

OPERATION AutoShift TRANSMISSION

Driving the AutoShift Transmission

AutoShift is a 3-pedal automated mechanical transmission with eighteen (18) forward gears and four (4) reverse gear ratios. The transmission requires the use of the clutch pedal for starting and stopping the vehicle.

Once the vehicle is in motion all forward gear shifting selection is 'clutch-less' in operation and 'fully automated' when "D" mode is selected.

Procedure - Start Up

1. Ensure "N" mode is selected and the park brake is applied.
2. Depress the clutch pedal and turn the ignition key to the ON position. Wait for the vehicle to 'power up' and a solid 'N' to appear in the gear display.
3. Start the engine and release the clutch pedal to enable AutoShift to register an input shaft speed signal.

NOTE: If AutoShift does not register an input shaft speed signal, it will not shift into the selected starting gear.

Selecting a Starting Gear

1. Select "R" for Reverse, "D" for Drive, "M" for Manual or "L" for Low mode.
2. Depress the clutch pedal. A solid number in the gear display indicates that the gear is fully engaged. If flashing down arrows appear in the gear display, this indicates that the input shaft has not slowed sufficiently to enable start gear selection. Continue to depress the clutch pedal until the down arrows are OFF. If the down arrows are OFF and the gear number continues to flash, partially release the clutch pedal to fully engage the requested start gear.
3. When either "D", "M" or "R" mode is initially selected AutoShift defaults to a pre-programmed start gear and should (due to load and gradient conditions) you require to manually select a different start gear use the "▲/▼" buttons on the RHS of the gear shift control.



Mode Default Start Gear ("▲/▼" selection range)

- D and M: '3' ('1~7')
- R: 'R2' ('R1~R4')

NOTE: AutoShift will then remember this start gear until you either manually select another start gear or 'power down' the vehicle.

Always remember to select the correct start gear ratio for your load and grade condition.

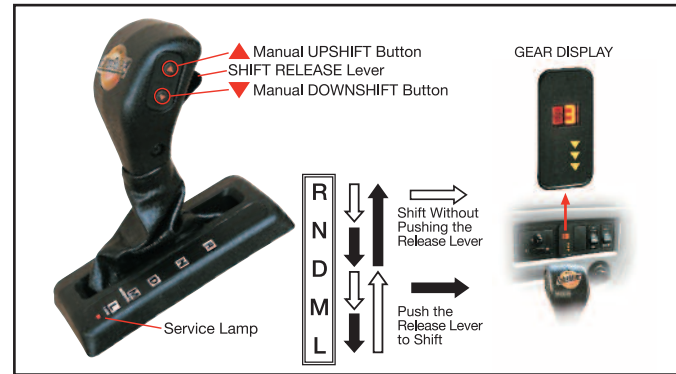
4. Set the vehicle in motion by releasing the park brake whilst progressively engaging the clutch.

AutoShift will automatically upshift and downshift in "D" mode.

Procedure - Shut Down

1. Remember to depress the clutch pedal when stopping the vehicle.
2. With the engine stabilised to idle speed, select "N" and make sure a solid 'N' appears in the gear display.
3. Apply the park brake.
4. Turn the ignition key to the OFF position and release the clutch pedal.

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R Reverse Mode

1. "R" mode can only be engaged when the vehicle is stationary.
2. Selecting "R" from "N" engages the default start gear 'R2'.
3. If required, use the "▲/▼" buttons to select an alternate start gear.

N Neutral Mode

1. Must be selected when starting and stopping the engine.

D Drive Mode

1. "D" mode can be selected while moving or from a stop.
2. When stationary, engages the default start gear '3'.
3. If required, use the "▲/▼" buttons to select an alternate start gear.
4. In motion AutoShift will automatically upshift and downshift.

Gear shifts can also be manually prompted by using the "▲/▼" buttons, if required.

M Manual Mode

1. "M" mode can be selected while moving or from a stop.
 2. Initially, when stationary, engages the default start gear '3'.
 3. In "M" mode the transmission will hold the selected gear.
 4. Once initially selected the "▲/▼" buttons must be used to manually control both the start gear and upshift/downshift gear selection.
- Operating Band "▲/▼" Buttons: Feature a wider band in "M" mode enabling "▲" at lower and "▼" at higher engine RPM settings.
 - Steep Gradient Operation: "M" mode is recommended.

L Low Mode

1. "L" mode can be selected while moving or from a stop.
2. Selecting "L" when stationary engages and maintains '1st' gear.
3. Selecting "L" while in motion will cause the transmission to automatically downshift, with the downshifts being performed at a higher RPM to maximize engine braking. When descending a hill, once the desired gear is engaged it is recommended that "M" mode be selected to hold that gear ratio.

▲ Upshift and ▼ Downshift Buttons

1. "R" Mode: Manually sets the start gear when the vehicle is stationary.
2. "D" Mode: Manually sets the start gear when the vehicle is stationary and manually prompts upshifts/downshifts when in motion.
3. "M" Mode: Manually controls both the start gear when the vehicle is stationary and the upshifts/downshifts when in motion.

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- **Shift Warning:** The shifter will 'beep' if the manually prompted start gear exceeds the selection range or the requested upshift/downshift cannot be completed due to engine RPM or road speed parameters.
- **Skip Shifting:** By repeatedly pressing the "▲/▼" buttons, AutoShift may skip shift up to three (3) gear ratios provided vehicle operation is within its pre-programmed engine RPM and road speed parameters.

CAUTION: It is very important that you DO NOT shut the truck off or stall the engine while the transmission is in gear. This will cause the transmission to lock in gear.

Refer to 'Neutral Mode Release Procedure' to restart the engine.

Procedure - 'N' Neutral Mode Release

If the engine is shut off while in gear, stalls while in gear, or 'L' appears in the gear display after 'power up', perform the following procedure to try to release the transmission back into 'N':

1. Turn the ignition key to the OFF position and let the transmission 'power down' for at least 2 minutes.
2. Release the park brake and hold the vehicle by applying the service brake.
3. Depress the clutch pedal.
4. Make sure the transmission control is in the "N" position.
5. Turn the ignition key to the ON position, while slightly releasing the service brake to let the torque lock-up off the driveline. AutoShift will then attempt to shift into N. If neutral is achieved, 'N' will appear in the gear display and the truck will start.

NOTE: If the above procedure does not work, also refer to 'Faults and Fault Code Retrieval/Clearing'.

AUTOSHIFT		Model: RTL0-18918-AS3				
Gear Display	Gear Position	Range	Splitter			
			Low	High		
1	2	Low	12.19	10.39		
3	4		8.51	7.26		
5	6		6.05	5.16		
7	8		4.38	3.74		
9	10	High	3.20	2.73		
11	12		2.28	1.94		
13	14		1.62	1.38		
15	16		1.17	1.00		
17	18		0.86	0.73		
R1	R2		Rev	Low	13.09	11.17
R3	R4			High	3.50	2.99

DRIVING TIPS AutoShift TRANSMISSION

The clutch is only needed at engine start up, when selecting a start gear, and when stopping. "D", "M" and "L" can be selected at any speed.

When AutoShift is downshifting in "D" it will not complete the shifts below a preset gear (normally 9th gear in an 18 speed transmission) and the vehicle will 'coast down' until the driver either applies the throttle or depresses the clutch pedal.

Manual Mode "M" should be used whenever you require to hold a gear or control the shifts, such as manoeuvring at low speeds, operating on gradients or in poor traction situations.

Low Mode "L" can be used anytime you want the transmission to automatically downshift to maximize the engine brake such as descending a long grade, or when coming to a stop. If left in "L" mode the transmission will automatically downshift through each gear ratio to 1st gear.

AutoShift is programmed to sometimes activate the engine brake to make upshifts faster. This can happen even if the engine brake control is in the OFF position.

OPERATION CRUISE CONTROL

- Cruise control can only be set between 60-100 km/h and when activated, AutoShift, whilst operating between 16th-18th gear ratios, will automatically interrupt the cruise control while performing the shift and re-engage the cruise control after the shift is completed.
- When driving in auto cruise, cruise control is cancelled when;
 - a) AutoShift engages a gear ratio lower than 16th or by the momentary operation of the
 - b) engine brake, clutch pedal or brake pedal.
- Once cancelled, it requires the driver to manually reactivate the cruise control by either pressing the RESUME switch if the original speed is required or the SET switch once the desired vehicle cruise speed is attained.

CAUTION: WHEN CLIMBING HILLS IT IS RECOMMENDED THAT THE DRIVER OVERRIDE THE CRUISE CONTROL BY APPLYING PRESSURE TO THE ACCELERATOR PEDAL.

Faults and Fault Code Retrieval/Clearing

If the down arrows continue to flash after selecting a start gear, even after pushing the clutch pedal all the way to the floor and waiting several seconds, it means that the input shaft has not slowed sufficiently to engage start gear. This could be caused by a maladjusted clutch, a faulty clutch, clutch linkage, or faulty countershaft brake. Contact your UD Trucks Dealer.

If AutoShift has detected a fault in the system an 'F' code will appear in the gear display. Note and record the conditions at which the fault occurred (hot/cold, wet/dry, on a grade/flat terrain etc.), this action will assist your UD Trucks dealer in diagnosing the reason for the fault code.

To clear the fault code reset the system by turning the ignition key OFF, allow the transmission to 'power down' for at least 2 minutes, then turn the key ON.

Faults and Fault Code Retrieval/Clearing contd:

Should the 'F' code remain displayed, the power supply to AutoShift may be interrupted and can be reinstated by the following procedure;

- Remove the electrical relay box cover, located in front of the battery carrier.
- Reset the AutoShift circuit breaker by pushing in the reset button.
- Refit the electrical relay box cover.



NOTE: If the above procedure does not work, contact your UD Trucks dealer for assistance (ph. 1300 289 283). Your UD Trucks dealer may require information regarding AutoShift fault codes, use the following procedure to retrieve/clear these codes.

Retrieving Fault Codes

1. Place the shift lever in "N".
2. Set the park brake.
3. Turn the ignition key ON but **do not start the engine**. If the engine is already running, you may still retrieve codes, however, do not engage the starter if the engine stalls.
4. **To Retrieve Active Codes:** Start with the key in the ON position. Turn the key OFF and ON two (2) times within five (5) seconds ending with the key in the ON position. After five seconds, the gear display begins flashing two-digit fault codes. If there are no active codes the gear display will show code '25'.
If there are inactive codes 'PD' (Product Diagnostic mode) will be displayed. The vehicle will not start in PD mode. **To restart the vehicle you must turn the key OFF and wait for the transmission to 'power down' to exit PD mode before restarting.**
5. **To Retrieve Inactive Codes:** Start with the key in the ON position. Turn the key OFF and ON four (4) times within five (5) seconds ending with the key in the ON position. After five seconds, the gear display begins flashing two-digit fault codes. If no codes are active, the gear display will flash code '25' (no codes).
6. Two-digit fault codes will be displayed in the gear display. Record the codes. A one or two second pause separates each stored code, and the sequence automatically repeats after all codes have been flashed.



Clearing Fault Codes

1. Start with the key in the ON position. Turn the key OFF and ON six (6) times within five (5) seconds, ending with the key in the ON position.
Note: If the codes have been successfully cleared, the service lamp will come on and stay on for five seconds.
2. Turn the key OFF and allow the transmission to 'power down' for at least 2 minutes prior to restarting the engine.



Driver Instructions GW470 Models with Eaton AutoShift 18-Speed Transmission



UD Trucks P/No. AUS000163
120 Hume Highway May-09
CHULLORA NSW 2190
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ABN 27 000 761 259

