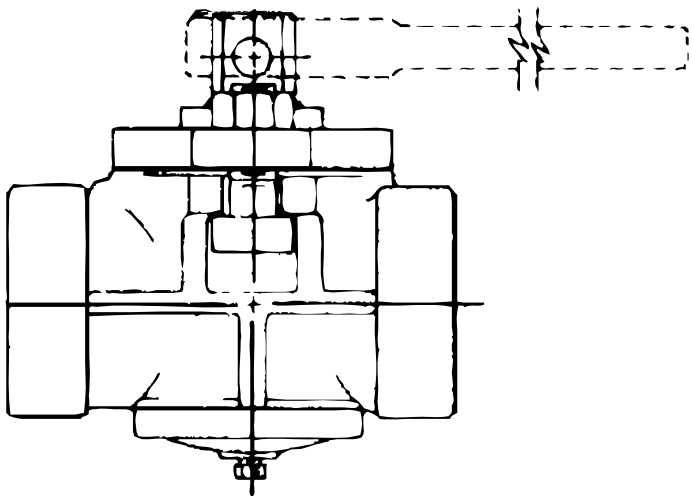
FILE NO.:	35.83
DATE:	Aug. 12, 2009
SUPERSEDES:	New
DATE:	New

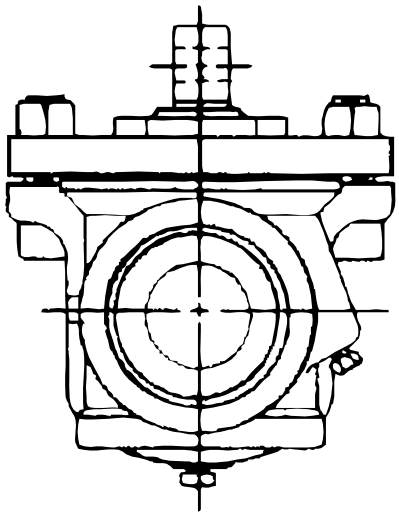
INSTALLATION AND OPERATING INSTRUCTIONS

Armstrong Model FTST

Threaded - Straight

Flo-Trex Combination Valve

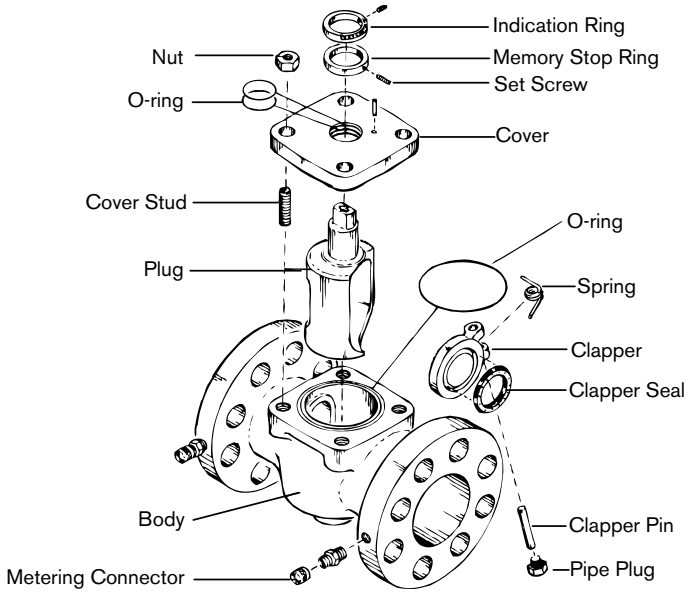




1.0 Introduction

The Armstrong Model FTV Flo-Trex Combination Valves are designed for installation on the discharge side of centrifugal pumps. The Armstrong Combination Valve incorporates two functions in one valve:

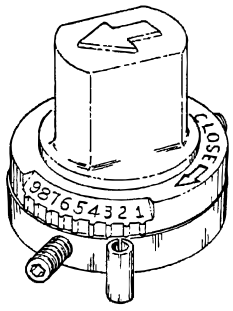
a) Flow regulator valve
b) Positive shut-off valve

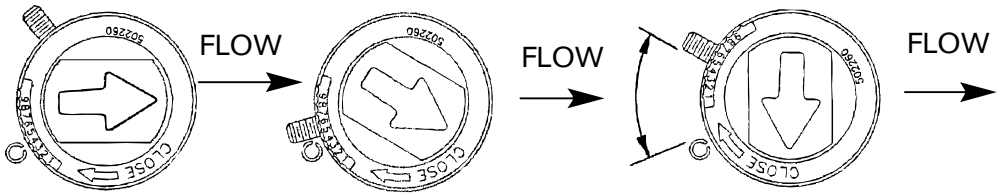


2.0 Installation

a) Mount 2" and 2½" valves with the stem in a vertically-up or horizontal position and the flow arrow (Cast in the valve body) aligned with the direction of flow.
b) Install valve in a location which allows easy access for an adjustment wrench and flow meter connections.
c) Install with the equivalent of at least 10 diameters of straight pipe, sized to the FTST valve, upstream of the valve and the equivalent of at least 5 diameters of pipe downstream of the FTST valve.
d) Once a flow rate has been set, adjust the memory stop located on the stem of the FTST valve (see below for memory stop adjustment instructions). The memory stop allows the valve to be closed and re-opened to the same balance position.

3.0 Memory Stop Adjustment Instruction





Valve is shown in open position. Memory Stop has not been set.

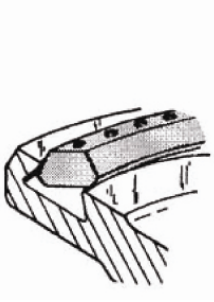
Valve Plug is rotated to selected balance position. Memory stop is rotated until it intercepts the stop on cover. Tighten lock screw on memory stop.

Valve plug may be closed and re-opened to same balance position.

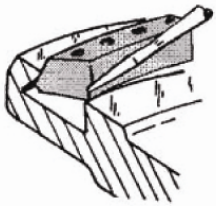
ARMSTRONG

4.0 Clapper Seal Repair

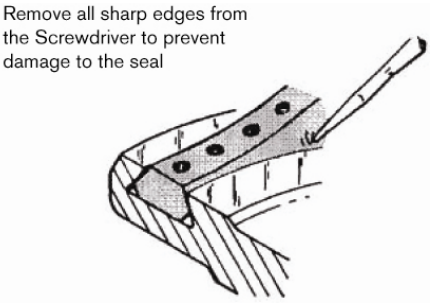
Armstrong Model FTST Flo-Trex Combination valves are equipped with Buna-N clapper seals. If the clapper seal is damaged, it can be replaced by removing the clapper and installing a new seal (see steps 1-3 below).



Step1
Place the outer edge of the seal into the clapper groove as shown.



Step2
Using a blunt screwdriver, force the inside lower edge of the seal into the clapper



Step3
As the seal is pressed into the groove, maintain force on the portion of the seal that has been installed. This will prevent elongation and excessive build-up of closing portion.

5.0 Clapper Replacement Procedure

a) Position clapper firmly against the seat face.
b) Pre-load spring and bind using filament tape (see Fig. 1 at right).
c) Take the clapper pin with the extension screw and insert the pin into the spring and support hangers (see Fig. 2 at right).
d) When holding the clapper firmly against the seat, the clapper pin must move freely into position.
e) Remove the extension screw, replace the clapper pin plug, and cut the filament tape to free the spring.
f) Check the clapper for free movement by opening and closing the clapper by hand.
g) If movement is free, complete the valve assembly.

Fig. 1

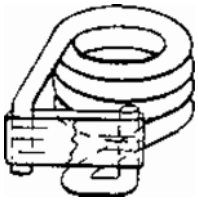
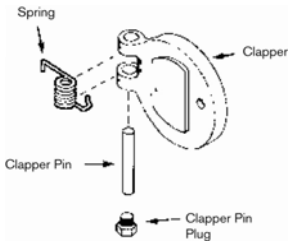


Fig. 2



6.0 Maintenance

The FTST valve requires no day-to-day maintenance or lubrication. It is suggested that the valve be operated once a month to ensure it is in operable condition. If at any time it is suspected that the valve is leaking, either in the plug position or as a check, it is possible that particulate is trapped between the mating faces of the seal and seat, and is preventing tight seal action. Cycling the valve from full open to full close causes a jetting action that will wash away particulate that may be trapped.

It is not uncommon to discover that when an FTST valve has been reported leaking in the closed position, that the valve is actually not completely closed. The cam-based design of the FTST valve makes it almost impossible to over-close. The FTST is designed to close at an approximate ninety degree rotation of the plug stem. To close the valve, rotate the stem one quarter turn and tighten.

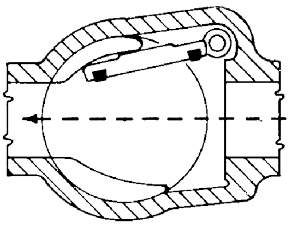
An adjustable wrench may be used with the cam-based design of the valve to assure a positive closure. The most satisfactory closure is accomplished by turning the plug to a tight fit and then 'bumping' the plug lightly using the wrench.

If these procedures have been completed and a tight seal is still not apparent, the valve should be disassembled and inspected for damage of the clapper seal and seat face, or for excessive wear of the clapper pin and pin hanger supports.

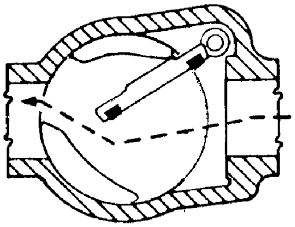
7.0 Standard Operation

The principle of operation for the FTST valve is simple. When in the open position, the clapper swings out of the flow. If the flow stops, the spring allows the clapper to close.

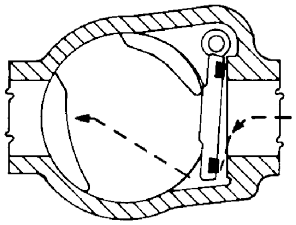
When closing the valve, a final 'bumping' action with a wrench gives the final positive seal closure.



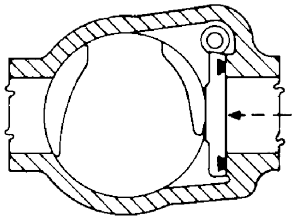
Open Position
With the plug in the open position, the clapper operates as an efficient check valve. The clapper being hinged at an angle provides 90% less dead weight to minimize clapper slam and chatter.



Balancing
The plug holds the clapper at the selected flow requirement for balancing.



Closed Downstream
As the plug is rotated toward the closed position, the downstream part closes first. This equalizes the pressure so the clapper closes with little resistance.



Positive Seal Closure
Final closing is accomplished by the plug camming against the back of the clapper.

S. A. Armstrong Limited
23 Bertrand Avenue
Toronto, Ontario
Canada, M1L 2P3
T: (416) 755-2291
F (Main): (416) 759-9101

Armstrong Pumps Inc.
93 East Avenue
North Tonawanda, New York
U.S.A. 14120-6594
T: (716) 693-8813
F: (716) 693-8970

Armstrong Holden Brooke Pullen Ltd.
Wenlock Way
Manchester
United Kingdom, M12 5JL
T: +44 (0) 1612 232223
F: +44 (0) 1612 209660