

NINE SPEED TRANSMISSION

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

The Mack 9-speed is designed with matching steps averaging 60% to allow full use of the "high torque rise" of the Maxidyne® engine. The first gear is 25.21:1 and the high gear is .71:1 overdrive, providing an overall transmission range of 35.40:1. This transmission is excellent for applications requiring the simplicity of a 9-speed in a lightweight, reliable, durable package.



FEATURES

• Gearing

All the TM300 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 TM300 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 speced.

• Lubrication

Splash lubrication is standard for the TM300. 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 speced 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 TM300 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, TM300's 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 TM300 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

• Countershafts (Continued)

TM300 a compact design and results in shorter transmission which improves driveline angularity.

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 TM300 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-308M wide ranging versatility in reverse.

• Power Take-Off Capabilities

As the leader in vocational applications, all the TM300 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.

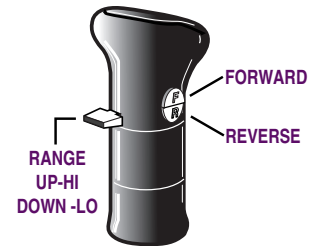
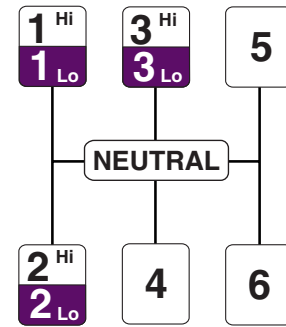
Additionally, the TM-309M offers gear dependent 6 and 8 bolt mounts on the right and left side of the compound case respectively. An optional, neutralizing range air cylinder permits operation of these multi-speed PTOs while the vehicle is stationary.



• TYPE	9 SPEED OVERDRIVE, TRIPLE COUNTERSHAFT
• LENGTH*	36.40" [925 mm]
• WEIGHT (DRY)	745 LB [339 kg]
• OIL CAPACITY	30 PINTS [14.2 l]
• TORQUE RATING	1700 LB. FT. [2 305 N•m]
• NUMBER OF SPEEDS	
FORWARD	NINE
REVERSE (AIR SHIFTED)	SIX
OVERALL TRANSMISSION RANGE	35.40:1
• 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—STANDARD SAE 6 BOLT	70% OF ENGINE RPM
REAR MOUNT 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



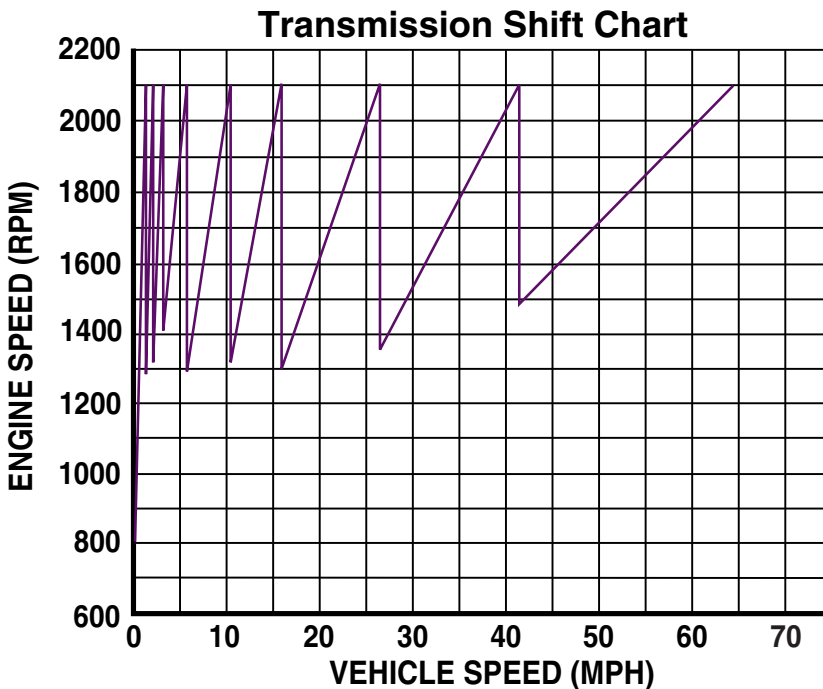
Gear Ratios

GEAR	RANGE SELECTOR	LEVER POSITION	RATIO	% STEP
1st	Lo	1st Lo	25.21	
2nd	Lo	2nd Lo	15.52	62
3rd	Lo	3rd Lo	9.73	60
4th	Hi	1st Hi	6.57	48
5th	Hi	2nd Hi	4.05	62
6th	Hi	3rd Hi	2.54	59
7th	Hi	4th	1.57	62
8th	Hi	5th	1.00	57
9th	Hi	6th	0.71	41
Rev 1	Lo	1st	22.12	
Rev 2	Lo	2nd	13.62	
Rev 3	Lo	3rd	8.54	
Rev 4	Lo	4th	5.30	
Rev 5	Lo	5th	3.36	
Rev 6	Lo	6th	2.40	

Power Take-Off Compound Case

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

SPEED, % OF ENGINE (RPM) (Gear Dependent Selection)	
1st	-9.3%
2nd	-15.1%
3rd	-24.1%
4th	-38.9%
5th	-61.2%
6th	-86.0%
1st Rev	10.6%
2nd Rev	17.2%
3rd Rev	27.5%
4th Rev	44.3%
5th Rev	69.8%
6th Rev.	98.0%



TM-309M w/2100 RPM ENGINE, REAR RATIO 5.55 AND 11R22.5 TIRES
(BASED ON 498 TIRE REVS PER MILE)