

# Table of Contents

<b>IH: Engine Mechanicals</b> .....	1
<b>Sub-Documents</b> .....	1
<b>Motor Mounts</b> .....	1
<b>Timing Hole Plug</b> .....	1
<b>Primary Cover</b> .....	2
<b>Primary Cover Gaskets</b> .....	2
<b>Shifter Shaft Bushing</b> .....	3
1977-2003 Bushing .....	3
<b>Primary Cover Dowel Bushing (1977-1985)</b> .....	4
<b>Name Transfer (1971-1980)</b> .....	4
<b>Access Covers / Cap Plugs</b> .....	5
1957-1970 XL/XLH and 1970 XLCH .....	5
1971-1976 All Models .....	6
1977-1985 All Models .....	7
<b>Gearcase / Cam Chest Cover</b> .....	7
<b>Cam Cover Gasket</b> .....	7
<b>Cam Cover Bushings</b> .....	9
Pinion shaft bushings .....	9
Oil Deflector / Separator Bushing Assembly (1957-1962) .....	9
Shifter Shaft / Brake Shaft Hole Bushings and Plugs .....	11
<b>Ignition Timer Cover</b> .....	13
<b>Parts Lists</b> .....	14
Engine Cases .....	14
Flywheels .....	16
L1981-up Commonized Flywheels .....	19
Roller Bearing Inspection (1957-1976) .....	20
Primary / Chain Cover .....	20



[Go To Technical Menu](#)

# IH: Engine Mechanicals

See also [Crankshaft / Flywheel Tools](#) in the Reference section of the Sportsterpedia.

## Sub-Documents

- [Ironhead Sprocket Cover Dowel Hole \(Case\) Repair](#)
- [Ironhead Engine Case Numbers](#)
- [Ironhead Engine Case Identification](#)
- [Ironhead Primary/Chain Cover Pics and Information](#)
- [Ironhead Gearcase/Cam Cover Pics and Information](#)
- [Ironhead Gearcase/Cam Cover Removal and Installation](#)
- [Ironhead Transmission Sprocket Cover Pics](#)
- [Catalog of OEM Flywheels](#)
- [Sportster Drain Plugs Explained](#)
- [Tapping or Installing a Helicoil on a Drain Plug with the Engine in the Frame](#)

## Motor Mounts

[Click here for Engine Mounts](#) in the Sportsterpedia.

## Timing Hole Plug

[Click Here](#) to go the Timing Inspection Hole and Plug - Sealing and Thread Repair page in the Sportsterpedia.

### **1954-1971 KH / Sportster Timing Hole Plug (704).**

This plug was also used as an oil tank drain plug for 1958-1961, 1966-1978 XLCH and 1979-1981 XLH, XLCH, XLS Sportsters.

Threads: 5/8"-18 x 3/8" with 3/4" Hex Head.

Click on a pic to enlarge:



**1972-2003 Sportster Timing Hole Plug (720).**

Threads: 5/8"-18 x .350" with 3/8" Hex Socket (Allen) Head.



# Primary Cover

## Primary Cover Gaskets

Below is a list of factory gaskets used on Sportster primary covers.

Pics of the different part numbers are listed to the right in the chart. Click on the link to open a picture of the part.

Year Model	Part#	Notes	Pics
1952-1953 K Model 1958-1969 XLC, XLCH	34955-52	XLCH "Tin" cover gasket. Kickstart only. Can also replace XLH gasket 34955-52A.	<a href="#">Pic <sup>5)</sup></a>

1954-1956 K Model 1957-1966 XL/XLH	34955-52A	XLH aluminum cover gasket. Kickstart only.	<a href="#">Pic 6)</a>
1967-1976 XLH 1970-1976 XLCH	34955-67	First electric start XL motor.	<a href="#">Pic 7)</a>
1977-1985 XLH 1977-1979 XLCH 1983-1990 Sportster	34955-75		
1980-1982 XLS	34966-80	Same exact gasket as 1977-1985 version above, just black in color.	

## Shifter Shaft Bushing

### 1977-2003 Bushing

1977-2003 Sportster Primary Cover Shifter Shaft Bushing 40520-63. Bushing is open ended. Below are approximate (only) dims. <sup>8)</sup>



## Primary Cover Dowel Bushing (1977-1985)

Dowel bushing part# (24754-77).

1977-1985 covers used 3 dowel bushings to locate the primary cover to the left case. (same bushing used through 1996 covers)

The mounting bolt hole in the cover is drilled for the OD of the bushing with the ID of the bushing sized for the mounting bolt.



9)

## Name Transfer (1971-1980)

These are used in the "pocket" in the center of the primary cover.

1971 XLH, XLCH used the transfer labeled "900" (34960-71).

1972-1976 XLH, XLCH used the transfer labeled "1000" (34960-72).

1977-1978 XLCR used the transfer labeled "CR1000" (34965-77).

1977-1980 XLH, XLCH used the transfer labeled "Sportster" (34961-77).

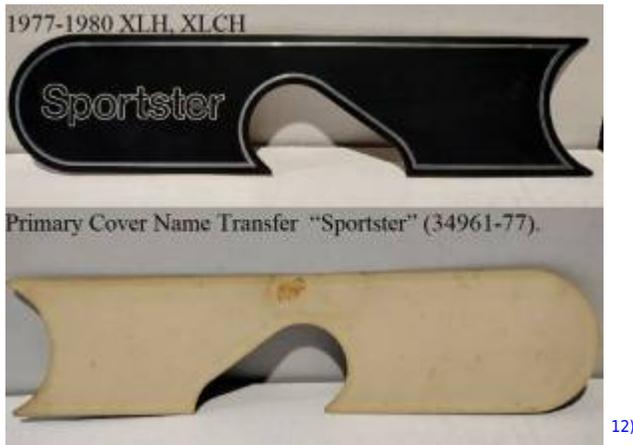
1979-1980 XLS used the transfer labeled "1000" (34962-79).



10)



11)



## Access Covers / Cap Plugs

### 1957-1970 XL/XLH and 1970 XLCH

#### Oil Filler Hole Plug (34742-52A):

The plug cap is threaded for removal to add oil to the primary case.

The plug is polished and knurled with a small hole through the center and filter mesh staked in place on the inward side of the plug.

It screws into the hole in the primary cover with no seal. The small hole with filter mesh serves as primary air intake.

This hole allows air to come into the primary replacing what's lost to the crankcase from the transfer valve in the left case half.

It also serves to control the amount of vacuum built up in the primary case by way of intake air from outside the case.

The plug has a slot milled out across the face as a socket for removal/installation and the tool is similar to and fits into the slot.

#### 1957-1970 XL/XLH and 1970 XLCH Oil Filler Hole Plug (34742-52A) <sup>13)</sup>



## 1971-1976 All Models

### Oil Filler Hole Plug (34742-71):

Changes made to the 57-70 hole plug include no knurling and now using a sealing O-ring (11106).

The plug cap is threaded for removal to add oil to the primary case.

The plug has a small hole through the center and filter mesh staked in place on the inward side of the plug.

It screws into the hole in the primary cover and seals with the installed O-ring. The small hole with filter mesh serves as primary air intake.

This hole allows air to come into the primary replacing what's lost to the crankcase from the transfer valve in the left case half.

It also serves to control the amount of vacuum built up in the primary case from outside air intake.

The plug has a slot milled out across the face as a socket for removal/installation and the tool is similar to and fits into the slot.

### Clutch Adjustment Hole Plug (37880-71):

This cap plug was introduced on the primary cover with the redesigned wet clutch models and installs over the clutch adjuster.

The procedure for clutch cable adjustment (as outlined in 1971-1972 Sportster owner and FSMs require the removal of the chain cover.

The MoCo revealed an easier way to make clutch adjustments by removing the access plug from the chain cover instead of removing the cover.

[Click Here](#) to go to the service bulletin page and scroll down to TSB #634 to view that PDF bulletin.

The cap plug is polished, has knurled edges and doesn't install flush with the cover.

The clutch adjustment hole plug also uses O-ring (11106), has no through-hole vent and has overlapping slots cut into the face in a "cross" pattern.

No vent is needed in this cap since the oil filler plug has the vent controlling air intake.

1971-1976 Sportster Primary Oil Filler Plug (34742-71) <sup>14)</sup>



1971-1976 Sportster Clutch Adjustment Hole Plug (37880-71) <sup>15)</sup>



## 1977-1985 All Models

1977-1985 models use 2 identical hole plugs for the oil filler hole and the clutch adjustment hole. It looks the same as the 1971-1976 oil filler hole plug but it has no vent hole.

The primary now breathes from a rubber hose on the top rear of the transmission.

The plug went through a couple revisions but any of these will fit and function on 1977-1985 primary covers.

1977 models used (34742-77)

1978-E1985 models used (34742-77A)

L1984-1985 models used (34742-77B)



## Gearcase / Cam Chest Cover

### Cam Cover Gasket

**Make sure to use the correct gasket for your engine/cover specifics.**

There were changes to the upper feed galley that dictate a specific gasket, especially between 1979-1982 models.

The upper oil feed galley was redesigned during the 1979-1982 and according to the MoCo, the gasket must fit the case design.

Below is a quick list of factory gaskets used on Sportster gearcase/cam covers. Pics of the different part numbers are listed to the right in the chart. Click on the link to open a picture of the part.

Year Model	Part#	Notes
1952-1976 K Models, Sportsters	25224-52	See below
1977-some E1981 Sportsters	25224-52A	
1982-1985 Sportsters (some 1981 Sportsters)	25263-81	

More in depth information on the right case changes that affected the cover gasket from 1979-1982; [Click Here](#) to read more about gearcase changes around the upper feed galley.

**1957-E1982 right cases with the small boss and upper oil feed oil slot:**

1952-1976 K and Sportster original gasket (25224-52), designed with an upper feed oil hole. Updated gasket (25224-52A).

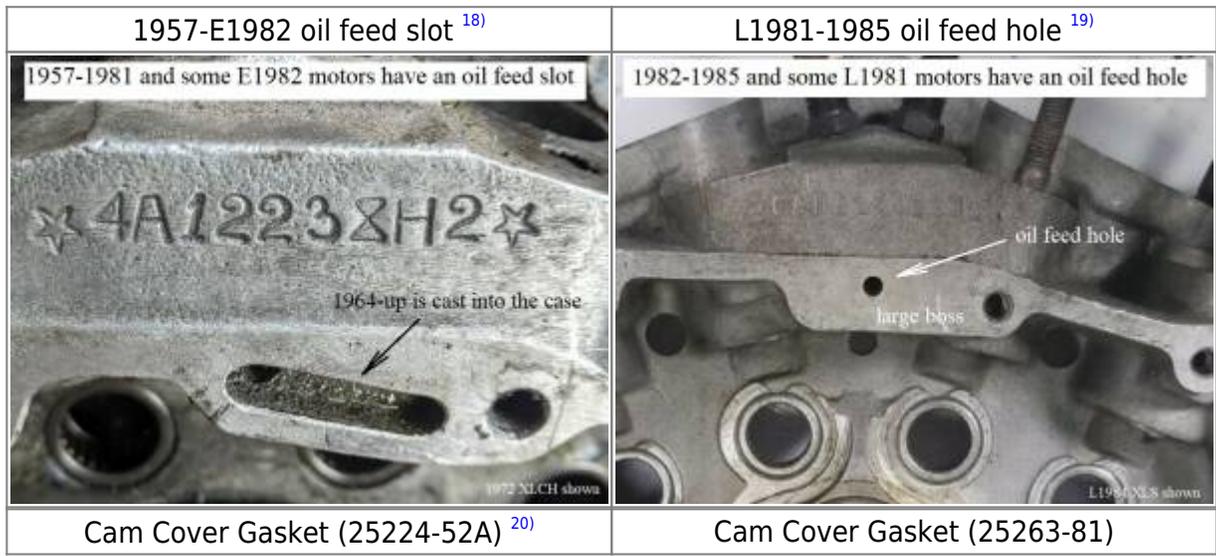
1977-L1981 and some E1982 Sportsters original gasket (25224-52A) original had a single for the upper feed galley passage.

The original gasket was updated in Nov. 1979 with a short slanted slot added to match the gearcase modification in L1979-E1980 models. <sup>17)</sup>

And the updated -52A gasket replaced the -52 gasket for 1952-1976 models in the -78B catalog.

**1982-1985 and some L1981 right cases with the large boss and upper oil feed hole:**

L1981-1985 Sportsters use gasket (25263-81), designed with a long horizontal slot.





## Cam Cover Bushings

### Pinion shaft bushings

1952-1976 bushing (25593-57) uses a .625" pinion bushing bore. <sup>21)</sup>

1977-2020 bushing (25593-74) uses a .562" pinion bushing bore.

### Oil Deflector / Separator Bushing Assembly (1957-1962)

AKA, (spring loaded top hat)

Looking at the brass part, you can see how the spring catches on the inward bent tabs. There are also unbent tabs on the brass. <sup>22)</sup>

These, when bent outward just a little, fit into slots on the far side of the steel bushing pressed into cam cover.

Here's how the factory assembled this thing.

They had pre-assembled the brass to the steel before the steel was pressed into the cover.

Then dropped the spring into the cover and pressed the brass/steel assembly into the cover as a unit (and manipulated the spring to sit correctly if needed).

However, it is possible to assemble the unit without removing the steel from the cover. <sup>23)</sup>

You can bend the tangs out without having to remove the steel bush with a screwdriver and a hammer to bend the 2 locating tabs out.

Notes:

The tabs must be bent outward enough that the brass stays keyed to the steel at full spring compression. You don't want the brass hat to 'unkey' when the generator compresses spring. The brass needs to be able to 'plunge' in and out under the spring pressure once the tags are bent.

If you get too aggressive, you can cause deformations in the brass that allow it to hang up in it's sliding fit to the steel.

These outward bent tangs do 2 things.

- They keep the brass hat and spring captive in the cover upon generator removal.
- More importantly, they key the brass to the steel to prevent the brass from rotating with the

generator gear.

The brass is unable to rotate by the tangs keying into the slots.

**Inspection:**

Check the operation of the oil separator bushing assembly.

The spring should have free action and be fully extended in the gearcase cover.





29)

## Shifter Shaft / Brake Shaft Hole Bushings and Plugs

### 1952-1974 Cam Covers:

1952-1974 K models and Sportster use shifter shaft bushing (34037-52) in both the right case and the cam cover.

This bushing is open ended for the long shift shaft to run through it.

Bushing (34037-52) App. Dims:

Bushing OD: 5/8"

Bushing ID: 1/2"

Bushing Length: 3/4"

### 1975-1976 Cam Covers:

1975-1976 Sportsters use shifter shaft bushing (34037-52) in the right case and bushing (34037-75) in the cam cover.

As result of the Sportster going left side shift in 1975, the shifter shaft got shorter out of the right case. The shaft end has linkages back to a crossover arm through the frame.

This bushing has one closed end which is installed on the outside of the cover.

Bushing (34037-75) App. Dims:

Bushing OD: 5/8"

Bushing ID: 1/2"

Bushing Length: 3/4"

### 1977-E1981 Cam Covers:

1977-E1981 cam covers came with a different bushing (25594-75) for a brake shaft.

Starting in 1977, the shifter shaft exits out the left case and the old then shifter shaft location in the cam cover became the brake shaft location.

This was the brake shaft design from 1977-1979 (even though the rear brakes went hydraulic in 1979).

However, in 1980, the MoCo moved the brake operating lever to the trans sprocket cover so the hole in the cam cover was now useless (1980-1985).

Cam Cover Bushing Bore: .7450" <sup>30)</sup>

Bushing (25594-75) App. Dims:

Bushing OD (before installing): .752" <sup>31)</sup>

Bushing ID (before installing): .6250" <sup>32)</sup>

Bushing Length: .625" <sup>33)</sup>

**1980-E1981 Cam Covers:**

In 1980, the MoCo used a rubber plug (25221-77) in the now unused brake shaft hole in the cam cover. The brake shaft bushing was still installed presumably to allow later covers to be used on 1979 models. The rubber plug inserts into the bushing.

The parts books (1980-1985) show the rubber plug sold for 1979-E1981 Sportsters.

As usual, that means they expected one to upgrade the 1979 system to the 1980 system.

**L1981-E1984 Cam Covers:**

Once again a change was made in “how to plug a hole that goes nowhere”.

There may have been some problems with the rubber plug falling out or other. The bushing and plug was deleted from the cover.

The hole was still there but threaded for metal plug (2506), 7/16“-14 x 1/2” hex socket bolt, which screws into the cam cover.

L-1984-1985 covers did not use a plug nor did they have a hole for a plug even though the parts books show the plug for L81-85 models.

**1975-1976 Sportster cam cover shifter shaft bushing:** <sup>34)</sup>

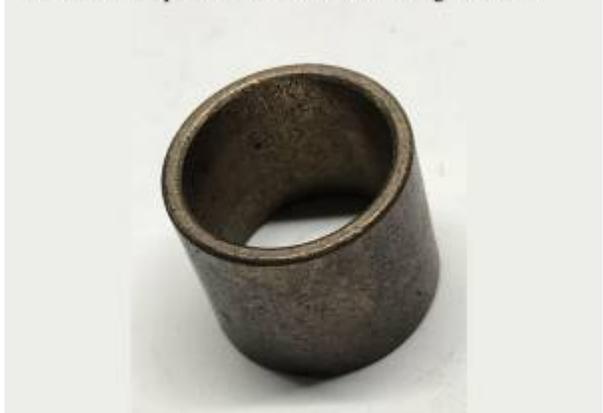
1975-1976 Sportster Shifter Shaft Bushing 34037-75  
(closed on one end and resides in the cam cover)



1975-1976 Sportster Shifter Shaft Bushing 34037-75  
(closed on one end and resides in the cam cover)

**1977-E1981 Sportster cam cover brake shaft bushing:** <sup>35)</sup>

1977-E1981 Sportster Brake Shaft Bushing 25594-75



1977-E1981 Sportster Brake Shaft Bushing 25594-75

**1977-1978 XLCR, 1979-E1981 cam cover brake shaft hole rubber plug:** <sup>36)</sup>



### L1981-E1984 Sportster cam cover screw plug: <sup>37)</sup>



## Ignition Timer Cover

<sup>38)</sup>

# Parts Lists

## Engine Cases

All part numbers were gathered from period specific Sportster parts catalogs from 1957-1985 including supplement and updated catalogs.

Year Model	Case Set Part#	Left Case Part#	Left Case Casting#	Right Case Part#	Right Case Casting#
1957-1965 XL/XLH	24511-57	24532-57	24534-57	24556-57	24558-57
Notes	"No hump" cases (primary not cast for electric start)				
1958-1965 XLC/XLCH	24515-58	24532-58	24534-57	24556-57	24558-57
Notes	"No hump" cases (primary not cast for electric start).				
1966 XLH	24511-57 24511-57A	24532-57	24534-57	24555-57 24555-57A	24558-57
Notes	<p>"No hump" cases (primary not cast for electric start).            E1966 case set (24511-57) replaced by (24511-57A) on 1-13-1966            Factory changes made starting with crankcase# (66 XLCH 6117-up); <sup>39)</sup>            Right case has fillet added to base of countershaft low gear boss.            Right case is replacement for all 1957-1965 models.            -57A case set is replacement for 57-66 XL/XLH (24511-57)            Left case is replacement for 1957-1966 XL/XLH            Case set (24511-57A) replaced by 1969 XLCH case set (24515-58A) in 1969            Left case replaced by XLCH (24532-58) in 1969 for 57-66 XL/XLH</p>				
1966-1969 XLCH	24515-58 24515-58A	24532-58	24534-57	24555-57 24555-57A	24558-57
Notes	<p>"No hump" cases (primary not cast for electric start).            E1966 case set (24515-58) replaced by (24515-58A) on 1-13-1966            Factory changes made (66 XLCH 6117-up); <sup>40)</sup>            Right case has fillet added to base of countershaft low gear boss.            -57A right case is replacement for all 1957-1965 models            -58A case set is replacement for 1966 XLH in 1969</p>				
1967-1968 XLH	24512-67	24531-67	34-67	24555-67	24558-67
Notes	"Hump" cases (primary cast to accept electric starter)				
1969 XLH	24512-67A	24532-58	34-67	24555-67A	24558-67
Notes	<p>"Hump" cases (primary cast to accept electric starter).            Right case is replacement for 1967-1968 XLH            Case set is also replacement for 1967-1969 XLH            Right case, lower left of gearcase, drilled and tapped for chain oiler fitting.</p>				
L1969-E1971 XLH/XLCH	24512-67A	24531-67	34-67	24555-67A	24558-67

	<p>1970 and all future Sportster year cases are "hump" cases for electric start  Left case is replacement for 1967-1969 XLH  Right case is replacement for 1967-1969 XLH  Case set is also replacement for 1967-1969 XLH  1978 parts supplement corrects "used on" models to 70-71 XLCH  VIN moved the from the left side case to the right case.  A blank Vin pad is still on the left with no number stamped on it. <sup>41)</sup></p>				
L1971 XLCH	24512-70	24531-67		24555-70	24558-67
Notes	Case set is also replacement for 1970 XLCH.				
1972 XLH/XLCH	24505-72	24535-72	24534-72	24551-72	24558-72
Notes	First year for 1000 Sportsters. Last year of the speedometer drive gear in the right case.				
1973-1976 XLH/XLCH	24505-73	24535-73	24534-72	24551-73	24558-73A
Notes	<p>There was a late 1973 cylinder and head change but the crankcase was left unchanged <sup>42)</sup>  Starting in 1976, case halves not sold separately</p>				
1977-1978 XL/XLCH/XLCR	24527-75	-	24534-75	-	24558-75
Notes	<p>Cases redesigned for a minisump, new oil pump mounting boss, left side shifter  Crankcase breathes thru holes in gearcase wall, oil trough for timed breather deleted.  Vertical oil scavenge passage drilled in sump wall</p>				
1979 XL/XLCH	24527-75A	-	24534-75	-	24558-75
Notes	Right case modified to eliminate high pressure oil leakage around the oil passage between the upper crankcase cover and crankcase in November, 1979 <sup>43)</sup>				
1979-1980 XLS	24490-79A	-	24534-75	-	24558-75
Notes	Last year cases were cast with hole for kick start.				
1980 XL	24527-75B	-	24534-75	-	24558-75
Notes	Case set is also replacement for 1979 XL/XLCH.				
1981-1982 XL	24527-81A	-	24534-81	-	24558-75A
Notes	<p>Sold for 1982-E1984 XL/XLS/XLX in 1985  Must use rear motor mount 16203-82A  L1981 to E1982 production change on the right case, all XL models.  On some cases, the oil galley slot in the top of the gearcase was not machined. Instead, a hole was drilled thru to connect the oil path.  Upper left corner of gearcase also received additional threaded hole to mount the gearcase cover.  Left case has a new "hump" casting to mount the new Nippon Denso starter.</p>				
1981-1982 XLS	24490-81A	-	24534-81	-	24558-75B
Notes	Case set is (painted black). See 1981-1982 XL production change above.				
1981-1982 XLS replacement	24490-81C	-		-	
Notes	<p>Replacement (painted black) case for 1981-1982 XLS offered in 1983  Must use rear motor mount 16203-67A on 1981 models  Must use rear motor mount 16203-82A on 1982 and 1983 models</p>				
1982 XLS replacement	24490-82	-		-	

	Notes	Replacement (painted black) case for 1982 XLS offered in 1984 Must use rear motor mount 16203-82A			
1983 XL/XLS		24527-81C	-	24534-83	24558-83A
	Notes	Replacement case for 1981-1982 XL offered in 1983 Must use rear motor mount 16203-67A on 1981 models See TSB M-876A for more details Must use rear motor mount 16203-82A on 1982 and 1983 models L1983 production change: The roll pin for the trans thrust washer in the case was removed. <sup>44)</sup>			
L1983 XR-1000		24517-83	-	-	-
	Notes				
E1984 XL/XLS/XLX		24480-84	-	24534-83A	24558-83B
	Notes	Case set 24480-84 is listed in 1984 parts book but number was later given to L1984 case set <sup>45)</sup>			
E1984 XL/XLS/XLX		24527-82A	-	24534-83A	24558-83B
	Notes	Late 1984 production change <sup>46)</sup> Case set is also replacement for 82-E84 models Must use rear motor mount 16203-82A New crankcase set starting with crankcase date code 7 84 174011 (June 22, 1984). Features new mainshaft bearing race (35105-83) and new pressed in mainshaft seal (12049). Trans mainshaft/roller bearing/retaining ring remain unchanged Same channel cast into right side of tranny compartment but hole not drilled for stator grommet			
L1984 XL/XLS/XLX		24480-84	-	24534-83A	24558-83B
	Notes	Production change in 1984 Generator deleted, hole in case there redesigned for oil filter mount Stator mounted to trap door w/ hole in case for wire grommet Channel cast into right side of tranny compartment ending in hole for stator wire grommet			
1985 XL/XLS/XLX		24480-85	-	-	-
	Notes	Originally listed for all 1985 models thru the -85 parts book Sold for Late 1985 thru the -85A parts book Starting with crankcase# (785 303002) a cam gear oiler was installed Right case drilled/tapped between F-R tappets for oiler tube feed oil Gearcase wall tapped to attach oiler tube			
E1985 XL/XLS/XLX		24480-85A	-	24534-83A	24558-83B
	Notes	Sold for Early 1985 thru the -85A parts book			

## Flywheels

All part numbers were gathered from period specific Sportster parts catalogs from 1957-1985 including supplement and updated catalogs.

Year Model → Parts ↓	1952-1953 K/KK	1954-1956 K Models	1957-1971 XL/XLH XLC/XLCH	1972-1976 XLH/XLCH	1977-1979 XLH/XLCH/XLS full assembly used until depleted →	1980-E1981 XL / XLS full assembly used until depleted →	L1981-1985 XL/XLS/XLX
Flywheel Assembly w/shafts, w/rods	23900-52	23900-54 23900-54A	23900-57 23900-57A (72)	23900-57A	23900-75	23900-75A	23900-75B 23900-75C (83)
Left Flywheel	23915-52	23916-54 23916-54A	23916-57 23916-57A (72)	23916-57A	23916-57A Keyway	23916-57A	23916-80 No keyway
Right Flywheel	23935-52	23936-54 23936-54A	23936-57 23936-57A (72)	23936-57A	23936-57A Compound oil path	23936-57A timing marks changed from case# 780-108-001 <sup>47)</sup>	23936-80 Single line oil path
Connecting Rod Assembly w/bearings w/crankpin	24275-52	24275-54	24275-57	24275-57	24275-57	24275-57	24275-80
Rear Rod	24290-52	24290-52	24290-57	24290-57	24290-57	24290-57	24290-57
Front Rod	24294-52	24294-52	24294-52	24294-52	24294-52	24294-52	24294-52
Crankpin	23960-52	23960-54	23960-54	23960-54	23960-54 Oil hole 110° from keyway	23960-54	23960-80 w/ plug Oil hole 90° from keyway
Crankpin Roller (std) (1 roller)	9101 (E52) 9381 (L52-53) 9401 (52-53)	9441 9441A (59) 9150 9150A (59)	9441 9441A (59) 9150 9150A (59)	9441A 9150A	9441A 9150A	9441A 9150A	9441A 9150A
Crankpin Key	23985-18 1/8" x 1/2"	23985-18 1/8" x 1/2"	23985-18 1/8" x 1/2"	23985-18 1/8" x 1/2"	23985-18 1/8" x 1/2"	23985-18 1/8" x 1/2"	11218 1/8" x 3/8"
Crankpin Boss Washer	23972-52	23972-54	23972-57	23972-72	23972-72 (E79) 6506 (L79)	6506	6506
Crankpin Nut	23967-48	23967-54	23967-54 23967-54A (71)	23967-54A	23967-54A		
Crankpin Nut Lock Plate	24015-36	24015-36 (E54) 23971-41 (L54)	23971-41	23971-41	23971-41		

Lock Plate Screw	2669	2669	<del>1187</del> <sup>48)</sup> 2669 <sup>49)</sup> 2669W (65)	2669W			
Con Rod Rear Roller Retainer	24362-52 24361-54	24362-54	24362-54	24362-54A	24362-54A	24362-54A	24362-54A
Con Rod Front Roller Retainer	24364-52 24361-54	24364-54	24364-54	24364-54A	24364-54A	24364-54A	24364-54A
Con Rod Rear Bearing Race			24341-52A (74)	24341-52A (74)	24341-52A	24341-52A	24341-52A
Con Rod Front Bearing Race		24352-52A (74)	24352-52A (74)	24352-52A (74)	24352-52A	24352-52A	24352-52A
Sprocket Shaft	24000-52	24000-54	24000-57	24000-57	24000-75	24000-75 Large keyway	24000-80 <sup>50)</sup> 24000-81 <sup>51)</sup> common taper No keyway
Sprocket Shaft Key	23985-12 3/16" x 1/2"	23985-12 E54 KH 40390-54 L54-56	40390-54	23985-12 3/16" x 1/2"	23985-12 3/16" x 1/2"	23985-12 3/16" x 1/2"	not used
Gear Shaft	24005-52	24005-54	24005-57	24005-57	24008-75 -77A, -78 3/16" key	24008-75A 2-piece <sup>52)</sup>	24005-75 <sup>53)</sup> 24005-80 <sup>54)</sup> 1-piece <sup>55)</sup> common taper 1/8" key
Gear Shaft Key	23985-18 1/8" x 1/2"	23985-18 1/8" x 1/2"	23985-12 3/16" x 1/2"	23985-12 3/16" x 1/2"	23985-12 (E79) 11200 (L79)	11200 <sup>56)</sup>	11218 1/8" x 3/8"
Sprocket Shaft or Gear Shaft Lock Plate			24015-36	24015-36			
Lock Plate Screw	2669	2669	<del>1187</del> <sup>57)</sup> 2669 <sup>58)</sup> 2669W (65)	2669W			
Sprocket or Gear Shaft Nut		24003-54 (54-E55) 8011 (54-56)	8011	8011	8011	8011	

Pinion Gear Nut Tabbed Washer					7913 7044	7913 7044	
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## L1981-up Commonized Flywheels

- In May of 1981, the MoCo issued a bulletin stating that product and quality improvements have brought about a commonized flywheel taper design.

All tapers were comunized at 6° and all keyways were standardized. In June of 1981, an update to this bulletin was issued to include part numbers. <sup>59) 60)</sup>

- A limited number of E1982 XL engines (782216009-782237017) were assembled without the comunized flywheel taper design. <sup>61)</sup>
  - Notable component changes are included in the chart below.
  - This was a running change in 1340cc and 1000cc engines but both new and old designs were used in production until the old stock parts ran out.
  - Assembly and disassembly was the same for the old and new style flywheels but the torque values did change for the new style assembly.  
However, new and old style components must not be intermixed.

Changes for Sportster 1000 engines include:

<b>New Flywheel -</b> Sprocket Side Gear Side	23916-80 23936-80	'Lazy 8' rear cylinder timing mark and no keyway Single hole oil path.
The old style flywheel has a keyway on the sprocket side (23916-57A) and a compound (2) hole oil path on the gear side (23936-57A).		
<b>New Crankpin</b>	23960-80	Oil hole is now 90° to the keyway
Old style crankpin (23960-54) oil hole was 110° to the keyway		
<b>New Crankpin Nuts</b>	23901-81	20/1" thread pattern at 150-185 ft/lbs.
Old style crankpin nuts (23967-54A) were 20/1" threads with 150-175 ft/lbs.		
<b>New Sprocket Shaft</b>	24000-80	No keyway
Old style sprocket shaft (24000-75) has a large keyway		
<b>New Sprocket Shaft Nut</b>	23902-81	3/4" x 20 threads at 100-120 ft/lbs.
Old style sprocket shaft nut (8011) has 11/16" x 18 threads at 100-120 ft/lbs.		
<b>New Sprocket Shaft Key</b>	Not used	
Old style sprocket shaft key (23985-12) has a large woodruff key (3/16" x 1/2")		
<b>New Gear Shaft</b>	24005-80	One piece construction
Old style gear shaft (24008-75A) is of two piece construction		
<b>New Gear Shaft Nut</b>	23902-81	3/4" x 20 threads at 100-120 ft/lbs.
Old style gear shaft nut (8011) has 11/16" x 18 threads at 100-120 ft/lbs.		
<b>New Gear Shaft Key</b>	11218	Small woodruff key (1/8" x 3/8")
Old style gear shaft key (11200) has a large woodruff key (3/16" x 1/2")		

<b>New Crank Key</b>	11218	Small woodruff key (1/8" x 3/8")
Old style crank key (23985-18) has a large woodruff key (1/8" x 1/2")		

## Roller Bearing Inspection (1957-1976)

- In a letter dated May 9, 1977, an HD interoffice memo was sent regarding an inspection of parts stock roller bearings. Some roller bearing part numbers were found to have incorrect diameters. A new micrometer was purchased to remedy this problem.
- Two of those part numbers are gear shaft (9421) and crank pin front rollers (9150A) for Sportsters.
- In light of this oversight, a listing of part numbers with their correct dims and tolerances was issued as in below:

<b>Used for 57-76 Sportster gear shaft roller bearings</b>	Diameter	Size	Length
9421	.1876" - .1974"	Standard	.800" - .796"
9422	.1878" - .1876"	+ .0002"	.800" - .796"
9423	.1880" - .1878"	+ .0004"	.800" - .796"
9424	.1882" - .1880"	+ .0006"	.800" - .796"
9425	.1884" - .1882"	+ .0008"	.800" - .796"
9426	.1886" - .1884"	+ .0010"	.800" - .796"
<b>Used for 54-85 Sportster and K Model front crankpin roller bearings</b>	Diameter	Size	
9150A	.1875" - .1874"	Standard	.480"
9152A	.1877" - .1976"	+ .0002"	.480"
9154A	.1879" - .1878"	+ .0004"	.480"
9156A	.1881" - .1880"	+ .0006"	.480"
9158A	.1883" - .1882"	+ .0008"	.480"
9160A	.1885" - .1884"	+ .0010"	.480"
9161	.1873" - .1872"	- .0002"	.480"

## Primary / Chain Cover

All part numbers were gathered from period specific Sportster parts catalogs from 1957-1985 including supplement and updated catalogs.

Year Model	Part Number	Casting Number	Gasket	Starter Shaft Bearing	Oil Filler Plug/Cap	Clutch Adj Hole Plug
1952-1953 K Models	34951-52	34950-52	34955-52	N/A	24742-52	N/A
1954-1956 K Models	34951-54	34950-52A	34955-52A	N/A	24742-52	N/A
1957-1966 XL/XLH	34951-57	34950-57	34955-52A	N/A	34742-52A	N/A

	Notes: Sand cast aluminum. Natural finish					
1958-1969 XLC/XLCH	34949-58	none	34952-52	N/A	60569-29	N/A
	Notes: Black, stamped steel					
1964-1969 XLCH	34949-64	none	34952-52	N/A	60570-64	N/A
	Notes: Chrome, stamped steel					
1967-1970 XLH	34947-67	34950-67	34955-67	9063	34742-52A	N/A
	Notes: Sand cast aluminum					
1970 XLCH	34948-70	34950-67	34955-67	N/A	34742-52A	N/A
	Notes: Sand cast aluminum, not drilled for starter shaft bearing. Dowel hole near bearing area not drilled					
1971 XLCH	34948-71		34955-67	9063	34742-71	37880-71
	Notes: Die Cast Aluminum. Name transfer "900" in center. Replaced by 34949-71 (1972). Extra removable plug cap added to cover for wet clutch adjustment.					
1971-1972 XLH/XLCH 1974-1976 XLH/XLCH <sup>62)</sup>	34949-71		34955-67	9063	34742-71	37880-71
	Notes: Polished. Name transfer "900" in center (1971). Name transfer "1000" in center (1972- up) Extra removable cap added to cover for wet clutch adjustment.					
1973 XLH/XLCH	34949-73 <sup>63)</sup>		34955-67	9063	34742-71	37880-71
	Notes: Black. Name transfer "1000" in center					
1975-1976 XLH/XLCH	34949-75 <sup>64)</sup>		34955-67	9063	34742-71	37880-71
	Notes: Polished. Name transfer "900" in center					
1977 XLH/XLCH	34949-75 <sup>65)</sup>		34955-75	9063	34742-77	34742-77
	Notes: Polished. Name transfer "Sportster" in center. Replaced by (34949-75A) in 1978 <sup>66)</sup>					
1978-1979 XLH/XLCH	34949-75A <sup>67)</sup> <sup>68) 69)</sup>		34955-75	9063	34742-77A	34742-77A
	Notes: Polished. Replaced by polished cover from kit (34949-75A). Also replacement for 1977 XLH/XLCH Name transfer "Sportster" in center. Later replacement cover 25430-81.					
	34956-78 <sup>70)</sup>		34955-75	9063	34742-77A	34742-77A
	Notes: Polished. Replaced by polished cover from kit (34949-75A). Also replacement for 1977 XLH/XLCH Name transfer "Sportster" in center. Later replacement cover 25430-81.					
1979 XLS	34941-79		34955-75	9063	34742-77A	34742-77A
	Notes: Gray. Name transfer "1000" in center. Replacement cover 25430-81					
1980 XLH	34946-78		34955-75	9063	34742-77A	34742-77A
	Notes: Polished. Part number for cover assembly. Name transfer "Sportster" in center					
	25423-80		34955-75	9063	34742-77A	34742-77A
	Notes: Polished, part number for cover assembly. Name transfer "Sportster" in center					
1980 XLS	25422-80		34966-80	9063	34742-77A	34742-77A

Notes:	Black, cover and gasket. Part# for cover assembly. Name transfer "1000" in center					
	25424-80		34966-80	9063	34742-77A	34742-77A
Notes:	Black, cover and gasket. Part# for cover only. Name transfer "1000" in center					
1981-E1984 XLH 1983-E1984 XLS	25430-81	34950-75B	34955-75	N/A	34742-77A	34742-77A
Notes:	Polished. Starter doesn't require bearing in primary cover. Bearing boss still present with hole milled for 1979-1980 bearing.					
1981-1982 XLS	25424-81		34966-80	N/A	34742-77A	34742-77A
Notes:	Black, cover and gasket. Ribbed across center.					
1983-E1984 XLX	25433-83		34955-75	N/A	34742-77A	34742-77A
Notes:	Aluminum finish.					
L1984-1985 XLH/XLS	25430-84		34955-75	N/A	34742-77B	34742-77B
Notes:	Polished					
L1984-1985 XLX	25433-84		34955-75	N/A	34742-77B	34742-77B
Notes:	Aluminum finish					

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31) 33)

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