FIELD CONVERSION OF AURORA 410 SERIES AND MODEL 481 SPLIT CASE PUMPS FROM RIGHT-HAND ROTATION TO LEFT-HAND ROTATION

Occasionally, a split case pump must be field modified from right-hand rotation to left-hand rotation. Fortunately, Aurora's split case pump design allows this conversion to be made easily in the field using the existing components. Even if the conversion is accomplished carefully with no damage to the internal parts, a new parting flange gasket and sleeve O-rings should be used for the re-assembly. Of course, if the pump has been in service for some time, the sleeves, packing or seals and wear rings should also be considered for replacement. It is prudent to have the appropriate Instruction Manual (Section 6 Items 41 1 through 413) on hand while performing this modification. Proceed as follows:

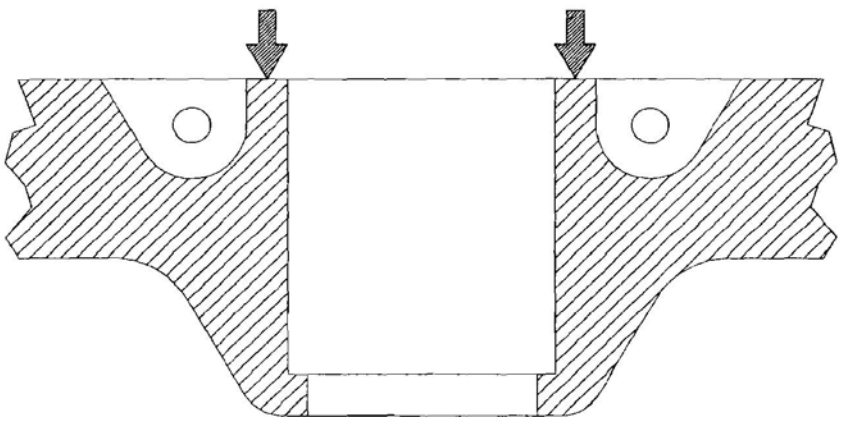
1. First, mark the bearing caps so they can be re-installed on the same bearing arm and in the same orientation during re-assembly. Then remove the bearing caps and upper casing half and lift out the rotating element.
2. For horizontal pumps, unbolt the pump casing from the base and rotate it 180 degrees. For vertical pumps, the motor support and ring base must be removed and placed on the opposite ends of the casing. Figure 1 shows the correct suction and discharge orientation for right-hand rotation pumps. Figure 2 shows the correct suction and discharge orientation for left-hand rotation pumps.
3. Carefully remove both bearings and mechanical seals (if used) as described in the Instruction Manual. It is possible to convert to left-hand rotation without removing the inboard bearing and mechanical seal, but to prevent damage to the delicate seal faces, we recommend removing both seals while reversing the impeller.
4. Assuming that you are converting right-hand rotation to left-hand rotation, remove the outboard shaft sleeve (the one farthest from the coupling) by turning it counterclockwise. The outboard sleeve must be removed first because the impeller key is engaged in the inboard sleeve locking it in place (see Figure 1).
5. After removing the outboard sleeve, mark or scribe the shaft at the edge of the impeller hub as a reference point for re-assembly.
6. Remove the impeller and impeller key from the shaft. Turn the impeller over so the curve of the blades is in the opposite direction. Refer to the Figures for-the correct blade curve direction when re-assembling the pump. Back off the inboard shaft sleeve.

Parts are now in position for re-assembly as a left-hand rotation pump.

1. Replace the inboard sleeve O-ring and place the impeller key into the shaft keyway.
2. Slide the impeller onto the shaft. Check Figure 2 to verify the blade curve is correct for left-hand rotation.
3. Replace the outboard sleeve O-ring and thread the outboard sleeve onto the shaft up to the mark made previously in Step 5. Align the sleeve keyway with the shaft keyway.
4. Slide the impeller key into the outboard shaft sleeve. The key should be flush with the inboard hub of the impeller. The outboard shaft sleeve should now be locked in place to prevent its loosening when the pump is rotating left-hand.

5. Tighten the inboard shaft sleeve in place. The rotating element has now been converted from right-hand rotation to left-hand rotation.
6. Re-install the mechanical seals or packing, bearings and case wear rings, referring to the Instruction Manual under Reassembly.
7. Place the rotating element into the pump casing, making sure the orientation is correct for the pump rotation (refer to Figure 2). Rotate the case wear rings to seat them onto the dowel pins in the lower casing half.
8. Re-install the bearing caps using the marks made in the first step of disassembly to assure they are returned to the original bearing arm and orientation. This is very important! Rotate the impeller by hand to be sure the rotating element is centered in the casing and that no rubbing occurs. If not centered, a minor re-positioning of the sleeves may be required.
9. The casing's parting flange should be cleaned of old gasket material using a scraper. Care should be taken so as not to scratch or mar the mating surfaces.

NOTE: The new parting flange gaskets must be neatly trimmed around the box, especially at the face if mechanical seals are used. This is necessary to ensure proper sealing of the gland O-ring. The arrows in the sketch below indicate these two points.



10. Replace the upper casing half, making sure it is properly aligned onto dowel pins in the lower casing half. Re-install and evenly tighten the upper casing capscrews.
11. To complete the job, be sure to change the motor leads to reverse the rotation. After final assembly, the coupling alignment must be carefully checked.

These instructions are specifically for single stage horizontal and vertical split case pumps, but the basic procedures also apply to two-stage Models 421,422, 423 and 431. However, these instructions *DO* to older style split-case pumps that employed right-and left-hand threaded sleeves.

These instructions were derived from Aurora Pump's Engineering Newsletter Vol. 1 No. 10, Dated May I, 1972, prepared by Joe Rundle, Applications Engineering.

FIGURE 1: RIGHT-HAND ROTATION

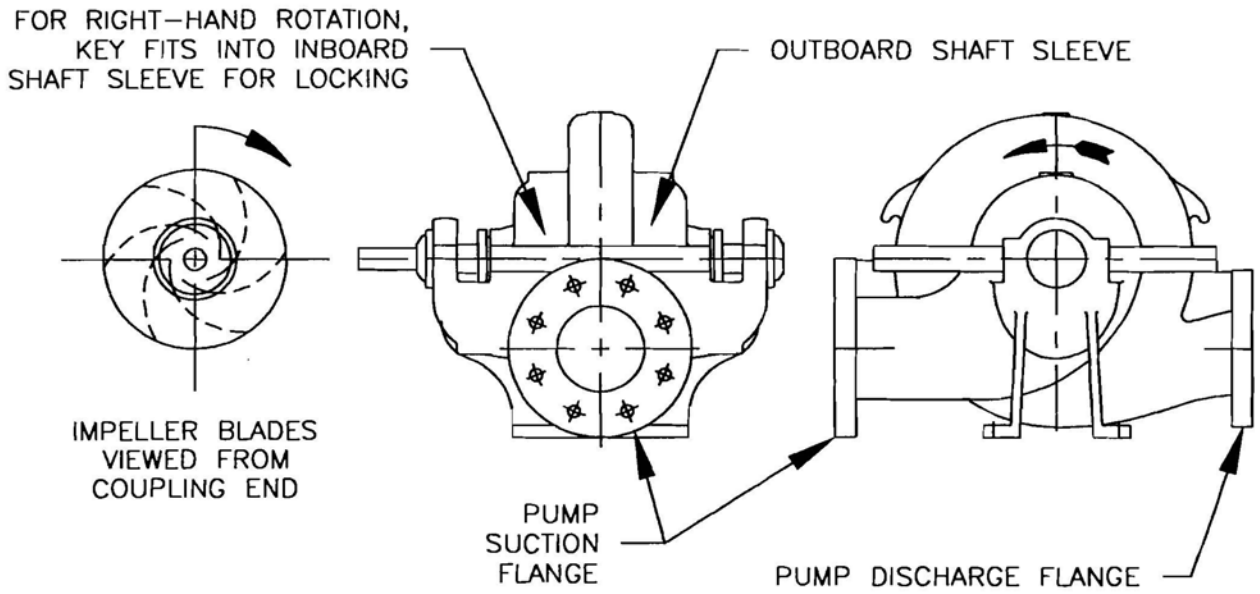


FIGURE 2: LEFT-HAND ROTATION

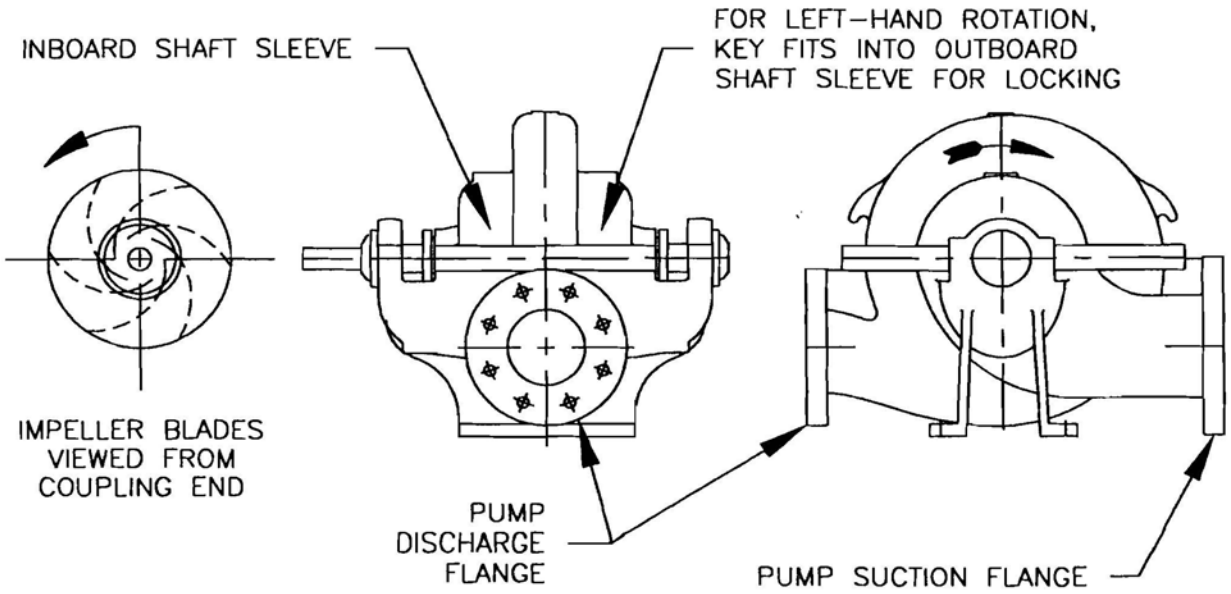


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FIGURE 1: RIGHT-HAND ROTATION

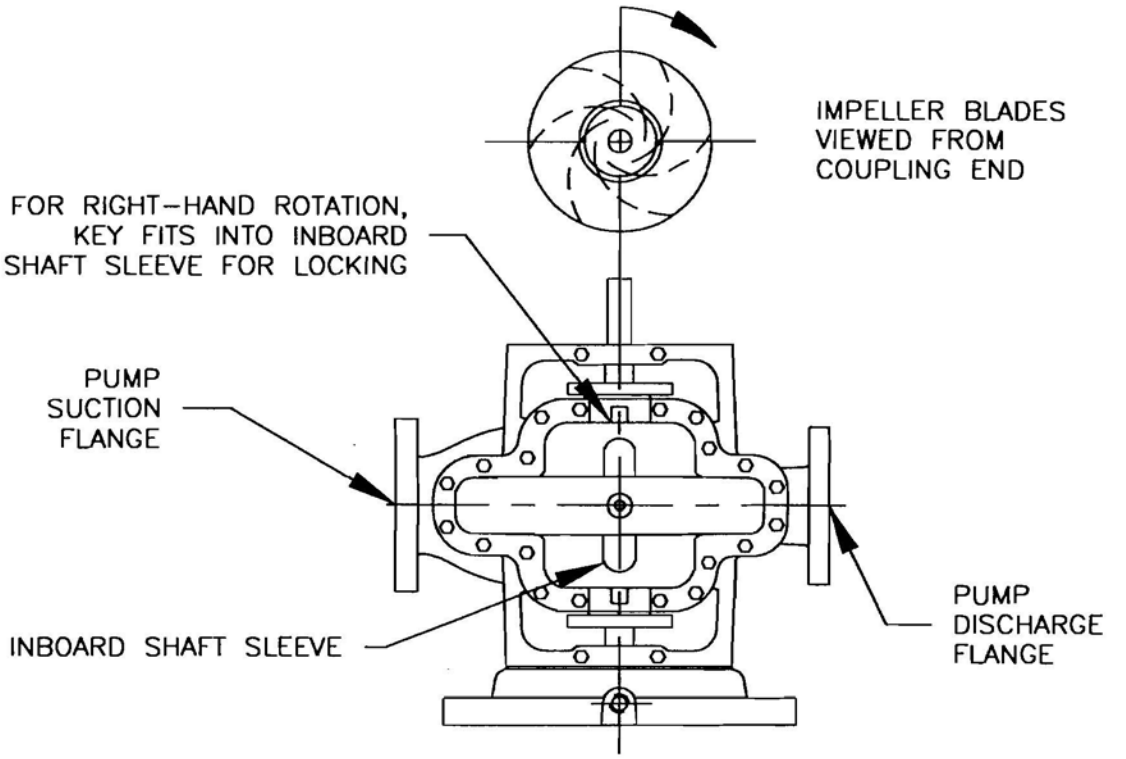
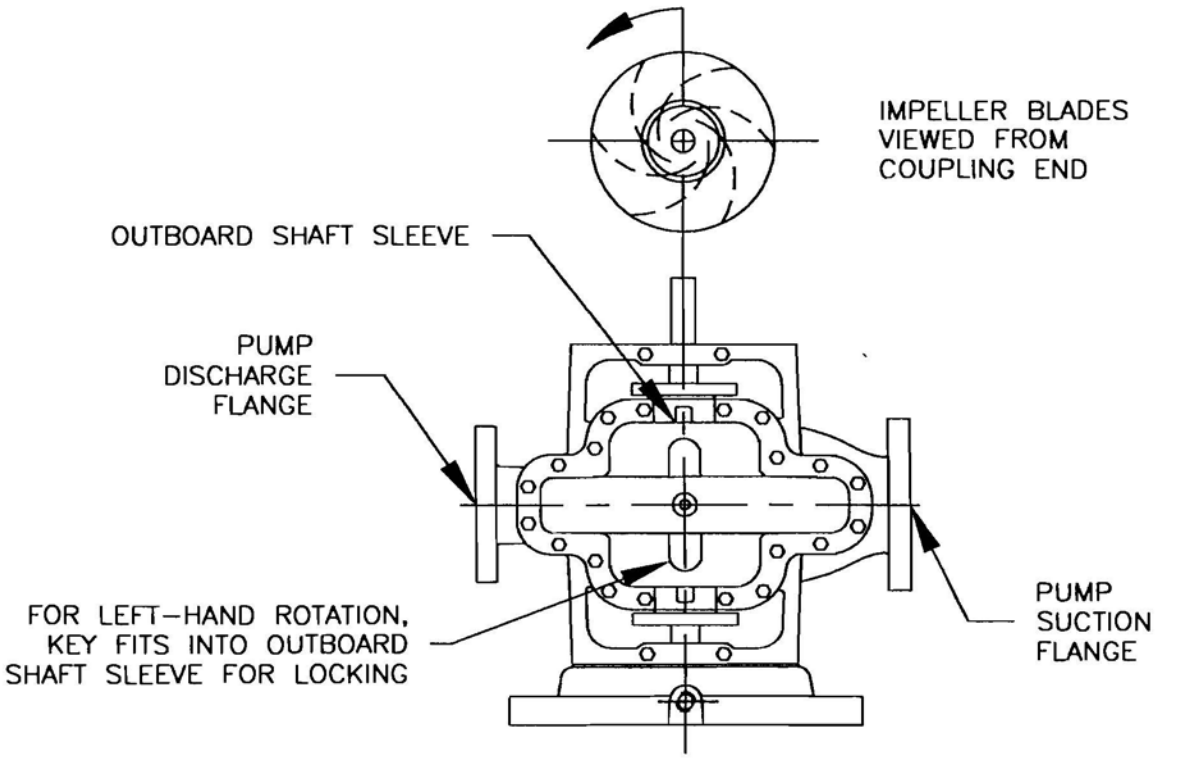


FIGURE 2: LEFT-HAND ROTATION



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