Video Instruction Available
Instructional videos are available for download at no charge at Roadranger.com

Videos are also available for purchase. To order, call 1-888-386-4636. Ask for item # RRSD0002

Eaton Fuller Advantage™
Heavy-Duty Manual
Transmissions
TRDR0970 EN-US
August 2013

FA-11810B     FAM-14810B     FAOF-12810C
FA-12810B     FAM-15810B     FAOF-13810C
FA-13810B     FAO-11810C     FAOF-14810C
FA-14810B     FAO-12810C     FAOF-15810C
FA-15810B     FAO-13810C     FAOF-16810C
FAF-9810B     FAO-14810C     FAOM-14810C
FAF-11810B    FAO-15810C     FAOM-15810C
FAF-12810B    FAO-16810C     FAOM-16810C
FAF-13810B    FAMF-14810B    FAOMF-14810C
FAF-14810B    FAMF-15810B    FAOMF-15810C
FAF-15810B    FAOF-11810C    FAOMF-16810C
Read the entire Driver Instructions before operating this Transmission.

Before starting a vehicle, always be seated in the driver’s seat, place the Shift Lever to neutral, and disengage the Clutch.

If engine cranks in any gear other than neutral or without the Master Clutch depressed, service your Vehicle Neutral Safety Start Circuit immediately.

Before working on a vehicle or leaving the cab with the engine running, place the Transmission in neutral and set the parking brakes, and block the wheels.

Do not release the parking brake or attempt to select a gear until the air pressure is at the correct level.

When parking the vehicle or leaving the cab, always place the Shift Lever in neutral and set the parking brakes.

Every effort has been made to ensure the accuracy of all information in this brochure. However, Eaton makes no expressed or implied warranty or representation based on the enclosed information. Any errors or omissions may be reported to:

Eaton
Attn: Technical Services
13100 E Michigan Ave
Galesburg, MI 49503
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Tag Information
Transmission Model designation and other Transmission Identification information are stamped on the Transmission Tag. To identify the Transmission Model designation and Serial Number, locate the Tag on the Transmission and then locate the numbers as shown.

All 10-Speed Models

DO NOT REMOVE OR DESTROY THE TRANSMISSION IDENTIFICATION TAG.

Record Transmission Identification data. Have these reference numbers handy when ordering replacement parts or requesting service information.

Transmission Model: ________________________________
Transmission Serial Number: ________________________________
Model Designations

Nomenclature

F A O F - 1 1 8 1 0 B

Fuller Advantage™
Overdrive
Forward Shift Bar Housing

Ratio Set
Forward Speeds
Design Level
This (x) 100 = Nominal Torque Capacity
Shift Lever Positions

Shift Positions

FAO
Shift Lever Positions

Roadranger Valve—A-5010

- Up for HI Range
- Range Lever
- Down for LO Range
General Information

This Eaton Fuller Advantage™ Transmission Model contains ten forward speeds and two reverse speeds. The Gear Shift Lever mechanically engages and disengages five forward gears and one reverse gear in the Transmission Front Section. The Range Lever on the Roadranger Valve allows the operator to control an air shifted auxiliary section to provide a LO and HI “Range”. The five forward gears selected in LO Range are used again in HI Range to provide the 10 progressive forward gear ratios. The one reverse gear selected in LO Range is selected again in HI Range to provide the two reverse gear ratios.

Once the highest shift lever position (5th gear) is obtained in LO Range, the operator preselects the Range Shift Lever for HI Range. The range shift occurs automatically as the Shift Lever is moved from 5th gear position to the 6th gear position.

When downshifting, the operator preselects the Range Lever for LO Range and the range shift occurs automatically during the shift lever movement to the next gear position.

Shift Pattern Diagram

A Shift Pattern Diagram should be in your vehicle. If it has been lost, a replacement may be obtained by writing to:

Eaton
Attn: Technical Services
13100 E Michigan Ave
Galesburg, MI 49503
www.roadranger.com

Please specify shifting controls used and Transmission Model Number when making this request.
Transmission Features

Range Shift
The Range Lever selects LO or HI range. It is used once during an upshift sequence and once during a downshift sequence.

Preselect

IMPORTANT: Always preselect all range shifts when upshifting or downshifting. Preselection requires that the Range Lever is moved to the needed position before starting the shift.

Preselected range shifts are completed automatically as the lever is moved through neutral and into the next gear. Preselecting all range shifts prevents damage to the Transmission and provides for smoother shifts.
General Information

Optional Equipment
For easier and faster gear engagement while the vehicle is standing still, some Eaton Fuller Advantage™ Transmissions may be equipped with a Clutch Brake.

Clutch Brake (Used with Pull-Type Clutches)
The Clutch Brake is applied by fully depressing the Clutch Pedal to the Floor Board. When applied, the brake slows down and can stop the Transmission Front Box gearing. It is a disc-type brake bolted to the front of the Transmission and compressed between the Release Bearing and Input Shaft Bearing Cover.

**IMPORTANT:** Never use the Clutch Brake when upshifting or downshifting. Use only for initial gear engagement when the vehicle is standing still.

**CAUTION:** Failure to properly use the Clutch Brake will lead to premature failure.
Operation

Driving Operation

Driving Tips
- Always use normal double-clutching procedures when making lever shifts.
- Always select an initial starting gear that provides sufficient reduction for the load and terrain.
- Never slam or jerk the Shift Lever to complete gear engagements.
- Never coast with the Shift Lever in the neutral position.
- Never downshift at too high of a road speed.
- Never move the Range Lever with the Shift Lever in neutral while the vehicle is moving.
- Never make a range shift while moving in reverse.
- In most cases, depending on the engine and axle ratios, you can save valuable fuel by operating the vehicle at less than governed RPM while cruising in top gear.
- If the lever shift is completed before the range shift (Transmission in neutral), the Lever must be moved back to neutral for the range to complete.

Double-Clutching Procedure

When ready to make a shift:
1. Depress pedal to disengage Clutch.
2. Move the Shift Lever to neutral.
3. Release pedal to engage Clutch.*
   a. Upshifts—decelerate engine until engine RPM and road speed match.
   b. Downshifts—accelerate engine until engine RPM and road speed match.
4. Quickly depress pedal to disengage Clutch and move Shift Lever to next gear speed position.
5. Release pedal to engage Clutch.

Note: * By engaging the Clutch with the Shift Lever in the neutral position, the operator is able to control the mainshaft gear RPM since it is regulated by engine RPM. This procedure allows the operator to speed up or slow down the mainshaft gearing to properly match the desired gear speed and the output shaft speed.
Operation

Initial Start-Up

WARNING: Before starting a vehicle, always be seated in the driver’s seat, move the Shift Lever to neutral and set the parking brakes.

1. Make sure the Shift Lever is in neutral and the parking brakes are set.
2. Turn on the Key Switch to start the engine. (Or push Start Button if equipped.)
3. Allow the vehicle air pressure to build to the correct level. Refer to your “Operator and Service Manual” supplied with the truck.
4. Apply the Service Brakes.
5. Make sure the Range Lever is down in the LO Range position.

Range Lever MUST be in the LO Range position for LO Range.

6. Depress the Clutch Pedal to the floor.
7. Move the Shift Lever to desired initial gear.
8. Release the parking brakes on the vehicle.
9. Slowly release the Clutch Pedal. When pedal is fully released (clutch is engaged), apply Accelerator.
Upshifting/Downshifting

In the following instructions, it is assumed that the driver is familiar with operating heavy-duty trucks and tractors, and can coordinate the Shift Lever movement and Clutch Pedal to make smooth gear engagements while upshifting or downshifting.

CAUTION: Never move the Range Lever with the Shift Lever in neutral while the vehicle is moving.

Upshifting

1. Move the Shift Lever, double-clutching, to the next desired gear position in LO Range.

Range Shift—LO to HI Range (5th to 6th)…

2. When in last gear position for LO Range and ready for the next upshift, pull up the Range Selector.

3. Move the Shift Lever, double-clutching, to the next higher speed position according to your Shift Pattern. As the Shift Lever passes through neutral, the Transmission will automatically shift from LO Range to HI Range.

Note: If you attempt a range shift to HI and the Transmission remains in neutral with the Shift Lever in gear, the Range Synchronizer Protection Device may be activated. Move the Shift Lever into neutral to allow the range shift to complete, and then move the Shift Lever back into gear.

4. Continue upshifting, double-clutching, to the next desired gear position in HI Range.
Operation

Downshifting

1. Move the Shift Lever, double-clutching, to the next desired gear position in HI Range.

Range Shift from HI Range to LO Range (6th to 5th)...

2. While in 6th and ready for the next downshift, preselect LO Range, push the Range Selector down.

3. Move the Shift Lever, double-clutching, to the next desired gear position in LO Range. As the Shift Lever passes through neutral, the Transmission automatically shifts from HI Range to LO Range.

4. Continue downshifting, double-clutching, to the next desired gear position in LO Range.
Proper Transmission Lubrication
Proper lubrication procedures are the key to a good all-around maintenance program.

Eaton Fuller Advantage™ Transmissions use a Precision Lube Oiling System to lubricate and cool transmission gearing.

All parts will be properly lubricated if these procedures are closely followed:
- Maintain oil level. Inspect regularly.
- Follow the Maintenance Interval Chart.
- Use the correct grade and type of oil.
- Buy from a reputable dealer.

Maintain Proper Oil Level

Sight Glass Oil Level Check

1. Vehicle engine must be stopped and parked on level ground.
2. Wipe any dirt from the Oil Level Sight Glass.
3. Proper oil level is obtained when the oil level is at the middle of the clear plastic bubble. If the oil level is below this level, add the necessary amount of oil at the fill plug.

Manual Oil Level Check

Make sure oil is level with the filler opening. Being able to reach oil with your finger does not mean oil is at proper level. (One inch of oil level is about one gallon of oil.)
For Additional Lubrication Information, See TCMT0021.

If your vehicle has a Transmission Oil Filter, you must change the Filter when fluid or lubricant is changed. Additive and friction modifiers must not be introduced. Never mix engine oils and gear oils in the same Transmission. Do not use EP gear oil or multi-purpose gear oil. The use of lubricants not meeting these requirements will affect warranty coverage. For a list of Eaton Approved Synthetic Lubricants see the Roadranger Lubricant Products Specification Manual (TCMT0021) or call 1-800-826-HELP (4357).

Buy From a Reputable Dealer

For a complete list of approved and reputable dealers see the Eaton Approved Lubricant Suppliers Guide (TCMT0020) or write to:

Eaton
Attn: Technical Services
13100 E Michigan Ave
Galesburg, MI 49503
www.roadranger.com

Transmission Operating Angles

If the Transmission operating angle is more than 12 degrees (or roughly a 21% grade), improper lubrication will occur. The operating angle is the Transmission mounting angle in the chassis plus the percent of upgrade (expressed in degrees).
Operating Temperatures

Operating at temperatures above 250 °F (120 ºC) causes loaded gear tooth temperatures to exceed 350 °F (177 ºC) which will ultimately destroy the heat treatment of the gears. Temperatures above 250 °F (120 ºC) should be regarded as a warning of inadequate cooling.

The following conditions in any combination can cause operating temperatures of over 250 °F:

- Operating consistently at slow speed.
- High ambient temperatures.
- Restricted air flow around Transmission.
- Exhaust system too close to Transmission.
- High horsepower operation.
Preventive Maintenance

Maintenance Checks
The following maintenance items are necessary to prevent costly transmission failures which may not be covered by warranty:

Transmission Oil
- Check Transmission daily for oil leaks. Repair promptly to prevent oil loss and subsequent Transmission failure.
- Check transmission oil level at every engine oil change interval. Add Transmission Oil as necessary.
- Drain and replace transmission oil as recommended by the schedule in Roadranger Lubricant Products Specification Manual (TCMT0021).
Preventive Maintenance

Air System
- Drain moisture from Vehicle Air System daily.
- Listen for air leaks daily, repair promptly.
- If the vehicle is equipped with an Air Dryer, confirm that the Air Dryer System is working properly. Repair as necessary.
- Service the vehicle air compressor as required to prevent oil from entering the Vehicle Air System.

Master Clutch System
- Lubricate Clutch Release Pedal Shaft Bushings at every chassis lubrication interval. There should be one grease fitting on each side of the Transmission Clutch Housing.
- Have the Clutch checked and adjusted if any of the following occurs:
  - Clutch does not disengage completely
  - Clutch Brake does not function
  - Clutch Pedal free-play is less than 1/2”
- When replacing the Clutch, use a high quality, spring damped replacement unit.

Drivetrain
- Inspect the Driveshaft for loose or worn U-joints weekly. Repair promptly to prevent excessive driveline vibration.
- Have the driveline checked by a maintenance facility if unusual noise or vibration is detected.

Overall Inspection
- Inspect the Transmission at the chassis lubrication interval for loose or missing Capscrews and Fasteners. Pay particular attention to the Capscrews that attach the Transmission to the Engine.