# Table of Contents

IH: Oiling & Lubrication .................................................................................................................. 1

**Engine Oil Routes** .................................................................................................................... 1

**Right Crankcase Feed Galley** .................................................................................................. 1

**Top End Oiling** .......................................................................................................................... 1
  - Rocker Arm / Valve Oiling ........................................................................................................ 1
  - Rocker Box Oiling .................................................................................................................... 1

**Bottom End Oiling** ................................................................................................................... 2
  - Pinion shaft and Crank Pin ....................................................................................................... 2
  - Cam Cover Bushings ............................................................................................................... 2
  - Cam Cover \ Gasket ................................................................................................................ 2

**Case Oiling and Drainage** ......................................................................................................... 3
  - Splash .................................................................................................................................... 3
  - Oil Pump Scavenge ................................................................................................................ 3
    - '57-'76 Cases ...................................................................................................................... 3
    - '77 and Later Cases ........................................................................................................... 5
  - Gravity .................................................................................................................................... 6
IH: Oiling & Lubrication

Engine Oil Routes

Right Crankcase Feed Galley

Top End Oiling

Rocker Arm / Valve Oiling

<table>
<thead>
<tr>
<th>Rocker arm shaft. 1)</th>
<th>Oil flow. 2)</th>
<th>Exhaust valve squirter. 3)</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.jpg" alt="Rocker arm shaft" /></td>
<td><img src="image2.jpg" alt="Oil flow" /></td>
<td><img src="image3.jpg" alt="Exhaust valve squirter" /></td>
</tr>
</tbody>
</table>

Rocker Box Oiling

Oil travels in a passage between the two rocker arm shafts (big end). The oil line comes from underneath into one shaft bore on the pushrod side in each rocker box. There is a rifle drilled hole between the rocker arm shafts in each box that connects the two for oil passage. Each hole is plugged off on the outside of the box.

Front rocker box oiling.
Rocker Boxes on 69 model. 4)

Bottom End Oiling

Pinion shaft and Crank Pin

Cam Cover Bushings

Cam Cover \ Gasket
Case Oiling and Drainage

73-Up right case half

Splash

Oil Pump Scavenge

See also the IH Oil Pump section of the Sportsterpedia.

'57-'76 Cases

An engine sitting for a while not running can “sit-ump” oil into the primary. Read more on Sit Sumping in the Sportsterpedia. On engine start up the excess oil in the primary should be transferred back into the engine (but not all at once). In the event oil from the oil pump seeps into the crankcase high enough to spill over into the primary, on startup, that oil is sent into the crankcase by way of the transfer valve. On piston downstroke, positive crankcase pressure closes the transfer valve and seals a small hole preventing flow into the primary. On piston upstroke, vacuum in the crankcase opens the transfer valve and sends a burst of oil/air into the crankcase. Read more about the Transfer Valve in the Sportsterpedia.

The pics below show the oil flow from the flywheel cavity to the return pump. In stock configuration, most all used oil ends up in the flywheel cavity. The small amount that gets supplied to the upper pushrod ball/socket goes into the gearcase. While the splash oil to the exhaust valves enters the crankcase through the head drains.

The two crankcase halves together form the oil scavenging slot where oil is sent out of the sump to the oil pump.

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The open slot receives oil by splash from the wheels and oil is forced into and thru the slot by way of positive crankcase pressure (downstroke of the pistons). The scavenge slot is blocked off on the left side by the crankcase wall.

Oil is pushed by the pistons thru the slot into the right case where it gathers in the oil trap at the oil pump mount.

Oil is picked up through the windows in the breather gear and slung into the gearcase and drained thru a strainer into the oil pump scavenge gears and sent back to the oil tank.
11) The “drain plug” on the bottom of the case is simply a threaded plug that caps the oil scavenging passageway. However, it’s not really a drain but rather a plug in a machined oil passage. The MoCo drilled from the bottom of the case to the horizontal oil passage in the gearcase. This connects the crankcase sump oil to the scavenge port of the oil pump and the hole is plugged on the bottom.

From inside the case with the plug removed from the scavenge passage:
In the second pic below, you can see that the threads, from the tap, have been machined farther up into this hole. This is the oil passage from the sump to the scavenge pump. Oil from cylinder drains, crankpin, pushrods and cam chest that collects in the sump is fed to the pump by crankcase pressure and pump suction through this hole. As you can see, even if you remove the plug, you still cannot drain the entire sump due to the mounting bosses (ribs) for the cover bolts.

In the third pic below, you can see where they drilled the case from the side where the cam cover goes and the bottom where the oil pump return hole goes. The hole drilled from the cam cover side doesn’t go anywhere. It dead ends into the cam cover flange. Caution: If you use silicone on your gaskets, the silicone could easily enter the oil passage and enter your pump.

Scavenge passage on 77 engines

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Gravity

Go To Technical Menu

1) photo by jmmarks70 of the XLFORUM http://xlforum.net/forums/showthread.php?t=1774605
2) photo by jmmarks70 of the XLFORUM - annotated by Hippysmack http://xlforum.net/forums/showthread.php?t=1774605
3) photos by Arcturus of the XLFORUM http://xlforum.net/forums/showthread.php?t=1304674&page=11
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6) photo by Dr Dick of the XLFORUM http://xlforum.net/forums/showpost.php?p=3886388&postcount=40
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