



VERSACOOL AIR COOLED HEAT EXCHANGERS FAN TO HYDRAULIC MOTOR FITTING INSTRUCTIONS

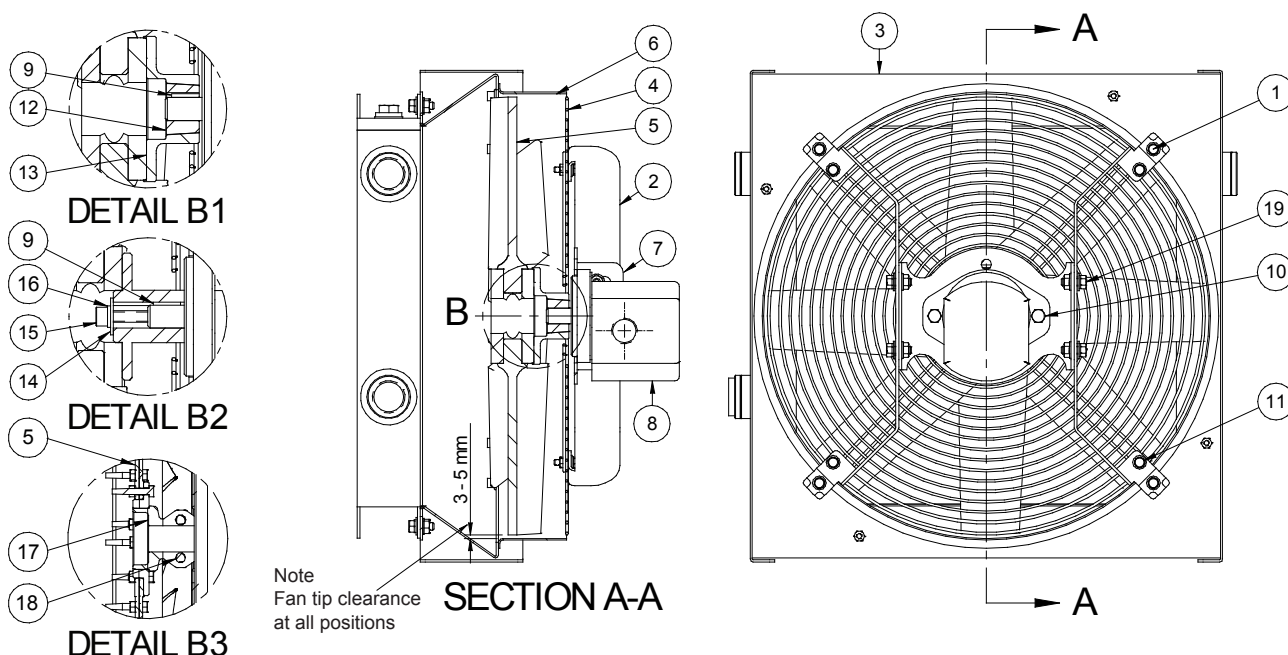


HYDRAULIC MOTOR DRIVEN FANS.

Some Versacool VC 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 Versacool 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 M6 bolts (1) securing each Motor Support Leg (2), two bolts per leg on each side of the Heat Exchanger Case (3). This will allow the Motor Mount Assembly, which includes the Motor Support Legs (2), the Motor Mount Bracket (7), the Fan Ring (6), the Fan Guard (4) and the Fan (5); to be removed from the Heat Exchanger Case(3)



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2. The heat exchanger is usually supplied with the Fan (5) strapped to the inside of the Fan Guard (4). Remove any plastic strapping to free Fan (5) from Fan Guard (4). Remove the Fan Ring (6) from the Motor Mount Assembly.
3. Check and remove any imperfections from the shaft of customer supplied Hydraulic Motor (8). For round shaft motors, fit the Shaft Key (9) to the Motor shaft. Coat the Motor Shaft with some grease.
4. Remove the Fan Guard (4) from the Motor Mount Assembly by removing the 4 M6 bolts (11) from the Motor Support Legs (2).
5. Place the Motor Mount Assembly face down on a bench, the Motor Mount Bracket (7) should be at the top.
6. Mount the Hydraulic Motor (8), shaft down, to the Motor Mount Bracket (7). Secure the Hydraulic Motor (8) with suitable customer supplied bolts (10) to the Motor Mount Bracket (7).
7. Re-install the Fan Guard (4) onto the Motor Mount Assembly. Ensure that there is an even gap between the outside wire of the fan guard to the inside of each Motor Support Leg (2).

Fitting the Fan (5) to the Hydraulic Motor (8) shaft.

For round and keyed shaft motors.

Taperlock Bush Fan Mounting - refer Detail 1

7. Fit the taper lock bush (12) loosely into the fan hub (13) using the grub screws provided.
8. 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.
9. Align the face of the taperlock bush (12) with the end of the motor shaft. Tighten the grub screws evenly. The trailing edge of the fan blades should be clear of the Fan Guard (4) and the Fan Hub (13) should be clear of the Hydraulic Motor mounting bolts (10). Adjust position of the Fan (5) until the required clearance is obtained.

Bolt & Washer Fan Mounting - refer Detail 2

10. 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.
11. A plastic bag containing items (14), (15) and (16) was packed attached to Fan Guard (4). Remove the plastic bag and all cable ties from the Fan Guard. Remove the Washer (14) and the SHC Screw and Spring Washer (15 & 16) from the plastic bag.
12. Apply a suitable thread locking compound such as LOCTITE 242 to the thread on Bolt (15). Then pass Bolt (15) through spring washer (16) and Washer (14) and attach to the hydraulic Motor Shaft. Tighten Bolt (15) to the final torque value as per recommended torque table below.

For splined shaft motors - refer Detail B3

13. 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.
14. Position the Fan (5) until the trailing edge of the fan blades are just clear of the Fan Guard (4) and the Fan Hub (13) is clear of the Hydraulic Motor mounting bolts (10). Adjust position of the Fan (5) until the required clearance is obtained.
15. Once the correct clearance is obtained, tighten the SHC screws (18) on the clamplock hub (17). Torque values are available in the Table below.

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

16. Refit the Fan Ring (6) into the Motor Mount Assembly.
17. Lift the completed Motor Mount Assembly carefully onto the Heat Exchanger Case (3)
18. Position the Motor Mount Assembly so that the Fan (5) is positioned centrally. Check that the Fan Tip clearance (see Note 1) is even at top or bottom and side to side of Fan Ring (6). The Motor Mount Assembly may be tapped up or down until Fan Tip Clearance is 3 to 5 mm at top and bottom. Alternatively, loosen the 4 M8 Motor Bracket bolts (19) and adjust Motor Bracket (7) until correct clearance is obtained. Tighten all bolts to torque values as shown below.



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TEST POINT 2. Hand rotate the Fan (5) inside of Fan Ring (6) to make sure that Fan tips do not interfere with Fan Ring (6). If Fan (5) touches Fan Ring (6) then repeat process 18 above as required.

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 on Heat Exchanger Case (3).

Recommended Torque Values

Bolt Type	Bolt Thread Size	Torque Nm (Dry)	Torque Nm (Oiled)
M6 SEMS (Hex)	M6 x 1.00	10	8
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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