DAVIES, CRAIG PTY. LTD.
A.B.N. 71 004 918 825 A.C.N. 004 918 825
MELBOURNE AUSTRALIA

77 Taras Avenue
P.O. Box 363
Altona North, Vic 3025 Australia
Phone: +61(0)3 9369 1234
Fax: +61(0)3 9369 3456
E-mail: info@daviescraig.com.au
Web: www.daviescraig.com.au

HYDRA COOL®
TRANSMISSION OIL COOLER – P/No: 676, 677, 678, 679 & 686

(WARRANTY: The lesser of twelve months or forty thousand kilometres)

BEFORE BEGINNING INSTALLATION, READ ALL THESE INSTRUCTIONS FULLY

INTRODUCTION

The transmission oil cooler is designed to cool transmission oil during sustained high speed driving, stop and go traffic, pulling heavy loads, mountain driving and related conditions of transmission stress. The cooler will guard against the transmission overheating.

This transmission oil cooler kit (Fig.1) contains the newest exclusive features developed to speed-up and simplifies installation.

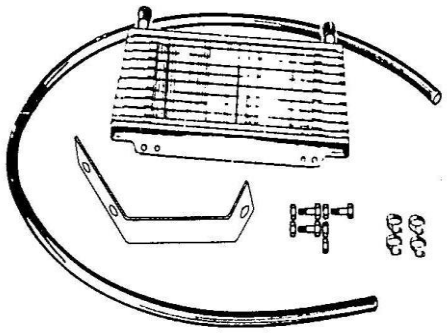


FIGURE 1

GENERAL

1. The Hydra Cool transmission oil cooler is easy to install, however the "**Installation Musts**" below should be studied prior to starting the installation.
2. The transmission oil cooler relies solely on air-flow to provide maximum cooling efficiency. The best location in the vehicle is where the transmission oil cooler will receive maximum air-flow, both from vehicle motion and the fan.
3. *NOTE: The Hydra Cool transmission oil cooler will protect your transmission oil from overheating, but it cannot correct a faulty transmission. The vehicle's mechanical condition should be checked by a competent mechanic prior to installation if troubles are suspected.*

TYPES OF INSTALLATION CONNECTIONS (Figure 2)

IN-SERIES - The recommended transmission-oil cooler connection is the "in-series" installation. It utilises the existing cooling system and complies with all new car warranties. This method provides maximum cooling effectiveness by returning the coolest oil directly to the transmission.

REPLACEMENT - This method must only be used if the existing cooling system is damaged and repair costs are excessive. The replacement installation **may void new car warranties** and will provide less total cooling than the "in-series" installation, therefore, this application **requires an oil cooler one or two sizes larger.**

IN-SERIES INSTALLATION **REPLACEMENT INSTALLATION**

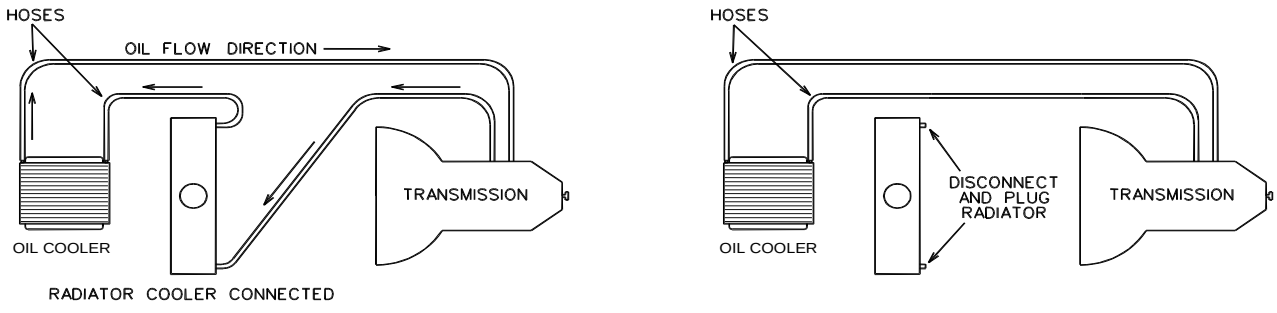


FIGURE 2

INSTALLATION MUSTS

1. Keep rubber hoses away from sharp edges, moving parts, points of wear or points of heat such as exhaust pipes, manifolds, etc. Secure hoses with nylon tie straps.
2. Do not kink hose or bend it tightly. A bend of less than 75mm radius will put excessive stress on the hose and void warranty.
3. Cooler should be mounted at least 25mm from fans, 50mm from hood, wheel wells and fire-wall, and 150mm from exhaust manifolds. When mounting to A/C condenser or radiator, foam pads must be used between the cooler and condenser/radiator.
4. Do not over-tighten hose clamps. Tighten only until rubber protrudes level with slots in hose clamp. If rubber protrudes through the slots, warranty will be void.
5. After 2 weeks, retighten hose clamps to insure against leakage.

TRANSMISSION OIL LINE IDENTIFICATON

Most vehicles have the transmission cooler built-in to the side (or bottom) tank of the radiator. The additional cooler must be mounted downstream of this to minimise oil temperatures.

Method 1 – Check oil line temperature (1 & 2) in Fig. 3.

1. Start engine whilst engine is cold
2. Place transmission shift lever in drive for no more than 10 seconds
3. Stop engine & remove keys
4. Identify oil return line by feeling both oil lines (1 & 2). Coolest line is the oil return line.

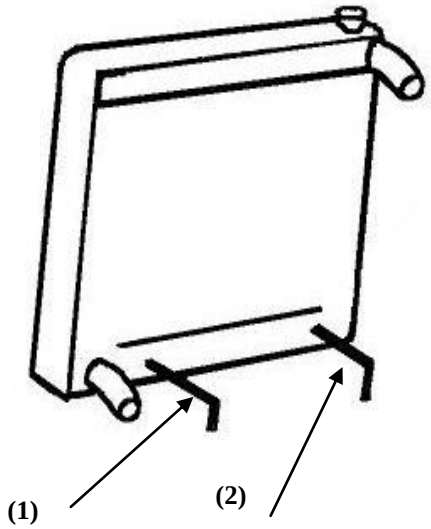


FIGURE 3

Method 2 – (Requires an observer) – Check Oil Flow Direction

1. Place container under transmission oil line (2) and disconnect oil line at radiator. *Caution – use backup spanner to avoid damage to radiator fitting.*

2. Have observer ready to watch radiator fitting. Start engine, place engine in drive position.

3. Stop engine immediately

4. Identify direction of oil flow. Oil must be pumped from radiator side for proper “in-series” connection. If oil flowed from radiator then that line must be connected to the new cooler. If oil did not flow from radiator then that hose must be refitted and the other line connected to the new cooler.

5. Reconnect oil hose line to radiator. Follow steps 1-16 on page 3 or A1-A5 on page 4.

Tools Required For Most Installations

- *Screwdriver or nut runner to attach hose clamps and brackets.*
- *Shifting spanner (or open end spanner) to remove & replace line fittings and bolts.*
- *Tube cutter and flare tool to prepare tubes.*
- *Knife to cut hose and plastic.*

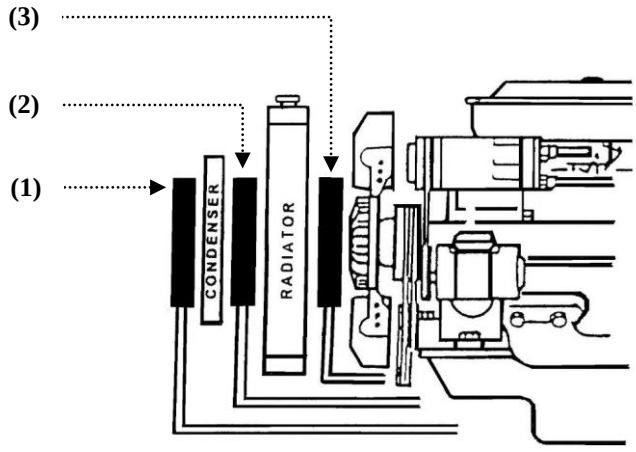
MOUNTING & POSITIONING OIL COOLER

CAUTION: When mounting cooler to radiator or A/C condenser with Quick-connectors, be sure foam rubber mounting pads are used. Tighten securely and repeat in 2 or 3 days to absorb any slack that will occur due to “seating” of the foam pads.

COOLER MOUNTING POSITIONS

Note: Cooler may be mounted in horizontal or vertical position – all mounting locations.
Position 1 is the basic and most efficient position for installing the oil cooler. Positions 2 and 3 are alternates.

These positions are listed and illustrated in their order of recommended use, as the oil cooler relies upon air flow for heat dissipation.
Shown are the three suggested locations for the cooler in relation to condenser, radiator and fan.
#1 Position – 100% efficient
#2 Position – 75% efficient
#3 Position – 60% efficient
Double check the position of the hoses to ensure that they do not contact the exhaust system or interfere with moving parts. Bends in the hose should not be less than a 75mm (3") radius.



(for alternate mounting, select a location where cooler will receive maximum cold air flow from vehicle motion or fan)

FIGURE 4

Preparations of Part No: 686 Transmission oil Cooler

1. Place clamp on to the end of 3/8" hose (x2) provided in the pack and push it on to the cooler barbs (Inlet and Outlet)
2. Position clamps 6mm from end of hose and tighten clamps until rubber protrudes level with clamp slots
3. Place clamp on to the other end of these tubes and insert the bigger diameter (3/8") of brass reducer provided in to the hose
4. Position the clamps and tighten it. Do not over- tighten clamps
5. Follow the steps 1 to 14 of hose and clamp assembly instructions shown below

HOSE & CLAMP ASSEMBLY INSTRUCTIONS (vehicles with rubber hose connection to existing transmission lines)

HOSE INSTALLATION MAY BE USED ON VEHICLES WITH 5/16" & 3/8" STEEL LINES

1. Place clamps on ends of hose and push hose onto oil cooler fittings. Leave hose in a loop – **DO NOT CUT HOSE!**
2. Position clamps 6mm from end of hose and tighten clamps until rubber protrudes level with clamp slots. Do NOT over-tighten clamps.
3. If mounting oil cooler behind radiator (position 3, figure 4) loosen fan shroud. Allow minimum of 25mm clearance between rear face of cooler and fan.
4. Remove adhesive backing from foam pads. Position pads on cooler mounting flange. Press pads to ensure the adhesive sticks to the cooler.
5. Place and hold oil cooler in desired mounting location with pads facing radiator or air conditioning condenser (fig. 5). Insert rod through cooler at mounting location where pad is positioned, then through the radiator and/or condenser.
6. Install locking button. These are permanent and can only be removed by cutting. Tighten to compress foam pad. Cut off excess mounting rods.

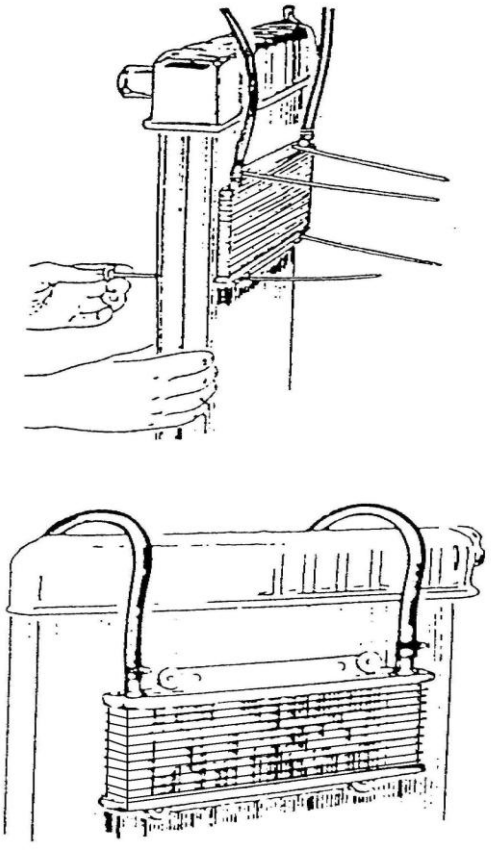


FIGURE 5

7. Repeat steps 5 through 7 for remaining ties.

FINAL PROCEDURES AFTER COOLER INSTALLATION

8. Cut hose to easily reach (no kinks) downstream oil pipe on radiator. Fit hose clamp over end of hose and slide hose onto radiator pipe about 30mm.
9. Position clamp 6mm from end of pipe and tighten until rubber protrudes level with the clamp slots. DO NOT OVER TIGHTEN.
10. Cut downstream hose from cooler so that it easily reaches the return line from the transmission. Remove the old hose from the return line and fit new hose from the cooler with clamp 6mm from end of pipe. DO NOT OVERTIGHTEN CLAMP.
11. CHECK THAT NEW HOSES ARE NOT KINKED, FOULING ANY MOVING OBJECTS OR NEAR ANY SHARP EDGES
12. Start engine. Place shift lever at position as stated in Vehicle Owners Manual for checking transmission oil levels.
13. Operate engine at fast idle for 2 minutes. Check hose connections for leakage. If leakage is found, stop engine and tighten clamps.
14. Feel both lines to cooler to be sure they are warm. If both are not warm, oil is not flowing through cooler. Check for kinked lines or other obstructions to flow.
15. Check oil transmission oil level. Stop engine and add oil if required. CAUTION: Do not overfill transmission. *Only use transmission fluid recommended by the motor vehicle manufacturer.*
16. Test drive vehicle. Hose connections should be periodically checked for leakage, and re-tightened if necessary.

HOSE INSTALLATION WHERE OIL LINES ARE METAL PIPES (ALTERNATE METHOD)

Follow INSTALLATION MUSTS on page 2, and steps 1 through 7, on page 3.

A1. Place container under oil return line and carefully cut line 100 mm from radiator.
A2. Carefully remove sharp edges and burrs from ends of cut oil line. Flare both ends of the oil line to prevent loss of fluid under pressure.
A3. Position hose loop next to flared ends of oil line and cut hose o length. Slide hose clamps loosely onto both ends and push hoses onto each of the flared oil lines about 30mm.
A4. Position clamps 6mm behind flare in oil lines and tighten. Over-tightening may void warranty. Tighten only until rubber protrudes level with the slots in the clamp.
A5. Perform steps 11 through 16, page 4.

Additional tools necessary for applications using ALTERNATE METHOD:

- Flaring tool or drift punch (to flare ends of transmission oil line).
- Small round file or emery cloth (to remove sharp edges or burrs).
- Steel tube cutter or hacksaw (to cut selected transmission oil line).

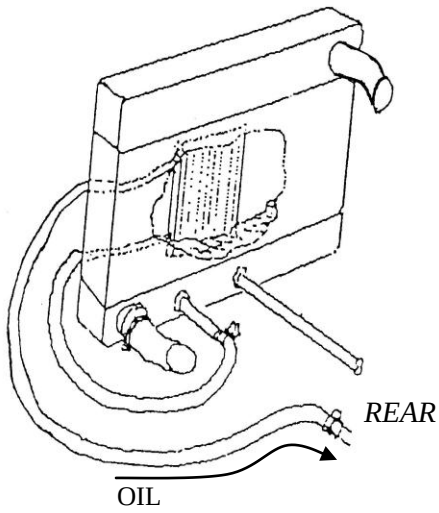


FIGURE 6

WARRANTY

We hereby guarantee that for a period of one (1) year or 40,000km (which ever is the lesser) from the date of purchase, we shall carry out, free of cost, any repairs that are reasonably necessary to correct any fault in the operation of your Transmission Cooler provided that such a fault is directly attributable to a defect in the workmanship or materials used in the manufacture of the parts(s) and is not due to installation other than described in these instructions. Labour and consequential costs are excluded from this warranty.

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