



CLOSURE SPECIALISTS SINCE 1981

MODCO™ FIGURE 500 CLOSURE

INSTALLATION INSTRUCTIONS

(!) THE INFORMATION PROVIDED IN THIS DOCUMENT IS VERY IMPORTANT (!)
&
(!) needs to be shared with everyone involved in installing the closure. (!)
(!) Modco appreciates the support of all SUPERVISORS. (!)

**This document and under a separate cover “Operations & Maintenance Instructions”
comes with every shipment.**

**If you are unsure about the provided information or can't identify parts of this
6 pages long document, please contact immediately (!) customer service:
1-(800)-378-8893 or 1-(936)-539-9222
sales@modcoind.com**

PART 1: Disassembly of not installed closure

1.1 Disassembly of Horizontal Hinge Closure

1. If a Pressure Alert Valve (PAV) is present, remove the stem and screw it into the retainer on the cap.
2. On closures 14" and under, unscrew the cap from the hub and lift the attached hinge components from hinge base.
3. On closures 16" and larger, remove the outer set collar from the cap pin and remove the hanger arm from the cap pin. Leave the inner set collar in place, this will retain the parallel balance set by the manufacturer.

NOTE: A burr may be left behind by the set screw in the collar. Using a file or emery cloth, remove the burr to ease removal of the hanger arm and/or related components.

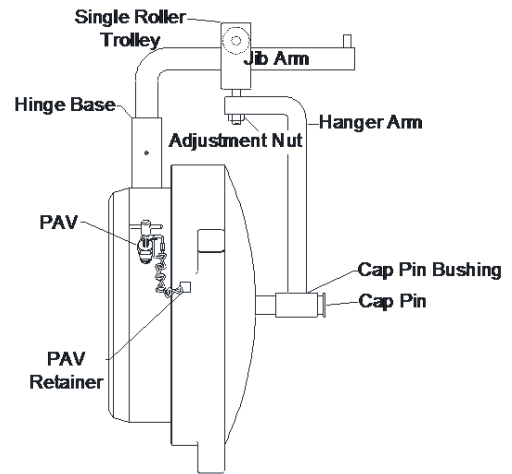
16" to 24" ANSI 300 class closures are equipped with a single roller trolley. Slide the hanger arm from the cap pin and lift the hinge components from the jib arm.

24" ANSI 600 and larger closures are equipped with a dual wheel trolley. Measure the distance from the bottom of the jib arm to the top of the hanger arm, or put a reference mark on the adjustment bolt above the hanger arm. Remove the nut, block and hanger arm from the closure. Do not remove the trolley from the jib arm.

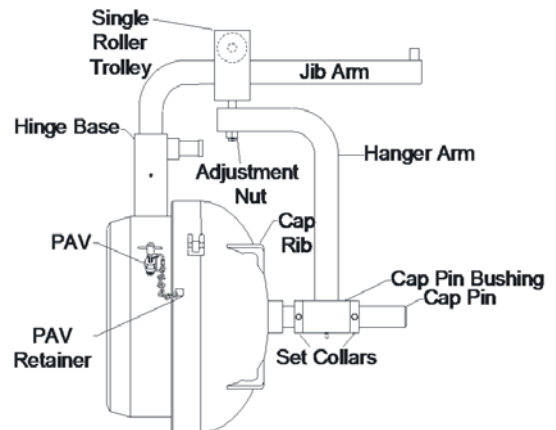
NOTE: 36" ANSI 600 closures and larger have roller bearings inside the cap pin bushing. Make sure the cap pin is free of all burrs to ease removal of the inner bearing race. Store bearings with care and keep them protected from dust, grit and other contaminants.

4. Remove the jib arm from the hinge base. The jib assembly of 24" ANSI 600 and larger closures are equipped with a brass bushing and tapered roller bearing inside the hinge base. Take care not to damage these components. Remove the tapered bearing race from the bottom of the hinge base.
5. Attach a hook sling to at least three cap ribs. Use the supplied opening tool to break the seal and loosen the cap if necessary. Using a crane, continue to unscrew the cap using just enough lift to keep the cap floating between threads. Keep lifting and turning till the cap clears the hub. Place the cap face down on a clean, flat surface. Plywood or a wooden pallet is preferred.

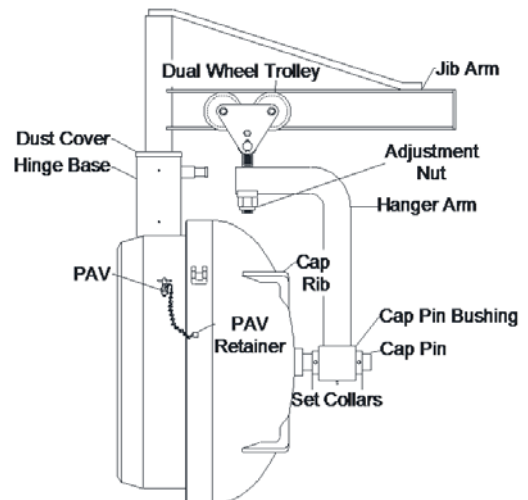
Horizontal 6"-14" drawing



Horizontal 16-24 300" drawing



Horizontal 24 600"- 48" drawing



1.2 Disassembly of Vertical Hinge Closure

1. Locate the Pressure Alert Valve (PAV), remove the stem and screw it into the retainer on the cap. The PAV is standard on all closures 6" and larger, optional on sizes 2", 3", and 4".
2. On closures 14" and under, unscrew the cap from the hub and cap with lift the attached hinge components out of the davit base.

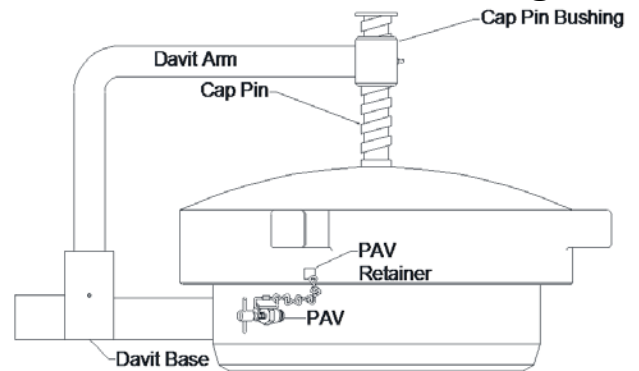
IMPORTANT: Keep the cap centered over the hub at this time. Swinging the cap to the side will cause a weight imbalance and the closure may fall over causing injuries and equipment damage.

On 16" and larger closures, use the supplied ratchet tool to break the seal, than unscrew the cap.

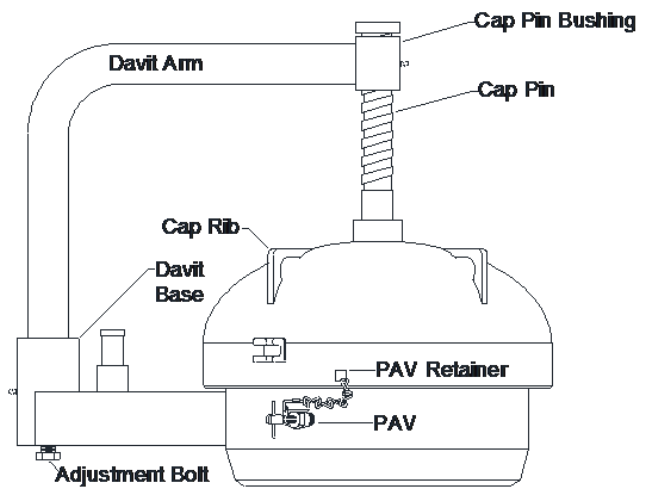
IMPORTANT: Keep the cap centered over the hub at this time. Swinging the cap to the side will cause a weight imbalance and the closure may fall over causing injuries and equipment damage.

3. Using a hook sling on at least 3 cap ribs and lift the cap with its hinge components out of the davit base. Support the davit arm also if needed. Please be aware the davit arm of 24" ANSI 600 and larger closures are equipped with a bronze bushing and tapered roller bearing inside the hinge base. Take care not to damage these components. Remove the tapered bearing race from the bottom of the davit base. Place cap face down on a clean flat surface allowing the arm to hang freely. Stacked wooden pallets are preferred.

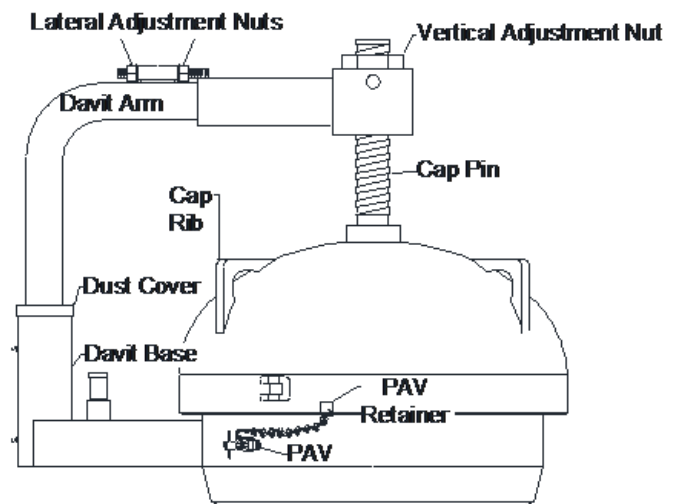
Vertical 6"-14" drawing



Vertical 16-24 300" drawing



Vertical 24 600"- 48" drawing

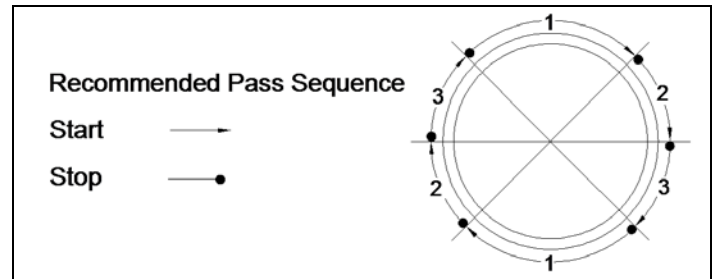


PART 2: Attachment of the Closure

Important:

All welding should be performed by qualified welders in accordance with qualified procedures. To avoid hub warpage, complete all nozzle and attachment welds prior to the closure installation!

Recommended Pass:



2.1 For Closure Hub in the Field (Manual Welding)

1. Remove the PAV, O-ring, and cap from the closure hub. Remove the hinge components as shown in “PART 1”.
2. Fit the hub to the vessel. The use of internal or “spider” bracing is recommended, especially with thinner wall thicknesses.
 - 2a. No hinge closures shall be fit with the PAV in the 12 o’clock position on horizontal applications.
 - 2b. Hinged closures shall be fit with the hinge base level vertically.
3. Weld root and hot passes. The amount of heat should be minimized to avoid possible hub sealing warpage. Using two welders on opposite sides of the closure to reduce the amount of residual stress induced is highly recommended on sizes 16” and larger. A recommended pass sequence is illustrated on the top of the page.
4. Replace the PAV and reassemble the closure. Make any necessary adjustments. Reference the horizontal or vertical adjustment section of the Operations & Maintenance Manual for proper adjustment procedures.

2.2 For Closure Hub in the Fabrication Shops (Automatic Welding)

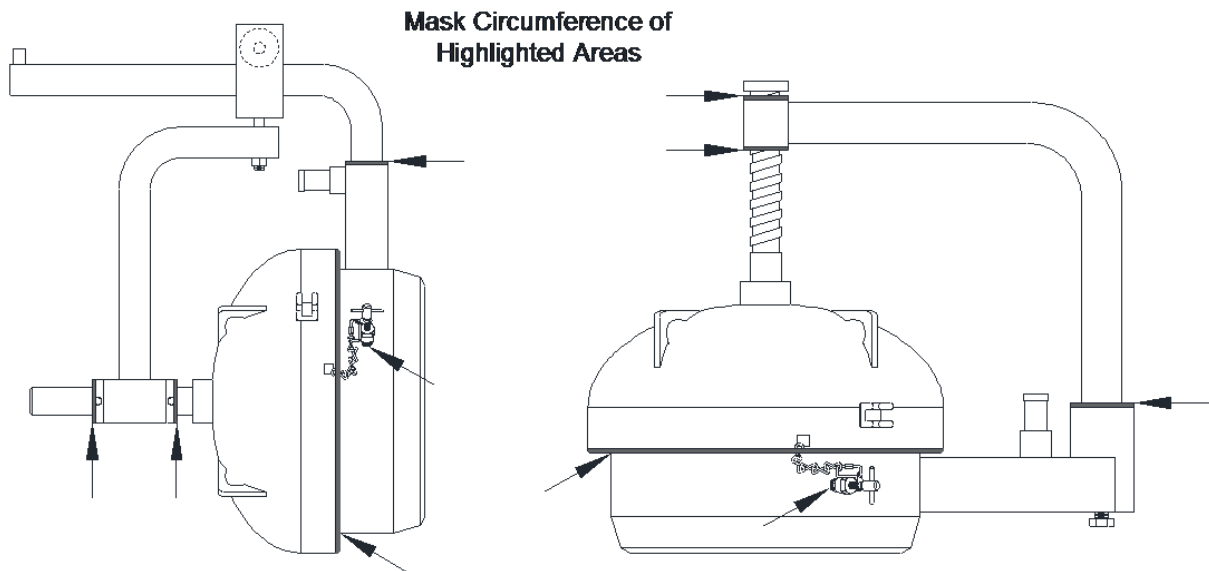
1. Remove the PAV, O-ring, and cap from the closure hub. Remove the hinge components as shown in “PART 1”.
2. Fit the hub to the vessel. The use of internal or “spider” bracing is recommended, especially with thinner wall thicknesses.
 - 2a. No hinge closures shall be fit with the PAV in the 12 o’clock position on horizontal applications.
 - 2b. Hinged closures shall be fit with the hinge base level vertically.
3. Weld the root pass. Using two welders on opposite sides of the closure to reduce the amount of residual stress is highly recommended on sizes 16” and larger. A recommended pass sequence is illustrated on the top of the page.
4. Complete the hub to vessel weld using care to minimize heat build up to avoid possible warpage of the hub seal face.
5. Before post weld heat treatment, remove all grease from the hub threads. A coating of an anti-splatter product used for welding will protect against scale build up during the post weld heat treatment. **DO NOT PERFORM POST WELD HEAT TREATMENT ON HINGE COMPONENTS OR THE CAP!**
6. Replace the PAV and reassemble the closure. Make any necessary adjustments. Reference the vertical or horizontal adjustment section of the Operation & Maintenance Manual for proper adjustment procedures.

PART 3: Final tune ups

3.1. Sandblasting

Take the following precautions to avoid trapping abrasive media in critical areas. Abrasive media trapped in threads, seal, and moving parts may lead to operation trouble and severe thread galling.

- a. Mask critical areas with a suitable masking material.
- b. Thoroughly clean the thread, seal, and moving parts after blasting.
- c. Avoid blasting directly towards masked areas as shown below.



3.2 Ready to go Actions

Before delivery to the end user or storage plans, ensure the closure is ready for reliable service in the field. During final make-ready, grease all grease zerks until grease flows from the joint, then wipe away excess. The closure should operate with little to no thread drag. Operate the closure, if resistance or thread drag is felt, see section 5 of the Operations Manual for proper adjustment procedure. Keep the cat tool or lug wrench with their respective closures.



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