

# TRANSMISSION REMOVAL & INSTALLATION - M/T

1995 Volvo 850

Manual Transmission Servicing

850

## APPLICATION

### TRANSMISSION APPLICATION

Vehicle Application	Transmission Model
850 .....	M56L

## REMOVAL & INSTALLATION

### Removal

- 1) Release steering wheel adjustment lever. Push steering wheel as far forward and upward as possible. Lock steering wheel with lever. Put shift lever in Neutral.
- 2) Remove battery, air cleaner, air intake, battery shelf and air cleaner bracket retaining screws. Remove transmission selector cables from bracket and levers. Tap out pin and remove selector link plate. Disconnect back-up light switch connector.
- 3) Remove cable tie from engine cable harness. Remove ground wire from gearbox. Remove circlip and clutch slave cylinder from gearbox. Leave bellows on cylinder. Loosen nut on rear engine mount/splash guard. Remove 5 bolts securing starter motor and gearbox. Remove cover over high tension wiring. Lift coolant expansion tank off bracket and allow it to hang free.
- 4) Remove bolt securing torque arm to engine. Disconnect ground lead next to torque arm. Using 2 bolts from torque arm, install Lifting Lug (999 5459) to valve cover. Install Lifting Lug (999 5464) to manifold heat guard. Install and adjust Lifting Yoke (999 5428) to lifting lugs.
- 5) Install Supports (999 5033) on fenders. Install Lifting Beam (999 5006) on supports. Install lifting beam directly above lugs on lifting yoke. Install Lifting Hook (999 5460). Lift hook about .20" (5 mm) to relieve weight on engine mountings. Measure and record height of lifting hook above engine.
- 6) Remove front wheels. Remove ABS sensor from left outboard shaft. DO NOT disconnect ABS electrical connector. Disconnect left and right brake lines and ABS cable brackets. Unhook brackets and allow them to hang free. Remove front plastic nuts from left fender liner and any Torx screws. Remove left hub center nut. Remove hub center nut locking clip. Remove hub center nut.
- 7) Remove front splash guard bolts. Push guard forward so locating pins on back come loose. Disconnect front of splash guard and remove. Remove splash guard under engine. Remove ball joint-to-link arm nuts on both sides. Disconnect link arms from ball joints. Disconnect and remove link arms from anti-roll bar.
- 8) Remove bolts connecting cable pipe on subframe and unhook pipe from frame. Disconnect charcoal canister from subframe and hang from body. Disconnect exhaust gas tie behind 3-way catalytic converter. Remove bolts holding pipe brackets to steering gear in subframe. Remove 2 bolts holding steady-bar bracket to gearbox.
- 9) Remove bolts from front engine mounting subframe. Loosen bolts securing steering gear to engine mounting about one turn. Remove nuts holding steering gear to subframe. Disconnect subframe from vehicle by positioning Jack (998 5972-0) under left side of subframe.

Tighten jack up gently against subframe. Remove bolts on both sides of subframe brackets. Loosen 2 right subframe-to-body bolts.

10) Lower subframe while ensuring steering gear bolts DO NOT hang up. Ensure MacPherson strut disengages from right axle shaft bellows. Remove jack and allow subframe to hang free on right side. Hang steering gear on left side using Hook (999 5045) in hole in frame member flange. Ensure lower steering wheel shaft section does not slip out of steering column.

11) Remove engine mount-to-subframe bolts and nut on top of engine mount. Remove engine mount. Disconnect HO2S cable terminals from cover. Disconnect speedometer connector and cable. Remove rear engine mount cover and rear mounting from gearbox.

12) Remove left axle shaft by twisting and pulling out MacPherson strut. Tap axle shaft end with plastic mallet and pull shaft from hub. Using Lever (999 5462), remove axle shaft from gearbox. Use care not to damage axle shaft seal or bellows. Install Plug (999 5488) to seal hole. Clean metal glue off hub axle shaft splines.

13) Use lifting hook and lower engine and gearbox until about 5" (130 mm) of hook thread is clear. DO NOT lower engine too much, as exhaust pipe may press on steering gear. Ensure no wiring or hoses are pinched or stretched, and that dipstick clears fan.

14) Install Universal Tool (999 5972) and Gearbox Fixture (999 5463) to jack. Attach gearbox fixture to gearbox using bolts from steady-bar bracket. At same time, position Support Plate (5463-2) on fixture. Raise engine. Remove remaining bolts securing gearbox to engine. Pull gearbox straight out from engine without any breaks in clutch plate center.

#### Installation

1) Ensure mating flanges on gearbox and engine are clean and engine locating sleeves are in place. Install gearbox to engine using jack and gearbox fixture. Ensure gearbox lines up straight with engine without any breaks in clutch plate center. Install 7 engine-to-gearbox bolts and tighten in rotation to 37 ft. lbs. (50 N.m). Remove gearbox fixture and jack from gearbox.

2) Raise Lifting Hook (999 5460) to level previously recorded in step 5) under REMOVAL. Ensure no cables, wiring, or hoses are pinched or trapped. Install 3 rear engine mount-to-gearbox bolts. Tighten 2 rear bolts to 37 ft. lbs. (50 N.m). Remove front bolt. Engage cover with engine mount and tighten bolt to 37 ft. lbs. (50 N.m).

3) Install engine mounting locating pin in cover and install, but DO NOT tighten, NEW nut. Install, but DO NOT tighten, engine mounting steering gear bolt. Disconnect support hook. Install HO2S cable and clips in cover. Install speedometer connector and cable.

4) Start with left side and raise subframe. Install 4 NEW bolts with greased threads. Install bolts to subframe and support plate. Tighten frame bolts to 77 ft. lbs. (105 N.m), then tighten another 120 degrees. Move jack to right side, remove existing bolts, and repeat procedure.

5) Remove lifting hook, lifting beam, hooks, supports and lifting lug. Remove lifting lug on rear of engine. Tighten manifold heat guard bolts. Install rear engine mounting splash guard nuts and tighten to 37 ft. lbs. (50 N.m). Install 5 NEW steering gear nuts and tighten to 37 ft. lbs. (50 N.m).

6) Install NEW steady bar bracket-to-gearbox bolts and tighten to 13 ft. lbs. (18 N.m), plus an additional 90 degrees (earlier version), or tighten to 26 ft. lbs. (35 N.m), plus an additional 60 degrees (later version). Install bolts holding pipe brackets to steering gear and tighten to 18 ft. lbs. (25 N.m). Tighten exhaust clamp.

7) Use care not to damage drive shaft seal or bellows and

install right axle shaft to gear box. Install bearing cap and tighten to 18 ft. lbs. (25 N.m). Ensure ABS sensor gear well area is free of dirt and install left axle shaft. Push in axle shaft so it engages with differential. Ensure axle shaft circlip snaps into place. Use care not to damage axle shaft seal or bellows.

8) Apply Metal Glue (1161370-0) to axle shaft splines. Use a socket wrench to hold suspension arm down and twist MacPherson strut clear and insert axle shaft in hub. Oil nut threads and flange and hand-tighten NEW axle shaft nut.

9) Ensure ball joint seating in suspension arm is clean and free of grease. Tighten inside and outside nuts to 13 ft. lbs. (18 N.m), plus an additional 120 degrees. Apply Rustproofing Material (1161432-8) to area between ball joint, suspension arm and nuts. Use NEW nuts and install link arm to anti-roll bar. Tighten nuts to 37 ft. lbs. (50 N.m).

10) Tighten left hub center nut to 89 ft. lbs. (120 N.m), plus an additional 60 degrees. Use a chisel and tap locking flange onto axle shaft slot. Install brake lines and ABS cable brackets on both sides.

NOTE: Ensure ABS sensor seat is perfectly clean.

11) Install ABS sensor on wheel spindle and tighten to 7 ft. lbs. (10 N.m). Install plastic nuts and Torx screws to inner shield on left side. Install cable pipe on subframe, charcoal canister, and subframe under engine.

12) Install cover under engine and push it toward front of vehicle. Push up at back so cover locating pins fall in place. Install bolts. Install wheels. Ensure brake disc pad contact surfaces are clean. Grease hub center locating pin in front of pad using Rustproofing Agent (1161038-3). Install bolts and tighten in pairs to 81 ft. lbs. (110 N.m).

13) Install 5 gearbox-to-engine and gearbox-to-starter bolts. Tighten gearbox-to-engine bolts to 37 ft. lbs. (50 N.m). Tighten gearbox-to-starter bolts to 30 ft. lbs. (40 N.m). Install clutch slave cylinder and clip. Without moving fork, remove temporary strap from throw-out bearing fork. Install ground wire and lead tie. Install back-up light switch connector. Install shift lever link plate and locking pin. Install selector cables in brackets.

NOTE: Outside bracket and selector cables have Yellow markings.

14) Lubricate selector levers with Grease (1161241-3). Install selector cables to levers. Install 2 washers and clips. Install high tension wire cover, expansion tank, air cleaner-to-bracket bolts, spark plug cover, battery shelf, air cleaner and battery.

## TORQUE SPECIFICATIONS

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Application	Ft. Lbs. (N.m)
ABS Sensor Bolt .....	7 (10)
Bearing Cap Bolts .....	18 (25)
Engine Mount-To-Gearbox Bolts .....	37 (50)
Engine-To-Gearbox Bolts .....	37 (50)
Gearbox-To-Engine Bolts .....	37 (50)
Gearbox-To-Starter Bolt .....	30 (40)
Hub Center Nut .....	(1) 89 (120)
Knee Guard Bolts .....	15 (20)

Link Arm-To-Anti-Roll Bar Nuts .....	37	(50)
Lug Nuts .....	81	(110)
Pipe Brackets-To-Steering Gear Bolts .....	18	(25)
Rear Splash Guard Nuts .....	37	(50)
Steady Bar Bracket-To-Gearbox Bolts		
Early Version .....	(2)	13 (18)
Later Version .....	(3)	26 (35)
Steering Gear Nuts .....	37	(50)
Subframe & Support Plate Bolts .....	(4)	77 (105)
Suspension Arm-To-Ball Joint Nuts .....	(5)	13 (18)

- (1) - Tighten nut an additional 60 degrees.
  - (2) - Tighten bolts another 90 degrees (early version).
  - (3) - Tighten bolts another 60 degrees (late version).
  - (4) - Tighten bolts another 120 degrees.
  - (5) - Tighten nuts an additional 120 degrees.
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