

L-Line Cargo > 360
A-Line Acterra

General Information

The purpose of this service bulletin is to provide more complete information about removal and installation of the Aisin automatic transmission on Sterling 360™ vehicles.

Special Tools

A special tool is required for these procedures. See [Table 1](#).

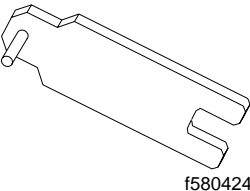
Special Tool for Aisin Transmission Removal and Installation			
Tool	Description	Manufacturer	Part Number
 <p>f580424</p>	Inhibitor Switch Alignment Tool	Kent-Moore	J-48455

Table 1, Special Tool for Aisin Transmission Removal and Installation

Removal

1. Park the vehicle on a level surface and chock all the tires.
2. If required, perform a stall test on the torque converter. See Group 23 of the *Sterling 360™ Workshop Manual*. Replace the torque converter if it fails the stall test.
3. Remove the midship bearing and safety strap.
4. Disconnect the driveshaft at the transmission. Move the driveshaft out of the way. Discard the end cap nuts. They are not reusable.
5. Remove the driveline parking brake assembly from the gear case.
6. Remove the exhaust pipe assembly.
7. Remove the shift selector cable from the control lever on the RH side of the transmission. See [Fig. 1](#).
8. Remove the electrical harness connectors, including those at the following locations. See [Fig. 2](#).
 - 8.1 Remove the electrical harness connectors from the LH side of the transmission gear box, including the neutral start switch connector, the two solenoid connectors, the output speed sensor, and the vehicle speed sensor.
 - 8.2 Remove the ATF temperature sensor connector from the RH side of the gear box.
 - 8.3 Remove the input speed sensor connector from the top of the gear box.
 - 8.4 Remove the engine speed sensor from the rubberized cover in the bell housing.
9. Remove the brake drum from the driveline parking brake. See [Fig. 3](#).
10. Remove the companion flange nut and slide the companion flange off the output shaft of the transmission. See [Fig. 4](#). Discard the O-ring and the companion flange nut.

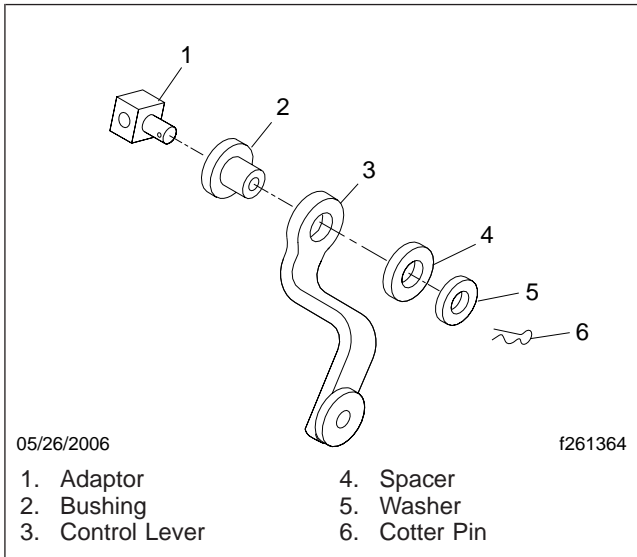


Fig. 1, Shift Control Lever Fasteners

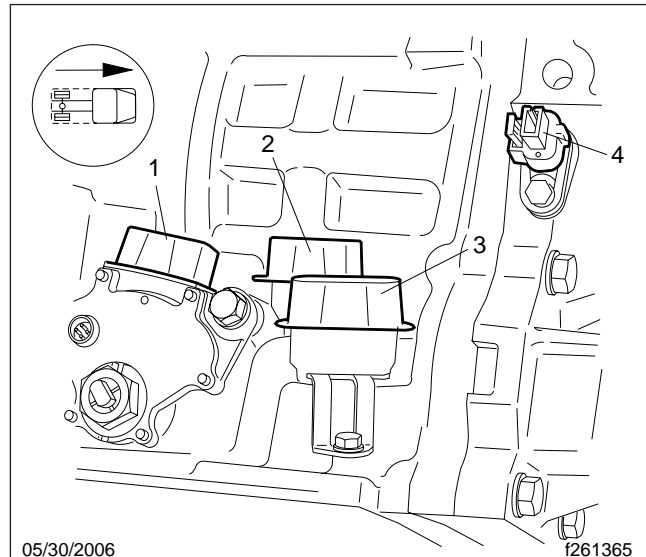


Fig. 2, Electrical Harness Connectors, LH Cluster

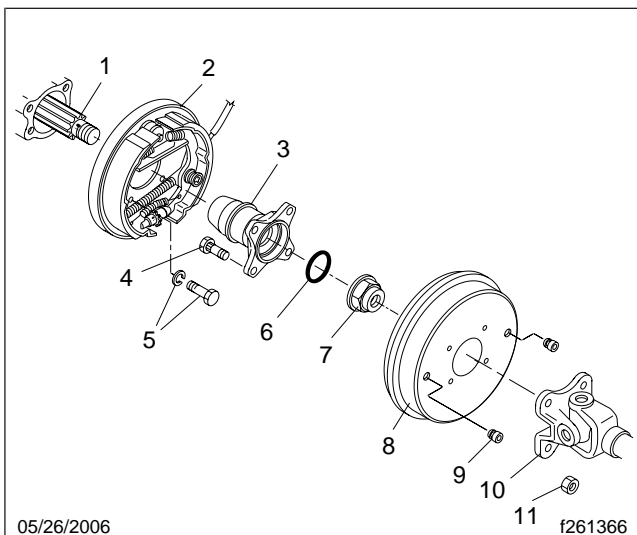


Fig. 3, Driveline Parking Brake

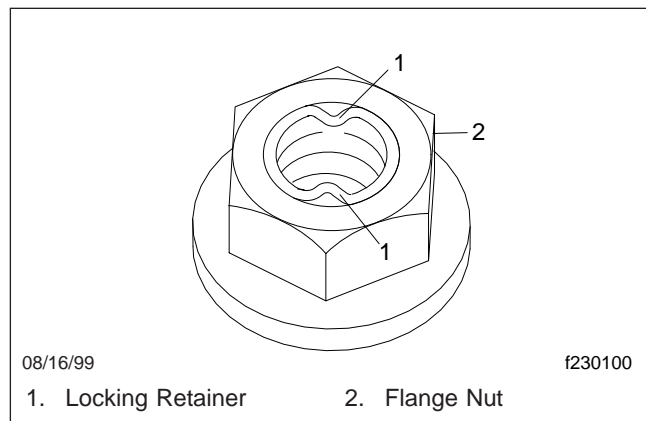


Fig. 4, Companion Flange and Locking Retainer

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IMPORTANT: The companion flange nut is held in place by a locking retainer that is bent into shape at the factory. In order to remove this retainer, it is necessary to straighten it back to its original shape.

11. Drain the automatic transmission fluid (ATF).
12. Remove the two ATF cooler lines. Disconnect them at the hoses on top of the transmission. See [Fig. 5](#).
13. Remove any miscellaneous brackets that attach the transmission to electrical cables, exhaust system components, or the frame rails.
14. Remove the dipstick and tube.
15. Remove the dust cover from the bottom of the transmission.
16. Tilt the cab.
17. Remove the bolts that attach the torque converter to the drive plate. Follow this procedure:
 - 17.1 Remove the first bolt that appears when the dust cover is removed.
 - 17.2 Manually rotate the engine until the next bolt appears in the inspection window. Remove that bolt.
 - 17.3 Continue rotating the engine and removing bolts until all are gone.
18. Place a bottle jack under the flywheel adaptor plate. Raise the jack until it supports the weight of the engine and transmission. See [Fig. 6](#).

 **CAUTION**

The rear of the engine must be supported to prevent damage to the motor mounts.

19. Remove the bolts that attach the output end of the transmission to the rear support bracket. See [Fig. 7](#).
20. Remove the transmission from the engine, as follows:
 - 20.1 Remove all the transmission mounting bolts except the top four.

NOTE: Mark each bolt and bolt hole with a paint pen for ease of installation. Not all bolts are the same size.
 - 20.2 Position a transmission jack underneath the transmission. Secure the transmission to the jack. See [Fig. 8](#).
 - 20.3 Remove the remaining transmission mounting bolts.
 - 20.4 On the jack, slowly slide the transmission away from the engine. Use the bottle jack to raise the engine if needed to provide clearance.

IMPORTANT: Do not allow the torque converter to fall out of the transmission. Lower the rear of the transmission slightly before removing it from the vehicle.

 - 20.5 Using straps, secure the engine to the cab rear mounting post. See [Fig. 9](#). Then, raise the rear of the vehicle and remove the transmission from the vehicle.
21. If necessary, remove the torque converter from the transmission. If removal is not required, secure the torque converter to prevent it from falling.

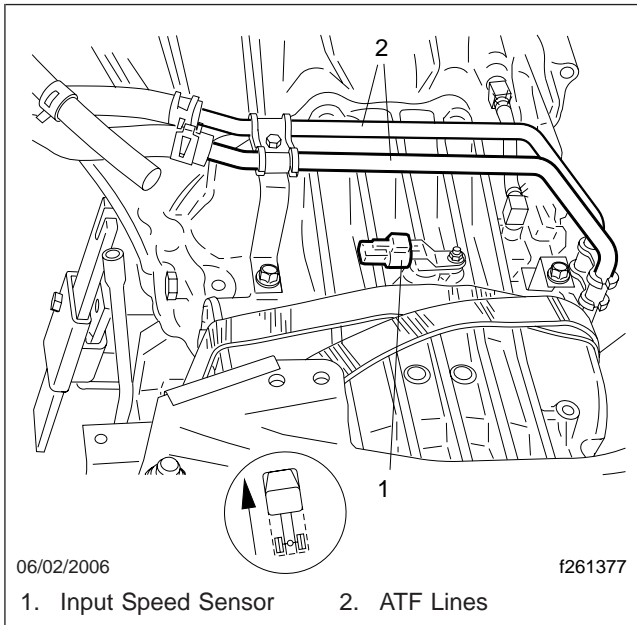


Fig. 5, Transmission, Top View

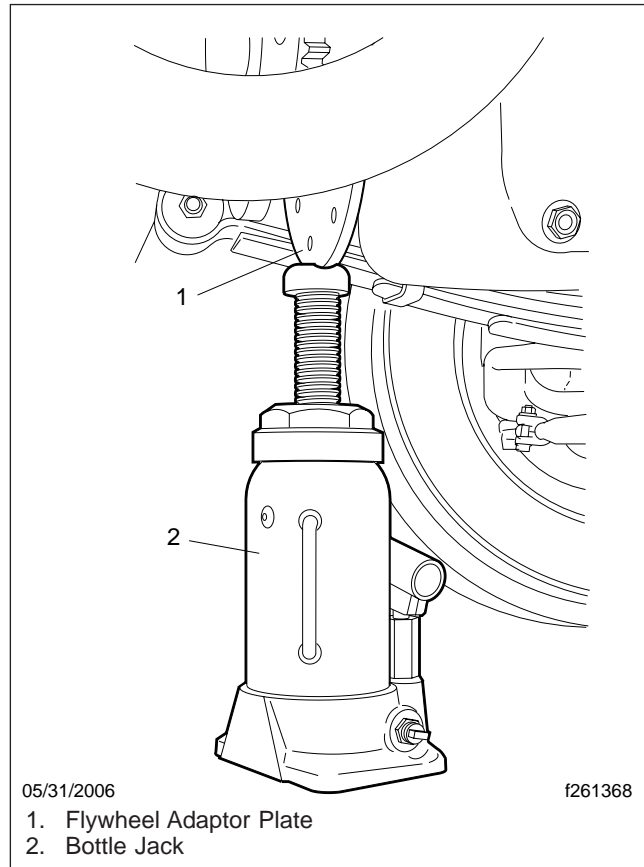


Fig. 6, Raising the Engine

Installation

1. Slide the torque converter onto the input shaft of the transmission. Make sure the torque converter is fully engaged with the input shaft. When the torque converter is correctly installed, the distance from the surface of the drive plate to the mounting surface of the bell housing is 2.42 inches (61.5 mm) or more. See [Fig. 10](#).
2. Grease the torque converter pilot on the drive plate with a small amount of wheel bearing grease (any grease meeting NLGI No. 2).
3. With the rear of the vehicle raised, position the transmission under the vehicle. Lower the vehicle and mate the transmission to the flywheel housing.
4. Install the top four transmission mounting bolts. Tighten all M10 bolts 35 lbf-ft (47 N-m) and all M12 bolts 60 lbf-ft (82 N-m). See [Fig. 11](#).
5. Make sure the bottle jack is supporting the engine and transmission. Then, remove the transmission jack from the transmission.
6. Install the six bolts that attach the torque converter to the drive plate. Tighten them 37 lbf-ft (50 N-m).
7. Finish fastening the transmission to the engine. Follow the procedure used on removal. See [Table 2](#) for information on transmission mounting bolts.

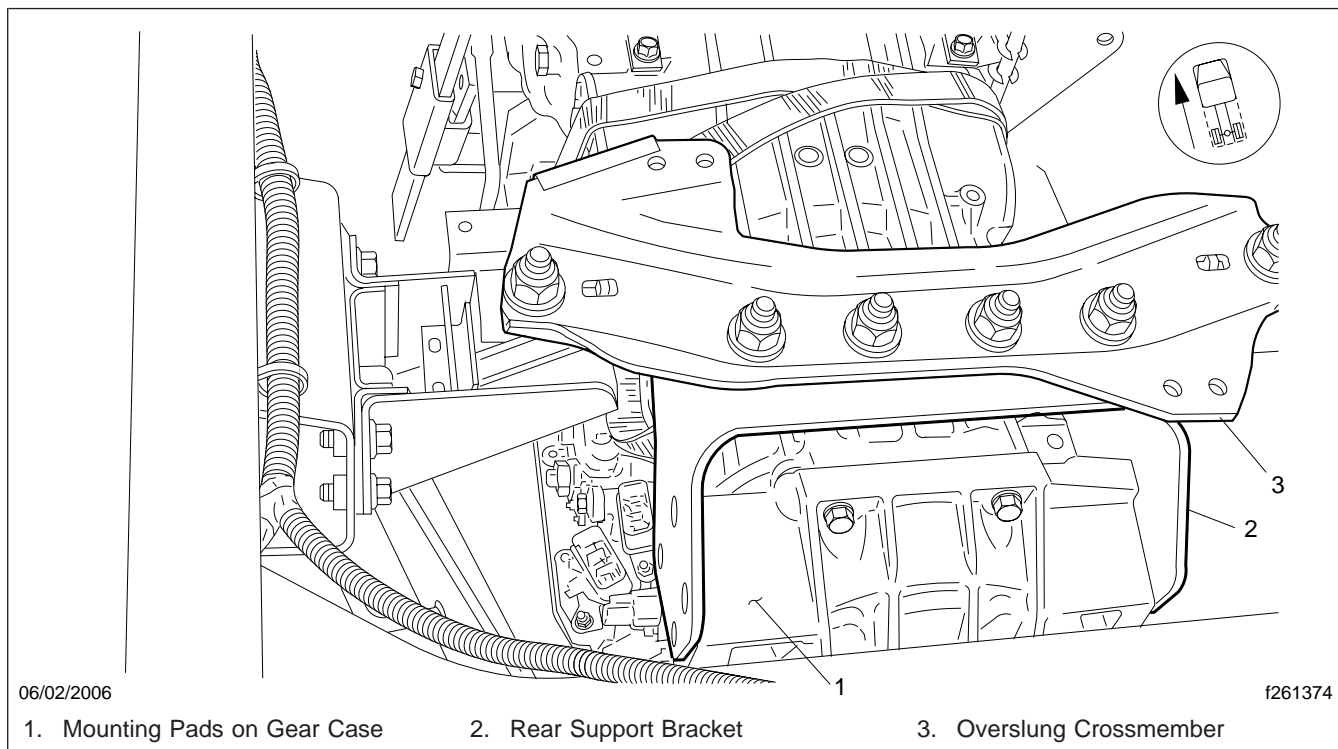
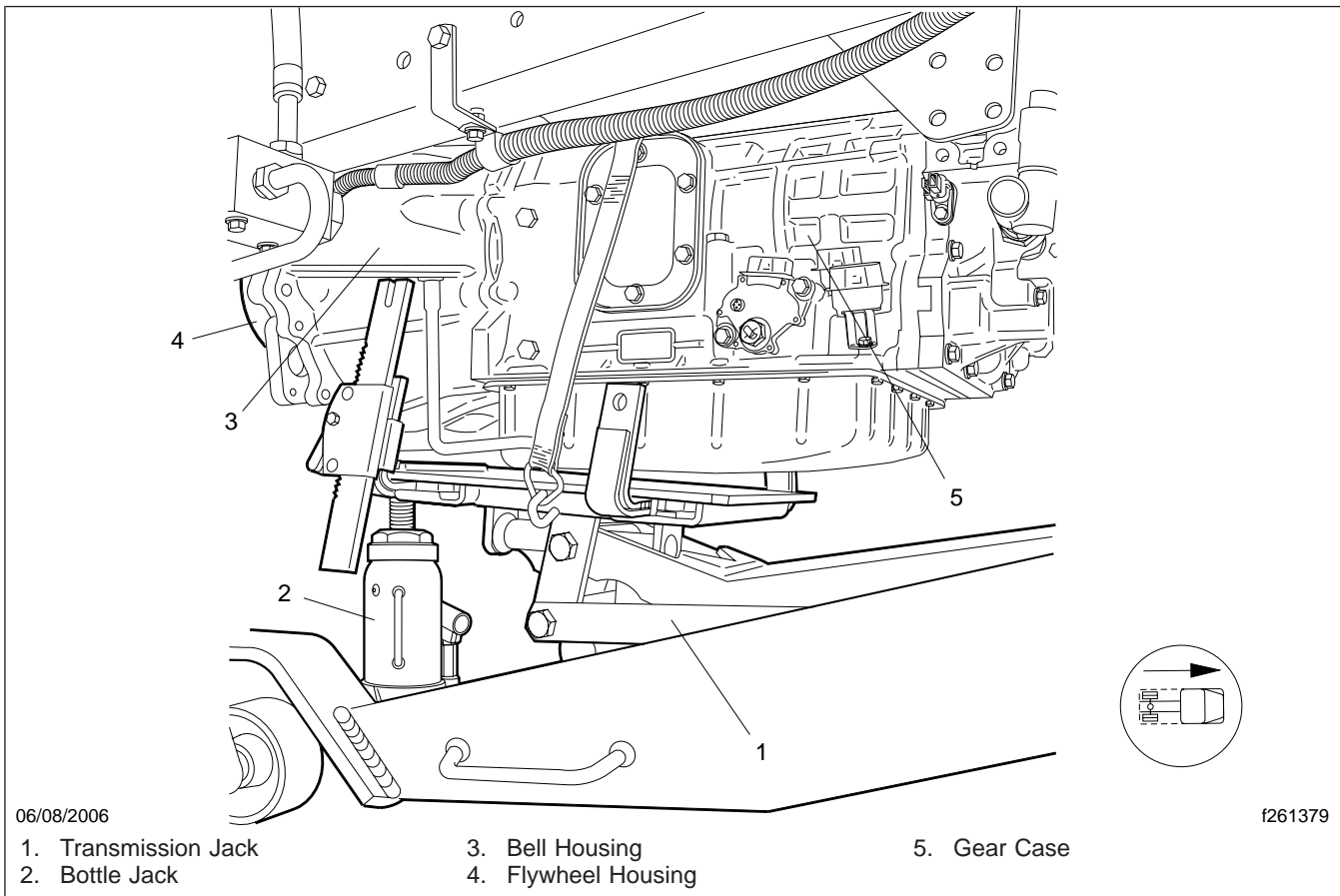


Fig. 7, Transmission Rear Mounting

Transmission Mounting Bolts				
Icon	Quantity	Location in Bell Housing	Size	Torque: lbf-ft (N-m)
Light Triangle	1	Lower LH side at 8 o'clock	M10 x 1.25 x 55	35 (47)
Light Star	4	Bottom	M10 x 1.25 x 80	
	1	Upper LH side at 10 o'clock		
	2	Upper dust cover on RH side		
Light Square	1	Lower RH side at 4 o'clock	M10 x 1.25 x 95	60 (82)
Light Diamond	2	Bracket on upper LH side	M10 x 1.5 x 20	
Dark Diamond	1	Lower LH side just below horizontal centerline	M12 x 1.75 x 45	
Dark Square	2	Top	M12 x 1.75 x 60	
Dark Triangle	1	LH side at horizontal centerline (9 o'clock)	M12 x 1.75 x 100	

Table 2, Transmission Mounting Bolts

- 7.1 Install the lower dust cover. Tighten the M10 transmission mounting bolts that go through the dust cover 35 lbf-ft (47 N-m). In addition, tighten the other two bolts that fasten the dust cover just to the bell housing 10 lbf-ft (13 N-m).
- 7.2 Install the small bracket on the bell housing and tighten the bracket capscrews 30 lbf-ft (40 N-m).
- 7.3 Install the remaining transmission mounting bolts. Be sure each bolt is installed in the correct location, as marked on removal. Tighten all M10 bolts 35 lbf-ft (47 N-m) and all M12 bolts 60 lbf-ft (82 N-m).

**Fig. 8, Supporting the Transmission**

8. Install the mounting bolts on the rear support bracket. Tighten them 96 to 125 lbf-ft (130 to 170 N·m). See [Fig. 12](#).
9. Remove the strap securing the engine to the cab rear mounting post. Remove the bottle jack.
10. As removed, install the electrical sensors and harnesses, including those listed below. See [Fig. 13](#).
 - 10.1 Install the two harnesses at the solenoid connectors.
 - 10.2 Install the harness on the neutral start switch.
 - 10.3 Install the harnesses on the two solenoid connectors (10-pin and 12-pin).
 - 10.4 Install the harness at the output speed sensor.
 - 10.5 Install the harness at the vehicle speed sensor (VSS) and adjust the sensor to a 45-degree angle. See [Fig. 14](#).
 - 10.6 Install the harness at the input speed sensor on the top of the gear case.
 - 10.7 Install the engine speed sensor under the rubberized cover in the bell housing.
11. Install the ATF cooler lines. See [Fig. 5](#).

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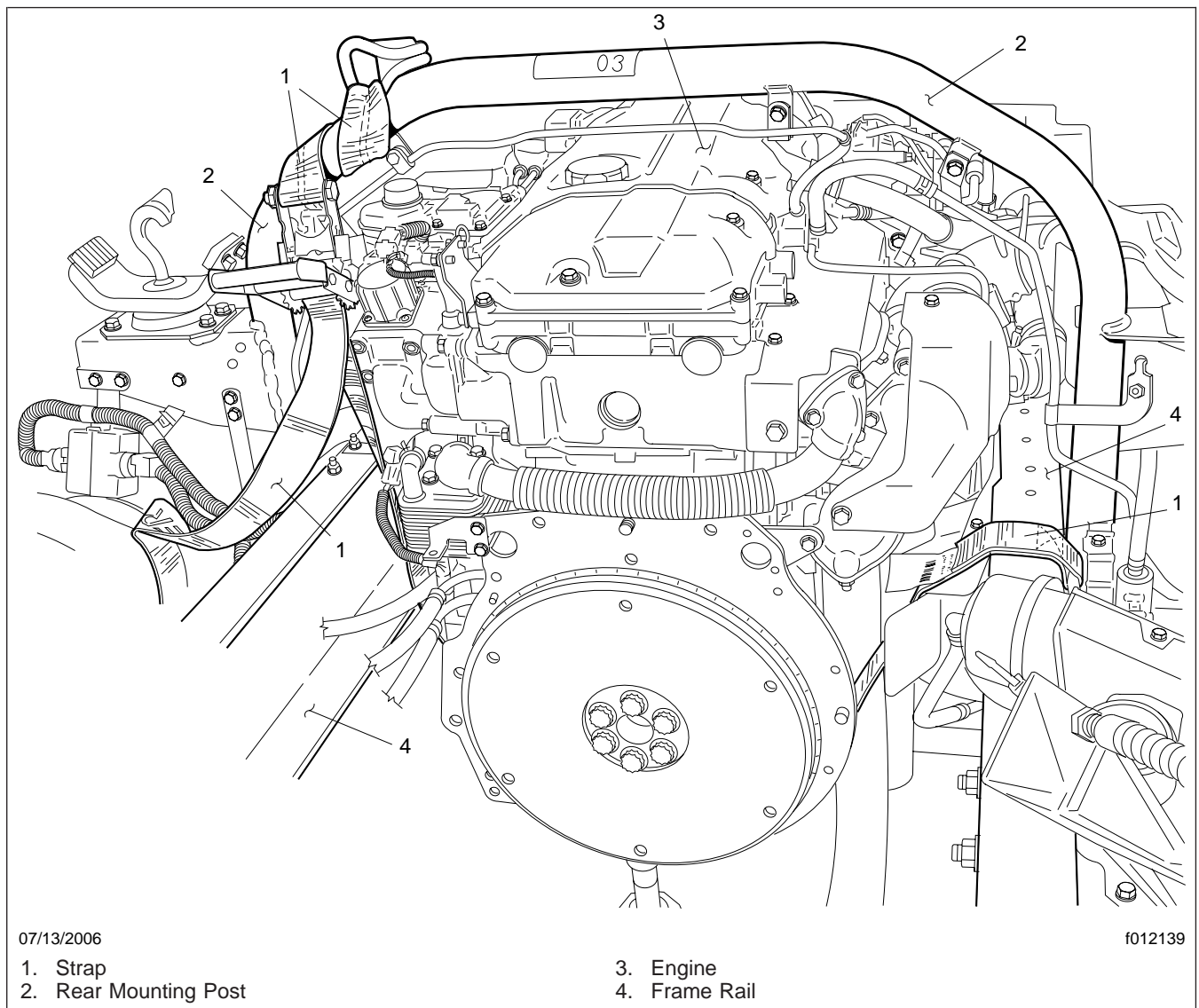


Fig. 9, Supporting the Engine

12. Install the shift selector cable on the control lever. Lubricate the bushing with a small amount of wheel bearing grease (any grease meeting NLGI No. 2). Using the inhibitor switch alignment tool, lock the control cable. See [Fig. 15](#).
13. Install the miscellaneous brackets, as removed.
14. Install the dipstick and dipstick tube, as removed.
15. Install the exhaust pipe assembly, as removed.
16. Install the driveline parking brake. Tighten the reamer bolts 38 to 49 lbf·ft (52 to 67 N·m).
17. Install the companion flange. Lubricate a new O-ring with a small amount of ATF. Tighten the flange nut 140 lbf·ft (190 N·m). Bend the retainer to lock the nut in place as shown in [Fig. 4](#).

IMPORTANT: Do not use an impact wrench on this nut.

18. Install the driveline parking brake drum.
19. Add five to six quarts of ExxonMobil ATF3309 transmission fluid. Start the engine and let it run at idle until it reaches normal operating temperature. Check the fluid level with the dipstick and add fluid until the level is within the "HOT" range on the dipstick.
20. Connect the drive shaft to the transmission. Tighten the U-bolt end cap nuts 74 to 89 lbf-ft (100 to 120 N-m).
21. Do the dealer adjustment (calibration) procedure. See Group 23 of the *Sterling 360™ Workshop Manual*. If the test fails for any reason, allow the engine to cool for 15 minutes and try again.
22. Remove the chocks from the tires.

Warranty

Normal warranty applies. Use the appropriate SRT and damage codes listed in ServicePro. See [Table 3](#).

Damage Code and Repair Time Information			
Damage Code	Operation Number	Description	Hours
342-001A11xxx	342-3010A	Transmission, Auto, R/R	6.2

Table 3, Damage Code and Repair Time Information

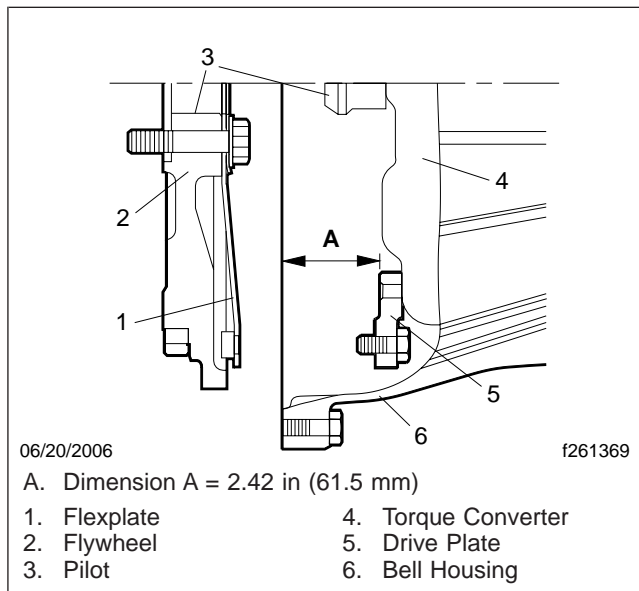


Fig. 10, Installing the Torque Converter

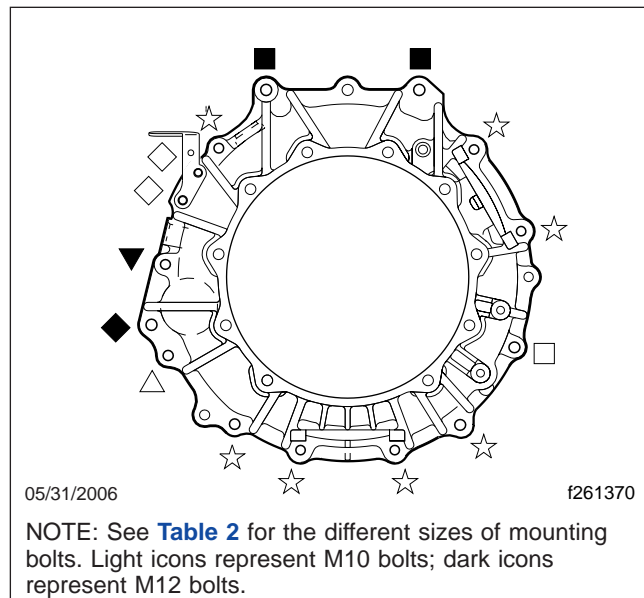


Fig. 11, Transmission Mounting Bolt Locations

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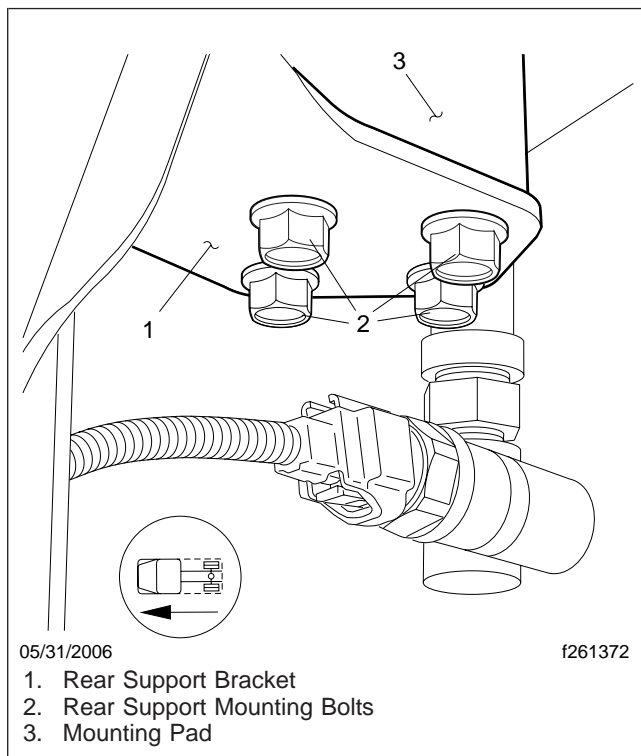


Fig. 12, Transmission Rear Support

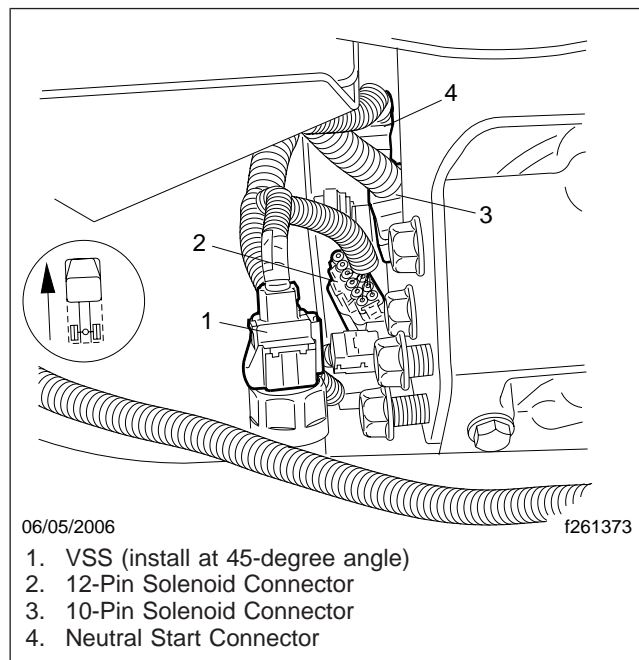


Fig. 13, Electrical Harness Connectors Installed

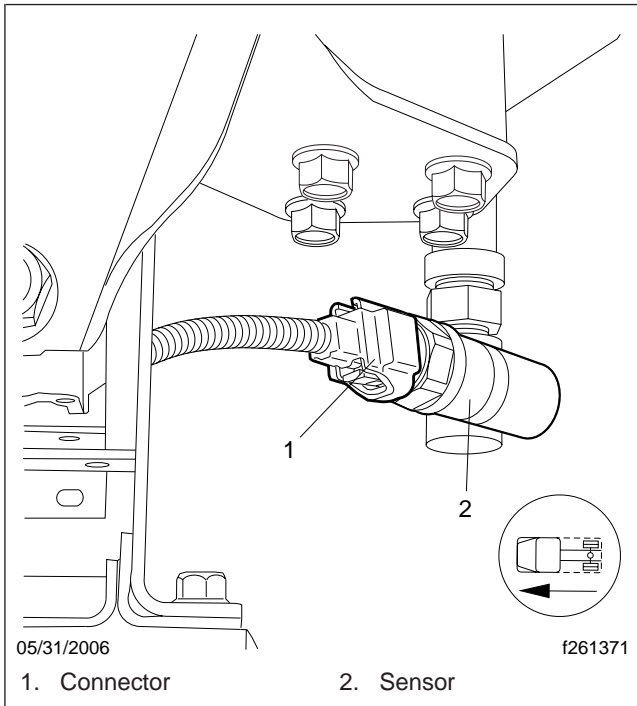


Fig. 14, VSS Installed at a 45-Degree Angle

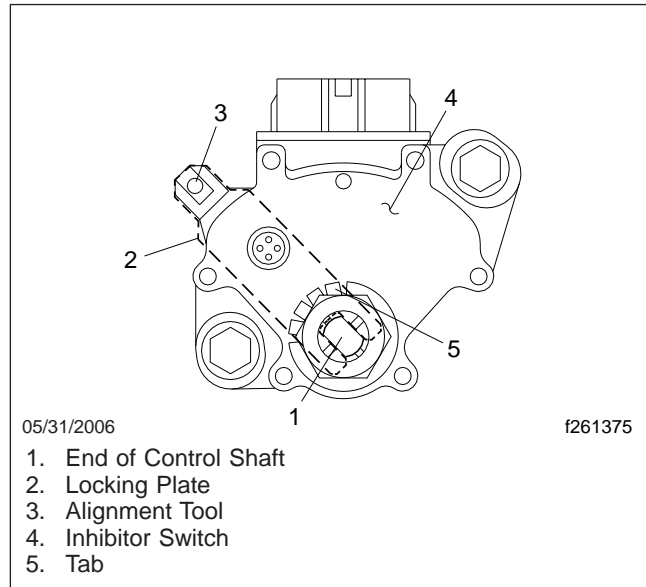


Fig. 15, Setting the Inhibitor Switch