



# INSTRUCTIONS

-J03484

REV. 2005-10-05

## 6 SPEED TRANSMISSION SUPER KIT

### GENERAL

#### Kit Number

33103-03A

#### Models

This kit fits 2001 to 2005 Dyna™ model motorcycles.

Table 1. Gear Ratio

GEAR	STOCK 5-SPEED	SE 6-SPEED
First	3.210	3.210
Second	2.209	2.209
Third	1.572	1.572
Fourth	1.226	1.226
Fifth	1.000	1.000
Sixth	N/A	0.885

#### Additional Parts Required

Requires separate purchase of cable Sidecover Release Kit or Hydraulic Sidecover Release Kit. See retail catalog for part numbers.

In addition to the above kits, the 2005 Dyna Model Service Manual (Part Number 99483-05) and Main Drive Gear Remover & Installer Kit (Part Number 35316-B) must be purchased. See your Harley-Davidson dealer.

A Service Manual for your model motorcycle is available at any Harley-Davidson Dealer.

### WARNING

The rider's safety depends upon the correct installation of this kit. If the procedure is not within your capabilities or you do not have the correct tools, have a Harley-Davidson dealer perform the installation. Improper installation of this kit could result in death or serious injury. (00308a)

#### Kit Contents

See Figure 6 and Table 3.

### REMOVAL

#### NOTE

Leave the transmission case in the frame unless the case itself requires replacement. For ease of illustration, photographs show the case removed.

### WARNING

To prevent accidental vehicle start-up, which could cause death or serious injury, disconnect negative (-) battery cable before proceeding. (00048a)

#### NOTES

While the two threaded holes at the top of the flange are used for mounting of the drill plate, the fork shaft hole (center thru hole) is used as the pilot for the drill bits.

Detailed instructions on removing the main drive gear and bearing can be found in the 2005 Touring Model Service Manual (Part Number 99483-05), **Section 7.7 MAIN DRIVE GEAR/ BEARING**

The front dowel pin may be stuck in the side door after removal. If this occurs, remove the dowel pin from the side door and install it back into the transmission case.



Figure 1. Install Drill Plate to Transmission Case

1. Using the appropriate service manual, proceed as follows:
  - a. Drain the primary chaincase and transmission lubricants.
  - b. Unthread bolt and remove battery negative cable (black) from battery negative (-) terminal.
  - c. Remove the primary chaincase cover. Remove the clutch assembly, primary chain, and compensating sprocket components. Remove the starter jackshaft assembly and primary chaincase.
  - d. Remove the exhaust system as necessary to gain complete access to the transmission side door.
  - e. Remove the starter.
  - f. Remove the clutch release cover. Remove the clutch cable from the clutch release cover.
  - g. Remove the vehicle speed sensor.
  - h. Remove the transmission top cover.
  - i. Remove the drum support blocks and shift drum. Remove the drum support block dowels from deck of transmission case.
  - j. Remove the fork shaft and shifter fork assemblies.
  - k. Remove the bearing inner race from the transmission mainshaft.
  - l. Remove the transmission side door and the mainshaft/ countershaft assembly.
  - m. Remove the shifter shaft assembly and shifter seal.
  - n. Remove the main drive gear and bearing.
  - o. Remove the countershaft needle bearing.

**NOTE**

*While the two threaded holes at the top of the flange are used for mounting of the drill plate, the fork shaft hole (center thru hole) is used as the pilot for the drill bits.*

2. Using masking tape, cover all the side door flange holes in the transmission case with the exception of the top three.
3. From inside the transmission case, tape over all bores as follows:
  - Vehicle speed sensor and mounting screw bores
  - Transmission top cover and shift drum support block screw bores
  - Transmission drain hole bore
  - Main drive gear bearing bore
  - Countershaft needle bearing bore
  - Fork shaft bore
  - Shifter shaft bore

**NOTE**

*Be sure drill plate is properly oriented. Improper orientation will result in damage that requires replacement of the transmission case.*

4. See Figure 1. Obtain the drill plate (Part Number 35155-03) provided in kit and fasten to top of side door flange using old and new vehicle speed sensor mounting screws.
5. Spread one or two clean shop cloths inside the transmission case to catch the metal shavings and debris.

**⚠ CAUTION**

**Always wear proper eye protection when drilling. Flying debris could cause serious eye injury. (00402c)**

6. Starting with a 3/8 inch drill bit, alternately use progressively larger bits to enlarge the fork shaft hole. Finish the drilling operation with a 3/4 inch drill bit.
7. Remove all remaining material up to the edge of the drill plate with a die grinder or similar tool.
8. Using emery cloth, steel wool, or a fine tooth file, remove any burrs or ridges that may exist from the drilling or cutting operation.

**NOTE**

*Abrasive particles can damage machined surfaces and result in premature failure.*

9. Carefully pull out shop cloths from inside the transmission case. Exercise care to keep any debris captured by the cloths from falling into the transmission case.
10. Place drain pan beneath transmission case and remove tape from drain hole. Thoroughly flush the transmission case with a non-volatile cleaning solution or solvent to remove any metal shavings, dust or debris that might remain. For best results, use a squirt bottle to direct a stream of solvent through the transmission top cover opening. Repeat procedure as necessary draining excess solvent through the drain hole.
11. Using low pressure compressed air, thoroughly blow out all solvent.
12. Using a clean lightly oiled cloth, thoroughly wipe the inside of the transmission case. Repeat this step with a new cloth until the cloth comes out clean.
13. Carefully inspect the transmission case for any metal shavings or debris. Repeat Steps 10 through 12 if any debris is found.
14. Remove the masking tape to uncover remaining holes and bores.
15. Thoroughly inspect each bore for any metal shavings, dust or debris. Alternately direct compressed air into each bore to be certain that it is clean and dry.

**INSTALLATION**

**NOTES**

*Detailed instructions on installing the main drive gear and bearing can be found in the 2005 Touring Model Service Manual (Part Number 99483-05), **Section 7.7 MAIN DRIVE GEAR/ BEARING***

*Prelube all bearings and shafts with clean transmission lubricant prior to installation.*

1. Using the appropriate service manual, proceed as follows:
  - a. Install the countershaft needle bearing.
  - b. Install the main drive gear and bearing.
  - c. Install the **new** shifter seal. Install shifter shaft assembly from inside the transmission case. Install **new** shifter seal washer and **new** retaining ring.

#### NOTES

*Leave the shrink wrap on the mainshaft until side door installation is complete. Installation of the side door with the shrink wrap removed may result in damage to the main drive gear seal.*

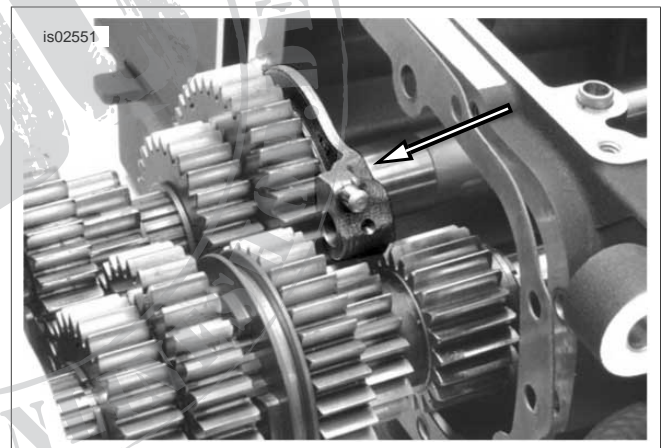
*Be sure to remove the plastic cap and cable strap from the mainshaft before side door installation. Blow away any styro-foam bits or other packaging material that might be clinging to gears or splines.*

2. Install the transmission side door and mainshaft/countershaft assembly as follows:
  - a. Hang **new** side door gasket on dowels in side door flange of transmission case.
  - b. Start side door and mainshaft/countershaft assembly into transmission case, but stop so that all gears remain on the outboard side.
  - c. Note that there are three shifter forks, each of which are stamped for easy identification. Set aside the 5-6 shifter fork, the 3-4 shifter fork and the 1-2 shifter fork in that order.
  - d. Install the 5-6 shifter fork into the shift ring outboard of the 6th gear on the mainshaft (shift ring closest to the main drive gear).
  - e. Install the 3-4 shifter fork into the shift ring between the 4th and 3rd gears on the mainshaft (shift ring closest to the side door). Be sure the dogs on the shift ring are engaged with mainshaft 3rd gear and then rotate shifter fork toward the countershaft until the slot in the fork engages the edge of the shift ring between 1st and 2nd gears on the countershaft. This engagement is necessary to obtain the proper clearance for side door installation.
  - f. Slide side door assembly further into transmission case stopping about one inch before mating flanges make contact.
  - g. Start fork shaft through hole in side door.
  - h. Through the transmission top cover opening, install the 1-2 shifter fork into the shift ring between 1st and 2nd gears on the countershaft. For proper clearance, be sure the dogs on the 3-4 shift ring (closest to side door on the mainshaft) are fully engaged with mainshaft 4th gear.
  - i. Slide fork shaft through holes in shifter forks and then fully install side door. Be sure that end of fork shaft engages blind hole on left side of transmission case.
  - j. Install fork shaft set screw in transmission side door. Tighten screw until the shaft has minimum endplay, but still rotates freely.
  - k. Install **new** side door plug into side door.
  - l. Remove shrink wrap from the mainshaft.

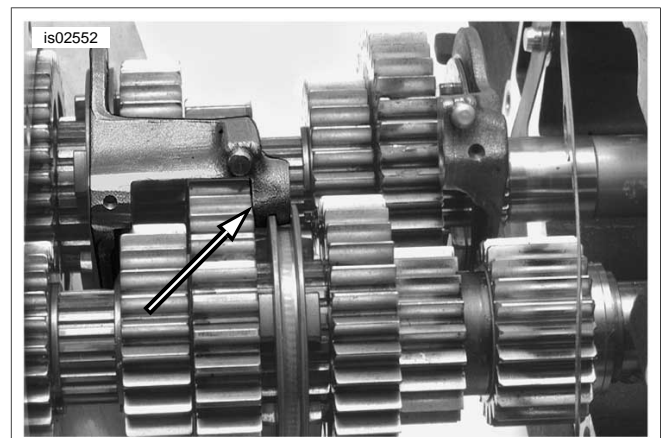
#### NOTE

*The 2005 Touring Models Service manual (Part Number 99483-05) includes detailed instructions on installing the mainshaft oil seal, quad seal, spacer sleeve, sprocket and sprocket nut in **Section 7.7, MAIN DRIVE GEAR/BEARING**.*

3. Using the appropriate service manual, proceed as follows:
  - a. Install four **new** drum support block dowels in deck of transmission case. Orient the dowels so that the split line is aligned left to right. Install **new** drum support blocks with **new** shift drum.
  - b. Rotating output shaft by hand, shift through all six gears to verify proper operation. Input shaft may need to be rocked back and forth to get all gears to shift.
  - c. Install the mainshaft oil seal, quad seal, spacer sleeve/sprocket spacer, sprocket, and sprocket nut.
  - d. Install the **new** bearing inner race onto the transmission mainshaft.
  - e. Install the transmission top cover with **new** gasket.
  - f. Install the starter.
  - g. Install the primary chaincase and starter jackshaft assembly. Install the clutch assembly, primary chain, and compensating sprocket components. Install the primary chaincase cover.
  - h. Install drain plug and fill the primary chaincase with the recommended lubricants.



**Figure 2. Install 5-6 Shifter Fork Onto Shift Ring**



**Figure 3. Install 3-4 Shifter Fork Onto Shift Ring**

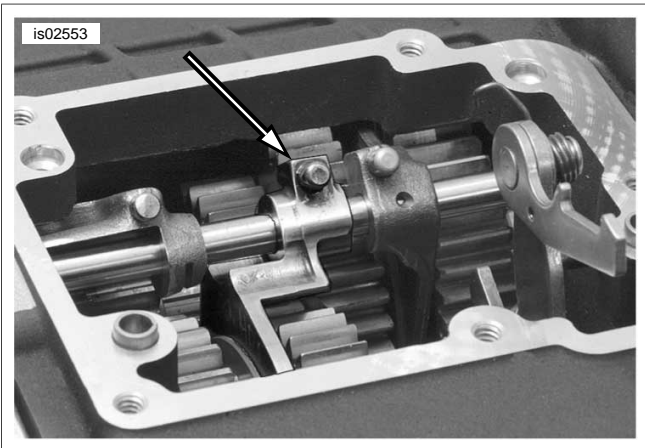


Figure 4. Install 1-2 Shifter Fork Onto Shift Ring



Figure 5. Orient Shift Drum Support Block Dowels

4. Install plate with gasket over vehicle speed sensor bore in transmission case using existing hardware.
5. Install vehicle speed sensor at top of transmission side door using **new** O-ring.
6. Install side cover.

For **Cable Actuated Clutch**: Follow the instructions in the SE 6-Speed Cable Clutch Side Cover and Release Pushrod Kit (Part Number 38752-04).

For **Hydraulic Clutch**: Follow the instructions in the Hydraulic Cable Side Cover and Release Pushrod Kit (Part Number 38753-04), and in the Hydraulic Clutch Kit (Part Number 45033-03, Black or 45383-03, Chrome).

## TRANSMISSION SERVICE

7. Replace the transmission lubricant after the first 500 miles. Thereafter, refer to the Service Manual and change the lubricant at the recommended service intervals.



# SERVICE PARTS

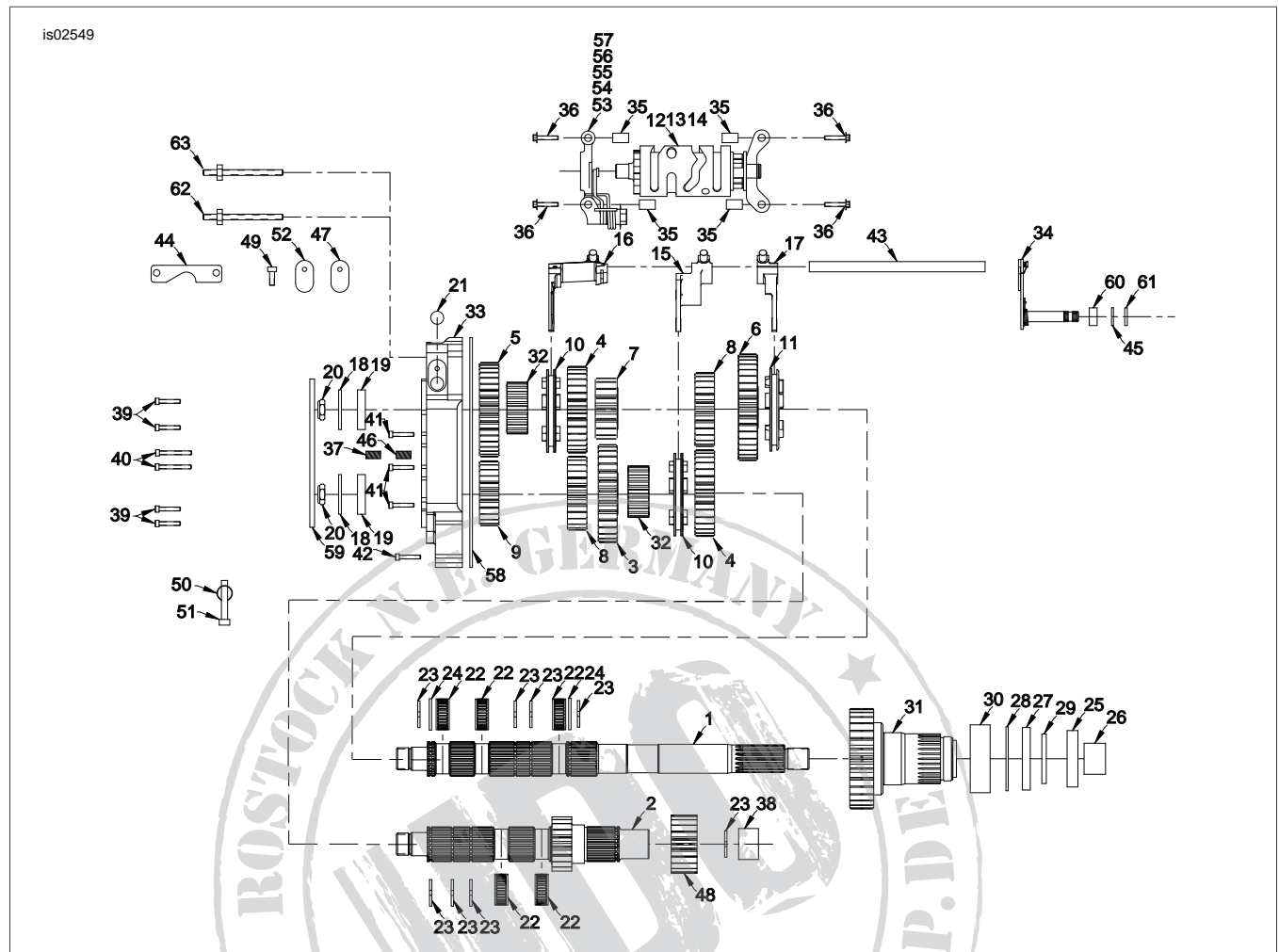


Figure 6. Service Parts: 6 Speed Transmission Super Kit

Table 2. Service Parts Table

Item	Description (Quantity)	Item	Description (Quantity)
1	Mainshaft	33	Chrome Trap Door with Ear
2	Countershaft	34	Shifter Shaft Assembly
3	Countershaft 1st Gear	35	Pillow Block Dowel (4)
4	Mainshaft 3rd Gear/Countershaft 2nd Gear (2)	36	Pillow Block Screw (4)
5	Mainshaft 4th Gear	37	Trap Door Plug
6	Mainshaft 6th Gear	38	Countershaft Bearing
7	Mainshaft 1th Gear	39	Lower Clutch RLS CVR Screw (4)
8	Countershaft 3rd Gear/Mainshaft 2nd Gear (2)	40	Upper Clutch RLS CVR Screw (2)
9	Countershaft 4th Gear	41	Lower Trap Door Screw (3)
10	Shift Ring, 1-2, 3-4 (2)	42	Upper Trap Door Screw
11	Shift Ring, 5-6	43	Shift Fork Shaft
12	Shift Drum Assembly	44	Case Modification Tool
13	Pillow Block, Left	45	Shifter Seal Washer
14	Shift Drum Retainer	46	Shift Fork Shaft Screw
15	Shifter Fork, 1-2 Assembly	47	Sensor Plate Gasket
16	Shifter Fork, 3-4 Assembly	48	Countershaft, 5th Gear

**Table 2. Service Parts Table**

Item	Description (Quantity)	Item	Description (Quantity)
17	Shifter Fork, 5-6 Assembly	49	Speedo Sensor Plate Screw
18	Door Retainer Ring (2)	50	Dipstick O-Ring
19	Trap Door Bearing (2)	51	Chrome Dipstick
20	Mainshaft/Countershaft Locknut (2)	52	Sensor Plate
21	Speed Sensor O-Ring	53	Pillow Block, Right
22	Split Cage Bearing (5)	54	Sleeve Detent
23	Mainshaft/Countershaft Retaing Ring (8)	55	Detent Follower
24	Mainshaft Thrust Washer (2)	56	Spring Detent Arm
25	Spacer Sprocket	57	Screw Detent Arm
26	Mainshaft Race	58	Trap Door Gasket
27	Main Case Seal	59	Side Cover Gasket
28	Case Bearing Retaining Ring	60	Shifter Seal
29	Quad Seal	61	Shifter Retaining Ring
30	Main Case Bearing	62	Lower Trap Door Stud
31	Mainshaft 5th Gear	63	Upper Trap Door Stud
32	Spline Sleeve (2)	64	Lid Gasket, (FXD Models)



**Table 3. Service Parts: 6 Speed Transmission Super Kit**

Item	Description (Quantity)	Part Number	Item	Description (Quantity)	Part Number
1	Mainshaft	35058-03	34	Shifter Shaft Assembly	35146-03
2	Countershaft	35059-03	35	Pillow Block Dowel (4)	609
3	Countershaft 1st Gear	35080-03	36	Pillow Block Screw (4)	3909
4	Mainshaft 3rd Gear/Countershaft 2nd Gear (2)	35083-03	37	Trap Door Plug	45830-48
5	Mainshaft 4th Gear	35104-03	38	Countershaft Bearing	8977
6	Mainshaft 6th Gear	35131-03	39	Lower Clutch RLS CVR Screw (4)	4718A
7	Mainshaft 1st Gear	35134-03	40	Upper Clutch RLS CVR Screw (2)	4717A
8	Countershaft 3rd Gear/ Mainshaft 2nd Gear (2)	35135-03	41	Lower Trap Door Screw (3)	3249
9	Countershaft 4th Gear	35136-03	42	Upper Trap Door Screw	4814A
10	Shift Ring, 1-2, 3-4 (2)	35137-03	43	Shift Fork Shaft (4)	34088-87A
11	Shift Ring, 5-6	35138-03	44	Case Modification Tool	35155-03
12	Shift Drum Assembly	35142-03	45	Shifter Seal Washer (4)	6497HW
13	Pillow Block, Left	33301-00A	46	Shift Fork Shaft Screw (2)	3784
14	Shift Drum Retainer	11342	47	Sensor Plate Gasket (3)	35152-03
15	Shifter Fork, 1-2 Assembly	35143-03	48	Countershaft, 5th Gear	35238-03
16	Shifter Fork, 3-4 Assembly	35144-03	49	Speedo Sensor Plate Screw	4705
17	Shifter Fork, 5-6 Assembly	35145-03	50	Dipstick O-Ring	11132
18	Trap Door Bearing (2)	35087-99	51	Chrome Dipstick	37075-87
19	Trap Door Bearing (2)	8992A	52	Sensor Plate	35153-03
20	Mainshaft/Countershaft Locknut (2)	35078-79	53	Pillow Block, Right	33304-00
21	Speed Sensor O-Ring	11289A	54	Sleeve Detent	33375-00A
22	Split Cage Bearing (5)	8876A	55	Detent Follower	33364-00A
23	Mainshaft/Countershaft Retaining Ring (8)	11067	56	Spring Detent Arm	33374-00
24	Mainshaft Thrust Washer (2)	6003	57	Screw Detent Arm	33376-00
25	Spacer Sprocket	33344-94	58	Trap Door Gasket	35147-03
26	Mainshaft Race	34091-85A	59	Side Cover Gasket	35148-03
27	Main Case Seal	12067B	60	Shifter Seal	12045
28	Case Bearing Retaining Ring	11161	61	Shifter Retaining Ring	11150
29	Quad Seal	11165	62	Lower Trap Door Stud	16708-95
30	Main Case Bearing	8996A	63	Upper Trap Door Stud	16709-95
31	Mainshaft 5th Gear	35237-03	<b>Items Not Shown</b>		
32	Spline Sleeve (2)	35140-03	Lid Gasket, (FXD Models)		134917-99B
33	Chrome Trap Door with Ear	35139-03			