

## **Installation Procedure for ASD16 Propeller Shaft Seal John Crane Marine Type 5M**

1. Measure and record dimension A from the end of the thrust tube to the seal shoulder. Dimension A should be about 2.86".
2. Measure and record dimension B from the end of the thrust tube to the shaft shoulder. This should be about 1.60".
3. Subtract B from A. This is the "setting dimension" and should be 1.264 +/- .026 inches. If the setting dimension deviates from this value, contact Twin Disc Engineering.

Perform the following on the work bench:

4. Install the rubber sealing strip into the seat housing item 2-1.
5. Apply a soapy solution on the sealing strip and the forward seat, item 1-1, and install the seat, into the seat housing. Push the seat evenly and firmly into the housing until it seats on the strip.
6. Measure and record dimension C, the height of the seat and housing subassembly in several locations. Ensure that it is fully seated before measuring.
7. Remove the seat from the seat housing but leave the sealing strip in the housing.
8. Lightly oil the interior surface of the thrust tube. Install the seat housing with o-ring into the thrust tube using tool T-18050-643. Install the retaining ring, item 2-3.
9. Clean the forward seat face with alcohol or lacquer thinner. The face must be completely free of debris and dirt. Apply a light film of very light oil to the seat face. Apply soapy solution to the sealing strip and to the forward seat and install the seat with tool T-21549-17. Be sure to keep the contact surfaces of the tool clean.
10. Measure and record dimension D, the distance from the end of the thrust tube to the forward seat face in several locations. Dimension D should be about 1.965".
11. Subtract D from A and record the result. This dimension should be about 0.895" or the same as dimension C.

After verifying that the above dimensions are correct, install the rotating assembly:

12. Clean the aft seat face, item 1-3, as above for the other seat face. Ensure that the entire rotating assembly is clean.
13. Coat the inside diameter of the rotating assembly and also the shaft sleeve with soapy solution.
14. Carefully place the rotating assembly onto the shaft and push forward carefully and gently by hand until the shaft sleeve o.d. is visible. Do not attempt to push it fully into place by hand. Attach a dial indicator to tool T-18050-642 and position the tool and propeller nut, behind the rotating assembly.
15. Push the rotating assembly until the aft edge of the abutment ring is about 1.0" (inches) from the end of the thrust tube. Continue slowly, while oscillating the shaft by hand until a squealing sound can be heard, indicating that the seal faces have just touched. Measure

dimension 'E' from the aft edge of the thrust tube to the aft edge of the abutment ring. It should be about 0.886" [22.5mm].

16. Zero the dial indicator. Push the rotating assembly as far as it will go forward, watching the indicator. When the indicator stops moving, tighten the propeller nut slightly more. Measure and record dimension 'F' the distance between the aft edge of the ring and aft edge of the thrust tube housing. This should be about 0.540" [13.7mm]. The total travel of the seal from the contact point to the fully installed position should be about 0.346" [8.8mm].

Note: The dimensions A through F are check dimensions to assure the parts are properly assembled; their purpose is not to set the value of the seal compression.

17. Install all 8 setscrews into the adapter ring, item 3-1, and torque them to about 8 foot-lbs. (enough to keep the adapter ring in place). After the setscrews are tightened, remove the seal installation tool. (The adapter ring is also known as the abutment ring and the retaining ring.)

#### Instructions for Drilling Dimples in the Shaft Sleeve:

18. Lock the propeller shaft against rotation.
19. Pack the seal cavity with cloth to keep chips from entering the seal cavity.
20. Scribe a line on the abutment ring and on the shaft sleeve to preserve the angular alignment of the ring on the shaft.
21. Remove one setscrew and replace with a drill bushing. Tighten the bushing firmly but do not over-tighten.
22. Using a size 'G' drill (0.261" or 6.6mm), spot a dimple in the sleeve through the bushing. The depth of cut should be to allow the full point of the drill to penetrate into the surface.
23. Remove the drill bushing.
24. Blow out all chips and debris from the threaded hole.
25. Repeat steps 17. Through 24. for the other 7 setscrew holes.
26. Mount the propeller on to the shaft, and torque the nut to about 2/3 final torque. It is not necessary to install the lock nut at this time.
27. Measure and record the gap between the hub and the abutment ring.
28. Select a white plastic keeper with a wall thickness less than the measured gap. If the keeper is too thick, grind or otherwise machine the face of the keeper to fit into the gap with about .25mm clearance.
29. Remove the propeller and slide the keeper into position, reinstall the housing end cover then the propeller.

### Data Sheet for Type 5M Seal Installation Twin Disc Model ASD16 Surface Drive

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Calculated dimensions are given. Fill in the actual measured dimensions on installation.

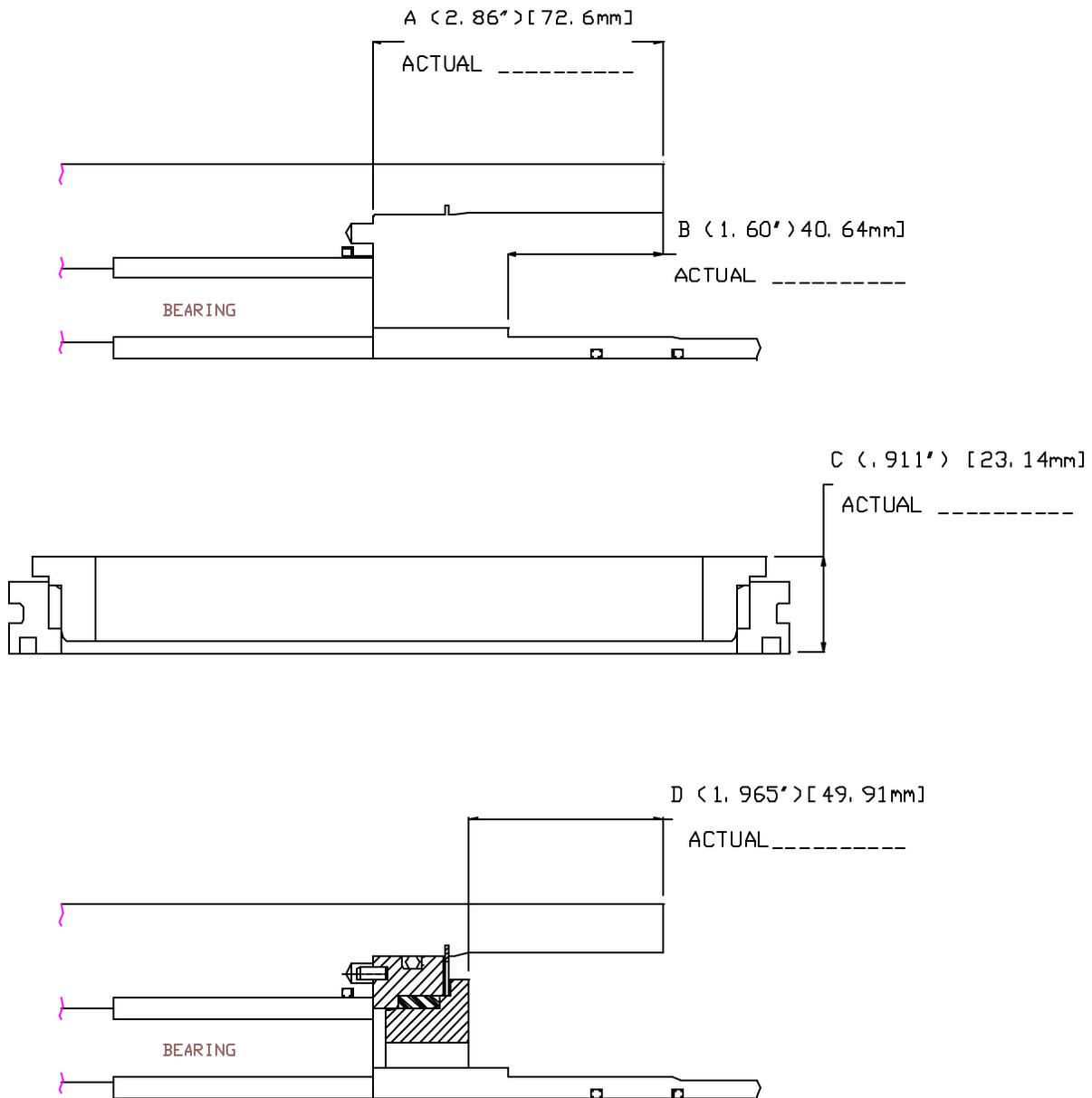
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Drive Ser No. \_\_\_\_\_

Port/Stbd. \_\_\_\_\_

Technician \_\_\_\_\_



# Data Sheet for Type 5M Seal Installation Twin Disc Model ASD16 Surface Drive

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