



# INSTRUCTIONS

-J03483

REV. 02-11-2005

Kit Number 33102-03A

## 6 SPEED TRANSMISSION SUPER KIT

### General

This kit fits 2000 and later Softail and 2001 and later Touring model motorcycles. 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 Touring 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.

For a list of items contained in this kit, see the Service Parts illustration.

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

### 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 your Harley-Davidson dealer perform the installation. Improper installation of this kit could result in death or serious injury. (00308a)

### NOTE

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

### Removal

### NOTE

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

1. Using the appropriate service manual, proceed as follows:
  - a. Drain the primary chaincase and transmission lubricants.

### WARNING

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

- b. Unthread bolt and remove battery negative cable (black) from battery negative (-) terminal.

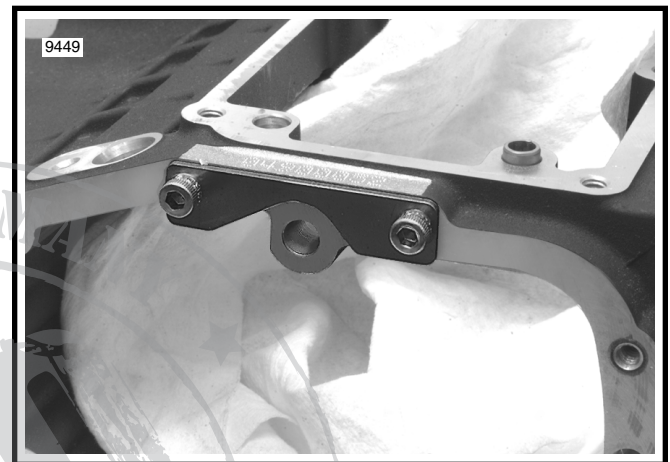


Figure 1. Install Drill Plate to Transmission Case

- c. Remove seat.
- d. Remove the primary chaincase cover. Remove the clutch assembly, primary chain, and compensating sprocket components. Remove the starter jackshaft assembly.
- e. Remove the exhaust system as necessary to gain complete access to the transmission side door.
- f. Remove the oil filler spout and starter.
- g. Remove the primary chaincase.
- h. Remove the clutch release cover. Remove the clutch cable from the clutch release cover.
- i. Remove the vehicle speed sensor.
- j. Remove the transmission top cover.
- k. Remove the drum support blocks and shift drum. Remove the drum support block dowels from deck of transmission case.
- l. Remove the fork shaft and shifter fork assemblies.
- m. Remove the bearing inner race from the transmission mainshaft.
- n. Remove the transmission side door and the mainshaft/countershaft assembly.

### NOTE

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.

- o. Remove the shifter shaft assembly and shifter seal.
- p. Remove the main drive gear and bearing.

#### NOTE

Detailed instructions on removing the main drive gear and bearing can be found in the 2005 Touring Model Service Manual (Part No. 99483-05), **Section 7.7 MAIN DRIVE GEAR/BEARING**.

- q. Remove the countershaft needle bearing.
2. Using masking tape, cover all the side door flange holes in the transmission case with the exception of the top three.

#### 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.

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

#### CAUTION

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

4. Obtain the drill plate (Part No. 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.
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. Remove the drill plate.
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.

#### CAUTION

**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

#### NOTE

*Prelube all bearings and shafts with clean transmission or SYN-3 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.

#### NOTE

Detailed instructions on installing the main drive gear and bearing can be found in the 2005 Touring Model Service Manual (Part No. 99483-05), **Section 7.7 MAIN DRIVE GEAR/BEARING**.

- c. Install shifter shaft assembly from inside the transmission case. Cover splines of shaft with tape to protect seal. Install the new shifter shaft seal. Remove tape and install new shifter seal washer and new retaining ring.
2. Install the transmission side door and mainshaft/countershaft assembly as follows:

#### CAUTION

**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.**

#### CAUTION

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

- 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.

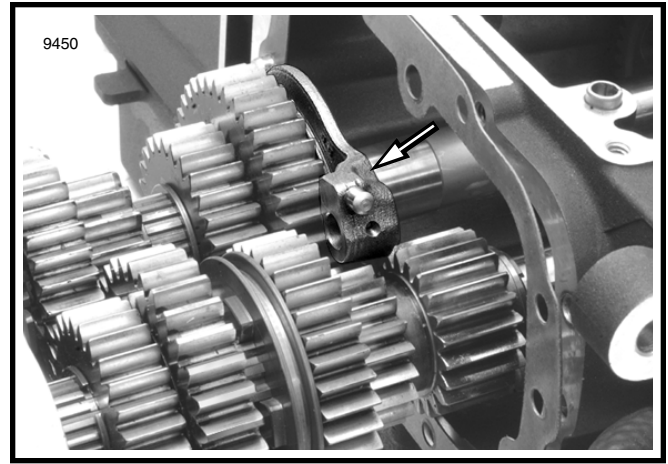
- c. Note that there are three shifter forks, each of which are stamped for easy identification. Set aside the 5-6 shifter fork, the 3-4 shifter fork and the 1-2 shifter fork in that order.
- d. Install the 5-6 shifter fork into the shift ring outboard of the 6th gear on the mainshaft (shift ring closest 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 plugged 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.

3. Using the appropriate service manual, proceed as follows:

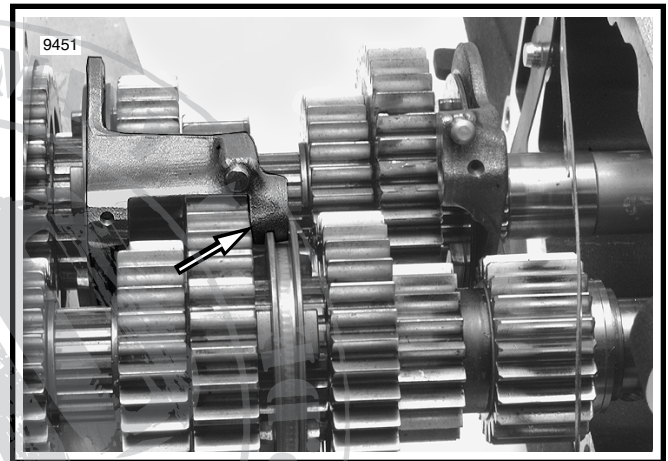
- a. Install four **new** drum support block dowels in deck of transmission case. Orient the dowels so that the split line is aligned left to right.
- b. Install **new** drum support blocks with **new** shift drum.
- c. Rotating output shaft by hand, shift through all six gears to verify proper operation. Input shaft may need to be rocked back and forth to get all gears to shift.
- d. Install the mainshaft oil seal, quad seal, spacer sleeve/sprocket spacer, sprocket, and sprocket nut.

**NOTE**

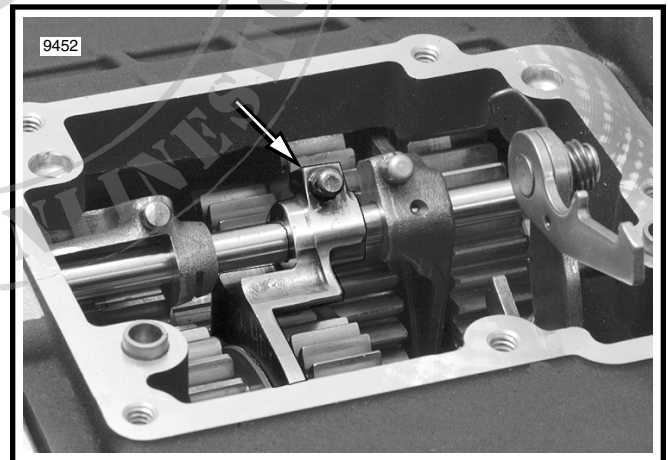
*The 2005 Touring Models Service Manual (Part Number 99483-05) includes detailed instructions on installing the mainshaft oil seal, quad seal, spacer sleeve, sprocket and sprocket nut in **Section 7.7, MAIN DRIVE GEAR/BEARING.***



**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**

- e. Install the **new** bearing inner race onto the transmission mainshaft.
- f. Install the transmission top cover with **new** gasket.
- g. Install primary chaincase.
- h. Install the starter and oil filler spout.



#### NOTE

If vehicle is equipped with a shotgun style exhaust system (FLSTF/I or FXSTD/I), re-use or install new Part Number 3300 longer screws for mounting exhaust bracket to transmission side door. Torque screws to 13-16 ft-lbs (17.6 -21.7 Nm).

- i. Install the starter jackshaft assembly. Install the clutch assembly, primary chain, and compensating sprocket components. Install the primary chaincase cover.
- j. Install drain plug and fill the primary chaincase with the recommended lubricants.

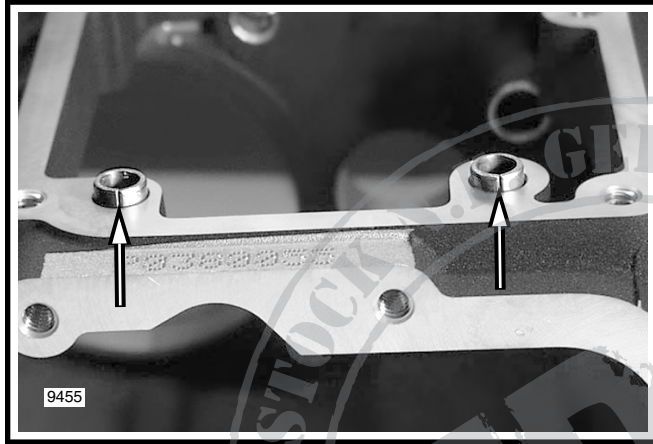


Figure 5. Orient Shift Drum Support Block Dowels

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.

#### **⚠ WARNING**

**Pull up on seat to verify that it is properly secured, front and rear. A loose seat may shift during vehicle operation and startle the rider, possibly causing loss of vehicle control resulting in death or serious injury.**

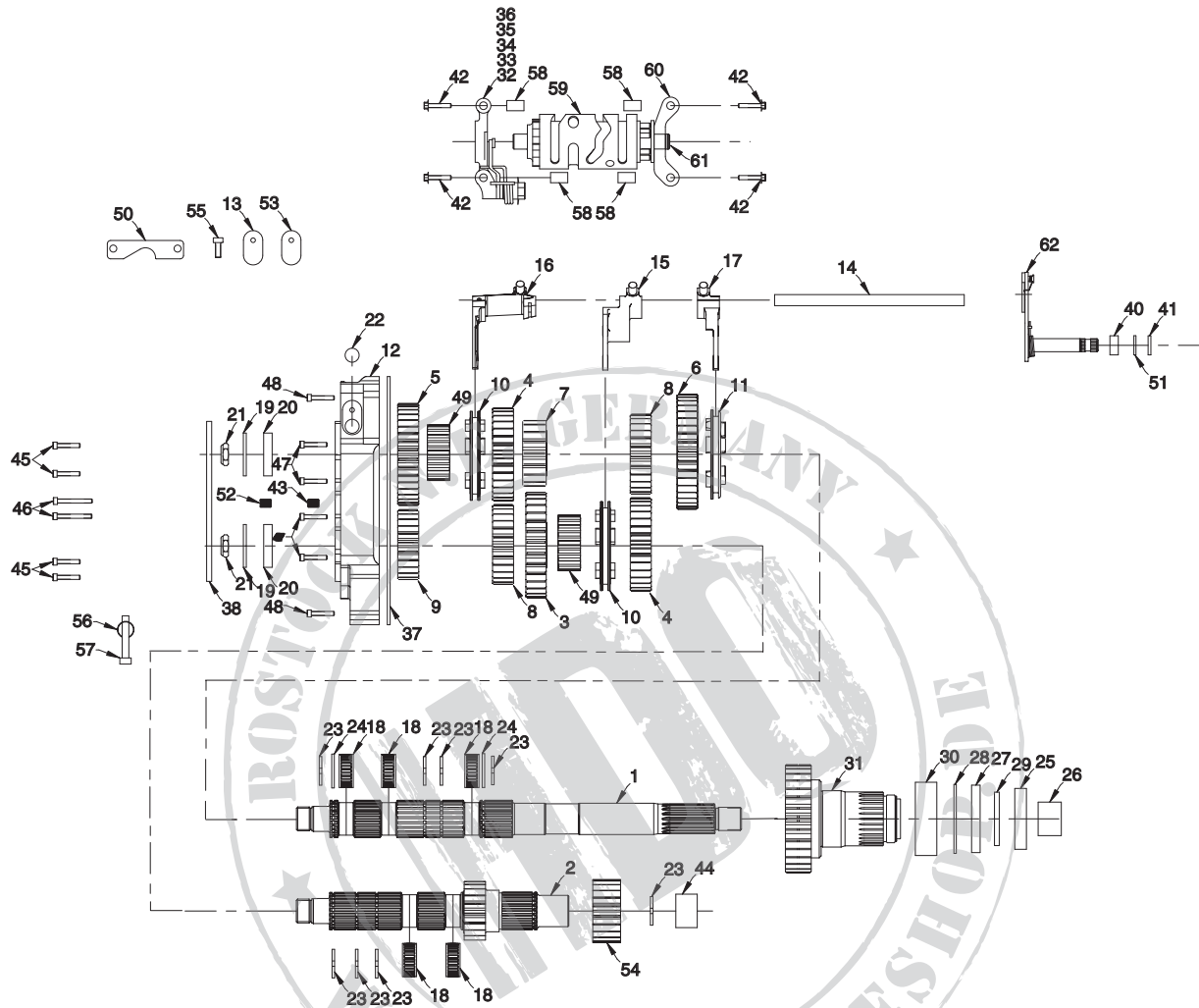
6. Install side cover.  
For **Cable Actuated Clutch**: Follow the instructions in the SE 6-Speed Cable Clutch Side Cover and Release Pushrod Kit (Part Number 38752-04).  
For **Hydraulic Clutch**: Follow the instructions in the Hydraulic Cable Side Cover and Release Pushrod Kit (Part Number 38753-04), 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.



## 6 Speed Transmission Super Kit



- |   |   |                               |
|---|---|-------------------------------|
| 1. Mainshaft  | 24. Mainshaft Thrust Washer (2)             | 46. Clutch Release Cover      |
| 2. Countershaft                                     | 25. Sprocket Spacer                         | Upper Screw (2)               |
| 3. Countershaft 1st Gear                            | 26. Mainshaft Race                          | 47. Lower Trap Door Screw     |
| 4. Mainshaft 3rd Gear/<br>Countershaft 2nd Gear (2) | 27. Main Case Seal                          | (FLH 4 ea.) (FXST, 2 ea.)     |
| 5. Mainshaft 4th Gear                               | 28. Case Bearing Retaining Ring             | 48. Upper Trap Door Screw (2) |
| 6. Mainshaft 6th Gear                               | 29. Qual Seal                               | 49. Spline Sleeve (2)         |
| 7. Mainshaft 1st Gear                               | 30. Main Case Bearing                       | 50. Case Modification Tool    |
| 8. Countershaft 3rd Gear/<br>Mainshaft 2nd Gear (2) | 31. Mainshaft 5th Gear                      | 51. Shifter Seal Washer       |
| 9. Countershaft 4th Gear                            | 32. Pillow Block, Right                     | 52. Trap Door Plug            |
| 10. Shift Ring, 1-2, 3-4 (2)                        | 33. Sleeve Detent                           | 53. Sensor Plate Gasket       |
| 11. Shift Ring, 5-6                                 | 34. Spring Detent Arm                       | 54. Countershaft Gear, 5th    |
| 12. Chrome Trap Door, No Ear                        | 35. Detent Arm Screw                        | 55. Speedo Sensor Plate Screw |
| 13. Plate Sensor                                    | 36. Detent Follower                         | 56. Dipstick O-Ring           |
| 14. Shift Fork Shaft                                | 37. Trap Door Gasket                        | 57. Chrome Dipstick           |
| 15. Shift Fork, 1-2 Assembly                        | 38. Side Cover Gasket                       | 58. Pillow Block Dowel (4)    |
| 16. Shift Fork, 3-4 Assembly                        | 39. Pushrod Thrust Washer (2)               | 59. Shift Drum Assembly       |
| 17. Shift Fork, 5-6 Assembly                        | 40. Shifter Seal                            | 60. Left Pillow Block         |
| 18. Split Cage Bearing (5)                          | 41. Shifter Retaining Ring                  | 61. Shift Drum Retainer       |
| 19. Door Retaining Ring (2)                         | 42. Pillow Block Screw (4)                  | 62. Shifter Shaft Assembly    |
| 20. Trap Door Bearing (2)                           | 43. Shift Fork Shaft Screw                  |                               |
| 21. Mainshaft/Countershaft<br>Locknut (2)           | 44. Countershaft Bearing                    |                               |
| 22. Speedo Sensor O-Ring                            | 45. Clutch Release Cover<br>Lower Screw (4) |                               |
| 23. Mainshaft/Countershaft<br>Retaining Ring (8)    |   |                               |

Items Not Shown:  
Top Cover Gasket, FLHT and FXST  
Oil Fill Spout Gasket, FLHT



# Service Parts

Part No. 33102-03A

Date 08/04

## 6 Speed Transmission Super Kit

Item	Quantity	Part No.
1. Mainshaft	1	35058-03
2. Countershaft	1	35059-03
3. Countershaft 1st Gear	1	35080-03
4. Mainshaft 3rd Gear/Countershaft 2nd Gear	2	35083-03
5. Mainshaft 4th Gear	1	35104-03
6. Mainshaft 6th Gear	1	35131-03
7. Mainshaft 1st Gear	1	35134-03
8. Countershaft 3rd Gear/ Mainshaft 2nd Gear	2	35135-03
9. Countershaft 4th Gear	1	35136-03
10. Shift Ring, 1-2, 3-4	2	35137-03
11. Shift Ring, 5-6	1	35138-03
12. Chrome Trap Door, No Ear	1	35158-03
13. Plate Sensor	1	35153-03
14. Shift Fork Shaft	1	34088-87A
15. Shift Fork, 1-2 Assembly	1	35143-03
16. Shift Fork, 3-4 Assembly	1	35144-03
17. Shift Fork, 5-6 Assembly	1	35145-03
18. Split Cage Bearing	5	8876A
19. Door Retaining Ring	2	35087-99
20. Trap Door Bearing	2	8992A
21. Mainshaft/Countershaft Locknut	2	35078-79
22. Speedo Sensor O-Ring	1	11289A
23. Mainshaft/Countershaft Retaining Ring	8	11067
24. Mainshaft Thrust Washer	2	6003
25. Sprocket Spacer	1	33344-94
26. Mainshaft Race	1	34091-85A
27. Main Case Seal	1	12067B
28. Case Bearing Retaining Ring	1	11161
29. Qual Seal	1	11165
30. Main Case Bearing	1	8996A
31. Mainshaft 5th Gear	1	35237-03
32. Pillow Block, Right	1	33304-00
33. Sleeve Detent	1	33375-00A
34. Spring Detent Arm	1	33374-00
35. Detent Arm Screw	1	33376-00
36. Detent Follower	1	33364-00A
37. Trap Door Gasket	1	35147-03
38. Side Cover Gasket	1	35148-03
39. Pushrod Thrust Washer	2	37313-80
40. Shifter Seal	1	12045
41. Shifter Retaining Ring	1	11150
42. Pillow Block Screw	4	3909
43. Shift Fork Shaft Screw	1	3784
44. Countershaft Bearing	1	8977
45. Clutch Release Cover Lower Screw	4	4718A
46. Clutch Release Cover Upper Screw	2	4717A
47. Lower Trap Door Screw (FLH 4 ea.) (FXST, 2 ea.)	4	3249
48. Upper Trap Door Screw	2	4814A
49. Spline Sleeve	2	35140-03
50. Case Modification Tool	1	35155-03
51. Shifter Seal Washer	1	6497HW
52. Trap Door Plug	1	45830-48
53. Sensor Plate Gasket	1	35152-03



# Service Parts

Part No. 33102-03A

Date 08/04

## 6 Speed Transmission Super Kit

Item	Quantity	Part No.
54. Countershaft Gear, 5th	1	35238-03
55. Speedo Sensor Plate Screw	1	3594
56. Dipstick O-Ring	1	11132
57. Chrome Dipstick	1	37075-87
58. Pillow Block Dowel	4	609
59. Shift Drum Assembly	1	35142-03
60. Left Pillow Block	1	33301-00A
61. Shift Drum Retainer	1	11342
62. Shifter Shaft Assembly	1	35146-03

### Items Not Shown:

Oil Fill Spout Gasket, FLHT	1	62432-93B
Top Cover Gasket, FLHT and FXST	1	34904-86D





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For a list of items contained in this kit, see the Service Parts illustration.

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Sixth	N/A	0.885

### WARNING

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### NOTE

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### Removal

### NOTE

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

1. Using the appropriate service manual, proceed as follows:
  - a. Drain the primary chaincase and transmission lubricants.

### WARNING

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

- b. Unthread bolt and remove battery negative cable (black) from battery negative (-) terminal.



Figure 1. Install Drill Plate to Transmission Case

- c. Remove seat.
- d. Remove the primary chaincase cover. Remove the clutch assembly, primary chain, and compensating sprocket components. Remove the starter jackshaft assembly.
- e. Remove the exhaust system as necessary to gain complete access to the transmission side door.
- f. Remove the oil filler spout and starter.
- g. Remove the primary chaincase.
- h. Remove the clutch release cover. Remove the clutch cable from the clutch release cover.
- i. Remove the vehicle speed sensor.
- j. Remove the transmission top cover.
- k. Remove the drum support blocks and shift drum. Remove the drum support block dowels from deck of transmission case.
- l. Remove the fork shaft and shifter fork assemblies.
- m. Remove the bearing inner race from the transmission mainshaft.
- n. Remove the transmission side door and the mainshaft/countershaft assembly.

### NOTE

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.

- o. Remove the shifter shaft assembly and shifter seal.
- p. Remove the main drive gear and bearing.



**NOTE**

Detailed instructions on removing the main drive gear and bearing can be found in the 2005 Touring Model Service Manual (Part No. 99483-05), **Section 7.7 MAIN DRIVE GEAR/BEARING**.

- q. Remove the countershaft needle bearing.
2. Using masking tape, cover all the side door flange holes in the transmission case with the exception of the top three.

**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.

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

**CAUTION**

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

4. Obtain the drill plate (Part No. 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.
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. Remove the drill plate.
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.

**CAUTION**

**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**

**NOTE**

*Prelube all bearings and shafts with clean transmission or SYN-3 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.

**NOTE**

Detailed instructions on installing the main drive gear and bearing can be found in the 2005 Touring Model Service Manual (Part No. 99483-05), **Section 7.7 MAIN DRIVE GEAR/BEARING**.

- c. Install shifter shaft assembly from inside the transmission case. Cover splines of shaft with tape to protect seal. Install the new shifter shaft seal. Remove tape and install new shifter seal washer and new retaining ring.
2. Install the transmission side door and mainshaft/countershaft assembly as follows:

**CAUTION**

**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.**

**CAUTION**

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

- 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.

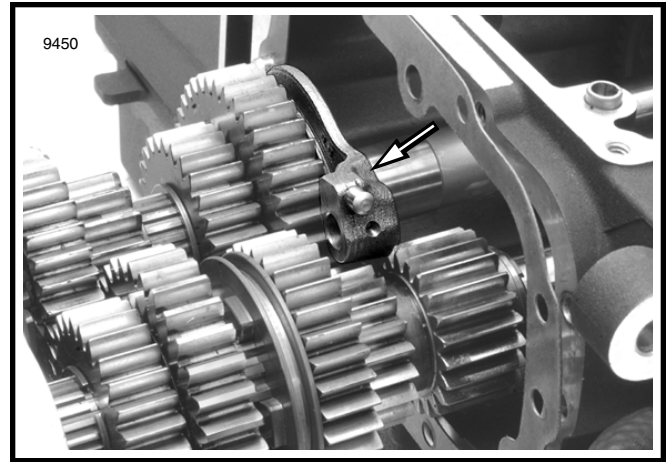
- c. Note that there are three shifter forks, each of which are stamped for easy identification. Set aside the 5-6 shifter fork, the 3-4 shifter fork and the 1-2 shifter fork in that order.
- d. Install the 5-6 shifter fork into the shift ring outboard of the 6th gear on the mainshaft (shift ring closest 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 plugged 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.

3. Using the appropriate service manual, proceed as follows:

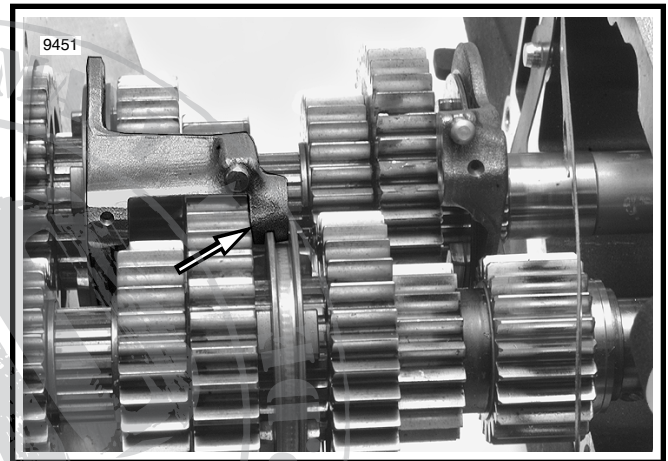
- a. Install four **new** drum support block dowels in deck of transmission case. Orient the dowels so that the split line is aligned left to right.
- b. Install **new** drum support blocks with **new** shift drum.
- c. Rotating output shaft by hand, shift through all six gears to verify proper operation. Input shaft may need to be rocked back and forth to get all gears to shift.
- d. Install the mainshaft oil seal, quad seal, spacer sleeve/sprocket spacer, sprocket, and sprocket nut.

**NOTE**

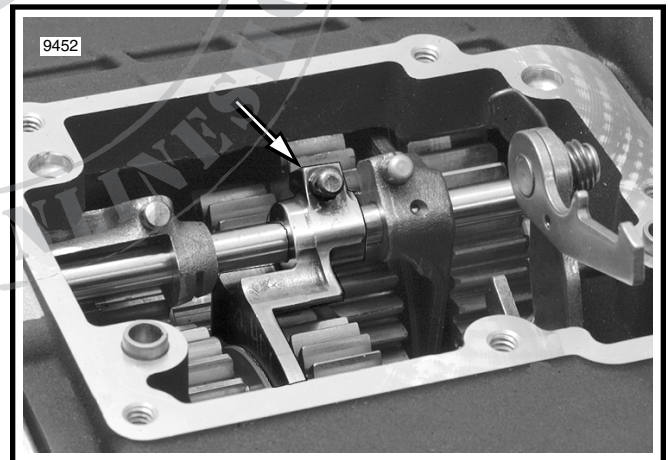
*The 2005 Touring Models Service Manual (Part Number 99483-05) includes detailed instructions on installing the mainshaft oil seal, quad seal, spacer sleeve, sprocket and sprocket nut in **Section 7.7, MAIN DRIVE GEAR/BEARING.***



**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**

- e. Install the **new** bearing inner race onto the transmission mainshaft.
- f. Install the transmission top cover with **new** gasket.
- g. Install primary chaincase.
- h. Install the starter and oil filler spout.

## NOTE

If vehicle is equipped with a shotgun style exhaust system (FLSTF/I or FXSTD/I), re-use or install new Part Number 3300 longer screws for mounting exhaust bracket to transmission side door. Torque screws to 13-16 ft-lbs (17.6 -21.7 Nm).

- i. Install the starter jackshaft assembly. Install the clutch assembly, primary chain, and compensating sprocket components. Install the primary chaincase cover.
- j. Install drain plug and fill the primary chaincase with the recommended lubricants.

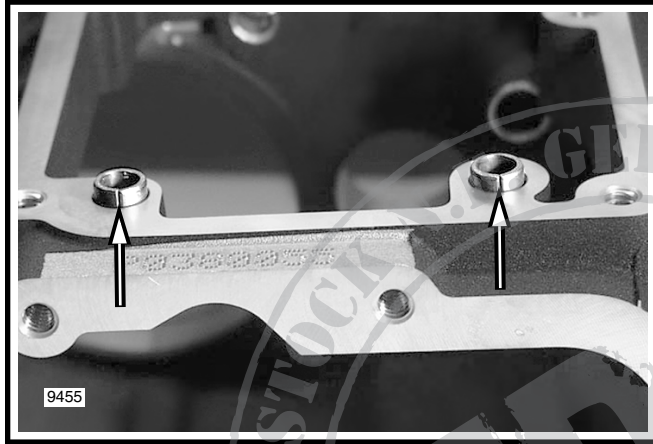


Figure 5. Orient Shift Drum Support Block Dowels

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.

### **⚠ WARNING**

**Pull up on seat to verify that it is properly secured, front and rear. A loose seat may shift during vehicle operation and startle the rider, possibly causing loss of vehicle control resulting in death or serious injury.**

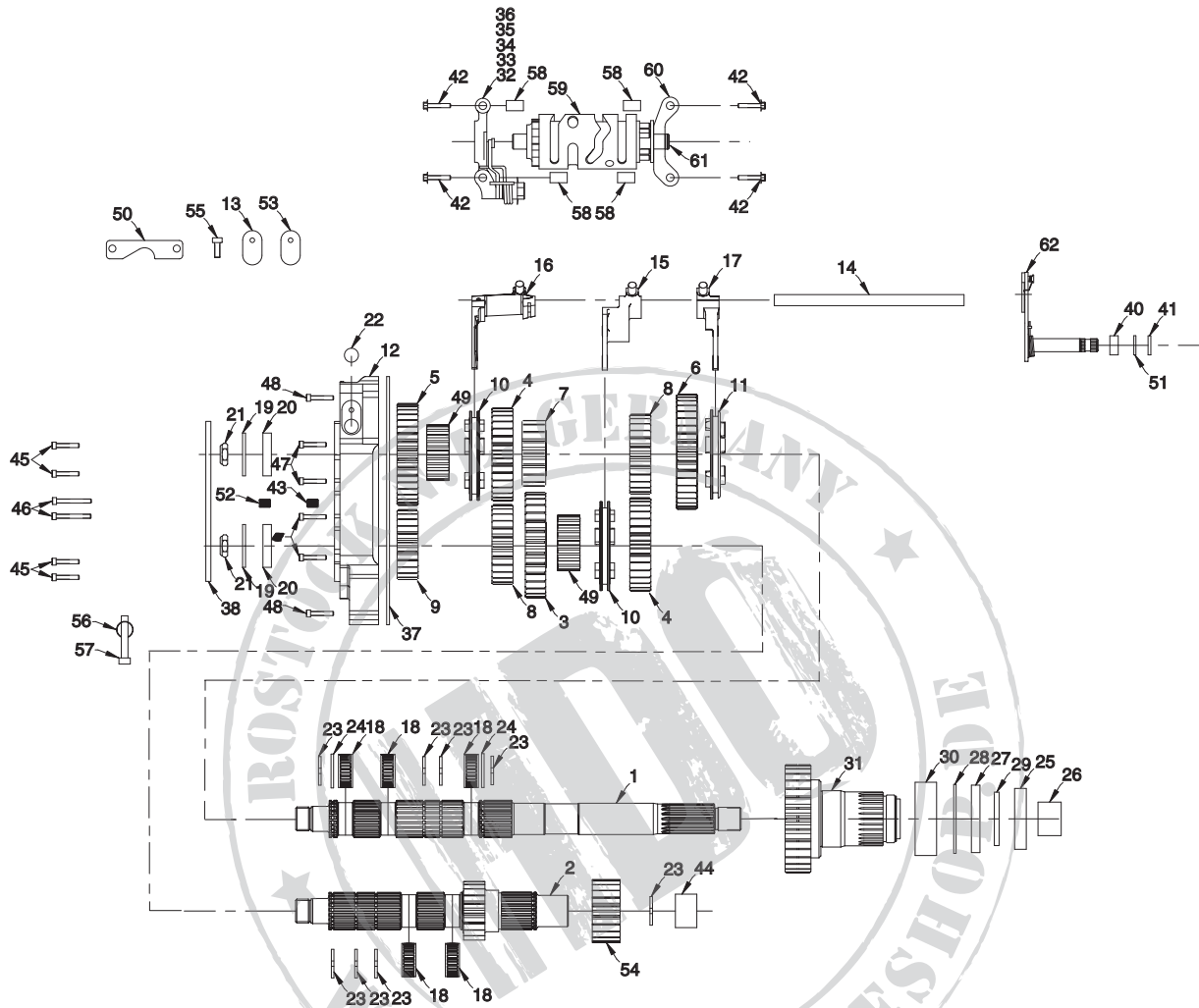
6. Install side cover.  
For **Cable Actuated Clutch**: Follow the instructions in the SE 6-Speed Cable Clutch Side Cover and Release Pushrod Kit (Part Number 38752-04).  
For **Hydraulic Clutch**: Follow the instructions in the Hydraulic Cable Side Cover and Release Pushrod Kit (Part Number 38753-04), 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.



## 6 Speed Transmission Super Kit



- |   |                                 |                               |
|---|---------------------------------|-------------------------------|
| 1. Mainshaft  | 24. Mainshaft Thrust Washer (2) | 46. Clutch Release Cover      |
| 2. Countershaft                                     | 25. Sprocket Spacer             | Upper Screw (2)               |
| 3. Countershaft 1st Gear                            | 26. Mainshaft Race              | 47. Lower Trap Door Screw     |
| 4. Mainshaft 3rd Gear/<br>Countershaft 2nd Gear (2) | 27. Main Case Seal              | (FLH 4 ea.) (FXST, 2 ea.)     |
| 5. Mainshaft 4th Gear                               | 28. Case Bearing Retaining Ring | 48. Upper Trap Door Screw (2) |
| 6. Mainshaft 6th Gear                               | 29. Qual Seal                   | 49. Spline Sleeve (2)         |
| 7. Mainshaft 1st Gear                               | 30. Main Case Bearing           | 50. Case Modification Tool    |
| 8. Countershaft 3rd Gear/<br>Mainshaft 2nd Gear (2) | 31. Mainshaft 5th Gear          | 51. Shifter Seal Washer       |
| 9. Countershaft 4th Gear                            | 32. Pillow Block, Right         | 52. Trap Door Plug            |
| 10. Shift Ring, 1-2, 3-4 (2)                        | 33. Sleeve Detent               | 53. Sensor Plate Gasket       |
| 11. Shift Ring, 5-6                                 | 34. Spring Detent Arm           | 54. Countershaft Gear, 5th    |
| 12. Chrome Trap Door, No Ear                        | 35. Detent Arm Screw            | 55. Speedo Sensor Plate Screw |
| 13. Plate Sensor                                    | 36. Detent Follower             | 56. Dipstick O-Ring           |
| 14. Shift Fork Shaft                                | 37. Trap Door Gasket            | 57. Chrome Dipstick           |
| 15. Shift Fork, 1-2 Assembly                        | 38. Side Cover Gasket           | 58. Pillow Block Dowel (4)    |
| 16. Shift Fork, 3-4 Assembly                        | 39. Pushrod Thrust Washer (2)   | 59. Shift Drum Assembly       |
| 17. Shift Fork, 5-6 Assembly                        | 40. Shifter Seal                | 60. Left Pillow Block         |
| 18. Split Cage Bearing (5)                          | 41. Shifter Retaining Ring      | 61. Shift Drum Retainer       |
| 19. Door Retaining Ring (2)                         | 42. Pillow Block Screw (4)      | 62. Shifter Shaft Assembly    |
| 20. Trap Door Bearing (2)                           | 43. Shift Fork Shaft Screw      |                               |
| 21. Mainshaft/Countershaft<br>Locknut (2)           | 44. Countershaft Bearing        |                               |
| 22. Speedo Sensor O-Ring                            | 45. Clutch Release Cover        |                               |
| 23. Mainshaft/Countershaft<br>Retaining Ring (8)    | Lower Screw (4)                 |                               |

Items Not Shown:  
Top Cover Gasket, FLHT and FXST  
Oil Fill Spout Gasket, FLHT





# Service Parts

Part No. 33102-03A

Date 08/04

## 6 Speed Transmission Super Kit

Item	Quantity	Part No.
1. Mainshaft	1	35058-03
2. Countershaft	1	35059-03
3. Countershaft 1st Gear	1	35080-03
4. Mainshaft 3rd Gear/Countershaft 2nd Gear	2	35083-03
5. Mainshaft 4th Gear	1	35104-03
6. Mainshaft 6th Gear	1	35131-03
7. Mainshaft 1st Gear	1	35134-03
8. Countershaft 3rd Gear/ Mainshaft 2nd Gear	2	35135-03
9. Countershaft 4th Gear	1	35136-03
10. Shift Ring, 1-2, 3-4	2	35137-03
11. Shift Ring, 5-6	1	35138-03
12. Chrome Trap Door, No Ear	1	35158-03
13. Plate Sensor	1	35153-03
14. Shift Fork Shaft	1	34088-87A
15. Shift Fork, 1-2 Assembly	1	35143-03
16. Shift Fork, 3-4 Assembly	1	35144-03
17. Shift Fork, 5-6 Assembly	1	35145-03
18. Split Cage Bearing	5	8876A
19. Door Retaining Ring	2	35087-99
20. Trap Door Bearing	2	8992A
21. Mainshaft/Countershaft Locknut	2	35078-79
22. Speedo Sensor O-Ring	1	11289A
23. Mainshaft/Countershaft Retaining Ring	8	11067
24. Mainshaft Thrust Washer	2	6003
25. Sprocket Spacer	1	33344-94
26. Mainshaft Race	1	34091-85A
27. Main Case Seal	1	12067B
28. Case Bearing Retaining Ring	1	11161
29. Qual Seal	1	11165
30. Main Case Bearing	1	8996A
31. Mainshaft 5th Gear	1	35237-03
32. Pillow Block, Right	1	33304-00
33. Sleeve Detent	1	33375-00A
34. Spring Detent Arm	1	33374-00
35. Detent Arm Screw	1	33376-00
36. Detent Follower	1	33364-00A
37. Trap Door Gasket	1	35147-03
38. Side Cover Gasket	1	35148-03
39. Pushrod Thrust Washer	2	37313-80
40. Shifter Seal	1	12045
41. Shifter Retaining Ring	1	11150
42. Pillow Block Screw	4	3909
43. Shift Fork Shaft Screw	1	3784
44. Countershaft Bearing	1	8977
45. Clutch Release Cover Lower Screw	4	4718A
46. Clutch Release Cover Upper Screw	2	4717A
47. Lower Trap Door Screw (FLH 4 ea.) (FXST, 2 ea.)	4	3249
48. Upper Trap Door Screw	2	4814A
49. Spline Sleeve	2	35140-03
50. Case Modification Tool	1	35155-03
51. Shifter Seal Washer	1	6497HW
52. Trap Door Plug	1	45830-48
53. Sensor Plate Gasket	1	35152-03



# Service Parts

Part No. 33102-03A

Date 08/04

## 6 Speed Transmission Super Kit

Item	Quantity	Part No.
54. Countershaft Gear, 5th	1	35238-03
55. Speedo Sensor Plate Screw	1	3594
56. Dipstick O-Ring	1	11132
57. Chrome Dipstick	1	37075-87
58. Pillow Block Dowel	4	609
59. Shift Drum Assembly	1	35142-03
60. Left Pillow Block	1	33301-00A
61. Shift Drum Retainer	1	11342
62. Shifter Shaft Assembly	1	35146-03

### Items Not Shown:

Oil Fill Spout Gasket, FLHT	1	62432-93B
Top Cover Gasket, FLHT and FXST	1	34904-86D

