Table of Contents

Go To Technical Menu

EVO: Transmission & Final Drive

2004+ 5-Speed Constant Mesh Transmission w/o Trapdoor

- For 2004 and up models, HD redesigned the transmission / engine case to confine the transmission fully within the engine cases. The trapdoor (access plate), that previously allowed easy removal of the transmission for service, was eliminated. Now, in order to service the transmission components, the engine cases need to be split.

Shifter Assembly


1)

2004-2005 vs 2006+ Shifter Assembly
Note the following part number differences between 04-05 and 06-later. The 06-later shifter shaft is larger than
the previous version and therefore the bushing & oil seal is different.[2)]

Part Description	**2004-05 P/N**	**2006-later P/N**
Shifter Assembly	34014-02B	2006-2008 —- 34014-06 2009-later — 34014-06A
Shaft Bushing+	40520-63	40574-06A
Shaft Oil Seal+	11000101++	37107-06
Shaft Washer	7019	2006-2007 —- 7019 2008-later —- 7080
	04-05 Primary Covers P/N	**06-later Primary Covers P/N**
All of these may have the same Internal Casting# (34951-04) which can be confusing.	Polished - 25430-04 Chrome - 25460-04 Silver - 25471-04 Black - 25307-05 ('05)	Polished - 25430-06 Chrome - 25460-06 Silver - 25471-06 Black - 25307-06 Grey - 60830-07 ('07+)
From the factory, the primary cover includes the year-specific bushing based on the cover part number. However, the 04-05 covers are interchangeable with the 06+ versions but the bushing/seal/washer must be matched to the shifter shaft for the model year of the engine.		

+04-05 brass bushing is flush in cover - 06-later bushing has a shoulder and presses in place from the inside of the cover. [3)]
++_latest P/N is 11000101 with 'garter spring' inside (old P/N 37101-84/A/B - no spring). Dims per James Gasket - 13 x 19 x 4
... Cometic Equiv of 11000101 is C10213

The Shifter Shaft Seal

Install On all models:
The oil seal can be removed without removing the primary cover - remove the lever, then use a pick or screwdriver to pry the seal out of the cavity.

On installs, make sure the shaft is free from debris or rust and be sure to put tape over the splines on the

shifter shaft before installing the oil seal to prevent the splines from cutting the seal.

[4)]

The Oil Seal is installed first, followed by the washer/spacer (the '04-'05 Parts Manual may show the **WRONG** order).

NOTE: There is a TSB (M-1350) related to the 'NEW' Shifter Shaft Seal P/N 11000101 being installed with Special Tool HD-51337. The new seal has a 'garter spring' to help seal the shifter shaft from leaks. In this TSB, the following caution is made: If the tool is not used, install seal to a depth of 0.125-0.135 inches. DO NOT bottom the seal in the bore. Bottoming the seal will damage it and prevent it from sealing properly. (While this bulletin refers to Big Twins with 6-spd transmissions, this shifter shaft seal is used on other models, including the Sportsters.)

The idea is that if you bottom the seal, the lips around the shaft will be pressed tightly against the primary cover and will not allow the lips to smoothly follow the movement of the shaft. Thus, the tight lips will be thwarting the 'sealing' aspect that the 'garter spring' is designed to enhance.

The clearance should be from the deepest edge of the seal cavity in the primary cover. The referenced instructions are for the BT models. Therefore, the Sportster models may not be exactly the same.

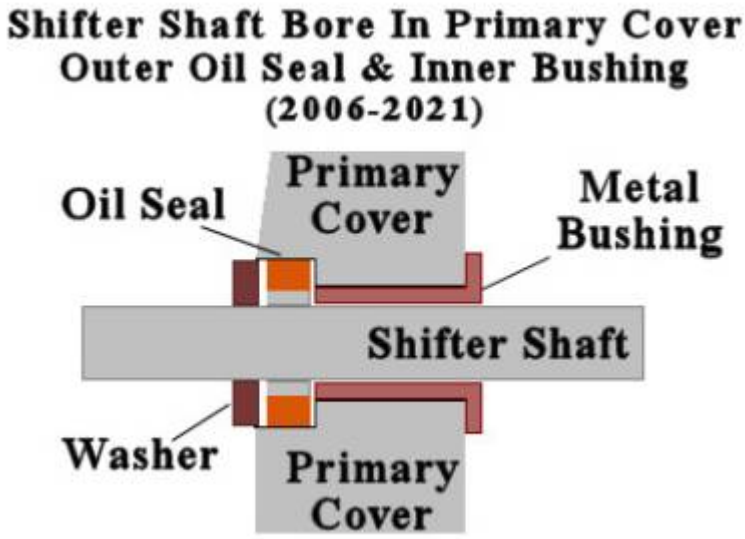
BUT, the principle still applies: Insert the seal slightly below that deepest edge of the cavity and don't bottom out the seal. That gives it the best chance to work correctly.

NOTE: Be sure to match the right bushing & seal to the shifter shaft of the engine year. An aftermarket seal, 12mm x 22mm x 5mm R23, seems to fit in some cases. The R23 version has double lips compared to single lip on the R21 version. [5)]

Also see the Sportsterpedia Primary Cover info HERE.

To increase the tightness of the oil seal (as often suggested by SportsterPaul), after installing the rubber washer, you might install one or two o-rings to take up the gap between the shift lever and the washer. The o-rings do not seal against leaking oil but, instead, they put additional pressure on the oil seal in the primary cover cavity, which does help to seal against leaks. (But be sure you are installing the seal correctly as mentioned above, not bottoming in the bore.)

2006 Sportster - added O-ring (5/8 OD x ½" ID x 1/8" thick)



Some XLForum reference threads:
https://www.xlforum.net/forum/sportster-motorcycle-forum/sportster-motorcycle-intake-and-exhaust/sportster-motorcycle-air-intake-carburetor-efi-fuel-and-exhaust/53895-06-carb-to-07-fuel-injection-conversion?t=254258
https://www.xlforum.net/forum/sportster-motorcycle-forum/sportster-motorcycle-drivetrain/sportster-motorcycle-transmission-clutch-primary-secondary-drive/39317-shifter-shaft-seal?t=79795
https://www.xlforum.net/forum/sportster-motorcycle-forum/sportster-motorcycle-drivetrain/sportster-motorcycle-transmission-clutch-primary-secondary-drive/143966-04-primary-cover-on-an-07?t=1560232
(pics of '04 & '06 primary cover)
https://www.xlforum.net/forum/sportster-motorcycle-forum/sportster-motorcycle-era-specific-and-model-specific/rubber-mount-sportster-motorcycle-talk-2004-2006/76901-primary-cover-differences-05-vs-06?t=548729
https://www.xlforum.net/forum/sportster-motorcycle-forum/sportster-motorcycle-era-specific-and-model-specific/rubber-mount-sportster-motorcycle-talk-2004-2006/123027-06-1200c-primary-oil-leak?t=1218730

Clutch

2004 Wet Clutch Information [6]		
Clutch plate thickness	–Friction plate (fiber)	0.0866 in. (± 0.0031 in.) / (2.200 mm ± 0.079 mm)
	–Steel plate	0.0629 in. (± 0.0020 in.) / (1.598 mm ± 0.51 mm)
Maximum allowable warp-age	–Friction (fiber) plate	0.0059 in. / (0.150 mm)
	–Steel plate	0.0059 in. / (0.150 mm)
Clutch pack service wear limit	0.6610 in. min. / (16.787 mm)	

Primary Drive (engine to transmission)

Year	Domestic Model(s)	Engine Sprocket	Clutch Sprocket	Ratio
2004	883, 883C[7]	34 Teeth	57 Teeth	1.676:1
	1200C, 1200R[8]	38 Teeth	57 Teeth	1.500:1
Year	**HDI, Japan Model(s)**	**Engine Sprocket**	**Clutch Sprocket**	**Ratio**
2004	883, 883C[9]	38 Teeth	57 Teeth	1.500:1
	1200C, 1200R[10]	38 Teeth	57 Teeth	1.500:1

Transmission

Year	Overall Gear Ratios[11]					Overall Gear Ratios[12]				
	US Models 883					US Models 1200				
	1st	2nd	3rd	4th	5th	1st	2nd	3rd	4th	5th
2004	10.944	7.524	5.834	4.806	4.071	9.454	6.500	5.040	4.152	3.517
Year	**Overall Gear Ratios[13]**					**Overall Gear Ratios[14]**				
	HDI Models 883					HDI Models 1200				
	1st	2nd	3rd	4th	5th	1st	2nd	3rd	4th	5th
2004	9.792	6.732	5.220	4.301	3.643	9.139	6.283	4.872	4.014	3.400
Year	**Overall Gear Ratios[15]**					**Overall Gear Ratios[16]**				
	Japan Models 883					Japan Models 1200				
	1st	2nd	3rd	4th	5th	1st	2nd	3rd	4th	5th
2004	9.647	6.633	5.143	4.248	3.643	9.004	6.190	4.800	3.965	3.400

Mainshaft Fifth Gear

L1994-2005 Mainshaft 5th Gear, Bearing & Spacer

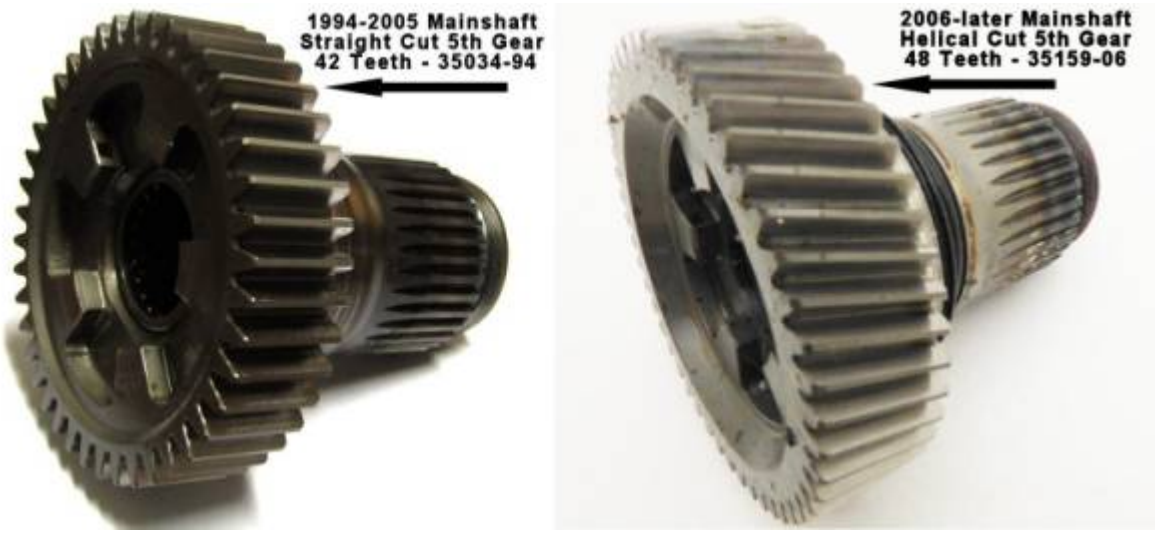
- 35034-94 - Gear Includes Needle Bearings
  - 8996A - Ball Bearing
  - 33344-94 - Drive Sprocket Spacer

2006-Later Mainshaft 5th Gear, Bearing & Spacer (Used on All Models except XR-1200 / XR1200X)

- 35159-06 - Gear includes Needle Bearings
  - 35051-89A - Needle Bearings (2req)
  - 8964 - Ball Bearing w/Built-in Drive Sprocket Spacer

Mainshaft 5th Gear Bearing - Used on XR-1200 and XR1200 Models [17)]

- 8956 - Ball Bearing
- Accompanied with:
  - 11631 - O-ring
  - 33354-08 - Spacer



Final Drive (Trans to Rear Wheel)

Year	Domestic Model(s)	Transmission Sprocket	Rear Wheel Sprocket	Secondary Drive Belt	Ratio
2004	883/ 883C	28 Teeth	68 Teeth	136 Teeth	2.429:1
	1200/ 1200R	29 Teeth	68 Teeth	137 Teeth	2.345:1
Year	**HDI / Japan Model(s)**	**Transmission Sprocket**	**Rear Wheel Sprocket**	**Secondary Drive Belt**	**Ratio**
2004	883 / 883C	28 Teeth	68 Teeth	136 Teeth	2.429:1
	1200 / 1200R	30 Teeth	68 Teeth	137 Teeth	2.267:1

Go To Technical Menu

1)
pic from AB,Frank
https://www.xlforum.net/forum/sportster-motorcycle-forum/sportster-motorcycle-drivetrain/sportster-mot

orcycle-transmission-clutch-primary-secondary-drive/167512-primary-rattle-noises-wtf-now?t=1799188
2)

https://www.xlforum.net/forum/sportster-motorcycle-forum/sportster-motorcycle-era-specific-and-model-specific/rubber-mount-sportster-motorcycle-talk-2004-2006/205263-2006-shifter-shaft-assembly-on-a-2004
3)

oo_buck_us in Post#15 -
https://www.xlforum.net/forum/sportster-motorcycle-forum/sportster-motorcycle-drivetrain/sportster-motorcycle-transmission-clutch-primary-secondary-drive/143966-04-primary-cover-on-an-07?t=1560232
4)

photo by cjburr of the XLFORUM
https://www.xlforum.net/forum/sportster-motorcycle-forum/sportster-motorcycle-drivetrain/sportster-motorcycle-transmission-clutch-primary-secondary-drive/29955-06-clutch-install?t=49915
5)

See post#15 from 93trident of the XLForum -
https://www.xlforum.net/forum/sportster-motorcycle-forum/sportster-motorcycle-motor-engine/sportster-motorcycle-bottom-end/202496-what-s-that-about-then?t=2079676
6)

2004 HD FSM pg 6-2
7) , 8) , 9) , 10)

2004 HD Sportster FSM pg 6-1
11) , 12) , 13) , 14) , 15) , 16)

Number of engine revolutions to drive rear wheel one revolution.
17)

09 and up HD Sportster Parts Catalogs