

**TRUCK, WRECKER, HEAVY, MC3, 8 TONNE (MACK), ARMY (AUST) 6778  
NSN 2320-66-151-7176**

**HEAVY REPAIR**

This instruction is authorised for use by command of the Chief of Army. It provides direction, mandatory controls and procedures for the operation, maintenance and support of equipment. Personnel are to carry out any action required by this instruction in accordance with EMEI General A 001.

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Figure 1 – Truck, Wrecker, Heavy, MC3, 8 Tonne (Mack), Army (Aust) 6778

**INTRODUCTION**

**WARNING**

**DRAIN AIR FROM THE TRUCKS AIR SYSTEM PRIOR TO REMOVAL OF AIR LINES OR AIR SYSTEM COMPONENTS.**

**CAUTION**

**DISCONNECT THE VEHICLE BATTERIES AND REMOVE BOTH PLUGS FROM THE WINCH PROGRAMMABLE LOGIC CONTROLLER (PLC) BOXES PRIOR TO COMMENCING ANY WELDING TASKS.**

**CAUTION**

**THE ENGINE, CLUTCH, TRANSMISSION AND BODY COMPONENTS OF THIS VEHICLE HAVE BEEN SIGNIFICANTLY MODIFIED FROM THE STANDARD CONFIGURATION OF MACK R SERIES FLEET VEHICLES. IT IS THEREFORE IMPERATIVE THAT INSTRUCTIONS DETAILED IN THIS EMEI ARE STRICTLY FOLLOWED TO PREVENT THE PERFORMANCE OF INCORRECT MAINTENANCE PROCEDURES.**

1. This EMEI supplement contains heavy repair level instructions for removing, repairing, replacing and installing major components fitted to the Truck, Wrecker, Heavy, MC3, 8 Tonne (Mack), Army (Aust) 6778 as shown in Figure 1. For further information on the base truck refer to the relevant references.

**ASSOCIATED PUBLICATIONS**

2. For technical data pertaining to the base truck, repair procedures and other relevant information, reference may be necessary to the latest issue of the following documents:

- a. EMEI Vehicle D 320, Truck, Wrecker, Heavy, MC3, 8 Tonne (Mack), Army (Aust) 6778 – Data Summary;
- b. EMEI Vehicle D 322, Truck, Wrecker, Heavy, MC3, 8 Tonne (Mack), Army (Aust) 6778 – Technical Description;
- c. EMEI Vehicle G 702, Truck, Cargo, Heavy, MC3, (Mack) – Technical Description;
- d. EMEI Vehicle G 702-1, Truck, Cargo, Heavy, MC3, (Mack), All Types, Air Spring Suspension System (SA441W) – Technical Description;
- e. EMEI Vehicle G 703, Truck, Cargo, Heavy, MC3, (Mack) – Unit Repair;
- f. EMEI Vehicle D 323, Truck, Wrecker, Heavy, MC3, 8 Tonne (Mack), Army (Aust) 6778 – Light Repair;

- g. EMEI Vehicle D 324-1, Truck, Wrecker, Heavy, MC3, 8 Tonne (Mack), Army (Aust) 6778 – Medium Repair;
- h. EMEI Vehicle G 704, Truck, Cargo, Heavy, MC3, (Mack) – Field Repair;
- i. EMEI Vehicle G 704-1, Truck, Cargo, Heavy, MC3, (Mack) – Base Repair;
- j. EMEI Vehicle G 798-10, Truck, Cargo, Heavy, MC3, (Mack) All Types, Air Bag Suspension Inspection Criteria and Periodic Preventative Maintenance – Inspection for Serviceability;
- k. EMEI Vehicle G 703-1, Truck, Cargo, Heavy, MC3, (Mack) All Types, Air Spring Suspension System (SA441W) – Unit Repair;
- l. EMEI Vehicle G 704-2, Truck, Cargo, Heavy, MC3, (Mack) All Types, Air Spring Suspension System (SA441W) – Field and Base Repair;
- m. EMEI Vehicle G 799-16, Truck, Cargo, Heavy, MC3, (Mack) All Types, Chassis Welding – Miscellaneous Instruction;
- n. Normax Transfer Case Oil Cooler Handbook;
- o. Crisp-Air Air Conditioning Handbook, March 2004;
- p. General Pneumatics Maintenance Manual – TruckMaster air filter, XD-30 Automatic Ejector and EXT-50 DumpMaster valves;
- q. EMEI Vehicle D 329, Truck, Wrecker, Heavy, MC3, 8 Tonne (Mack), Army (Aust) 6778 – Servicing Instruction;
- r. EMEI Vehicle A 029 – Servicing of B Vehicles;
- s. EMEI Vehicle A 119-21 – Repair of Vehicles Under Warranty Agreement;
- t. Repair Parts Scale (RPS) 02252;
- u. GM 120 Record Book for Service Equipment – Army;
- v. Technical Manual User Handbook (Truck, Wrecker, Heavy, MC3, 8 Tonne (Mack), Army (Aust) 6778); and
- w. Defence Road Transport Instruction.

3. Refer to the following publications for safety of personnel and prevention of damage to equipment:

- a. EMEI Workshop E series – Occupational Health and Safety Instructions;
- b. Defence Safety Manual, Volumes 1 and 2;

- c. Product Material Safety Data Sheets (MSDS) – product information sheets;
- d. Relevant Equipment EMEI Servicing Instructions;
- e. Technical Manual User Handbook (Truck, Wrecker, Heavy, MC3, 8 Tonne (Mack), Army (Aust) 6778); and
- f. EMEI Vehicle D 108, Inspection of Recovery Equipment – Inspection for Serviceability.

**ROTABLE ITEM IDENTIFICATION**

4. Table 1 lists the identification and locations for rotatable items:

**Table 1 – Rotable Item Identification**

Item	Location
Chassis No.	Right hand rear frame, above intermediate axle.
Engine No.	Right hand top of timing gear housing
Fuel injection pump	Side of pump
Front axle No.	Left rear of axle housing
Transmission No.	Right rear of auxiliary housing
Transfer case No.	Right hand rear
Intermediate axle No.	Right hand front of carrier housing
Rear axle No.	Right hand front of carrier housing
Crane PTO	Plate on PTO housing
Miller recovery unit	Plate on inner side of right hand spade housing
Winches	Plate affixed to motor side of winch housing

**SPECIAL TOOLS AND GAUGES**

5. The following special tools, gauges and apparatus are required as indicated to perform the tasks detailed below:

- a. Transmission Output Seal Driver – 5564501 (refer to Para 45) available though Eaton. See Figure 2.



**Figure 2 – Transmission Output Seal Driver**

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- b. Input Bearing Driver – T120 (refer to Para 35) available through Eaton. See Figure 3.



Figure 3 – Transmission Input Bearing Driver

- c. Countershaft Bearing Driver – Part of kit T101 (refer to Paras 62 and 65) available through Eaton. See Figure 4.



Figure 4 – Transmission Countershaft Bearing Driver

- d. Shim Gauges (0.100 inch) – T-65514-S (refer to Para 46) available through Eaton. See Figure 5.



Figure 5 – Transmission Countershaft Shim Gauges

- e. Cab and Crew Cab Lifting Beam, 1 tonne complete with four bolt-on lifting eyes - Part No 48740 (refer to Para 89). See Figure 6.



Figure 6 – Cab and Crew Cab Lifting Kit

- f. Recovery Unit Lifting Beam, 7 tonne – Part No 50296 (refer to Para 102). See Figure 7.



Figure 7 – Recovery Platform Lifting Kit

#### GROUP 1 – ENGINE

- 6. For maintenance procedures related to the engine, refer to the following:
  - a. EMEI Vehicle G 703,
  - b. EMEI Vehicle G 704, and
  - c. EMEI Vehicle G 704-1.

#### GROUP 4 – FUEL SYSTEM

- 7. For maintenance procedures related to fuel system components not contained in this EMEI, refer to the following:
  - a. EMEI Vehicle G 703,
  - b. EMEI Vehicle G 704, and
  - c. EMEI Vehicle G 704-1.

**WARNING**

**SAFETY GLASSES, SKIN PROTECTION SUCH AS RUBBER GLOVES OR BARRIER CREAM AND HEARING PROTECTION ARE TO BE USED WHEN REPAIRING AND CALIBRATING FUEL INJECTION PUMPS OR WHEN HANDLING FUEL AND TEST MEDIA.**

**FUEL INJECTION PUMP**

8. **Removal and Installation.** Removal and installation of the fuel injection pump (Figure 8) is to be conducted in accordance with EMEI Vehicle G 704.



**Figure 8 – Fuel Injection Pump**

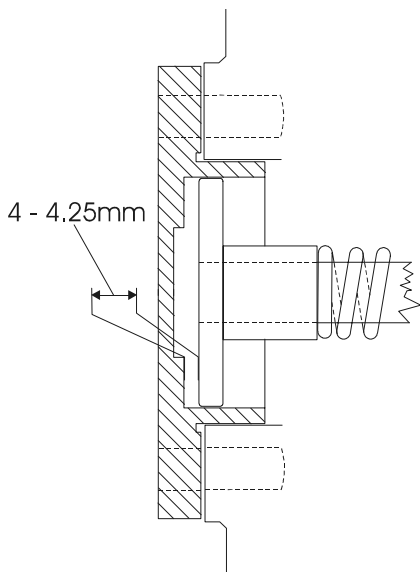
9. **Overhaul.** Overhaul of the fuel injection pump is to be conducted in accordance with EMEI Vehicle G 704-1, however timing and calibration procedures vary as this pump has been upgraded to produce higher engine power for this vehicle. The procedures for timing and calibration are listed at Paras 11 and 13.

**GOVERNOR**

10. **Overhaul.** Overhaul of the governor is to be conducted in accordance with EMEI Vehicle G 704-1, however there is a change to the inner spring clearance as detailed in the following note:

**NOTE**

During governor assembly, the inner spring clearance listed at EMEI Vehicle G 704-1 Group 4, Para 47q must be set to between 4 and 4.25 mm for the governor on this vehicle only (refer to Figure 9).



**Figure 9 – Governor Inner Spring Clearance**

**Timing Procedures**

11. Internal pump timing is to be conducted in accordance with EMEI Vehicle G 704-1. When fitted to the engine the pump must be spill timed to the engine to ensure port closing at 21 deg BTDC.

**Calibration**

12. Set the pump up on the test bench and ensure all pressure testing, preliminary checks and run in procedures are conducted in accordance with EMEI Vehicle G 704-1.

13. Calibrate the fuel injection pump as detailed in the following procedure:

**NOTE**

Prior to starting calibration the engine brake contact strip must be moved to permit access to the droop screw.

a. **Setting Maximum Fuel.** To set maximum fuel, proceed as follows:

- (1) Back out the droop screw and deactivate the stop plate assembly by moving it towards the pump with the adjusting screw. This is done to provide sufficient control rack travel to adjust the pump. Figure 10 shows the horizontal adjustment of the stop plate.
- (2) Start the test stand with the operating lever in the idle position and increase the pump speed to 1000 rev/min full load speed.
- (3) Move the operating lever into the full load position and adjust the governor stop plate horizontally to contact the cam nose as shown in Figure 11 this contact must occur at the full load rack extension of 30.73 mm.



**Figure 10 – Horizontal Adjustment of Stop Plate**

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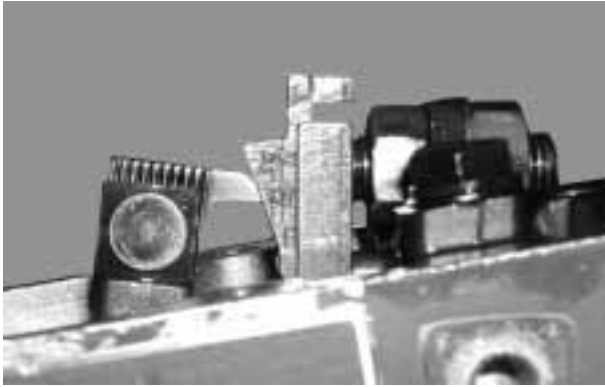


Figure 11 – Cam Nose/Stop Plate Relationship at Full Speed RPM



Figure 13 – Cam Nose/Stop Plate Relationship at Stop Plate Vertical Set Point

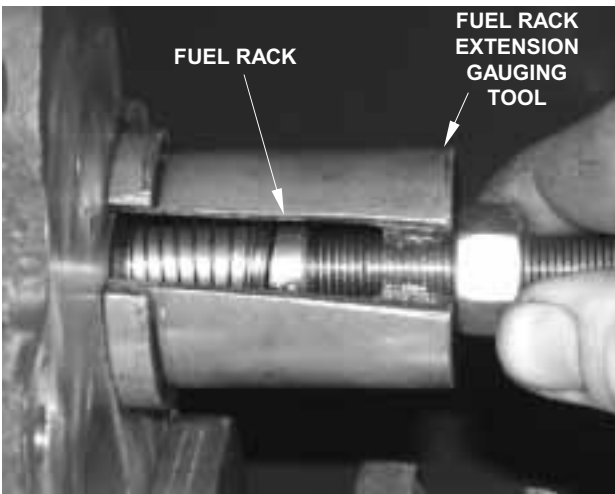


Figure 12 – Measuring Load Rack Extension

**NOTE**

Load rack extension can be checked using a depth gauge or PLE gauge set to 30.73 mm as shown at Figure 12.

b. *Stop Plate Vertical Adjustment.* To complete the stop plate vertical adjustment, proceed as follows:

- (1) Set the angle between cam nose and fulcrum lever to between 88° and 92°.
- (2) Reduce the pump rpm to stop plate vertical adjustment speed of 800 rpm.
- (3) Loosen the stop plate adjusting screw slightly and adjust the stop plate vertically to achieve the cam nose/stop plate relationship as shown at Figure 13. Tighten the stop plate adjusting screw.

**NOTE**

Both horizontal and vertical set points must be within the fuel flow specifications. Continue to adjust horizontally and/or vertically to obtain the correct fuel flow.

**NOTE**

When checking or adjusting fuel deliveries there must be no excessive vibration or oscillation in the fulcrum lever or control rack. The test stand may cause such behaviour and this must be corrected before making any adjustments to the pump.

c. *Adjustment of Pump Cylinders.* Adjust all pump cylinders to obtain fuel delivery of 212 to 240 cc @ 800 strokes/min as follows:

- (1) Loosen the segment locking screws and rotate the control sleeves with adjusting pin TSE 7695 (see EMEI Vehicle G 704-1) as shown in Figure 14.

**NOTE**

The variation between cylinders must be kept to a minimum. Maximum allowable variation between outlets at full load speed is 8%.

- (2) Once all cylinders have been set as close as possible to each other, torque the segment locking screws to between 5.0 and 5.5 N.m (45 and 50 lbf.in).
- (3) Recheck settings after tightening segment locking screws and readjust if necessary.

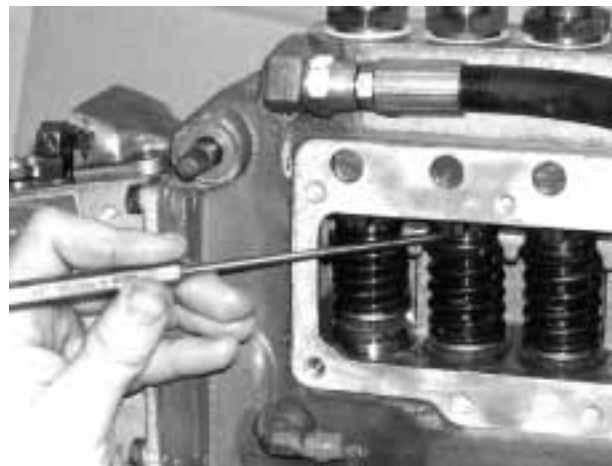


Figure 14 – Adjusting Segments



- d. **Droop Screw Adjustment.** Reduce the pump speed to 750 rpm and adjust the droop screw to contact the stop plate to obtain a delivery of 218 cc to 228 cc @ 1000 strokes/min (see Figure 15).

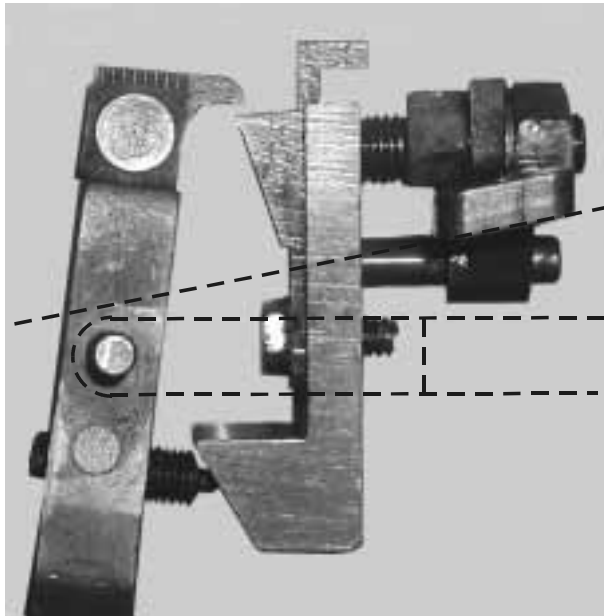


Figure 15 – Droop Screw/Stop Plate Relationship at Set Point

- e. **Low Idle Delivery.** To set the low idle delivery, proceed as follows:
- (1) Reduce the pump speed to 290 rpm (low idle speed) and secure the operating lever in the low idle position.
  - (2) Adjust the idle screw to obtain a delivery of 24 to 40 cc/1000 strokes (see Figure 16).

**NOTE**

Variation in idle delivery between cylinders must not exceed 6 cc for 500 strokes.

- f. **Starting Fuel Delivery.** To check the starting fuel delivery proceed as follows:
- (1) Secure the operating lever in the full load position and reduce the pump speed to 75 rpm.
  - (2) Check that the starting delivery is 120 to 230 cc maximum @ 1000 strokes. Delivery requirements must be met without any adjustment being made.
- g. **Breakaway Adjustment.** To adjust the breakaway setting, proceed as follows:

- (1) Increase the pump speed to cam breakaway speed of 1085 to 1100 rpm and adjust the high speed screw so that the cam nose begins to leave the stop plate (Figure 17). The clearance

between the cam nose and stop plate at this setting should be 0.025 to 0.13 mm.

- (2) Move the shut off lever to the shut off position. Delivery must stop completely.
- h. Disconnect and remove the pump, nozzle and holder assemblies from the test stand, continue reassembly of the pump and governor in accordance with EMEI Vehicle G 704-1.
- i. Check puff limiter extension (PLE) requirements in accordance with EMEI Vehicle G 704-1.

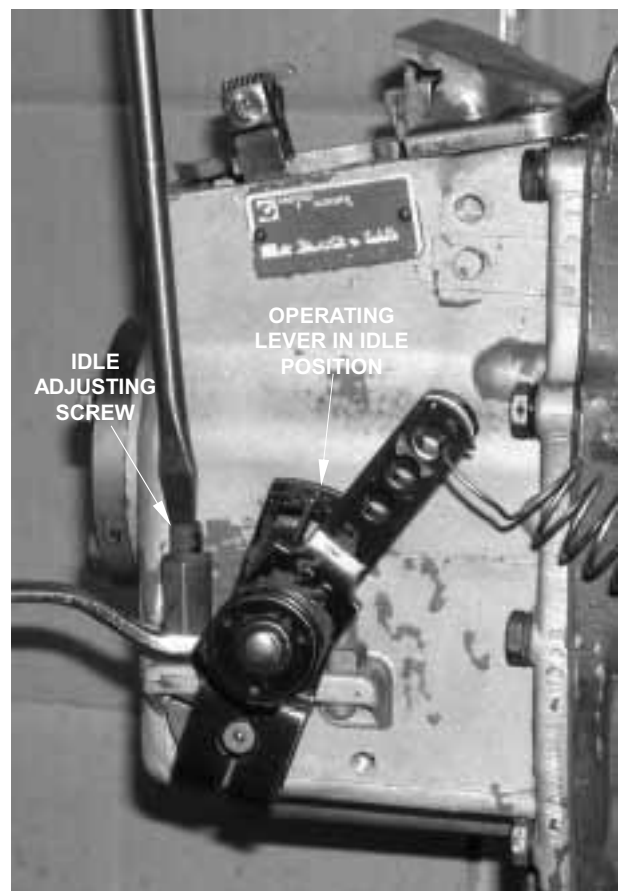


Figure 16 – Low Idle Set Point



Figure 17 – Breakaway Point

**SPEED LIMITER**



**ADJUSTMENT OF THE SPEED LIMITER IS ONLY TO BE PERFORMED BY MACK TRUCKS (AUST) OR AN AUTHORISED AGENT.**

14. *Adjustment.* To adjust the speed setting, proceed as follows:

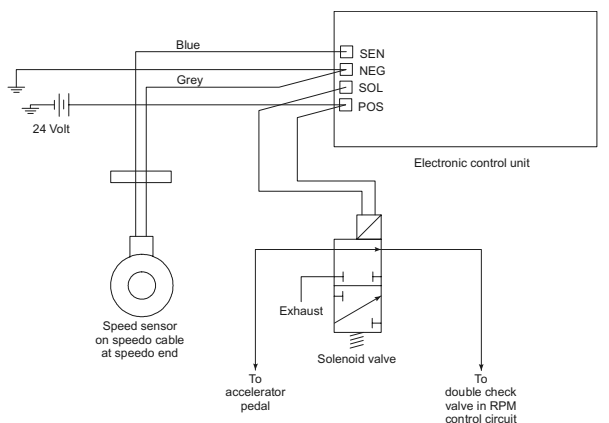


**TO AVOID ANY ACCIDENTS, ADJUSTMENT OF THE SPEED LIMITER MUST BE CONDUCTED WITH TWO PEOPLE.**

**NOTE**

**Speed testing must be conducted using a GPS and on a road where a speed of 100 kph can be safely and legally reached and maintained.**

- Gain access to the speed limiter control box by removing the access panel under the far left hand side of the dash.
- Remove the cover from the control box.
- Have a driver drive the truck, building up speed to 100 kph. If the speed limiter has not cut the air supply to the accelerator valve at this speed, continue acceleration to approximately 102 kph. If the speed limiter still has not cut in, back the speed adjusting screw out until it cuts in.
- To verify the setting, reduce speed to below 100 kph then increase speed until the speed limiter cuts in. This should occur at approximately 102 kph. Re-adjust if necessary.
- Refit the cover to the control box and the access panel.



**Figure 18 – Speed Limiter System Overview**

**Electronic Control Unit (ECU)**

15. *Removal.* To remove the speed limiter ECU, proceed as follows:

- Remove the access panel under the far left hand side of dash.
- Remove the cover (refer to Figure 19) from the speed limiter ECU and disconnect the wiring from the connection block (refer to Figure 21).
- Remove the mounting screws and remove the ECU from its mounting.



**Figure 19 – Speed Limiter Control Box**

16. *Installation.* To install the speed limiter ECU, proceed as follows:

- Fit the ECU to its mounting point and reconnect the wiring to the connection block in the correct order (see Figure 18).
- Adjust the speed limiter in accordance with Para 14.
- Fit the ECU cover and access panel.

**GROUP 6 – TRANSMISSION**



**BEFORE STARTING ANY DRIVELINE MAINTENANCE PROCEDURES ON THIS VEHICLE, PLACE THE TRANSMISSION IN NEUTRAL, APPLY THE PARKING BRAKES AND CHOCK THE WHEELS.**



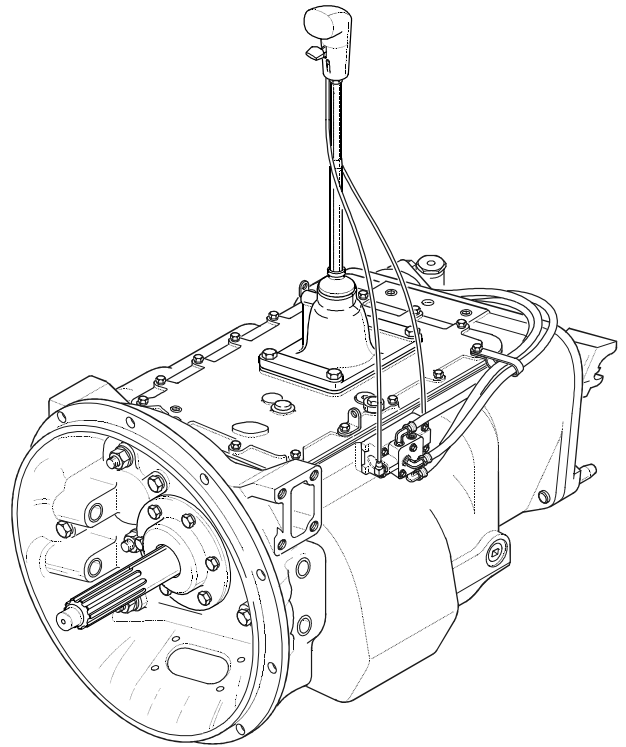
**TO AVOID TRANSMISSION DAMAGE WHEN TOWING THIS VEHICLE, PLACE THE TRANSMISSION IN NEUTRAL AND REMOVE ALL FOUR REAR AXLE HALF SHAFTS. THIS VEHICLE MUST BE TRANSPORTED BY TRAILER IF THE NATURE OF DAMAGE PREVENTS FRONT LIFT TOWING.**

17. Table 2 provides the torque settings for fasteners used in the transmission as shown in Figure 20.

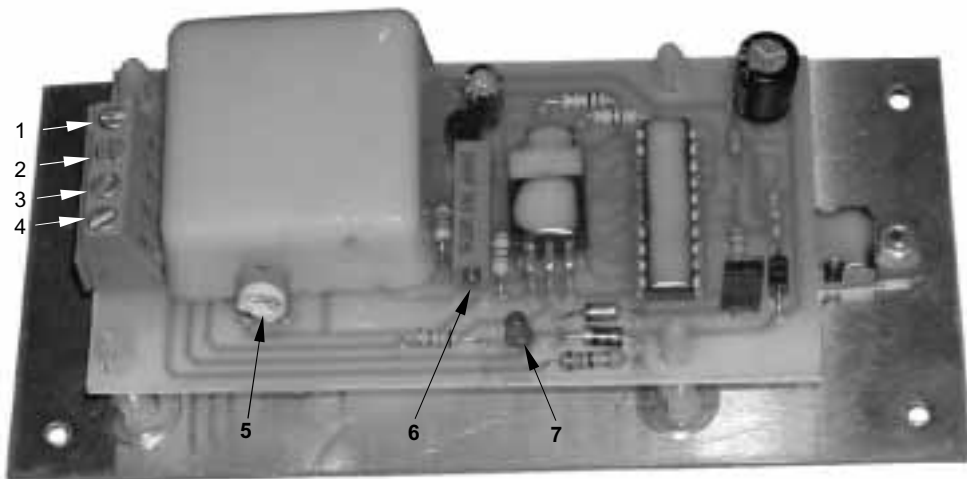
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**Table 2 – Transmission Torque Settings**

Fastener Description	Torque N.m (lbf.ft)
Clutch housing to flywheel housing	102 (75)
Front bearing cover capscrews	339-407 (250-300)
Clutch housing nuts	244-257 (180-190)
Clutch housing capscrews	122-136 (90-100)
Slave valve capscrews	11-16 (8-12)
Front countershaft bearing retainer capscrews	122-163 (90-120)
Shift block and yoke lockscrews	48-61 (35-45)
Shift lever and shift bar housing capscrews	48-61 (35-45)
Oil drain plug	61-74 (45-55)
Mainshaft bearing retainer capscrews	48-61 (35-45)
Oil filler plug	48-68 (35-50)
Air filter/regulator mounting capscrews	11-16 (8-12)
Range cylinder shift bar nut	95-115 (70-85)
Auxiliary housing capscrews	48-61 (35-45)
Output shaft nut	610-678 (450-500)
Mainshaft rear bearing cover capscrews	48-61 (35-45)
Range cylinder mounting capscrews	48-61 (35-45)
Range cylinder cover capscrews	48-61 (35-45)
Rear countershaft bearing cover capscrews	48-61 (35-45)



**Figure 20 – Transmission**



Item	Description	Item	Description
1.	SEN (sensor)	5.	Signal level adjuster
2.	NEG (negative)	6.	Speed adjustment screw
3.	SOL (solenoid)	7.	LED
4.	POS (positive)		

**Figure 21 – Speed Limiter Circuit Board**

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AIR SYSTEM

**WARNING**

TO PREVENT SKIN AND EYE INJURIES ENSURE THAT THE AIR SYSTEM IS DRAINED PRIOR TO COMMENCING WORK ON THE AIR SYSTEM.

ROADRANGER VALVE

18. **Removal and Installation.** Removal and installation of the Roadranger valve in to be conducted in accordance with EMEI Vehicle D 323.

19. **Disassembly.** To disassemble the Roadranger valve, proceed as follows:

- a. Pry the medallion from recess in the top of the cover.
- b. Remove the two screws in the top cover and remove the cover from the housing.
- c. Remove the two screws in side of valve housing to separate the housing.
- d. Remove the range lever from the left hand housing and remove the position balls and pin from the lever.
- e. Remove the spring and 'O' ring from the bores in the left hand housing.
- f. Remove the springs, 'O' ring and sleeve from bores in the right hand housing.

20. **Cleaning and Inspection.** To clean and inspect the Roadranger valve, proceed as follows:

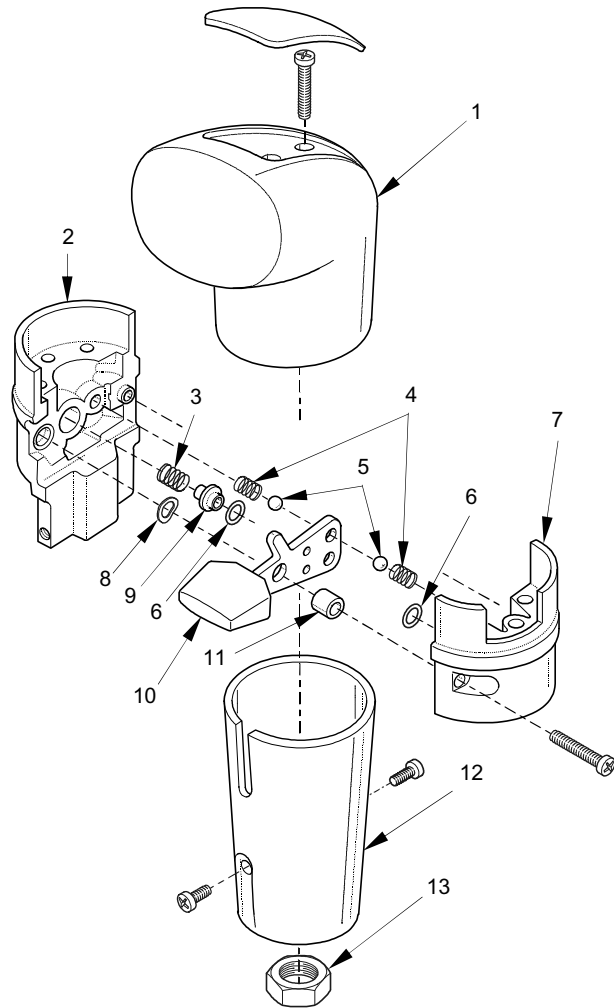
- a. Clean all components with cleaning spirit and blow dry with low pressure air. Ensure all bores and galleries are free of foreign matter.
- b. Visually inspect all components for damage and wear and replace as necessary.

**NOTE**

If the housings are worn or damaged the complete assembly must be replaced.

21. **Assembly.** To assemble the Roadranger valve, proceed as follows (refer to Figure 22):

- a. Using a very small amount of silicone grease, thinly coat the 'O' rings to avoid clogging the ports and refit the 'O' rings.
- b. Place a dab of grease on the detent balls and springs to hold them in place and reinstall them into their bores.
- c. Refit the guide and range lever to the left hand housing then join the two housings and secure with the screws.



Item	Description
1.	Knob
2.	Valve body (right)
3.	Compression spring
4.	Compression spring
5.	Ball 5/16 in
6.	'O' ring
7.	Valve body (left)
8.	Wave washer
9.	Retainer
10.	Lever
11.	Spacer
12.	Cover
13.	Jam nut

**Figure 22 – Roadranger Valve**

- d. Place the top cover over the housing, refit and tighten the screws.
- e. Refit the medallion.

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**SLAVE VALVE**

**22. Removal.** Remove the slave valve in accordance with EMEI Vehicle D 324-1.

**23. Disassembly.** To disassemble the slave valve, proceed as follows:

- a. Remove the air line fittings.
- b. Disassemble the slave valve in accordance with Figure 23 and discard all seals and 'O' rings.

**24. Cleaning and Inspection.** To clean and inspect the slave valve, proceed as follows:

- a. Clean all components with cleaning spirit and blow dry with low pressure air. Ensure all bores and galleries are free of foreign matter.
- b. Visually inspect all components for damage and wear, paying particular attention to the surfaces of pistons and bores.

**25. Assembly.** Apply a light film of silicon grease to all 'O' rings and seals then assemble the slave valve in accordance with Figure 23.

**26. Installation.** To install the slave valve in accordance with EMEI Vehicle D 324-1.

- a. Refit the air line fittings into the slave valve body using a suitable thread sealant.
- b. Install the spring and plunger into the bore in the transmission case.
- c. Fit a new gasket and refit the slave valve. Apply a medium strength thread locking agent to the threads of the cap screws and tighten to between 11 and 16 N.m.
- d. Reconnect the air lines as marked.

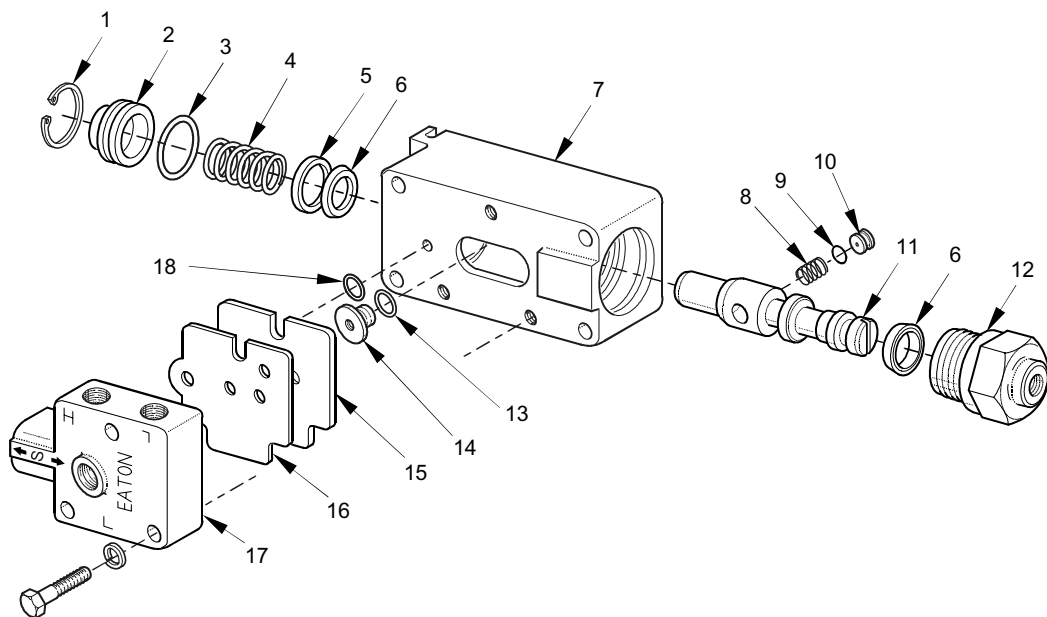
**AIR FILTER REGULATOR**

**27. Removal.** To remove the filter regulator, proceed as follows:

- a. Drain the air from the truck air system.
- b. Mark and disconnect the air lines from the filter regulator.

**NOTE**

**If the pistons or bores are worn or damaged, replace the complete assembly.**

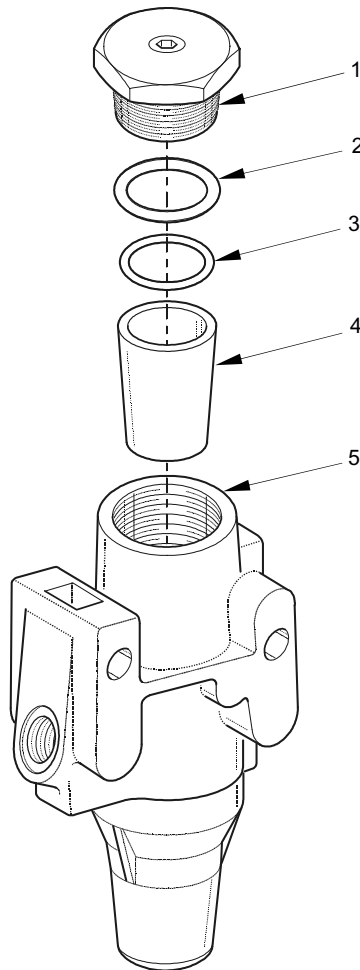


Item	Description	Item	Description	Item	Description
1.	Circlip	7.	Body	13.	'O' ring
2.	Plug	8.	Compression spring	14.	Seal
3.	'O' ring	9.	'O' ring	15.	Plate
4.	Compression spring	10.	Balance valve seal	16.	Gasket
5.	Washer	11.	Pilot piston	17.	Cap
6.	'U' seal	12.	Cap	18.	'O' ring

**Figure 23 – Slave Valve**

- c. Remove the two cap screws and remove the filter regulator from the transmission.

28. **Disassembly.** Disassemble the filter regulator in accordance with Figure 24.



Item	Description
1.	Cap
2.	'O' ring
3.	'O' ring
4.	Filter element
5.	Housing

Figure 24 – Air Filter Regulator

29. **Cleaning and Inspection.** To clean and inspect the filter regulator, proceed as follows:

- a. Clean all metal components with cleaning spirit and blow dry with low pressure air. Ensure all bores and galleries are free of foreign matter.
- b. Visually inspect all components for damage and wear and inspect the condition of the filter element. Replace parts as necessary.

30. **Assembly.** Assemble the filter regulator in accordance with Figure 24.

31. **Installation.** To install the filter regulator, proceed as follows:

- a. Fit the filter regulator to its position on the auxiliary case. Apply a medium strength thread locking agent to the threads of the cap screws and tighten to between 11 and 16 N.m.
- b. Reconnect the air lines as marked.

#### TRANSMISSION DISASSEMBLY

32. The following points should be taken into account prior to, and during transmission overhaul procedures:

- a. **Bearings.** Carefully wash and relubricate all reusable bearings as removed and protectively wrap until ready for use. Carefully remove bearings planned to be reused with appropriate pullers.
- b. **Assemblies.** When disassembling the various assemblies, such as the mainshaft, countershaft, and shift bar housing, lay all parts on a clean bench in the same sequence as removed. This procedure will simplify assembly and reduce the possibility of losing parts.
- c. **Snap Rings.** Remove snap rings with pliers designed for this purpose. Snap rings removed in this manner can be reused if they are not sprung or loose.
- d. **Input Shaft.** The input shaft can be removed from transmission without removing the countershafts, mainshaft, or main drive gear. Special procedures are required and provided in this manual at Para 34.
- e. **Cleanliness.** Provide a clean place to work. It is important that no dirt or foreign material enters the unit during repairs. Dirt is an abrasive and can damage bearings. It is always good practice to clean the outside of the unit before starting the planned disassembly.
- f. **When Using Tools to Move Parts.** Always apply force to shafts, housings, etc, with restraint. Movement of some parts is restricted. Never apply force to the part being driven after it stops solidly. The use of soft hammers, bars and mauls for all disassembly work is recommended.

#### INPUT SHAFT REPLACEMENT

33. If the input shaft splines are worn due to excessive clutch wear it will be necessary to replace the input shaft along with the clutch. In this case the input shaft can be replaced without further disassembly of the transmission using the following procedure.

**NOTE**

Replacement of the main drive gear cannot be effected using this procedure. If the main drive gear requires replacing (refer to Para 49).

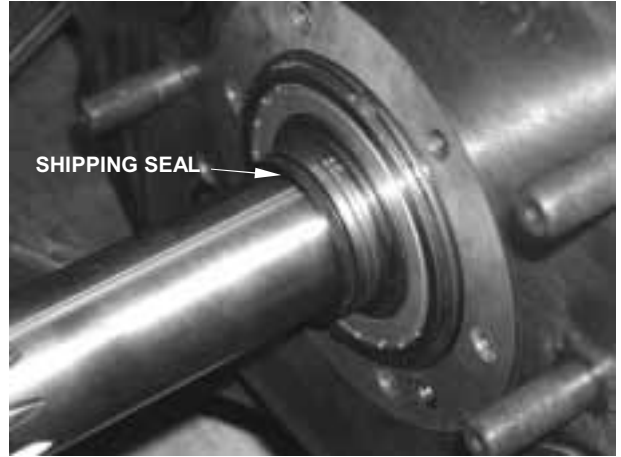
34. **Removal.** To remove the input shaft, proceed as follows (refer to Figure 25):

- a. Remove the clutch housing in accordance with Para 41.
- b. Remove the front bearing cover and gasket.

**NOTE**

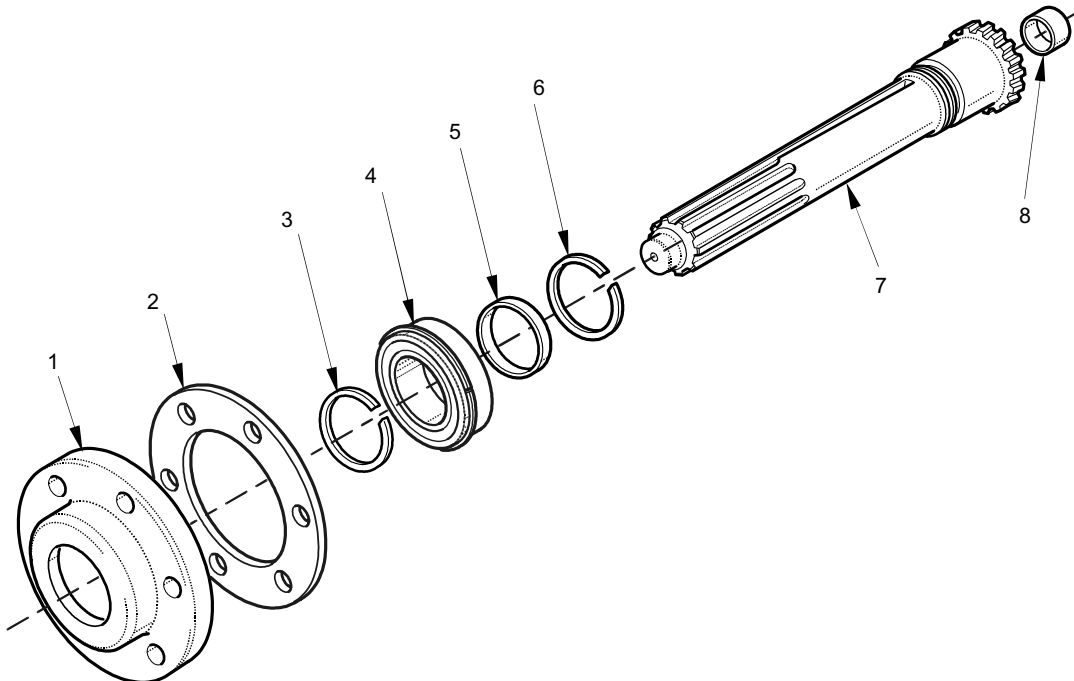
If the bearing cover is being removed for the first time a shipping seal as shown at Figure 26 may be fitted to the input shaft. This seal can be removed and discarded. It is not available as a repair part.

- c. Remove the front bearing retaining snap ring from the groove in the input shaft.
- d. Push down on the front of the input shaft to cock the bearing in the bore then, using a soft drift and maul drive the input shaft through the bearing towards the rear of the transmission as far as possible.



**Figure 26 – Input Shaft Shipping Seal**

- e. Pull the input shaft forward to expose the rear bearing snap ring.
- f. Using pry bars completely remove the bearing from the input shaft (refer to Figure 27).
- g. Remove the drive gear spacer and the internal snap ring from the drive gear.
- h. Pull the input shaft forward out of the drive gear and case.



Item	Description	Item	Description	Item	Description
1.	Bearing cover	4.	Bearing	7.	Input shaft
2.	Gasket	5.	Spacer	8.	Spigot bush
3.	Snap ring	6.	Snap ring		

**Figure 25 – Input Shaft Arrangement**

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