



**EIGHTEEN-SPEED  
QUADRUPLEX**

## TRANSMISSION

**TRQ 7220** overgear  
**\*TRQL 7220** overgear

\*Weight-Saver Aluminum Design

**M**ACK designed and manufactured — These Quadruplex transmissions provide, in a single unit, eighteen different forward speeds. The weight saver TRQL version has an aluminum main case.

The gear arrangement is a five-speed primary gear set with overgear fifth and a four-speed compound. In the compound is a direct, a high splitter, a low splitter and the ratio to give the low series of speeds. Thus from each of the five basic forward speeds and the reverse, four final changes are obtainable. The main and compound sections are a unified assembly. Shifting is by two levers.

These transmissions provide ratios comparable to a five-speed transmission and a separate four-speed auxiliary. With the TRQ 7220 or TRQL 7220, the chassis can be geared for fast road travel and have the shifts suitable for highway operation and also have the low series of ratios that provide total gear ratios that are numerically ample for heavy pulls.

Compared to the separate auxiliary combination, the TRQ 7220 and TRQL 7220 do not necessitate as long a wheelbase.

Tower type power take-offs are not applicable to the TRQ 7220 or TRQL 7220. The necessity for a tower type power take-off dictates usage of the separate auxiliary.

This transmission is fully sized for duty behind the higher powered engines of high-gross vehicles.



*Gear set showing sturdy gears and shafts.*



*Transmission showing compact design.*

**MACK TRUCKS, INC. • Allentown, Pa.**

Illustrations are not necessarily a representation of standard specifications with respect to all details.

## TRANSMISSION MODEL TRQ 7220 • TRQL 7220

<b>Gearset, Model</b> .....	TRQ 7220 & TRQL 7220
<b>Make</b> .....	Mack
<b>Type</b> .....	Two-lever Quadruplex, selective, shift, constant mesh
<b>Number of speeds,</b>	
Forward .....	Eighteen
Reverse .....	Four
<b>Case, material</b>   TRQ 7220 .....	Iron
TRQL 7220 .....	Aluminum main case; iron compound case
<b>Lubrication</b> .....	Splash to gear faces
<b>Face of gears and type:</b>	
<b>Main transmission</b>	
Fifth .....	1-15/16" Helical
Fourth .....	1-13/16" Helical
Third .....	1-5/8" Helical
Second .....	1-5/8" Helical
First .....	1-5/8" Helical
Reverse .....	1-1/16" Spur
Control .....	Hand lever
<b>Compound transmission:</b>	
High .....	1-7/8" Helical
High splitter .....	1-23/32" Helical
Low Splitter .....	1-3/4" Helical
Low .....	2-1/4" Helical
Control .....	Hand lever
<b>Bearings:</b>	
<b>Main transmission:</b>	
Main drive pinion .....	Radial, single-row ball
Spigot .....	Cylindrical roller, single-row
Splineshaft, rear .....	Tapered roller, double-row
Countershaft, front .....	Cylindrical roller, single-row
rear .....	Tapered roller, single-row
Reverse idler .....	Cylindrical roller, single-row (2)
<b>Compound transmission:</b>	
Spigot .....	Cylindrical roller, single-row
Splineshaft, rear .....	Tapered roller, double-row
Countershaft, front and rear .....	Tapered roller, single-row (2)
<b>Main splineshaft:</b>	
Diameter over maximum spline .....	3"
Diameter at root of minimum spline .....	2"
<b>Compound splineshaft:</b>	
Diameter over maximum spline .....	3"
Diameter at root of minimum spline .....	2"
<b>Main countershaft:</b>	
Minimum diameter .....	2-3/8"
<b>Compound countershaft:</b>	
Minimum diameter .....	3"
<b>Oil capacity</b> .....	36 pints

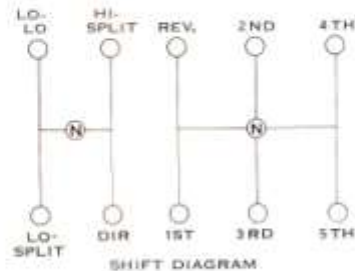
### RATIOS

Shift	High Split	Main	Low Split	Low Low
5th	0.70	0.84	1.01	2.13
4th	0.84	1.00	1.20	2.53
3rd	1.47	1.76	2.10	4.44
2nd	2.61	3.13	3.74	7.92
1st	4.55	5.45	6.52	13.80
Rev.	3.91	4.69	5.60	11.86

### POWER-TAKE-OFF OPENINGS

**STANDARD**—Main Case, right and left side, SAE opening, special depth.

**OPTIONAL**—Compound Case, right and left side, SAE opening, for high capacity vendor PTO (*In addition to Standard*).



# TRANSMISSIONS TRD 722 • \*TRDL 722 • TRD 7220 • \*TRDL 7220

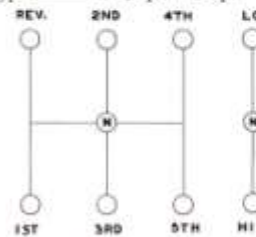
\*Weight-Saver Aluminum Design

<b>Gearset, Models</b> .....	TRD 722	TRD 7220
<b>Type</b> .....	TRDL 722	TRDL 7220
<b>Number of speeds,</b>	Direct	Overgear
<b>Forward</b> .....	Ten	Nine
<b>Reverse</b> .....	Two	Two
<b>Direct drive in</b> .....	Fifth	Fourth
<b>Face of gears and type:</b>		
Main transmission:		
Fifth (Countershaft drive gear-722) .....	1-13/16" Helical	1-15/16" Helical
Fourth (Countershaft drive gear-7220) .....	1-5/8" Helical	1-13/16" Helical
Third .....	1-5/8" Helical	1-5/8" Helical
Second .....	1-5/8" Helical	1-5/8" Helical
First .....	1-5/8" Helical	1-5/8" Helical
Reverse .....	1-1/16" Helical	1-1/16" Helical
Control .....	Hand lever	Hand lever
Compound transmission:		
High range .....	1-25/32" Helical	1-25/32" Helical
Low range .....	2-1/4" Helical	2-1/4" Helical
Control .....	Hand lever	Hand lever
<b>Bearings:</b>		
Main transmission:		
Main drive pinion .....	Radial, single-row ball	
Spigot .....	Cylindrical roller, single-row	
Splineshaft, rear .....	Tapered roller, double-row	
Countershaft, front .....	Cylindrical roller, single-row	
rear .....	Tapered roller, single-row	
Reverse idler .....	Cylindrical roller, single-row (2)	
Compound transmission:		
Spigot .....	Cylindrical roller, single-row	
Splineshaft, rear .....	Tapered roller, double-row	
Countershaft, front & rear .....	Tapered roller, single-row (2)	
<b>Main splineshaft:</b>		
Diameter over maximum spline .....	3"	3"
Diameter at root of minimum spline .....	2"	2"
<b>Compound splineshaft:</b>		
Diameter over spline .....	3-13/32"	3-13/32"
Diameter at root of spline .....	2"	2"
<b>Main countershaft:</b>		
Minimum diameter .....	2-5/8"	2-5/8"
<b>Compound countershaft:</b>		
Minimum diameter .....	3"	3"
<b>Shift type:</b>		
First, second and third .....	Clutch, internal	Clutch, internal
Fourth and fifth .....	Clutch, external	Clutch, external
Reverse .....	Sliding gear	Sliding gear
Compound .....	Clutch, external	Clutch, external
<b>Lubrication</b> .....		
	Splash and pump feed through rifle-drilled passages in splineshaft to free-running intermediate gears.	
<b>Oil capacity</b> .....	28 pints	28 pints

Speed	Direct	Overgear
Fifth — High	1.00	0.78
Low	1.27	1.02
Fourth — High	1.62	1.00
Low	2.06	1.31
Third — High	2.60	1.76
Low	3.31	2.29
Second — High	4.32	3.13
Low	5.48	4.09
First — High	7.53	5.45
Low	9.56	7.12
Reverse — High	7.53	5.45
Low	9.56	7.12

## POWER-TAKE-OFF OPENINGS

Number — Two, right and left side  
Type — SAE, special depth



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**8000 SERIES**

**3**

**SPEED**

**AUXILIARY**

**TRANSMISSION**

**SPECIFICATIONS . . .**

**8000 SERIES . . .**

**3 SPEED**

**AUXILIARY . . .**

**REFERENCE SHEET NO. 2401-2**

**THREE SPEEDS FORWARD  
NO REVERSE**

**USED IN CONJUNCTION WITH  
STANDARD FOUR OR FIVE  
SPEED TRANSMISSIONS**

**STANDARD OR SIDE CONTROL**

**CAST IRON**

STANDARD CONTROL  
ASSEMBLY 001961

SIDE CONTROL  
ASSEMBLY 300414

**MODEL 8031-C**

**MODEL 8031-K**

**MODEL 8031-P**

**MODEL 8031-Q**

**CAST ALUMINUM**

STANDARD CONTROL  
ASSEMBLY 002028

SIDE CONTROL  
ASSEMBLY 300415

**MODEL 8035-C**

**MODEL 8035-K**

**MODEL 8035-P**

**MODEL 8035-Q**

**DANA**

**Spicer**

PRODUCT OF

**DANA CORPORATION • SPICER DIVISION**

**TOLEDO, OHIO 43601**

PRINTED IN U. S. A. MARCH, 1964

500  
70

## 8000 SERIES 3 SPEED AUXILIARY TRANSMISSIONS

### TORQUE RATING

Where definite torque rating of this transmission is desired, our Engineers will submit this information upon receipt of complete data as required on our standard specification sheet.

(See back of Reference Book for Specification Sheet)

### COMPANION FLANGES— END YOKES

Can be furnished and assembled by Dana Corporation for use with Spicer joints. Customer should specify on Transmission Order which companion flange or end yoke is required.

#### COMPANION FLANGES

Joint Series	Comp. Flange Part No.	Overall Length	Remarks	Type Flange	Length Hole
1600	5-1-2541	3 $\frac{1}{4}$ "	Std.	Circ.	3 $\frac{1}{4}$ "
1650-1700	6-1-1731	3 $\frac{1}{4}$ "	Std.	Circ.	3 $\frac{1}{4}$ "
1600	5-1-401	4 $\frac{1}{2}$ "	A.C.	Circ.	3 $\frac{1}{4}$ "
1650-1700	6-1-1511	4 $\frac{1}{2}$ "	A.C.	Circ.	3 $\frac{1}{4}$ "
1800	6 $\frac{1}{2}$ -1-481	3 $\frac{1}{4}$ "	Std.	Circ.	3 $\frac{1}{4}$ "
1800	6 $\frac{1}{2}$ -1-301	4 $\frac{1}{4}$ "	A.C.	Circ.	3 $\frac{1}{4}$ "

#### END YOKES

Joint Series	End Yoke Part No.	Overall Length	Length Hole	Operating Angle
1650	5-4-2761	5 $\frac{1}{2}$ "	3 $\frac{1}{4}$ "	22 $\frac{1}{2}$ "
1700	6-4-3031	5 $\frac{1}{2}$ "	3 $\frac{1}{4}$ "	22"

### WEIGHT

Iron Assembly . . . . . 425 lbs.  
Aluminum Assembly . . . . . 345 lbs.

### SPEEDOMETER DRIVE

Provision is made in rear bearing cap for installation of speedometer gears.

Cap can be assembled 180° from position shown.

### POWER TOWER

A Top Mounted Power Take-Off Assembly 001974 or 310991X which will transmit full torque of motor (with forward transmission in direct drive) can be assembled to this transmission by removing shifter housing assembly.

### MOUNTING

Front . . . . . Use trunnion 70-410-2  
Rear . . . . . Two vertical  $\frac{1}{4}$ " bolt holes

### OIL CAPACITY

12 Pinta

### CONTROL

Control Assembly 300136 may be used.

### NOTE

In writing for installations it is important that the customer fill out a Standard Specification Sheet. (See back of Reference Book)

