

TRANSMISSION OIL COOLER ~ INSTALLATION INSTRUCTIONS

HYDRA COOL® & ULTRA COOL® TRANSMISSION OIL COOLER KITS & COMBO KITS

Congratulations on the purchase of your new Davies Craig Transmission Oil Cooler Kit. Automatic transmissions generate tremendous heat and your new kit is designed to cool automatic transmission fluid, protect internal components and further assist in the heat transfer process during sustained highway travel, high-speed driving, stop/start traffic, towing, four wheel drive, off-road and high-torque climbing conditions.

- Transmission Oil Cooler Kits and Combo Kits are all do-it-yourself installation packages. Check your kit components with those listed here to ensure your kit is complete.
- The Transmission Oil Cooler Core benefits from direct air-flow to provide maximum cooling efficiency. The best location for your core is where the unit will receive maximum air-flow, from either vehicle motion and/or the fitment of the Thematic Fan (if applicable).

NOTE: Your Davies Craig Hydra Cool® or Ultra Cool® transmission oil cooler will protect your transmission fluid from overheating, but it will not correct a faulty transmission. Your vehicle's automatic transmission should be checked by an automatic transmission specialist prior to installation if other issues are suspected. E.g. if the automatic transmission fluid is very dark (burnt).

**PLEASE READ ALL THESE INSTRUCTIONS THOROUGHLY.
DON'T RUSH - ENSURE YOU HAVE FULL UNDERSTANDING OF THE WORK AHEAD BEFORE YOU COMMENCE. ENSURE YOU HAVE ALL TOOLS AND COMPONENTS REQUIRED.**

TYPES OF INSTALLATION CONNECTIONS

IN-SERIES - The recommended transmission oil cooler installation is the "in-series" method. This installation uses the existing oil cooling system and provides maximum cooling by returning the coolest fluid to the automatic transmission.

REPLACEMENT - This system should be adopted, a). When the existing transmission oil cooling system (radiator) is damaged and repair costs are excessive. b). When you wish to improve the existing transmission oil cooling system with the fitment of an appropriate external core.

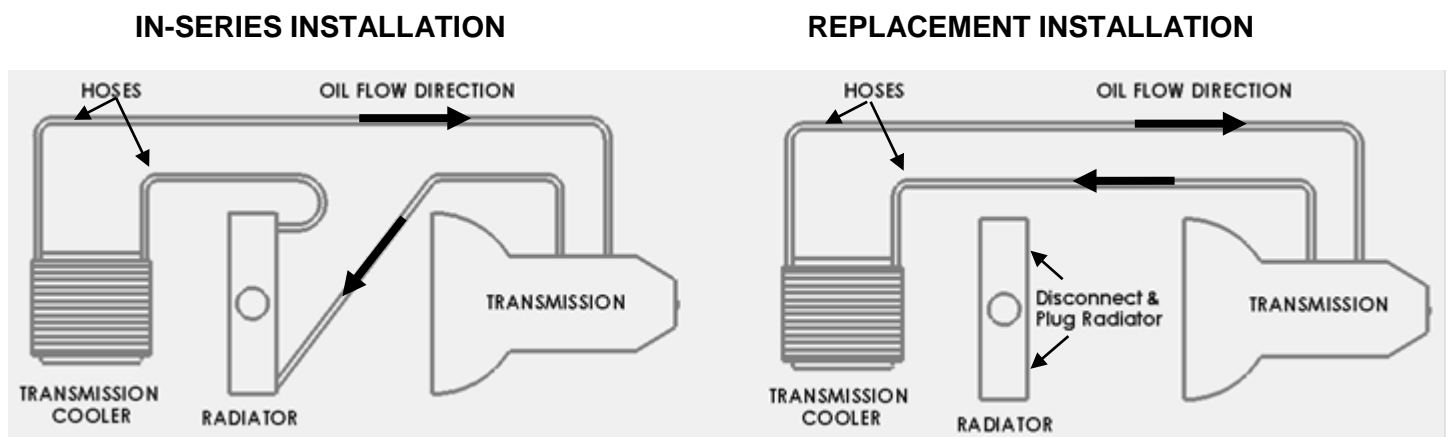


Figure 1: Installation Options for the Transmission Oil Cooler Kit

**TRANSMISSION OIL COOLER & 8" FAN
COMBO KIT CONTENTS: Part #698 & #699**

Item No.	Description	Qty.
1.	3/8" Hose	1.4m
2.	Core 21-Plate	1
3.	DCSL 8" Fan Kit	1
4.	Hardware Bag	1
5.	Wiring Harness	1
6.	Quick Fit Kit	1



Transmission Cooler & 8" Fan Combo Kit Contents

**TRANSMISSION OIL COOLER & 10" FAN
COMBO KIT CONTENTS: Part #691 & #692**

Item No.	Description	Qty.
1.	3/8" Hose	1.4m
2.	Core 30-Plate	1
3.	DCSLX 10" Fan Kit	1
4.	Hardware Bag	1
5.	Wiring Harness	1
6.	Quick Fit Kit	2



Transmission Cooler & 10" Fan Combo Kit Contents

**ULTRA-COOL® TRANSMISSION OIL
COOLER KIT CONTENTS:**

Item No.	Description	Qty.
1.	3/8" Hose	1.4m
2.	Core	1
3.	Hose Clamps	4
4.	Quick Fit Kit	1
5.	Reducer	1



Ultra-Cool® Transmission Oil Cooler Kit Contents

**HYDRA-COOL® TRANSMISSION OIL
COOLER KIT CONTENTS:**

Item No.	Description	Qty.
1.	3/8" Hose	1.4m
2.	Core	1
3.	Hose Clamps	4
4.	Quick Fit Kit	1



Hydra-Cool® Transmission Oil Cooler Kit Contents

TRANSMISSION OIL LINE IDENTIFICATION

Most vehicles have an automatic transmission cooler built into the side (or bottom) tank of the vehicle's radiator. Before you commence your installation you need to identify the oil return line.

Method 1 – Checking oil line temperature

1. Start engine and run until warm. Turn off engine.
2. Identify oil return line by feeling both oil lines – the cooler line is the oil return line.

Method 2 – Checking oil flow direction (Requires an observer).

1. Place a drip-tray under the transmission oil line at the radiator union point, disconnect.
Caution – use spanners on both fittings to avoid damage.
2. Start engine and run until warm. Turn off engine.
3. Once transmission oil flow is identified. Proceed with the "In-Series" core connection for the most suitable and efficient transmission oil cooling.

COOLER CORE - POSITIONING

- Firstly, place your Davies Craig Transmission Oil Cooler Core into the desired position as outlined in **(Figure 2)** to ensure you have the appropriate space to permanently mount the core as shown.
- The core is to be mounted in a vertical position in either location.
- Should your Davies Craig Transmission Oil Cooler model be a unit supplied with a Thermatic Fan (Parts #691 or #698) you will need to allow more space if you plan to mount the core and fan assembly in the front of the vehicle.
- Models #691 and #698 offer broader mounting options as these units can be mounted horizontally. Further, the Thermatic Fans offer reverse polarity and therefore can be mounted either side of the core to operate as an upstream or downstream of the cooler. (refer Page 6)

Position (1) is the most efficient location for installing the core. Positions (2) and (3) are alternatives and are shown in order of their recommended use;

- Position 1 – Most efficiency
- Position 2 – Medium efficiency
- Position 3 – Least efficiency

The core relies on direct air flow for maximum heat dissipation. For alternative mounting, select a location where the core will receive maximum air flow from either vehicle motion or the Thermatic Fan (if applicable).

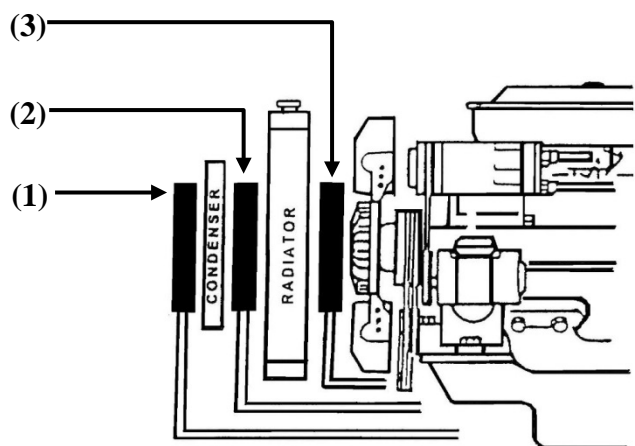


Figure 2 – Mounting options for the core.

COOLER CORE – MOUNTING (Using the Quick-Fit Kit supplied)

1. When examining the core position, ensure the two barbed core connectors are accessible to the existing transmission cooler lines. When mounting the core to radiator or A/C condenser with the Quick-Fit Kit (Part #0579) supplied, the foam rubber mounting pads should be used.
2. Remove adhesive backing from the foam rubber pads and position pads on core mounting flanges. Press pads to ensure each pad sticks firmly to the core.
3. Place and hold the core in designated mounting position with pads facing radiator and/or A/C condenser. Insert the Quick Fit Rod through the centre of the pad at mounting point, push through the radiator and/or A/C condenser fins.
4. Place locking button over the rod end and push on till foam pad is fully compressed. Cut off excess rod.
Note: - *Once the button is pushed onto the rod it can only be removed by cutting the rod.*
5. Repeat steps 3 and 4 to complete your core mounting process.

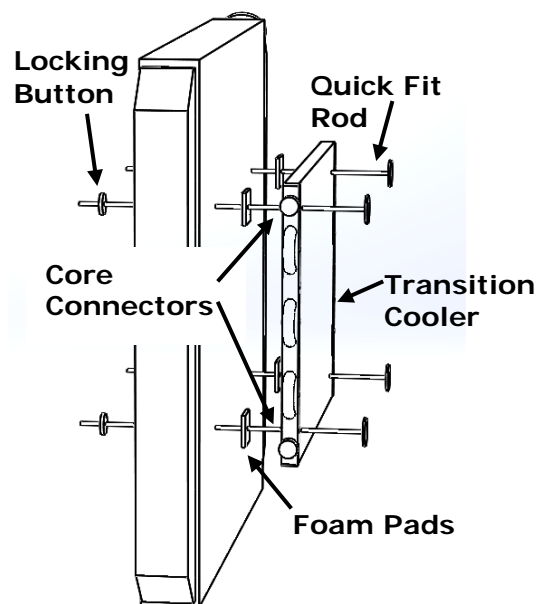


Figure 3 – Mounting the Trans Cooler using the Quick-Fit Kit.

HOSE & CLAMP INSTALLATION INSTRUCTIONS (For transmissions fitted with 5/16" and 3/8" steel lines)

1. You have previously identified the feed and return oil lines to the transmission from the existing radiator cooler. Remove both lines from the radiator. If metal unions are fitted these can be cut off. Carefully remove sharp edges and burrs from ends. Flare both ends of each oil line with appropriate flaring tool to assist prevent loss of fluid under pressure.
2. Position the 3/8" hose supplied and measure the two lengths required to ensure they will easily reach and connect to the two barbed core connectors on the mounted core and the two transmission lines. Allow approx. 60mm of extra hose for clamping over lines at each end. *(No kinks - Allow a minimum of 75mm radius on all hose bends.)*
3. Slide hose clamps provided about 6mm onto the hose ends. Slide these two measured hoses about 30mm onto the two barbed core connectors and then 30mm onto the two existing transmission oil lines. If you have purchased the Ultra-Cool® Transmission Oil Cooler, a reducer is provided for your use if required for your application.
4. Tighten hose clamps until rubber hose is level with clamp slots. **DO NOT OVER-TIGHTEN.**
5. If your transmission is fitted with 5/16" oil lines, reducers with male and female adaptors have been supplied in this specific Transmission Oil Cooler Kit (Part #686)
6. Continue to the final procedures

NOTE: Burst Pressure of the supplied hose = 60 Bar

FINAL INSTALLATION PROCEDURES

1. Start engine. Place lever into the position as stated in Vehicle Owner's Manual for checking transmission oil level.
2. Operate engine at fast idle for a few minutes then check all connections. If leakage is found, stop engine and further tighten hose clamps. You may wish to place a second hose clamp to further secure and protect oil lines from leakage in severe operating conditions.
3. Feel both transmission lines to ensure they are warm. If both are not warm, oil is not flowing through cooler. Check for kinked lines or other obstructions to oil flow.
4. Check the transmission oil level as outlined in the vehicle's Operator's Manual. Stop engine and add oil if required.

CAUTION: Do not overfill transmission. Only use transmission fluid recommended by the motor vehicle's manufacturer.

5. **Test-drive vehicle** – all fittings and connections should then be checked for any leakage, and re-tightened if necessary. Quick-Fit Kit/s should also be checked to ensure any slack which may occur due to "seating" of the foam pads. Repeat this procedure within two weeks or 200 kilometres.
6. Regular inspections of your transmission oil cooling system are strongly recommended.
7. Guidance by the supplier as to which model may be suitable for a particular transmission will be given in good faith. Due to varying factors, you should check space available and air flow required for your transmission.

INSTALLATION CAUTIONS:

1. Keep all hoses away from sharp edges, moving parts, wear and hot points such as exhaust pipes, manifolds, etc. Secure hoses with appropriate nylon ties.
2. Ensure there are no kinks or tight bends in the hoses. A bend of less than 75mm (3") radius may limit oil flow which may cause transmission failure.
3. Ideally, the core should be mounted at least 25mm (1") from fans, 50mm (2") from bonnet, wheel wells and fire wall, and at least 150mm (6") from exhaust manifolds. When mounting to A/C condenser or radiator core, foam pads must be used as spacers between the core and condenser/radiator core.
4. Do not over-tighten hose clamps. Tighten until rubber hose is level with clamp slots.
5. Examine your entire installation carefully after 2 weeks or 200 kilometres to ensure all connections and hoses are secure and totally free of leaks.

These installation instructions will suit most applications but there are circumstances surrounding some engine designs, environments, and the nature of system involved, which may require other installation arrangements not outlined here. Frequently Asked Questions are listed on our website www.daviescraig.com.au Davies Craig Pty Ltd appreciates customer feedback. Emails can be directed to info@daviescraig.com.au or Telephone +61 (0) 3 9369 1234.

8" OR 10" THERMATIC FAN MOUNTING INSTALLATION (Part #698, #699 & #691, #692)

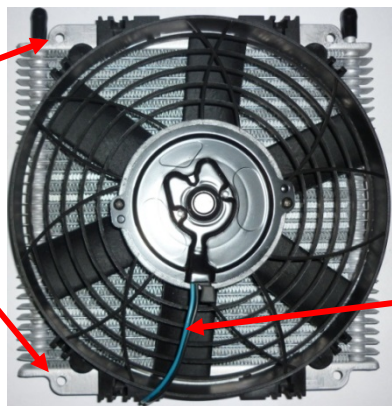
Decide which face of the core you wish to mount the Thermatic Fan. Please pay particular attention to the arrow markings on the fan blade hub regarding the direction the fan should operate (upstream/downstream).

Note: Both 8" and 10" were assembled to be mounted upstream, you can change this for your downstream operation.

Please note the direction of the arrow on the blade hub as once the fan is installed the arrow will not be visible.

1. Position the fan unit directly on the face of the core; rotate the fan blade manually to ensure the blade is not touching with the core. Check that the fan motor wires exit downwards (i.e. at 6 o'clock), (or away from moisture if the core is mounted horizontally) in the final assembly, so that any condensation formed in the motor is allowed to drain.

Secure fan to the Core using the Quick Fit Kit supplied. Follow instructions outlined below.

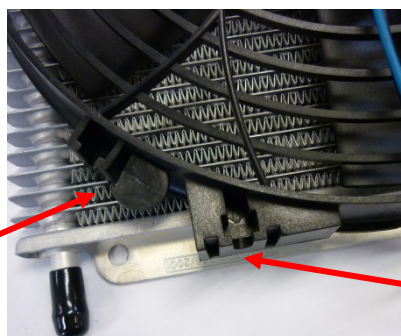


Motor wire exit downwards

Figure 4 – Mounting the Fan to the Transmission Oil Cooler.

2. When mounting the fan to the core with the Quick-Fit Kit (#0579) supplied, be sure the foam rubber mounting pads are used. Remove adhesive backing from the foam pads and position pads as required. Press pads to ensure each pad sticks firmly.
3. Place and hold the fan in designated mounting position with pads facing the core. Insert the rod through the centre of the pad at fan mounting point in to the appropriate fan mounting holes. To ensure a tight fitting, trim a section off the quick fit rod head to suit.
4. Push button onto rod till foam pad is compressed then cut off excess rod. **NOTE:** - Once the button is pushed onto the rod it can only be removed by cutting the rod.
5. Alternatively, you may wish to secure the fan to the Core using optional mounting points. In this case you will need to drill suitable holes in the Fan shroud and Core flanges.

Rod head trimmed to fit available space



Optional mounting point

Figure 5 – Optional mounting points on the Fan.

FAN WIRING INSTRUCTIONS

Note: Decide whether you wish to fit a Thematic Switch (Part #0444) to activate the fan. Do not make any permanent connections with the blue and black leads from the fan motor until you have fully checked the direction of rotation of the fan blades.

1. Temporarily connect the blue and black leads from the fan motor to the harness supplied/ignition source. Please refer to the fan wiring diagram below.
2. If the fan turns in the direction of the arrow on the fan blade, firmly connect the wiring. If not, swap these two wires over then firmly connect.
3. To confirm air flow direction, place a piece of paper (or similar) against the fan shroud. Air should be sucked onto or blown off the core.
4. Ensure all electrical connections are fitted in accordance with the instructions. Firmly secure and insure all wiring is adequately insulated. Avoid sharp edges, tight bends and contact with hot engine parts.

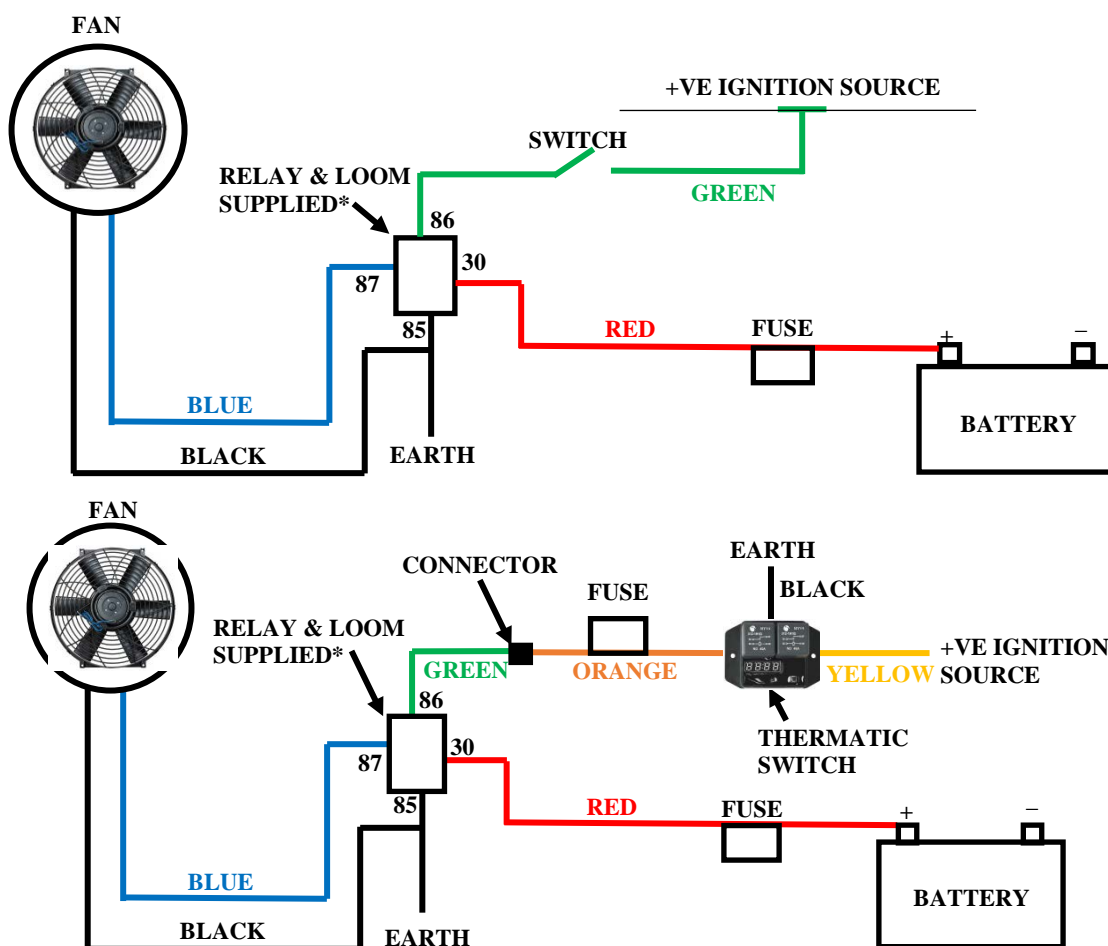


Figure 6 –Wiring Diagram for Standard Set-up a.) without Thematic Switch or b.) with Thematic Switch (Part #0444 or #0455). * **Note:** Relay, Loom, Connector & Fuse are supplied with Part #698, #699 and #691, #692 only.

Please use the following components as marked above from the hardware bag supplied;

1. Blue connector
2. Self-tapping screw
3. Scotch lock
4. Ring Terminal
5. Fuse

WARRANTY

We warrant that for a period of two years or 2000 hours continuous running (whichever 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 Davies, Craig product provided that such a fault is directly attributable to a defect in the workmanship or materials used in the manufacture of the part(s) and is not due to installation other than described in these instructions. Labour and consequential costs are excluded. **DAVIES, CRAIG PTY. LTD.**

REGISTER YOUR WARRANTY AT: www.daviescraig.com.au



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