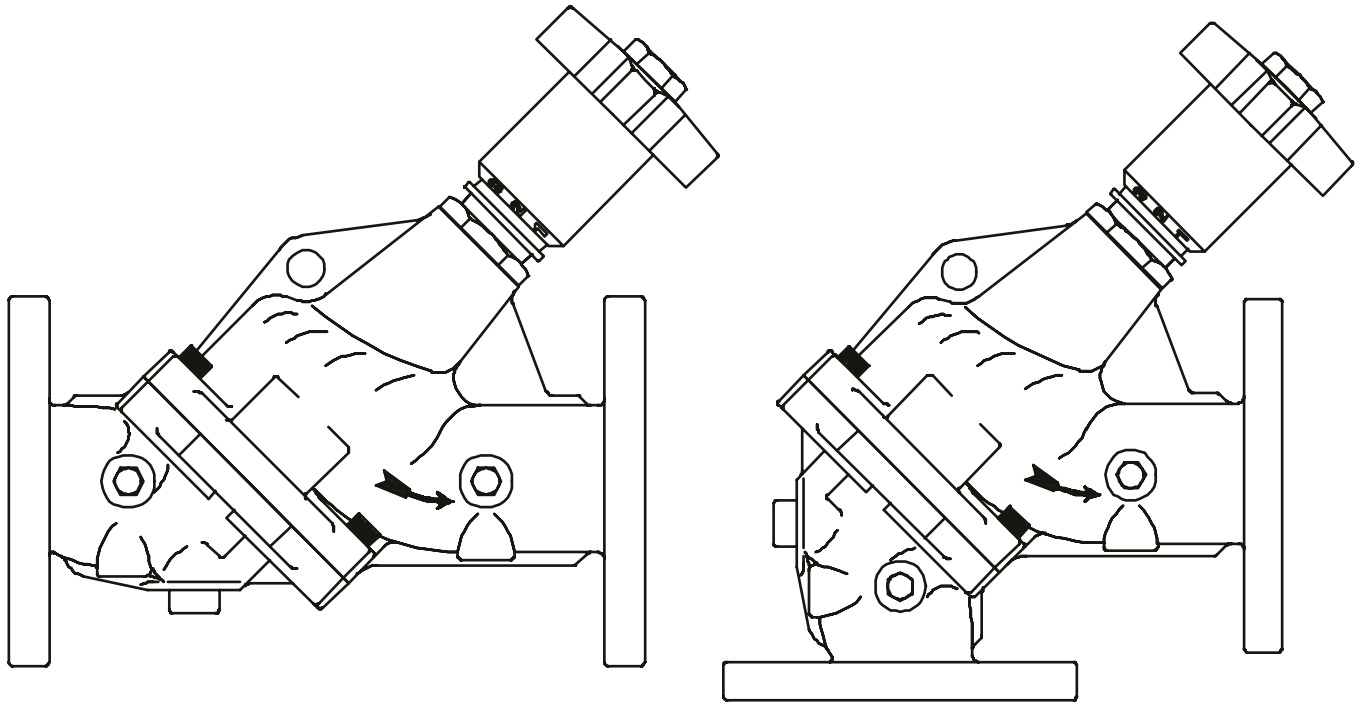




AURORA[®]

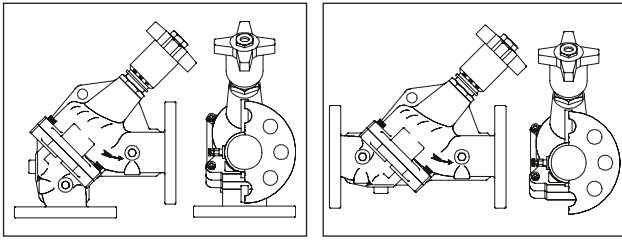


MODELS CBV-S/A HARD FLANGED CIRCUIT BALANCING VALVES

INSTALLATION AND OPERATION MANUAL

NOTE! To the installer: Please make sure you provide this manual to the owner of the equipment or to the responsible party who maintains the system.

MODELS CBV-S/A



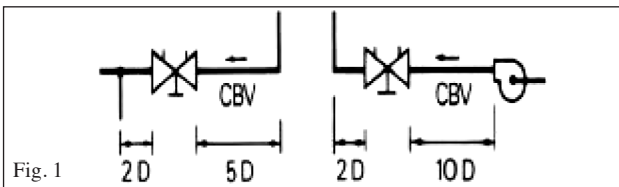
Model CBV-A – Angle Design Model CBV-S – Straight Design

CALIFORNIA PROPOSITION 65 WARNING:

▲ WARNING This product and related accessories contain chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

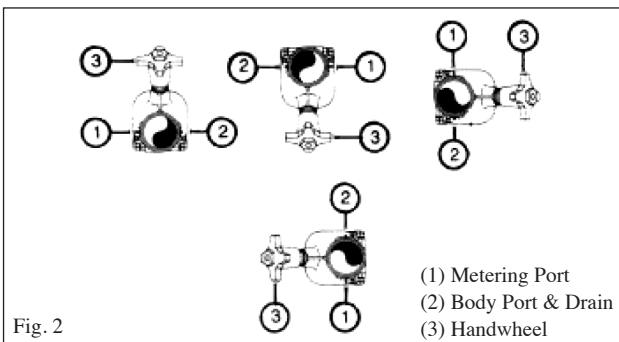
INSTALLATION:

To ensure accuracy of measurement, the CBV should be located at least five pipe diameters downstream from any fitting and at least ten pipe diameters downstream from a pump. Two pipe diameters downstream from the CBV should be free of any fitting (as illustrated in Fig. 1).



CBV valves must be installed with flow in the direction of the arrow on the valve body. Easy access to the probe metering ports (P.M.P's) and handwheel must be provided.

CBV valves can be installed in horizontal or vertical piping. The metering ports should never be installed below the pipe (pointing down), as this will allow system sediment to accumulate in the ports. (Illustrated below for horizontal piping in Fig. 2.)



CBV angle-style valves are designed to replace piping elbows.

Metering ports and body plugs may be interchanged for improved accessibility.

BOLT TIGHTENING:

Tighten all bolts evenly in standard star pattern. When used with a “raised face” flange, there will be a gap between the faces on the outer flange diameters.

CONVERSION (STRAIGHT TO ANGLE):

1. Open the valve one complete turn.
2. Remove the body bolts from the valve body.
3. Rotate one-half of the valve body 180°, making sure the seat and O-ring stay in position and do not get nicked or cut.
4. Replace the body bolts and tighten evenly.

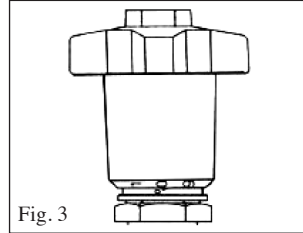


Fig. 3

5. With no arrows visible, the inner scale set at 0 on the indicator line aligned with the 0 on the outer scale, the valve is closed. Refer to Fig. 3.

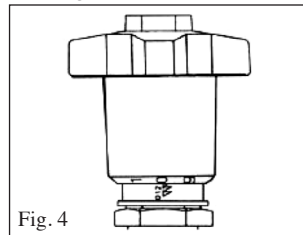


Fig. 4

6. Figure 4 shows a valve setting of 2.0, indicating that the valve is partially open.

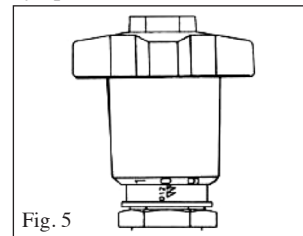


Fig. 5

7. With all arrows visible, the inner scale set at 6 and the indicator line aligned with outer scale 0, the valve setting is 6.0 and the valve is fully open. Refer to Fig. 5.

OPERATION:

The valve operates from closed (Fig. 3) to fully open by a counterclockwise rotation of the red handwheel. Use five (5) 380° turns for the 2-1/2" and 3" valves, six (6) turns for the 4", 5", and 6" valves, 12 turns for the 8" and 10" valves and 14 turns for the 12" valve. Two scales indicate the position of the valve.

Inner Scale (Figs. 4 and 5) – This sleeve has a vertical arrowed scale which indicates the number of full turns the valve has been opened.

Outer Scale (Figs. 4 and 5) – This scale is a micrometer-type scale marked 0–9 at the tapered base of the handwheel. Each gives 1/10th indications for each 360° turn of opening against the indicator line of the inner scale. Connect meter quick-disconnect hoses to metering ports as follows:

- Remove protective cap from metering ports.
- Insert and lock the meter probe into the metering ports.

MODELS CBV-S/A

The hose with the red fitting is upstream; the hose with the blue fitting is downstream.

CAUTION

The probe should not be left inserted into the fitting for prolonged periods of time, such as overnight, as leakage of the P.M.P. may occur when the probe is removed.

The locking nut on the probe is designed to hold it in the P.M.P. when taking readings in systems having a high working pressure. As sealing is accomplished internally on the probe stem, it is only necessary to tighten the locking nut finger-tight. Overtightening may cause damage to the P.M.P. or locking nut threads.

Safety glasses should be used.

Before taking a flow measurement reading, set the valve to its fully open (4.0) or at a preset position. Read the pressure drop across the valve. Curves are in the Aurora catalog.

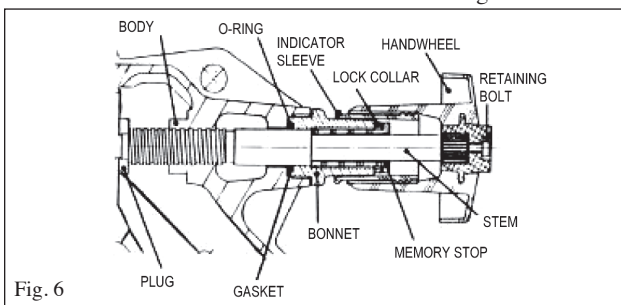


Fig. 6
MEMORY SETTING – 2-1/2" – 6" VALVES (FIG. 6):

After the valve has been adjusted to its balance setpoint and without moving the handwheel, remove the retaining bolt from the end of the handwheel using a 1/4" Allen wrench.

Carefully remove the handwheel and turn indicator sleeve assembly, leaving the valve at its balance setpoint.

Turn the plastic memory stop (clockwise) down until it stops. Finger-tight pressure is sufficient. Do not overtighten. Holding the memory stops in position, turn the lock collar (clockwise) down until it stops against the valve bonnet. The memory has now been set.

With the handwheel/turn indicator sleeve assembly still at its balance setpoint indication, reinstall them on the valve stem and hold in place with the 1/4" retaining bolt.

CAUTION

Care must be taken not to rotate the valve stem or change the handwheel/indicator setting while setting the memory.

REPOSITIONING HANDWHEEL – 2-1/2" – 6" VALVES:

The handwheel can be removed and repositioned in any of six positions around the stem.

- a. Close valve fully.
- b. Remove handwheel-retaining bolt.

- c. Remove handwheel and turn indicator sleeve by grasping the handwheel and pulling away from the valve body along the stem.
- d. Select a new position for easy reading and with the sleeve and handwheel held together in the closed position (0.0), push them back over the bonnet head and valve stem.
- e. Replace handwheel-retaining bolt.
- f. Open valve.

If handwheel is removed for any reason, it is important to first close the valve and then replace the handwheel per d. and e. above.

REPACKING CBV UNDER FULL SYSTEM PRESSURE – 2-1/2" – 6" VALVES:

- 1. Open valve fully to its memory setting and, on a piece of paper, record the valve setting.
- 2. Remove the handwheel/indicator sleeve assembly as instructed in the first and second paragraphs under "Memory Setting."
- 3. Loosen the lock collar by turning it counterclockwise until it seats against the top of the memory stop.
- 4. Remove the memory stop/lock collar assembly by turning the plastic memory stop counterclockwise.
- 5. Using the handwheel **WITH THE INDICATOR SLEEVE REMOVED**, turn the valve stem counterclockwise until the valve is fully open and will not turn any further (45 ft. lbs.). A step on the valve plug has now been back-seated against the upper portion of the valve body (metal-to-metal).
- 6. The valve bonnet may now be removed. There may be slight leakage, as the metal-to-metal backseating does not provide a drip-tight seal.
- 7. Clean exposed portion of valve stem (do not scratch).
- 8. Remove and replace the O-ring and gasket.
- 9. Install the valve bonnet.
- 10. Replace memory stop/lock collar assembly into the valve bonnet.
- 11. Close the valve fully by turning the stem in a clockwise direction. Tightening valve bonnet is necessary to stop any leaks.
- 12. Replace handwheel/indicator sleeve assembly per d. and a. under "Repositioning Handwheel."
- 13. Open valve to balance setpoint as recorded from first paragraph under "Repacking CBV Under Full System Pressure."
- 14. Reset memory. Refer to "Memory Setting" on page 2.

WARRANTY

Seller warrants equipment (and its component parts) of its own manufacture against defects in materials and workmanship under normal use and service for one (1) year from the date of installation or start-up, or for eighteen (18) months after the date of shipment, whichever occurs first. Seller does not warrant accessories or components that are not manufactured by Seller; however, to the extent possible, Seller agrees to assign to Buyer its rights under the original manufacturer's warranty, without recourse to Seller. Buyer must give Seller notice in writing of any alleged defect covered by this warranty (together with all identifying details, including the serial number, the type of equipment, and the date of purchase) within thirty (30) days of the discovery of such defect during the warranty period. No claim made more than 30 days after the expiration of the warranty period shall be valid. Guarantees of performance and warranties are based on the use of original equipment manufactured (OEM) replacement parts. Seller assumes no responsibility or liability if alterations, non-authorized design modifications and/or non-OEM replacement parts are incorporated. If requested by Seller, any equipment (or its component parts) must be promptly returned to Seller prior to any attempted repair, or sent to an authorized service station designated by Seller, and Buyer shall prepay all shipping expenses. Seller shall not be liable for any loss or damage to goods in transit, nor will any warranty claim be valid unless the returned goods are received intact and undamaged as a result of shipment. Repaired or replaced material returned to customer will be shipped F.O.B., Seller's factory. Seller will not give Buyer credit for parts or equipment returned to Seller, and will not accept delivery of any such parts or equipment, unless Buyer has obtained Seller's approval in writing. The warranty extends to repaired or replaced parts of Seller's manufacture for ninety (90) days or for the remainder of the original warranty period applicable to the equipment or parts being repaired or replaced, whichever is greater. This warranty applies to the repaired or replaced part and is not extended to the product or any other component of the product being repaired. Repair parts of its own manufacture sold after the original warranty period are warranted for a period of one (1) year from shipment against defects in materials and workmanship under normal use and service. This warranty applies to the replacement part only and is not extended to the product or any other component of the product being repaired. Seller may substitute new equipment or improve part(s) of any equipment judged defective without further liability. All repairs or services performed by Seller, which are not covered by this warranty, will be charged in accordance with Seller's standard prices then in effect.

THIS WARRANTY IS THE SOLE WARRANTY OF SELLER AND SELLER HEREBY EXPRESSLY DISCLAIMS AND BUYER WAIVES ALL OTHER WARRANTIES EXPRESSED, IMPLIED IN LAW OR IMPLIED IN FACT, INCLUDING ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Seller's sole obligation under this warranty shall be, at its option, to repair or replace any equipment (or its component parts) which has a defect covered by this warranty, or to refund the purchase price of such equipment or part. Under the terms of this warranty, Seller shall not be liable for (a) consequential, collateral, special or liquidated losses or damages; (b) equipment conditions caused by normal wear and tear, abnormal conditions of use, accident, neglect, or misuse of said equipment; (c) the expense of, and loss or damage caused by, repairs or alterations made by anyone other than the Seller; (d) damage caused by abrasive materials, chemicals, scale deposits, corrosion, lightning, improper voltage, mishandling, or other similar conditions; (e) any loss, damage, or expense relating to or resulting from installation, removal or reinstallation of equipment; (f) any labor costs or charges incurred in repairing or replacing defective equipment or parts, including the cost of reinstalling parts that are repaired or replaced by Seller; (g) any expense of shipment of equipment or repaired or replacement parts; or (h) any other loss, damage or expense of any nature.

The above warranty shall not apply to any equipment which may be separately covered by any alternate or special warranties.

PERFORMANCE: In the absence of Certified Pump Performance Tests, equipment performance is not warranted or guaranteed. Performance curves and other information submitted to Buyer are approximate and no warranty or guarantee shall be deemed to arise as a result of such submittal. All testing shall be done in accordance with Seller's standard policy under Hydraulic Institute procedures.

LIABILITY LIMITATIONS: Under no circumstances shall the Seller have any liability under the Order or otherwise for liquidated damages or for collateral, consequential or special damages or for loss of profits, or for actual losses or for loss of production or progress of construction, regardless of the cause of such damages or losses. In any event, Seller's aggregate total liability under the Order or otherwise shall not exceed the contract price.

ACTS OF GOD: Seller shall in no event be liable for delays in delivery of the equipment or other failures to perform caused by fires, acts of God, strikes, labor difficulties, acts of governmental or military authorities, delays in transportation or procuring materials, or causes of any kind beyond Seller's control.

COMPLIANCE WITH LAW: Seller agrees to comply with all United States laws and regulations applicable to the manufacturing of the subject equipment. Such compliance shall include: The Fair Labor Standards Acts of 1938, as amended; Equal Employment Opportunity clauses of Executive Order 11246, as amended; Occupational Safety and Health Act of 1970 and the standards promulgated thereunder, if applicable. Since compliance with the various Federal, State, and Local laws and regulations concerning occupational health and safety, pollution or local codes are affected by the use, installation and operation of the equipment and other matters over which Seller has no control, Seller assumes no responsibility for compliance with those laws and regulations, whether by way of indemnity, warranty, or otherwise. It is incumbent upon the Buyer to specify equipment which complies with local codes and ordinances.



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