

## BILLET OIL-FILTER/COOLER INSTALLATION

- Use the two (2) supplied 5/16 – 18 UNC x 7/8” long stainless steel socket head cap screws to fasten the filter block housing to the mounting holes in the engine case.
- The bolts should be lubricated before installing to a torque of 15-20 ft.-lbs. (Blue 242 Loctite recommended)
- Ensure that both the oil line fittings and the ports of the engine case are free of dirt or other contaminant.
- Apply a small amount of thread sealant to the oil fittings.
- Torque each fitting to – 2 full turns past hand tight engagement.
- Attach the inlet line to the corresponding port in the filter block housing (engraved “Oil In”).
- Attach the inlet line to the other port in the filter block housing (furthest from the face of the engine case).
- Wipe off all oil line connections with clean rag.
- Start your engine, and allow it to idle for a minute or two.
- Check all your potential pressure loss areas for oil leaks (this includes the oil fittings, both ends of the cooler, and around the flow diverter spool).
- If no leaks appear, bring the engine up to normal operating temperature. If no further leaks appear, you are safe to operate.
- If leaks DO appear, snug up all of the potential pressure areas and repeat engine pressurization procedure until no leaks are present.
- M/M sticker should be stuck on after installation of filter to ensure it is placed properly.
- Your Merch Filter/Cooler has two modes of operation – Filter only (F), and Filter + Cooler (C).
- The Filter Block Housing is engraved with an arrow that lines up with the corresponding engraved letter on the Filter Diverter Spool.
- The Flow Diverter Spool is engraved with the letters “F” and “C” to indicate the selected mode of operation.
- To change the mode of the operation, simply turn the flow diverter spool ¼ turn using a 5/16 allen key, or ¾” wrench.

**NOTE:** Outside of Spool head is hexed. You will be able to hear and feel a slight click when you have turned the Spool the correct amount.

**NOTE:** Through rigorous testing in both hot and cold climatic conditions, we have established a rough guideline for the filter/cooler application:

Above 80F/25C ..... Cooler should be in “C” mode

Below 80F/25C .....Cooler should be in “F” mode

Below 60F/15C .....Cooler should be on “F” mode and leather sock (provided) should cover the cooler.

**NOTE:** *This is a guideline only.* Stop and to traffic, wet conditions, towing or other factors can affect heat.

**RULE OF THUMB: Engine Temp between 170-220F is considered acceptable – anything above or below these temperatures should be dealt with promptly.**

- Kindly use a band-style strap wrench to remove end over when servicing filter.
- The sintered bronze lifetime filter cartridge should be taken out and washed periodically to remove any particles that the filter has trapped.
- Recommended time between filter cleaning/flushing is six (6) months, or 3000 miles (whichever comes first), when using Synthetic Oil i.e. Amsoil 20w-50 Racing Oil or Mobil1 20/50 m/c oil. After initial break-in.
- Initial break-in with regards to all Merch Motors USA engines as described I the Merch Motors USA Break-in Procedures manual – suggests for the first 500 miles of operation, using Valvoline 20w-50 Racing Oil, or Penzoil 20w-50 Motorcycle Oil.

**To remove the filter cartridge follow these steps:**

- Ensure engine is **NOT** running.
- Place a tray under the filter/cooler to catch any oil that will drain out once the cooler cap is removed.
- Unscrew the Cooler Cap. The Cooler Cap o-ring should remain on the cooler.
- Filter Cartridge Assembly should come out with the cooler-cap.
- Separate filter cartridge from end cap.
- Immerse cartridge in varsol or similar solvent and swish back and forth for (1) minute.
- Remove excess solvent with compressed air and let stand to air dry.
- When using compressed air, direct air blast from inside filter cartridge to outside. (Noting filter cartridge cleans oiling system through sintered bronze medium by passing through outside to inside): Cleaning is reverse of operation.
- Check to make sure Check-Ball functions correctly – Check Ball faces forward and spring is behind Check Ball.

**To replace the cleaned Filter Cartridge, follow these steps:**

- Insert filter cartridge back in to threaded end cover; reverse of dis-assembly. Insert complete filter cartridge back into cleaned canister housing.
- Make sure cartridge slides into housing orifice at rear of canister housing.
- Screw cylinder cap onto the cylinder housing to where cap just makes contact with the cylinder o-ring. Felt pen mark and turn another 1/8<sup>th</sup> to a ¼ turn **ONLY** past the o-ring contact.

**NOTE:** Cylinder cap will indicate when you can thread further. Resist tightening past ¼ turn due to the fact that when oil swells a lot more pressure is exerted on the o-ring interface.

**NOTE:** If cylinder cap is over- tightened, end cover will be very tight to separate from the housing; also, if excess force is used to unscrew end cover, the canister housing may separate and unscrew from the filter block housing.

- A light amount of oil or grease is all that is needed before screwing on end cover.
- Start engine and check for any leaks.
- Re-check end cover after motor is up to operating temperature.