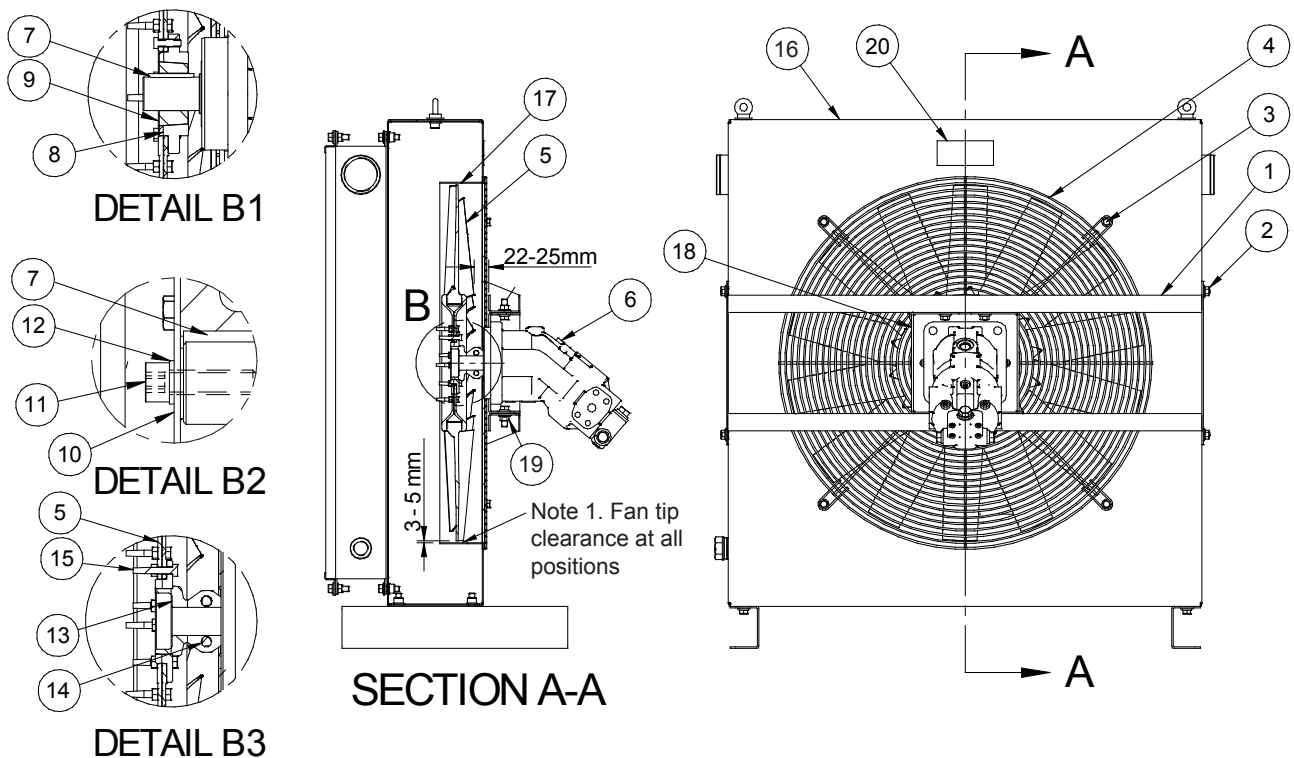


HYDRAULIC MOTOR DRIVEN FANS.

Some Dynacool DC & ST model hydraulically driven heat exchangers are supplied without motors so that the customer may supply and fit a hydraulic fan motor of their choice. In such cases where the customer is to fit the motor, care should be taken to make sure that the motor and fan are fitted correctly and secured against undesired movement. Hydraulic motors fitted as fan drives must be equipped with a check valve to permit the fan to rotate freely after the oil flow has been shut off from the motor. Failure to provide such a device may cause the fan to be damaged due to inertial loads.

It is the customers responsibility to ensure that the correct materials are used and that the materials supplied by the customer are operated within the published ratings.

Field assembly of fans is not covered by supplier warranty..



Fan Installation Procedure

The procedure as set out below details the installation of customer supplied hydraulic motors to the fans for Dynacool no motor model heat exchangers. This procedure describes the mounting of fans to hydraulic motors with either splined shafts or round shafts with a single key.



Before commencing any work on the heat exchanger, ensure that all site safety procedures are followed.

Note

Some earlier model coolers had the fan retained to the round motor shaft using a washer and bolt system. The bolt was threaded into a hole in the end of the motor shaft. See Detail B2. Later models use a taper lock bush system. See Detail B1. For splined shaft motors, refer to Detail B3.

Procedure

1. Remove the four bolts (1) securing the Motor Beam (2), two bolts on each side of the Heat Exchanger Case (16).
2. The heat exchanger is usually supplied with the Fan (5) strapped to the inside of the Fan Guard (2). Remove the fan guard bolt assemblies (3), then remove the Fan Guard, (4) & Fan (5) noting the way the Fan Guard mounting lugs sit flush against the heat exchanger case. Remove any plastic strapping to free fan from guard.



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- Place the customer supplied hydraulic motor (6) onto a work bench with the motor shaft facing towards the assembler.
- Check and remove any imperfections from the shaft of hydraulic motor (6). For round shaft motors, fit the Shaft Key (7) to the Motor shaft. Coat the Motor Shaft with some grease.
- Mount the Motor Beam (1) onto the mounting flange of the hydraulic motor (6). Secure the Motor Beam to the hydraulic motor with suitable bolts (customer supplied).
- Place the Fan Guard (4) over the hydraulic motor shaft with the mounting lugs facing toward the assembler. When assembled, the mounting lugs will sit flush on the heat exchanger case.

For round and keyed shaft motors.

Taperlock Bush Fan Mounting - refer Detail 1

- Fit the taper lock bush (9) loosely into the fan hub (8) using the grub screws provided.
- Fit Fan (5) onto the hydraulic motor shaft. DO NOT force Fan (5) on to shaft with a hammer. This should be a hand push fit.
- Align the face of the taperlock bush (9) with the end of the motor shaft. Tighten the grub screws evenly. The trailing edge of the fan should be between 22-25mm from the closest face of the motor beam. Refer to "Sect A-A" in the diagram above. Adjust position of the Fan (5) until the required distance is obtained.

Bolt & Washer Fan Mounting - refer Detail 2

- Fit Fan (5) onto the hydraulic motor shaft. DO NOT force Fan (5) on to shaft with a hammer. This should be a hand push fit.
- A plastic bag containing items (10), (11) and (12) was packed attached to Fan Guard (4). Remove the plastic bag and all cable ties from the Fan Guard. Remove the Washer (10) and the SHC Screw and Spring Washer (11 & 12) from the plastic bag.
- Apply a suitable thread locking compound such as LOCTITE 242 to the thread on Bolt (11). Then pass Bolt (11) through spring washer (12) and Washer (10) and attach to the hydraulic Motor Shaft. Tighten Bolt (11) to the final torque value as per recommended torque table below.

For splined shaft motors

- Fit Fan (5) onto the splined hydraulic motor shaft. DO NOT force Fan (5) on to shaft with a hammer. This should be a hand push fit.
- Position the Fan (5) until the trailing edge of the fan is between 22-25mm from the closest face of the motor beam. Refer to "Sect A-A" in the diagram above. Adjust the position of the Fan (5) until the required distance is obtained.
- Once the correct distance is obtained, tighten the SHC screws (14) on the clamplock hub (13). Torque values are available in the Table below. Check the trailing edge to motor beam distance to ensure correct amount is still 22-25mm.

TEST POINT 1. Hand rotate the fan to ensure that the hydraulic motor rotates freely.

- Using a suitable lifting device, lift the completed Fan/ Motor Beam Assembly carefully onto the Heat Exchanger Motor Case (16) inserting the Fan (5) carefully inside the heat exchanger Fan Ring (17). First, re-attach the Motor Beam (1) to the Heat Exchanger Case (16) using the four bolts (2). Then re-attach the Fan Guard (4) using the fan guard bolt assemblies (3). Tighten all bolts to final torque values as per the table below.
- Position the Fan/ Motor Beam Assembly so that the Fan (5) is positioned centrally in Fan Ring (17). See Note 1 on diagram.
- If the Fan Tip clearance is not even at top or bottom of Fan Ring (17), the 4 Motor Base Bolts (3) may be loosened. The Motor Base (1) may be tapped up or down until Fan Tip Clearance is 3 to 5 mm at top and bottom. Then re-tighten the 4 Motor Base Bolts (3).
- If the Fan Tip clearance is not even at the sides of the Fan Ring (17), then 4 Motor Mounting Bracket Bolts (19) may be loosened. The Motor Mounting Bracket (18) may be tapped until Fan Tip Clearance is 3 to 5 mm from side to side of the fan ring. Then re-tighten the 4 Motor Mounting Bracket Bolts (19).



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TEST POINT 2. Hand rotate the Fan (5) inside of Fan Ring (17) to make sure that Fan tips do not interfere with Fan Ring (17). If Fan (5) touches Fan Ring (12) then repeat process 17 or 18 above as required.

19. If the Fan (5) trailing edges interfere with the Fan Guard (4), then the 4 Motor Mounting Bracket Bolts (19) may be loosened. The Motor Mounting Bracket (18) may be pushed in until the Fan (5) trailing edges are clear of the Fan Guard(4). Then re-tighten the 4 Motor Mounting Bracket Bolts (19). Re-check **Test Point 2**.

Note Ensure that the plastic bag and all cable ties are removed from the fan guard.



When connecting the hydraulic motor, ensure that Fan (5) rotates in correct direction as per direction arrow (see item 20).

Recommended Torque Values

Bolt Type	Bolt Thread Size	Torque Nm (Dry)	Torque Nm (Oiled)
M8 SEMS (Hex)	M8 x 1.25	20	15
M10 SEMS (Hex)	M10 x 1.5	30	23
M8 SHCS	M8 x 1.25	35	26
M10 SHCS	M10 x 1.5	70	52
UNF 3/8" SHCS	UNF 3/8" x 24	40-64	
UNF 7/16" SHCS	UNF 7/16" x 20	70-100	

** Above torque values are for zinc plated carbon steel only.



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