

## TEN SPEED TRANSMISSION

- Aluminum Case
- Triple Countershaft
- Reliable and Durable
- On/Off Highway Applications
- Versatile Power Take-Off Capabilities
- Air Shifted Multi-Speed Reverse

An excellent choice for general vocational use, the versatile T310M features an overall ratio of 23.77:1. The 17.35:1 low ratio gives it superior low speed maneuverability while the .73:1 overdrive ratio in top gear allows it to easily cruise at highway speeds to and from the job site. The 40% steps make it easy to shift and compatible with the Mack Econodyne as well as the Maxidyne



engines. The T310M also has the Mack exclusive shiftable multi-speed reverse as well as both fixed and speed dependent PTO options. If you need an optional ratio rear PTO use the T-310ME.

## FEATURES

### • Gearing

All the T300 gearing uses a spur type design for maximum efficiency and minimum friction. Gear blanks are designed with the aid of computers to optimize the balance between weight and strength. Teeth are cut to a precise geometry to insure quiet, uniform rotating motion and then carburized to assure the intended loads can be carried without breaking or wearing. In top gears, dovetail clutch teeth maintain engagement under varying loads.

Top gear in all T300 transmissions is an overdrive. The overdrive allows required highway speeds to be met at the recommended engine speed with lower driveline torques. Because driveline torques are lower, lighter, less expensive shafts and slower, more durable rear axles carriers can be specified.

### • Lubrication

Splash lubrication is standard for the T300. Gears and bearings receive lubrication from the lower countershaft dipping and spinning in oil. For extreme operating conditions or unusually high loads, a pump can be specified to assure lubricant flow to critical areas. Magnetic drain plugs are also standard as is a main case magnetic chip trap to remove metallic contaminants from circulation.

### • Case

The T300 case is a permanent mold, high strength, aluminum alloy casting. An SAE #1 bell housing is cast integral with the case to form a one-piece, light weight component with maximum rigidity and no misalignment. Within the case, iron bearing retainers support countershaft and mainshaft bearings to provide rigidity and fit integrity throughout the life of the transmission.

Because of the excellent heat transfer properties of aluminum, T300s naturally run cool and have less requirement for auxiliary transmission oil coolers. For those applications which do require additional cooling, oil-to-air and oil-to-water systems are available.

### • Countershafts

The hallmark of the T300 is its triple countershaft design. Spreading the load over three shafts rather than just two lowers the stress on components and increases life. The layout of the three shafts gives the T300 a compact design and results in shorter transmission which improves driveline angularity.

### • Countershafts (Continued)

The countershafts are forged alloy steel with both integral and pressed-on gears. Tapered roller bearings, which have the highest load carrying capacity in the smallest envelope, insure a smooth, long operating life.

### • Improved Shift Quality

All of the T300 transmissions are based on an 'H' shift pattern and feature improvements to make the operation easier and more comfortable. The shift rail profile and springs have been redesigned to smooth transitions in and out of neutral with each up and down shift.

Additionally, fine pitch sliding clutches permit quicker, smoother shifts as well as improved durability. Shift levers have also been revised for a tighter, more ergonomic shift pattern and isolated to reduce vibration.

Range shifts are executed after toggling a selector on the front of the shift knob.

### • Shiftable Multi-Speed Reverse

The Mack exclusive shiftable multispeed reverse is invaluable in applications operating in reverse for extended time periods or over long distances. After selecting 'reverse' via a rocker-type air switch on the knob, operators can follow the same shift pattern as the forward gears and progressively shift through different reverse speeds. The resulting flexibility and control reduces cycle time and gives the T-310M wide ranging versatility in reverse.

### • Power Take-Off Capabilities

As the leader in vocational applications, all the T300 transmissions offer as standard main case, speed dependent SAE 6 and 8 bolt PTO mounts on the right and left sides, respectively. Rear mounts on any of the three countershafts are also available.

Additionally, the T-310M offers gear dependent 6 and 8 bolt mounts on the right and left side of the compound case respectively. An optional, neutralizing range air cylinder permits operation of these multi-speed PTOs while the vehicle is stationary.

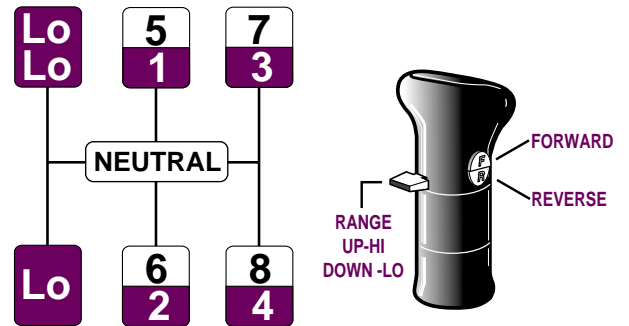


# T-310M MAXITORQUE

• TYPE	10 SPEED OVERDRIVE, TRIPLE COUNTERSHAFT
• LENGTH*	36.44" [925 mm]
• WEIGHT (DRY)	775 LB [352 kg]
• OIL CAPACITY	30 PINTS [14.20 l]
• TORQUE RATING	1800 LB. FT. [2 400 N*m]
• NUMBER OF SPEEDS	
FORWARD	TEN
REVERSE (AIR SHIFTED)	SIX
OVERALL TRANSMISSION RANGE	23.77:1
• CASE, BELL HOUSING	
MATERIAL	ONE-PIECE HEAT-TREATED ALUMINUM
BELL HOUSING TYPE	SAE#1
• TYPE OF GEARS	SPUR
• CONTROL	SHIFT LEVER WITH AIR SHIFT RANGE SELECTOR
• LUBRICATION	SPLASH
• DRAIN PLUG	MAGNETIC
• POWER TAKE-OFF OPENINGS	
LEFT SIDE-STANDARD SAE 8 BOLT	70% OF ENGINE RPM
RIGHT SIDE-STANDARD SAE 6 BOLT	70% OF ENGINE RPM
REAR PTO DRIVE	70% OF ENGINE RPM

\* From Bell Housing mounting flange to forward seating surface of companion flange or yoke.

## Shift Pattern and Shift Lever



## Gear Ratios

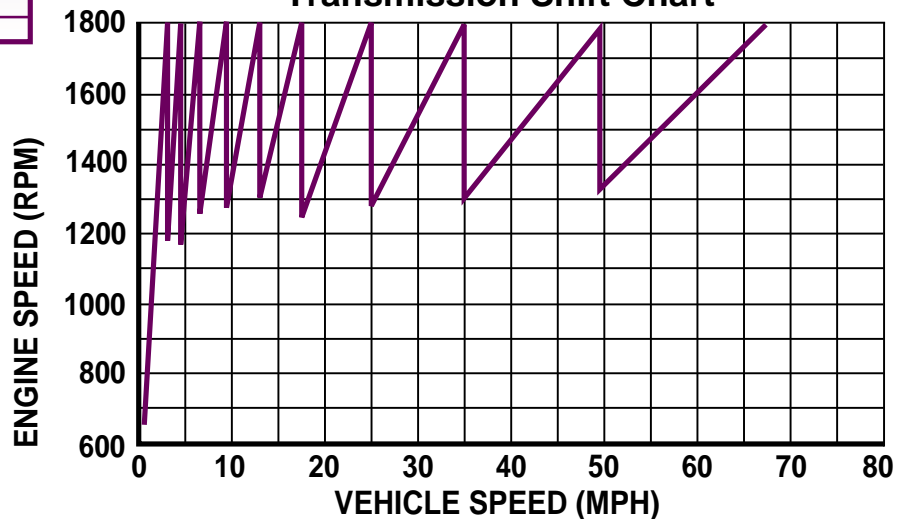
GEAR	RANGE SELECTOR	LEVER POSITION	RATIO	% STEP
1st	Lo	LoLo	17.35	
2nd	Lo	Lo	11.40	52
3rd	Lo	1st	7.45	53
4th	Lo	2nd	5.33	40
5th	Lo	3rd	3.83	39
6th	Lo	4th	2.78	38
7th	Hi	5h	1.94	43
8th	Hi	6th	1.39	40
9th	Hi	7th	1.00	39
10th	Hi	8th	.73	37
Rev 1	Lo	LoLo	15.22	
Rev 2	Lo	Lo	10.00	
Rev 3	Lo	1st	6.54	
Rev 4	Lo	2nd	4.67	
Rev 5	Lo	3rd	3.37	
Rev 6	Lo	4th	2.44	

## Power Take-Off Compound Case

Left Side — Standard SAE 8 Bolt  
Right Side — Standard SAE 6 Bolt

SPEED, % OF ENGINE (RPM) (Gear Dependent Selection)	
LoLo	-13.5%
Lo	-20.6%
1st	-31.5%
2nd	-44.1%
3rd	-61.2%
4th	-84.4%
LoLo Rev	15.4%
Lo Rev	23.5%
1st Rev	35.9%
2nd Rev	50.2%
3rd Rev	69.8%
4th Rev	96.2%

## Transmission Shift Chart



T-310M w/1800 RPM ENGINE, REAR RATIO 4.42 AND 11R22.5 TIRES (BASED ON 498 TIRE REVS PER MILE)

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