

Table of Contents

REF: Oiling & Lubrication - Sub-05E	3
1986-1990 Oil Filter Mount Mods	3
Oil Pressure Regulator	3
<i>Rendering the oil pressure regulator inoperable</i>	3
<i>Blocking off the Oil Pressure Regulator</i>	4
<i>Routing the Regulator Discharge to the Oil Tank</i>	5
Tapping the Regulator Plug	5
Tapping the Discharge Hole	7
Convert to a L84-85 Filter Pad	7
<i>Considerations</i>	7
<i>Plugging the rear hole</i>	10

[Go To Technical Menu](#)

REF: Oiling & Lubrication - Sub-05E

1986-1990 Oil Filter Mount Mods

See also in the Sportsterpedia:

- [Cutting Oils, Soaking Oils and Lubes](#)
- [General Drilling and Tapping](#)
- [86-90 Oil Filter Mount Parts, Specs and Dims](#)



Oil Pressure Regulator

The oil pressure regulator in the 86-90 pump can malfunction from time to time.

Having the regulator open prematurely is not optimal since you want full oiling capacity at all times (i.e. at hot engine idle).

Reports of the valve leaking in the closed position and age on the regulator spring weakening it have prompted some to block the regulator off entirely.

Below are some mods to accomplish this if so desired.

Rendering the oil pressure regulator inoperable

The regulator valve is suppose to keep the oil pressure from getting too high. ²⁾

See more on the [Oil Pressure Regulator](#) in the Evo section of the Sportsterpedia.

The oil pressure relief valve is factory set to open between 30-35 psi.

The stock spring can get weak and open too soon which will dump oil into the cam chest prematurely instead of where it is needed. ³⁾

And your low oil pressure light will never go off.

You can replace the stock plunger spring with a 5/8"x2" spring of heavier gauge from your local hardware store.

This will render the plunger inoperable as there will now be too much oil pressure needed to overcome the increased spring pressure.



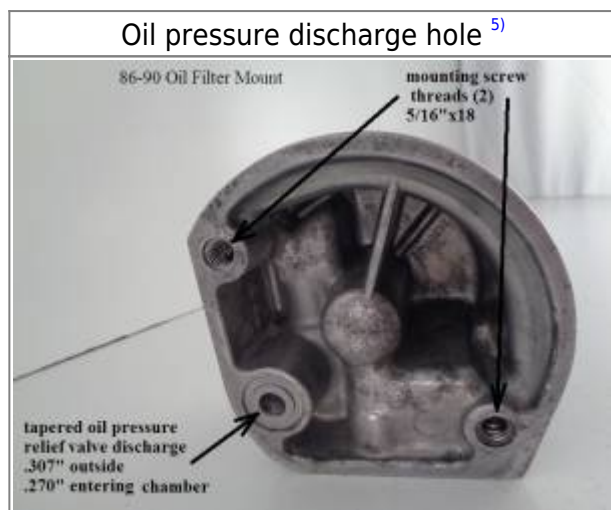
This mod is reversible:

Simply replace the 2" spring with a new OEM replacement.

Blocking off the Oil Pressure Regulator

Normally, when the regulator opens to purge excess pressure from the filter pad, the oil is routed thru a hole in the pad and into the gearcase.

With this mod, you can render the affects of the pressure regulator inoperative while leaving the plunger and spring in place in the filter pad.



If you drill and tap a plug or even a set screw in the discharge hole, oil cannot pass through it. This will shut (or plug) off the pressure regulating valve. This puts the oiling system in the same unregulated state as the 92-and-up sportsters.

Hole drilled, tapped 1/8" NPS and plugged with an 1/8"x27 NPT aluminum allen head plug. Pre-drill hole size for an 1/8"x27 tap is 11/32". ⁶⁾



This mod is reversible (as long as the plunger and spring are not thrown away):

Even so, replacement OEM parts can be obtained.

They can both be left in place since without flow into the discharge port, it doesn't matter if the valve is opened or closed.

No oil or crankcase pressure will be diverted.

However, if desired, you can simply remove the plug and the regulator will be unrestricted as was before this mod.

Routing the Regulator Discharge to the Oil Tank

This is a way to preserve the function of removing excess oil pressure from the filter pad and keep the gearcase safe from over oiling from the practice.

The bypass oil from the regulator is oil that is not being put to use in the pressure side anyway. ⁷⁾

This mod has to be done in conjunction with blocking off the regulator discharge as in above.

Else the excess pressure will still be dumped into the gearcase.

The excess pressure (bypass oil) is diverted directly back to tank via the oil pump return line or straight to the oil tank.

(not to the gearcase or the sump)

Tapping the Regulator Plug

An extra hose is installed into the plug (737) and plumbed into the return hose near the oil pump with a "Y" coupling.

The clear hose in the picture below is only a temporary line to monitor the oil level in the sump during dyno testing. ⁸⁾



In addition, the plunger seat was tapered (not necessary to this mod however).⁹⁾
Drill and tap the plug (1/8"x27 NPSC) for an 1/8"x27 NPT reducing 90° fitting. Pre-drill hole size is 11/32".
(the hole in the plug has also been tapered in the pic below, nice but not necessary for this mod)
Install a 1/4" NPT 45° fitting on the end of the 90 and then a 1/4" to 3/8" hose barb fitting for the hose.
Install a "Y" connector inline on the return after the oil pump for bypass oil to return to the oil tank.

The discharge hole has now been blocked which will keep the excess oil from entering the gearcase.
And the blocked up bypass oil will be diverted to the oil tank.
This will keep that extra oil from filling up the gearcase and free up power to the engine (wetsumping due to the oil pressure regulator).

The extra washer in the first picture below was added to preload the spring to increase the pressure needed to open the spring.

That is an option but is not necessary for this mod.

The fitting in the top in the second picture below was added for an oil pressure gauge (nice but also not necessary for this mod).



This mod can also be reversed:

Simply remove the 3rd hose and fitting in the plug,
'Plug' that threaded hole,

Replace the "Y" at the pump with a straight through fitting and remove the fitting in the discharge hole in the filter pad.

Tapping the Discharge Hole

This is another way of getting the excess oil back to the tank without running it through the engine first. The rear discharge hole was plugged and the side of the discharge hole was tapped with and 1/8" nipple.

A hole was drilled into the top of the mount behind the internal cavities for a hose to run from there straight to the oil tank cap. ¹⁰⁾

**Convert to a L84-85 Filter Pad**

The oil filter on 85 and prior engines was placed in the return side of the oil system. The oil is pumped from the oil tank to the pump, engine, out to the filter and back to the oil tank. The L84-85 oil filter pad is basically an 86-90 mount without a few holes or pressure regulator. It can be mounted to 86-90 engines just as the factory mount is on these engines.

Considerations

You still need to use the quad seal between the filter pad and the case.
The oil filter adapter threads are the same size from L84-90.

L84-85 Oil Filter Adapter. Each end has the same ID. Should work fine with a check ball and spring. ¹¹⁾



If you're using a check valve, the 86-90 oil filter adapter must be used. The check valve in 85 and prior models is in the oil pump. Therefore, the filter adapter is not set up for the check valve.

86-90 Oil Filter Adapter: Each end has a different ID. Installs with larger I.D. outward ¹²⁾



The pressure regulator hole is not tapped for a plug.

It's also not connected to the inlet feed cavity. The cavity is cast into the pad but the hole is not drilled thru.

It would actually be a blind hole if not for the small hole through it going to the would be regulator discharge hole.

(which is not used on L84-85 engines)

For that reason, the discharge hole in the rear has to be plugged off since the 86-90 case has a corresponding hole feeding into the gearcase.

Else crankcase oil and mist would escape through this hole and onto the bike / ground through the would be plug regulator plug hole.

(with it functioning as a simple in / out hole from the case to the ground)

The hole is normally left open on L84-85 models. It connects to the hole in the back only. ¹³⁾



Rear hole plugged for use on 86-90 engines. ¹⁴⁾



Line routing is the same as in the 86-90 filter pad with exception that the outlet hole for filtered oil has 1/8" NPT threads.

(inlet on the outside - outlet in the center)

You'll either need to tap that hole for 1/4" NPT threads to use your existing oil lines.

Or you could use a 1/8" to 1/4" reducer to attach the OEM return hose to the oil pump.

Pre-drill hole size for a 1/4"x18 tap is 7/16".

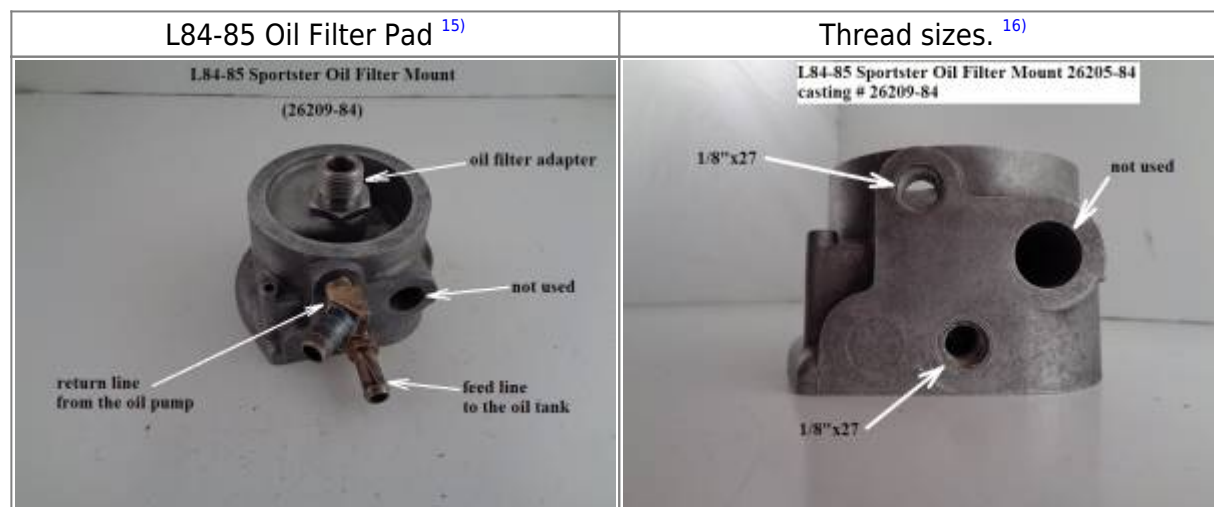
There is a circle imprint on the L84-85 mount where the 1/8"x27 NPSC hole will have to be tapped to accept the hose from the oil pump.

This will allow you to use the oil pressure switch on the existing 1/8" hole on the unfiltered side.

Else you can use an 1/8" NPT "tee" inline for both fittings.

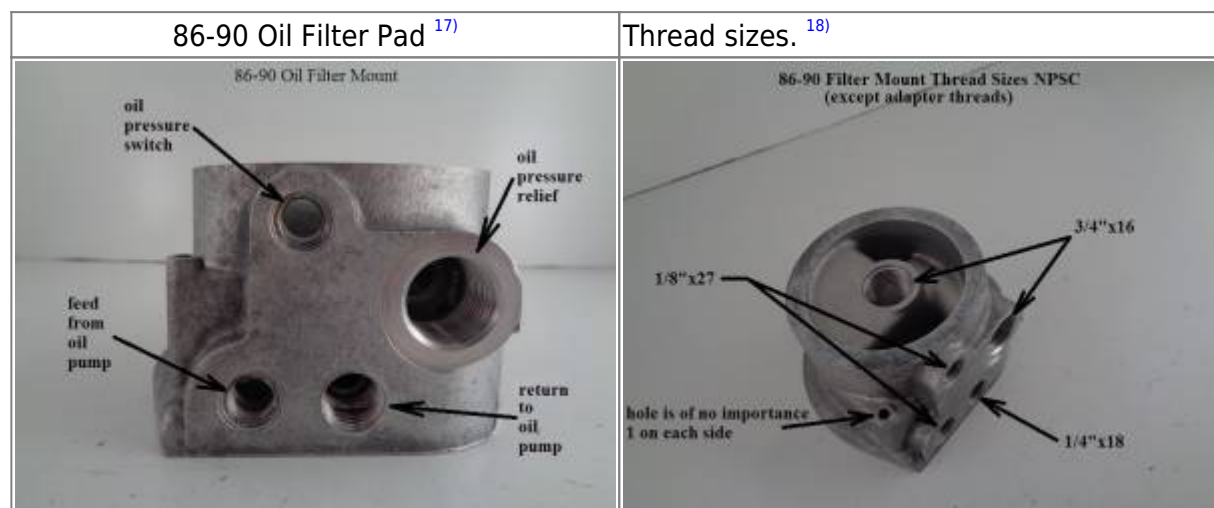
Pics below are how the lines are routed normally on L84-85 models.

(filter on the return part of the oil system)



And how the lines are routed normally on 86-90 models.

(filter on the feed part of the oil system)



Plugging the rear hole



Go To Technical Menu

1) , 11) , 12) , 13)

photos by Hippysmack

2)

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<https://www.xlforum.net/forum/sportster-motorcycle-forum/sportster-motorcycle-era-specific-and-model-specific/frame-mount-evo-sportster-talk-1986-2003-models/156934-1986-1990-oil-filter-mount?t=1679433>

3)

WI_duker of the XLFORUM

4)

photo by WI_duker of the XLFORUM

<https://www.xlforum.net/forum/sportster-motorcycle-forum/sportster-motorcycle-era-specific-and-model-specific/frame-mount-evo-sportster-talk-1986-2003-models/183021-1986-90-evo-sportsters-what-every->

[owner-should-know-but-were-afraid-to-ask/page9?t=1971026&highlight=oil+filter+mount&page=9](#)

5)

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6)

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<https://www.xlforum.net/forum/sportster-motorcycle-forum/sportster-motorcycle-motor-engine/sportster-motorcycle-engine-conversions/149281-124-1993-xlh-build-thread/page42?t=1619616&highlight=jorgen+oil+pump&page=42>

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<https://www.xlforum.net/forum/sportster-motorcycle-forum/sportster-motorcycle-motor-engine/sportster-motorcycle-engine-conversions/135020-88-puking-oil/page3?t=1458269&page=3>

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14) 15) 16) 17) 18)

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