

# KOSO HAMMEL DAHL

CONTROL VALVES

KOSO HAMMEL DAHL

253 Pleasant Street

West Bridgewater, MA 02379

tel: 774.517.5300

fax: 774.517.5230

[www.hammeldahl.com](http://www.hammeldahl.com)

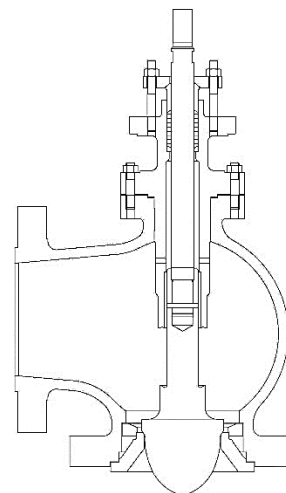
## Installation, Maintenance & Operating Instructions

### IMO – V701

#### Venturi Seat Angle Valves

1 inch – 16 inches (DN 25 – 400)

ANSI Class 150 – 600



**Read these instructions carefully before installation or servicing.**

### WARNING!

**FOR YOUR SAFETY AND PROTECTION, IT IS IMPORTANT THAT THE FOLLOWING PRECAUTIONS BE TAKEN PRIOR TO REMOVING THE VALVE FROM SERVICE OR BEFORE ANY DISASSEMBLY OF THE VALVE:**

1. At all times during this procedure, keep hands out of the valve. A remotely actuated valve could close at any time and result in serious injury.
2. Know what media is in the line. If there is any doubt, check with the proper authority.
3. Wear any protective clothing or equipment normally required when working with the media involved.
4. Depressurize the line and valves as follows:
  - a. Open the valve and drain the line.
  - b. Close and open the valve to relieve any residual pressure that may be in the valve prior to removing the valve from service.
  - c. After removal and prior to any disassembly, drain any remaining media by placing the valve in a vertical position and carefully opening and closing the valve several times.
5. The practical and safe use of this product is determined by the trim, packing, seal rings and body ratings. Read the name tags and check the maximum temperature and rating listed. This product is available with a variety of trim materials. Some of the trim materials have pressure ratings that are less than the body ratings. All of the body and trim ratings are dependent on valve type and size, packing, seal rings, trim material, bolting material, and temperature. Do not exceed these ratings.

## Table of Contents

STORAGE .....	3
INSTALLATION .....	3
MAINTENANCE .....	3
General .....	3
Removal of Actuator .....	3
Disassembly of Valve Body .....	3
Assembly of Valve Body .....	4
Mounting The Actuator.....	4

*These instructions provide information about safe handling and operation of the valve and are subject to change without notice.*

## STORAGE

When a valve is to be stored for an extended period, remove the line connection covers and spray a light coating of rust inhibitor on the interior. Replace the covers to prevent foreign matter from entering the valve body. Exposed parts should also be sprayed with a protective film of rust inhibitor. This list should be checked soon after the shipment has been received.

When hoisting the valve, make sure that ropes or cables are of sufficient strength and are positioned so that any tubing or accessories will not be damaged.

**CAUTION:** When the outlet flange protector is removed, coat with rust inhibitor. Please note that the seat ring is held in place by the flange protector.

## INSTALLATION

The valve performs best when in the inlet and outlet connections adjoin a straight run of the main pipeline away from pipe bends or sections of abnormal velocity. The valve may be installed in any position, provided that the correct direction of flow is maintained.

Clearance should be provided above the actuator to permit its removal for servicing, or for inspection of the pull stem-to-open-plug.

**By-Pass:** The conventional three-valve by-pass should be installed if it is necessary to continue operation during periods of control valve servicing. When making flanged connections, tighten the bolts evenly to avoid placing a strain on the body, or cracking a flange.

**Instruments:** An air supply pressure regulator with filter should be installed in the air line ahead of any valve-mounted instruments. Mounted positioners are piped and adjusted at the factory. Positioners should be re-calibrated before placing into service. Excessive delays in response occur when air control instruments are placed more than 100 feet from the valve. See the positioner IMO for instructions.

**Packing Adjustment:** Tighten packing flange nuts evenly for optimum seal pressure on valve stem and packing box walls. Tighten sufficiently to stop any stem leakage. Over-tightening will restrict stem movement.

IMO-V701

4/22 Rev.0

**Final Check:** After the valve has been installed, make a final check of the following:

- (1). **Valve travel** – vary air supply to the actuator to ascertain that actual travel corresponds with the nameplate indication.
- (2). **Airlines to the actuator** – check for leaks;
- (3). **Control instrument valve action** – check that the combined actions of controller, positioner (if any), and valve will provide the desired direction of valve movement and will ensure the required valve position in the event of air failure.

Under actual operating conditions, pressure drop across the valve may differ from the calculated figure. Diaphragm actuators on single-seated valves may require adjustment of the spring to provide full valve travel and shut-off. See the actuator IMO for instructions.

## MAINTENANCE

### General

- A. Maintenance such as diaphragms or packing can be done without removing the valve from the line.
- B. Valve must be removed from the line to replace trim.

### Removal of Actuator

Refer to actuator IMO.

### Disassembly of Valve Body

- A. Remove valve body (1) from the line.  
**CAUTION:** The seat ring, valve seat adapter and gasket may become loose when the valve body is removed.
- B. Remove seat ring (5), valve seat gasket (4B), and valve seat adapter (5A) from the valve body.
- C. Slide the valve plug and stem assembly (6, 19, & 8) out of the bottom of the valve body.
- D. If necessary, remove the pin (19) holding the valve plug stem (8) to the valve plug (6) and unscrew the assembly.
- E. For the ACME nut bonnet, Remove the

- bonnet nut (25) and wear ring (33).
- F. For the flanged bonnet, remove the bonnet studs and/or nuts (9, 10) and lift the bonnet.
  - G. For the ACME nut bonnet, slide the bonnet (2) and seal ring (4S) out of the bottom of the valve body.
  - H. Remove the packing:
    - 1. Remove the packing follower (14).
    - 2. Using a narrow hook or bent wire, remove the packing rings (12).
    - 3. Clean packing box thoroughly before replacing.

### **Assembly of Valve Body**

- A. If necessary, assemble plug and stem. A new plug and stem are pinned together at the factory. If only one of these parts is to be replaced, or if either part has been removed:
  - 1. Screw the valve plug (6) into the stem (8).
  - 2. Drill through plug shank and stem.
  - 3. Insert pin (19). The new pin should be the same diameter as the original pin.

For the ACME nut bonnet, assemble using steps B through D.

- B. Slide the seal ring (4S) around the top of the bonnet (2).
- C. Slide the bonnet (2) up through the bottom of the valve body (1).
- D. Place the wear ring (33) on the valve body and screw the bonnet nut (25) on to the valve bonnet. The bonnet nut must be tightened sufficiently to cause the seal ring (4S) to deform, creating a tight seal.

For the flanged bonnet, assemble using step E.

- E. Place the bonnet gasket (4) and bonnet (2) onto the body. Install and tighten the bonnet studs (9) and nuts (10). Tighten incrementally (in a star pattern) and evenly to ensure proper gasket sealing.
- F. Slide the plug and stem assembly (6, 8, 19) up through the bottom of the bonnet (2) and hold it in place while packing the stuffing

box

- G. Assemble the packing box:
  - 1. Insert the wiper ring (12G) and washers (12D when applicable) into the bottom of the stuffing box in the orientation shown.
  - 2. Inset six packing rings (12) into the stuffing box on top of the wiper ring (12G).
  - 3. Slide the gland follower (14) over the plug stem (8) and down onto the packing rings (12).
- H. Slide the seat ring (5), the valve seat gasket (4B) and the valve seat adapter (5A) into the bottom of the valve body.

### **Mounting The Actuator**

Refer to actuator IMO.

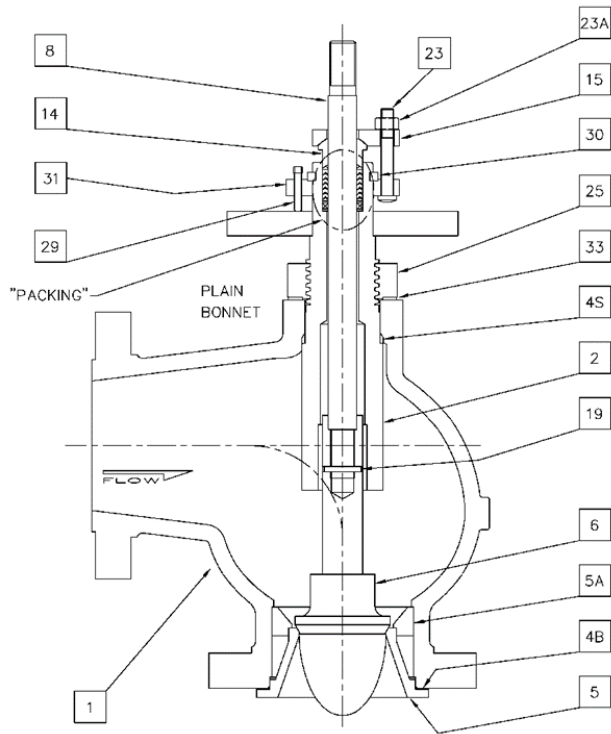


Figure 1. Cut-away drawing with plain bonnet

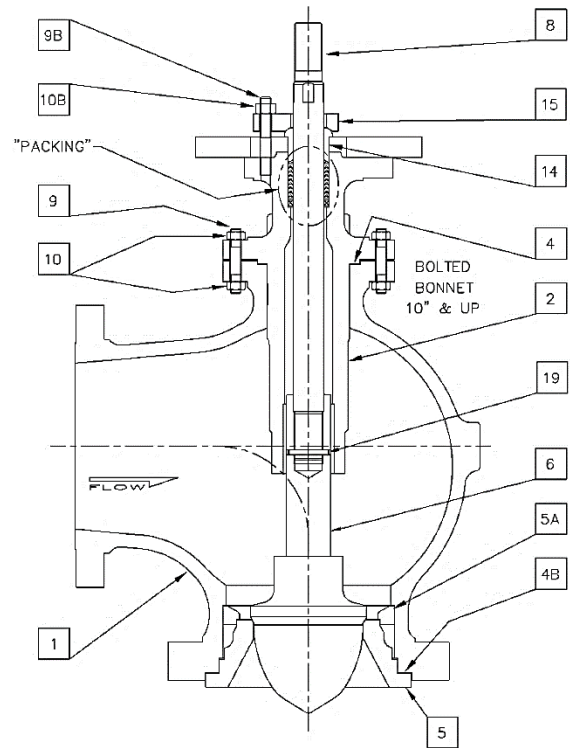


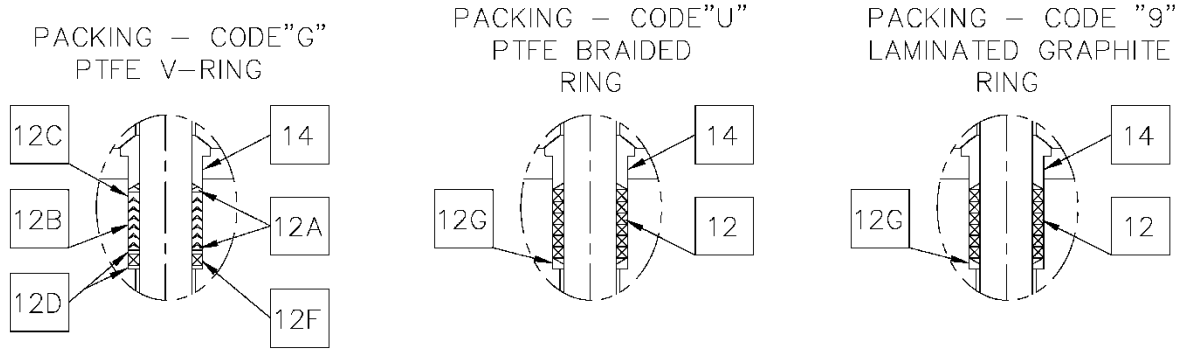
Figure 2. Cut-away drawing with bolted bonnet

Table 1: Parts Description

ITEM	DESCRIPTION	QTY.
1	BODY	1
2	BONNET	1
4	BONNET GASKET	1
4B	SEAT GASKET	1
4S	SEAL RING	1
5	SEAT RING	1
5A	SEAT RETAINER	1
6	PLUG	1
8	STEM	1
9	BODY STUD	AR
9B	PACKING STUD	2
10	BODY STUD NUT	AR
10B	PACKING STUD NUT	2

ITEM	DESCRIPTION	QTY.
12	PACKING - SEE VIEWS	AR
14	PACKING FOLLOWER	1
15	PACKING FLANGE	1
16	PIPE PLUG	1
18	DOWEL PIN	2
19	PIN	1
23	CARRIAGE BOLT	2
23A	CARRIAGE BOLT NUT	2
25	BONNET NUT	1
29	SQ HD SET SCREW	4
30	SPLIT RETAINING RING	1
31	YOKE RETAINING PLATE	1
33	WEAR RING	1

Figure 3. Packing



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