

# 400EX Auxiliary Oil Cooler Installation Instructions

Thank you for purchasing this quality product. It should provide years of trouble service as long as the installation is done correctly and general maintenance guidelines are followed. I have been running this kit on a 2000 400EX for over seven months and in that time have had no major problems and no down time as a result of the cooler. Installation of this kit requires some basic mechanical skills and I strongly recommend referring to a factory or aftermarket service manual for many of the procedures required to perform this installation. If, after reading the installation instructions, you are not comfortable with the project, please refer to your local motorcycle shop for installation. Since I'm not performing the installation, I accept no responsibility for engine damage as a result of improper installation. If you have any questions at all regarding installation please email me at [jason@exchangesafe.com](mailto:jason@exchangesafe.com) or call (253)921-0898

Jason...

**Before you begin:** Verify all parts are in the kit:

- Aluminum protective grill - 1
- Oil cooler core - 1
- 4 foot length of tubing - 1
- Hose clamp - 4
- 90 degree brass barb fitting - 2
- 1/4-28 x 5/8 set screw (black) - 1
- Zip Ties 10" - 4
- Zip Ties 8" - 4
- Foam Shock Pads - 4
- Cooler Mounting Ties - 4
- Cooler Mounting Tie Backplates - 4

## What you will need:

### Tools and supplies to remove and reinstall the following items:

- Front and rear plastics
- Fuel Tank
- Engine head cover
- Clutch cover

### Specific Items Needed to Install the Cooler Components:

- Drill
- 1/4-28 N.F. tap and a No.3 drill bit
- 1/8-27 NPT tap and a 11/32 (8.7mm) drill bit
- JB Weld\* or similar hi-temp bonding agent
- Vacuum and compressed air are handy but not required.

#### Step 1 - Install Barbed Fitting in Head Cover

After removing all of the plastics, fuel tank, head cover and clutch cover perform the following steps to install the oil fitting in the head cover:

- In the center of the portion of the head cover that covers the cam oil reservoir (right side of the cover facing forward) drill and tap with a 1/8-27 NPT tap and drill.(Fig. 1)
- Locate one of two 90 degree barbed fittings included with the kit. Apply JB Weld or a similar high temp high strength sealant/adhesive to the threads of the fitting and thread into the hole you just tapped into the side of the head cover. Be sure that the fitting faces forward (towards the front of the cover) (Fig.2, 3).
- Set aside the cover and allow the sealant to cure.

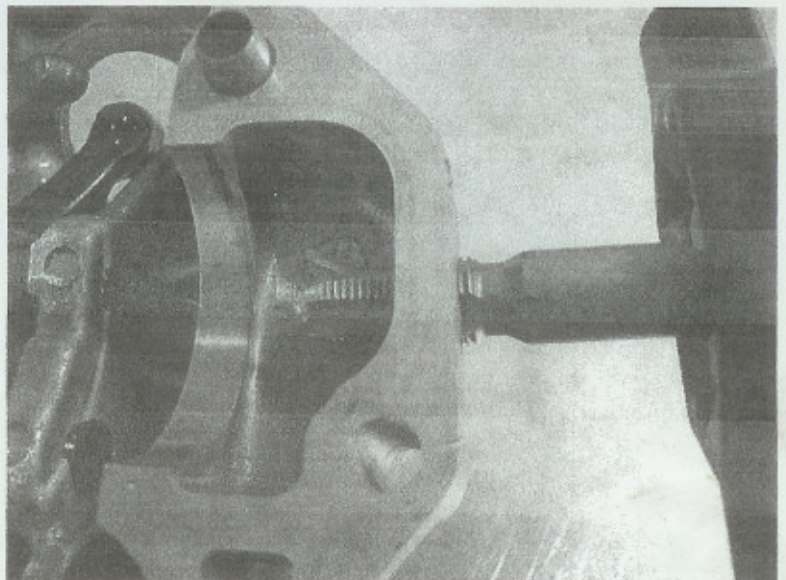


Fig. 1

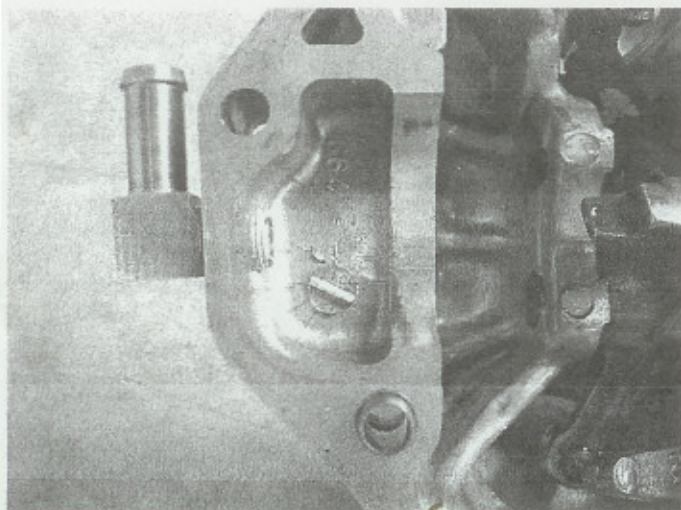


Fig. 2

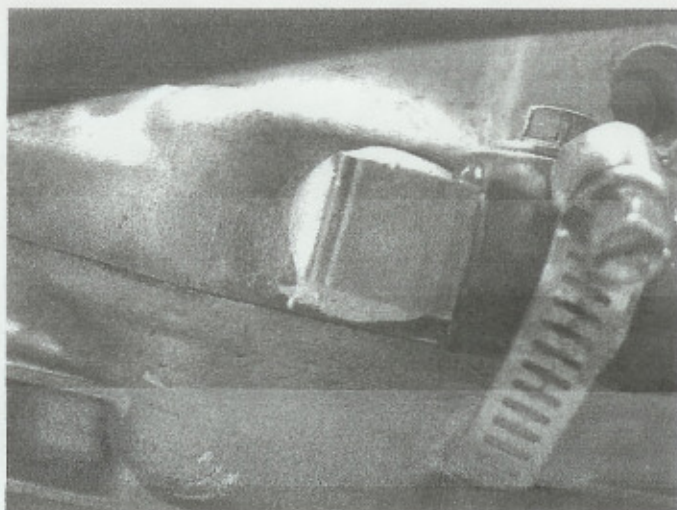


Fig. 3

## Step 2 - Install Barbed Fitting in Clutch Cover

Looking at the clutch cover from the side, you'll notice an oil passage that exits the side of the oil filter cover at about the 10 o'clock position (Fig. 4). This is the main feed to the top-end of the engine that must be tapped to divert the flow of oil through the cooler and back to the top-end.

- Using center punch mark the tap location on the clutch cover in the following manner:
- There is a flat (Fig. 5) about an inch wide where the cover matches up with the engine, on the engine side you'll see where the oil passage exits the cover (Fig. 5), center your punch on the 1 inch flat and align it with the center of the oil passage, mark and the drill with a 11/32 drill just until the passage is exposed, proceed slowly and be sure not to drill through the bottom of the passage.
- Tap hole with a 1/8-27 NPT tap.

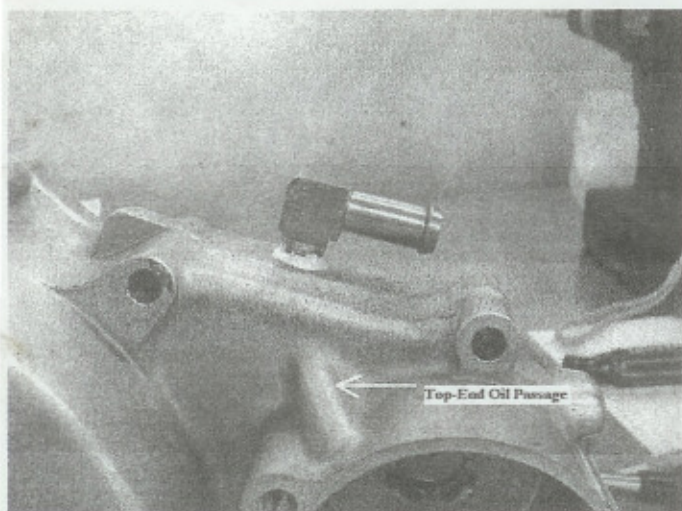


Fig. 4

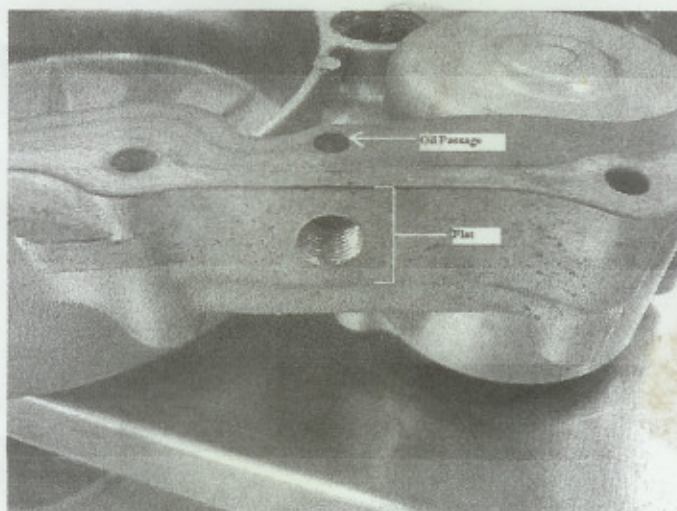


Fig. 5

- Blow or vacuum out all shavings from the passage. Locate the other 90 degree barbed fitting supplied with the kit. Apply JB Weld or a similar high temp sealant/adhesive to the threads and thread into the hole you just tapped into the clutch cover. Be sure the fitting is facing forward (Fig. 4).

Set aside the cover and allow sealant to cure

### Step 3 - Install the Oil Passage Plug.

Now that you've tapped the oil passage at the clutch cover, you need to cut off the flow of oil from the passage to the top-end so that the pressure is diverted to the cooler and only cool oil reaches the top-end.

- Locate the passage exit in the top of the cylinder head to the rear of the cam oil reservoir (Fig. 6)
- The following procedure is to prevent shavings from falling down and becoming lodged in the oil passage:

#### With Compressed Air-

Roll up a small piece of shop towel or tissue into a ball small enough to be stuffed into the passage yet large enough to seal it off, stuff it about a quarter of the way down with a small screwdriver. When done drilling and tapping apply compressed air to the bottom passage entrance (where the clutch cover oil passage feeds out) to blow out the shop towel and the shavings.

#### Without Compressed Air-

Roll up a small piece of shop towel or tissue into a ball small enough to be stuffed into the passage yet large enough to seal it off. Wrap a piece of safety wire tightly around the center of the wad. Leave about 1 1/2 to 2 inches of wire protruding from the wad and make a secure small loop in the end. Stuff this assembly in the passage with the loop pointing up so that the loop is about 1 inch from the top of the passage opening, being careful not to crush the loop. When your done drilling and tapping ( be careful not to destroy the loop when drilling or you'll need to find a buddy with a compressor to blow the wad out), hook the loop with a tool fashioned from a paper clip and remove the wad and shavings.

- With a No.3 drill bit, drill down into the passage about 3/4 of an inch.
- With a 1/4-28 tap, tap the passage to a depth of about 3/4 of an inch.
- Clear out all shavings from the passage
- Locate the 1/4 x 5/8 set screw. Apply a removable thread-locking compound such as Loc-Tite and insert the screw into the passage until it's flush with the bottom of the oil reservoir (Fig. 7).

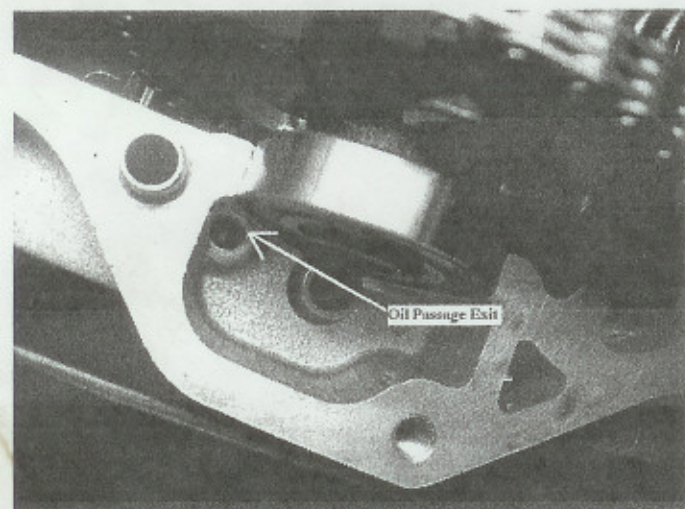


Fig. 6

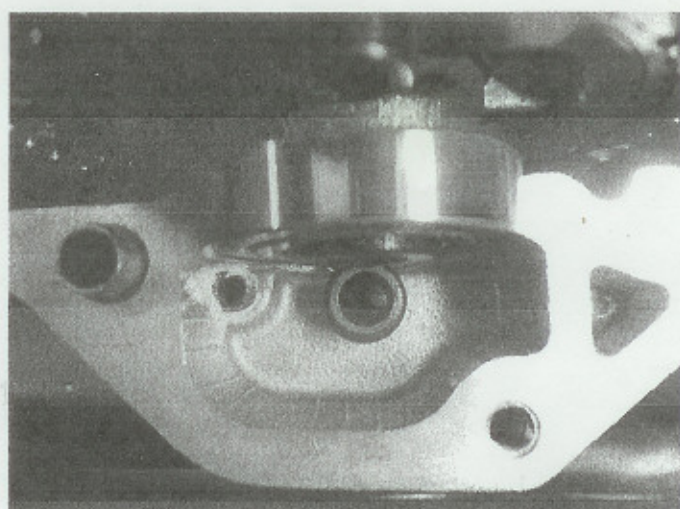


Fig. 7

#### Step 4 - Install the Cooler, Grill and Run the Feed Lines.

- Reinstall the head cover and clutch cover per factory specifications
- Locate the aluminum grill and 4 10" zip ties supplied with the kit. Install the grill behind the two down tubes between the front shocks with the four supplied zip ties. (Fig. 8).
- Locate the oil cooler, 4 cooler mounting ties and backplates and the foam shock pads. Remove the adhesive backing and affix the shock pads to the four corners of the cooler, line up the holes so that the centers are between cooling fins.
- Hold the cooler against aluminum grill with the outlets facing upward and the shock pads facing toward the grill. Line it up until you're satisfied with its location and then insert the cooler mounting ties through the grill, shock pads and cooler, pull tight and secure with the backing plates (Fig. 9). Cut off excess.
- Locate the length of hose and 4 hose clamps supplied with the kit. Attach one end of the hose to the right side inlet on the cooler (facing the cooler from the front). Route the hose over the left side of the factory cooler around the oil line and down the lower frame tube to the fitting at the clutch cover. Cut the hose to length and secure both ends with the supplied hose clamps. Secure the hose to the frame tubes with two of the supplied 8" zip ties.
- Attach the remaining length of hose to the outlet on the cooler and **\*\*fill the cooler with oil\*\*** this can be accomplished with a small funnel, oil can or syringe. This step is very important as you can starve your top-end on initial start-up and cause premature wear. Route the hose along the upper frame tube and secure it to the head cover fitting with a hose clamp. Secure the hose to the frame tubes with two of the supplied 8" zip ties.

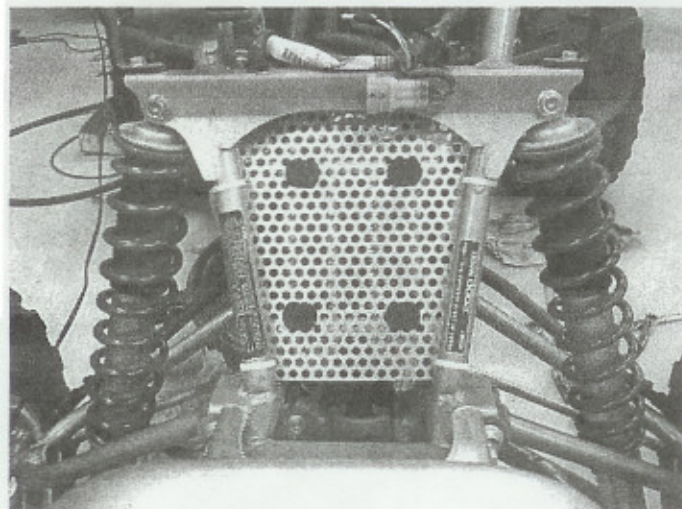


FIG. 8

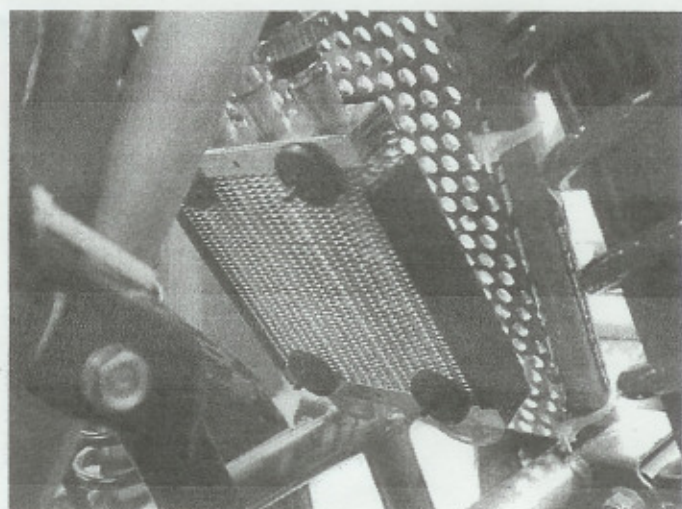


FIG. 9

## Step 5 - Run and Check For Leaks

Be sure that your engine oil level is sufficient and that you've filled the cooler with oil as outlined in step 4. Start the engine and observe for oil leaks, paying special attention to the fittings that were installed, if leaks are found repair and test again. Let the engine get up to running temperature and ride around for a short while, Observe for leaks again, if leaks are found repair and test again. If no leaks are found, go out ride and have a blast!

## Hints and Tips

- Periodically inspect the zip ties that secure the grill for wear, you may want to secure the grill with 6 or even 8 ties for added security and strength.
- If there's ever a problem with the cooler while out riding, it's perfectly fine to connect the two outlets together with one of the cooler hoses, bypassing the cooler. Your engine will still be cooled to factory specs.
- When changing your oil, disconnect the cooler hose from the head cover and the clutch cover. Blow in one of the hoses while holding the other in your waste pan to clear the dirty oil caught in the cooler. Refill the cooler with fresh oil before reattaching the hoses.

If you have any questions or suggestions please feel free to email me at [jason@exchangesafe.com](mailto:jason@exchangesafe.com).