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IH: Oiling & Lubrication - Sub-03X

1952-1956 Production K-Model Oil Pumps - Parts Lists and Information

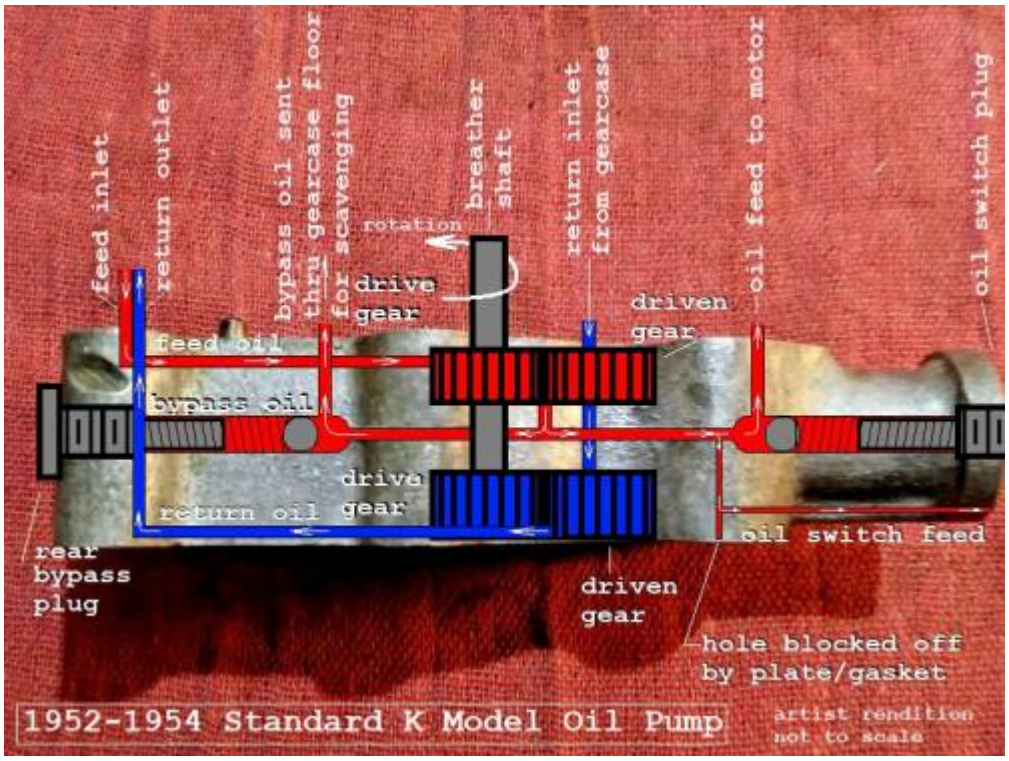
1952-1954 K/KK/KH Model Pump

Standard oil pump for K and KH models with a feed oil pressure bypass that dumps excess pressured oil into the cam chest to be picked up by the oil scavenging system.
The bypass pressure is set by a spring and ball stop inserted in the rear of the pump with a threaded plug to hold them in place.
The only difference between 1952-1954 pumps is a different oil presssure switch on 1954 models.
The body is not machined for an oil seal between the feed and return gears.
Breather timing was advanced for 1954 KH models [1] for better oil scavenging from the crankcase.

- Pump Speed is 1/2 of the engine RPM.
- Oil Pump Pressure is not stated in the riders handbook and is determined by the bypass spring pressure.

Oil Pump Assembly	Oil Pump Body	Upper Cover / Breather Tower	Lower Cover Plate	Oil Pump Drive Gear	Feed Gear (driver)	Feed Gear (idler)	Return Gear (driver)	Return Gear (idler)	Idler Gear Shaft
26203-52	26217-52	26241-52	26250-52	26318-37	26323-52	26322-52	26320-52	26326-52	26327-52
Breather Gear	Drive Gear Lock Pins (2)	Breather Shaft Split Ret Washer (2)	Oil Pump Check Ball (with tail)	Oil Pump Check Spring	Oil Pump Switch Nipple	Oil Switch Screen	Oil Switch Packing Washer	52-53 Oil Pressure Switch	54 Oil Pressure Switch
26331-52	603	26341-37	26400-52A	26363-36	26420-52	26579-38	6375	26550-42	26550-38A
Feed Bypass Ball (with tail)	Feed Bypass Spring	Feed Bypass Plug Rear Fitting	Feed Bypass Line Plug	Pump Gasket Lower	Pump Gasket Upper	Pump Gasket Mounting			
26400-52A	26374-52	26423-52A	26424-52	26258-52	26259-52	26256-52			

Click on pic to enlarge:



2)

1955 KH Model Pump

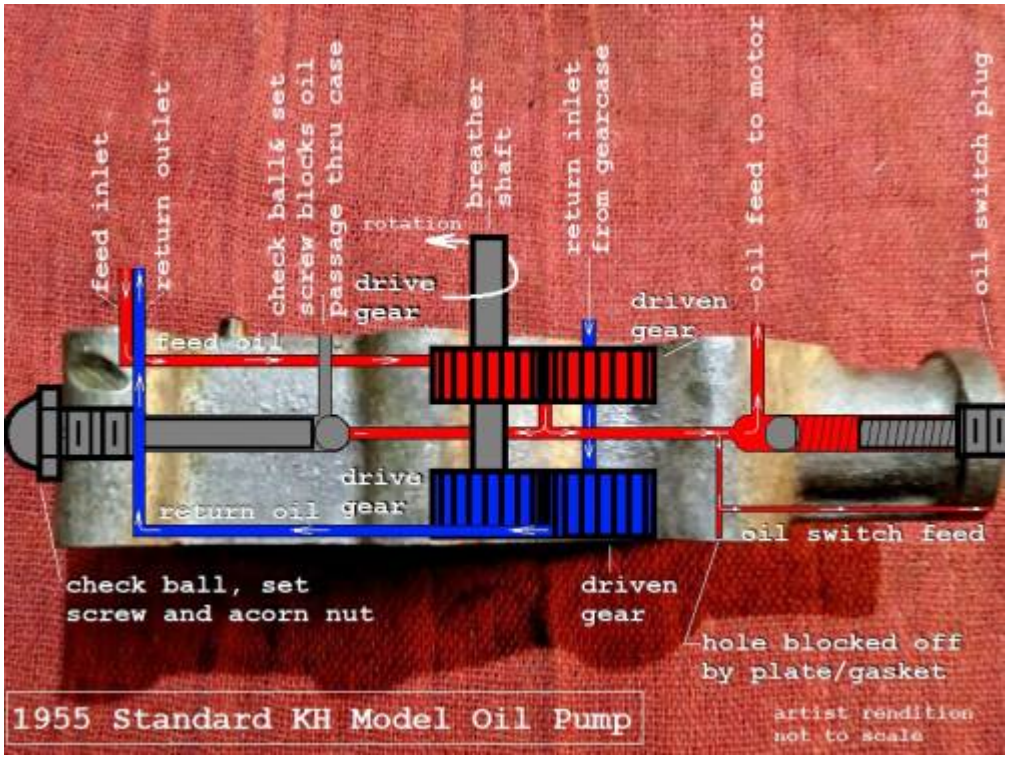
The 1955 pump is the same as the 52-54 pump with the exception of blocking off the feed oil pressure bypass with a removable ball and set screw.
It has the same pump body machining and gears including no oil seal between the feed and return gears.
A 1/2“-20 x 3/4” acorn nut locked the 1/2“-20 set screw in place instead of the original threaded plug.
The (-A) assembly revision was designated for 1955 KH models.
Although the ball and set screw could be replaced instead with the spring and tail ball for use with previous models.

- Pump Speed is 1/2 of the engine RPM.
- Oil Pump Pressure is not stated in the riders handbook and is determined by the bypass spring pressure.

Oil Pump Assembly	Oil Pump Body	Upper Cover / Breather Tower	Lower Cover Plate	Oil Pump Drive Gear	Feed Gear (driver)	Feed Gear (idler)	Return Gear (driver)	Return Gear (idler)	Idler Gear Shaft
26203-52A	26217-52	26241-52	26250-52	26318-37	26323-52	26322-52	26320-52	26326-52	26327-52
Breather Gear	Drive Gear Lock Pins	Breather Shaft Split Ret Washer	Oil Pump Check Ball (with tail)	Oil Pump Check Spring	Oil Pump Switch Nipple	Oil Switch Screen	Oil Switch Packing Washer	52-53 Oil Pressure Switch	54 Oil Pressure Switch
26331-52	603	26341-37	26400-52A	26363-36	26420-52	26579-38	6375	26550-42	26550-38A

Feed Bypass Ball (no tail)	Feed Bypass Set Screw Rear Fitting	Feed Bypass Acorn Nut	Pump Gasket Lower	Pump Gasket Upper	Pump Gasket Mounting	
8866	26389-55	7901W	26258-52	26259-52	26256-52	

Click on pic to enlarge:



3)

1956 KH Model Pump

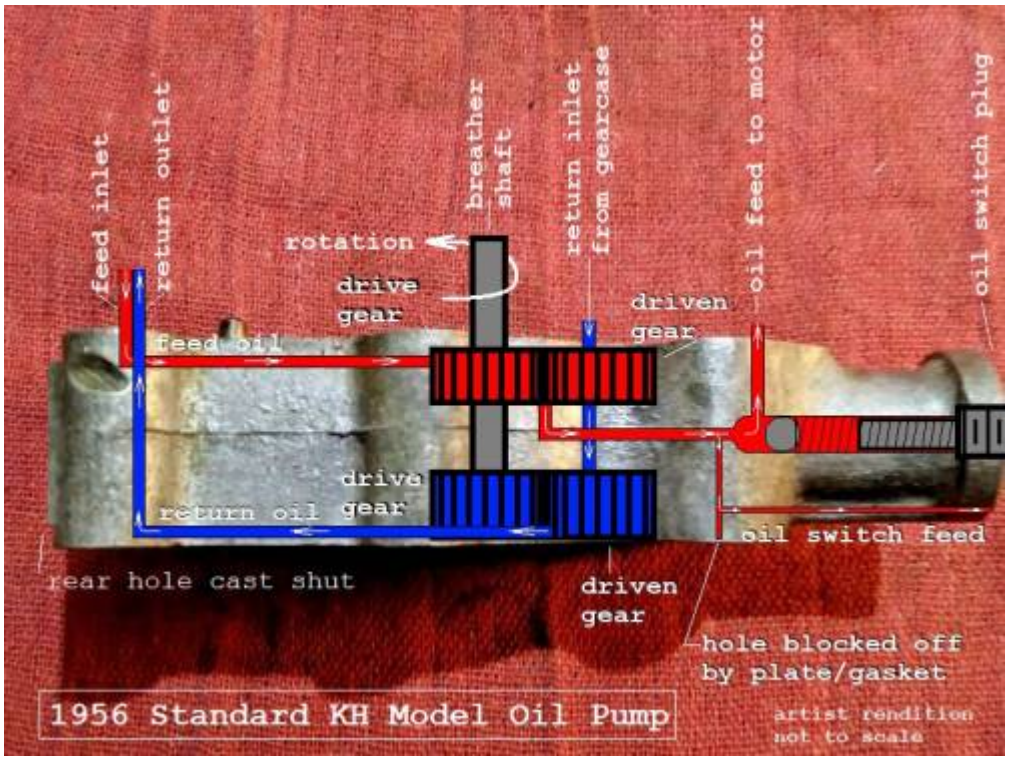
The (-B) assembly version oil pump for 1956 KH models does not have a feed pressure bypass system.
This body was also used on 1957-E1958 Sportsters.
Pump body changes include not drilling the vertical bypass hole in the top of the pump.
The body is still not machined for an oil seal between the feed and return gears.
The rear bypass hole was cast shut and the rifling hole from there to the feed gears not drilled.
The new return gear woodruff key is the same width as the solid pin in previous year pumps (.094”).

- Pump Speed is 1/2 of the engine RPM.
- Oil Pump Pressure is not stated in the riders handbook.

Oil Pump Assembly	Oil Pump Body	Upper Cover / Breather Tower	Lower Cover Plate	Oil Pump Drive Gear	Feed Gear (driver)	Feed Gear (idler)	Return Gear (driver)	Return Gear (idler)	Idler Gear Shaft

26203-52B	26217-56	26241-52	26250-56	26318-37	26323-52	26322-52	26320-56	26326-52	26327-52
Breather Gear	Feed Gear Lock Pin	Return Gear Woodruff Key	Breather Shaft Ret Ring	Oil Pump Check Ball (with tail)	Oil Pump Check Spring	Oil Pump Switch Nipple	Oil Switch Screen	Oil Switch Packing Washer	Oil Pressure Switch
26331-56	603	26347-15	11002	26400-52A	26363-36	26420-52	26579-38	6375	26550-38A
Pump Gasket Lower	Pump Gasket Upper	Pump Gasket Mounting							
26258-52	26259-52	26256-52							

Click on any pic to enlarge:



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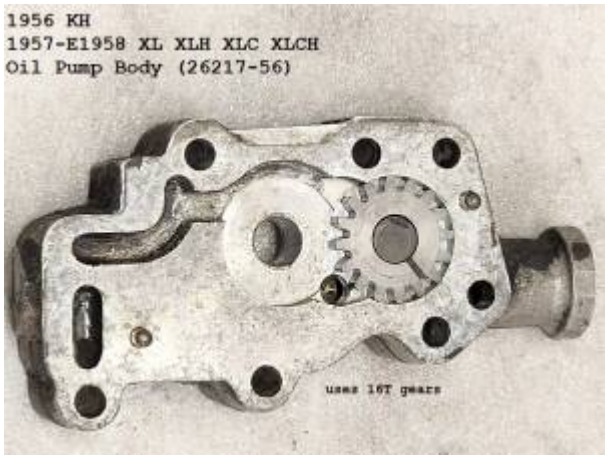
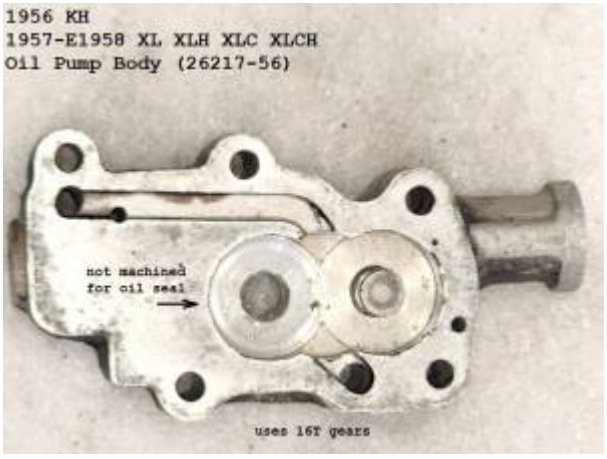
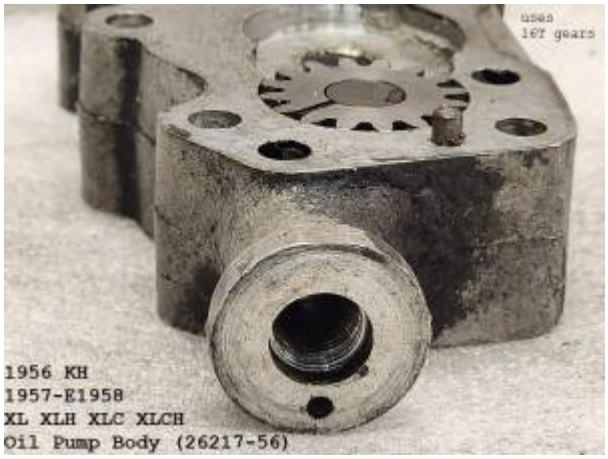






1952-1969 Competition Oil Pumps - Parts Lists and Information

1952-1955 KR, KRTT, KHRTT Pump

- Pump Speed is 1/4 of the engine RPM.

- Oil Pump Pressure is determined by a bypass spring and is pre-set at the factory at 15 PSI.
- The crankcase breathing system was used to return oil from the crankcase into the cam / gear cover using the timed breather valve gear.
  From there, the oil drained directly onto the return gears of the oil pump.
  - 1954-1955 Timing: Opens at (36° ±10° ATDC) front cylinder. Closes at (70° ±10° ABDC) front cylinder. (per 1954 Competition Model Instructions)
  - Duration of open window: 214°
  - Duration of pressure built under pistons before window opens: 36° (±10°)
  - Duration of vacuum created under pistons: 65° (±10°)

Special thanks to the The French Owl for providing period specific parts catalogs.
Parts List:[5) 6) 7) 8)]

Oil Pump Assembly	Oil Pump Body	Upper Cover Breather Tower (52-53)	Upper Cover Breather Tower (54-56)	Lower Cover Plate	Oil Pump Drive Gear (52-53)	Oil Pump Drive Gear (54-55)	Feed Gear (driver)	Feed Gear (idler)	Return Gear (driver)
26203-54R	26217-52	26241-52	26241-54R	26250-52	26318-37	26318-54R	26323-52	26322-52	26320-52
Return Gear (idler)	Idler Gear Shaft	Breather Gear (52-53)	Breather Gear (54-55)	Drive Gear Lock Pin (2)	Breather Shaft Split Ret Washer	Oil Pump Check Ball (with tail)	Oil Pump Check Spring	Oil Pump Nipple Plug Screw	Oil Pump Nipple Plug Washer
26326-52	26327-52	26331-52	26331-54R	603	26341-37	26400-52A	26363-36	700	6375
Feed Bypass Ball (with tail)	Feed Bypass Spring	Feed Bypass Plug Rear Fitting	Pump Gasket Lower	Pump Gasket Upper	Pump Gasket Mounting				
26400-52A	26374-53R	26423-52R	26258-52	26259-52	26256-52				

1956-1957 KR, KRTT, KHRTT Pump

New pump assembly# (26203-54RA) includes new breather gear (-56R) with the retaining ring instead of the half moon washers.
Changes also include a new return driver gear and lower body plate.

- Pump Speed is 1/4 of the engine RPM.
- Oil Pump Pressure is determined by a bypass spring and is pre-set at the factory at 15 PSI.

Special thanks to the The French Owl for providing period specific part catalogs.
Parts List: [9) 10) 11)]

Oil Pump Assembly	Oil Pump Body	Upper Cover Breather Tower	Lower Cover Plate	Oil Pump Drive Gear	Feed Gear (driver)	Feed Gear (idler)	Return Gear (driver)	Return Gear (idler)	Idler Gear Shaft

26203-54RA	26217-52	26241-54R	26250-56	26318-54R	26323-52	26322-52	26320-56	26326-52	26327-52
Breather Gear	Feed Gear Lock Pin	Return Gear Woodruff Key	Breather Shaft Ret Ring	Pump Check Ball (with tail)	Pump Check Spring (56)	Pump Check Spring (57)	Pump Nipple Plug (56)	Pump Nipple Washer (56)	
26331-56R	603	26347-15	11002	26400-52A	26363-36	26364-57	700	6375	
Pump Switch Nipple (57)	Oil Switch Plug (57)	Feed Bypass Ball (with tail)	Feed Bypass Spring	Feed Bypass Plug	Pump Gasket Lower	Pump Gasket Upper	Pump Gasket Mounting		
26420-57	45830-48	26400-52A	26374-53R	26423-52R	26258-52	26259-52	26256-52		

1958-1969 KR, KRTT, KHRTT, XLRTT Pump

New pump body machining while using the same pump assembly number as the 56-57 pump.
The 58 pump changes the path of excess feed oil to the return gears instead of into the gearcase. See more on the bypass change below.
1958-1964 pump still used the check and bypass balls with the tail (stem).
1965-1969 pump changed to the round ball with no tail for both oil check and bypass using the same spring as before.
The 1965-1969 version of this pump was also used on 1970 XR-750 engines (round check ball instead of the half ball with the tail).

Sometime before 1963, the original breather valve (26331-56R) setup was modified at the factory before shipped out to open at 25 ATDC.
The 1963-up instruction manuals give the procedure for the mod if neccessary.

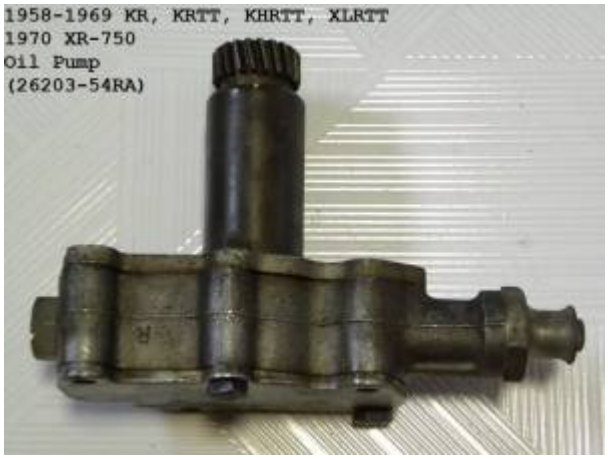
- Pump Speed is 1/4 of the engine RPM.
- Oil Pump Pressure is determined by a bypass spring and is pre-set at the factory.
  - KR is set at 15 PSI. Oil Pressure as measured at the oil switch fitting with hot oil at 3000 RPM and above, 15-20 PSI. [12)]
  - XLR is set at 5 PSI. [13)]
- The crankcase breathing system was used to return oil from the crankcase into the gearcase using the timed breather valve gear.
  From there, the oil drained directly onto the return gears of the oil pump.
  - 1961 Breather Timing (all): Opens at (20°-25° ATDC) front cylinder. Closes at 85°-90° (ABDC). [14)]
  - 1963-up Breather Timing (all): Opens at (25° ±5° ATDC) front cylinder. [15)]

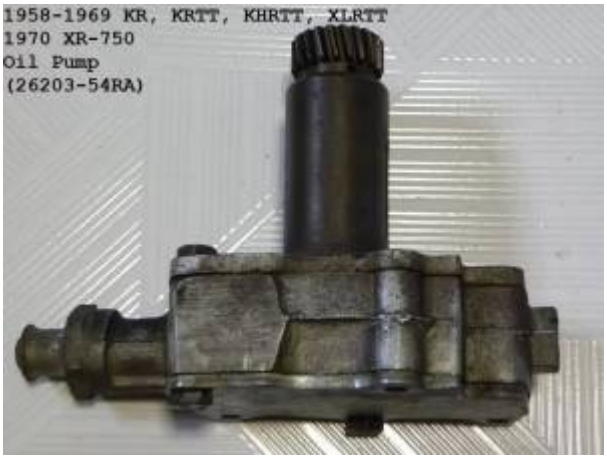
Special thanks to the The French Owl for providing period specific part catalogs.
Parts List: [16)] [17)] [18)] [19)] [20)]

Oil Pump Assembly	Oil Pump Body	Upper Cover Breather Tower	Lower Cover Plate	Oil Pump Drive Gear	Feed Gear (driver)	Feed Gear (idler)	Return Gear (driver) (58-64)	Return Gear (driver) (65-69)	Return Gear (idler)
26203-54RA	26217-58R	26241-54R	26250-56	26318-54R	26323-52	26322-52	26320-56	26320-56R	26326-52

Idler Gear Shaft	Breather Gear	Feed Gear Lock Pin	Return Gear Woodruff Key	Breather Shaft Ret Ring	Pump Check Ball (58-64) (with tail)	Pump Check Ball (65-69) (no tail)	Pump Check Spring	Pump Switch Nipple	Oil Switch Plug
26327-52	26331-56R	603	26347-15	11002	26400-52A	8866	26364-57	26420-57	45830-48
Bypass Ball (no tail)	Feed Bypass Spring	Feed Bypass Plug	Pump Gasket Lower	Pump Gasket Upper	Pump Gasket Mounting				
8866	26374-53R	26423-52R	26258-52	26259-52	26256-52				

Pics: click on any pic to enlarge. [21)]






1958-1969 KR, KRTT, KHRTT, XLRTT
1970 XR-750
Oil Pump
(26203-54RA)


1958-1969 KR, KRTT, KHRTT, XLRTT
1970 XR-750
Oil Pump
(26203-54RA)


958-1969 KR, KRTT, KHRTT, XLRTT
1970 XR-750
Oil Pump
(26203-54RA)


1958-1969 KR, KRTT, KHRTT, XLRTT
1970 XR-750
Oil Pump
(26203-54RA)


1958-1969 KR, KRTT, KHRTT, XLRTT
1970 XR-750
Oil Pump
(26203-54RA)


958-1969 KR, KRTT KHRTT, XLRTT
970 XR-750
Oil Pump
(26203-54RA)

Feed Bypass Systems

1952-1955 production K Models and 1952-1957 Competition KR, KRTT and KHRTT

1952-1955 production K Models use oil pump body (26217-52) which is machined for an internal feed bypass system (this lowers oil flow to the motor).
1952-1957 KR, KRTT and KHRTT all used the same pump body (26217-52). These use a different relief spring than the production model pumps.
The bypass on all above returns a portion of feed oil internally to the gearcase.

How it's plumbed:

- The pump body has a vertical (bypass) hole drilled half thru it at app 11:00 from the rear outer mounting bolt looking at the feed side. A horizontal hole is drilled from the rear of the pump thru the bypass hole and to the normal feed output side of the pump. The horizontal hole is counter drilled in the rear for a ball stop near the vertical bypass hole. A spring and plug on the rear of the pump keeps the ball pressed against it's seat, closing off the vertical hole with spring pressure. The breather tower plate and the right case both have a corresponding hole drilled through where oil can rise from the pump into the cam chest.

How it works:

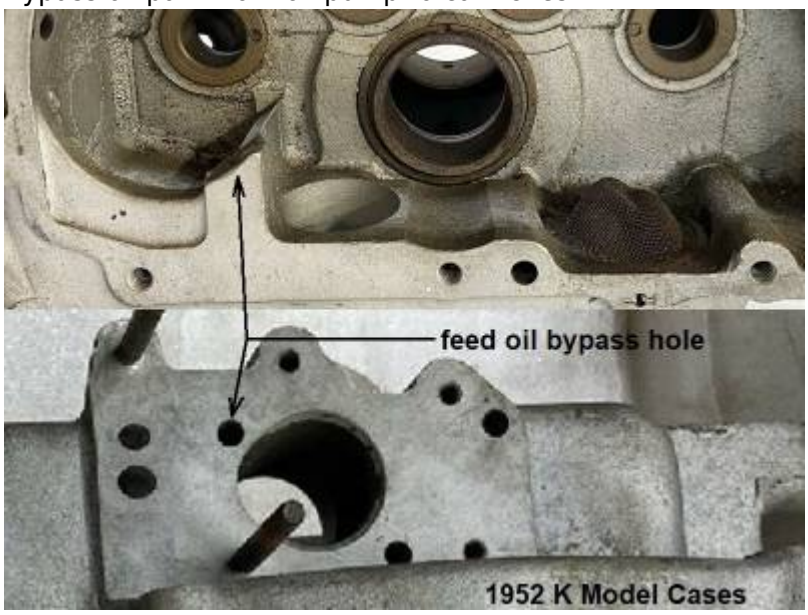
- Feed oil is split where a portion of oil is fed to the engine and a portion of oil is sent to the cam chest to be scavenged back to the oil tank. Oil that runs the horizontal bypass hole leaves the feed gears and pushes against the rear ball, pushing it backwards opening a path to the vertical hole. Lower oil pressure allows less oil to flow and higher pressure allows more oil to flow up the vertical bypass hole and into a hole machined into the gearcase. From there the oil falls to the floor and is scavenged by the pump back to the oil tank. The spring determines the output oil pressure to the feed side of the motor. The more oil that is bypassed, the lower the pressure of oil that enters the motor.

Rendering the bypass inoperable on production model pumps:

- **1952-1954 K model** production pumps had a barrel type line plug (26424-52) available for parts order to block oil from going into the vertical bypass hole. It appears to install between the ball and spring and stop oil pressure from moving the ball off it's seat.
- **1955 KH** used the same pump body (26217-52) but got a ball and set screw with no spring that closes off the vertical bypass path to the cam chest.
- **1956 KH** pump body (26217-56) was not machined for a bypass and the rear hole for the plug was cast shut.

Rendering the bypass inoperable on competition model pumps:
Since these pumps are for competition only, it is counter productive to block the bypass system.

Bypass oil path from oil pump to cam chest. [22].



1958-1969 KR, KRTT, KHRTT, XLR, XLRTT and 1970 Iron XR-750 Pump

All these models use oil pump body (26217-58R) which is machined with an internal feed bypass system to lower oil flow to the motor.
The bypass returns a portion of feed oil internally to the suction side of the return gears.

How it's plumbed:

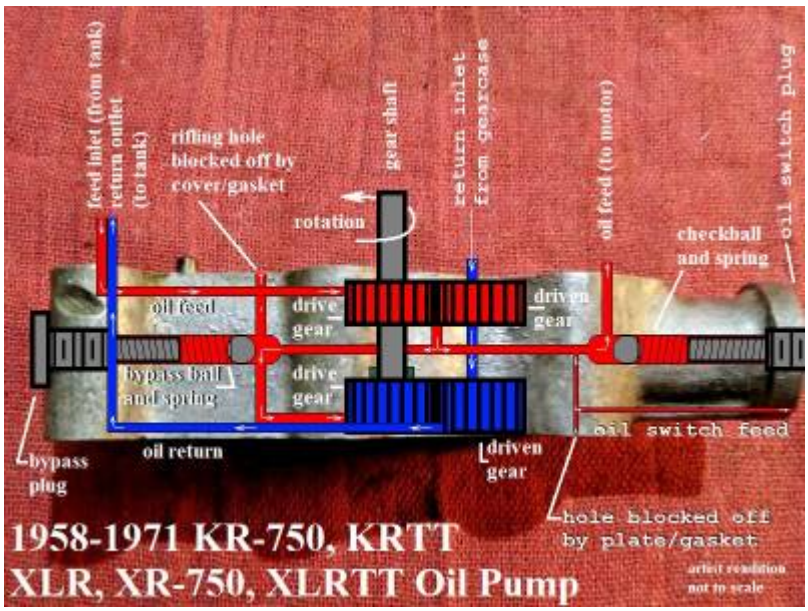
- The pump body has a vertical (bypass) hole drilled all the way through the pump body at app 11:00 from the rear outer mounting bolt looking at the feed side. On the return side of the pump, a “J” slot is milled from that hole around to the suction chamber in front of the return gears. A horizontal hole is drilled from the rear of the pump thru the vertical bypass hole and to the feed output passage in the pump. The horizontal hole is counter drilled in the rear for a ball stop near the vertical bypass hole. A spring and plug on the rear of the pump keeps the ball pressed against it's seat, closing off the vertical hole with spring pressure. The breather tower plate is not drilled for the bypass hole and closes off the top of that hole as assembled. So bypassed oil on these models gets sent to the bottom of that hole to the oil tank straight from the return pump's outgoing oil channel.

How it works:

- Feed oil is split where a portion of oil is fed to the engine and a portion of oil is internally sent to the return pump to be scavenged back to the oil tank from there. Oil that runs the horizontal bypass hole leaves the feed gears and pushes against the rear ball, pushing it backwards opening a path to the vertical hole. Lower oil pressure allows less oil to flow and higher pressure allows more oil to flow down the vertical bypass hole, through the milled “J” slot and into the suction chamber of the return gears. The gears send the oil to the return pressure side chamber, through

the pump's return channel, into the engine return passage and out to the oil tank. The spring determines the output oil pressure to the feed side of the motor. The more oil that is bypassed, the lower the pressure of oil that enters the motor.

Rendering the bypass inoperable:
Since these pumps are for competition only, it is counter productive to block the bypass system.



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1)
Harley Shop Dope #346A dated June 1, 1954
2) , 3) , 4)
photo by hawghd1, edited by Hippysmack
5)
1954 KR, KRTT, KHRTT Parts Catalog
6) , 9)
1956 KR, KRTT, KHRTT Parts Catalog
7) , 10)
1957 KR, KRTT, KHRTT Parts Catalog
8) , 11)
1959 KR, KRTT, KHRTT Parts Catalog
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1963 HD KR, KRTT and XLR Specifications and Instructions
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1959 KR Parts Catalog
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1970 XR-750 Parts Catalog

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1958-1968 Competition Sportster XLRTT and KR-KRTT Models

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