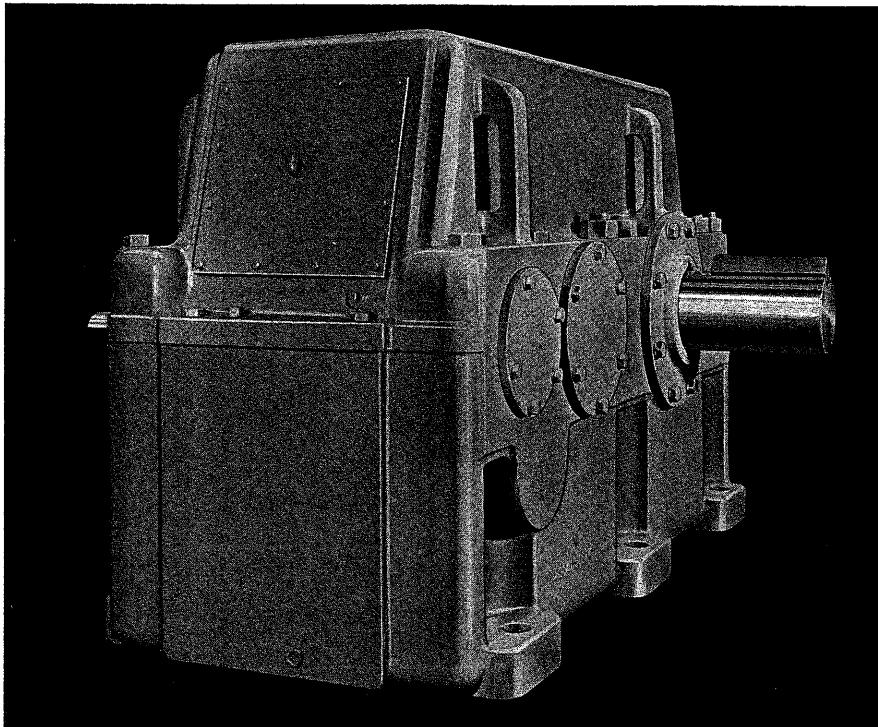


# Type TDS

## Parallel Shaft Speed Reducers



Type TDS Parallel Shaft Speed Reducers are available with torque ratings up to 6,200,000 inch-pounds and standard gear ratios up to 357:1. TDS units incorporate precision helical gearing (in single, double, triple, and quadruple reductions) enclosed in heavy duty cast iron or steel fabricated housings. Standard features include tapered roller bearings, large inspection plates, a positive splash system for lubrication, extra wide bearing spans and center bearing supports; all to provide a rugged reliable unit with proven dependability in virtually every industrial application. Nuttall Gear Corporation can supply TDS units separately or in completely engineered packages including motor, reducer, and other accessories mounted on a bedplate.

For over 100 years Nuttall Gear has provided cost effective solutions to application problems in the broad spectrum of industrial machinery.

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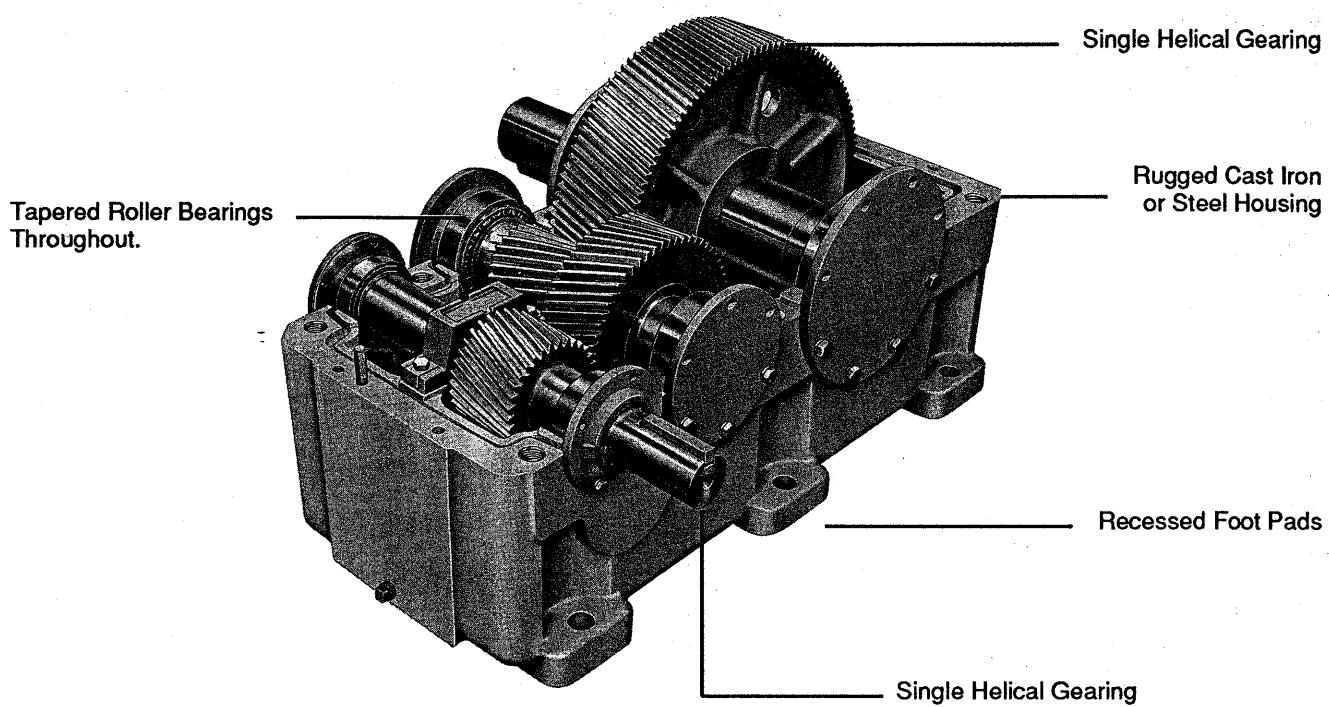
As a charter member of the American Gear Manufacturers Association (AGMA), Nuttall Gear has been at the forefront of gear design and manufacturing. To the basic standards established by AGMA, Nuttall research and field experience have added many advanced concepts to increase efficiency and operational reliability, and to simplify adaptation to the many special application requirements of specific industries.



# Type TDS

## Parallel Shaft Speed Reducers

### Construction Features



**Single Helical Gears** hobbed and shaved to AGMA Quality 10 using through hardened high alloy steel for strength and shock resistance, to provide a long trouble free operating life.

**Inspection Plate** with attached breather permits easy inspection for preventative maintenance check-ups.

**Oil Dip Stick** provides a foolproof and time-saving method of accurately checking and maintaining the proper oil level.

**Recessed Foot Pads** reduce floor space requirements. Adequate clearance is provided in the housing recess for standard tools.

**Splash Lubricated** with oil troughs. Wipers and oil dams are also included when required.

**Lifting Lugs** can be used to lift the entire reducer safely and easily.

**Cast-Iron Housing** corrosion resistant, provides rigid alignment of internal components. The flat top allows for mounting of motors and auxiliary equipment. **TDS Reducers** are also available in fabricated steel housings in standard and special configurations.

**Shafts** are made of high alloy 4150 ANSI steel. Input and output shafts are fitted with **double lip seals** to keep oil in, and contaminants out.

# Type TDS

## Parallel Shaft Speed Reducers

### Reducer Selection

Section 310

Page 3

Selection

#### REQUIRED APPLICATION DATA

- A. Application Type
- B. Hours of operation per day
- C. Application Horsepower (or torque) required
- D. Determine AGMA minimum application factor from tables on Section 310, pages 5 -7
- E. Prime mover, type and speed
- F. Gear ratio or desired output speed
- G. Overhung load requirements, if any
- H. Modifications or accessories
- I. Mounting position

#### SELECTION PROCEDURE

##### Procedure:

A. Using the proper AGMA application factor, determine the minimum equivalent horsepower or torque capacity required. (Equivalent power = application power x application factor)

B. The rating tables are grouped by reduction, and sub-divided by input speeds of 1750, 1170, 870, 720, and 580 RPM. Locate the appropriate pages and find the desired gear ratio or output speed. Read across the page until you have found the horsepower or torque rating that equals or exceeds the equivalent power required. The column heading will indicate the selected unit. The column headings define the units selected. the first letter, S, D, T, or Q indicates the number of reductions, Single, Double, Triple or Quadruple and the number is the approximate center distance of the low speed gears (A "W" Prefix indicates a steel housing).

C. Compare the thermal horsepower rating with the actual prime mover horsepower rating (not the equivalent horsepower rating - see Section 310, page 4 "Thermal Ratings"). If the rating equals or exceeds the prime mover rating then the selection is complete. If the prime mover rating is larger than the thermal capacity, consider the fan cooled unit, an oil-to-water, or oil-to-air heat exchanger, or, in some cases where auxiliary cooling cannot be used, select a larger unit that will meet the requirements.

##### Example:

A bucket elevator operates 24 hours per day. The prime mover is an electric motor, 75 hp, 1750 rpm. desired output speed is 100 rpm.

##### Solution:

1. Application factor is 1.5 (Section 310, page 5)
2. Equivalent horsepower is 112.5 ( $75 \times 1.5$ )
3. Required ratio is 17.5. (17.09 nominal)  
 $1750 \text{ rpm} / 100 \text{ rpm} = 17.5$
4. Look in the double reduction section for an input speed of 1750 (Section 310, page 18).
5. Read across the 17.09/100 RPM line until you reach the bold figure 144 which is greater than the equivalent HP.
6. By reading the top of the column the type designation D9 is found. Reading down the column, we find the basic unit has a thermal capacity of 68, which is less than the 75 horsepower prime mover; however, by going to the fan-cooled unit, we have a thermal capacity of 170, which is more than adequate.
7. If auxiliary cooling is not acceptable, then moving to the next larger unit, D11, would provide the thermal capacity required.
8. If the exact output speed is critical, look at the table at the bottom of the page to determine the exact gear ratio for the unit selected. That ratio for D9 would be 17.893:1 and the D11 is 17.698:1, both within 2% of the required 17.5:1 ratio. When required, Nuttall Gear can produce special gear ratios to meet your specifications.

#### MODIFICATION AND ACCESSORIES

Among the many options available are:

- A. Complete packaged drive systems with motors, couplings, reducers and accessories mounted and "ready to run" without further assembly of components.
- B. Motor mounting with bedplates, scoops, or piggy-back provisions.
- C. Special enclosures, steel fabricated housings, sound dampening shrouds, protection from corrosive or abrasive ambient conditions as well as appropriate seals for

applications requiring special attention, such as taconite or paper mill duty.

- D. Backstops, brakes, clutches, and special couplings can all be supplied and mounted by Nuttall Gear.
- E. Temperature detectors to monitor bearing and/or oil sump temperatures, as well as heaters to be used in low temperature locations.
- F. Special exact gear ratios.
- G. Special shafts.

# Type TDS

## Parallel Shaft Speed Reducers

### Application

#### APPLICATION FACTORS

To provide long life and reliability for any given application, a suitable application factor must be applied to the load requirements.

The required equivalent horsepower or equivalent torque necessary to select a reducer from the rating tables is found by multiplying the load horsepower or torque by an application factor.

The gear drive selected will require a rating equal to, or in excess of, the equivalent horsepower or equivalent torque.

Pages 5 through 7, following, list the **minimum recommended** application factors for a broad spectrum of applications. These factors were developed by The American Gear Manufacturers Association, and were derived from data collected from countless installations over many years.

It is not possible to list all possible applications requiring gear drives, but a sufficient variety of types is covered to serve as a guide for other applications.

It should be noted that the values given in the tables are based on field experience of average operating conditions for each class of equipment and may not be correct in all cases, due to unique operating conditions or design of the driving or driven equipment.

Proper application factors can be determined if full operational conditions are known. It is necessary to have this data before a final gear drive selection is made. Any drive for use under abnormal conditions must be referred to Nuttall Gear.

The table also indicates the application factors for duration of service. If a single or multi-cylinder engine is used as the prime mover, the factors must be adjusted further. For a single cylinder engine, add .50 to the appropriate factor, if a multi-cylinder engine is used, then only a .25 addition is made.

#### THERMAL CAPACITY

The thermal horsepower rating represents the **actual** horsepower that a gear drive will transmit continually for more than three (3) hours without overheating. Maximum sump temperature is not to exceed 200°F.

It is not necessary to check thermal horsepower ratings when the continuous operating period is three (3) hours or less, and the shutdown time equals or exceeds the running time. If, however, the running time exceeds the shutdown time, selection must be made on the basis of an adequate thermal rating. It is important that the thermal horsepower be checked prior to application, for if the unit develops heat at a faster rate than can be dissipated, premature failure may occur. Note: **application factors do not apply to thermal ratings.** Only the **actual** transmitted horsepower is subject to thermal horsepower consideration.

In cases where transmitted horsepower exceeds the thermal rating horsepower, additional cooling by means of shaft mounted fans or an oil to water heat exchanger will be necessary at added cost. It should be noted that fan cooling may not be effective in high ambient conditions or in high attitudes, and all such applications must be referred to the factory.

The area in which the reducer is located should allow adequate air circulation. Also, the housing should be free from dust or other material which can become an insulator. Gear drives operating outdoors should be provided with a sun shield roof structure to eliminate the effects of solar heating. If these precautions are not taken, over-heating with premature failure may occur.

#### LOAD CONDITIONS

Basic conditions to be observed before applying application factors are as follows:

##### 1. Excessive Overloads

The maximum momentary or starting load must not exceed 200 percent of rated load (100% overload). Rated load is defined as the unit rating with a service factor of 1.0. Driven equipment with high inertia loading may require higher application factors than indicated because of the high momentary torque required for breakaway. Expected breakaway and shock load torques must not exceed 200% of rated reducer torque.

##### 2. Oversize Prime Mover

The practice of using oversize motors for motor standardization or starting conditions must be given attention due to the potential high starting torque available.

##### 3. Braking Conditions

When the rating of a shaft mounted or motor mounted brake exceeds the motor rating, the rating of the brake must be used in selection of the reducer.

##### 4. Drive-Train Vibrations

Gear reducers are sold with the understanding that the rotating parts are free from serious critical speeds or torsional vibrations. Calculation required to check the entire system is the responsibility of the systems builder. Details of reducer rotating parts for such calculations are available on request at time of order.

##### 5. Pulsating Loads

The responsibility for satisfactory operation of reducers driving or driven by pulsating or reciprocating apparatus such as compressors, pumps, and internal combustion engines is assumed by Nuttall Gear provided that:

- The gears are not operated with torque reversals at the gear mesh, except when starting and stopping.
- When loaded, the torque variation at the gear mesh does not exceed  $\pm 25\%$  of average transmitted torque.
- When unloaded, the torque variation at the gear mesh does not exceed  $\pm 15\%$  of rated torque with no negative torque.

#### AMBIENT CONDITIONS

Standard speed reducers are basically designed for horizontal floor mounted operation in a heated building where reasonably clean and dry

conditions exist. For conditions other than this, special features may be required. Full data should be provided to insure proper selection.

##### Low Temperature Operation

Starting and operating gear drives at temperatures below 40°F could result in damage to the gears and bearings if the pour point of the lubricant is higher than the ambient temperature. This is of particular concern when controlled splash lubrication or circulation lube oil systems with pump and piping are employed. In such cases, it may be necessary to provide immersion heaters in the oil sump and provide a method of heating the external oil pump and piping at start-up.

**High Temperature Operation**  
Operation at sustained ambient temperatures in excess of 100°F will greatly affect thermal modifications required to provide a reasonable operating temperature. High oil sump temperatures will drastically reduce the life of most lubricants and require frequent oil changes. Contact Nuttall Gear for lubrication recommendations if this condition is expected.

**Type TDS**  
**Parallel Shaft Speed Reducers**  
**Application Factors**

APPLICATION	LOAD DURATION HOURS PER DAY			APPLICATION	LOAD DURATION HOURS PER DAY			
	0-3 3-10 10+				0-3 3-10 10+			
	0-3	3-10	10+		0-3	3-10	10+	
AGITATORS (Mixers)				CRANES (cont.)				
Pure Liquids	1.00	1.00	1.25	Trolley Travel	2.50	3.00	3.00	
Liquids and Solids	1.00	1.25	1.50	Industrial Duty				
Liquids - Variable Density	1.00	1.25	1.50	Main	2.50	2.50	3.00	
BLOWERS				Auxiliary	2.50	2.50	3.00	
Centrifugal	1.00	1.00	1.25	Bridge and	2.50	3.00	3.00	
Lobe	1.00	1.25	1.50	Trolley Travel	2.50	3.00	3.00	
Vane	1.00	1.25	1.50					
BREWING AND DISTILLING				CRUSHER				
Bottling Machinery	1.00	1.00	1.25	Stone or Ore	1.75	1.75	2.00	
Brew Kettles - Continuous Duty	1.25	1.25	1.25	DREDGES				
Cookers - Continuous Duty	1.25	1.25	1.25	Cable Reels	1.25	1.25	1.50	
Mash Tubs - Continuous Duty	1.25	1.25	1.25	Conveyors	1.25	1.25	1.50	
Scale Hopper - Frequent Starts	1.25	1.25	1.50	Cutter Head Drives	2.00	2.00	2.00	
CAN FILLING MACHINES	1.00	1.00	1.25	Pumps	2.00	2.00	2.00	
CAR DUMPERS	1.50	1.75	2.00	Screen Drives	1.75	1.75	2.00	
CAR PULLERS	1.00	1.25	1.50	Stackers	1.25	1.25	1.50	
CLARIFIERS	1.00	1.00	1.25	Winches	1.25	1.25	1.50	
CLASSIFIERS	1.00	1.25	1.50	ELEVATORS				
PLAY WORKING MACHINERY				Bucket	1.00	1.25	1.50	
Brick Press	1.50	1.75	2.00	Centrifugal Discharge	1.00	1.00	1.25	
Briquette Machine	1.50	1.75	2.00	Escalators	1.00	1.00	1.25	
Pug Mill	1.00	1.25	1.50	Freight	1.00	1.25	1.50	
COMPACTORS	2.00	2.00	2.00	Gravity Discharge	1.00	1.00	1.25	
COMPRESSORS				EXTRUDERS				
Centrifugal	1.00	1.00	1.25	General	1.50	1.50	1.50	
Lobe	1.00	1.25	1.50	Plastics				
Reciprocating, Multi-Cylinder	1.50	1.50	1.75	Variable Speed Drive	1.50	1.50	1.50	
Reciprocating, Single-Cylinder	1.75	1.75	2.00	Fixed Speed Drive	1.75	1.75	1.75	
CONVEYORS - GENERAL PURPOSE				Rubber				
Uniformly loaded or fed	1.00	1.00	1.25	Continuous Screw Operation	1.75	1.75	1.75	
Heavy Duty, not uniformly fed	1.00	1.25	1.50	Intermittent Screw Operation	1.75	1.75	1.75	
Reciprocating of Shaker	1.50	1.75	2.00	FANS				
CRANES ①				Centrifugal	1.00	1.00	1.25	
Dry Dock				Cooling Towers	2.00	2.00	2.00	
Main Hoist	2.50	2.50	2.50	Forced Draft	1.25	1.25	1.25	
Auxiliary Hoist	2.50	2.50	3.00	Induced Draft	1.50	1.50	1.50	
Boom Hoist	2.50	2.50	3.00	Industrial and Mine	1.50	1.50	1.50	
Slewing Drive	2.50	2.50	3.00	FEEDERS				
Traction Drive	3.00	3.00	3.00	Apron	1.00	1.25	1.50	
Container				Belt	1.00	1.15	1.50	
Main Hoist	3.00	3.00	3.00	Disc	1.00	1.00	1.25	
Boom Hoist	2.00	2.00	2.00	Reciprocating	1.50	1.75	2.00	
Trolley Drive				Screw	1.00	1.25	1.50	
Gantry Drive	3.00	3.00	3.00	FOOD INDUSTRY				
Traction Drive	2.00	2.00	2.00	Cereal Cooker	1.00	1.00	1.25	
Mill Duty				Dough Mixer	1.25	1.25	1.50	
Main Hoist	3.50	3.50	3.50	Meat Grinders	1.25	1.25	1.50	
Auxiliary	3.50	3.50	3.50	Slicers	1.25	1.25	1.50	
Bridge and	2.50	3.00	3.00	GENERATORS AND EXCITERS	1.00	1.00	1.25	

# Type TDS

## Parallel Shaft Speed Reducers

### Application Factors

APPLICATION	LOAD DURATION HOURS PER DAY			APPLICATION	LOAD DURATION HOURS PER DAY		
	0-3	3-10	10+		0-3	3-10	10+
<b>HOISTS (cont.)</b>				<b>METAL STRIP PROCESSING MACHINERY (cont.)</b>			
Medium Duty	1.25	1.25	1.50	Shears	2.00	2.00	2.00
Skip Hoist	1.25	1.25	1.50	Slitters	1.00	1.25	1.50
<b>LAUNDRY</b>				<b>MILLS, ROTARY TYPE</b>			
Tumblers	1.25	1.25	1.50	Ball and Rod	2.00	2.00	2.00
Washers	1.50	1.50	2.00	Spur Ring Gear	1.50	1.50	1.50
<b>LUMBER INDUSTRY</b>				Helical Ring Gear	2.00	2.00	2.00
Barkers - Spindle Feed	1.25	1.25	1.50	Direct Connected	1.50	1.50	1.50
Main Drive	1.75	1.75	1.75	Cement Kilns	1.50	1.50	1.50
Conveyors - Burner	1.25	1.25	1.50	Dryers and Coolers	1.50	1.50	1.50
Main Drive or Heavy Duty	1.50	1.50	1.50	<b>MIXERS</b>			
Main Log	1.75	1.75	2.00	Concrete	1.25	1.25	1.50
Re-saw, Merry-Go-Round	1.25	1.25	1.50	<b>PAPER MILLS</b> <sup>(2)</sup>			
Slab	1.75	1.75	2.00	Agitator (Mixer)	1.50	1.50	1.50
Transfer	1.25	1.25	1.50	Agitator for Pure Liquors	1.25	1.25	1.25
Chains				Barking Drums	2.00	2.00	2.00
Floor	1.50	1.50	1.50	Barkers - Mechanical	2.00	2.00	2.00
Green	1.50	1.50	1.75	Beater	1.50	1.50	1.50
Cut-Off Saws				Breaker Stack	1.25	1.25	1.25
Chain	1.50	1.50	1.75	Calender <sup>(3)</sup>	1.25	1.25	1.25
Drag	1.50	1.50	1.75	Chipper	2.00	2.00	2.00
Debarking Drums	1.75	1.75	2.00	Chip Feeder	1.50	1.50	1.50
Feeds				Coating Rolls	1.25	1.25	1.25
Edger	1.25	1.25	1.50	Conveyors			
Gang	1.75	1.75	1.75	Chip, Bark, Chemical	1.25	1.25	1.25
Trimmer	1.25	1.25	1.50	Log (including Slab)	2.00	2.00	2.00
Log Deck	1.75	1.75	1.75	Couch Rolls	1.25	1.25	1.25
Log Hauls - Incline - Well Type	1.75	1.75	1.75	Cutter	2.00	2.00	2.00
Log Turning Devices	1.75	1.75	1.75	Cylinder Molds	1.25	1.25	1.25
Planer Feed	1.25	1.25	1.50	Dryers <sup>(3)</sup>			
Planer Tilting Hoists	1.50	1.50	1.50	Paper Machine	1.25	1.25	1.25
Rolls - Live-of brg - Roll Cases	1.75	1.75	1.75	Conveyor Type	1.25	1.25	1.25
Sorting Table	1.25	1.25	1.50	Embosser	1.25	1.25	1.25
Tipple Hoist	1.25	1.25	1.50	Extruder	1.50	1.50	1.50
Transfers				Fourdriner Rolls (Includes Lump breaker, dandy roll, wire turning, and return rolls)			
Chain	1.50	1.50	1.75	Jordan	1.25	1.25	1.25
Craneway	1.50	1.50	1.75	Kiln Drive	1.50	1.50	1.50
Tray Drives	1.25	1.25	1.50	Mt. Hope Roll	1.25	1.25	1.25
Veneer Lathe Drives	1.25	1.25	1.50	Paper Rolls	1.25	1.25	1.25
<b>METAL MILLS</b>				Platter	1.50	1.50	1.50
Draw Bench Carriage and Main Drive	1.25	1.25	1.50	Presses, Felt and Suction	1.25	1.25	1.25
Runout Table				Pulper	2.00	2.00	2.00
Non-Reversing				Pumps - Vacuum	1.50	1.50	1.50
Group Drives	1.50	1.50	1.50	Reel (Surface Type)	1.25	1.25	1.25
Individual Drives	2.00	2.00	2.00	Screens			
Reversing	2.00	2.00	2.00	Chip	1.50	1.50	1.50
Slab Pushers	1.50	1.50	1.50	Rotary	1.50	1.50	1.50
Shears	2.00	2.00	2.00	Vibrating	2.00	2.00	2.00
Wire Drawing	1.25	1.25	1.50	Size Press	1.25	1.25	1.25
Wire Winding Machine	1.25	1.25	1.50	Super Calender <sup>(4)</sup>	1.25	1.25	1.25
<b>METAL STRIP PROCESSING MACHINERY</b>				Thickener (AC Motor)	1.50	1.50	1.50
Bridles	1.25	1.25	1.50	Thickener (DC Motor)	1.25	1.25	1.25
Coilers and Uncoilers	1.00	1.00	1.25	Washer (AC Motor)	1.50	1.50	1.50
Edge Trimmers	1.00	1.25	1.50	Washer (DC Motor)	1.25	1.25	1.25
Flatteners	1.25	1.25	1.50	Wind and Unwind Stand	1.00	1.00	1.25
Loopers (Accumulators)	1.00	1.00	1.25	Winders (Surface Type)	1.25	1.25	1.25
Pinch Rolls	1.25	1.25	1.50				
Scrap Choppers	1.25	1.25	1.50				

# Type TDS

## Parallel Shaft Speed Reducers

### Application Factors

APPLICATION	LOAD DURATION HOURS PER DAY			APPLICATION	LOAD DURATION HOURS PER DAY		
	0-3	3-10	10+		0-3	3-10	10+
PAPER MILLS (cont.)				RUBBER INDUSTRY (cont.)			
Yankee Dryers ③	1.25	1.25	1.25	Holding, Feed & blend Mill - 2 rolls	1.25	1.25	1.25
PLASTICS INDUSTRY				Refiner - 2 rolls	1.50	1.50	1.50
Primary Processing				Calenders	1.50	1.50	1.50
Intensive Internal Mixers				SAND MULLER	1.25	1.25	1.50
Batch Mixers	1.75	1.75	1.75	SEWAGE DISPOSAL EQUIPMENT			
Continuous Mixers	1.50	1.50	1.50	Bar Screens	1.25	1.25	1.25
Batch Drop Mill - 2 smooth rolls	1.25	1.25	1.25	Chemical Feeders	1.25	1.25	1.25
Continuous Feed, Holding & Blend Mill	1.25	1.25	1.25	Dewatering Screens	1.50	1.50	1.50
Compounding Mill	1.25	1.25	1.25	Scum Breakers	1.50	1.50	1.50
Calenders	1.50	1.50	1.50	Slow or Rapid Mixers	1.50	1.50	1.50
Secondary Processing				Sludge Collectors	1.25	1.25	1.25
Blow Molders	1.50	1.50	1.50	Thickeners	1.50	1.50	1.50
Coating	1.25	1.25	1.25	Vacuum Filters	1.50	1.50	1.50
Film	1.25	1.25	1.25	SCREENS			
Pipe	1.25	1.25	1.25	Air Washing	1.00	1.00	1.25
Pre-Plasticizers	1.50	1.50	1.50	Rotary - Stone or Gravel	1.25	1.25	1.50
Rods	1.25	1.25	1.25	Traveling Water Intake	1.00	1.00	1.25
Sheet	1.25	1.25	1.25	SUGAR INDUSTRY			
Tubing	1.25	1.25	1.50	Beet Slicer	2.00	2.00	2.00
PULLERS - BARGE HAUL	1.25	1.25	1.50	Cane Knives	1.50	1.50	1.50
PUMPS				Crushers	1.50	1.50	1.50
Centrifugal	1.00	1.00	1.25	Mills (low speed end)	1.75	1.75	1.75
Proportioning	1.25	1.25	1.50	TEXTILE INDUSTRY			
Reciprocating				Batchers	1.25	1.25	1.50
Single Acting, 3 or more cylinders	1.25	1.25	1.50	Calenders	1.25	1.25	1.50
Double Acting, 2 or more cylinders	1.25	1.25	1.50	Cards	1.25	1.25	1.50
Rotary				Dry Cans	1.25	1.25	1.50
Gear Type	1.00	1.00	1.25	Dryers	1.25	1.25	1.50
Lobe	1.00	1.00	1.25	Dyeing Machinery	1.25	1.25	1.50
Vane	1.00	1.00	1.25	Looms	1.25	1.25	1.50
RUBBER INDUSTRY				Mangles	1.25	1.25	1.50
Intensive Internal Mixers				Nappers	1.25	1.25	1.50
Batch Mixers	1.75	1.75	1.75	Pads	1.25	1.25	1.50
Continuous Mixers	1.50	1.50	1.50	Slashers	1.25	1.25	1.50
Mixing Mill - 2 smooth rolls - (if corrugated rolls are used, then use the same service factors that are used for a Cracker-Warmer)	1.50	1.50	1.50	Soapers	1.25	1.25	1.50
Batch Drop Mill - 2 smooth rolls	1.50	1.50	1.50	Spinners	1.25	1.25	1.50
Cracker-Warmer - 2 rolls; 1 corrugated roll	1.75	1.75	1.75	Tenter Frames	1.25	1.25	1.50
Cracker - 2 corrugated rolls	2.00	2.00	2.00	Washers	1.25	1.25	1.50
				Winders	1.25	1.25	1.50

**NOTES:**

① Crane drives are to be selected based on gear tooth bending strength. Contact Nuttall Gear for strength ratings. Application factor in durability should be a minimum of 1.0.

NOTE: Application factors shown for cranes are based on tooth bending strength and their use must be coordinated with Nuttall Gear. The values shown are consistent with those recommended by C.M.A.A. (Crane Manufacturers Association of America).

② Application factors for paper mill applications are applied to the nameplate rating of the electric drive motor at the motor rated base speed.

③ Anti-Friction Bearings only. Use 1.5 for sleeve bearings.

④ An application Factor of 1.00 may be applied at base speed of a super calender operating over a speed range of part constant horsepower, part constant torque where the constant horsepower speed range is greater than 1.5 to 1. An application factor of 1.25 is applicable to super calenders operating over the entire speed range at constant torque or where the constant horsepower speed range is less than 1.5 to 1.

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Ratio 1.225 thru 5.060

1750 Input

**Type TDS**  
**Parallel Shaft Speed Reducers**  
**Single Reduction**

**MECHANICAL CAPACITY**

NOMINAL GEAR RATIO	NOMINAL OUTPUT SPEED	REDUCER SIZE	S7	S8	S9	S11	S12	S13	S15	S16	S18	S20
<b>1.225</b>	<b>1420</b>	MECH HP TORQUE (X1000 IN. LBS.) 36	810 49	1097 78	1745 118	2605 169	3745 221	4887 267	6045 330	7459 401	9092	
<b>1.500</b>	<b>1170</b>	MECH HP TORQUE (X1000 IN. LBS.) 38	717 54	980 82	1544 125	2295 179	3338 230	4390 284	5361 356	6534 429	8095 541	10020
<b>1.837</b>	<b>950</b>	MECH HP TORQUE (X1000 IN. LBS.) 40	588 56	825 86	1290 129	1954 186	2780 232	3798 297	4408 370	5456 449	6667 579	8663
<b>2.250</b>	<b>780</b>	MECH HP TORQUE (X1000 IN. LBS.) 40	506 56	691 86	1068 129	1581 185	2193 244	3285 298	3606 372	4555 452	5463 596	7098
<b>2.756</b>	<b>640</b>	MECH HP TORQUE (X1000 IN. LBS.) 39	397 55	556 84	846 126	1242 181	1841 236	2536 293	3001 364	3649 444	4554 581	5673
<b>3.375</b>	<b>520</b>	MECH HP TORQUE (X1000 IN. LBS.) 37	301 52	426 81	645 124	1013 170	1387 241	1956 284	2289 345	2770 433	3482 559	4633
<b>4.134</b>	<b>420</b>	MECH HP TORQUE (X1000 IN. LBS.) 38	248 50	345 81	534 126	836 164	1112 230	1579 289	1892 338	2256 441	2890 536	3490
<b>5.060</b>	<b>350</b>	MECH HP TORQUE (X1000 IN. LBS.) 37	207 51	285 79	452 123	699 160	877 223	1182 281	1583 341	1850 431	2426 538	2848

**THERMAL CAPACITY**

NOMINAL GEAR RATIO	NOMINAL OUTPUT SPEED		S7	S8	S9	S11	S12	S13	S15	S16	S18	S20
<b>1.225</b>	<b>1420</b>	THERMAL HP WITH FANS	105 263	128 320	138 345	152 380	183 458	202 505	213 533	232 580	238 595	
<b>1.500</b>	<b>1170</b>	THERMAL HP WITH FANS	107 268	131 328	140 350	155 388	187 468	207 518	218 545	238 595	244 610	247 618
<b>1.837</b>	<b>950</b>	THERMAL HP WITH FANS	110 275	135 338	145 363	161 403	194 485	214 535	226 565	246 615	253 633	257 643
<b>2.250</b>	<b>780</b>	THERMAL HP WITH FANS	112 280	137 343	147 368	164 410	197 493	219 548	231 578	255 638	260 650	265 663
<b>2.756</b>	<b>640</b>	THERMAL HP WITH FANS	113 283	139 348	150 375	167 418	202 505	225 563	238 595	262 655	270 675	277 693
<b>3.375</b>	<b>520</b>	THERMAL HP WITH FANS	117 293	144 360	156 390	174 435	211 528	235 588	250 625	276 690	287 718	296 740
<b>4.134</b>	<b>420</b>	THERMAL HP WITH FANS	127 318	157 393	171 428	192 480	234 585	262 655	281 703	312 780	326 815	339 848
<b>5.060</b>	<b>350</b>	THERMAL HP WITH FANS	135 338	168 420	182 455	205 513	249 623	280 700	300 750	334 835	349 873	365 913

**EXACT GEAR RATIO**

NOMINAL GEAR RATIO		S7	S8	S9	S11	S12	S13	S15	S16	S18	S20
1.225		1.225	1.244	1.238	1.256	1.256	1.255	1.225	1.227	1.225	
1.500		1.472	1.525	1.474	1.514	1.487	1.524	1.472	1.513	1.472	1.500
1.837		1.871	1.886	1.849	1.839	1.853	1.865	1.871	1.882	1.871	1.857
2.250		2.179	2.258	2.241	2.259	2.345	2.212	2.296	2.267	2.296	2.333
2.756		2.708	2.741	2.760	2.826	2.731	2.786	2.708	2.769	2.708	2.846
3.375		3.450	3.391	3.476	3.400	3.409	3.417	3.450	3.454	3.450	3.348
4.134		4.235	4.050	4.222	4.177	4.105	4.048	4.235	4.158	4.235	4.263
5.060		4.933	4.941	4.875	4.867	5.063	5.235	4.933	5.125	4.933	5.250



**Type TDS**  
**Parallel Shaft Speed Reducers**  
**Single Reduction**

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Ratio 1.225 thru 5.060

1750 Input

MECHANICAL CAPACITY											
S22	S25	WS28	WS30	WS32	WS34	WS36	WS38	WS40	REDUCER SIZE	NOMINAL OUTPUT SPEED	NOMINAL GEAR RATIO
10017	683								MECH HP TORQUE(X1000 IN. LBS.)	1420	1.225
8744	706								MECH HP TORQUE(X1000 IN. LBS.)	1170	1.500
6795	9787	13219	17293						MECH HP TORQUE(X1000 IN. LBS.)	950	1.837
690	961	1330	1693						MECH HP TORQUE(X1000 IN. LBS.)	780	2.250
5281	8041	10407	13816						MECH HP TORQUE(X1000 IN. LBS.)	640	2.756
658	983	1274	1695						MECH HP TORQUE(X1000 IN. LBS.)	520	3.375
4307	6199	7934	10525						MECH HP TORQUE(X1000 IN. LBS.)	420	4.134
635	921	1211	1582						MECH HP TORQUE(X1000 IN. LBS.)	350	5.060
3581	4667	6608	8585						MECH HP TORQUE(X1000 IN. LBS.)		
638	866	1216	1530						MECH HP TORQUE(X1000 IN. LBS.)		
THERMAL CAPACITY										NOMINAL OUTPUT SPEED	NOMINAL GEAR RATIO
272	680								THERMAL HP WITH FANS	1420	1.225
281	703								THERMAL HP WITH FANS	1170	1.500
297	272	255	236						THERMAL HP WITH FANS	950	1.837
743	680	638	590						THERMAL HP WITH FANS	780	2.250
320	299	284	265						THERMAL HP WITH FANS	640	2.756
800	748	710	663						THERMAL HP WITH FANS	520	3.375
369	350	335	315						THERMAL HP WITH FANS	420	4.134
923	875	838	788						THERMAL HP WITH FANS	350	5.060
EXACT GEAR RATIO										NOMINAL GEAR RATIO	
1.892										1.225	
2.242										1.500	
2.821	2.727	2.793	2.719							1.837	
3.458	3.393	3.400	3.407							2.250	
4.095	4.125	4.238	4.174							2.756	
4.944	5.150	5.111	4.950							3.375	
										4.134	
										5.060	

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Ratio 1.225 thru 5.060

1170 Input

**Type TDS**  
**Parallel Shaft Speed Reducers**  
**Single Reduction**

**MECHANICAL CAPACITY**

NOMINAL GEAR RATIO	NOMINAL OUTPUT SPEED	REDUCER SIZE	S7	S8	S9	S11	S12	S13	S15	S16	S18	S20
<b>1.225</b>	<b>950</b>	MECH HP TORQUE (X1000 IN. LBS.) 37	568 51	765 82	1225 124	1833 178	2627 211	3406 281	4256 344	5200 423	6414	
<b>1.500</b>	<b>780</b>	MECH HP TORQUE (X1000 IN. LBS.) 40	504 56	679 87	1094 132	1620 189	2359 222	3050 300	3786 377	4623 453	5710 566	7006
<b>1.837</b>	<b>640</b>	MECH HP TORQUE (X1000 IN. LBS.) 42	412 59	577 90	906 136	1376 196	1961 235	2635 313	3106 390	3851 476	4725 604	6034
<b>2.250</b>	<b>520</b>	MECH HP TORQUE (X1000 IN. LBS.) 42	354 59	482 90	749 135	1110 194	1537 241	2299 314	2537 392	3208 478	3862 632	5027
<b>2.756</b>	<b>420</b>	MECH HP TORQUE (X1000 IN. LBS.) 41	278 57	388 88	594 133	873 190	1289 241	1782 308	2108 383	2569 469	3213 611	3984
<b>3.375</b>	<b>350</b>	MECH HP TORQUE (X1000 IN. LBS.) 39	209 54	298 84	451 130	708 178	968 252	1370 298	1601 361	1941 454	2444 590	3273
<b>4.134</b>	<b>280</b>	MECH HP TORQUE (X1000 IN. LBS.) 39	173 53	242 85	372 132	586 172	780 241	1103 303	1329 355	1585 464	2034 564	2458
<b>5.060</b>	<b>230</b>	MECH HP TORQUE (X1000 IN. LBS.) 38	144 53	199 83	316 128	488 167	612 233	825 294	1107 359	1299 451	1699 566	2001

**THERMAL CAPACITY**

NOMINAL GEAR RATIO	NOMINAL OUTPUT SPEED		S7	S8	S9	S11	S12	S13	S15	S16	S18	S20
<b>1.225</b>	<b>950</b>	THERMAL HP WITH FANS	174 334	214 411	232 445	263 505	322 618	363 697	392 753	440 845	466 895	
<b>1.500</b>	<b>780</b>	THERMAL HP WITH FANS	175 336	217 417	235 451	267 513	327 628	369 708	398 764	447 858	473 908	502 964
<b>1.837</b>	<b>640</b>	THERMAL HP WITH FANS	177 340	219 420	238 457	269 516	330 634	372 714	402 772	452 868	479 920	510 979
<b>2.250</b>	<b>520</b>	THERMAL HP WITH FANS	179 344	221 424	240 461	272 522	333 639	376 722	406 780	456 876	484 929	515 989
<b>2.756</b>	<b>420</b>	THERMAL HP WITH FANS	181 348	224 430	244 468	276 530	338 649	382 733	412 791	463 889	489 939	520 998
<b>3.375</b>	<b>350</b>	THERMAL HP WITH FANS	186 357	230 442	249 478	282 541	345 662	389 747	420 806	471 904	499 958	529 1016
<b>4.134</b>	<b>280</b>	THERMAL HP WITH FANS	189 363	234 449	254 488	289 555	354 680	400 768	434 833	489 939	520 998	556 1068
<b>5.060</b>	<b>230</b>	THERMAL HP WITH FANS	192 369	238 457	259 497	295 566	363 697	410 787	446 856	504 968	537 1031	576 1106

**EXACT GEAR RATIO**

NOMINAL GEAR RATIO		S7	S8	S9	S11	S12	S13	S15	S16	S18	S20
1.225		1.225	1.244	1.238	1.256	1.256	1.255	1.225	1.227	1.225	
1.500		1.472	1.525	1.474	1.514	1.487	1.524	1.472	1.513	1.472	1.500
1.837		1.871	1.886	1.849	1.839	1.853	1.865	1.871	1.882	1.871	1.857
2.250		2.179	2.258	2.241	2.259	2.345	2.212	2.296	2.267	2.296	2.333
2.756		2.708	2.741	2.760	2.826	2.731	2.786	2.708	2.769	2.708	2.846
3.375		3.450	3.391	3.476	3.400	3.409	3.417	3.450	3.454	3.450	3.348
4.134		4.235	4.050	4.222	4.177	4.105	4.048	4.235	4.158	4.235	4.263
5.060		4.933	4.941	4.875	4.867	5.063	5.235	4.933	5.125	4.933	5.250

**Type TDS**  
**Parallel Shaft Speed Reducers**  
**Single Reduction**

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1170 Input

MECHANICAL CAPACITY												
S22	S25	WS28	WS30	WS32	WS34	WS36	WS38	WS40	REDUCER SIZE	NOMINAL OUTPUT SPEED	NOMINAL GEAR RATIO	
										MECH HP TORQUE (X1000 IN. LBS.)	950	1.225
8079	10637	15453	19170							MECH HP TORQUE (X1000 IN. LBS.)	780	1.500
674	865	1249	1527							MECH HP TORQUE (X1000 IN. LBS.)	640	1.837
6998	9269	13547	16543							MECH HP TORQUE (X1000 IN. LBS.)	520	2.250
713	929	1329	1633							MECH HP TORQUE (X1000 IN. LBS.)	420	2.756
6123	8052	11584	14325							MECH HP TORQUE (X1000 IN. LBS.)	350	3.375
739	970	1395	1710							MECH HP TORQUE (X1000 IN. LBS.)	280	4.134
4782	6834	9348	12101							MECH HP TORQUE (X1000 IN. LBS.)	230	5.060
727	1004	1406	1772									
3717	5616	7348	9762									
692	1026	1346	1792									
3029	4355	5650	7425									
668	968	1290	1669									
2512	3272	4651	5992									
669	908	1280	1598									
THERMAL CAPACITY												
S22	S25	WS28	WS30	WS32	WS34	WS36	WS38	WS40		NOMINAL OUTPUT SPEED	NOMINAL GEAR RATIO	
										THERMAL HP WITH FANS	950	1.225
557	563	565	560							THERMAL HP WITH FANS	780	1.500
1069	1081	1085	1075							THERMAL HP WITH FANS	640	1.837
568	578	582	580							THERMAL HP WITH FANS	520	2.250
1091	1110	1117	1114							THERMAL HP WITH FANS	420	2.756
573	584	590	590							THERMAL HP WITH FANS	350	3.375
1100	1121	1133	1133							THERMAL HP WITH FANS	280	4.134
578	590	599	604							THERMAL HP WITH FANS	230	5.060
1110	1133	1150	1160									
589	602	619	628									
1131	1156	1188	1206									
625	648	674	695									
1200	1244	1294	1334									
649	680	718	740									
1246	1306	1379	1421									
EXACT GEAR RATIO												
S22	S25	WS28	WS30	WS32	WS34	WS36	WS38	WS40		NOMINAL GEAR RATIO		
										1.225		
1.548	1.510	1.500	1.479							1.500		
1.892	1.861	1.821	1.833							1.837		
2.242	2.237	2.235	2.216							2.250		
2.821	2.727	2.793	2.719							2.756		
3.458	3.393	3.400	3.407							3.375		
4.095	4.125	4.238	4.174							4.134		
4.944	5.150	5.111	4.950							5.060		

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Ratio 1.225 thru 5.060

870 Input

**Type TDS**  
**Parallel Shaft Speed Reducers**  
**Single Reduction**

**MECHANICAL CAPACITY**

NOMINAL GEAR RATIO	NOMINAL OUTPUT SPEED	REDUCER SIZE	S7	S8	S9	S11	S12	S13	S15	S16	S18	S20
<b>1.225</b>	<b>710</b>	MECH HP TORQUE (X1000 IN. LBS.) 39	435 53	583 85	943 129	1413 183	2009 237	2607 292	3288 354	3986 440	4962 440	
<b>1.500</b>	<b>580</b>	MECH HP TORQUE (X1000 IN. LBS.) 41	387 57	518 90	842 137	1248 196	1818 257	2332 312	2923 391	3566 471	4413 584	5374 584
<b>1.837</b>	<b>474</b>	MECH HP TORQUE (X1000 IN. LBS.) 43	316 61	443 93	697 141	1058 203	1510 272	2013 325	2395 405	2971 494	3648 622	4624 622
<b>2.250</b>	<b>387</b>	MECH HP TORQUE (X1000 IN. LBS.) 43	271 61	370 93	575 140	854 201	1182 281	1755 325	1954 406	2473 495	2979 656	3880 656
<b>2.756</b>	<b>316</b>	MECH HP TORQUE (X1000 IN. LBS.) 42	213 59	297 91	455 137	670 196	991 277	1370 318	1622 397	1978 486	2476 633	3072 633
<b>3.375</b>	<b>258</b>	MECH HP TORQUE (X1000 IN. LBS.) 40	160 56	228 87	346 134	543 183	743 261	1053 308	1231 374	1493 470	1881 612	2522 612
<b>4.134</b>	<b>210</b>	MECH HP TORQUE (X1000 IN. LBS.) 40	132 54	185 87	285 136	449 178	598 248	846 313	1020 367	1218 480	1564 584	1891 584
<b>5.060</b>	<b>172</b>	MECH HP TORQUE (X1000 IN. LBS.) 39	110 54	152 85	242 132	373 172	469 240	633 303	849 370	997 466	1305 585	1538 585

**THERMAL CAPACITY**

NOMINAL GEAR RATIO	NOMINAL OUTPUT SPEED		S7	S8	S9	S11	S12	S13	S15	S16	S18	S20
<b>1.225</b>	<b>710</b>	THERMAL HP WITH FANS	233 377	288 467	312 505	355 575	437 708	496 804	539 873	610 988	651 1055	
<b>1.500</b>	<b>580</b>	THERMAL HP WITH FANS	235 381	290 470	315 510	358 580	441 714	499 808	543 880	615 996	656 1063	705 1142
<b>1.837</b>	<b>474</b>	THERMAL HP WITH FANS	236 383	292 473	317 514	361 585	444 719	503 815	548 888	620 1004	661 1071	711 1152
<b>2.250</b>	<b>387</b>	THERMAL HP WITH FANS	238 386	294 476	319 517	363 588	447 724	507 821	552 894	625 1013	667 1081	717 1162
<b>2.756</b>	<b>316</b>	THERMAL HP WITH FANS	240 389	297 481	322 522	367 595	452 732	513 831	558 904	632 1024	675 1094	726 1176
<b>3.375</b>	<b>258</b>	THERMAL HP WITH FANS	244 395	302 489	328 531	374 606	460 745	522 846	569 922	644 1043	688 1115	741 1200
<b>4.134</b>	<b>210</b>	THERMAL HP WITH FANS	247 400	306 496	332 538	379 614	467 757	530 859	577 935	654 1059	699 1132	753 1220
<b>5.060</b>	<b>172</b>	THERMAL HP WITH FANS	249 403	309 501	336 544	383 620	472 765	535 867	584 946	662 1072	707 1145	762 1234

**EXACT GEAR RATIO**

NOMINAL GEAR RATIO		S7	S8	S9	S11	S12	S13	S15	S16	S18	S20
1.225		1.225	1.244	1.238	1.256	1.256	1.255	1.225	1.227	1.225	
1.500		1.472	1.525	1.474	1.514	1.487	1.524	1.472	1.513	1.472	1.500
1.837		1.871	1.886	1.849	1.839	1.853	1.865	1.871	1.882	1.871	1.857
2.250		2.179	2.258	2.241	2.259	2.345	2.212	2.296	2.267	2.296	2.333
2.756		2.708	2.741	2.760	2.826	2.731	2.786	2.708	2.769	2.708	2.846
3.375		3.450	3.391	3.476	3.400	3.409	3.417	3.450	3.454	3.450	3.348
4.134		4.235	4.050	4.222	4.177	4.105	4.048	4.235	4.158	4.235	4.263
5.060		4.933	4.941	4.875	4.867	5.063	5.235	4.933	5.125	4.933	5.250



**Type TDS**  
**Parallel Shaft Speed Reducers**  
**Single Reduction**

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870 Input

**MECHANICAL CAPACITY**

S22	S25	WS28	WS30	WS32	WS34	WS36	WS38	WS40	REDUCER SIZE	NOMINAL OUTPUT SPEED	NOMINAL GEAR RATIO
6199	8171	11919	14747						MECH HP TORQUE (X1000 IN. LBS.)	710	1.225
695	894	1295	1580						MECH HP TORQUE (X1000 IN. LBS.)	580	1.500
5365	7114	10406	12714						MECH HP TORQUE (X1000 IN. LBS.)	474	1.837
735	959	1373	1688						MECH HP TORQUE (X1000 IN. LBS.)	387	2.250
4690	6174	8890	10999						MECH HP TORQUE (X1000 IN. LBS.)	316	2.756
762	1001	1439	1766						MECH HP TORQUE (X1000 IN. LBS.)	258	3.375
3689	5235	7225	9282						MECH HP TORQUE (X1000 IN. LBS.)	210	4.134
754	1034	1462	1828						MECH HP TORQUE (X1000 IN. LBS.)	172	5.060
2865	4297	5674	7542						CONTACT NUTTALL GEAR FOR ADDITIONAL RATINGS		
718	1056	1398	1732								
2332	3356	4357	5729								
692	1003	1338	1732								
1932	2518	3583	4619								
692	939	1327	1656								

**THERMAL CAPACITY**

S22	S25	WS28	WS30	WS32	WS34	WS36	WS38	WS40	NOMINAL OUTPUT SPEED	NOMINAL GEAR RATIO
787	809	842	857						710	1.225
1275	1311	1364	1388						580	1.500
794	817	850	869						474	1.837
1286	1324	1377	1408						387	2.250
801	825	858	877						316	2.756
1298	1337	1390	1421						258	3.375
812	837	872	887						210	4.134
1315	1356	1413	1437						172	5.060
829	857	888	904							
1343	1388	1439	1464							
843	873	915	945							
1366	1414	1482	1531							
854	885	939	977							
1383	1434	1521	1583							

**EXACT GEAR RATIO**

S22	S25	WS28	WS30	WS32	WS34	WS36	WS38	WS40	NOMINAL GEAR RATIO
1.548	1.510	1.500	1.479						1.225
1.892	1.861	1.821	1.833						1.500
2.242	2.237	2.235	2.216						1.837
2.821	2.727	2.793	2.719						2.250
3.458	3.393	3.400	3.407						2.756
4.095	4.125	4.238	4.174						3.375
4.944	5.150	5.111	4.950						4.134
									5.060

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Ratio 1.225 thru 5.060

720 Input

**Type TDS**  
**Parallel Shaft Speed Reducers**  
**Single Reduction**

**MECHANICAL CAPACITY**

NOMINAL GEAR RATIO	NOMINAL OUTPUT SPEED	REDUCER SIZE	S7	S8	S9	S11	S12	S13	S15	S16	S18	S20
<b>1.225</b>	<b>588</b>	MECH HP TORQUE (X1000 IN. LBS.) 39	365 53	490 86	796 131	1195 186	1691 241	2195 299	2785 361	3360 451	4206	
<b>1.500</b>	<b>480</b>	MECH HP TORQUE (X1000 IN. LBS.) 42	327 58	435 92	711 140	1055 200	1538 262	1963 319	2474 398	3004 482	3739 595	<b>4531</b>
<b>1.837</b>	<b>392</b>	MECH HP TORQUE (X1000 IN. LBS.) 44	267 61	372 95	588 144	894 207	1277 276	1693 332	2026 414	2515 506	3089 633	<b>3897</b>
<b>2.250</b>	<b>320</b>	MECH HP TORQUE (X1000 IN. LBS.) 44	229 62	312 95	486 143	721 205	999 286	1476 332	1652 415	2092 415	2521 507	<b>3283</b>
<b>2.756</b>	<b>261</b>	MECH HP TORQUE (X1000 IN. LBS.) 42	179 60	251 93	384 140	566 200	837 282	1157 325	1371 405	1672 496	2094 647	<b>2599</b>
<b>3.375</b>	<b>213</b>	MECH HP TORQUE (X1000 IN. LBS.) 41	135 57	192 89	291 136	458 187	627 266	888 314	1039 381	1261 480	1590 625	<b>2132</b>
<b>4.134</b>	<b>174</b>	MECH HP TORQUE (X1000 IN. LBS.) 41	111 55	156 .89	240 139	379 181	504 253	714 319	861 375	1029 490	1321 596	<b>1598</b>
<b>5.060</b>	<b>142</b>	MECH HP TORQUE (X1000 IN. LBS.) 40	92 55	128 87	203 134	315 175	395 244	533 309	716 377	841 476	1102 597	<b>1299</b>

**THERMAL CAPACITY**

NOMINAL GEAR RATIO	NOMINAL OUTPUT SPEED		S7	S8	S9	S11	S12	S13	S15	S16	S18	S20
<b>1.225</b>	<b>588</b>	THERMAL HP WITH FANS	272 400	338 497	368 541	420 617	518 761	589 866	642 944	729 1072	780 1147	
<b>1.500</b>	<b>480</b>	THERMAL HP WITH FANS	274 403	339 498	370 544	422 620	521 766	592 870	646 950	733 1078	785 1154	<b>848</b>
<b>1.837</b>	<b>392</b>	THERMAL HP WITH FANS	275 404	341 501	371 545	424 623	524 770	595 875	650 956	737 1083	790 1161	<b>853</b>
<b>2.250</b>	<b>320</b>	THERMAL HP WITH FANS	276 406	343 504	373 548	426 626	526 773	598 879	653 960	742 1091	794 1167	<b>858</b>
<b>2.756</b>	<b>261</b>	THERMAL HP WITH FANS	278 409	345 507	376 553	430 632	530 779	603 886	658 967	748 1100	801 1177	<b>866</b>
<b>3.375</b>	<b>213</b>	THERMAL HP WITH FANS	281 413	349 513	380 559	435 639	537 789	611 898	667 980	758 1114	813 1195	<b>878</b>
<b>4.134</b>	<b>174</b>	THERMAL HP WITH FANS	283 416	352 517	384 564	439 645	543 798	617 907	674 991	767 1127	822 1208	<b>890</b>
<b>5.060</b>	<b>142</b>	THERMAL HP WITH FANS	285 419	354 520	386 567	442 650	547 804	622 914	680 1000	773 1136	829 1219	<b>898</b>

**EXACT GEAR RATIO**

NOMINAL GEAR RATIO		S7	S8	S9	S11	S12	S13	S15	S16	S18	S20
1.225		1.225	1.244	1.238	1.256	1.256	1.255	1.225	1.227	1.225	
1.500		1.472	1.525	1.474	1.514	1.487	1.524	1.472	1.513	1.472	1.500
1.837		1.871	1.886	1.849	1.839	1.853	1.865	1.871	1.882	1.871	1.857
2.250		2.179	2.258	2.241	2.259	2.345	2.212	2.296	2.267	2.296	2.333
2.756		2.708	2.741	2.760	2.826	2.731	2.786	2.708	2.769	2.708	2.846
3.375		3.450	3.391	3.476	3.400	3.409	3.417	3.450	3.454	3.450	3.348
4.134		4.235	4.050	4.222	4.177	4.105	4.048	4.235	4.158	4.235	4.263
5.060		4.933	4.941	4.875	4.867	5.063	5.235	4.933	5.125	4.933	5.250



**Type TDS**  
**Parallel Shaft Speed Reducers**  
**Single Reduction**

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Ratio 1.225 thru 5.060

720 Input

**MECHANICAL CAPACITY**

S22	S25	WS28	WS30	WS32	WS34	WS36	WS38	WS40	REDUCER SIZE	NOMINAL OUTPUT SPEED	NOMINAL GEAR RATIO
									MECH HP TORQUE (X1000 IN. LBS.)	588	1.225
5228	6896	10066	12458						MECH HP TORQUE (X1000 IN. LBS.)	480	1.500
708	911	1322	1613						MECH HP TORQUE (X1000 IN. LBS.)	392	1.837
4522	6000	8783	10734						MECH HP TORQUE (X1000 IN. LBS.)	320	2.250
749	977	1400	1722						MECH HP TORQUE (X1000 IN. LBS.)	261	2.756
3951	5205	7498	9281						MECH HP TORQUE (X1000 IN. LBS.)	213	3.375
775	1019	1467	1800						MECH HP TORQUE (X1000 IN. LBS.)	174	4.134
3122	4410	6122	7827						MECH HP TORQUE (X1000 IN. LBS.)	142	5.060
771	1053	1497	1863								
2423	3617	4805	6374								
733	1074	1430	1901								
1972	2838	3687	4862								
707	1025	1368	1776								
1632	2128	3030	3907								
706	959	1356	1693								

CONTACT NUTTALL GEAR  
FOR ADDITIONAL  
RATINGS

**THERMAL CAPACITY**

S22	S25	WS28	WS30	WS32	WS34	WS36	WS38	WS40		NOMINAL OUTPUT SPEED	NOMINAL GEAR RATIO
									THERMAL HP WITH FANS	588	1.225
948	978	1025	1055						THERMAL HP WITH FANS	480	1.500
1394	1438	1507	1551						THERMAL HP WITH FANS	392	1.837
954	986	1034	1065						THERMAL HP WITH FANS	320	2.250
1402	1449	1520	1566						THERMAL HP WITH FANS	261	2.756
961	994	1043	1075						THERMAL HP WITH FANS	213	3.375
1413	1461	1533	1580						THERMAL HP WITH FANS	174	4.134
970	1005	1057	1091						THERMAL HP WITH FANS	142	5.060
1426	1477	1554	1604								
986	1024	1080	1116								
1449	1505	1588	1641								
999	1040	1098	1136								
1469	1529	1614	1670								
1009	1051	1112	1152								
1483	1545	1635	1693								

**EXACT GEAR RATIO**

S22	S25	WS28	WS30	WS32	WS34	WS36	WS38	WS40		NOMINAL GEAR RATIO
1.548	1.510	1.500	1.479							1.225
1.892	1.861	1.821	1.833							1.500
2.242	2.237	2.235	2.216							1.837
2.821	2.727	2.793	2.719							2.250
3.458	3.393	3.400	3.407							2.756
4.095	4.125	4.238	4.174							3.375
4.944	5.150	5.111	4.950							4.134
										5.060

**Type TDS**  
**Parallel Shaft Speed Reducers**  
**Single Reduction**

**MECHANICAL CAPACITY**

NOMINAL GEAR RATIO	NOMINAL OUTPUT SPEED	REDUCER SIZE	S7	S8	S9	S11	S12	S13	S15	S16	S18	S20
<b>1.225</b>	<b>473</b>	MECH HP TORQUE (X1000 IN. LBS.) 40	299 54	401 88	652 135	986 189	1387 213	1802 306	2301 368	2761 463	3479	
<b>1.500</b>	<b>387</b>	MECH HP TORQUE (X1000 IN. LBS.) 43	269 59	356 94	586 143	870 204	1264 229	1610 327	2044 406	2467 494	3091 607	3725
<b>1.837</b>	<b>316</b>	MECH HP TORQUE (X1000 IN. LBS.) 45	219 62	304 97	484 147	737 212	1053 244	1388 340	1673 425	2077 519	2552 646	3201
<b>2.250</b>	<b>258</b>	MECH HP TORQUE (X1000 IN. LBS.) 45	188 63	256 97	400 146	594 210	823 240	1209 340	1363 425	1726 519	2081 683	2695
<b>2.756</b>	<b>210</b>	MECH HP TORQUE (X1000 IN. LBS.) 43	147 61	206 95	316 143	466 204	689 232	953 333	1130 415	1379 508	1728 663	2145
<b>3.375</b>	<b>172</b>	MECH HP TORQUE (X1000 IN. LBS.) 42	111 58	158 90	239 139	377 191	516 239	731 321	856 390	1039 491	1311 640	1759
<b>4.134</b>	<b>140</b>	MECH HP TORQUE (X1000 IN. LBS.) 42	91 56	128 90	197 141	311 185	415 218	587 326	709 383	847 501	1088 610	1317
<b>5.060</b>	<b>115</b>	MECH HP TORQUE (X1000 IN. LBS.) 41	76 56	105 88	167 136	258 179	325 218	438 316	589 385	692 486	907 610	1069

**THERMAL CAPACITY**

NOMINAL GEAR RATIO	NOMINAL OUTPUT SPEED		S7	S8	S9	S11	S12	S13	S15	S16	S18	S20
<b>1.225</b>	<b>473</b>	THERMAL HP WITH FANS	314 418	391 520	427 568	489 650	605 805	689 916	755 1004	859 1142	923 1228	
<b>1.500</b>	<b>387</b>	THERMAL HP WITH FANS	314 418	392 521	428 569	491 653	607 807	691 919	757 1007	862 1146	926 1232	1005 1337
<b>1.837</b>	<b>316</b>	THERMAL HP WITH FANS	315 419	393 523	429 571	492 654	609 810	693 922	759 1009	865 1150	929 1236	1008 1341
<b>2.250</b>	<b>258</b>	THERMAL HP WITH FANS	316 420	393 523	430 572	493 656	610 811	695 924	761 1012	868 1154	932 1240	1012 1346
<b>2.756</b>	<b>210</b>	THERMAL HP WITH FANS	317 422	395 525	431 573	495 658	613 815	698 928	765 1017	872 1160	937 1246	1018 1354
<b>3.375</b>	<b>172</b>	THERMAL HP WITH FANS	318 423	397 528	434 577	498 662	617 821	703 935	771 1025	878 1168	945 1257	1027 1366
<b>4.134</b>	<b>140</b>	THERMAL HP WITH FANS	319 424	398 529	436 580	501 666	620 825	707 940	775 1031	884 1176	951 1265	1034 1375
<b>5.060</b>	<b>115</b>	THERMAL HP WITH FANS	320 426	400 532	437 581	503 669	623 829	710 944	779 1036	888 1181	956 1271	1039 1382

**EXACT GEAR RATIO**

NOMINAL GEAR RATIO	S7	S8	S9	S11	S12	S13	S15	S16	S18	S20
1.225	1.225	1.244	1.238	1.256	1.256	1.255	1.225	1.227	1.225	
1.500	1.472	1.525	1.474	1.514	1.487	1.524	1.472	1.513	1.472	1.500
1.837	1.871	1.886	1.849	1.839	1.853	1.865	1.871	1.882	1.871	1.857
2.250	2.179	2.258	2.241	2.259	2.345	2.212	2.296	2.267	2.296	2.333
2.756	2.708	2.741	2.760	2.826	2.731	2.786	2.708	2.769	2.708	2.846
3.375	3.450	3.391	3.476	3.400	3.409	3.417	3.450	3.454	3.450	3.348
4.134	4.235	4.050	4.222	4.177	4.105	4.048	4.235	4.158	4.235	4.263
5.060	4.933	4.941	4.875	4.867	5.063	5.235	4.933	5.125	4.933	5.250



**Type TDS**  
**Parallel Shaft Speed Reducers**  
**Single Reduction**

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Ratio 1.225 thru 5.060

580 Input

**MECHANICAL CAPACITY**

S22	S25	WS28	WS30	WS32	WS34	WS36	WS38	WS40	REDUCER SIZE	NOMINAL OUTPUT SPEED	NOMINAL GEAR RATIO
4299	5675	8299	10264						MECH HP TORQUE (X1000 IN. LBS.)	473	1.225
723	931	1353	1650						MECH HP TORQUE (X1000 IN. LBS.)	387	1.500
3716	4935	7228	8837						MECH HP TORQUE (X1000 IN. LBS.)	316	1.837
764	998	1430	1760						MECH HP TORQUE (X1000 IN. LBS.)	258	2.250
3245	4278	6167	7635						MECH HP TORQUE (X1000 IN. LBS.)	210	2.756
791	1040	1498	1839						MECH HP TORQUE (X1000 IN. LBS.)	172	3.375
2578	3622	5062	6434						MECH HP TORQUE (X1000 IN. LBS.)	140	4.134
790	1073	1536	1901						MECH HP TORQUE (X1000 IN. LBS.)	115	5.060
1999	2969	3969	5235						CONTACT NUTTALL GEAR FOR ADDITIONAL RATINGS		
751	1095	1466	1938								
1626	2342	3043	4005								
724	1050	1401	1817								
1345	1754	2499	3224								
723	982	1388	1734								

**THERMAL CAPACITY**

S22	S25	WS28	WS30	WS32	WS34	WS36	WS38	WS40	NOMINAL OUTPUT SPEED	NOMINAL GEAR RATIO
1127	1171	1231	1269						473	1.225
1499	1557	1637	1688						387	1.500
1132	1177	1239	1279						316	1.837
1506	1565	1648	1701						258	2.250
1144	1193	1260	1303						210	2.756
1522	1587	1676	1733						172	3.375
1156	1209	1281	1327						140	4.134
1537	1608	1704	1765						115	5.060
1165	1222	1297	1346							
1549	1625	1725	1790							
1172	1232	1310	1361							
1559	1639	1742	1810							

**EXACT GEAR RATIO**

S22	S25	WS28	WS30	WS32	WS34	WS36	WS38	WS40	NOMINAL GEAR RATIO
1.548	1.510	1.500	1.479						1.225
1.892	1.861	1.821	1.833						1.500
2.242	2.237	2.235	2.216						1.837
2.821	2.727	2.793	2.719						2.250
3.458	3.393	3.400	3.407						2.756
4.095	4.125	4.238	4.174						3.375
4.944	5.150	5.111	4.950						4.134
									5.060

**Type TDS**  
**Parallel Shaft Speed Reducers**  
**Double Reduction**

**MECHANICAL CAPACITY**

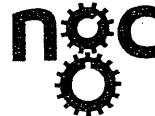
NOMINAL GEAR RATIO	NOMINAL OUTPUT SPEED	REDUCER SIZE	D7	D8	D9	D11	D12	D13	D15	D16	D18	D20
<b>6.200</b>	<b>280</b>	MECH HP TORQUE (X1000 IN. LBS.) 39	169 52	238 84	368 131	593 172	764 237	1105 298	1327 354	1578 463	2005 556	2435 556
<b>7.590</b>	<b>230</b>	MECH HP TORQUE (X1000 IN. LBS.) 40	139 53	194 86	298 135	481 176	632 243	903 306	1084 363	1320 475	1694 570	2005 570
<b>9.300</b>	<b>190</b>	MECH HP TORQUE (X1000 IN. LBS.) 40	117 54	163 87	257 137	417 180	538 248	758 312	913 372	1088 486	1411 585	1626 585
<b>11.39</b>	<b>155</b>	MECH HP TORQUE (X1000 IN. LBS.) 41	98 55	135 89	210 139	342 183	451 253	628 319	757 379	920 497	1154 595	1420 595
<b>13.95</b>	<b>125</b>	MECH HP TORQUE (X1000 IN. LBS.) 42	80 56	116 90	175 143	275 187	372 258	509 326	614 387	766 507	978 609	1163 609
<b>17.09</b>	<b>100</b>	MECH HP TORQUE (X1000 IN. LBS.) 42	67 57	92 93	144 145	228 189	316 263	428 332	515 395	620 517	811 620	983 620
<b>20.93</b>	<b>84</b>	MECH HP TORQUE (X1000 IN. LBS.) 43	55 58	80 94	121 147	198 193	264 266	375 336	451 402	519 525	707 633	815 633

**THERMAL CAPACITY**

NOMINAL GEAR RATIO	NOMINAL OUTPUT SPEED		D7	D8	D9	D11	D12	D13	D15	D16	D18	D20
<b>6.200</b>	<b>280</b>	THERMAL HP WITH FANS	38 95	52 130	59 148	97 243	123 308	141 353	162 405	196 490	219 548	257 643
<b>7.590</b>	<b>230</b>	THERMAL HP WITH FANS	38 95	53 133	60 150	99 248	125 313	144 360	165 413	200 500	224 560	262 655
<b>9.300</b>	<b>190</b>	THERMAL HP WITH FANS	39 98	54 135	61 153	101 253	128 320	147 368	168 420	204 510	228 570	267 668
<b>11.39</b>	<b>155</b>	THERMAL HP WITH FANS	40 100	55 138	63 158	104 260	132 330	151 378	173 433	210 525	235 588	275 688
<b>13.95</b>	<b>125</b>	THERMAL HP WITH FANS	42 105	57 143	66 165	108 270	137 343	157 393	180 450	218 545	244 610	285 713
<b>17.09</b>	<b>100</b>	THERMAL HP WITH FANS	43 108	59 148	68 170	112 280	141 353	163 408	186 465	226 565	252 630	296 740
<b>20.93</b>	<b>84</b>	THERMAL HP WITH FANS	45 113	61 153	70 175	116 290	146 365	168 420	193 483	233 583	261 653	306 765

**EXACT GEAR RATIO**

NOMINAL GEAR RATIO		D7	D8	D9	D11	D12	D13	D15	D16	D18	D20
6.200		6.407	6.075	6.333	6.149	6.261	5.965	6.242	6.237	6.413	6.340
7.590		7.973	7.609	7.999	7.815	7.741	7.482	7.829	7.641	7.787	7.899
9.300		9.600	9.217	9.437	9.099	9.270	9.072	9.493	9.485	9.569	9.996
11.39		11.728	11.340	11.793	11.311	11.251	11.171	11.689	11.434	11.969	11.642
13.95		14.631	13.439	14.355	14.409	13.922	14.070	14.723	14.033	14.400	14.534
17.09		17.610	17.325	17.893	17.698	16.627	17.090	17.882	17.671	17.689	17.502
20.93		21.706	19.997	21.579	20.604	20.285	19.732	20.647	21.523	20.612	21.583



**Type TDS**  
**Parallel Shaft Speed Reducers**  
**Double Reduction**

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Ratio 6.200 thru 20.93

1750 Input

**MECHANICAL CAPACITY**

D22	D25	D28	D30	WD32	WD34	WD36	WD38	WD40	REDUCER SIZE	NOMINAL OUTPUT SPEED	NOMINAL GEAR RATIO
3041	4424	5595	7422	7836	9878	11128	12262	13776	MECH HP	280	6.200
667	968	1257	1643	1710	2219	2479	2728	3095	TORQUE (X1000 IN. LBS.)		
2506	3576	4542	6020	6541	8303	9344	10300	11575	MECH HP	230	7.590
685	994	1297	1693	1767	2291	2564	2823	3204	TORQUE (X1000 IN. LBS.)		
2034	2985	3793	5029	5392	7191	8000	8821	9916	MECH HP	190	9.300
703	1018	1329	1736	1830	2352	2639	2907	3299	TORQUE (X1000 IN. LBS.)		
1776	2578	3277	4346	4544	5913	6756	7452	8379	MECH HP	155	11.39
715	1037	1355	1769	1881	2433	2718	2994	3399	TORQUE (X1000 IN. LBS.)		
1456	2077	2641	3505	3952	4965	5602	6180	6951	MECH HP	125	13.95
732	1065	1391	1818	1925	2504	2803	3089	3508	TORQUE (X1000 IN. LBS.)		
1232	1728	2198	2918	3206	4290	4737	5228	5881	MECH HP	100	17.09
746	1087	1421	1858	1989	2563	2882	3177	3609	TORQUE (X1000 IN. LBS.)		
1020	1508	1919	2548	2674	3642	3900	4306	4845	MECH HP	84	20.93
761	1105	1445	1890	2043	2627	2962	3267	3712	TORQUE (X1000 IN. LBS.)		

**THERMAL CAPACITY**

D22	D25	D28	D30	WD32	WD34	WD36	WD38	WD40		NOMINAL OUTPUT SPEED	NOMINAL GEAR RATIO
291	329	379	398	416	426	430	427	407	THERMAL HP WITH FANS	280	6.200
728	823	948	995	1040	1065	1075	1068	1018			
297	336	388	406	425	436	439	436	416	THERMAL HP WITH FANS	230	7.590
743	840	970	1015	1063	1090	1098	1090	1040			
303	343	395	414	433	444	448	445	424	THERMAL HP WITH FANS	190	9.300
758	858	988	1035	1083	1110	1120	1113	1060			
312	353	406	426	446	457	461	458	436	THERMAL HP WITH FANS	155	11.39
780	883	1015	1065	1115	1143	1153	1145	1090			
324	366	422	442	463	474	478	475	453	THERMAL HP WITH FANS	125	13.95
810	915	1055	1105	1158	1185	1195	1188	1133			
335	380	437	458	480	491	496	492	469	THERMAL HP WITH FANS	100	17.09
838	950	1093	1145	1200	1228	1240	1230	1173			
347	392	452	474	496	508	512	509	485	THERMAL HP WITH FANS	84	20.93
868	980	1130	1185	1240	1270	1280	1273	1213			

**EXACT GEAR RATIO**

D22	D25	D28	D30	WD32	WD34	WD36	WD38	WD40		NOMINAL GEAR RATIO
6.090	6.073	6.239	6.145	6.060	6.268	6.185	6.178	6.238		6.200
7.588	7.718	7.930	7.809	7.503	7.662	7.619	7.611	7.685		7.590
9.603	9.472	9.732	9.584	9.426	9.082	9.160	9.150	9.239		9.300
11.183	11.172	11.479	11.304	11.497	11.427	11.169	11.157	11.265		11.39
13.961	14.231	14.621	14.400	13.525	14.006	13.895	13.880	14.014		13.95
16.812	17.471	17.950	17.678	17.223	16.586	16.893	16.875	17.038		17.09
20.732	20.350	20.908	20.591	21.210	20.025	21.090	21.068	21.272		20.93

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**Type TDS**  
**Parallel Shaft Speed Reducers**  
**Double Reduction**

**MECHANICAL CAPACITY**

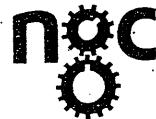
NOMINAL GEAR RATIO	NOMINAL OUTPUT SPEED	REDUCER SIZE	D7	D8	D9	D11	D12	D13	D15	D16	D18	D20
6.200	190	MECH HP TORQUE (X1000 IN. LBS.) 40	117 54	165 87	256 137	413 180	533 248	771 312	927 371	1103 486	1406 582	1704
7.590	155	MECH HP TORQUE (X1000 IN. LBS.) 41	96 55	135 89	207 140	332 183	440 254	629 318	755 378	919 496	1182 596	1401
9.300	125	MECH HP TORQUE (X1000 IN. LBS.) 42	81 56	113 90	178 142	289 187	374 258	528 325	635 387	757 507	983 611	1135
11.39	100	MECH HP TORQUE (X1000 IN. LBS.) 42	67 57	93 92	145 144	237 190	313 264	438 331	526 394	639 518	803 620	988
13.95	84	MECH HP TORQUE (X1000 IN. LBS.) 43	55 58	80 94	121 147	190 193	258 268	354 388	426 401	530 409	678 536	809
17.09	68	MECH HP TORQUE (X1000 IN. LBS.) 44	46 59	63 95	99 150	157 196	219 272	296 344	357 409	430 536	562 644	683
20.93	56	MECH HP TORQUE (X1000 IN. LBS.) 44	38 59	55 96	83 152	137 199	182 276	260 347	312 416	359 543	489 656	564

**THERMAL CAPACITY**

NOMINAL GEAR RATIO	NOMINAL OUTPUT SPEED		D7	D8	D9	D11	D12	D13	D15	D16	D18	D20
6.200	190	THERMAL HP WITH FANS	73 140	99 190	114 219	187 359	237 455	272 522	311 597	377 724	422 810	494 948
7.590	155	THERMAL HP WITH FANS	74 142	101 194	115 221	190 365	240 461	276 530	316 607	383 735	428 735	501 962
9.300	125	THERMAL HP WITH FANS	75 144	103 198	117 225	194 372	244 468	281 540	322 618	390 749	436 837	511 981
11.39	100	THERMAL HP WITH FANS	76 146	105 202	119 228	197 378	249 478	286 549	327 628	396 760	443 851	519 996
13.95	84	THERMAL HP WITH FANS	78 150	106 204	122 234	200 384	253 486	291 559	333 639	404 776	451 866	529 1016
17.09	68	THERMAL HP WITH FANS	79 152	109 209	124 238	205 394	259 497	298 572	340 653	413 793	461 885	540 1037
20.93	56	THERMAL HP WITH FANS	81 156	111 213	127 244	210 403	265 509	305 586	348 668	422 810	472 906	553 1062

**EXACT GEAR RATIO**

NOMINAL GEAR RATIO		D7	D8	D9	D11	D12	D13	D15	D16	D18	D20
6.200		6.407	6.075	6.333	6.149	6.261	5.965	6.242	6.237	6.413	6.340
7.590		7.973	7.609	7.999	7.815	7.741	7.482	7.829	7.641	7.787	7.899
9.300		9.600	9.217	9.437	9.099	9.270	9.072	9.493	9.485	9.569	9.996
11.39		11.728	11.340	11.793	11.311	11.251	11.171	11.689	11.434	11.969	11.642
13.95		14.631	13.439	14.355	14.409	13.922	14.070	14.723	14.033	14.400	14.534
17.09		17.610	17.325	17.893	17.698	16.627	17.090	17.882	17.671	17.689	17.502
20.93		21.706	19.997	21.579	20.604	20.285	19.732	20.647	21.523	20.612	21.583



**Type TDS**  
**Parallel Shaft Speed Reducers**  
**Double Reduction**

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MECHANICAL CAPACITY										NOMINAL OUTPUT SPEED	NOMINAL GEAR RATIO
D22	D25	D28	D30	WD32	WD34	WD36	WD38	WD40	REDUCER SIZE		
2131 699	3103 1015	3928 1320	5220 1728	5575 1820	7000 2363	7937 2644	8745 2910	9830 3303	MECH HP TORQUE (X1000 IN. LBS.)	190	6.200
1752 716	2509 1043	3178 1358	4221 1776	4639 1875	5898 2434	6639 2725	7323 3002	8234 3409	MECH HP TORQUE (X1000 IN. LBS.)	155	7.590
1419 734	2089 1066	2647 1388	3517 1816	3814 1937	5098 2494	5676 2801	6263 3087	7044 3506	MECH HP TORQUE (X1000 IN. LBS.)	125	9.300
1238 746	1804 1086	2286 1413	3038 1850	3213 1990	4180 2573	4775 2873	5281 3174	5929 3598	MECH HP TORQUE (X1000 IN. LBS.)	100	11.39
1013 762	1450 1112	1838 1448	2445 1897	2786 2030	3501 2642	3950 2957	4361 3261	4907 3704	MECH HP TORQUE (X1000 IN. LBS.)	84	13.95
856 775	1204 1133	1527 1476	2031 1934	2253 2090	3020 2698	3331 3031	3678 3343	4140 3800	MECH HP TORQUE (X1000 IN. LBS.)	68	17.09
707 790	1048 1149	1330 1498	1770 1963	1871 2138	2558 2759	2743 3116	3030 3439	3411 3909	MECH HP TORQUE (X1000 IN. LBS.)	56	20.93
THERMAL CAPACITY										NOMINAL OUTPUT SPEED	NOMINAL GEAR RATIO
D22	D25	D28	D30	WD32	WD34	WD36	WD38	WD40			
561 1077	634 1217	731 1404	766 1471	802 1540	821 1576	828 1590	823 1580	783 1503	THERMAL HP WITH FANS	190	6.200
569 1092	644 1236	742 1425	777 1492	814 1563	833 1599	841 1614	835 1603	795 1526	THERMAL HP WITH FANS	155	7.590
579 1112	655 1258	755 1450	791 1519	828 1590	848 1628	856 1643	850 1632	809 1553	THERMAL HP WITH FANS	125	9.300
589 1131	667 1281	768 1475	805 1546	843 1619	863 1657	871 1672	865 1660	823 1580	THERMAL HP WITH FANS	100	11.39
600 1152	679 1304	782 1501	819 1572	857 1645	879 1688	886 1701	880 1690	838 1609	THERMAL HP WITH FANS	84	13.95
613 1177	694 1332	799 1534	838 1609	877 1684	898 1724	906 1740	900 1728	857 1645	THERMAL HP WITH FANS	68	17.09
627 1204	710 1363	818 1571	857 1645	897 1722	919 1764	927 1780	921 1768	877 1684	THERMAL HP WITH FANS	56	20.93
EXACT GEAR RATIO										NOMINAL GEAR RATIO	
D22	D25	D28	D30	WD32	WD34	WD36	WD38	WD40			
6.090	6.073	6.239	6.145	6.060	6.268	6.185	6.178	6.238			6.200
7.588	7.718	7.930	7.809	7.503	7.662	7.619	7.611	7.685			7.590
9.603	9.472	9.732	9.584	9.426	9.082	9.160	9.150	9.239			9.300
11.183	11.172	11.479	11.304	11.497	11.427	11.169	11.157	11.265			11.39
13.961	14.231	14.621	14.400	13.525	14.006	13.895	13.880	14.014			13.95
16.812	17.471	17.950	17.678	17.223	16.586	16.893	16.875	17.038			17.09
20.732	20.350	20.908	20.591	21.210	20.025	21.090	21.068	21.272			20.93

**Type TDS**  
**Parallel Shaft Speed Reducers**  
**Double Reduction**

**MECHANICAL CAPACITY**

NOMINAL GEAR RATIO	NOMINAL OUTPUT SPEED	REDUCER SIZE	D7	D8	D9	D11	D12	D13	D15	D16	D18	D20
<b>6.200</b>	<b>140</b>	MECH HP TORQUE (X1000 IN. LBS.)42	90 55	126 90	196 141	316 185	408 254	588 321	710 383	847 502	1080 601	1308
<b>7.590</b>	<b>115</b>	MECH HP TORQUE (X1000 IN. LBS.)42	73 57	103 92	158 144	255 189	337 260	479 328	578 390	705 511	905 614	1073
<b>9.300</b>	<b>94</b>	MECH HP TORQUE (X1000 IN. LBS.)43	62 57	86 93	136 146	222 192	286 264	402 334	485 398	579 521	752 629	868
<b>11.39</b>	<b>76</b>	MECH HP TORQUE (X1000 IN. LBS.)43	51 58	71 95	111 148	181 195	239 269	332 340	402 405	489 531	612 531	757
<b>13.95</b>	<b>62</b>	MECH HP TORQUE (X1000 IN. LBS.)45	42 59	61 96	92 151	145 198	196 274	269 347	325 413	406 540	518 650	617
<b>17.09</b>	<b>51</b>	MECH HP TORQUE (X1000 IN. LBS.)45	35 60	48 97	75 154	120 201	167 279	225 352	272 421	329 548	428 661	521
<b>20.93</b>	<b>42</b>	MECH HP TORQUE (X1000 IN. LBS.)46	29 61	42 98	63 155	104 204	139 282	197 356	238 427	274 557	373 669	428

**THERMAL CAPACITY**

NOMINAL GEAR RATIO	NOMINAL OUTPUT SPEED		D7	D8	D9	D11	D12	D13	D15	D16	D18	D20
<b>6.200</b>	<b>140</b>	THERMAL HP WITH FANS	113 183	155 251	178 288	293 475	370 599	425 689	486 787	589 954	659 1068	772 1251
<b>7.590</b>	<b>115</b>	THERMAL HP WITH FANS	116 188	158 256	181 293	298 483	377 611	433 701	496 804	601 974	672 1089	787 1275
<b>9.300</b>	<b>94</b>	THERMAL HP WITH FANS	118 191	162 262	185 300	305 494	385 624	443 718	507 821	614 995	687 1113	805 1304
<b>11.39</b>	<b>76</b>	THERMAL HP WITH FANS	121 196	166 269	189 306	312 505	394 638	453 734	518 839	628 1017	702 1137	823 1333
<b>13.95</b>	<b>62</b>	THERMAL HP WITH FANS	124 201	169 274	193 313	319 517	402 651	463 750	530 859	642 1040	718 1163	841 1362
<b>17.09</b>	<b>51</b>	THERMAL HP WITH FANS	127 206	173 280	198 321	327 530	412 667	474 768	543 880	657 1064	735 1191	861 1395
<b>20.93</b>	<b>42</b>	THERMAL HP WITH FANS	129 209	177 287	203 329	334 541	422 684	485 786	555 899	673 1090	752 1218	881 1427

**EXACT GEAR RATIO**

NOMINAL GEAR RATIO		D7	D8	D9	D11	D12	D13	D15	D16	D18	D20
6.200		6.407	6.075	6.333	6.149	6.261	5.965	6.242	6.237	6.413	6.340
7.590		7.973	7.609	7.999	7.815	7.741	7.482	7.829	7.641	7.787	7.899
9.300		9.600	9.217	9.437	9.099	9.270	9.072	9.493	9.485	9.569	9.996
11.39		11.728	11.340	11.793	11.311	11.251	11.171	11.689	11.434	11.969	11.642
13.95		14.631	13.439	14.355	14.409	13.922	14.070	14.723	14.033	14.400	14.534
17.09		17.610	17.325	17.893	17.698	16.627	17.090	17.882	17.671	17.689	17.502
20.93		21.706	19.997	21.579	20.604	20.285	19.732	20.647	21.523	20.612	21.583

**Type TDS**  
**Parallel Shaft Speed Reducers**  
**Double Reduction**

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870 Input

**MECHANICAL CAPACITY**

D22	D25	D28	D30	WD32	WD34	WD36	WD38	WD40	REDUCER SIZE	NOMINAL OUTPUT SPEED	NOMINAL GEAR RATIO
1637	2382	3028	4029	4327	5435	6166	6802	7650	MECH HP	140	6.200
722	1048	1369	1794	1900	2468	2763	3044	3457	TORQUE (X1000 IN. LBS.)		
1344	1922	2445	3254	3596	4572	5149	5682	6391	MECH HP	115	7.590
739	1075	1405	1841	1955	2538	2842	3133	3558	TORQUE (X1000 IN. LBS.)		
1087	1600	2035	2710	2946	3945	4386	4841	5447	MECH HP	94	9.300
756	1098	1435	1882	2012	2596	2910	3209	3646	TORQUE (X1000 IN. LBS.)		
947	1377	1753	2335	2476	3229	3688	4083	4583	MECH HP	76	11.39
767	1114	1458	1912	2062	2673	2984	3300	3740	TORQUE (X1000 IN. LBS.)		
774	1106	1408	1877	2144	2700	3050	3368	3792	MECH HP	62	13.95
783	1140	1491	1958	2101	2740	3070	3387	3850	TORQUE (X1000 IN. LBS.)		
654	917	1167	1556	1732	2326	2561	2829	3185	MECH HP	51	17.09
796	1161	1518	1993	2161	2794	3134	3458	3931	TORQUE (X1000 IN. LBS.)		
540	797	1016	1355	1425	1967	2101	2321	2614	MECH HP	42	20.93
810	1175	1539	2021	2190	2854	3210	3542	4028	TORQUE (X1000 IN. LBS.)		

**THERMAL CAPACITY**

D22	D25	D28	D30	WD32	WD34	WD36	WD38	WD40		NOMINAL OUTPUT SPEED	NOMINAL GEAR RATIO
876	991	1142	1197	1252	1283	1294	1286	1224	THERMAL HP WITH FANS	140	6.200
1419	1605	1850	1939	2028	2078	2096	2083	1983			
892	1010	1163	1220	1276	1308	1319	1307	1247	THERMAL HP WITH FANS	115	7.590
1445	1636	1884	1976	2067	2119	2137	2117	2020			
913	1033	1190	1248	1306	1338	1349	1340	1276	THERMAL HP WITH FANS	94	9.300
1479	1673	1928	2022	2116	2168	2185	2171	2067			
933	1056	1216	1275	1334	1367	1379	1370	1304	THERMAL HP WITH FANS	76	11.39
1511	1711	1970	2066	2161	2215	2234	2219	2112			
954	1080	1244	1304	1364	1398	1410	1401	1333	THERMAL HP WITH FANS	62	13.95
1545	1750	2015	2112	2210	2265	2284	2270	2159			
977	1106	1274	1335	1397	1431	1444	1434	1366	THERMAL HP WITH FANS	51	17.09
1583	1792	2064	2163	2263	2318	2339	2323	2213			
1000	1132	1303	1366	1430	1465	1478	1468	1398	THERMAL HP WITH FANS	42	20.93
1620	1834	2111	2213	2317	2373	2394	2378	2265			

**EXACT GEAR RATIO**

D22	D25	D28	D30	WD32	WD34	WD36	WD38	WD40		NOMINAL GEAR RATIO
6.090	6.073	6.239	6.145	6.060	6.268	6.185	6.178	6.238		6.200
7.588	7.718	7.930	7.809	7.503	7.662	7.619	7.611	7.685		7.590
9.603	9.472	9.732	9.584	9.426	9.082	9.160	9.150	9.239		9.300
11.183	11.172	11.479	11.304	11.497	11.427	11.169	11.157	11.265		11.39
13.961	14.231	14.621	14.400	13.525	14.006	13.895	13.880	14.014		13.95
16.812	17.471	17.950	17.678	17.223	16.586	16.893	16.875	17.038		17.09
20.732	20.350	20.908	20.591	21.210	20.025	21.090	21.068	21.272		20.93

**Type TDS**  
**Parallel Shaft Speed Reducers**  
**Double Reduction**

**MECHANICAL CAPACITY**

NOMINAL GEAR RATIO	NOMINAL OUTPUT SPEED	REDUCER SIZE	D7	D8	D9	D11	D12	D13	D15	D16	D18	D20
<b>6.200</b>	<b>116</b>	MECH HP TORQUE (X1000 IN. LBS.) 42	75 56	106 91	164 143	266 188	343 260	497 327	598 389	713 510	909 510	1104 613
<b>7.590</b>	<b>95</b>	MECH HP TORQUE (X1000 IN. LBS.) 43	61 57	86 93	133 146	213 192	283 265	404 334	487 397	593 397	764 521	906 626
<b>9.300</b>	<b>77</b>	MECH HP TORQUE (X1000 IN. LBS.) 44	52 58	72 94	114 147	185 194	239 269	339 339	408 405	488 405	633 530	731 640
<b>11.39</b>	<b>63</b>	MECH HP TORQUE (X1000 IN. LBS.) 44	43 60	60 95	92 150	152 198	201 275	281 346	338 411	411 411	516 541	635 647
<b>13.95</b>	<b>52</b>	MECH HP TORQUE (X1000 IN. LBS.) 45	35 60	51 97	77 154	122 201	165 280	227 352	273 418	340 418	436 550	519 660
<b>17.09</b>	<b>42</b>	MECH HP TORQUE (X1000 IN. LBS.) 45	29 61	40 99	63 155	100 204	140 284	190 358	229 425	275 425	360 557	437 669
<b>20.93</b>	<b>34</b>	MECH HP TORQUE (X1000 IN. LBS.) 46	24 61	35 100	53 157	87 206	116 287	166 360	199 431	229 431	313 565	361 682

**THERMAL CAPACITY**

NOMINAL GEAR RATIO	NOMINAL OUTPUT SPEED		D7	D8	D9	D11	D12	D13	D15	D16	D18	D20
<b>6.200</b>	<b>116</b>	THERMAL HP WITH FANS	159 234	218 320	249 366	411 604	519 763	597 878	683 1004	827 1216	925 1360	1084 1593
<b>7.590</b>	<b>95</b>	THERMAL HP WITH FANS	162 238	222 326	254 373	418 614	527 775	607 892	694 1020	841 1236	941 1383	1102 1620
<b>9.300</b>	<b>77</b>	THERMAL HP WITH FANS	165 243	226 332	258 379	426 626	537 789	618 908	707 1039	857 1260	959 1260	1123 1651
<b>11.39</b>	<b>63</b>	THERMAL HP WITH FANS	168 247	230 338	263 387	434 638	547 804	630 926	720 1058	873 1283	976 1435	1143 1680
<b>13.95</b>	<b>52</b>	THERMAL HP WITH FANS	171 251	234 344	268 394	442 650	557 819	641 942	733 1078	889 1307	994 1461	1164 1711
<b>17.09</b>	<b>42</b>	THERMAL HP WITH FANS	174 256	239 351	273 401	451 663	568 835	654 961	748 1100	907 1333	1014 1491	1188 1746
<b>20.93</b>	<b>34</b>	THERMAL HP WITH FANS	178 262	244 359	279 410	460 676	580 853	667 980	763 1122	925 1360	1034 1520	1212 1782

**EXACT GEAR RATIO**

NOMINAL GEAR RATIO		D7	D8	D9	D11	D12	D13	D15	D16	D18	D20
6.200		6.407	6.075	6.333	6.149	6.261	5.965	6.242	6.237	6.413	6.340
7.590		7.973	7.609	7.999	7.815	7.741	7.482	7.829	7.641	7.787	7.899
9.300		9.600	9.217	9.437	9.099	9.270	9.072	9.493	9.485	9.569	9.996
11.39		11.728	11.340	11.793	11.311	11.251	11.171	11.689	11.434	11.969	11.642
13.95		14.631	13.439	14.355	14.409	13.922	14.070	14.723	14.033	14.400	14.534
17.09		17.610	17.325	17.893	17.698	16.627	17.090	17.882	17.671	17.689	17.502
20.93		21.706	19.997	21.579	20.604	20.285	19.732	20.647	21.523	20.612	21.583



**Type TDS**  
**Parallel Shaft Speed Reducers**  
**Double Reduction**

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Ratio 6.200 thru 20.93

720 Input

**MECHANICAL CAPACITY**

D22	D25	D28	D30	WD32	WD34	WD36	WD38	WD40	REDUCER SIZE	NOMINAL OUTPUT SPEED	NOMINAL GEAR RATIO
1381 736	2016 1072	2554 1395	3394 1826	3676 1950	4618 2534	5235 2834	5776 3124	6497 3548	MECH HP TORQUE (X1000 IN. LBS.)	116	6.200
1133 753	1622 1096	2061 1431	2740 1873	3049 2003	3880 2602	4367 2912	4820 3211	5423 3648	MECH HP TORQUE (X1000 IN. LBS.)	95	7.590
916 770	1349 1118	1716 1462	2282 1914	2497 2060	3345 2659	3719 2982	4106 3289	4621 3737	MECH HP TORQUE (X1000 IN. LBS.)	77	9.300
798 781	1160 1134	1477 1484	1964 1943	2100 2113	2734 2735	3123 3053	3460 3379	3882 3828	MECH HP TORQUE (X1000 IN. LBS.)	63	11.39
652 796	935 1165	1186 1518	1579 1990	1817 2151	2284 2801	2582 3140	2853 3466	3212 3940	MECH HP TORQUE (X1000 IN. LBS.)	52	13.95
550 809	774 1184	983 1545	1308 2024	1449 2185	1966 2854	2167 3204	2395 3538	2697 4022	MECH HP TORQUE (X1000 IN. LBS.)	42	17.09
454 823	671 1195	855 1565	1138 2051	1200 2228	1662 2912	1774 3275	1960 3615	2208 4111	MECH HP TORQUE (X1000 IN. LBS.)	34	20.93

**THERMAL CAPACITY**

D22	D25	D28	D30	WD32	WD34	WD36	WD38	WD40		NOMINAL OUTPUT SPEED	NOMINAL GEAR RATIO
1229 1807	1392 2046	1603 2356	1680 2470	1758 2584	1801 2647	1817 2671	1805 2653	1718 2525	THERMAL HP WITH FANS	116	6.200
1250 1838	1415 2080	1630 2396	1708 2511	1788 2628	1832 2693	1848 2717	1835 2697	1747 2568	THERMAL HP WITH FANS	95	7.590
1274 1873	1442 2120	1660 2440	1741 2559	1822 2678	1866 2743	1883 2768	1870 2749	1780 2617	THERMAL HP WITH FANS	77	9.300
1297 1907	1468 2158	1690 2484	1772 2605	1854 2725	1900 2793	1916 2817	1904 2799	1812 2664	THERMAL HP WITH FANS	63	11.39
1320 1940	1495 2198	1721 2530	1805 2653	1888 2775	1935 2844	1952 2869	1939 2850	1846 2713	THERMAL HP WITH FANS	52	13.95
1347 1980	1525 2242	1756 2581	1841 2706	1927 2833	1974 2902	1991 2927	1978 2908	1883 2768	THERMAL HP WITH FANS	42	17.09
1374 2020	1556 2287	1791 2633	1878 2761	1965 2889	2014 2961	2031 2986	2018 2966	1921 2824	THERMAL HP WITH FANS	34	20.93

**EXACT GEAR RATIO**

D22	D25	D28	D30	WD32	WD34	WD36	WD38	WD40		NOMINAL GEAR RATIO
6.090	6.073	6.239	6.145	6.060	6.268	6.185	6.178	6.238		6.200
7.588	7.718	7.930	7.809	7.503	7.662	7.619	7.611	7.685		7.590
9.603	9.472	9.732	9.584	9.426	9.082	9.160	9.150	9.239		9.300
11.183	11.172	11.479	11.304	11.497	11.427	11.169	11.157	11.265		11.39
13.961	14.231	14.621	14.400	13.525	14.006	13.895	13.880	14.014		13.95
16.812	17.471	17.950	17.678	17.223	16.586	16.893	16.875	17.038		17.09
20.732	20.350	20.908	20.591	21.210	20.025	21.090	21.068	21.272		20.93

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Ratio 6.200 thru 20.93

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**Type TDS**  
**Parallel Shaft Speed Reducers**  
**Double Reduction**

**MECHANICAL CAPACITY**

NOMINAL GEAR RATIO	NOMINAL OUTPUT SPEED	REDUCER SIZE	D7	D8	D9	D11	D12	D13	D15	D16	D18	D20
6.200	94	MECH HP TORQUE (X1000 IN. LBS.) 42	61	87	135	219	282	407	491	587	748	906
			57	93	146	192	264	333	398	521	624	
7.590	76	MECH HP TORQUE (X1000 IN. LBS.) 43	50	70	109	176	233	331	399	487	626	744
			58	95	149	196	269	339	404	530	639	
9.300	62	MECH HP TORQUE (X1000 IN. LBS.) 44	42	59	93	153	197	278	335	400	520	600
			59	95	151	198	274	346	412	541	652	
11.39	51	MECH HP TORQUE (X1000 IN. LBS.) 45	35	49	76	125	164	229	277	338	423	521
			60	97	154	201	278	352	420	550	659	
13.95	42	MECH HP TORQUE (X1000 IN. LBS.) 46	29	42	63	100	135	185	224	279	358	426
			61	98	157	204	283	358	425	560	673	
17.09	34	MECH HP TORQUE (X1000 IN. LBS.) 46	24	33	51	83	115	154	187	226	294	359
			62	99	160	208	286	363	434	565	683	
20.93	28	MECH HP TORQUE (X1000 IN. LBS.) 47	20	29	44	72	96	136	166	191	259	299
			63	103	161	212	292	372	447	580	701	

**THERMAL CAPACITY**

NOMINAL GEAR RATIO	NOMINAL OUTPUT SPEED		D7	D8	D9	D11	D12	D13	D15	D16	D18	D20
6.200	94	THERMAL HP WITH FANS	240 319	329 438	376 500	620 825	782 1040	900 1197	1029 1369	1247 1659	1395 1855	1634 2173
7.590	76	THERMAL HP WITH FANS	247 329	338 450	387 515	638 849	805 1071	926 1232	1059 1408	1284 1708	1435 1909	1682 2237
9.300	62	THERMAL HP WITH FANS	253 336	347 462	397 528	654 870	825 1097	950 1264	1086 1444	1317 1752	1472 1958	1725 2294
11.39	51	THERMAL HP WITH FANS	258 343	353 469	404 537	666 886	841 1119	967 1286	1107 1472	1341 1784	1499 1994	1757 2337
13.95	42	THERMAL HP WITH FANS	262 348	359 477	411 547	677 900	855 1137	983 1307	1125 1496	1363 1813	1524 2027	1786 2375
17.09	34	THERMAL HP WITH FANS	266 354	364 484	417 555	687 914	867 1153	997 1326	1141 1518	1382 1838	1545 2055	1811 2409
20.93	28	THERMAL HP WITH FANS	269 358	368 489	421 560	694 923	876 1165	1008 1341	1153 1533	1397 1858	1562 2077	1830 2434

**EXACT GEAR RATIO**

NOMINAL GEAR RATIO		D7	D8	D9	D11	D12	D13	D15	D16	D18	D20
6.200		6.407	6.075	6.333	6.149	6.261	5.965	6.242	6.237	6.413	6.340
7.590		7.973	7.609	7.999	7.815	7.741	7.482	7.829	7.641	7.787	7.899
9.300		9.600	9.217	9.437	9.099	9.270	9.072	9.493	9.485	9.569	9.996
11.39		11.728	11.340	11.793	11.311	11.251	11.171	11.689	11.434	11.969	11.642
13.95		14.631	13.439	14.355	14.409	13.922	14.070	14.723	14.033	14.400	14.534
17.09		17.610	17.325	17.893	17.698	16.627	17.090	17.882	17.671	17.689	17.502
20.93		21.706	19.997	21.579	20.604	20.285	19.732	20.647	21.523	20.612	21.583

**Type TDS**  
**Parallel Shaft Speed Reducers**  
**Double Reduction**

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**MECHANICAL CAPACITY**

D22	D25	D28	D30	WD32	WD34	WD36	WD38	WD40	REDUCER SIZE	NOMINAL OUTPUT SPEED	NOMINAL GEAR RATIO
1137 753	1656 1093	2107 1428	2806 1874	3042 2003	3828 2607	4347 2922	4798 3221	5398 3659	MECH HP TORQUE (X1000 IN. LBS.)	94	6.200
932 769	1334 1119	1698 1463	2262 1919	2526 2059	3212 2675	3617 2995	3994 3303	4495 3754	MECH HP TORQUE (X1000 IN. LBS.)	76	7.590
752 785	1106 1138	1408 1489	1877 1955	2063 2113	2767 2731	3087 3073	3403 3384	3830 3845	MECH HP TORQUE (X1000 IN. LBS.)	62	9.300
655 796	953 1157	1214 1514	1618 1987	1724 2154	2259 2805	2582 3134	2853 3459	3212 3932	MECH HP TORQUE (X1000 IN. LBS.)	51	11.39
535 811	764 1181	974 1547	1298 2031	1488 2187	1885 2869	2123 3205	2346 3538	2642 4023	MECH HP TORQUE (X1000 IN. LBS.)	42	13.95
451 824	631 1198	799 1558	1065 2046	1192 2231	1621 2921	1785 3277	1973 3618	2223 4116	MECH HP TORQUE (X1000 IN. LBS.)	34	17.09
376 847	543 1201	708 1609	988 2211	979 2256	1381 3006	1480 3392	1636 3745	1845 4265	MECH HP TORQUE (X1000 IN. LBS.)	28	20.93

**THERMAL CAPACITY**

D22	D25	D28	D30	WD32	WD34	WD36	WD38	WD40	NOMINAL OUTPUT SPEED	NOMINAL GEAR RATIO	
1853 2464	2098 2790	2416 3213	2533 3369	2650 3525	2715 3611	2739 3643	2721 3619	2590 3445	THERMAL HP WITH FANS	94	6.200
1907 2536	2159 2871	2486 3306	2607 3467	2728 3628	2795 3717	2819 3749	2800 3724	2666 3546	THERMAL HP WITH FANS	76	7.590
1956 2601	2214 2945	2550 3392	2673 3555	2798 3721	2866 3812	2891 3845	2872 3820	2735 3638	THERMAL HP WITH FANS	62	9.300
1993 2651	2255 2999	2597 3454	2723 3622	2850 3791	2920 3884	2945 3917	2925 3890	2785 3704	THERMAL HP WITH FANS	51	11.39
2025 2693	2293 3050	2640 3511	2768 3681	2897 3853	2968 3947	2993 3981	2974 3955	2831 3765	THERMAL HP WITH FANS	42	13.95
2054 2732	2325 3092	2677 3560	2807 3733	2937 3906	3009 4002	3035 4037	3015 4010	2871 3818	THERMAL HP WITH FANS	34	17.09
2076 2761	2350 3126	2706 3599	2837 3773	2969 3949	3042 4046	3068 4080	3048 4054	2902 3860	THERMAL HP WITH FANS	28	20.93

**EXACT GEAR RATIO**

D22	D25	D28	D30	WD32	WD34	WD36	WD38	WD40	NOMINAL GEAR RATIO
6.090	6.073	6.239	6.145	6.060	6.268	6.185	6.178	6.238	6.200
7.588	7.718	7.930	7.809	7.503	7.662	7.619	7.611	7.685	7.590
9.603	9.472	9.732	9.584	9.426	9.082	9.160	9.150	9.239	9.300
11.183	11.172	11.479	11.304	11.497	11.427	11.169	11.157	11.265	11.39
13.961	14.231	14.621	14.400	13.525	14.006	13.895	13.880	14.014	13.95
16.812	17.471	17.950	17.678	17.223	16.586	16.893	16.875	17.038	17.09
20.732	20.350	20.908	20.591	21.210	20.025	21.090	21.068	21.272	20.93

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1750 Input

**Type TDS**  
**Parallel Shaft Speed Reducers**  
**Triple Reduction**

**MECHANICAL CAPACITY**

NOMINAL GEAR RATIO	NOMINAL OUTPUT SPEED	REDUCER SIZE	T7	T8	T9	T11	T12	T13	T15	T16	T18	T20
25.63	68	MECH HP TORQUE (X1000 IN. LBS.)	46 44	62 59	98 96	156 150	218 196	294 271	355 343	437 409	572 536	672 646
31.39	56	MECH HP TORQUE (X1000 IN. LBS.)	38 45	52 60	80 97	127 152	177 199	240 278	290 351	351 418	459 547	553 657
38.44	45	MECH HP TORQUE (X1000 IN. LBS.)	32 46	44 61	67 98	107 155	149 203	201 282	242 355	305 423	398 552	469 668
47.08	37	MECH HP TORQUE (X1000 IN. LBS.)	26 46	36 62	56 100	89 157	122 205	166 286	200 361	249 429	327 564	393 679
57.66	30	MECH HP TORQUE (X1000 IN. LBS.)	22 47	30 63	46 102	73 161	105 209	142 290	173 370	201 441	263 578	326 697
70.62	25	MECH HP TORQUE (X1000 IN. LBS.)	19 48	26 65	39 104	62 164	84 215	114 300	139 383	168 453	221 596	278 710
86.50	20	MECH HP TORQUE (X1000 IN. LBS.)	15 50	21 67	32 106	52 170	75 222	101 307	122 388	147 462	194 610	234 729

**THERMAL CAPACITY**

NOMINAL GEAR RATIO	NOMINAL OUTPUT SPEED		T7	T8	T9	T11	T12	T13	T15	T16	T18	T20
25.63	68	THERMAL HP WITH FANS	47 118	64 160	73 183	120 300	152 380	175 438	200 500	242 605	271 678	317 793
31.39	56	THERMAL HP WITH FANS	48 120	65 163	75 188	123 308	155 388	178 445	204 510	247 618	276 690	324 810
38.44	45	THERMAL HP WITH FANS	49 123	67 168	77 193	127 318	160 400	185 463	211 528	256 640	286 715	335 838
47.08	37	THERMAL HP WITH FANS	50 125	68 170	78 195	129 323	163 408	187 468	214 535	260 650	291 728	340 850
57.66	30	THERMAL HP WITH FANS	51 128	69 173	79 198	131 328	165 413	190 475	217 543	263 658	294 735	344 860
70.62	25	THERMAL HP WITH FANS	51 128	70 175	80 200	131 328	166 415	191 478	218 545	264 660	295 738	346 865
86.50	20	THERMAL HP WITH FANS	51 128	70 175	80 200	132 330	166 415	191 478	219 548	265 663	296 740	347 868

**EXACT GEAR RATIO**

NOMINAL GEAR RATIO		T7	T8	T9	T11	T12	T13	T15	T16	T18	T20
25.63		26.905	26.469	27.069	26.760	24.941	25.635	26.823	26.015	26.042	26.691
31.39		32.469	31.944	33.682	33.298	31.239	32.109	33.597	33.062	33.096	33.004
38.44		39.623	38.981	40.558	40.096	37.841	38.895	40.698	38.498	38.537	39.521
47.08		49.162	48.366	49.549	48.984	46.555	47.852	50.070	47.858	47.907	47.968
57.66		58.699	57.749	61.811	61.107	55.172	56.708	59.336	60.965	61.027	59.355
70.62		71.419	70.263	74.397	73.549	71.127	73.108	76.496	74.842	74.918	70.883
86.50		89.225	87.780	91.702	90.656	82.096	84.382	88.292	87.176	87.265	86.481



**Type TDS**  
**Parallel Shaft Speed Reducers**  
**Triple Reduction**

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 1750 Input

**MECHANICAL CAPACITY**

T22	T25	T28	T30	WT32	WT34	WT36	WT38	WT40	REDUCER SIZE	NOMINAL OUTPUT SPEED	NOMINAL GEAR RATIO
841 777	1217 1128	1514 1482	2011 1939	2268 2092	2971 2704	3382 3029	3735 3342	4203 3797	MECH HP TORQUE (X1000 IN. LBS.)	68	25.63
667 792	993 1155	1270 1510	1688 1976	1863 2141	2487 2770	2733 3111	3018 3432	3398 3901	MECH HP TORQUE (X1000 IN. LBS.)	56	31.39
588 804	830 1171	1053 1538	1399 2012	1504 2187	2138 2824	2278 3182	2516 3511	2834 3993	MECH HP TORQUE (X1000 IN. LBS.)	45	38.44
492 817	683 1186	856 1564	1140 2052	1305 2210	1741 2896	1966 3239	2173 3577	2448 4068	MECH HP TORQUE (X1000 IN. LBS.)	37	47.08
407 836	552 1207	733 1611	976 2113	1061 2244	1457 2974	1590 3337	1757 3684	1981 4194	MECH HP TORQUE (X1000 IN. LBS.)	30	57.66
350 857	459 1219	613 1655	807 2146	887 2259	1265 3058	1347 3471	1489 3833	1679 4363	MECH HP TORQUE (X1000 IN. LBS.)	25	70.62
295 882	401 1230	538 1693	699 2166	735 2308	1020 3188	1175 3529	1300 3898	1466 4438	MECH HP TORQUE (X1000 IN. LBS.)	20	86.50

**THERMAL CAPACITY**

T22	T25	T28	T30	WT32	WT34	WT36	WT38	WT40		NOMINAL OUTPUT SPEED	NOMINAL GEAR RATIO
360 900	407 1018	469 1173	491 1228	514 1285	527 1318	532 1330	528 1320	503 1258	THERMAL HP WITH FANS	68	25.63
367 918	416 1040	479 1198	502 1255	525 1313	538 1345	543 1358	539 1348	514 1285	THERMAL HP WITH FANS	56	31.39
380 950	430 1075	495 1238	519 1298	543 1358	557 1393	562 1405	558 1395	531 1328	THERMAL HP WITH FANS	45	38.44
386 965	437 1093	503 1258	528 1320	552 1380	566 1415	571 1428	567 1418	540 1350	THERMAL HP WITH FANS	37	47.08
391 978	442 1105	509 1273	534 1335	559 1398	573 1433	578 1445	574 1435	546 1365	THERMAL HP WITH FANS	30	57.66
393 983	444 1110	512 1280	537 1343	561 1403	575 1438	580 1450	576 1440	549 1373	THERMAL HP WITH FANS	25	70.62
394 985	446 1115	513 1283	538 1345	563 1408	577 1443	582 1455	578 1445	550 1375	THERMAL HP WITH FANS	20	86.50

**EXACT GEAR RATIO**

T22	T25	T28	T30	WT32	WT34	WT36	WT38	WT40		NOMINAL GEAR RATIO
25.638	25.747	27.181	26.769	25.614	25.273	24.870	24.843	25.083		25.63
31.703	32.295	33.004	32.504	31.913	30.930	31.606	31.573	31.878		31.39
37.963	39.160	40.553	39.939	40.385	36.690	38.791	38.750	39.124		38.44
46.077	48.220	50.727	49.959	47.032	46.203	45.751	45.702	46.144		47.08
57.015	60.733	61.029	60.104	58.715	56.668	58.280	58.219	58.781		57.66
68.089	73.763	74.966	73.831	70.705	67.133	71.546	71.471	72.161		70.62
83.071	85.171	87.355	86.032	87.192	86.831	83.338	83.249	84.053		86.50

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**Type TDS**  
**Parallel Shaft Speed Reducers**  
**Triple Reduction**

**MECHANICAL CAPACITY**

NOMINAL GEAR RATIO	NOMINAL OUTPUT SPEED	REDUCER SIZE	T7	T8	T9	T11	T12	T13	T15	T16	T18	T20
25.63	45	MECH HP TORQUE (X1000 IN. LBS.) 45	31 61	43 98	67 154	107 202	150 282	204 354	245 422	301 553	394 669	465
31.39	37	MECH HP TORQUE (X1000 IN. LBS.) 45	26 62	36 100	55 158	88 205	122 285	165 360	199 431	242 565	317 679	382
38.44	30	MECH HP TORQUE (X1000 IN. LBS.) 47	22 63	30 103	47 162	75 210	103 293	140 370	169 438	211 577	278 694	326
47.08	25	MECH HP TORQUE (X1000 IN. LBS.) 48	18 65	25 104	39 164	62 216	86 302	117 380	141 449	174 591	229 713	276
57.66	20	MECH HP TORQUE (X1000 IN. LBS.) 50	15 67	21 107	32 171	52 220	74 305	100 387	121 470	143 611	186 735	230
70.62	16.5	MECH HP TORQUE (X1000 IN. LBS.) 50	13 68	18 111	27 174	44 226	59 319	81 400	97 480	119 630	156 752	197
86.50	13.5	MECH HP TORQUE (X1000 IN. LBS.) 52	11 71	15 114	23 181	37 230	52 323	71 409	86 493	105 644	137 769	165

**THERMAL CAPACITY**

NOMINAL GEAR RATIO	NOMINAL OUTPUT SPEED		T7	T8	T9	T11	T12	T13	T15	T16	T18	T20
25.63	45	THERMAL HP WITH FANS	83 159	113 217	130 250	214 411	270 518	310 595	355 682	430 826	481 924	563 1081
31.39	37	THERMAL HP WITH FANS	85 163	116 223	133 255	219 420	276 530	318 611	364 699	441 847	493 947	577 1108
38.44	30	THERMAL HP WITH FANS	86 165	118 227	135 259	223 428	281 540	324 622	370 710	449 862	502 964	588 1129
47.08	25	THERMAL HP WITH FANS	88 169	120 230	137 263	227 436	286 549	329 632	376 722	456 876	510 979	597 1146
57.66	20	THERMAL HP WITH FANS	89 171	122 234	140 269	230 442	290 557	334 641	382 733	463 889	518 995	607 1165
70.62	16.5	THERMAL HP WITH FANS	90 173	123 236	140 269	232 445	292 561	336 645	385 739	466 895	521 1000	611 1173
86.50	13.5	THERMAL HP WITH FANS	90 173	123 236	141 271	232 445	293 563	337 647	386 741	468 899	523 1004	613 1177

**EXACT GEAR RATIO**

NOMINAL GEAR RATIO		T7	T8	T9	T11	T12	T13	T15	T16	T18	T20
25.63		26.905	26.469	27.069	26.760	24.941	25.635	26.823	26.015	26.042	26.691
31.39		32.469	31.944	33.682	33.298	31.239	32.109	33.597	33.062	33.096	33.004
38.44		39.623	38.981	40.558	40.096	37.841	38.895	40.698	38.498	38.537	39.521
47.08		49.162	48.366	49.549	48.984	46.555	47.852	50.070	47.858	47.907	47.968
57.66		58.699	57.749	61.811	61.107	55.172	56.708	59.336	60.965	61.027	59.355
70.62		71.419	70.263	74.397	73.549	71.127	73.108	76.496	74.842	74.918	70.883
86.50		89.225	87.780	91.702	90.656	82.096	84.382	88.292	87.176	87.265	86.481

**Type TDS**  
**Parallel Shaft Speed Reducers**  
**Triple Reduction**

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**MECHANICAL CAPACITY**

T22	T25	T28	T30	WT32	WT34	WT36	WT38	WT40	REDUCER SIZE	NOMINAL OUTPUT SPEED	NOMINAL GEAR RATIO
583	845	1046	1392	1575	2082	2365	2613	2943	MECH HP	45	25.63
805	1172	1532	2007	2173	2834	3168	3497	3976	TORQUE (X1000 IN. LBS.)		
480	685	877	1167	1289	1739	1910	2111	2378	MECH HP	37	31.39
819	1192	1559	2043	2216	2897	3252	3590	4083	TORQUE (X1000 IN. LBS.)		
408	571	732	974	1037	1496	1601	1769	1994	MECH HP	30	38.44
835	1204	1599	2095	2256	2957	3345	3693	4202	TORQUE (X1000 IN. LBS.)		
346	469	602	799	896	1235	1392	1538	1735	MECH HP	25	47.08
859	1218	1645	2150	2270	3073	3431	3786	4313	TORQUE (X1000 IN. LBS.)		
288	375	516	667	727	1040	1140	1261	1422	MECH HP	20	57.66
885	1227	1696	2160	2299	3176	3579	3955	4503	TORQUE (X1000 IN. LBS.)		
247	311	432	549	607	902	950	1051	1162	MECH HP	16.5	70.62
907	1236	1745	2183	2312	3262	3661	4046	4517	TORQUE (X1000 IN. LBS.)		
208	269	381	477	502	726	839	928	1013	MECH HP	13.5	86.50
932	1234	1793	2211	2358	3394	3769	4162	4587	TORQUE (X1000 IN. LBS.)		

**THERMAL CAPACITY**

T22	T25	T28	T30	WT32	WT34	WT36	WT38	WT40		NOMINAL OUTPUT SPEED	NOMINAL GEAR RATIO
639	723	833	873	914	936	944	938	893	THERMAL HP WITH FANS	45	25.63
1227	1388	1599	1676	1755	1797	1812	1801	1715			
655	741	853	895	936	959	967	961	915	THERMAL HP WITH FANS	37	31.39
1258	1423	1638	1718	1797	1841	1857	1845	1757			
667	755	870	912	954	977	986	979	933	THERMAL HP WITH FANS	30	38.44
1281	1450	1670	1751	1832	1876	1893	1880	1791			
677	767	883	926	969	993	1001	995	947	THERMAL HP WITH FANS	25	47.08
1300	1473	1695	1778	1860	1907	1922	1910	1818			
688	779	897	941	985	1009	1017	1011	962	THERMAL HP WITH FANS	20	57.66
1321	1496	1722	1807	1891	1937	1953	1941	1847			
693	784	903	946	990	1015	1023	1017	968	THERMAL HP WITH FANS	16.5	70.62
1331	1505	1734	1816	1901	1949	1964	1953	1859			
695	787	906	950	994	1018	1027	1020	971	THERMAL HP WITH FANS	13.5	86.50
1334	1511	1740	1824	1908	1955	1972	1958	1864			

**EXACT GEAR RATIO**

T22	T25	T28	T30	WT32	WT34	WT36	WT38	WT40		NOMINAL GEAR RATIO
25.638	25.747	27.181	26.769	25.614	25.273	24.870	24.843	25.083		25.63
31.703	32.295	33.004	32.504	31.913	30.930	31.606	31.573	31.878		31.39
37.963	39.160	40.553	39.939	40.385	36.690	38.791	38.750	39.124		38.44
46.077	48.220	50.727	49.959	47.032	46.203	45.751	45.702	46.144		47.08
57.015	60.733	61.029	60.104	58.715	56.668	58.280	58.219	58.781		57.66
68.089	73.763	74.966	73.831	70.705	67.133	71.546	71.471	72.161		70.62
83.071	85.171	87.355	86.032	87.192	86.831	83.338	83.249	84.053		86.50

**Type TDS**  
**Parallel Shaft Speed Reducers**  
**Triple Reduction**

**MECHANICAL CAPACITY**

NOMINAL GEAR RATIO	NOMINAL OUTPUT SPEED	REDUCER SIZE	T7	T8	T9	T11	T12	T13	T15	T16	T18	T20
<b>25.63</b>	<b>34</b>	MECH HP TORQUE (X1000 IN. LBS.)	24 47	33 63	51 100	82 159	115 208	154 286	187 363	230 433	300 566	354 684
<b>31.39</b>	<b>28</b>	MECH HP TORQUE (X1000 IN. LBS.)	20 48	28 64	42 102	68 164	94 213	126 293	154 375	186 445	244 585	294 703
<b>38.44</b>	<b>22</b>	MECH HP TORQUE (X1000 IN. LBS.)	17 49	23 66	36 106	57 166	79 217	108 304	130 383	164 457	215 600	253 724
<b>47.08</b>	<b>18.5</b>	MECH HP TORQUE (X1000 IN. LBS.)	14 50	19 68	30 109	48 170	67 226	90 312	108 392	135 468	178 618	213 740
<b>57.66</b>	<b>15.0</b>	MECH HP TORQUE (X1000 IN. LBS.)	12 52	16 69	25 113	40 177	58 232	77 316	95 406	110 486	143 632	177 761
<b>70.62</b>	<b>12.5</b>	MECH HP TORQUE (X1000 IN. LBS.)	10 53	14 71	21 115	34 181	46 237	62 328	75 416	91 493	120 651	152 781
<b>86.50</b>	<b>10.0</b>	MECH HP TORQUE (X1000 IN. LBS.)	8.3 54	11 72	17 117	28 184	40 238	54 330	66 422	79 499	104 657	127 796

**THERMAL CAPACITY**

NOMINAL GEAR RATIO	NOMINAL OUTPUT SPEED		T7	T8	T9	T11	T12	T13	T15	T16	T18	T20
<b>25.63</b>	<b>34</b>	THERMAL HP WITH FANS	132 214	181 293	207 335	341 552	430 697	494 800	566 917	685 1110	766 1241	898 1455
<b>31.39</b>	<b>28</b>	THERMAL HP WITH FANS	134 217	183 296	209 339	345 559	435 705	501 812	573 928	694 1124	776 1257	909 1473
<b>38.44</b>	<b>22</b>	THERMAL HP WITH FANS	135 219	185 300	211 342	348 564	439 711	506 820	578 936	701 1136	784 1270	918 1487
<b>47.08</b>	<b>18.5</b>	THERMAL HP WITH FANS	136 220	186 301	212 343	350 567	442 716	508 823	581 941	705 1142	788 1277	923 1495
<b>57.66</b>	<b>15.0</b>	THERMAL HP WITH FANS	136 220	187 303	213 345	352 570	444 719	511 828	584 946	708 1147	791 1281	927 1502
<b>70.62</b>	<b>12.5</b>	THERMAL HP WITH FANS	137 222	187 303	214 347	353 572	445 721	512 829	586 949	710 1150	794 1286	930 1507
<b>86.50</b>	<b>10.0</b>	THERMAL HP WITH FANS	137 222	188 305	215 348	354 573	447 724	514 833	588 953	713 1155	797 1291	933 1511

**EXACT GEAR RATIO**

NOMINAL GEAR RATIO		T7	T8	T9	T11	T12	T13	T15	T16	T18	T20
25.63		26.905	26.469	27.069	26.760	24.941	25.635	26.823	26.015	26.042	26.691
31.39		32.469	31.944	33.682	33.298	31.239	32.109	33.597	33.062	33.096	33.004
38.44		39.623	38.981	40.558	40.096	37.841	38.895	40.698	38.498	38.537	39.521
47.08		49.162	48.366	49.549	48.984	46.555	47.852	50.070	47.858	47.907	47.968
57.66		58.699	57.749	61.811	61.107	55.172	56.708	59.336	60.965	61.027	59.355
70.62		71.419	70.263	74.397	73.549	71.127	73.108	76.496	74.842	74.918	70.883
86.50		89.225	87.780	91.702	90.656	82.096	84.382	88.292	87.176	87.265	86.481

**Type TDS**  
**Parallel Shaft Speed Reducers**  
**Triple Reduction**

MECHANICAL CAPACITY										NOMINAL OUTPUT SPEED	NOMINAL GEAR RATIO
T22	T25	T28	T30	WT32	WT34	WT36	WT38	WT40	REDUCER SIZE		
444	640	799	1065	1200	1598	1819	2011	2265	MECH HP	34	25.63
825	1194	1573	2065	2227	2926	3277	3619	4116	TORQUE (X1000 IN. LBS.)		
370	517	682	902	979	1348	1480	1636	1845	MECH HP	28	31.39
849	1210	1631	2124	2263	3020	3389	3742	4261	TORQUE (X1000 IN. LBS.)		
317	428	571	748	786	1169	1245	1376	1552	MECH HP	22	38.44
871	1214	1677	2164	2300	3106	3499	3863	4399	TORQUE (X1000 IN. LBS.)		
268	351	473	598	676	963	1082	1196	1342	MECH HP	18.5	47.08
895	1226	1738	2164	2303	3223	3586	3960	4486	TORQUE (X1000 IN. LBS.)		
223	283	399	503	546	810	889	983	1079	MECH HP	15.0	57.66
922	1245	1764	2190	2322	3327	3753	4146	4595	TORQUE (X1000 IN. LBS.)		
191	232	334	414	458	702	738	826	896	MECH HP	12.5	70.62
945	1240	1814	2214	2346	3414	3825	4275	4683	TORQUE (X1000 IN. LBS.)		
160	204	290	357	378	558	642	715	774	MECH HP	10.0	86.50
963	1259	1835	2225	2388	3513	3878	4312	4724	TORQUE (X1000 IN. LBS.)		
THERMAL CAPACITY										NOMINAL OUTPUT SPEED	NOMINAL GEAR RATIO
T22	T25	T28	T30	WT32	WT34	WT36	WT38	WT40	REDUCER SIZE		
1018	1153	1328	1392	1456	1492	1506	1495	1424	THERMAL HP WITH FANS	34	25.63
1649	1868	2151	2255	2359	2417	2438	2422	2307			
1031	1167	1344	1409	1474	1511	1524	1514	1441	THERMAL HP WITH FANS	28	31.39
1670	1891	2177	2283	2388	2448	2469	2453	2334			
1041	1179	1358	1423	1489	1526	1539	1529	1456	THERMAL HP WITH FANS	22	38.44
1686	1910	2200	2305	2412	2472	2493	2477	2359			
1047	1185	1365	1431	1497	1534	1547	1537	1464	THERMAL HP WITH FANS	18.5	47.08
1696	1920	2211	2318	2425	2485	2506	2490	2372			
1052	1191	1371	1437	1504	1541	1554	1544	1470	THERMAL HP WITH FANS	15.0	57.66
1704	1929	2221	2328	2436	2496	2517	2501	2381			
1055	1194	1376	1442	1509	1546	1560	1549	1475	THERMAL HP WITH FANS	12.5	70.62
1709	1934	2229	2336	2445	2505	2527	2509	2390			
1059	1198	1380	1447	1514	1551	1565	1555	1480	THERMAL HP WITH FANS	10.0	86.50
1716	1941	2236	2344	2453	2513	2535	2519	2398			
EXACT GEAR RATIO										NOMINAL GEAR RATIO	
T22	T25	T28	T30	WT32	WT34	WT36	WT38	WT40	REDUCER SIZE		
25.638	25.747	27.181	26.769	25.614	25.273	24.870	24.843	25.083		25.63	
31.703	32.295	33.004	32.504	31.913	30.930	31.606	31.573	31.878		31.39	
37.963	39.160	40.553	39.939	40.385	36.690	38.791	38.750	39.124		38.44	
46.077	48.220	50.727	49.959	47.032	46.203	45.751	45.702	46.144		47.08	
57.015	60.733	61.029	60.104	58.715	56.668	58.280	58.219	58.781		57.66	
68.089	73.763	74.966	73.831	70.705	67.133	71.546	71.471	72.161		70.62	
83.071	85.171	87.355	86.032	87.192	86.831	83.338	83.249	84.053		86.50	

**Type TDS**  
**Parallel Shaft Speed Reducers**  
**Triple Reduction**

**MECHANICAL CAPACITY**

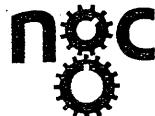
NOMINAL GEAR RATIO	NOMINAL OUTPUT SPEED	REDUCER SIZE	T7	T8	T9	T11	T12	T13	T15	T16	T18	T20
<b>25.63</b>	<b>28</b>	MECH HP TORQUE (X1000 IN. LBS.)	20 48	28 64	44 104	70 163	97 212	132 296	159 373	195 444	255 581	301 703
<b>31.39</b>	<b>23</b>	MECH HP TORQUE (X1000 IN. LBS.)	17 49	24 66	36 107	58 168	80 219	108 304	131 385	159 460	207 600	251 725
<b>38.44</b>	<b>19</b>	MECH HP TORQUE (X1000 IN. LBS.)	14 50	20 67	31 109	49 172	68 225	92 313	111 396	139 468	182 614	216 747
<b>47.08</b>	<b>15</b>	MECH HP TORQUE (X1000 IN. LBS.)	12 52	16 69	26 112	41 177	57 231	77 323	93 408	116 486	152 637	182 764
<b>57.66</b>	<b>12.5</b>	MECH HP TORQUE (X1000 IN. LBS.)	10 53	14 71	21 115	34 182	49 236	65 323	79 417	93 496	122 652	152 790
<b>70.62</b>	<b>10.2</b>	MECH HP TORQUE (X1000 IN. LBS.)	8.6 54	11 72	18 116	29 184	39 242	53 337	63 422	77 504	101 662	127 788
<b>86.50</b>	<b>8.3</b>	MECH HP TORQUE (X1000 IN. LBS.)	7.0 54	9.5 73	14 118	23 186	34 244	46 340	55 425	66 504	87 665	105 795

**THERMAL CAPACITY**

NOMINAL GEAR RATIO	NOMINAL OUTPUT SPEED		T7	T8	T9	T11	T12	T13	T15	T16	T18	T20
<b>25.63</b>	<b>28</b>	THERMAL HP WITH FANS	181 266	248 365	283 416	467 686	589 866	678 997	775 1139	939 1380	1050 1544	1230 1808
<b>31.39</b>	<b>23</b>	THERMAL HP WITH FANS	183 269	250 368	286 420	472 694	595 875	685 1007	784 1152	950 1397	1062 1561	1244 1829
<b>38.44</b>	<b>19</b>	THERMAL HP WITH FANS	184 270	253 372	289 425	476 700	601 883	691 1016	791 1163	958 1408	1072 1576	1255 1845
<b>47.08</b>	<b>15</b>	THERMAL HP WITH FANS	185 272	254 373	290 426	478 703	604 888	695 1022	795 1169	963 1416	1077 1583	1262 1855
<b>57.66</b>	<b>12.5</b>	THERMAL HP WITH FANS	186 273	255 375	291 428	481 707	606 891	698 1026	798 1173	967 1421	1082 1591	1267 1862
<b>70.62</b>	<b>10.2</b>	THERMAL HP WITH FANS	186 273	255 375	292 429	481 707	607 892	699 1028	799 1175	969 1424	1083 1592	1269 1865
<b>86.50</b>	<b>8.3</b>	THERMAL HP WITH FANS	187 275	256 376	292 429	482 709	608 894	700 1029	800 1176	970 1426	1084 1593	1270 1867

**EXACT GEAR RATIO**

NOMINAL GEAR RATIO		T7	T8	T9	T11	T12	T13	T15	T16	T18	T20
25.63		26.905	26.469	27.069	26.760	24.941	25.635	26.823	26.015	26.042	26.691
31.39		32.469	31.944	33.682	33.298	31.239	32.109	33.597	33.062	33.096	33.004
38.44		39.623	38.981	40.558	40.096	37.841	38.895	40.698	38.498	38.537	39.521
47.08		49.162	48.366	49.549	48.984	46.555	47.852	50.070	47.858	47.907	47.968
57.66		58.699	57.749	61.811	61.107	55.172	56.708	59.336	60.965	61.027	59.355
70.62		71.419	70.263	74.397	73.549	71.127	73.108	76.496	74.842	74.918	70.883
86.50		89.225	87.780	91.702	90.656	82.096	84.382	88.292	87.176	87.265	86.481



**Type TDS**  
**Parallel Shaft Speed Reducers**  
**Triple Reduction**

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Ratio 25.63 thru 86.50

720 Input

**MECHANICAL CAPACITY**

T22	T25	T28	T30	WT32	WT34	WT36	WT38	WT40	REDUCER SIZE	NOMINAL OUTPUT SPEED	NOMINAL GEAR RATIO
377	536	681	906	1004	1362	1546	1709	1927	MECH HP	28	25.63
847	1208	1620	2123	2251	3014	3366	3716	4231	TORQUE (X1000 IN. LBS.)		
314	433	575	753	820	1151	1267	1401	1580	MECH HP	23	31.39
873	1224	1661	2142	2291	3115	3505	3872	4409	TORQUE (X1000 IN. LBS.)		
269	361	483	620	659	997	1070	1183	1326	MECH HP	19	38.44
895	1237	1715	2168	2330	3202	3633	4013	4541	TORQUE (X1000 IN. LBS.)		
228	297	398	501	563	821	926	1024	1129	MECH HP	15	47.08
919	1254	1767	2191	2319	3319	3708	4097	4560	TORQUE (X1000 IN. LBS.)		
190	237	340	421	458	690	751	825	895	MECH HP	12.5	57.66
946	1260	1816	2215	2354	3424	3831	4204	4605	TORQUE (X1000 IN. LBS.)		
161	195	282	348	387	594	628	684	742	MECH HP	10.2	70.62
962	1259	1851	2249	2395	3493	3933	4279	4687	TORQUE (X1000 IN. LBS.)		
134	171	243	299	315	469	543	588	639	MECH HP	8.3	86.50
975	1275	1858	2252	2404	3566	3964	4285	4701	TORQUE (X1000 IN. LBS.)		

**THERMAL CAPACITY**

T22	T25	T28	T30	WT32	WT34	WT36	WT38	WT40		NOMINAL OUTPUT SPEED	NOMINAL GEAR RATIO
1396	1580	1819	1907	1996	2045	2063	2049	1951	THERMAL HP WITH FANS	28	25.63
2052	2323	2674	2803	2934	3006	3033	3012	2868			
1411	1598	1840	1929	2018	2068	2086	2072	1973	THERMAL HP WITH FANS	23	31.39
2074	2349	2705	2836	2966	3040	3066	3046	2900			
1424	1612	1856	1946	2036	2086	2104	2091	1990	THERMAL HP WITH FANS	19	38.44
2093	2370	2728	2861	2993	3066	3093	3074	2925			
1431	1620	1865	1956	2046	2097	2115	2101	2000	THERMAL HP WITH FANS	15	47.08
2104	2381	2742	2875	3008	3083	3109	3088	2940			
1437	1627	1874	1964	2055	2106	2124	2110	2009	THERMAL HP WITH FANS	12.5	57.66
2112	2392	2755	2887	3021	3096	3122	3102	2953			
1439	1629	1877	1967	2059	2109	2127	2113	2012	THERMAL HP WITH FANS	10.2	70.62
2115	2395	2759	2891	3027	3100	3127	3106	2958			
1441	1631	1878	1969	2060	2111	2129	2115	2014	THERMAL HP WITH FANS	8.3	86.50
2118	2398	2761	2894	3028	3103	3130	3109	2961			

**EXACT GEAR RATIO**

T22	T25	T28	T30	WT32	WT34	WT36	WT38	WT40		NOMINAL GEAR RATIO
25.638	25.747	27.181	26.769	25.614	25.273	24.870	24.843	25.083		25.63
31.703	32.295	33.004	32.504	31.913	30.930	31.606	31.573	31.878		31.39
37.963	39.160	40.553	39.939	40.385	36.690	38.791	38.750	39.124		38.44
46.077	48.220	50.727	49.959	47.032	46.203	45.751	45.702	46.144		47.08
57.015	60.733	61.029	60.104	58.715	56.668	58.280	58.219	58.781		57.66
68.089	73.763	74.966	73.831	70.705	67.133	71.546	71.471	72.161		70.62
83.071	85.171	87.355	86.032	87.192	86.831	83.338	83.249	84.053		86.50

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Ratio 25.63 thru 86.50

580 Input

**Type TDS**  
**Parallel Shaft Speed Reducers**  
**Triple Reduction**

**MECHANICAL CAPACITY**

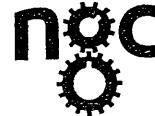
NOMINAL GEAR RATIO	NOMINAL OUTPUT SPEED	REDUCER SIZE	T7	T8	T9	T11	T12	T13	T15	T16	T18	T20
25.63	22.6	MECH HP TORQUE (X1000 IN. LBS.)49	17	23	36	58	81	109	131	161	211	251
31.39	18.5	MECH HP TORQUE (X1000 IN. LBS.)50	14	19	30	48	66	89	109	132	172	208
38.44	15.1	MECH HP TORQUE (X1000 IN. LBS.)52	12	16	26	41	56	75	92	114	152	179
47.08	12.3	MECH HP TORQUE (X1000 IN. LBS.)53	9.9	13	21	34	47	63	76	95	125	152
57.66	10.1	MECH HP TORQUE (X1000 IN. LBS.)54	8.4	11	17	28	40	55	66	75	99	124
70.62	8.2	MECH HP TORQUE (X1000 IN. LBS.)54	7.0	9.6	14	23	32	43	52	63	83	105
86.50	6.7	MECH HP TORQUE (X1000 IN. LBS.)56	5.7	7.9	12	19	28	37	46	55	72	87

**THERMAL CAPACITY**

NOMINAL GEAR RATIO	NOMINAL OUTPUT SPEED		T7	T8	T9	T11	T12	T13	T15	T16	T18	T20
25.63	22.6	THERMAL HP WITH FANS	271 360	371 493	424 564	699 930	882 1173	1015 1350	1161 1544	1407 1871	1574 2093	1844 2453
31.39	18.5	THERMAL HP WITH FANS	271 360	371 493	425 565	700 931	883 1174	1017 1353	1163 1547	1409 1874	1576 2096	1846 2455
38.44	15.1	THERMAL HP WITH FANS	271 360	371 493	425 565	700 931	883 1174	1017 1353	1163 1547	1409 1874	1576 2096	1846 2455
47.08	12.3	THERMAL HP WITH FANS	271 360	371 493	425 565	700 931	883 1174	1017 1353	1163 1547	1409 1874	1576 2096	1846 2455
57.66	10.1	THERMAL HP WITH FANS	271 360	371 493	425 565	700 931	883 1174	1017 1353	1163 1547	1409 1874	1576 2096	1846 2455
70.62	8.2	THERMAL HP WITH FANS	271 360	371 493	425 565	700 931	883 1174	1017 1353	1163 1547	1409 1874	1576 2096	1846 2455
86.50	6.7	THERMAL HP WITH FANS	271 360	371 493	425 565	700 931	883 1174	1017 1353	1163 1547	1409 1874	1576 2096	1846 2455

**EXACT GEAR RATIO**

NOMINAL GEAR RATIO		T7	T8	T9	T11	T12	T13	T15	T16	T18	T20
25.63		26.905	26.469	27.069	26.760	24.941	25.635	26.823	26.015	26.042	26.691
31.39		32.469	31.944	33.682	33.298	31.239	32.109	33.597	33.062	33.096	33.004
38.44		39.623	38.981	40.558	40.096	37.841	38.895	40.698	38.498	38.537	39.521
47.08		49.162	48.366	49.549	48.984	46.555	47.852	50.070	47.858	47.907	47.968
57.66		58.699	57.749	61.811	61.107	55.172	56.708	59.336	60.965	61.027	59.355
70.62		71.419	70.263	74.397	73.549	71.127	73.108	76.496	74.842	74.918	70.883
86.50		89.225	87.780	91.702	90.656	82.096	84.382	88.292	87.176	87.265	86.481



**Type TDS**  
**Parallel Shaft Speed Reducers**  
**Triple Reduction**

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Ratio 25.63 thru 86.50

580 Input

**MECHANICAL CAPACITY**

T22	T25	T28	T30	WT32	WT34	WT36	WT38	WT40	REDUCER SIZE	NOMINAL OUTPUT SPEED	NOMINAL GEAR RATIO
313 873	437 1223	571 1687	748 2176	820 2282	1137 3123	1290 3486	1426 3850	1608 4383	MECH HP TORQUE (X1000 IN. LBS.)	22.6	25.63
261 899	351 1232	484 1736	614 2169	667 2313	960 3725	1058 3634	1170 4014	1309 4534	MECH HP TORQUE (X1000 IN. LBS.)	18.5	31.39
228 920	292 1243	399 1758	503 2183	537 2357	831 3312	889 3747	983 4139	1079 4587	MECH HP TORQUE (X1000 IN. LBS.)	15.1	38.44
190 945	237 1242	328 1808	405 2199	458 2341	683 3431	764 3798	840 4172	932 4671	MECH HP TORQUE (X1000 IN. LBS.)	12.3	47.08
153 958	190 1254	277 1837	341 2227	369 2354	569 3507	613 3882	683 4323	742 4737	MECH HP TORQUE (X1000 IN. LBS.)	10.1	57.66
128 973	157 1258	230 1874	283 2270	315 2420	487 3555	514 3996	556 4318	604 4736	MECH HP TORQUE (X1000 IN. LBS.)	8.2	70.62
111 975	138 1277	197 1870	242 2262	260 2460	390 3676	444 4023	487 4404	528 4826	MECH HP TORQUE (X1000 IN. LBS.)	6.7	86.50

**THERMAL CAPACITY**

T22	T25	T28	T30	WT32	WT34	WT36	WT38	WT40		NOMINAL OUTPUT SPEED	NOMINAL GEAR RATIO
2091 2781	2367 3148	2726 3626	2858 3801	2991 3978	3064 4075	3091 4111	3070 4083	2923 3888	THERMAL HP WITH FANS	22.6	25.63
2094 2785	2370 3152	2729 3630	2861 3805	2994 3982	3068 4080	3094 4115	3074 4088	2927 3893	THERMAL HP WITH FANS	18.5	31.39
2094 2785	2370 3152	2729 3630	2861 3805	2994 3982	3068 4080	3094 4115	3074 4088	2927 3893	THERMAL HP WITH FANS	15.1	38.44
2094 2785	2370 3152	2729 3630	2861 3805	2994 3982	3068 4080	3094 4115	3074 4088	2927 3893	THERMAL HP WITH FANS	12.3	47.08
2094 2785	2370 3152	2729 3630	2861 3805	2994 3982	3068 4080	3094 4115	3074 4088	2927 3893	THERMAL HP WITH FANS	10.1	57.66
2094 2785	2370 3152	2729 3630	2861 3805	2994 3982	3068 4080	3094 4115	3074 4088	2927 3893	THERMAL HP WITH FANS	8.2	70.62
2094 2785	2370 3152	2729 3630	2861 3805	2994 3982	3068 4080	3094 4115	3074 4088	2927 3893	THERMAL HP WITH FANS	6.7	86.50

**EXACT GEAR RATIO**

T22	T25	T28	T30	WT32	WT34	WT36	WT38	WT40		NOMINAL GEAR RATIO
25.638	25.747	27.181	26.769	25.614	25.273	24.870	24.843	25.083		25.63
31.703	32.295	33.004	32.504	31.913	30.930	31.606	31.573	31.878		31.39
37.963	39.160	40.553	39.939	40.385	36.690	38.791	38.750	39.124		38.44
46.077	48.220	50.727	49.959	47.032	46.203	45.751	45.702	46.144		47.08
57.015	60.733	61.029	60.104	58.715	56.668	58.280	58.219	58.781		57.66
68.089	73.763	74.966	73.831	70.705	67.133	71.546	71.471	72.161		70.62
83.071	85.171	87.355	86.032	87.192	86.831	83.338	83.249	84.053		86.50

**Type TDS**  
**Parallel Shaft Speed Reducers**  
**Quadruple Reduction**

**MECHANICAL CAPACITY**

NOMINAL GEAR RATIO	NOMINAL OUTPUT SPEED	REDUCER SIZE	Q7	Q8	Q9	Q11	Q12	Q13	Q15	Q16	Q18	Q20
105.9	16.5	MECH HP TORQUE (X1000 IN. LBS.) 51	13 69	17 112	27 174	43 230	59 320	80 404	96 481	118 629	154 750	196
129.7	13.5	MECH HP TORQUE (X1000 IN. LBS.) 52	11 70	15 114	23 181	37 235	50 328	68 416	82 492	97 655	129 776	162
158.9	11.0	MECH HP TORQUE (X1000 IN. LBS.) 53	9.1 72	12 116	19 183	31 240	42 334	57 422	68 501	82 661	108 784	135
194.6	9.0	MECH HP TORQUE (X1000 IN. LBS.) 54	7.7 72	10 117	16 185	25 244	34 338	46 427	56 508	68 672	90 786	110
238.4	7.5	MECH HP TORQUE (X1000 IN. LBS.) 55	6.4 74	8.8 119	13 189	21 248	29 343	39 436	47 521	56 686	73 796	94
291.9	6.0	MECH HP TORQUE (X1000 IN. LBS.) 56	5.4 76	7.4 122	11 193	18 254	24 345	32 447	40 535	48 696	62 840	77
357.5	5.0	MECH HP TORQUE (X1000 IN. LBS.) 57	4.4 77	6.0 125	9.3 199	15 261	20 348	26 460	33 549	40 719	52 858	68

**THERMAL CAPACITY**

NOMINAL GEAR RATIO	NOMINAL OUTPUT SPEED	Q7	Q8	Q9	Q11	Q12	Q13	Q15	Q16	Q18	Q20	
105.9	16.5	THERMAL HP WITH FANS 128	51 175	70 200	80 330	132 418	167 480	192 550	220 665	266 743	297 870	348
129.7	13.5	THERMAL HP WITH FANS 128	51 175	70 203	81 333	133 420	168 483	193 553	221 668	267 748	299 875	350
158.9	11.0	THERMAL HP WITH FANS 130	52 178	71 203	81 333	133 420	168 485	194 555	222 673	269 750	300 880	352
194.6	9.0	THERMAL HP WITH FANS 130	52 178	71 205	82 335	134 425	170 488	195 558	223 675	270 755	302 885	354
238.4	7.5	THERMAL HP WITH FANS 130	52 180	72 205	82 338	135 428	171 493	197 563	225 683	273 763	305 893	357
291.9	6.0	THERMAL HP WITH FANS 133	53 183	73 208	83 343	137 433	173 498	199 568	227 688	275 770	308 903	361
357.5	5.0	THERMAL HP WITH FANS 133	53 183	73 208	83 345	138 438	175 503	201 573	229 693	277 775	310 913	365

**EXACT GEAR RATIO**

NOMINAL GEAR RATIO	Q7	Q8	Q9	Q11	Q12	Q13	Q15	Q16	Q18	Q20
105.9	111.592	109.746	116.246	112.368	108.668	111.694	116.871	113.221	113.336	106.321
129.7	130.526	128.413	135.968	135.610	131.144	134.797	141.043	140.883	141.026	133.170
158.9	162.835	160.200	169.626	165.486	160.036	164.493	172.116	169.644	169.817	161.314
194.6	194.781	191.628	202.904	205.327	198.565	204.096	213.554	207.252	207.463	198.466
238.4	236.811	232.978	246.687	245.161	237.088	243.691	254.984	258.542	258.804	235.195
291.9	289.433	284.748	301.502	298.286	288.463	296.497	310.237	311.185	311.502	303.211
357.5	361.066	355.222	376.123	372.651	360.379	370.416	387.582	383.565	383.955	349.973

**Type TDS**  
**Parallel Shaft Speed Reducers**  
**Quadruple Reduction**

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Ratio 105.9 thru 357.5

1750 Input

**MECHANICAL CAPACITY**

Q22	Q25	Q28	Q30	WQ32	WQ34	WQ36	WQ38	WQ40	REDUCER SIZE	NOMINAL OUTPUT SPEED	NOMINAL GEAR RATIO
247 908	310 1235	439 1745	557 2180	598 2322	887 3272	938 3686	1064 4036	1178 4512	MECH HP TORQUE (X1000 IN. LBS.)	16.5	105.9
203 936	250 1248	358 1808	445 2214	493 2368	742 3381	789 3834	887 4220	962 4621	MECH HP TORQUE (X1000 IN. LBS.)	13.5	129.7
172 958	209 1264	309 1818	381 2207	414 2380	636 3472	670 3989	731 1217	793 4619	MECH HP TORQUE (X1000 IN. LBS.)	11.0	158.9
141 971	171 1272	253 1850	307 2211	342 2387	532 3527	557 3934	604 4291	656 4705	MECH HP TORQUE (X1000 IN. LBS.)	9.0	194.6
121 982	145 1278	200 1863	241 2211	278 2400	439 3603	460 4019	492 4402	517 4671	MECH HP TORQUE (X1000 IN. LBS.)	7.5	238.4
94 991	113 1284	164 1875	199 2241	232 2393	377 3695	384 4007	409 4443	429 4707	MECH HP TORQUE (X1000 IN. LBS.)	6.0	291.9
82 996	99 1299	142 1891	174 2283	195 2453	318 3799	322 4100	356 4472	387 4902	MECH HP TORQUE (X1000 IN. LBS.)	5.0	357.5

**THERMAL CAPACITY**

Q22	Q25	Q28	Q30	WQ32	WQ34	WQ36	WQ38	WQ40	NOMINAL OUTPUT SPEED	NOMINAL GEAR RATIO	
395 988	447 1118	515 1288	540 1350	565 1413	579 1448	584 1460	580 1450	553 1383	THERMAL HP WITH FANS	16.5	105.9
397 993	449 1123	518 1295	543 1358	568 1420	582 1455	587 1468	583 1458	555 1388	THERMAL HP WITH FANS	13.5	129.7
399 998	452 1130	520 1300	546 1365	571 1428	585 1463	590 1475	586 1465	558 1395	THERMAL HP WITH FANS	11.0	158.9
402 1005	455 1138	524 1310	549 1373	575 1438	589 1473	594 1485	590 1475	562 1405	THERMAL HP WITH FANS	9.0	194.6
405 1013	459 1148	528 1320	554 1385	579 1448	594 1485	599 1498	595 1488	566 1415	THERMAL HP WITH FANS	7.5	238.4
409 1023	463 1158	533 1333	599 1398	585 1463	600 1500	605 1513	601 1503	572 1430	THERMAL HP WITH FANS	6.0	291.9
413 1033	467 1168	538 1345	564 1410	591 1478	606 1515	611 1528	607 1518	579 1448	THERMAL HP WITH FANS	5.0	357.5

**EXACT GEAR RATIO**

Q22	Q25	Q28	Q30	WQ32	WQ34	WQ36	WQ38	WQ40	NOMINAL GEAR RATIO
102.133	110.644	110.365	108.694	107.825	102.377	109.108	105.323	106.344	105.9
127.924	138.586	140.261	138.138	133.350	126.593	134.936	132.114	133.390	129.7
154.961	167.877	163.321	160.848	159.652	151.590	161.551	160.195	161.742	158.9
190.648	206.536	203.030	199.956	193.802	183.993	196.108	197.260	199.164	194.6
225.931	244.760	258.633	254.717	239.761	227.667	242.612	248.447	250.846	238.4
291.268	315.543	317.503	312.696	286.355	271.887	289.761	301.751	304.678	291.9
336.188	364.205	369.830	364.231	349.353	331.714	353.509	348.421	351.785	357.5

**Type TDS**  
**Parallel Shaft Speed Reducers**  
**Quadruple Reduction**

**MECHANICAL CAPACITY**

NOMINAL GEAR RATIO	NOMINAL OUTPUT SPEED	REDUCER SIZE	Q7	Q8	Q9	Q11	Q12	Q13	Q15	Q16	Q18	Q20
<b>105.9</b>	<b>11</b>	MECH HP TORQUE (X1000 IN. LBS.)53	8.9 72	12 116	18 182	30 240	41 335	56 422	67 503	83 659	108 790	138
<b>129.7</b>	<b>9</b>	MECH HP TORQUE (X1000 IN. LBS.)54	7.7 73	10 117	16 183	25 240	34 339	47 425	56 510	67 669	88 796	111
<b>158.9</b>	<b>7.5</b>	MECH HP TORQUE (X1000 IN. LBS.)55	6.3 74	8.6 120	13 187	21 250	29 346	39 436	47 521	57 677	74 816	94
<b>194.6</b>	<b>6.0</b>	MECH HP TORQUE (X1000 IN. LBS.)56	5.4 76	7.3 123	11 194	17 252	24 341	31 437	38 535	48 699	63 833	78
<b>238.4</b>	<b>5.0</b>	MECH HP TORQUE (X1000 IN. LBS.)58	4.5 77	6.1 125	9.4 198	15 255	20 341	26 453	33 550	39 719	52 858	68
<b>291.9</b>	<b>4.0</b>	MECH HP TORQUE (X1000 IN. LBS.)59	3.8 77	5.0 129	7.9 203	12 267	17 351	22 468	28 561	33 735	44 886	54
<b>357.5</b>	<b>3.2</b>	MECH HP TORQUE (X1000 IN. LBS.)60	3.1 78	4.0 132	6.5 209	10 271	14 352	17 480	23 564	27 754	36 890	47

**THERMAL CAPACITY**

NOMINAL GEAR RATIO	NOMINAL OUTPUT SPEED		Q7	Q8	Q9	Q11	Q12	Q13	Q15	Q16	Q18	Q20
<b>105.9</b>	<b>11</b>	THERMAL HP WITH FANS	90 173	124 238	142 273	233 447	294 564	339 651	388 745	470 902	525 1008	615 1181
<b>129.7</b>	<b>9</b>	THERMAL HP WITH FANS	91 175	124 238	142 273	235 451	296 568	341 655	390 749	472 906	528 1014	618 1187
<b>158.9</b>	<b>7.5</b>	THERMAL HP WITH FANS	91 175	125 240	143 275	236 453	298 572	343 659	392 753	475 912	531 1020	622 1194
<b>194.6</b>	<b>6.0</b>	THERMAL HP WITH FANS	92 177	126 242	144 276	238 457	300 576	345 662	395 758	479 920	535 1027	627 1204
<b>238.4</b>	<b>5.0</b>	THERMAL HP WITH FANS	93 179	127 244	146 280	240 461	303 582	348 668	398 764	483 927	540 1037	633 1215
<b>291.9</b>	<b>4.0</b>	THERMAL HP WITH FANS	94 180	129 248	147 282	243 467	306 588	352 676	403 774	488 937	546 1048	640 1229
<b>357.5</b>	<b>3.2</b>	THERMAL HP WITH FANS	95 182	131 252	149 286	246 472	309 593	356 684	407 781	493 947	552 1060	647 1242

**EXACT GEAR RATIO**

NOMINAL GEAR RATIO		Q7	Q8	Q9	Q11	Q12	Q13	Q15	Q16	Q18	Q20
105.9		111.592	109.746	116.246	112.368	108.668	111.694	116.871	113.221	113.336	106.321
129.7		130.526	128.413	135.968	135.610	131.144	134.797	141.043	140.883	141.026	133.170
158.9		162.835	160.200	169.626	165.486	160.036	164.493	172.116	169.644	169.817	161.314
194.6		194.781	191.628	202.904	205.327	198.565	204.096	213.554	207.252	207.463	198.466
238.4		236.811	232.978	246.687	245.161	237.088	243.691	254.984	258.542	258.804	235.195
291.9		289.433	284.748	301.502	298.286	288.463	296.497	310.237	311.185	311.502	303.211
357.5		361.066	355.222	376.123	372.651	360.379	370.416	387.582	383.565	383.955	349.973



**Type TDS**  
**Parallel Shaft Speed Reducers**  
**Quadruple Reduction**

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Ratio 105.9 thru 357.5

1170 Input

**MECHANICAL CAPACITY**

Q22	Q25	Q28	Q30	WQ32	WQ34	WQ36	WQ38	WQ40	REDUCER SIZE	NOMINAL OUTPUT SPEED	NOMINAL GEAR RATIO
174 957	209 1246	308 1831	381 2231	413 2401	630 3475	656 3856	746 4232	822 4708	MECH HP TORQUE (X1000 IN. LBS.)	11	105.9
141 971	172 1284	243 1836	299 2225	333 2392	518 3536	543 3947	604 4298	663 4767	MECH HP TORQUE (X1000 IN. LBS.)	9	129.7
118 983	143 1293	210 1848	258 2235	285 2448	441 3601	460 4003	492 4246	553 4815	MECH HP TORQUE (X1000 IN. LBS.)	7.5	158.9
96 990	115 1279	169 1848	208 2240	237 2470	373 3701	390 4122	411 4367	453 4864	MECH HP TORQUE (X1000 IN. LBS.)	6.0	194.6
82 996	100 1318	135 1881	166 2278	193 2494	311 3813	319 4163	329 4403	364 4916	MECH HP TORQUE (X1000 IN. LBS.)	5.0	238.4
64 1004	76 1292	112 1912	137 2316	162 2512	263 3855	269 4194	278 4523	302 4958	MECH HP TORQUE (X1000 IN. LBS.)	4.0	291.9
56 1009	66 1295	96 1921	119 2327	135 2532	218 3887	222 4229	242 4550	263 4988	MECH HP TORQUE (X1000 IN. LBS.)	3.2	357.5

**THERMAL CAPACITY**

Q22	Q25	Q28	Q30	WQ32	WQ34	WQ36	WQ38	WQ40		NOMINAL OUTPUT SPEED	NOMINAL GEAR RATIO
698 1340	790 1517	910 1747	953 1830	998 1916	1022 1962	1031 1980	1025 1968	975 1872	THERMAL HP WITH FANS	11	105.9
701 1346	794 1524	914 1755	959 1841	1003 1926	1028 1974	1037 1991	1030 1978	986 1882	THERMAL HP WITH FANS	9	129.7
706 1356	799 1534	920 1766	964 1851	1009 1937	1034 1985	1043 2003	1036 1989	986 1893	THERMAL HP WITH FANS	7.5	158.9
711 1365	805 1546	927 1780	972 1866	1017 1953	1042 2001	1051 2018	1044 2004	994 1908	THERMAL HP WITH FANS	6.0	194.6
718 1379	812 1559	935 1795	981 1884	1026 1970	1051 2018	1061 2037	1054 2024	1003 1926	THERMAL HP WITH FANS	5.0	238.4
726 1394	821 1576	946 1816	992 1905	1038 1993	1063 2041	1072 2058	1065 2045	1014 1947	THERMAL HP WITH FANS	4.0	291.9
734 1409	830 1594	957 1837	1003 1926	1049 2014	1068 2051	1083 2079	1076 2066	1028 1974	THERMAL HP WITH FANS	3.2	357.5

**EXACT GEAR RATIO**

Q22	Q25	Q28	Q30	WQ32	WQ34	WQ36	WQ38	WQ40		NOMINAL GEAR RATIO
102.133	110.644	110.365	108.694	107.825	102.377	109.108	105.323	106.344		105.9
127.924	138.586	140.261	138.138	133.350	126.593	134.936	132.114	133.390		129.7
154.961	167.877	163.321	160.848	159.652	151.590	161.551	160.195	161.742		158.9
190.648	206.536	203.030	199.956	193.802	183.993	196.108	197.260	199.164		194.6
225.931	244.760	258.633	254.717	239.761	227.667	242.612	248.447	250.846		238.4
291.268	315.543	317.503	312.696	286.355	271.887	289.761	301.751	304.678		291.9
336.188	364.205	369.830	364.231	349.353	331.714	353.509	348.421	351.785		357.5

**Type TDS**  
**Parallel Shaft Speed Reducers**  
**Quadruple Reduction**

**MECHANICAL CAPACITY**

NOMINAL GEAR RATIO	NOMINAL OUTPUT SPEED	REDUCER SIZE	Q7	Q8	Q9	Q11	Q12	Q13	Q15	Q16	Q18	Q20
<b>105.9</b>	<b>8.2</b>	MECH HP TORQUE (X1000 IN. LBS.)54	6.7	9.2	14	23	31	42	51	63	82	105
				73	118	187	245	342	432	517	672	808
<b>129.7</b>	<b>6.7</b>	MECH HP TORQUE (X1000 IN. LBS.)55	5.8	8.1	12	19	26	35	43	52	68	86
				75	121	191	251	344	447	529	691	829
<b>158.9</b>	<b>5.5</b>	MECH HP TORQUE (X1000 IN. LBS.)57	4.8	6.6	10	16	22	29	36	44	58	73
				77	124	196	255	347	453	541	707	849
<b>194.6</b>	<b>4.5</b>	MECH HP TORQUE (X1000 IN. LBS.)58	4.1	5.6	8.6	13	18	24	30	37	48	61
				77	126	201	264	349	465	555	725	872
<b>238.4</b>	<b>3.6</b>	MECH HP TORQUE (X1000 IN. LBS.)60	3.5	4.6	7.3	11	15	20	26	30	40	52
				78	130	206	270	350	480	562	746	887
<b>291.9</b>	<b>3.0</b>	MECH HP TORQUE (X1000 IN. LBS.)61	2.9	3.8	6.1	9.7	13	16	22	25	34	41
				78	133	210	271	352	487	566	763	894
<b>357.5</b>	<b>2.5</b>	MECH HP TORQUE (X1000 IN. LBS.)63	2.4	3.0	5.0	8.0	10	13	18	21	28	35
				78	136	216	273	357	500	573	782	897

**THERMAL CAPACITY**

NOMINAL GEAR RATIO	NOMINAL OUTPUT SPEED	Q7	Q8	Q9	Q11	Q12	Q13	Q15	Q16	Q18	Q20	
<b>105.9</b>	<b>8.2</b>	THERMAL HP WITH FANS	138 224	189 306	216 350	355 575	449 727	516 836	590 956	716 1160	800 1296	937 1518
<b>129.7</b>	<b>6.7</b>	THERMAL HP WITH FANS	138 224	190 308	217 352	357 578	451 731	519 841	593 961	719 1165	804 1302	942 1526
<b>158.9</b>	<b>5.5</b>	THERMAL HP WITH FANS	139 225	191 309	218 353	359 582	454 735	522 846	597 967	724 1173	809 1311	948 1536
<b>194.6</b>	<b>4.5</b>	THERMAL HP WITH FANS	140 227	192 311	220 356	362 586	457 740	526 852	602 975	729 1181	815 1320	955 1547
<b>238.4</b>	<b>3.6</b>	THERMAL HP WITH FANS	142 230	194 314	222 360	365 591	461 747	531 860	607 983	735 1191	822 1332	963 1560
<b>291.9</b>	<b>3.0</b>	THERMAL HP WITH FANS	143 232	196 318	224 363	369 598	466 755	536 868	614 995	744 1205	831 1346	974 1578
<b>357.5</b>	<b>2.5</b>	THERMAL HP WITH FANS	143 232	196 318	226 366	373 604	471 763	541 876	621 1006	753 1220	840 1361	985 1596

**EXACT GEAR RATIO**

NOMINAL GEAR RATIO	Q7	Q8	Q9	Q11	Q12	Q13	Q15	Q16	Q18	Q20
105.9	111.592	109.746	116.246	112.368	108.668	111.694	116.871	113.221	113.336	106.321
129.7	130.526	128.413	135.968	135.610	131.144	134.797	141.043	140.883	141.026	133.170
158.9	162.835	160.200	169.626	165.486	160.036	164.493	172.116	169.644	169.817	161.314
194.6	194.781	191.628	202.904	205.327	198.565	204.096	213.554	207.252	207.463	198.466
238.4	236.811	232.978	246.687	245.161	237.088	243.691	254.984	258.542	258.804	235.195
291.9	289.433	284.748	301.502	298.286	288.463	296.497	310.237	311.185	311.502	303.211
357.5	361.066	355.222	376.123	372.651	360.379	370.416	387.582	383.565	383.955	349.973



**Type TDS**  
**Parallel Shaft Speed Reducers**  
**Quadruple Reduction**

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MECHANICAL CAPACITY										NOMINAL OUTPUT SPEED	NOMINAL GEAR RATIO
Q22	Q25	Q28	Q30	WQ32	WQ34	WQ36	WQ38	WQ40	REDUCER SIZE		
132	160	230	283	306	480	501	572	621	MECH HP	8.2	105.9
976	1281	1839	2228	2390	3559	3960	4367	4784	TORQUE (X1000 IN. LBS.)		
106	129	183	225	251	399	414	461	501	MECH HP	6.7	129.7
987	1291	1859	2252	2425	3661	4047	4416	4840	TORQUE (X1000 IN. LBS.)		
88	107	156	196	214	342	353	384	417	MECH HP	5.5	158.9
993	1300	1846	2287	2475	3755	4131	4457	4884	TORQUE (X1000 IN. LBS.)		
72	87	128	158	176	288	291	315	342	MECH HP	4.5	194.6
1000	1309	1883	2289	2471	3840	4134	4498	4930	TORQUE (X1000 IN. LBS.)		
61	74	101	124	145	235	240	252	274	MECH HP	3.6	238.4
1005	1316	1892	2288	2524	3874	4215	4542	4979	TORQUE (X1000 IN. LBS.)		
48	58	84	103	123	198	202	209	227	MECH HP	3.0	291.9
1013	1326	1930	2338	2541	3901	4245	4578	5018	TORQUE (X1000 IN. LBS.)		
42	51	72	89	100	164	167	182	198	MECH HP	2.5	357.5
1017	1334	1939	2350	2531	3931	4277	4603	5046	TORQUE (X1000 IN. LBS.)		
THERMAL CAPACITY											
Q22	Q25	Q28	Q30	WQ32	WQ34	WQ36	WQ38	WQ40		NOMINAL OUTPUT SPEED	NOMINAL GEAR RATIO
1063	1203	1386	1453	1520	1558	1571	1561	1486	THERMAL HP WITH FANS	8.2	105.9
1722	1949	2245	2354	2462	2524	2545	2529	2407			
1069	1210	1393	1460	1528	1566	1579	1569	1494	THERMAL HP WITH FANS	6.7	129.7
1732	1960	2257	2365	2475	2537	2558	2542	2420			
1075	1217	1401	1469	1523	1575	1589	1578	1503	THERMAL HP WITH FANS	5.5	158.9
1742	1972	2270	2380	2467	2552	2574	2556	2435			
1083	1226	1412	1480	1549	1587	1601	1590	1514	THERMAL HP WITH FANS	4.5	194.6
1754	1986	2287	2398	2509	2571	2594	2576	2453			
1093	1237	1425	1493	1563	1601	1615	1604	1527	THERMAL HP WITH FANS	3.6	238.4
1771	2004	2309	2419	2532	2594	2616	2598	2474			
1105	1251	1440	1510	1580	1619	1633	1622	1544	THERMAL HP WITH FANS	3.0	291.9
1790	2027	2333	2446	2560	2623	2645	2628	2501			
1117	1265	1455	1527	1597	1638	1651	1640	1565	THERMAL HP WITH FANS	2.5	357.5
1810	2049	2357	2474	2587	2654	2675	2657	2535			
EXACT GEAR RATIO											
Q22	Q25	Q28	Q30	WQ32	WQ34	WQ36	WQ38	WQ40		NOMINAL GEAR RATIO	
102.133	110.644	110.365	108.694	107.825	102.377	109.108	105.323	106.344			105.9
127.924	138.586	140.261	138.138	133.350	126.593	134.936	132.114	133.390			129.7
154.961	167.877	163.321	160.848	159.652	151.590	161.551	160.195	161.742			158.9
190.648	206.536	203.030	199.956	193.802	183.993	196.108	197.260	199.164			194.6
225.931	244.760	258.633	254.717	239.761	227.667	242.612	248.447	250.846			238.4
291.268	315.543	317.503	312.696	286.355	271.887	289.761	301.751	304.678			291.9
336.188	364.205	369.830	364.231	349.353	331.714	353.509	348.421	351.785			357.5

**Type TDS**  
**Parallel Shaft Speed Reducers**  
**Quadruple Reduction**

**MECHANICAL CAPACITY**

NOMINAL GEAR RATIO	NOMINAL OUTPUT SPEED	REDUCER SIZE	Q7	Q8	Q9	Q11	Q12	Q13	Q15	Q16	Q18	Q20
105.9	6.8	MECH HP TORQUE (X1000 IN. LBS.)56	5.7 75	7.8 121	12 191	19 251	26 344	35 440	43 525	53 685	69 818	88
129.7	5.6	MECH HP TORQUE (X1000 IN. LBS.)57	5.0 77	6.8 124	10 196	16 257	22 346	29 453	37 541	44 704	57 849	73
158.9	4.5	MECH HP TORQUE (X1000 IN. LBS.)58	4.0 77	5.5 127	8.6 201	14 263	19 348	24 464	31 554	37 724	49 870	62
194.6	3.7	MECH HP TORQUE (X1000 IN. LBS.)60	3.5 77	4.6 130	7.3 206	11 270	15 351	19 476	25 562	31 743	41 887	51
238.4	3.0	MECH HP TORQUE (X1000 IN. LBS.)61	2.9 78	3.8 133	6.2 210	9.8 271	13 352	16 487	22 566	25 763	34 885	43
291.9	2.5	MECH HP TORQUE (X1000 IN. LBS.)62	2.5 78	3.1 135	5.1 215	8.3 272	11 355	13 498	18 571	21 780	29 898	34
357.5	2.0	MECH HP TORQUE (X1000 IN. LBS.)64	2.0 81	2.6 140	4.3 221	6.8 281	8.9 367	11 512	15 590	17 801	24 917	30

**THERMAL CAPACITY**

NOMINAL GEAR RATIO	NOMINAL OUTPUT SPEED		Q7	Q8	Q9	Q11	Q12	Q13	Q15	Q16	Q18	Q20
105.9	6.8	THERMAL HP WITH FANS	187 275	256 376	292 429	482 709	608 894	700 1029	801 1177	971 1427	1085 1595	1271 1868
129.7	5.6	THERMAL HP WITH FANS	187 275	256 376	293 431	483 710	609 895	701 1030	802 1179	972 1429	1087 1598	1273 1871
158.9	4.5	THERMAL HP WITH FANS	187 275	257 378	293 431	484 711	610 897	702 1032	803 1180	973 1430	1088 1599	1275 1874
194.6	3.7	THERMAL HP WITH FANS	188 276	257 378	294 432	484 711	611 898	703 1033	805 1183	975 1433	1090 1602	1277 1877
238.4	3.0	THERMAL HP WITH FANS	188 276	258 379	294 432	486 714	613 901	705 1036	806 1185	977 1436	1093 1607	1280 1882
291.9	2.5	THERMAL HP WITH FANS	189 278	258 379	295 434	487 716	614 903	707 1039	809 1189	980 1441	1096 1611	1284 1887
357.5	2.0	THERMAL HP WITH FANS	189 278	259 381	295 434	487 716	615 904	709 1042	811 1192	983 1445	1099 1616	1287 1892

**EXACT GEAR RATIO**

NOMINAL GEAR RATIO		Q7	Q8	Q9	Q11	Q12	Q13	Q15	Q16	Q18	Q20
105.9		111.592	109.746	116.246	112.368	108.668	111.694	116.871	113.221	113.336	106.321
129.7		130.526	128.413	135.968	135.610	131.144	134.797	141.043	140.883	141.026	133.170
158.9		162.835	160.200	169.626	165.486	160.036	164.493	172.116	169.644	169.817	161.314
194.6		194.781	191.628	202.904	205.327	198.565	204.096	213.554	207.252	207.463	198.466
238.4		236.811	232.978	246.687	245.161	237.088	243.691	254.984	258.542	258.804	235.195
291.9		289.433	284.748	301.502	298.286	288.463	296.497	310.237	311.185	311.502	303.211
357.5		361.066	355.222	376.123	372.651	360.379	370.416	387.582	383.565	383.955	349.973



**Type TDS**  
**Parallel Shaft Speed Reducers**  
**Quadruple Reduction**

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**MECHANICAL CAPACITY**

Q22	Q25	Q28	Q30	WQ32	WQ34	WQ36	WQ38	WQ40	REDUCER SIZE	NOMINAL OUTPUT SPEED	NOMINAL GEAR RATIO
110 986	132 1278	193 1865	238 2264	261 2459	407 3649	429 4097	478 4408	519 4831	MECH HP TORQUE (X1000 IN. LBS.)	6.8	105.9
89 993	106 1286	153 1878	188 2273	213 2482	339 3760	338 3992	385 4456	418 4883	MECH HP TORQUE (X1000 IN. LBS.)	5.6	129.7
74 999	88 1293	132 1887	162 2281	179 2502	289 3859	291 4115	321 4494	348 4926	MECH HP TORQUE (X1000 IN. LBS.)	4.5	158.9
60 1006	73 1317	107 1902	132 2310	149 2522	240 3870	245 4206	263 4534	285 4971	MECH HP TORQUE (X1000 IN. LBS.)	3.7	194.6
51 1011	62 1323	84 1902	105 2337	121 2543	196 3903	200 4247	210 4577	229 5017	MECH HP TORQUE (X1000 IN. LBS.)	3.0	238.4
40 1019	49 1344	70 1945	86 2345	102 2559	165 3930	169 4275	175 4625	190 5071	MECH HP TORQUE (X1000 IN. LBS.)	2.5	291.9
35 1040	43 1374	62 1998	76 2421	86 2639	139 4024	142 4408	155 4736	169 5193	MECH HP TORQUE (X1000 IN. LBS.)	2.0	357.5

**THERMAL CAPACITY**

Q22	Q25	Q28	Q30	WQ32	WQ34	WQ36	WQ38	WQ40	NOMINAL OUTPUT SPEED	NOMINAL GEAR RATIO	
1442 2119	1632 2399	1880 2764	1971 2897	2062 3031	2113 3106	2131 3133	2117 3112	2016 2964	THERMAL HP WITH FANS	6.8	105.9
1444 2123	1634 2402	1883 2767	1973 2900	2065 3036	2116 3111	2134 3137	2120 3116	2018 2966	THERMAL HP WITH FANS	5.6	129.7
1446 2126	1637 2406	1885 2771	1976 2905	2068 3040	2119 3115	2137 3141	2123 3121	2021 2971	THERMAL HP WITH FANS	4.5	158.9
1449 2130	1640 2411	1889 2777	1980 2911	2072 3046	2123 3121	2141 3147	2127 3127	2025 2977	THERMAL HP WITH FANS	3.7	194.6
1452 2134	1644 2417	1893 2783	1984 2916	2077 3053	2128 3128	2146 3155	2132 3134	2030 2984	THERMAL HP WITH FANS	3.0	238.4
1456 2140	1648 2423	1898 2790	1990 2925	2082 3061	2133 3136	2152 3163	2138 3143	2035 2991	THERMAL HP WITH FANS	2.5	291.9
1461 2147	1652 2428	1903 2797	1996 2934	2087 3068	2138 3143	2158 3172	2144 3152	2042 3002	THERMAL HP WITH FANS	2.0	357.5

**EXACT GEAR RATIO**

Q22	Q25	Q28	Q30	WQ32	WQ34	WQ36	WQ38	WQ40	NOMINAL GEAR RATIO
102.133	110.644	110.365	108.694	107.825	102.377	109.108	105.323	106.344	105.9
127.924	138.586	140.261	138.138	133.350	126.593	134.936	132.114	133.390	129.7
154.961	167.877	163.321	160.848	159.652	151.590	161.551	160.195	161.742	158.9
190.648	206.536	203.030	199.956	193.802	183.993	196.108	197.260	199.164	194.6
225.931	244.760	258.633	254.717	239.761	227.667	242.612	248.447	250.846	238.4
291.268	315.543	317.503	312.696	286.355	271.887	289.761	301.751	304.678	291.9
336.188	364.205	369.830	364.231	349.353	331.714	353.509	348.421	351.785	357.5

**Type TDS**  
**Parallel Shaft Speed Reducers**  
**Quadruple Reduction**

**MECHANICAL CAPACITY**

NOMINAL GEAR RATIO	NOMINAL OUTPUT SPEED	REDUCER SIZE	Q7	Q8	Q9	Q11	Q12	Q13	Q15	Q16	Q18	Q20
105.9	5.5	MECH HP TORQUE (X1000 IN. LBS.) 57	4.7 77	6.4 125	9.9 196	16 258	22 347	29 457	36 541	44 702	57 843	73
129.7	4.5	MECH HP TORQUE (X1000 IN. LBS.) 58	4.1 77	5.5 127	8.6 201	13 264	18 349	24 465	30 551	36 720	47 868	60
158.9	3.7	MECH HP TORQUE (X1000 IN. LBS.) 60	3.4 78	4.4 131	7.1 206	11 270	15 351	19 476	25 563	31 738	40 888	51
194.6	3.0	MECH HP TORQUE (X1000 IN. LBS.) 61	2.9 78	3.8 133	6.1 211	9.5 271	12 353	16 489	21 566	25 763	34 893	41
238.4	2.4	MECH HP TORQUE (X1000 IN. LBS.) 63	2.4 78	3.1 135	5.1 216	8.1 273	10 356	13 499	18 574	20 783	28 894	35
291.9	2.0	MECH HP TORQUE (X1000 IN. LBS.) 63	2.0 81	2.6 140	4.3 221	6.8 281	9.0 367	11 511	15 591	17 801	24 928	28
357.5	1.7	MECH HP TORQUE (X1000 IN. LBS.) 66	1.7 83	2.2 143	3.5 227	5.6 290	7.4 380	9.4 525	12 610	14 821	19 949	25

**THERMAL CAPACITY**

NOMINAL GEAR RATIO	NOMINAL OUTPUT SPEED		Q7	Q8	Q9	Q11	Q12	Q13	Q15	Q16	Q18	Q20
105.9	5.5	THERMAL HP WITH FANS	271 360	371 493	425 565	700 931	883 1174	1017 1353	1163 1547	1409 1874	1576 2096	1846 2455
129.7	4.5	THERMAL HP WITH FANS	271 360	371 493	425 565	700 931	883 1174	1017 1353	1163 1547	1409 1874	1576 2096	1846 2455
158.9	3.7	THERMAL HP WITH FANS	271 360	371 493	425 565	700 931	883 1174	1017 1353	1163 1547	1409 1874	1576 2096	1846 2455
194.6	3.0	THERMAL HP WITH FANS	271 360	371 493	425 565	700 931	883 1174	1017 1353	1163 1547	1409 1874	1576 2096	1846 2455
238.4	2.4	THERMAL HP WITH FANS	271 360	371 493	425 565	700 931	883 1174	1017 1353	1163 1547	1409 1874	1576 2096	1846 2455
291.9	2.0	THERMAL HP WITH FANS	271 360	371 493	425 565	700 931	883 1174	1017 1353	1163 1547	1409 1874	1576 2096	1846 2455
357.5	1.7	THERMAL HP WITH FANS	271 360	371 493	425 565	700 931	883 1174	1017 1353	1163 1547	1409 1874	1576 2096	1846 2455

**EXACT GEAR RATIO**

NOMINAL GEAR RATIO		Q7	Q8	Q9	Q11	Q12	Q13	Q15	Q16	Q18	Q20
105.9		111.592	109.746	116.246	112.368	108.668	111.694	116.871	113.221	113.336	106.321
129.7		130.526	128.413	135.968	135.610	131.144	134.797	141.043	140.883	141.026	133.170
158.9		162.835	160.200	169.626	165.486	160.036	164.493	172.116	169.644	169.817	161.314
194.6		194.781	191.628	202.904	205.327	198.565	204.096	213.554	207.252	207.463	198.466
238.4		236.811	232.978	246.687	245.161	237.088	243.691	254.984	258.542	258.804	235.195
291.9		289.433	284.748	301.502	298.286	288.463	296.497	310.237	311.185	311.502	303.211
357.5		361.066	355.222	376.123	372.651	360.379	370.416	387.582	383.565	383.955	349.973



**Type TDS**  
**Parallel Shaft Speed Reducers**  
**Quadruple Reduction**

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**MECHANICAL CAPACITY**

Q22	Q25	Q28	Q30	WQ32	WQ34	WQ36	WQ38	WQ40	REDUCER SIZE	NOMINAL OUTPUT SPEED	NOMINAL GEAR RATIO
89 993	108 1299	156 1871	192 2268	212 2483	338 3762	350 4144	389 4454	422 4881	MECH HP TORQUE (X1000 IN. LBS.)	5.5	105.9
72 1000	87 1309	125 1905	154 2307	173 2505	280 3845	285 4183	313 4499	340 4931	MECH HP TORQUE (X1000 IN. LBS.)	4.5	129.7
60 1006	72 1317	107 1899	132 2307	145 2524	235 3814	240 4215	261 4536	283 4972	MECH HP TORQUE (X1000 IN. LBS.)	3.7	158.9
49 1013	59 1326	87 1919	106 2303	121 2543	195 3904	199 4247	213 4574	232 5014	MECH HP TORQUE (X1000 IN. LBS.)	3.0	194.6
41 1018	50 1330	70 1954	86 2368	99 2571	159 3935	163 4293	172 4642	187 5089	MECH HP TORQUE (X1000 IN. LBS.)	2.4	238.4
33 1052	41 1390	58 2001	72 2445	85 2646	137 4036	140 4420	146 4793	159 5255	MECH HP TORQUE (X1000 IN. LBS.)	2.0	291.9
29 1076	36 1425	51 2050	63 2505	72 2733	116 4169	119 4566	130 4906	141 5380	MECH HP TORQUE (X1000 IN. LBS.)	1.7	357.5

**THERMAL CAPACITY**

Q22	Q25	Q28	Q30	WQ32	WQ34	WQ36	WQ38	WQ40		NOMINAL OUTPUT SPEED	NOMINAL GEAR RATIO
2094 2785	2370 3152	2729 3630	2861 3805	2994 3982	3068 4080	3094 4115	3074 4088	2927 3893	THERMAL HP WITH FANS	5.5	105.9
2094 2785	2370 3152	2729 3630	2861 3805	2994 3982	3068 4080	3094 4115	3074 4088	2927 3893	THERMAL HP WITH FANS	4.5	129.7
2094 2785	2370 3152	2729 3630	2861 3805	2994 3982	3068 4080	3094 4115	3074 4088	2927 3893	THERMAL HP WITH FANS	3.7	158.9
2094 2785	2370 3152	2729 3630	2861 3805	2994 3982	3068 4080	3094 4115	3074 4088	2927 3893	THERMAL HP WITH FANS	3.0	194.6
2094 2785	2370 3152	2729 3630	2861 3805	2994 3982	3068 4080	3094 4115	3074 4088	2927 3893	THERMAL HP WITH FANS	2.4	238.4
2094 2785	2370 3152	2729 3630	2861 3805	2994 3982	3068 4080	3094 4115	3074 4088	2927 3893	THERMAL HP WITH FANS	2.0	291.9
2094 2785	2370 3152	2729 3630	2861 3805	2994 3982	3068 4080	3094 4115	3074 4088	2927 3893	THERMAL HP WITH FANS	1.7	357.5

**EXACT GEAR RATIO**

Q22	Q25	Q28	Q30	WQ32	WQ34	WQ36	WQ38	WQ40		NOMINAL GEAR RATIO
102.133	110.644	110.365	108.694	107.825	102.377	109.108	105.323	106.344		105.9
127.924	138.586	140.261	138.138	133.350	126.593	134.936	132.114	133.390		129.7
154.961	167.877	163.321	160.848	159.652	151.590	161.551	160.195	161.742		158.9
190.648	206.536	203.030	199.956	193.802	183.993	196.108	197.260	199.164		194.6
225.931	244.760	258.633	254.717	239.761	227.667	242.612	248.447	250.846		238.4
291.268	315.543	317.503	312.696	286.355	271.887	289.761	301.751	304.678		291.9
336.188	364.205	369.830	364.231	349.353	331.714	353.509	348.421	351.785		357.5

Type TDS  
Parallel Shaft Speed Reducers

**NOTES**

# Type TDS

## Parallel Shaft Speed Reducers

### Additional Thermal Capacity

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Engineering Data

#### A. Increased Thermal Rating Capacity by fan Cooling

Cooling fans mounted externally on the extensions of a double extended high speed shaft provide a method of increasing the heat dissipation of the gear housing thereby permitting increased thermal ratings.

Thermal Ratings with Fans are shown in the Selection Tables (Section 310).

#### B. Increased Thermal Rating Capacity by Water Cooling

If the required thermal rating is beyond the range of cooling fans, a circulating lube oil system will be required. This method requires the user to supply cooling water for removal of excess heat.

The circulating lube oil system includes — shaft driven lube oil pump, oil to water heat exchanger (for 85°F max. water temp. fouling factor .001) cleanable oil strainer, flow switch, necessary pipe and pipe fittings to provide a complete assembly.

For thermal increase greater than shown, refer to Nuttall Gear. If cooling water is not available, oil-to-air heat exchangers can be furnished. Refer to Nuttall Gear.

#### SELECTION OF PUMP AND COOLER UNITS

- Determine the thermal horsepower capacity that is required. This is usually the horsepower rating of the prime mover.
- Use the rating tables (Section 310) to determine the thermal capacity of the selected unit (the rating without fans).
- Subtracting the unit's thermal rating from the thermal requirement results in the additional cooling that is needed.
- In the Cooling Capacity Table, locate the input speed in the far left column, and within that speed group, select the number of reductions — single, double, triple, or quadruple. Reading to the right on the appropriate line, select the first size that exceeds the additional cooling needed.
- Determine the water flow required for the unit selected, using the adjacent table, and insure that there is an adequate supply available. Please refer to Nuttall Gear for application assistance.

ADDITIONAL THERMAL HORSEPOWER CAPACITY							
INPUT SPEED	REDUC.	COOLING UNIT SIZES					
		1	2	3	4	5	6
1750	Single	979		2080		4282	
	Double	469		1040		2141	
	Triple	326		693		1427	
	Quadruple	245		520		1071	
1170	Single		734		1346	2814	
	Double		367		673	1407	
	Triple		245		449	938	
870	Single		489		979		2202
	Double		245		489		1101
	Triple		163		326		734
720	Single		489		734		1713
	Double		245		367		856
580	Single		367		612		1468
	Double		184		306		734
WATER FLOW REQUIRED ①							
1750		8		17		35	
1170		6		11		23	
870	All Reductions	4		8		18	
720		4		6		14	
580		3		5		12	

① In GPM with a maximum temperature of 85°F.

# Type TDS

## Parallel Shaft Speed Reducers

### Backstop Ratings

Backstops are required for applications in which rotation in one direction must be prevented — for example, on conveyor drives.

The instant the shaft attempts to change direction, the backstop sprags grip, thereby preventing reverse rotation. This action is fully automatic.

A backstop is generally located on the end of the reducer high speed shaft opposite the motor. If space limitations prevent normal mounting, the backstop can be mounted on an intermediate shaft extension.

BACKSTOP SELECTION TABLE		
MODEL No.	MAX. RPM	TORQUE RATING
B20	2900	3,600
B50	2650	12,000
B80	2300	26,400
B110	2000	48,000
B120	1800	81,600
B130	1400	138,000
B150	1300	216,000

#### SELECTION

1. Calculate the required torque. Use the formula:

$$T = \frac{63,000 \times \text{Motor HP}}{\text{Input Speed}}$$

Formula must be modified if the backstop is mounted on a shaft other than the input shaft.

2. Refer to the backstop selection table and read down the column until the listed torque rating is equal to or greater than the required torque calculated in step 1. Read to the left to determine the model number of the required backstop.
3. The maximum allowable backstop speed must be equal to or greater than the speed of the shaft upon which the backstop is mounted. If this is not the case, refer to Nuttall Gear.
4. Specify the direction of rotation of the reducer output shaft when ordering a backstop (clockwise or counter-clockwise when facing the end of the low speed shaft).

**Type TDS  
Parallel Shaft Speed Reducers  
WK<sup>2</sup>**

NOM. GEAR RATIO	UNIT SIZE													
	7	8	9	11	12	13	15	16	18	20	22	25	28	30
<b>SINGLE REDUCTION</b>														
1.225	3.38	7.83	13.4	26.5	50.5	71.9	117.2	192	275					
1.500	3.16	6.15	10.99	21.6	42.1	58.4	96.4	154	227	362	499	967	1408	2067
1.837	2.41	4.79	8.51	17.5	33.2	47.0	74.6	122	176	289	404	590	1087	1592
2.250	2.03	3.97	6.82	13.9	25.6	38.9	59.6	99.8	141	226	336	473	823	1218
2.756	1.57	3.07	5.3	10.7	21.4	29.9	49.4	79.5	117	180	191	362	609	930
3.375	1.17	2.35	4.0	8.6	16.4	23.4	36.9	55.3	87.7	112	146	215	450	555
4.134	.90	1.88	3.1	6.6	13.0	18.9	28.5	48.4	67.9	78.5	117	171	277	398
5.060	.74	1.44	2.6	5.4	9.8	13.4	23.3	36.9	55.7	59.6	86.3	161	255	347
<b>DOUBLE REDUCTION</b>														
6.20	.74	1.76	3.0	6.0	11.2	19.4	24.2	38.7	51.0	77.5	113	171	354	408
7.59	.53	1.26	2.1	4.2	8.2	14.1	17.2	29.7	37.8	56.9	84.3	121	256	290
9.30	.40	.96	1.7	3.3	6.4	10.8	13.0	20.7	27.7	41.4	66.5	90.2	195	218
11.39	.31	.72	1.2	2.5	4.8	8.1	9.7	15.9	19.9	33.8	48.7	71.4	157	174
13.95	.22	.56	.93	1.8	3.6	6.0	7.1	11.9	15.3	25.3	37.1	50.5	114	125
17.09	.17	.40	.68	1.3	2.8	4.6	5.5	8.7	11.4	19.9	29.7	37.5	86.1	93.8
20.93	.13	.33	.53	1.1	2.1	3.8	4.5	6.7	9.2	15.3	21.4	29.9	70.0	76.0
<b>TRIPLE REDUCTION</b>														
25.63	.22	.31	.66	.94	2.2	3.0	3.3	5.8	6.4	13.2	23.5	28.5	58.6	79.3
31.39	.17	.24	.49	.67	1.5	2.1	2.3	4.2	4.5	9.5	16.6	20.0	43.2	57.7
38.44	.13	.18	.38	.51	1.2	1.6	1.8	3.4	3.6	7.4	12.5	14.9	31.6	41.7
47.08	.10	.14	.29	.38	.88	1.2	1.3	2.5	2.7	5.5	9.3	10.9	22.8	29.7
57.66	.08	.11	.22	.28	.69	.92	1.1	1.9	2.0	4.0	6.7	7.9	17.5	22.7
70.62	.07	.09	.17	.22	.50	.67	.78	1.4	1.5	3.1	5.1	6.0	13.2	17.1
86.50	.06	.07	.13	.17	.42	.56	.67	1.2	1.3	2.4	4.2	4.9	10.8	14.0
<b>QUADRUPLE REDUCTION</b>														
105.9	.07	.09	.19	.26	.36	.41	.45	.99	1.0	2.5	3.3	3.6	8.5	9.6
129.7	.06	.09	.17	.21	.28	.31	.33	.70	.74	1.8	2.3	2.5	5.8	6.5
158.9	.06	.08	.15	.16	.21	.23	.25	.53	.55	1.4	1.7	1.8	4.6	5.1
194.6	.05	.07	.12	.13	.16	.17	.18	.40	.41	1.1	1.3	1.4	3.3	3.7
238.4	.05	.07	.09	.10	.13	.13	.15	.29	.30	.85	1.0	1.1	2.4	2.6
291.9	.05	.06	.07	.08	.10	.10	.11	.22	.23	.65	.74	.78	1.8	1.9
357.5	.05	.05	.06	.07	.08	.08	.08	.17	.18	.56	.63	.65	1.5	1.6

NOM. GEAR RATIO	UNIT SIZE				
	32	34	36	38	40
<b>DOUBLE REDUCTION</b>					
6.20	698	922	1471	1601	1652
7.59	512	692	931	1017	1050
9.30	371	545	718	777	800
11.39	281	328	513	553	569
13.95	187	242	352	378	388
17.09	129	190	263	281	288
20.93	96.3	141	230	241	245
<b>TRIPLE REDUCTION</b>					
25.63	102	142	213	221	224
31.39	73.7	105	149	154	156
38.44	52.6	81.7	111	114	116
47.08	42.5	59.1	88.3	90.6	91.6
57.66	31.6	44.8	63.4	64.9	65.4
70.62	24.9	35.9	48.2	49.2	49.6
86.50	19.2	26.0	39.6	40.3	40.6
<b>QUADRUPLE REDUCTION</b>					
105.9	16.2	20.7	24.4	31.3	31.5
129.7	11.7	14.6	17.0	21.9	22.1
158.9	9.0	11.1	12.7	16.4	16.5
194.6	6.8	8.2	9.3	12.4	12.4
238.4	5.1	5.6	6.7	8.8	8.9
291.9	4.0	4.7	5.2	6.8	6.8
357.5	3.2	3.6	3.9	5.7	5.7

The WK<sup>2</sup> values listed are in pound-feet<sup>2</sup> at the high speed shaft. These values include rotating parts of the standard reducer but do not include values for couplings, clutches, fans, brake wheels or other external devices. Special ratios, extended shafts and shaft driven pumps will also affect actual values, and can be calculated at time of order engineering, if required.

# Type TDS

## Parallel Shaft Speed Reducers

## Overhung Load Ratings

**Overhung Load Capacities**

When a pulley, sprocket or pinion is to be mounted on the input or output shaft of a reducer, the overhung load capacity of the reducer must be checked. The magnitude of the overhung load varies with the type of connection and its location from the shaft bearing. Use the following overhung load formula after selecting appropriate Lc and Lf factors from the tables.

**Overhung Load Formula**

OHL (lbs) =

$$\text{Motor Hp} \times 126,000 \times \text{Lc}$$

$$\text{Shaft RPM} \times \text{Pitch Diameter (Inches)} \times \text{Lf}$$

Compare the calculated overhung load with the overhung load table applicable to the reducer type, size and shaft. If the calculated overhung load is greater than that listed, contact Nuttall Gear.

**Load Connection Factor • Lc**

Type of Load Connection      Factor, Lc

Sprocket	1.00
Pinion	1.25
V-Belt	1.50
Flat Belt	2.50

**Load Location Factor • Lf**

See table below for low speed shafts. For high speed shaft, use Lf of 1.00 unless load location is outboard of shaft midpoint, then contact Nuttall Gear.

A belt conveyor is to be driven by a T11 reducer at 68 RPM, and requires 100 Hp. A sprocket with a 12 inch pitch diameter is mounted 4 inches from the end cap.

**EXAMPLE**

Calculate the overhung load.

Lc = 1.00 from table

Lf = .99 from table

$$100 \times 126,000 \times 1.00$$

$$68 \times 12 \times .99$$

$$= 15,597 \text{ lbs.}$$

Refer to the "Low Speed Shaft Overhung Rating" table. The T11 reducer at 68 RPM has a rating of 22,500 pounds and is suitable for the application.

**Lf - LOAD LOCATION FACTORS - LOW SPEED SHAFT**  
**UNIT SIZE**

(1) IN.	7	8	9	11	12	13	15	16	18	20	22	25	28	30	32	34	36	38	40
1	1.13	1.13	1.18	1.16	1.16	1.22	1.17	1.16	1.18	1.17	1.17	1.19	1.20	1.20	1.21	1.19	1.20	1.19	1.18
2	1.04	1.06	1.10	1.10	1.11	1.16	1.12	1.11	1.13	1.13	1.13	1.15	1.16	1.17	1.17	1.17	1.16	1.16	1.15
3	0.96	0.99	1.03	1.05	1.06	1.11	1.07	1.07	1.09	1.09	1.10	1.12	1.13	1.13	1.15	1.14	1.14	1.13	1.13
4	0.89	0.93	0.96	0.99	1.01	1.06	1.02	1.02	1.05	1.06	1.06	1.08	1.10	1.10	1.12	1.12	1.11	1.11	1.10
5	0.84	0.88	0.91	0.95	0.97	1.02	0.99	0.99	1.01	1.02	1.03	1.05	1.07	1.07	1.09	1.09	1.09	1.09	1.08
6						0.96	0.91	0.93	0.99	0.95	0.95	0.98	0.99	1.00	1.02	1.04	1.05	1.06	1.06
7						0.87	0.89	0.94	0.92	0.92	0.95	0.96	0.97	0.99	1.01	1.02	1.03	1.04	1.04
8						0.86	0.91	0.88	0.90	0.92	0.93	0.94	0.97	0.99	1.00	1.01	1.01	1.02	1.02
9						0.88	0.86	0.87	0.89	0.91	0.92	0.94	0.96	0.97	0.99	1.00	1.00	1.00	1.00
10						0.86	0.88	0.90	0.92	0.94	0.94	0.95	0.95	0.97	0.97	0.97	0.98	0.98	0.98
11						0.85	0.87	0.89	0.92	0.93	0.95	0.95	0.96	0.96	0.96	0.96	0.96	0.96	0.96
12	(1) Center of applied load in inches from the end cap.				0.85	0.87	0.90	0.91	0.93	0.94	0.94	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
13						0.85	0.88	0.89	0.91	0.92	0.92	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
14						0.86	0.87	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.91	0.91	0.91	0.91	0.91
15						0.84	0.85	0.87	0.88	0.89	0.89	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
16						0.83	0.86	0.87	0.87	0.87	0.87	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88

**LOW SPEED SHAFT OVERHUNG LOAD RATINGS (2)**

OUTPUT SPEED	7	8	9	11	12	13	15	16	18	20	22	25	28	30	32	34	36	38	40
1420	1.8	4.1	2.5	5.1	4.8	1.2	3.0	4.6											
1170	2.1	4.6	2.9	5.8	5.4	4.7	3.7	5.0											
950	2.6	5.2	3.7	6.6	6.5	5.7	5.2	6.9	6.2	8.6	6.2								
750	3.0	5.8	4.4	7.6	8.0	6.4	6.5	8.6	7.9	12.7	8.6								
640	3.6	6.7	5.3	8.8	9.0	8.6	7.7	10.9	9.3	15.0	13.9	16.8	28.1	26.2					
520	4.3	7.4	6.3	9.8	10.7	10.5	9.6	13.7	11.8	17.0	16.8	19.5	32.5	31.1					
420	4.8	8.3	7.0	10.8	11.9	12.0	11.0	15.6	13.6	20.1	19.0	22.6	37.8	36.0					
350	5.1	9.1	7.6	11.7	13.4	14.2	11.9	18.1	14.6	22.6	21.5	26.6	42.1	40.4					
280	4.8	8.3	6.9	12.6	13.6	10.5	6.3	10.8	14.3	13.4	21.2	16.7	34.2	30.6	43.3	67.5	57.0	63.0	81.0
230	5.2	9.1	7.7	13.9	13.6	11.8	7.5	12.0	15.7	15.2	23.0	19.7	38.4	35.1	47.6	72.8	63.0	70.0	89.0
190	5.6	9.8	8.0	14.9	16.0	14.1	8.4	12.9	17.1	17.2	25.1	21.7	41.9	38.4	52.8	72.5	69.0	76.0	96.0
155	6.1	10.6	8.9	16.2	17.3	15.0	9.4	14.5	19.1	18.1	27.5	23.1	44.5	40.8	57.3	79.6	75.0	83.0	104.0
125	6.7	11.5	9.6	17.8	18.8	16.8	10.8	15.5	20.6	20.2	29.8	26.1	49.4	47.2	60.6	86.1	84.0	92.0	115.0
100	7.2	12.6	10.5	19.3	20.0	18.3	11.7	17.3	22.5	21.7	31.1	28.7	53.6	52.5	67.2	91.6	91.0	100.0	124.0
84	8.0	13.3	11.4	20.4	21.7	19.4	12.8	19.0	24.7	24.2	36.3	30.7	56.9	55.9	73.5	95.0	103.0	113.0	139.0
68	8.6	14.5	12.4	22.5	23.5	21.6	14.1	20.6	27.1	26.4	38.2	35.2	93.5	60.7	75.0	95.0	109.0	119.0	147.0
56	9.3	15.5	13.6	24.3	25.6	23.5	15.8	23.2	30.0	29.1	41.4	38.0	68.6	65.6	75.0	95.0	120.0	135.0	160.0
45	10.1	16.7	14.6	26.1	27.6	25.4	17.4	24.6	31.8	31.4	45.0	41.2	74.4	71.0	75.0	95.0	120.0	140.0	160.0
37	10.8	18.0	15.8	28.0	29.8	27.4	19.1	27.1	34.9	33.8	48.8	45.1	81.3	77.8	75.0	89.5	120.0	140.0	160.0



**Type TDS**  
**Parallel Shaft Speed Reducers**  
**Overhung Load Ratings<sup>①</sup>**

Section 317  
 Page 5  
 Engineering Data  
 High Speed Shaft

UNIT	SINGLE REDUCTION						
	1170 INPUT				870 INPUT		
	NOMINAL RATIOS						
UNIT	1.500	1.837	2.250	2.756	3.375	4.134	5.060
S7	1.1	1.2	1.4	1.6	1.9	1.9	2.1
S8	3.0	3.0	3.3	3.5	3.8	4.0	4.0
S9	1.1	1.5	1.9	2.2	2.7	2.8	3.0
S11	2.2	2.6	3.0	3.1	3.4	3.5	3.7
S12	3.2	3.6	3.8	4.2	4.3	4.5	4.7
S13	0.2	0.3	0.4	0.6	3.3	3.9	4.1
S15	1.3	2.3	3.3	4.1	4.3	4.7	5.2
S16	1.1	1.6	2.4	5.5	6.1	6.8	7.3
S18	0.5	2.7	3.0	4.0	4.6	5.1	5.6
S20	5.0	4.4	7.0	8.0	9.6	9.6	10.2
S22	2.3	3.0	3.5	4.4	6.4	8.2	8.8
S25	1.0	7.3	7.6	8.0	8.2	9.4	10.9
S28	3.4	4.1	6.1	6.8	8.9	11.0	12.7
S30	2.0	2.9	6.4	7.7	8.6	11.0	12.4
	7.7	8.0	8.5	10.4	11.8	12.8	14.4

UNIT	DOUBLE REDUCTION						
	1170 INPUT				870 INPUT		
	NOMINAL RATIOS						
UNIT	6.200	7.590	9.300	11.39	13.95	17.09	20.93
D7	0.5	0.6	0.7	0.8	0.8	0.9	0.9
D8	0.2	0.4	0.5	0.5	0.6	0.7	0.7
D9	0.2	0.2	0.3	0.5	0.6	0.6	0.8
D11	0.1	0.2	0.5	0.6	0.9	0.9	0.9
D12	0.9	1.2	1.4	1.6	1.7	1.8	1.9
D13	0.1	0.2	0.5	0.7	0.9	1.1	1.2
D15	0.1	0.2	0.2	0.3	0.4	0.5	0.7
D16	0.7	1.2	1.4	1.9	2.0	2.0	2.2
D18	0.1	0.2	0.3	0.3	0.7	1.1	1.3
D20	0.3	0.4	0.6	0.8	1.2	1.5	1.9
D22	0.1	0.2	0.3	0.3	0.4	0.9	1.7
D25	0.1	0.2	0.2	1.0	1.2	1.6	1.9
D28	0.1	0.2	0.7	1.5	1.9	2.0	2.5
D30	2.4	5.3	8.7	9.6	9.9	10.2	11.0
D32	2.1	3.1	4.1	5.2	7.1	6.7	7.3
D34	4.6	8.7	9.9	10.5	10.9	11.8	12.2
D36	1.0	7.3	7.6	8.0	8.2	9.4	10.9
D38	3.2	7.5	7.8	8.2	8.4	9.6	11.1
D40	12.1	13.6	14.0	14.3	14.6	15.7	17.3
	6.8	9.5	10.2	11.0	11.6	12.0	13.0
	3.7	4.2	5.3	6.3	7.7	8.0	8.5
	9.3	10.5	11.7	12.0	12.6	13.3	13.7
	7.9	8.4	8.7	9.2	9.9	11.0	12.6
	8.1	8.6	9.0	9.4	10.1	11.2	12.9
	14.8	15.3	15.7	16.2	16.8	17.9	19.6

(1) In pounds X 1000.

**Type TDS**  
**Parallel Shaft Speed Reducers**  
**Overhung Load Ratings<sup>①</sup>**

UNIT	TRIPLE REDUCTION							870 INPUT						
	1170 INPUT							NOMINAL RATIOS						
	25.63	31.39	38.44	47.08	57.66	70.62	86.50	25.63	31.39	38.44	47.08	57.66	70.62	86.50
T7	1.7	1.8	1.8	1.8	1.8	1.8	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.1
T8	1.5	1.6	1.6	1.6	1.7	1.7	1.7	1.7	1.8	1.9	1.9	1.9	1.9	2.0
T9	2.2	2.3	2.3	2.3	2.3	2.4	2.4	2.5	2.6	2.6	2.6	2.6	2.7	2.7
T11	2.4	2.4	2.5	2.5	2.5	2.6	2.6	2.6	2.7	2.8	2.8	2.8	2.9	2.9
T12	4.0	4.0	4.1	4.1	4.2	4.2	4.2	4.5	4.5	4.6	4.6	4.6	4.6	4.7
T13	3.5	3.6	3.6	3.7	3.8	3.8	3.8	4.0	4.0	4.1	4.2	4.2	4.3	4.3
T15	3.1	3.2	3.3	3.3	3.4	3.4	3.5	3.6	3.7	3.8	3.8	3.8	3.8	3.9
T16	5.8	6.0	6.1	6.1	6.2	6.2	6.2	6.5	6.6	6.7	6.7	6.7	6.8	6.9
T18	5.3	5.4	5.5	5.6	5.6	5.7	5.7	6.0	6.0	6.1	6.2	6.3	6.3	6.4
T20	5.8	6.0	6.2	6.3	6.4	6.5	6.6	6.5	6.7	6.9	7.0	7.1	7.2	7.2
T22	7.4	7.6	7.8	7.9	7.9	8.0	8.0	8.3	8.5	8.6	8.9	9.0	9.0	9.0
T25	7.5	8.5	9.2	9.5	9.6	9.7	9.9	9.6	10.3	10.5	10.7	10.8	10.9	11.0
T28	10.9	11.2	11.4	11.5	11.6	11.8	12.0	12.1	12.3	12.6	12.8	13.0	13.1	13.3
T30	10.1	10.3	10.5	10.6	10.9	10.9	11.2	11.1	11.5	11.7	11.9	12.0	12.2	12.4
T32	4.5	5.1	5.6	6.2	6.5	6.8	7.2	5.7	6.5	6.5	7.7	8.0	8.4	8.5
T34	5.9	6.1	6.5	7.1	8.2	9.0	9.3	6.6	6.8	7.1	7.5	8.9	9.6	10.2
T36	8.2	8.8	9.5	10.3	10.5	10.9	11.2	10.1	10.6	11.3	12.3	12.4	12.5	13.0
T38	8.2	8.8	9.5	10.3	10.5	10.9	11.2	10.1	10.6	11.3	12.3	12.4	12.5	13.0
T40	12.2	12.8	13.5	14.3	14.5	14.8	15.2	14.4	14.9	15.6	16.7	16.7	16.9	17.3

UNIT	QUADRUPLE REDUCTION							870 INPUT						
	1170 INPUT							NOMINAL RATIOS						
	105.9	129.7	158.9	194.6	238.4	291.9	357.5	105.9	129.7	158.9	194.6	238.4	291.9	357.5
Q7	1.8	1.8	1.8	1.8	1.8	1.8	1.8	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Q8	1.8	1.8	1.8	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.1	2.1	2.1	2.1
Q9	1.7	1.7	1.7	1.7	1.7	1.8	1.8	1.9	1.9	1.9	1.9	1.9	1.9	1.9
Q11	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.4	1.4	1.4
Q12	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.1	2.1	2.2	2.2	2.2	2.2	2.2
Q13	1.7	1.8	1.8	1.8	1.9	1.9	2.0	1.9	2.0	2.0	2.1	2.1	2.1	2.1
Q15	1.2	1.3	1.3	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.6	1.6	1.6	1.6
Q16	2.0	2.0	2.1	2.1	2.1	2.1	2.2	2.2	2.3	2.3	2.3	2.4	2.4	2.4
Q18	1.7	1.8	1.9	1.9	1.9	2.0	2.0	2.0	2.1	2.1	2.1	2.2	2.2	2.2
Q20	1.3	1.4	1.4	1.5	1.5	1.6	1.6	1.5	1.6	1.6	1.7	1.7	1.8	1.8
Q22	3.6	3.6	3.7	3.8	3.8	3.8	3.9	4.0	4.1	4.1	4.2	4.2	4.3	4.3
Q25	2.0	2.1	2.2	2.3	2.3	2.5	2.5	2.3	2.4	2.6	2.7	2.8	2.8	2.8
Q28	4.3	4.5	4.6	4.8	4.8	5.0	4.1	5.0	5.1	5.3	5.4	5.5	5.6	4.6
Q30	4.1	4.4	4.5	4.7	4.8	4.9	3.8	4.8	5.0	5.2	5.3	5.4	5.6	4.4
Q32	4.1	4.3	4.4	4.5	4.6	4.6	4.7	4.7	4.8	4.9	5.0	5.2	5.2	5.2
Q34	3.8	4.0	4.1	4.3	4.4	4.4	4.5	4.4	4.6	4.7	4.8	4.9	5.1	5.1
Q36	2.8	3.0	3.2	3.3	3.5	3.6	3.7	3.3	3.5	3.7	3.8	3.5	4.1	4.2
Q38	4.9	5.1	5.4	5.5	5.6	5.8	5.9	5.7	6.0	6.1	6.2	6.4	6.6	6.6
Q40	4.6	4.9	5.2	5.3	5.5	5.7	5.8	5.4	5.8	5.9	6.0	6.3	6.4	6.4

(1) In pounds X 1000.

**Type TDS**  
**Parallel Shaft Speed Reducers**  
**Dimensions**

Section 320  
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**CAST IRON  
HOUSINGS**

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STEEL  
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# Type TDS

## Parallel Shaft Speed Reducers

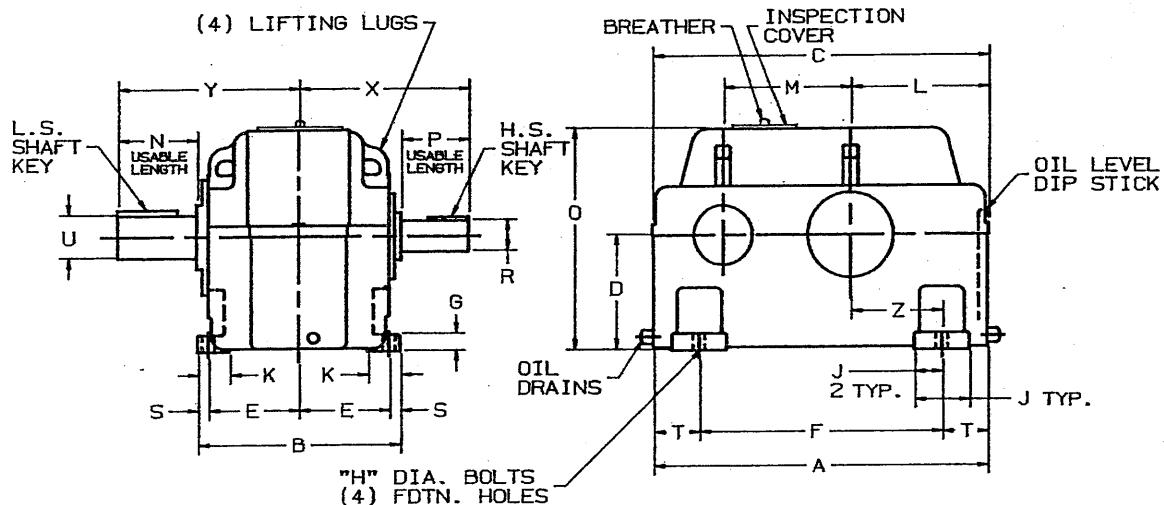
### Single Reduction

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Dimensions

S7 to S9



#### DIMENSIONS - INCHES

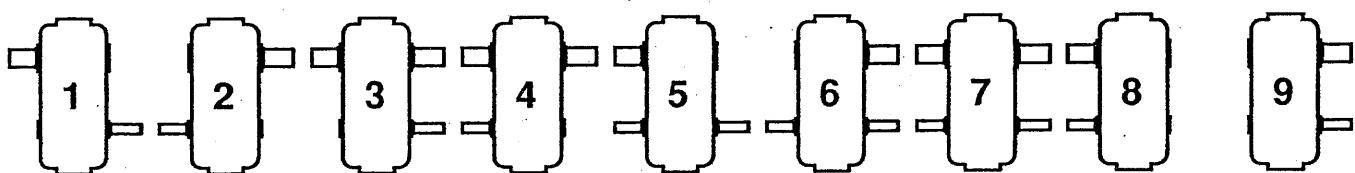
UNIT SIZE	A	B	C	D <sup>(2)</sup>	E	F	G	H	J	K	L	M	O	S	T	Z	APPROX WT. LBS.
S7	26.0	12.8	26.3	8.25	5.50	20.00	1.1	.75	3.5	2.4	9.1	7.500	15.8	.9	3.0	6.00	500
S8	33.0	15.0	33.3	10.25	6.50	25.50	1.5	1.00	4.0	2.8	11.1	8.548	20.0	1.0	3.8	7.25	750
S9	33.0	15.0	33.3	10.25	6.50	25.50	1.5	1.00	4.0	2.8	11.1	9.500	20.0	1.0	3.8	7.25	850

UNIT SIZE	LOW SPEED SHAFT				HIGH SPEED SHAFT			
UNIT SIZE	U <sup>(1)</sup>	KEY	N	Y	R <sup>(1)</sup>	KEY	P	X
S7	.2875	.750 x .750 x 4.0	5.0	11.3	1.875	.500 x .500 x 3.0	4.0	10.3
S8	.3375	.875 x .875 x 4.5	6.0	13.6	2.125	.500 x .500 x 3.5	4.3	11.5
S9	.3875	1.000 x 1.000 x 5.3	6.6	14.3	2.375	.625 x .625 x 3.8	4.8	12.0

<sup>(1)</sup>TOLERANCE = +.0000, -.0005 for diameters up to and including 2 inches; +.000, -.001 for dimensions above 2 inches.

<sup>(2)</sup>THIS DIMENSION will never be exceeded. When exact dimension is required, shims up to 1/16 inch may be necessary.

#### STANDARD ASSEMBLY POSITIONS



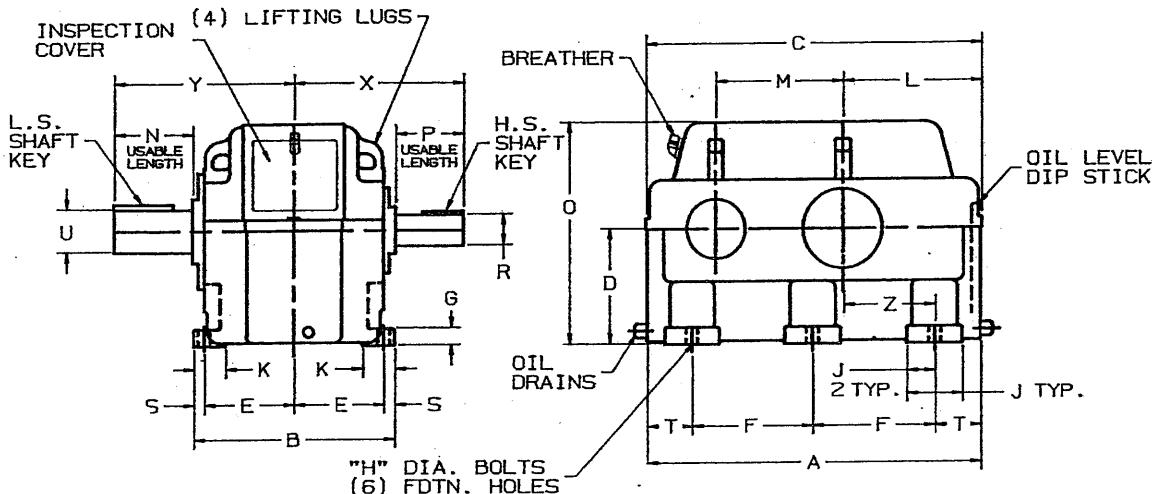
Not to be used for construction unless both appropriate unit and supplemental dimensions are CERTIFIED.

CUSTOMER ORDER:	ITEM NO.:	S.O. NO.:	UNIT SIZE:	ASSEMBLY:
PRELIMINARY <input type="checkbox"/>	CERTIFIED <input type="checkbox"/>	BY:		DATE:

# Type TDS

## Parallel Shaft Speed Reducers

### Single Reduction



ALL UNITS FURNISHED WITH SINGLE END  
SHAFT EXTENSION UNLESS OTHERWISE SPECIFIED.

#### DIMENSIONS - INCHES

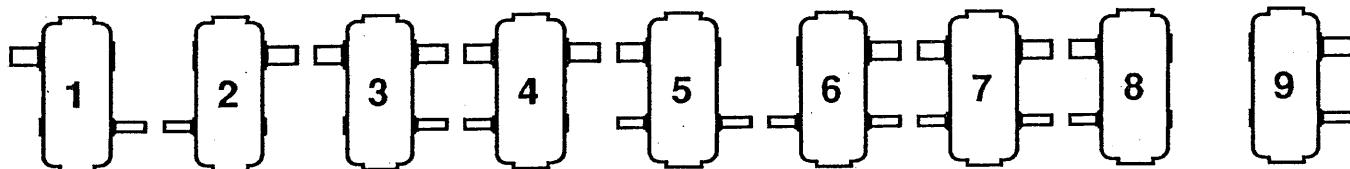
UNIT SIZE	A	B	C	D <sup>(2)</sup>	E	F	G	H	J	K	L	M	O	S	T	Z	APPROX WT. LBS.
S11	33.5	16.0	33.8	11.50	7.00	12.25	1.8	1.00	5.0	3.3	14.1	11.138	23.0	1.0	4.5	9.50	1,400
S12	36.0	19.0	36.3	12.50	8.25	13.25	2.0	1.25	5.5	3.8	15.1	12.318	25.0	1.3	4.8	10.25	1,900
S13	47.3	23.8	47.6	13.50	10.63	18.25	2.0	1.25	6.5	3.8	16.2	13.469	27.0	1.3	5.4	10.70	2,750
S15	42.5	21.0	42.8	15.00	9.00	15.75	2.3	1.50	6.0	4.3	17.6	15.024	30.0	1.5	5.5	12.00	2,750
S16	55.5	28.5	55.8	16.50	12.50	21.88	2.5	1.50	7.5	5.0	19.6	16.578	33.0	1.8	5.9	13.62	4,850
S18	49.5	23.0	49.8	18.00	9.75	19.00	2.8	1.75	6.5	4.8	20.1	18.132	36.0	1.8	5.8	14.25	4,650
S20	54.0	24.0	54.3	20.00	10.25	21.00	3.0	1.75	7.0	5.3	22.1	20.205	40.0	1.8	6.0	16.00	4,900
S22	59.0	26.0	59.5	22.00	11.25	22.50	3.3	2.00	7.5	5.3	24.3	21.759	44.0	1.8	7.0	17.00	5,500
S25	67.5	27.5	68.0	25.00	11.75	26.25	3.5	2.25	8.0	6.0	27.8	24.867	50.0	2.0	7.5	20.00	5,950

UNIT SIZE	LOW SPEED SHAFT			HIGH SPEED SHAFT				
U <sup>(1)</sup>	KEY	N	Y	R <sup>(1)</sup>	KEY	P	X	
S11	4.500	1.000 x 1.000 x 6.0	7.8	16.5	2.875	.750 x .750 x 4.0	5.5	14.3
S12	4.750	1.250 x 1.250 x 6.8	8.5	18.4	3.375	.875 x .875 x 5.0	6.5	16.3
S13	5.000	1.250 x 1.250 x 7.0	9.1	21.3	3.625	.875 x .875 x 5.3	6.6	18.8
S15	5.250	1.250 x 1.250 x 7.8	9.5	20.1	3.875	1.000 x 1.000 x 5.8	7.3	17.8
S16	5.500	1.250 x 1.250 x 8.3	9.8	23.5	4.250	1.000 x 1.000 x 5.8	7.4	21.1
S18	6.000	1.500 x 1.500 x 8.8	10.5	22.3	4.500	1.000 x 1.000 x 6.0	8.0	19.3
S20	6.500	1.500 x 1.500 x 9.3	11.3	23.5	4.750	1.250 x 1.250 x 6.8	8.5	20.3
S22	7.000	1.750 x 1.750 x 9.8	12.0	25.3	5.000	1.250 x 1.250 x 7.5	9.0	21.8
S25	8.000	2.000 x 2.000 x 10.8	13.5	27.3	5.750	1.500 x 1.500 x 8.0	10.0	23.8

<sup>(1)</sup>TOLERANCE = +.0000, -.0005 for diameters up to and including 2 inches; +.000, -.001 for dimensions above 2 inches.

<sup>(2)</sup>THIS DIMENSION will never be exceeded. When exact dimension is required, shims up to 1/16 inch may be necessary.

#### STANDARD ASSEMBLY POSITIONS

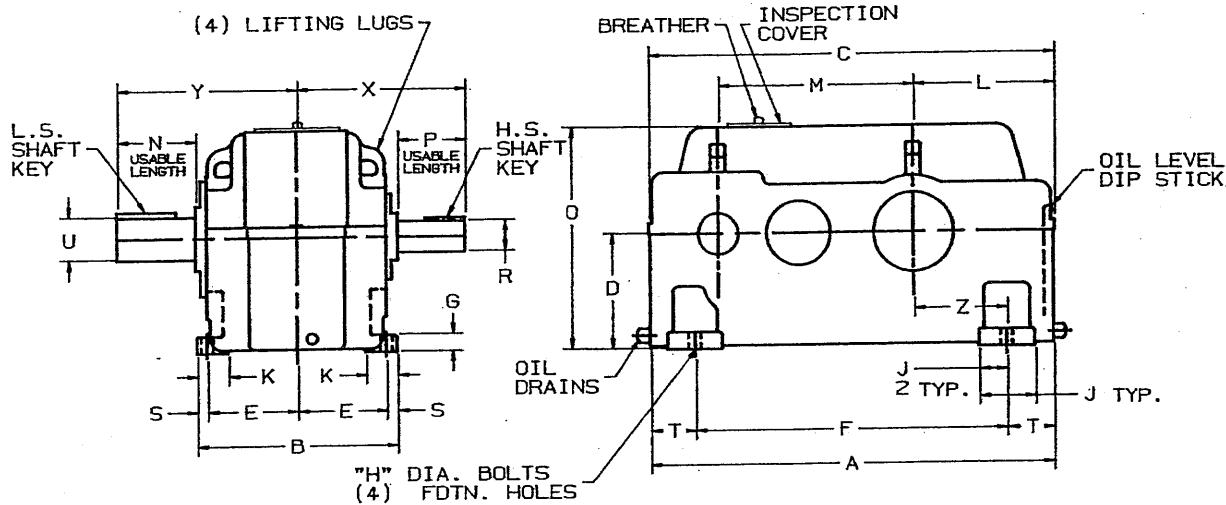


Not to be used for construction unless both appropriate unit and supplemental dimensions are CERTIFIED.

CUSTOMER ORDER:	ITEM NO.:	S.O. NO.:	UNIT SIZE:	ASSEMBLY:
<input type="checkbox"/> PRELIMINARY	<input type="checkbox"/> CERTIFIED	BY:	DATE:	

Type TDS  
Parallel Shaft Speed Reducers  
Double Reduction

Section 320  
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Dimensions  
D7 to D9



ALL UNITS FURNISHED WITH SINGLE END  
SHAFT EXTENSION UNLESS OTHERWISE SPECIFIED.

DIMENSIONS - INCHES

UNIT SIZE	A	B	C	D <sup>(2)</sup>	E	F	G	H	J	K	L	M	O	S	T	Z	APPROX WT. LBS.
D7	26.0	12.8	26.3	8.25	5.50	20.00	1.1	0.75	3.5	2.4	9.1	12.500	15.8	0.9	3.0	6.00	550
D8	33.0	15.0	33.3	10.25	6.50	25.50	1.5	1.00	4.0	2.8	11.1	14.548	20.0	1.0	3.8	7.25	900
D9	33.0	15.0	33.3	10.25	6.50	25.50	1.5	1.00	4.0	2.8	11.1	16.500	20.0	1.0	3.8	7.25	1,000

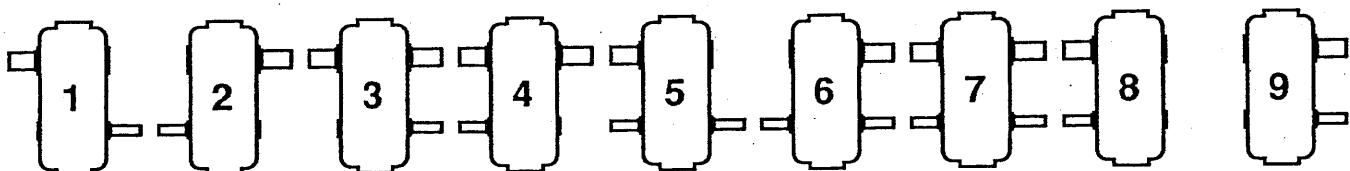
UNIT SIZE	U <sup>(1)</sup>	LOW SPEED SHAFT KEY	N	Y
D7	2.875	.750 x .750 x 4.0	5.0	11.3
D8	3.375	.875 x .875 x 4.5	6.0	13.6
D9	3.875	1.000 x 1.000 x 5.3	6.6	14.3

UNIT SIZE	R <sup>(1)</sup>	HIGH SPEED SHAFT KEY	P	X
D7	1.375	.312 x .312 x 2.5	3.5	9.5
D8	1.500	.375 x .375 x 2.5	3.7	10.7
D9	1.875	.500 x .500 x 3.0	4.0	11.0

<sup>(1)</sup> TOLERANCE = +.0000, -.0005 for diameters up to and including 2 inches; +.000, -.001 for dimensions above 2 inches.

<sup>(2)</sup> THIS DIMENSION will never be exceeded. When exact dimension is required, shims up to 1/16 inch may be necessary.

STANDARD ASSEMBLY POSITIONS



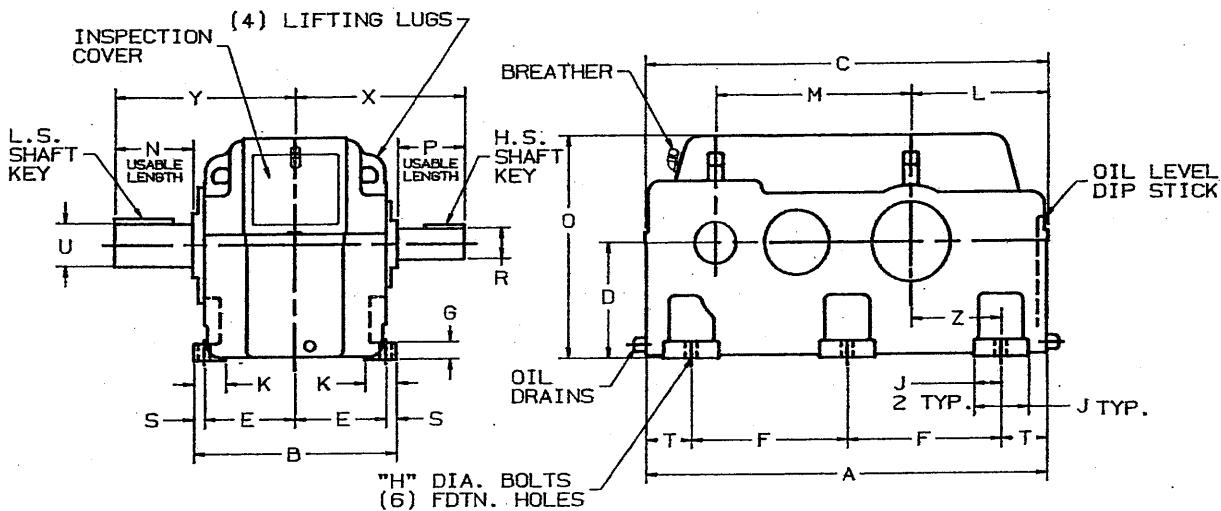
Not to be used for construction unless both appropriate unit and supplemental dimensions are CERTIFIED.

CUSTOMER ORDER:	ITEM NO.:	S.O. NO.:	UNIT SIZE:	ASSEMBLY:
PRELIMINARY <input type="checkbox"/>	CERTIFIED <input type="checkbox"/>	BY:		DATE:

# Type TDS

## Parallel Shaft Speed Reducers

### Double Reduction



ALL UNITS FURNISHED WITH SINGLE END  
SHAFT EXTENSION UNLESS OTHERWISE SPECIFIED.

#### DIMENSIONS - INCHES

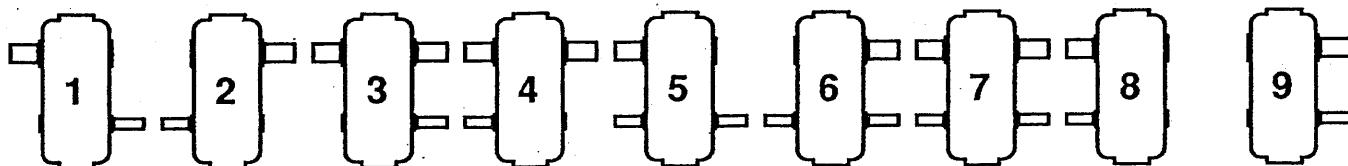
UNIT SIZE	A	B	C	D <sup>(2)</sup>	E	F	G	H	J	K	L	M	O	S	T	Z	APPROX WT. LBS.
D11	39.5	21.0	39.8	11.50	9.25	14.75	1.8	1.00	5.8	3.8	14.0	18.638	23.0	1.3	5.0	8.88	1,750
D12	43.0	23.0	43.3	12.50	10.25	16.25	2.0	1.25	6.5	3.8	15.3	20.866	25.0	1.3	5.3	9.88	2,450
D13	47.3	23.8	47.6	13.50	10.63	18.25	2.0	1.25	6.5	3.8	16.2	22.969	27.0	1.3	5.4	10.70	2,900
D15	49.5	25.0	49.8	15.00	11.00	19.25	2.3	1.50	7.3	4.3	17.4	24.524	30.0	1.5	5.5	11.75	3,400
D16	55.5	28.5	55.8	16.50	12.50	21.88	2.5	1.50	7.5	5.0	19.6	27.198	33.0	1.8	5.9	13.62	4,850
D18	58.8	29.0	59.0	18.00	12.75	23.00	2.8	1.75	8.5	5.0	20.8	29.270	35.5	1.8	6.4	14.25	5,650
D20	65.3	31.0	65.5	20.00	13.75	25.50	3.0	1.75	9.3	5.8	23.1	32.523	39.5	1.8	7.1	15.88	5,900
D22	68.3	33.0	68.5	22.00	14.50	26.50	3.3	2.00	9.8	6.3	24.6	34.077	43.5	2.0	7.6	16.88	7,000
D25	77.5	35.0	77.8	25.00	15.25	30.50	3.5	2.25	10.5	7.0	27.1	39.891	49.5	2.3	8.3	18.75	8,450

UNIT SIZE	LOW SPEED SHAFT				HIGH SPEED SHAFT			
	U <sup>(1)</sup>	KEY	N	Y	R <sup>(1)</sup>	KEY	P	X
D11	4.500	1.000 x 1.000 x 6.0	7.8	18.5	2.125	.500 x .500 x 3.5	4.5	15.0
D12	4.750	1.250 x 1.250 x 6.8	8.5	20.3	2.625	.625 x .625 x 4.0	5.3	16.8
D13	5.000	1.250 x 1.250 x 7.0	9.1	21.3	2.875	.750 x .750 x 4.3	5.6	17.5
D15	5.250	1.250 x 1.250 x 7.8	9.5	22.0	3.125	.750 x .750 x 4.8	6.0	18.3
D16	5.500	1.250 x 1.250 x 8.3	9.5	23.5	3.375	.875 x .875 x 4.8	6.0	19.8
D18	6.000	1.500 x 1.500 x 8.8	10.5	25.0	3.375	.875 x .875 x 5.0	6.5	20.5
D20	6.500	1.500 x 1.500 x 9.3	11.3	26.5	3.375	.875 x .875 x 5.0	6.5	21.5
D22	7.000	1.750 x 1.750 x 9.8	12.0	28.8	3.625	.875 x .875 x 5.0	7.0	23.3
D25	8.000	2.000 x 2.000 x 10.8	13.5	30.8	3.875	1.000 x 1.000 x 5.8	7.3	24.0

<sup>(1)</sup>TOLERANCE = ±.0000, -.0005 for diameters up to and including 2 inches; +.000, -.001 for dimensions above 2 inches.

<sup>(2)</sup>THIS DIMENSION will never be exceeded. When exact dimension is required, shims up to 1/16 inch may be necessary.

#### STANDARD ASSEMBLY POSITIONS



Not to be used for construction unless both appropriate unit and supplemental dimensions are CERTIFIED.

CUSTOMER ORDER:	ITEM NO.:	S.O. NO.:	UNIT SIZE:	ASSEMBLY:
<input type="checkbox"/> PRELIMINARY	<input type="checkbox"/> CERTIFIED	BY:	DATE:	

# Type TDS

## Parallel Shaft Speed Reducers

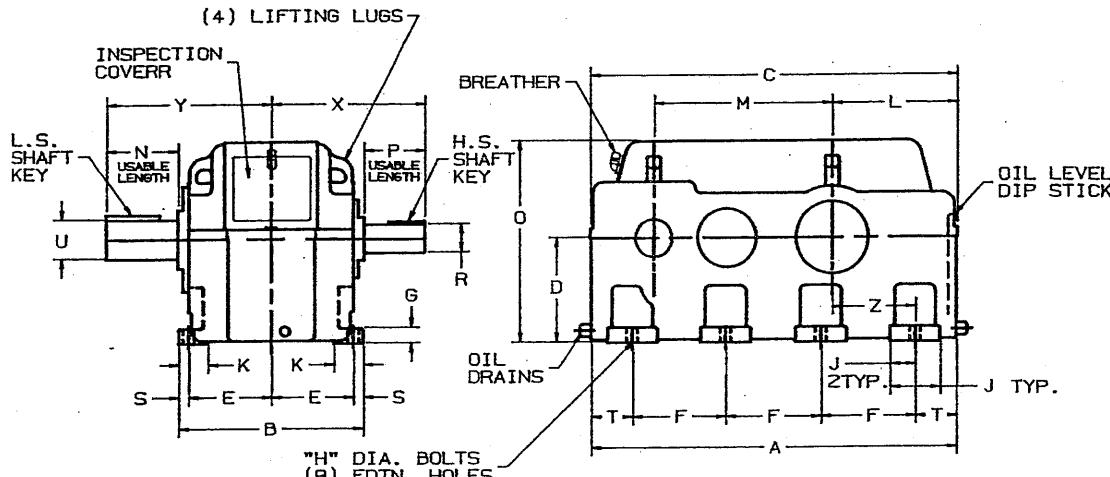
### Double Reduction

Section 320

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Dimensions

D28 to D30



#### DIMENSIONS - INCHES

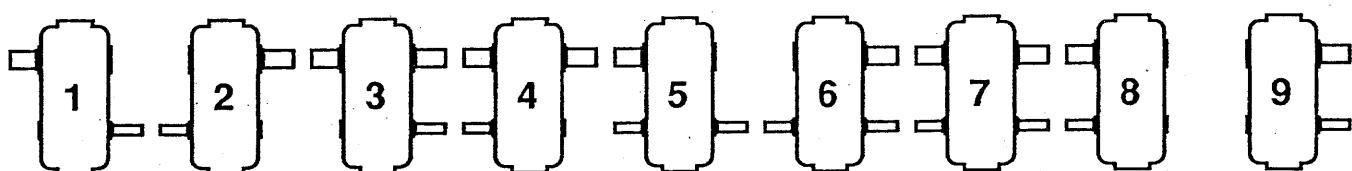
UNIT SIZE	A	B	C	D <sup>(2)</sup>	E	F	G	H	J	K	L	M	O	S	T	Z	APPROX WT. LBS.
D28	88.0	40.5	88.3	28.00	17.75	23.50	3.5	2.25	11.5	7.5	30.6	46.108	55.5	2.5	8.8	21.75	9,900
D30	93.0	42.8	93.3	30.00	18.62	24.50	3.6	2.50	12.0	8.1	32.9	48.180	59.0	2.8	9.8	23.00	12,800

UNIT SIZE	U <sup>(1)</sup>	LOW SPEED SHAFT KEY	N	Y	R <sup>(1)</sup>	HIGH SPEED SHAFT KEY	P	X
D28	9.000	2.500 x 2.500 x 12.3	15.0	34.3	4.500	1.000 x 1.000 x 6.0	8.0	26.5
D30	9.500	2.500 x 2.500 x 12.5	15.8	35.5	5.000	1.250 x 1.250 x 7.0	9.0	28.3

<sup>(1)</sup>TOLERANCE = +.0000, -.0005 for diameters up to and including 2 inches; +.000, -.001 for dimensions above 2 inches.

<sup>(2)</sup>THIS DIMENSION will never be exceeded. When exact dimension is required, shims up to 1/16 inch may be necessary.

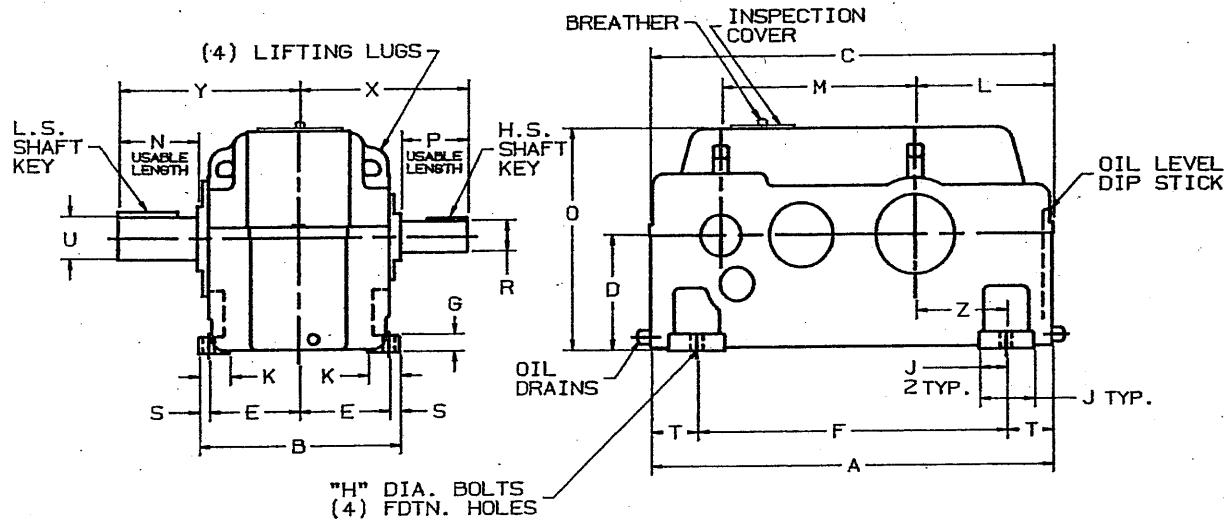
#### STANDARD ASSEMBLY POSITIONS



Not to be used for construction unless both appropriate unit and supplemental dimensions are CERTIFIED.

CUSTOMER ORDER:	ITEM NO.:	S.O. NO.:	UNIT SIZE:	ASSEMBLY:
PRELIMINARY <input type="checkbox"/>	CERTIFIED <input type="checkbox"/>	BY:		DATE:

# Type TDS Parallel Shaft Speed Reducers Triple Reduction



ALL UNITS FURNISHED WITH SINGLE END SHAFT EXTENSION UNLESS OTHERWISE SPECIFIED.

## DIMENSIONS - INCHES

UNIT SIZE	A	B	C	D <sup>(2)</sup>	E	F	G	H	J	K	L	M	O	S	T	Z	APPROX WT. LBS.
T7	26.0	12.8	26.3	8.25	5.50	20.00	1.1	0.75	3.5	2.4	9.1	12.500	15.8	0.9	3.0	6.00	600
T8	33.0	15.0	33.3	10.25	6.50	25.50	1.5	1.00	4.0	2.8	11.1	14.548	20.0	1.0	3.8	7.25	950
T9	33.0	15.0	33.3	10.25	6.50	25.50	1.5	1.00	4.0	2.8	11.1	16.500	20.0	1.0	3.8	7.25	1,100

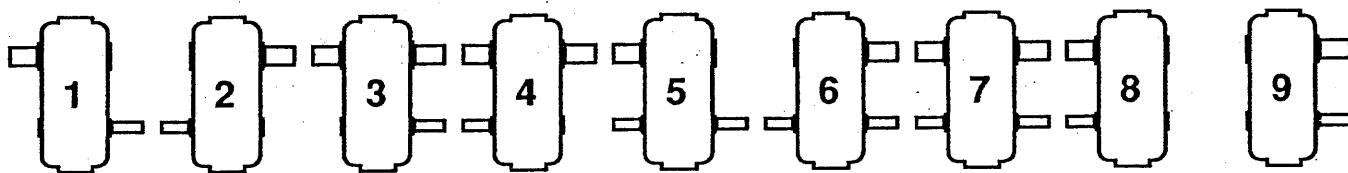
UNIT SIZE	U <sup>(1)</sup>	LOW SPEED SHAFT KEY	N	Y
T7	2.875	.750 x .750 x 4.0	5.0	11.3
T8	3.375	.875 x .875 x 4.5	6.0	13.6
T9	3.875	1.000 x 1.000 x 5.3	6.6	14.3

R <sup>(1)</sup>	HIGH SPEED SHAFT KEY	P	X
1.125	.250 x .250 x 2.5	3.3	9.3
1.125	.250 x .250 x 2.5	3.3	10.3
1.375	.312 x .312 x 2.5	3.5	10.5

<sup>(1)</sup>TOLERANCE = +.0000, -.0005 for diameters up to and including 2 inches; +.000, -.001 for dimensions above 2 inches.

<sup>(2)</sup>THIS DIMENSION will never be exceeded. When exact dimension is required, shims up to 1/16 inch may be necessary.

## STANDARD ASSEMBLY POSITIONS



Not to be used for construction unless both appropriate unit and supplemental dimensions are CERTIFIED.

CUSTOMER ORDER:	ITEM NO.:	S.O. NO.:	UNIT SIZE:	ASSEMBLY:
PRELIMINARY <input type="checkbox"/>	CERTIFIED <input type="checkbox"/>	BY:	DATE:	

# Type TDS

## Parallel Shaft Speed Reducers

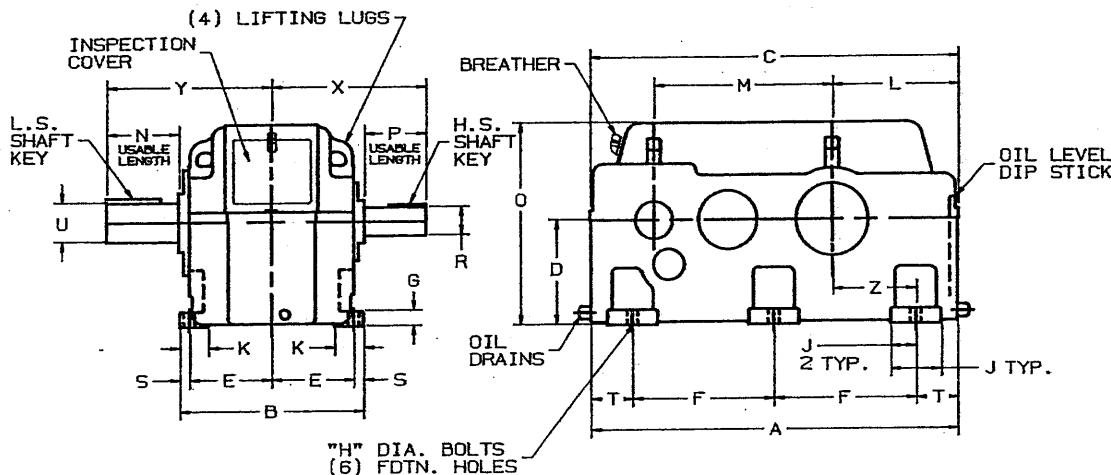
### Triple Reduction

Section 320

Page 7

Dimensions

T11 to T25



ALL UNITS FURNISHED WITH SINGLE END  
SHAFT EXTENSION UNLESS OTHERWISE SPECIFIED.

#### DIMENSIONS - INCHES

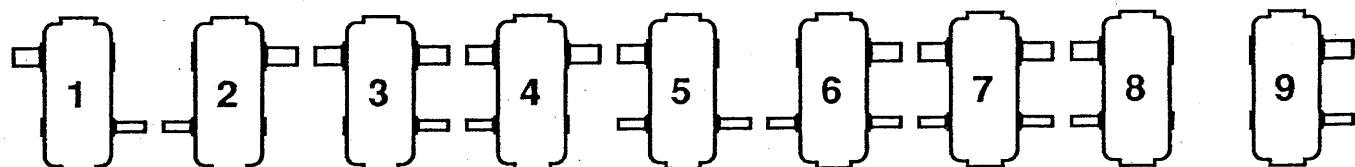
UNIT SIZE	A	B	C	D <sup>(2)</sup>	E	F	G	H	J	K	L	M	O	S	T	Z	APPROX WT. LBS.
T11	39.5	21.0	39.8	11.50	9.25	14.75	1.8	1.00	5.8	3.8	14.0	18.638	23.0	1.3	5.0	8.88	1,850
T12	43.0	23.0	43.3	12.50	10.25	16.25	2.0	1.25	6.5	3.8	15.3	20.866	25.0	1.3	5.3	9.88	2,550
T13	47.3	23.8	47.6	13.50	10.63	18.25	2.0	1.25	6.5	3.8	16.2	22.969	27.0	1.3	5.4	10.70	3,050
T15	49.5	25.0	49.8	15.00	11.00	19.25	2.3	1.50	7.3	4.3	17.4	24.524	30.0	1.5	5.5	11.75	3,550
T16	55.5	28.5	55.8	16.50	12.50	21.88	2.5	1.50	7.5	5.0	19.6	27.198	33.0	1.8	5.9	13.62	5,000
T18	58.8	29.0	59.0	18.00	12.75	23.00	2.8	1.75	8.5	5.0	20.8	29.270	35.5	1.8	6.4	14.25	5,850
T20	65.3	31.0	65.5	20.00	13.75	25.50	3.0	1.75	9.3	5.8	23.1	32.523	39.5	1.8	7.1	15.88	6,100
T22	68.3	33.0	68.5	22.00	14.50	26.50	3.3	2.00	9.8	6.3	24.6	34.077	43.5	2.0	7.6	16.88	7,250
T25	77.5	35.0	77.8	25.00	15.25	30.50	3.5	2.25	10.5	7.0	27.1	39.891	49.5	2.3	8.3	18.75	8,750

UNIT SIZE	LOW SPEED SHAFT				HIGH SPEED SHAFT			
	U <sup>(1)</sup>	KEY	N	Y	R <sup>(1)</sup>	KEY	P	X
T11	4.500	1.000 x 1.000 x 6.0	7.8	18.5	1.375	.312 x .312 x 2.5	3.5	14.0
T12	4.750	1.250 x 1.250 x 6.8	8.5	20.3	1.625	.375 x .375 x 2.8	3.8	15.3
T13	5.000	1.250 x 1.250 x 7.0	9.1	21.3	1.625	.375 x .375 x 2.8	4.0	16.0
T15	5.250	1.250 x 1.250 x 7.8	9.5	22.0	1.875	.500 x .500 x 3.0	4.0	16.3
T16	5.500	1.250 x 1.250 x 8.3	9.5	23.5	2.125	.500 x .500 x 3.0	4.0	17.8
T18	6.000	1.500 x 1.500 x 8.8	10.5	25.0	2.125	.500 x .500 x 3.5	4.5	18.5
T20	6.500	1.500 x 1.500 x 9.3	11.3	26.5	2.375	.625 x .625 x 3.8	4.8	19.8
T22	7.000	1.750 x 1.750 x 9.8	12.0	28.8	2.625	.625 x .625 x 4.0	5.3	21.5
T25	8.000	2.000 x 2.000 x 10.8	13.5	30.8	2.875	.750 x .750 x 4.0	5.5	22.3

<sup>(1)</sup> TOLERANCE = +.0000, -.0005 for diameters up to and including 2 inches; +.000, -.001 for dimensions above 2 inches.

<sup>(2)</sup> THIS DIMENSION will never be exceeded. When exact dimension is required, shims up to 1/16 inch may be necessary.

#### STANDARD ASSEMBLY POSITIONS



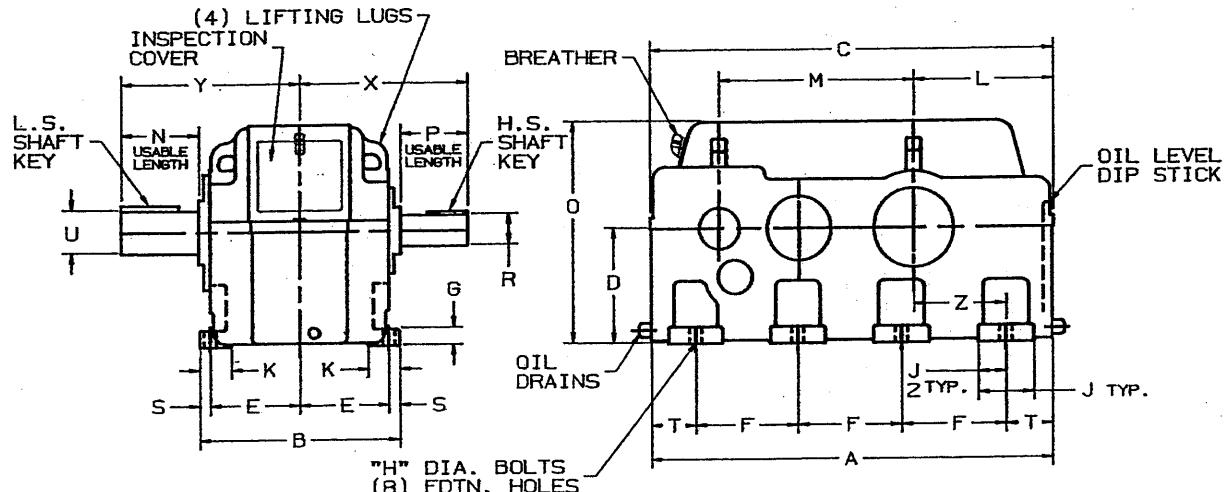
Not to be used for construction unless both appropriate unit and supplemental dimensions are CERTIFIED.

CUSTOMER ORDER:	ITEM NO.:	S.O. NO.:	UNIT SIZE:	ASSEMBLY:
<input type="checkbox"/> PRELIMINARY	<input type="checkbox"/> CERTIFIED	BY:	DATE:	

# Type TDS

## Parallel Shaft Speed Reducers

### Triple Reduction



ALL UNITS FURNISHED WITH SINGLE END SHAFT EXTENSION UNLESS OTHERWISE SPECIFIED.

#### DIMENSIONS - INCHES

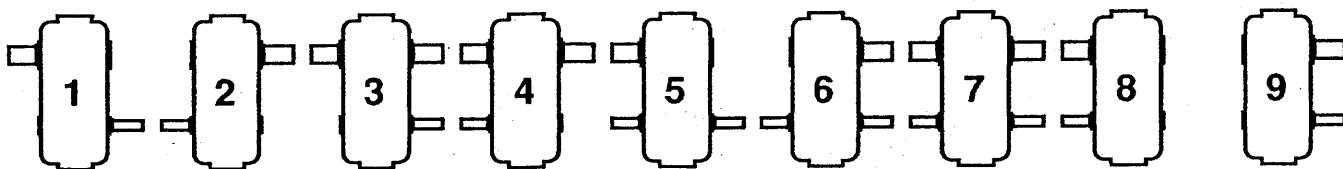
UNIT SIZE	A	B	C	D <sup>(2)</sup>	E	F	G	H	J	K	L	M	O	S	T	Z	APPROX WT. LBS.
T28	88.0	40.5	88.3	28.00	17.75	23.50	3.5	2.25	11.5	7.5	30.6	46.108	55.5	2.5	8.8	21.75	10,250
T30	93.0	42.8	93.3	30.00	18.62	24.50	3.6	2.50	12.0	8.1	32.9	48.180	59.0	2.8	9.8	23.00	13,150

UNIT SIZE	U <sup>(1)</sup>	LOW SPEED SHAFT KEY	N	Y	R <sup>(1)</sup>	HIGH SPEED SHAFT KEY	P	X
T28	9.000	2.500 x 2.500 x 12.3	15.0	34.3	3.375	.875 x .875 x 4.5	6.5	25.0
T30	9.500	2.500 x 2.500 x 12.5	15.8	35.5	3.625	.875 x .875 x 5.0	7.0	26.3

<sup>(1)</sup>TOLERANCE = +.0000, -.0005 for diameters up to and including 2 inches; +.000, -.001 for dimensions above 2 inches.

<sup>(2)</sup>THIS DIMENSION will never be exceeded. When exact dimension is required, shims up to 1/16 inch may be necessary.

#### STANDARD ASSEMBLY POSITIONS



Not to be used for construction unless both appropriate unit and supplemental dimensions are CERTIFIED.

CUSTOMER ORDER:	ITEM NO.:	S.O. NO.:	UNIT SIZE:	ASSEMBLY:
PRELIMINARY <input type="checkbox"/>	CERTIFIED <input type="checkbox"/>	BY:	DATE:	

# Type TDS

## Parallel Shaft Speed Reducers

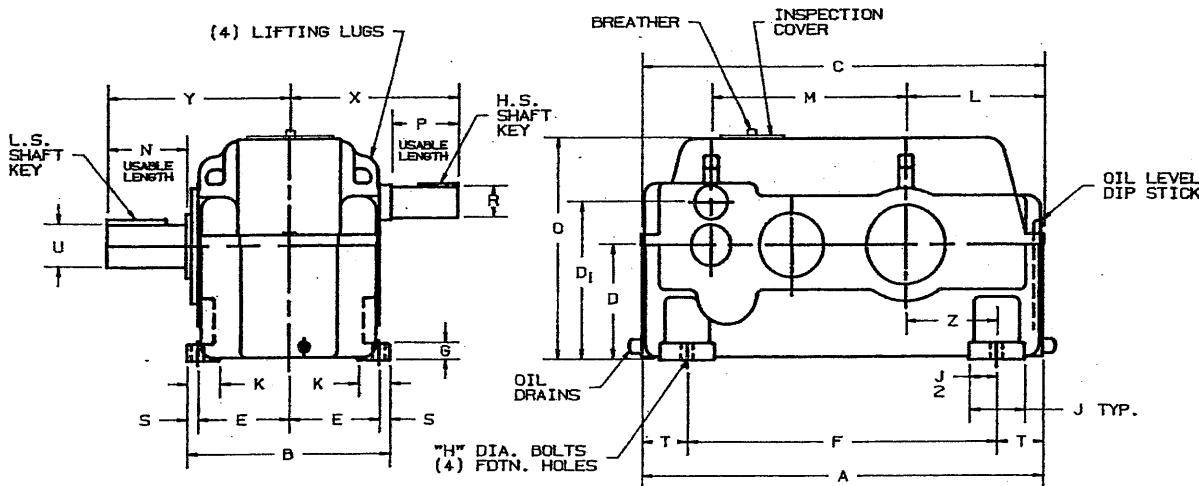
### Quadruple Reduction

Section 320

Page 9

Dimensions

Q7 to Q9



ALL UNITS FURNISHED WITH SINGLE END SHAFT EXTENSION UNLESS OTHERWISE SPECIFIED.

#### DIMENSIONS - INCHES

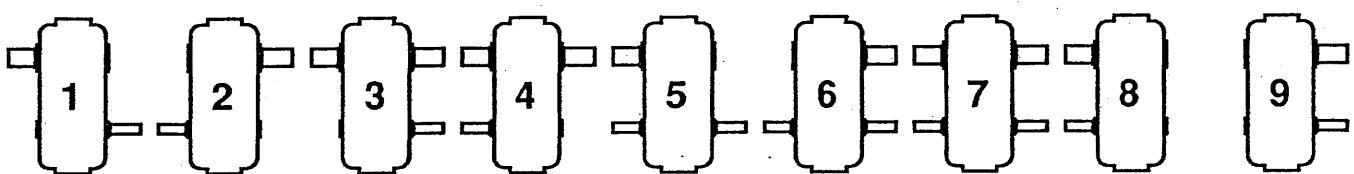
UNIT SIZE	A	B	C	D <sup>(2)</sup>	D1	E	F	G	H	J	K	L	M	O	S	T	Z	WT. LBS.
Q7	26.0	12.8	26.3	8.25	11.75	5.50	20.00	1.1	0.75	3.5	2.4	9.1	12.500	15.8	0.9	3.0	6.00	650
Q8	33.0	15.0	33.3	10.25	13.75	6.50	25.50	1.5	1.00	4.0	2.8	11.1	14.548	20.0	1.0	3.8	7.25	1,000
Q9	33.0	15.0	33.3	10.25	13.75	6.50	25.50	1.5	1.00	4.0	2.8	11.1	16.500	20.0	1.0	3.8	7.25	1,200

UNIT SIZE	U <sup>(1)</sup>	LOW SPEED SHAFT KEY	N	Y	R <sup>(1)</sup>	HIGH SPEED SHAFT KEY	P	X
Q7	2.875	.750 x .750 x 4.0	5.0	11.3	1.125	.250 x .250 x 2.5	3.3	9.3
Q8	3.375	.875 x .875 x 4.5	6.0	13.6	1.125	.250 x .250 x 2.5	3.3	10.3
Q9	3.875	1.000 x 1.000 x 5.3	6.6	14.3	1.375	.312 x .312 x 2.5	3.5	10.5

<sup>(1)</sup>TOLERANCE = +.0000, -.0005 for diameters up to and including 2 inches; +.000, -.001 for dimensions above 2 inches.

<sup>(2)</sup>THIS DIMENSION will never be exceeded. When exact dimension is required, shims up to 1/16 inch may be necessary.

#### STANDARD ASSEMBLY POSITIONS



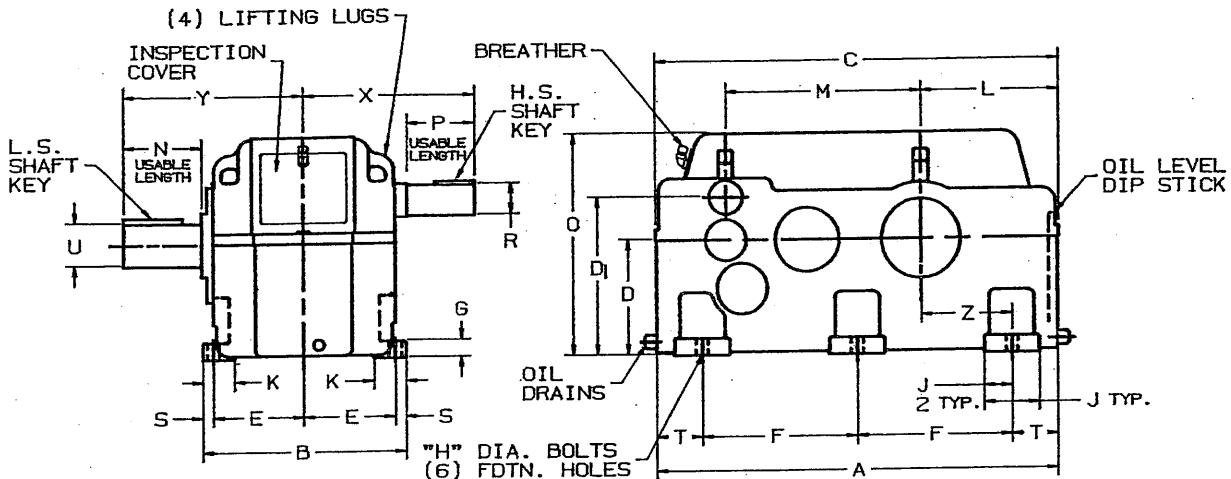
Not to be used for construction unless both appropriate unit and supplemental dimensions are CERTIFIED.

CUSTOMER ORDER:	ITEM NO.:	S.O. NO.:	UNIT SIZE:	ASSEMBLY:
PRELIMINARY <input type="checkbox"/>	CERTIFIED <input type="checkbox"/>	BY:	DATE:	

# Type TDS

## Parallel Shaft Speed Reducers

### Quadruple Reduction



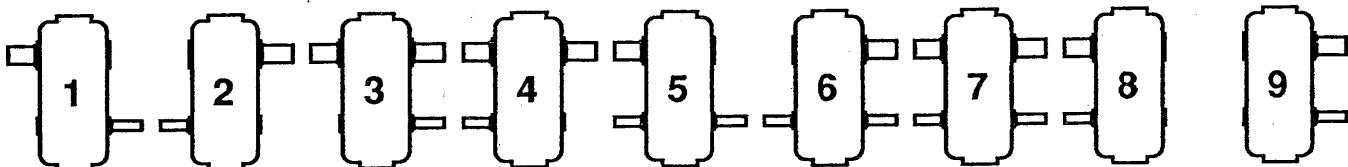
ALL UNITS FURNISHED WITH SINGLE END SHAFT EXTENSION UNLESS OTHERWISE SPECIFIED.

#### DIMENSIONS - INCHES

UNIT SIZE	A	B	C	D <sup>(2)</sup>	D1	E	F	G	H	J	K	L	M	O	S	T	Z	APPROX. WT. LBS.
Q11	39.5	21.0	39.8	11.50	15.50	9.25	14.75	1.8	1.00	5.8	3.8	14.0	18.638	23.0	1.3	5.0	8.88	1,950
Q12	43.0	23.0	43.3	12.50	16.50	10.25	16.25	2.0	1.25	6.5	3.8	15.3	20.866	25.0	1.3	5.3	9.88	2,650
Q13	47.3	23.8	47.6	13.50	17.50	10.63	18.25	2.0	1.25	6.5	3.8	16.2	22.969	27.0	1.3	5.4	10.70	3,200
Q15	49.5	25.0	49.8	15.00	19.00	11.00	19.25	2.3	1.50	7.3	4.3	17.4	24.524	30.0	1.5	5.5	11.75	3,700
Q16	55.5	28.5	55.8	16.50	21.50	12.50	21.88	2.5	1.50	7.5	5.0	19.6	27.198	33.0	1.8	5.9	13.62	5,150
Q18	58.8	29.0	59.0	18.00	23.00	12.75	23.00	2.8	1.75	8.5	5.0	20.8	29.270	35.5	1.8	6.4	14.25	6,050
Q20	65.3	31.0	65.5	20.00	26.00	13.75	25.50	3.0	1.75	9.3	5.8	23.1	32.523	39.5	1.8	7.1	15.88	6,300
Q22	68.3	33.0	68.5	22.00	28.00	14.50	26.50	3.3	2.00	9.8	6.3	24.6	34.077	43.5	2.0	7.6	16.88	7,500
Q25	77.5	35.0	77.8	25.00	31.00	15.25	30.50	3.5	2.25	10.5	7.0	27.1	39.891	49.5	2.3	8.3	18.75	9,050

UNIT SIZE	LOW SPEED SHAFT				HIGH SPEED SHAFT				(1) TOLERANCE = +.0000, -.0005 for diameters up to and including 2 inches; +.000, -.001 for dimensions above 2 inches.
	U <sup>(1)</sup>	KEY	N	Y	R <sup>(1)</sup>	KEY	P	X	
Q11	4.500	1.000 x 1.000 x 6.0	7.8	18.5	1.375	.312 x .312 x 2.5	3.5	14.0	
Q12	4.750	1.250 x 1.250 x 6.8	8.5	20.3	1.625	.375 x .375 x 2.8	3.8	15.3	
Q13	5.000	1.250 x 1.250 x 7.0	9.1	21.3	1.625	.375 x .375 x 2.8	4.0	16.0	
Q15	5.250	1.250 x 1.250 x 7.8	9.5	22.0	1.875	.500 x .500 x 3.0	4.0	16.3	
Q16	5.500	1.250 x 1.250 x 8.3	9.5	23.5	2.125	.500 x .500 x 3.0	4.0	17.8	
Q18	6.000	1.500 x 1.500 x 8.8	10.5	25.0	2.125	.500 x .500 x 3.5	4.5	18.5	
Q20	6.500	1.500 x 1.500 x 9.3	11.3	26.5	2.375	.625 x .625 x 3.8	4.8	19.8	
Q22	7.000	1.750 x 1.750 x 9.8	12.0	28.8	2.625	.625 x .625 x 4.0	5.3	21.5	
Q25	8.000	2.000 x 2.000 x 10.8	13.5	30.8	2.875	.750 x .750 x 4.0	5.5	22.3	

#### STANDARD ASSEMBLY POSITIONS

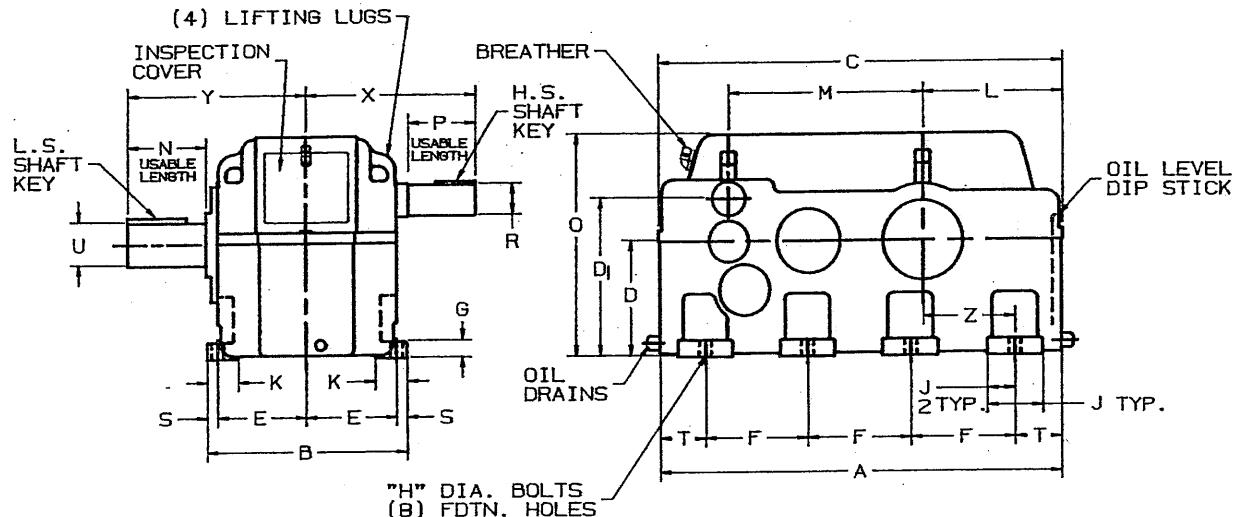


Not to be used for construction unless both appropriate unit and supplemental dimensions are CERTIFIED.

CUSTOMER ORDER:	ITEM NO.:	S.O. NO.:	UNIT SIZE:	ASSEMBLY:
PRELIMINARY <input type="checkbox"/>	CERTIFIED <input type="checkbox"/>	BY:		DATE:

**Type TDS**  
**Parallel Shaft Speed Reducers**  
**Quadruple Reduction**

Section 320  
 Page 11  
 Dimensions  
 Q28 to Q30



ALL UNITS FURNISHED WITH SINGLE END  
 SHAFT EXTENSION UNLESS OTHERWISE SPECIFIED.

DIMENSIONS - INCHES

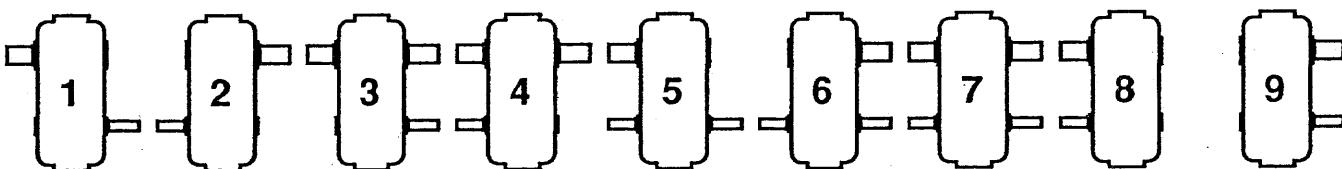
UNIT SIZE	A	B	C	D <sup>(2)</sup>	D <sub>1</sub>	E	F	G	H	J	K	L	M	O	S	T	Z	WT. LBS.
Q28	88.0	40.5	88.3	28.00	35.50	17.75	23.50	3.5	2.25	11.5	7.5	30.6	46.108	55.5	2.5	8.8	21.75	10,600
Q30	93.0	42.8	93.3	30.00	37.50	18.62	24.50	3.6	2.50	12.0	8.1	32.9	48.180	59.0	2.8	9.8	23.00	13,500

UNIT SIZE	U <sup>(1)</sup>	LOW SPEED SHAFT KEY	N	Y	R <sup>(1)</sup>	HIGH SPEED SHAFT KEY	P	X
Q28	9.000	2.500 x 2.500 x 12.3	15.0	34.3	3.375	.875 x .875 x 4.5	6.5	25.0
Q30	9.500	2.500 x 2.500 x 12.5	15.8	35.5	3.625	.875 x .875 x 5.0	7.0	26.3

<sup>(1)</sup> TOLERANCE = +.0000, -.0005 for diameters up to and including 2 inches; +.000, -.001 for dimensions above 2 inches.

<sup>(2)</sup> THIS DIMENSION will never be exceeded. When exact dimension is required, shims up to 1/16 inch may be necessary.

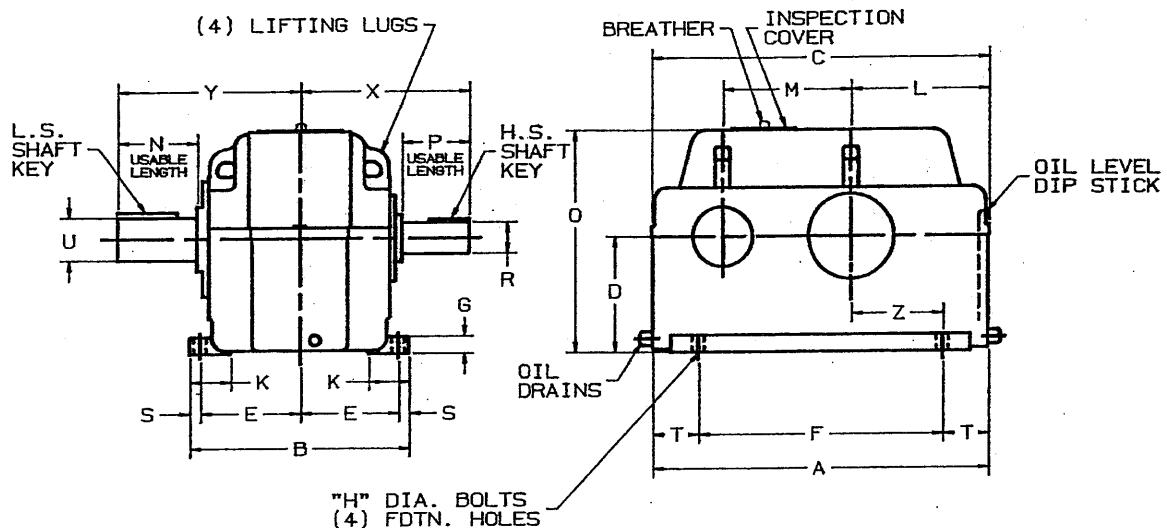
STANDARD ASSEMBLY POSITIONS



Not to be used for construction unless both appropriate unit and supplemental dimensions are CERTIFIED.

CUSTOMER ORDER:	ITEM NO.:	S.O. NO.:	UNIT SIZE:	ASSEMBLY:
PRELIMINARY <input type="checkbox"/>	CERTIFIED <input type="checkbox"/>	BY:		DATE:

# Type TDS Parallel Shaft Speed Reducers Single Reduction-Steel Construction



ALL UNITS FURNISHED WITH SINGLE END  
SHAFT EXTENSION UNLESS OTHERWISE SPECIFIED.

#### DIMENSIONS - INCHES

UNIT SIZE	A	B	C	D <sup>(2)</sup>	E	F	G	H	K	L	M	O	S	T	Z	APPROX WT. LBS.
WS7	26.0	15.3	26.3	8.25	6.75	20.00	1.1	.75	3.7	9.1	7.500	15.8	.9	3.0	6.00	700
WS8	33.0	18.0	33.3	10.25	8.00	25.50	1.5	1.00	4.3	11.1	8.548	20.0	1.0	3.8	7.25	950
WS9	33.0	18.0	33.3	10.25	8.00	25.50	1.5	1.00	4.3	11.1	9.500	20.0	1.0	3.8	7.25	1,050

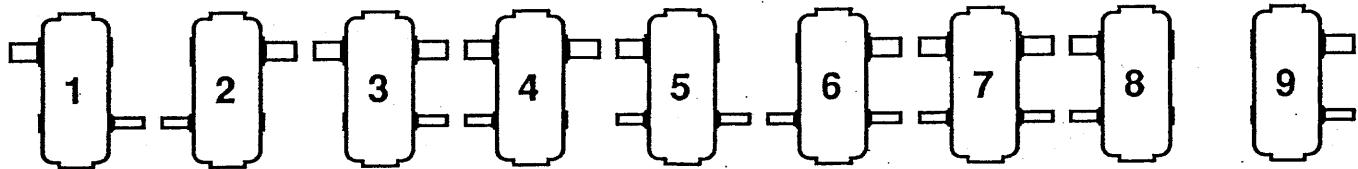
UNIT SIZE	U <sup>(1)</sup>	LOW SPEED SHAFT KEY	N	Y
WS7	2.875	.750 x .750 x 4.0	5.0	11.3
WS8	3.375	.875 x .875 x 4.5	6.0	13.6
WS9	3.875	1.000 x 1.000 x 5.3	6.6	14.3

R <sup>(1)</sup>	HIGH SPEED SHAFT KEY	P	X
1.875	.500 x .500 x 3.0	4.0	10.3
2.125	.500 x .500 x 3.5	4.3	11.5
2.375	.625 x .625 x 3.8	4.8	12.0

<sup>(1)</sup>TOLERANCE = +.0000, -.0005 for diameters up to and including 2 inches; +.000, -.001 for dimensions above 2 inches.

<sup>(2)</sup>THIS DIMENSION will never be exceeded. When exact dimension is required, shims up to 1/16 inch may be necessary.

#### STANDARD ASSEMBLY POSITIONS



Not to be used for construction unless both appropriate unit and supplemental dimensions are CERTIFIED.

CUSTOMER ORDER:	ITEM NO.:	S.O. NO.:	UNIT SIZE:	ASSEMBLY:
<input type="checkbox"/> PRELIMINARY	<input type="checkbox"/> CERTIFIED	BY:	DATE:	

# Type TDS

## Parallel Shaft Speed Reducers

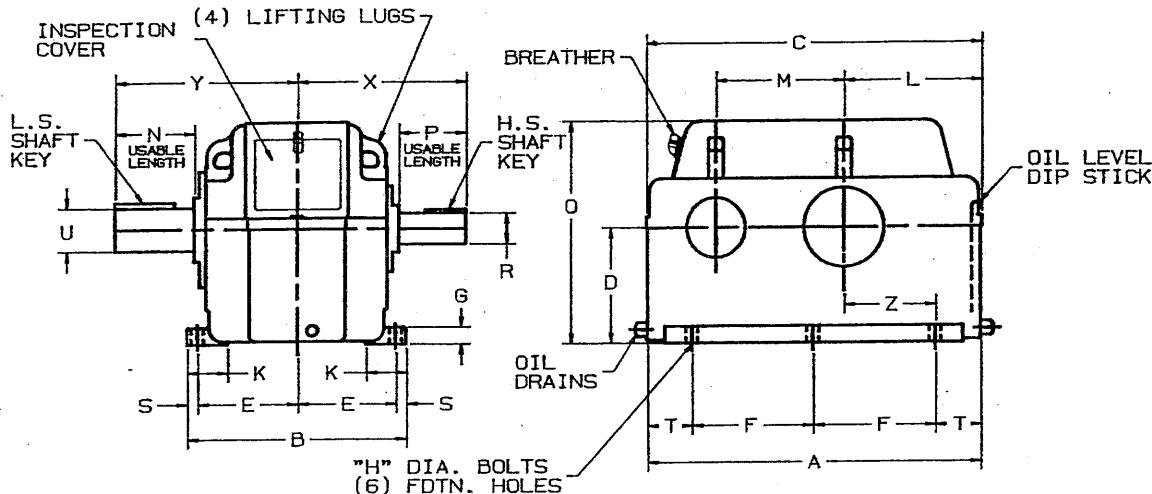
### Single Reduction-Steel Construction

Section 320

Page 13

Dimensions

WS11 to WS25



ALL UNITS FURNISHED WITH SINGLE END SHAFT EXTENSION UNLESS OTHERWISE SPECIFIED.

#### DIMENSIONS - INCHES

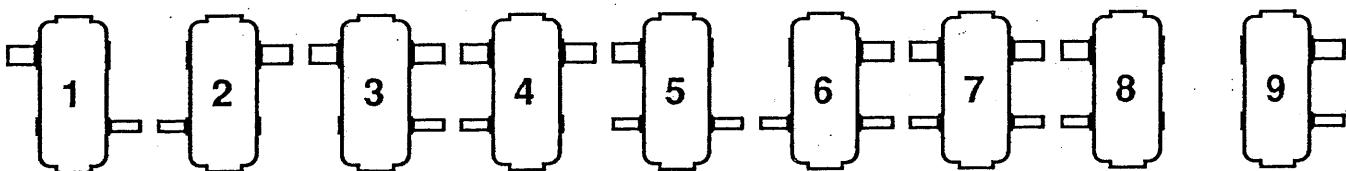
UNIT SIZE	A	B	C	D <sup>(2)</sup>	E	F	G	H	K	L	M	O	S	T	Z	APPROX WT. LBS.
WS11	33.5	19.5	33.8	11.50	8.75	12.25	1.8	1.00	5.0	14.1	11.138	23.0	1.0	4.5	9.50	1,650
WS12	36.0	23.0	36.3	12.50	10.25	13.25	2.0	1.25	5.8	15.1	12.318	25.0	1.3	4.8	10.25	2,150
WS13	47.3	28.0	47.6	13.50	12.75	18.25	2.0	1.25	5.9	16.2	13.469	27.0	1.3	5.4	10.70	3,050
WS15	42.5	25.5	42.8	15.00	11.25	15.75	2.3	1.50	6.5	17.6	15.024	30.0	1.5	5.5	12.00	3,150
WS16	55.5	33.0	55.8	16.50	14.75	21.88	2.5	1.50	7.3	19.6	16.578	33.0	1.8	5.9	13.62	5,450
WS18	49.5	23.0	49.8	18.00	9.75	19.00	2.8	1.75	4.8	20.1	18.132	36.0	1.8	5.8	14.25	5,350
WS20	54.0	24.0	54.3	20.00	10.25	21.00	3.0	1.75	5.3	22.1	20.205	40.0	1.8	6.0	16.00	5,700
WS22	59.0	26.0	59.5	22.00	11.25	22.50	3.3	2.00	5.3	24.3	21.759	44.0	1.8	7.0	17.00	6,400
WS25	67.5	27.5	68.0	25.00	11.75	26.25	3.5	2.25	6.0	27.8	24.867	50.0	2.0	7.5	20.00	6,950

UNIT SIZE	LOW SPEED SHAFT				HIGH SPEED SHAFT			
	U <sup>(1)</sup>	KEY	N	Y	R <sup>(1)</sup>	KEY	P	X
WS11	4.500	1.000 x 1.000 x 6.0	7.8	16.5	2.875	.750 x .750 x 4.0	5.5	14.3
WS12	4.750	1.250 x 1.250 x 6.8	8.5	18.4	3.375	.875 x .875 x 5.0	6.5	16.3
WS13	5.000	1.250 x 1.250 x 7.0	9.1	21.3	3.625	.875 x .875 x 5.3	6.6	18.8
WS15	5.250	1.250 x 1.250 x 7.8	9.5	20.1	3.875	1.000 x 1.000 x 5.8	7.3	17.8
WS16	5.500	1.250 x 1.250 x 8.3	9.5	23.5	4.250	1.000 x 1.000 x 5.8	7.4	21.1
WS18	6.000	1.500 x 1.500 x 8.8	10.5	22.3	4.500	1.000 x 1.000 x 6.0	8.0	19.3
WS20	6.500	1.500 x 1.500 x 9.3	11.3	23.5	4.750	1.250 x 1.250 x 6.8	8.5	20.3
WS22	7.000	1.750 x 1.750 x 9.8	12.0	25.3	5.000	1.250 x 1.250 x 7.5	9.0	21.8
WS25	8.000	2.000 x 2.000 x 10.8	13.5	27.3	5.750	1.500 x 1.500 x 8.0	10.0	23.8

<sup>(1)</sup>TOLERANCE = +.0000, -.0005 for diameters up to and including 2 inches; +.000, -.001 for dimensions above 2 inches.

<sup>(2)</sup>THIS DIMENSION will never be exceeded. When exact dimension is required, shims up to 1/16 inch may be necessary.

#### STANDARD ASSEMBLY POSITIONS



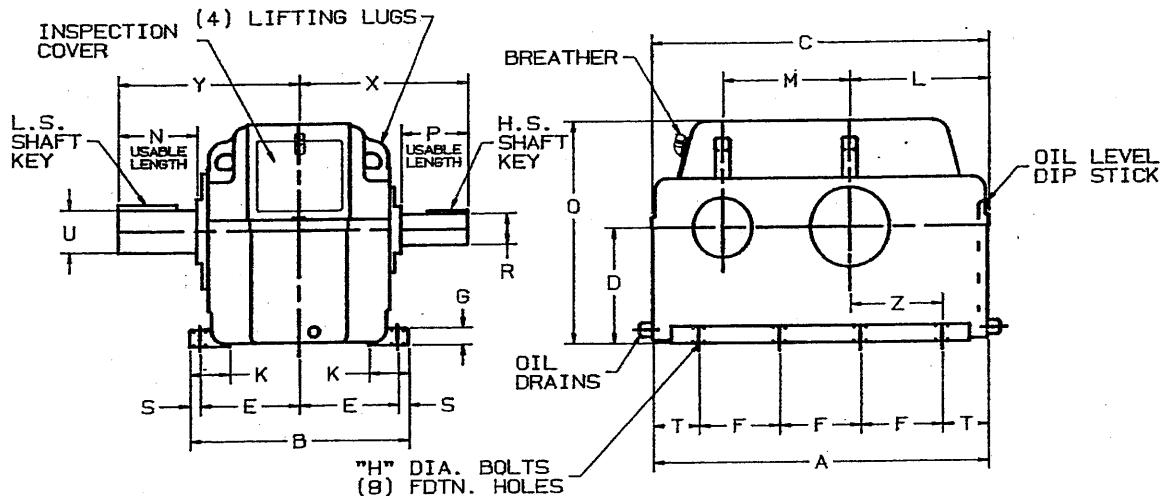
Not to be used for construction unless both appropriate unit and supplemental dimensions are CERTIFIED.

CUSTOMER ORDER:	ITEM NO.:	S.O. NO.:	UNIT SIZE:	ASSEMBLY:
<input type="checkbox"/> PRELIMINARY	<input type="checkbox"/> CERTIFIED	BY:	DATE:	

# Type TDS

## Parallel Shaft Speed Reducers

### Single Reduction-Steel Construction



ALL UNITS FURNISHED WITH SINGLE END  
SHAFT EXTENSION UNLESS OTHERWISE SPECIFIED.

#### DIMENSIONS - INCHES

UNIT SIZE	A	B	C	D <sup>(2)</sup>	E	F	G	H	K	L	M	O	S	T	Z	APPROX WT. LBS.
WS28	76.5	31.0	77.0	28.00	13.00	20.00	3.5	2.25	7.5	31.0	27.976	55.5	2.5	8.3	22.50	9,450
WS30	81.5	33.5	82.0	30.00	14.00	21.00	3.6	2.50	8.1	33.0	30.048	59.0	2.8	9.3	23.50	11,300

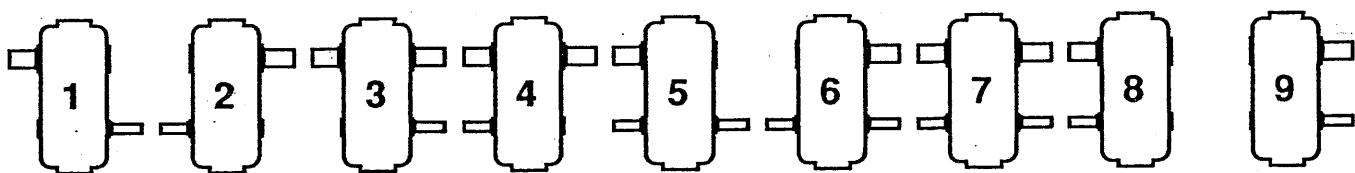
UNIT SIZE	U <sup>(1)</sup>	LOW SPEED SHAFT KEY	N	Y
WS28	9.000	2.500 x 2.500 x 12.3	15.0	30.0
WS30	9.500	2.500 x 2.500 x 12.5	15.8	31.8

R <sup>(1)</sup>	HIGH SPEED SHAFT KEY	P	X
6.500	1.500 x 1.500 x 9.3	11.0	26.0
7.000	1.750 x 1.750 x 10.0	12.0	28.0

<sup>(1)</sup>TOLERANCE = +.0000, -.0005 for diameters up to and including 2 inches; +.000, -.001 for dimensions above 2 inches.

<sup>(2)</sup>THIS DIMENSION will never be exceeded. When exact dimension is required, shims up to 1/16 inch may be necessary.

#### STANDARD ASSEMBLY POSITIONS

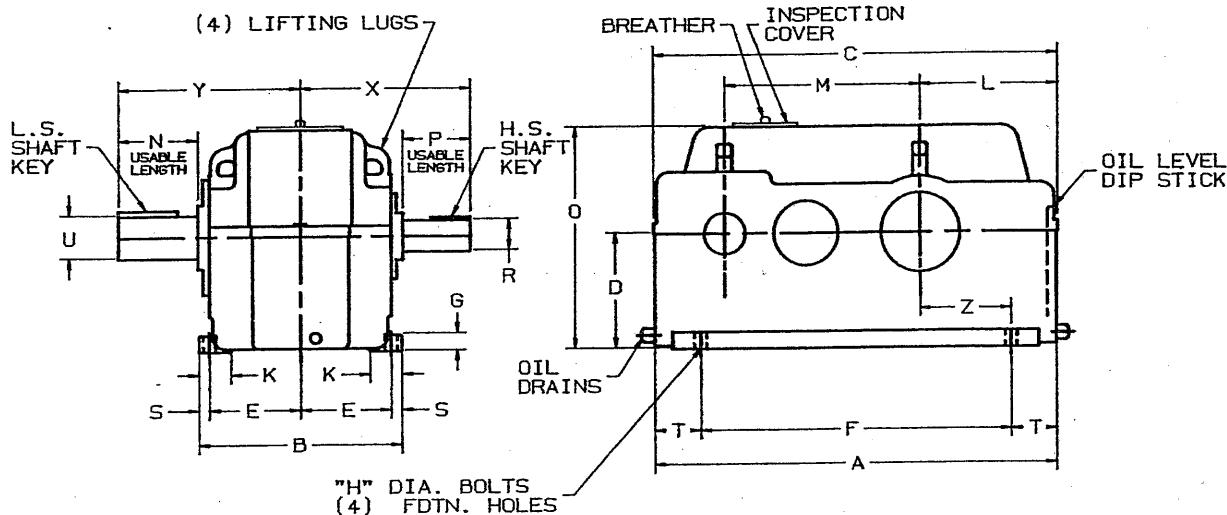


Not to be used for construction unless both appropriate unit and supplemental dimensions are CERTIFIED.

CUSTOMER ORDER:	ITEM NO.:	S.O. NO.:	UNIT SIZE:	ASSEMBLY:
PRELIMINARY <input type="checkbox"/>	CERTIFIED <input type="checkbox"/>	BY:		DATE:

**Type TDS**  
**Parallel Shaft Speed Reducers**  
**Double Reduction-Steel Construction**

Section 320  
 Page 15  
 Dimensions  
 WD7 to WD9



ALL UNITS FURNISHED WITH SINGLE END SHAFT EXTENSION UNLESS OTHERWISE SPECIFIED.

**DIMENSIONS - INCHES**

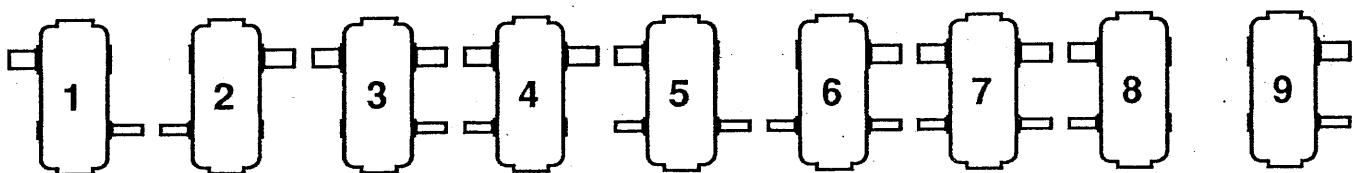
UNIT SIZE	A	B	C	D <sup>(2)</sup>	E	F	G	H	K	L	M	O	S	T	Z	APPROX WT. LBS.
WD7	26.0	15.3	26.3	8.25	6.75	20.00	1.1	0.75	3.7	9.1	12.500	15.8	0.9	3.0	6.00	750
WD8	33.0	18.0	33.3	10.25	8.00	25.50	1.5	1.00	4.3	11.1	14.548	20.0	1.0	3.8	7.25	1,100
WD9	33.0	18.0	33.3	10.25	8.00	25.50	1.5	1.00	4.3	11.1	16.500	20.0	1.0	3.8	7.25	1,200

UNIT SIZE	LOW SPEED SHAFT				HIGH SPEED SHAFT			
	U <sup>(1)</sup>	KEY	N	Y	R <sup>(1)</sup>	KEY	P	X
WD7	2.875	.750 x .750 x 4.0	5.0	11.3	1.375	.312 x .312 x 2.5	3.5	9.5
WD8	3.375	.875 x .875 x 4.5	6.0	13.6	1.500	.375 x .375 x 2.5	3.7	10.7
WD9	3.875	1.000 x 1.000 x 5.3	6.6	14.3	1.875	.500 x .500 x 3.0	4.0	11.0

<sup>(1)</sup>TOLERANCE = +.0000, -.0005 for diameters up to and including 2 inches; +.000, -.001 for dimensions above 2 inches.

<sup>(2)</sup>THIS DIMENSION will never be exceeded. When exact dimension is required, shims up to 1/16 inch may be necessary.

**STANDARD ASSEMBLY POSITIONS**



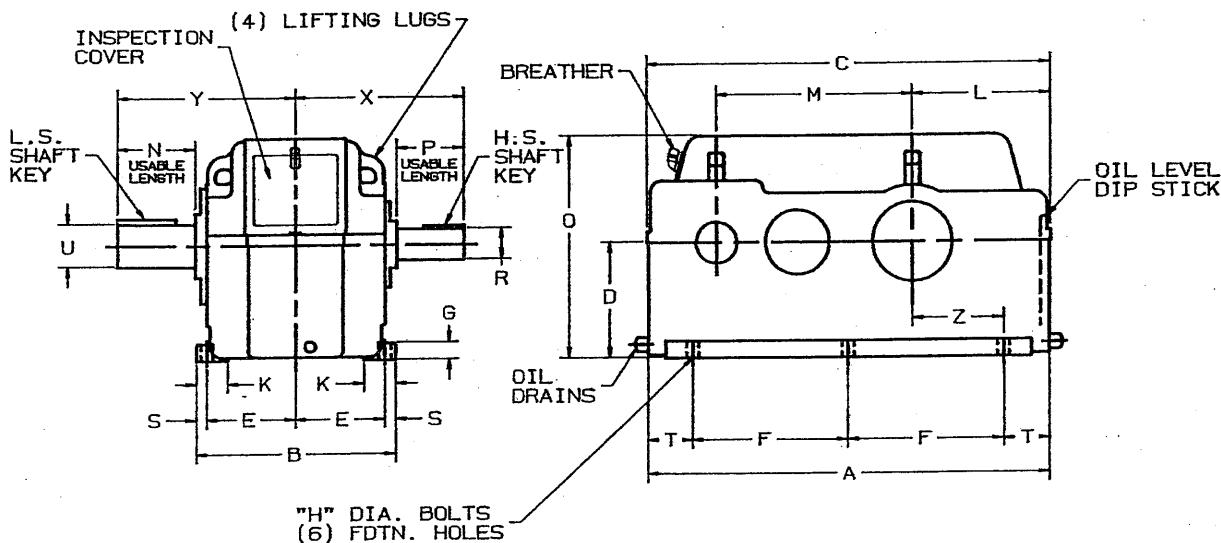
Not to be used for construction unless both appropriate unit and supplemental dimensions are CERTIFIED.

CUSTOMER ORDER:	ITEM NO.:	S.O. NO.:	UNIT SIZE:	ASSEMBLY:
PRELIMINARY <input type="checkbox"/>	CERTIFIED <input type="checkbox"/>	BY:		DATE:

# Type TDS

## Parallel Shaft Speed Reducers

### Double Reduction-Steel Construction



ALL UNITS FURNISHED WITH SINGLE END  
SHAFT EXTENSION UNLESS OTHERWISE SPECIFIED.

#### DIMENSIONS - INCHES

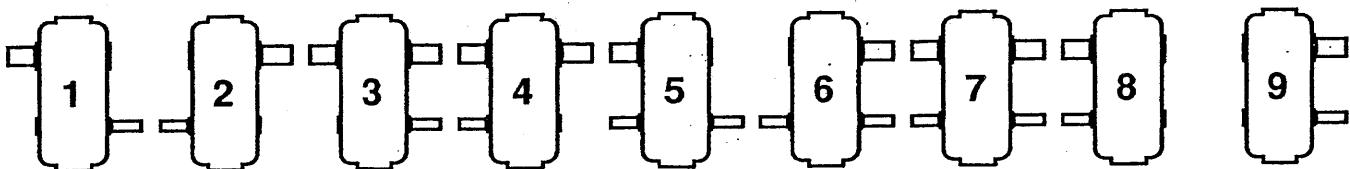
UNIT SIZE	A	B	C	D <sup>(2)</sup>	E	F	G	H	K	L	M	O	S	T	Z	APPROX WT. LBS.
WD11	39.5	25.0	39.8	11.50	11.25	14.75	1.8	1.00	5.8	14.0	18.638	23.0	1.3	5.0	8.88	2,100
WD12	43.0	27.0	43.3	12.50	12.25	16.25	2.0	1.25	5.8	15.3	20.866	25.0	1.3	5.3	9.88	2,950
WD13	47.3	28.0	47.6	13.50	12.75	18.25	2.0	1.25	5.9	16.2	22.969	27.0	1.3	5.4	10.70	3,400
WD15	49.5	29.5	49.8	15.00	13.25	19.25	2.3	1.50	6.5	17.4	24.524	30.0	1.5	5.5	11.75	4,000
WD16	55.5	33.0	55.8	16.50	14.75	21.88	2.5	1.50	7.3	19.6	27.198	33.0	1.8	5.9	13.62	5,650
WD18	58.8	29.0	59.0	18.00	12.75	23.00	2.8	1.75	5.0	20.8	29.270	35.5	1.8	6.4	14.25	6,650
WD20	65.3	31.0	65.5	20.00	13.75	25.50	3.0	1.75	5.8	23.1	32.523	39.5	1.8	7.1	15.88	7,100
WD22	68.3	33.0	68.5	22.00	14.50	26.50	3.3	2.00	6.3	24.6	34.077	43.5	2.0	7.6	16.88	8,500
WD25	77.5	35.0	77.8	25.00	15.25	30.50	3.5	2.25	7.0	27.1	39.891	49.5	2.3	8.3	18.75	10,150

UNIT SIZE	U <sup>(1)</sup>	LOW SPEED SHAFT KEY	N	Y	R <sup>(1)</sup>	HIGH SPEED SHAFT KEY	P	X
WD11	4.500	1.000 x 1.000 x 6.0	7.8	18.5	2.125	.500 x .500 x 3.5	4.5	15.0
WD12	4.750	1.250 x 1.250 x 6.8	8.5	20.3	2.625	.625 x .625 x 4.0	5.3	16.8
WD13	5.000	1.250 x 1.250 x 7.0	9.1	21.3	2.875	.750 x .750 x 4.3	5.6	17.5
WD15	5.250	1.250 x 1.250 x 7.8	9.5	22.0	3.125	.750 x .750 x 4.8	6.0	18.3
WD16	5.500	1.250 x 1.250 x 8.3	9.5	23.5	3.375	.875 x .875 x 4.8	6.0	19.8
WD18	6.000	1.500 x 1.500 x 8.8	10.5	25.0	3.375	.875 x .875 x 5.0	6.5	20.5
WD20	6.500	1.500 x 1.500 x 9.3	11.3	26.5	3.375	.875 x .875 x 5.0	6.5	21.5
WD22	7.000	1.750 x 1.750 x 9.8	12.0	28.8	3.625	.875 x .875 x 5.0	7.0	23.3
WD25	8.000	2.000 x 2.000 x 10.8	13.5	30.8	3.875	1.000 x 1.000 x 5.8	7.3	24.0

<sup>(1)</sup>TOLERANCE = +.0000, -.0005 for diameters up to and including 2 inches; +.000, -.001 for dimensions above 2 inches.

<sup>(2)</sup>THIS DIMENSION will never be exceeded. When exact dimension is required, shims up to 1/16 inch may be necessary.

#### STANDARD ASSEMBLY POSITIONS



Not to be used for construction unless both appropriate unit and supplemental dimensions are CERTIFIED.

CUSTOMER ORDER:	ITEM NO.:	S.O. NO.:	UNIT SIZE:	ASSEMBLY:
PRELIMINARY <input type="checkbox"/>	CERTIFIED <input type="checkbox"/>	BY:	DATE:	

# Type TDS

## Parallel Shaft Speed Reducers

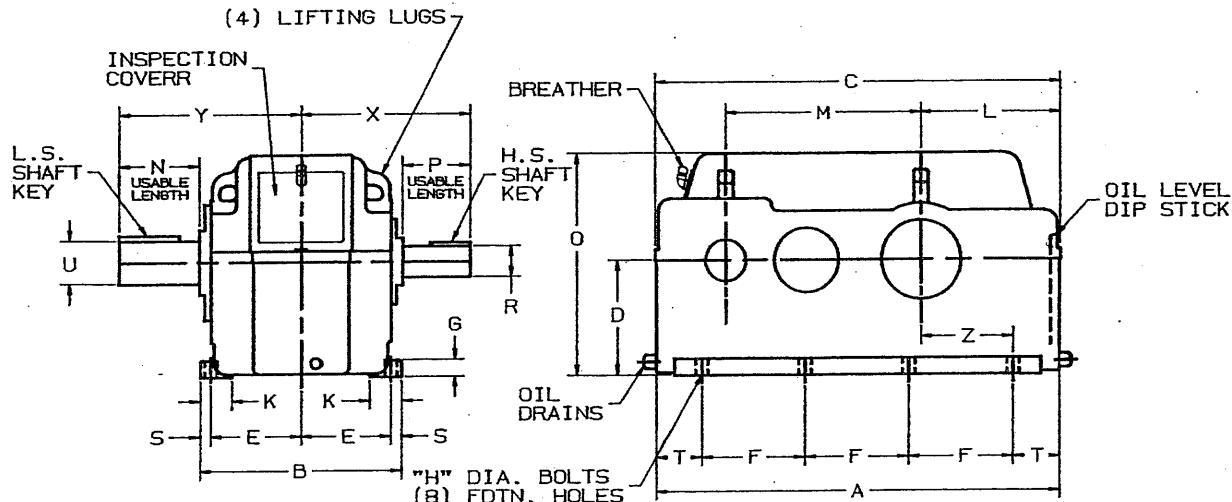
### Double Reduction-Steel Construction

Section 320

Page 17

Dimensions

WD28 to WD40



ALL UNITS FURNISHED WITH SINGLE END  
SHAFT EXTENSION UNLESS OTHERWISE SPECIFIED.

#### DIMENSIONS - INCHES

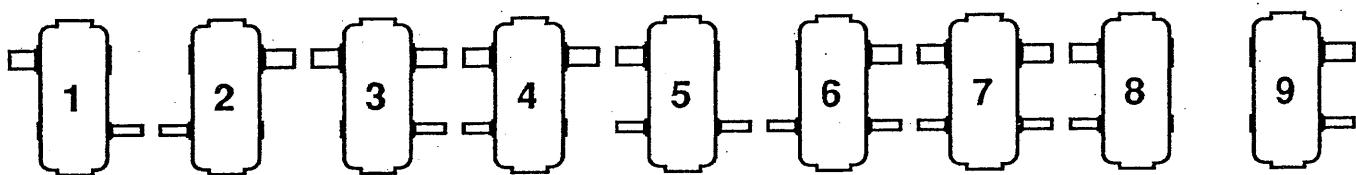
UNIT SIZE	A	B	C	D <sup>(2)</sup>	E	F	G	H	K	L	M	O	S	T	Z	APPROX WT. LBS.
WD28	88.0	40.5	88.3	28.00	17.75	23.50	3.5	2.25	7.5	30.6	46.108	55.5	2.5	8.8	21.75	11,800
WD30	93.0	42.8	93.3	30.00	18.62	24.50	3.6	2.50	8.1	32.9	48.180	59.0	2.8	9.8	23.00	14,800
WD32	100.6	45.0	101.1	32.00	19.75	25.75	3.1	2.50	8.3	34.3	52.325	63.0	2.8	11.7	22.25	18,400
WD34	105.5	47.5	106.0	34.00	20.75	27.00	3.1	2.75	9.0	36.0	55.951	67.0	3.0	12.3	23.50	21,650
WD36	114.0	49.0	114.5	36.00	21.50	29.50	3.1	2.75	9.0	37.5	61.132	71.0	3.0	12.8	24.50	25,600
WD38	117.0	51.0	117.5	38.00	22.25	30.50	3.1	3.00	9.8	39.0	62.867	75.0	3.3	12.8	26.00	30,000
WD40	121.5	53.0	122.0	40.00	23.25	32.00	3.1	3.00	9.8	40.8	64.867	79.0	3.3	12.8	27.75	35,600

UNIT SIZE	LOW SPEED SHAFT				HIGH SPEED SHAFT			
	U <sup>(1)</sup>	KEY	N	Y	R <sup>(1)</sup>	KEY	P	X
WD28	9.000	2.500 x 2.500 x 12.3	15.0	34.3	4.500	1.000 x 1.000 x	6.0	8.0
WD30	9.500	2.500 x 2.500 x 12.5	15.8	35.5	5.000	1.250 x 1.250 x	7.0	9.0
WD32	10.500	2.500 x 2.500 x 13.5	17.0	38.3	5.000	1.250 x 1.250 x	7.0	9.0
WD34	11.500	3.000 x 3.000 x 14.3	18.0	40.3	5.250	1.250 x 1.250 x	8.0	10.0
WD36	12.500	3.000 x 3.000 x 15.0	19.0	43.0	5.500	1.500 x 1.500 x	8.0	10.0
WD38	13.250	3.500 x 3.500 x 16.0	20.0	45.0	5.750	1.500 x 1.500 x	8.0	10.0
WD40	14.000	3.500 x 3.500 x 17.0	21.0	47.0	5.750	1.500 x 1.500 x	8.0	10.0

<sup>(1)</sup>TOLERANCE = +.0000, -.0005 for diameters up to and including 2 inches; +.000, -.001 for dimensions above 2 inches.

<sup>(2)</sup>THIS DIMENSION will never be exceeded. When exact dimension is required, shims up to 1/16 inch may be necessary.

#### STANDARD ASSEMBLY POSITIONS



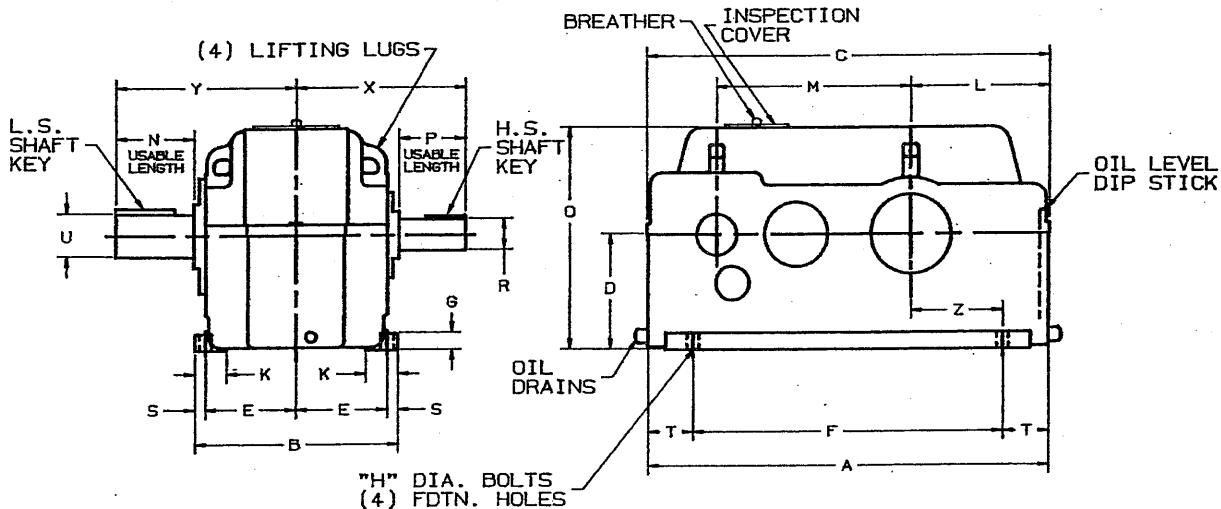
Not to be used for construction unless both appropriate unit and supplemental dimensions are CERTIFIED.

CUSTOMER ORDER:	ITEM NO.:	S.O. NO.:	UNIT SIZE:	ASSEMBLY:
<input type="checkbox"/> PRELIMINARY	<input type="checkbox"/> CERTIFIED	BY:	DATE:	

# Type TDS

## Parallel Shaft Speed Reducers

### Triple Reduction-Steel Construction



#### DIMENSIONS - INCHES

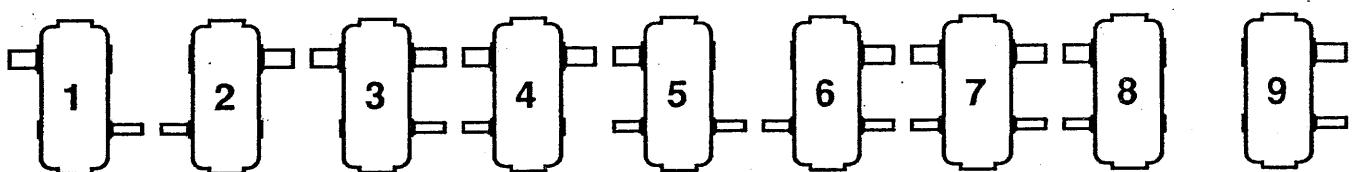
UNIT SIZE	A	B	C	D <sup>(2)</sup>	E	F	G	H	K	L	M	O	S	T	Z	APPROX WT. LBS.
WT7	26.0	15.3	26.3	8.25	6.75	20.00	1.1	0.75	3.7	9.1	12.500	15.8	0.9	3.0	6.00	800
WT8	33.0	18.0	33.3	10.25	8.00	25.50	1.5	1.00	4.3	11.1	14.548	20.0	1.0	3.8	7.25	1,150
WT9	33.0	18.0	33.3	10.25	8.00	25.50	1.5	1.00	4.3	11.1	16.500	20.0	1.0	3.8	7.25	1,300

UNIT SIZE	U <sup>(1)</sup>	LOW SPEED SHAFT KEY	N	Y	R <sup>(1)</sup>	HIGH SPEED SHAFT KEY	P	X
WT7	2.875	.750 x .750 x 4.0	5.0	11.3	1.125	.250 x .250 x 2.5	3.3	9.3
WT8	3.375	.875 x .875 x 4.5	6.0	13.6	1.125	.250 x .250 x 2.5	3.3	10.3
WT9	3.875	1.000 x 1.000 x 5.3	6.6	14.3	1.375	.312 x .312 x 2.5	3.5	10.5

<sup>(1)</sup> TOLERANCE = +.0000, -.0005 for diameters up to and including 2 inches; +.000, -.001 for dimensions above 2 inches.

<sup>(2)</sup> THIS DIMENSION will never be exceeded. When exact dimension is required, shims up to 1/16 inch may be necessary.

#### STANDARD ASSEMBLY POSITIONS



Not to be used for construction unless both appropriate unit and supplemental dimensions are CERTIFIED.

CUSTOMER ORDER:	ITEM NO.:	S.O. NO.:	UNIT SIZE:	ASSEMBLY:
PRELIMINARY <input type="checkbox"/>	CERTIFIED <input type="checkbox"/>	BY:	DATE:	

# Type TDS

## Parallel Shaft Speed Reducers

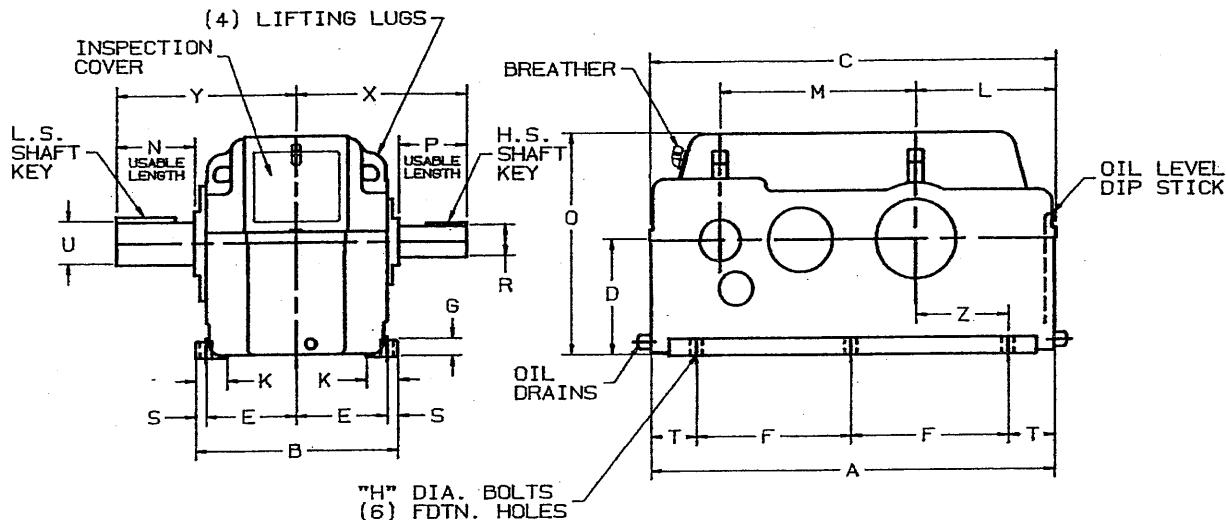
### Triple Reduction-Steel Construction

Section 320

Page 19

Dimensions

WT11 to WT25



ALL UNITS FURNISHED WITH SINGLE END  
SHAFT EXTENSION UNLESS OTHERWISE SPECIFIED.

#### DIMENSIONS - INCHES

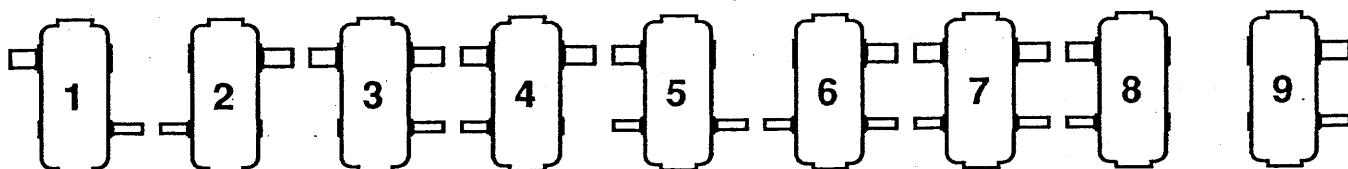
UNIT SIZE	A	B	C	D <sup>(2)</sup>	E	F	G	H	K	L	M	O	S	T	Z	APPROX WT. LBS.
WT11	39.5	25.0	39.8	11.50	11.25	14.75	1.8	1.00	5.8	14.0	18.638	23.0	1.3	5.0	8.88	2,200
WT12	43.0	27.0	43.3	12.50	12.25	16.25	2.0	1.25	5.8	15.3	20.866	25.0	1.3	5.3	9.88	3,050
WT13	47.3	28.0	47.6	13.50	12.75	18.25	2.0	1.25	5.9	16.2	22.969	27.0	1.3	5.4	10.70	3,550
WT15	49.5	29.5	49.8	15.00	13.25	19.25	2.3	1.50	6.5	17.4	24.524	30.0	1.5	5.5	11.75	4,150
WT16	55.5	33.0	55.8	16.50	14.75	21.88	2.5	1.50	7.3	19.6	27.198	33.0	1.8	5.9	13.62	5,700
WT18	58.8	29.0	59.0	18.00	12.75	23.00	2.8	1.75	5.0	20.8	29.270	35.5	1.8	6.4	14.25	6,850
WT20	65.3	31.0	65.5	20.00	13.75	25.50	3.0	1.75	5.8	23.1	32.523	39.5	1.8	7.1	15.88	7,300
WT22	68.3	33.0	68.5	22.00	14.50	26.50	3.3	2.00	6.3	24.6	34.077	43.5	2.0	7.6	16.88	8,750
WT25	77.5	35.0	77.8	25.00	15.25	30.50	3.5	2.25	7.0	27.1	39.891	49.5	2.3	8.3	18.75	10,450

UNIT SIZE	U <sup>(1)</sup>	LOW SPEED SHAFT KEY	N	Y	R <sup>(1)</sup>	HIGH SPEED SHAFT KEY	P	X
WT11	4.500	1.000 x 1.000 x 6.0	7.8	18.5	1.375	.312 x .312 x 2.5	3.5	14.0
WT12	4.750	1.250 x 1.250 x 6.8	8.5	20.3	1.625	.375 x .375 x 2.8	3.8	15.3
WT13	5.000	1.250 x 1.250 x 7.0	9.1	21.3	1.625	.375 x .375 x 2.8	4.0	16.0
WT15	5.250	1.250 x 1.250 x 7.8	9.5	22.0	1.875	.500 x .500 x 3.0	4.0	16.3
WT16	5.500	1.250 x 1.250 x 8.3	9.5	23.5	2.125	.500 x .500 x 3.0	4.0	17.8
WT18	6.000	1.500 x 1.500 x 8.8	10.5	25.0	2.125	.500 x .500 x 3.5	4.5	18.5
WT20	6.500	1.500 x 1.500 x 9.3	11.3	26.5	2.375	.625 x .625 x 3.8	4.8	19.8
WT22	7.000	1.750 x 1.750 x 9.8	12.0	28.8	2.625	.625 x .625 x 4.0	5.3	21.5
WT25	8.000	2.000 x 2.000 x 10.8	13.5	30.8	2.875	.750 x .750 x 4.0	5.5	22.3

<sup>(1)</sup> TOLERANCE = +.0000, -.0005 for diameters up to and including 2 inches; +.000, -.001 for dimensions above 2 inches.

<sup>(2)</sup> THIS DIMENSION will never be exceeded. When exact dimension is required, shims up to 1/16 inch may be necessary.

#### STANDARD ASSEMBLY POSITIONS



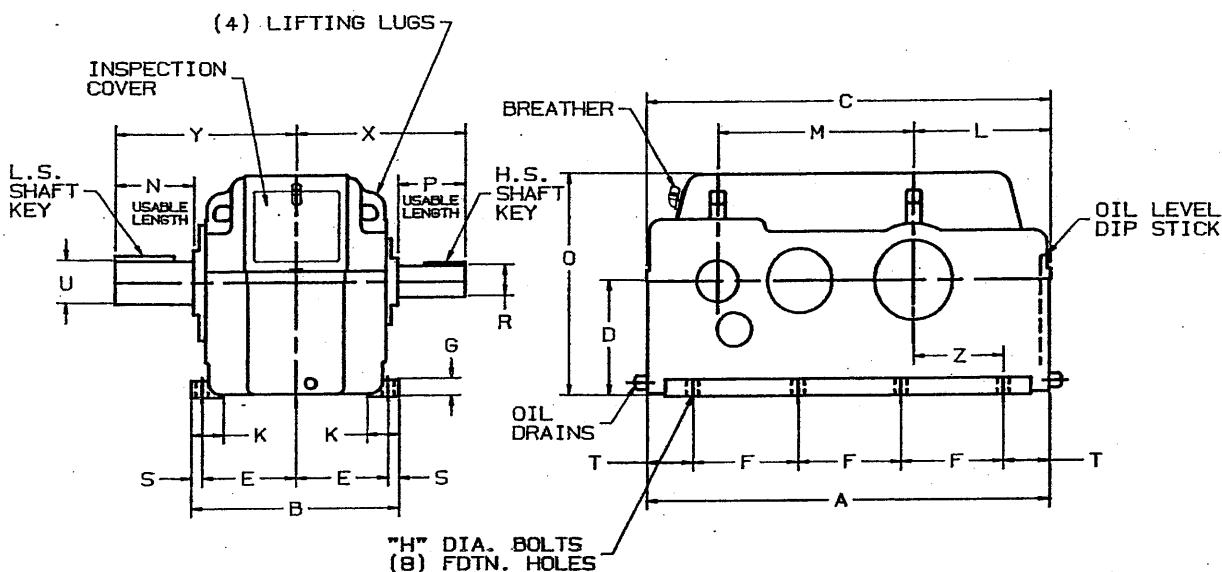
Not to be used for construction unless both appropriate unit and supplemental dimensions are CERTIFIED.

CUSTOMER ORDER:	ITEM NO.:	S.O. NO.:	UNIT SIZE:	ASSEMBLY:
<input type="checkbox"/> PRELIMINARY	<input type="checkbox"/> CERTIFIED	BY:	DATE:	

# Type TDS

## Parallel Shaft Speed Reducers

### Triple Reduction-Steel Construction



ALL UNITS FURNISHED WITH SINGLE END  
SHAFT EXTENSION UNLESS OTHERWISE SPECIFIED.

#### DIMENSIONS - INCHES

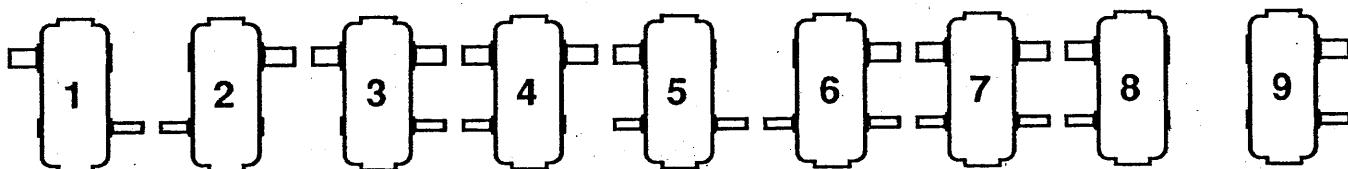
UNIT SIZE	A	B	C	D <sup>(2)</sup>	E	F	G	H	K	L	M	O	S	T	Z	APPROX WT. LBS.
WT28	88.0	40.5	88.3	28.00	17.75	23.50	3.5	2.25	7.5	30.6	46.108	55.5	2.5	8.8	21.75	12,150
WT30	93.0	42.8	93.3	30.00	18.62	24.50	3.6	2.50	8.1	32.9	48.180	59.0	2.8	9.8	23.00	15,150
WT32	100.6	45.0	101.1	32.00	19.75	25.75	3.1	2.50	8.3	34.3	52.325	63.0	2.8	11.7	22.25	18,800
WT34	105.5	47.5	106.0	34.00	20.75	27.00	3.1	2.75	9.0	36.0	55.951	67.0	3.0	12.3	23.50	22,050
WT36	114.0	49.0	114.5	36.00	21.50	29.50	3.1	2.75	9.0	37.5	61.132	71.0	3.0	12.8	24.50	26,050
WT38	117.0	51.0	117.5	38.00	22.25	30.50	3.1	3.00	9.8	39.0	62.867	75.0	3.3	12.8	26.00	30,450
WT40	121.5	53.0	122.0	40.00	23.25	32.00	3.1	3.00	9.8	40.8	64.867	79.0	3.3	12.8	27.75	36,100

UNIT SIZE	U <sup>(1)</sup>	LOW SPEED SHAFT KEY	N	Y	R <sup>(1)</sup>	HIGH SPEED SHAFT KEY	P	X
WT28	9.000	2.500 x 2.500 x 12.3	15.0	34.3	3.375	.875 x .875 x 4.5	6.5	25.0
WT30	9.500	2.500 x 2.500 x 12.5	15.8	35.5	3.625	.875 x .875 x 5.0	7.0	26.3
WT32	10.500	2.500 x 2.500 x 13.5	17.0	38.3	3.625	.875 x .875 x 5.0	7.0	27.5
WT34	11.500	3.000 x 3.000 x 14.3	18.0	40.3	3.625	.875 x .875 x 5.0	7.0	28.5
WT36	12.500	3.000 x 3.000 x 15.0	19.0	43.0	3.875	1.000 x 1.000 x 5.5	8.0	30.5
WT38	13.250	3.500 x 3.500 x 16.0	20.0	45.0	3.875	1.000 x 1.000 x 5.5	8.0	31.5
WT40	14.000	3.500 x 3.500 x 17.0	21.0	47.0	3.875	1.000 x 1.000 x 5.5	8.0	33.0

<sup>(1)</sup>TOLERANCE = +.0000, -.0005 for diameters up to and including 2 inches; +.000, -.001 for dimensions above 2 inches.

<sup>(2)</sup>THIS DIMENSION will never be exceeded. When exact dimension is required, shims up to 1/16 inch may be necessary.

#### STANDARD ASSEMBLY POSITIONS



Not to be used for construction unless both appropriate unit and supplemental dimensions are CERTIFIED.

CUSTOMER ORDER:	ITEM NO.:	S.O. NO.:	UNIT SIZE:	ASSEMBLY:
<input type="checkbox"/> PRELIMINARY	<input type="checkbox"/> CERTIFIED	BY:	DATE:	

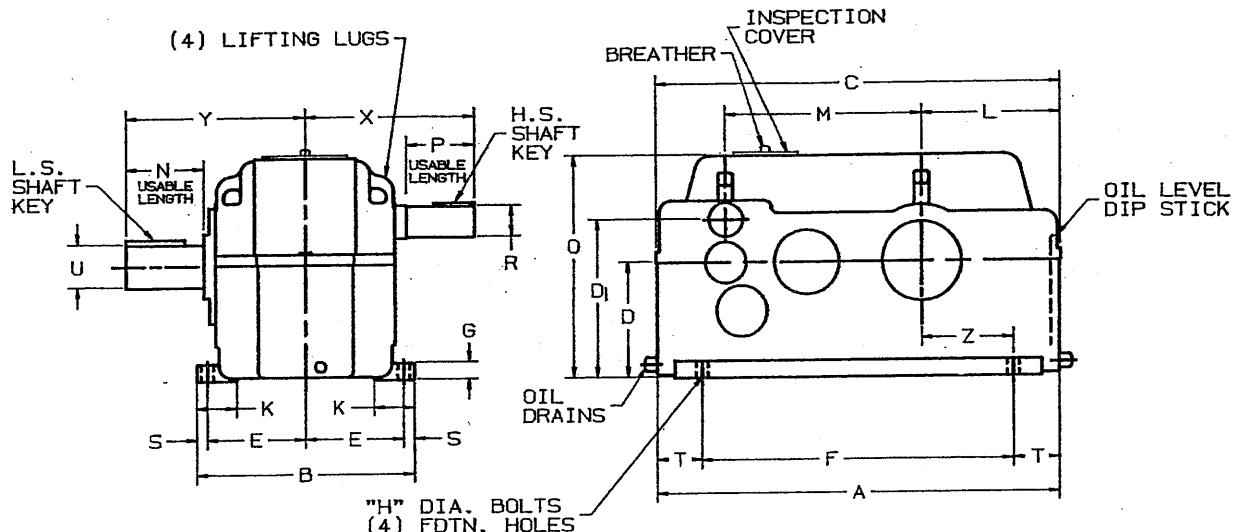
**Type TDS**  
**Parallel Shaft Speed Reducers**  
**Quadruple Reduction-Steel Construction**

Section 320

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Dimensions

WQ7 to WQ9



ALL UNITS FURNISHED WITH SINGLE END  
 SHAFT EXTENSION UNLESS OTHERWISE SPECIFIED.

DIMENSIONS - INCHES

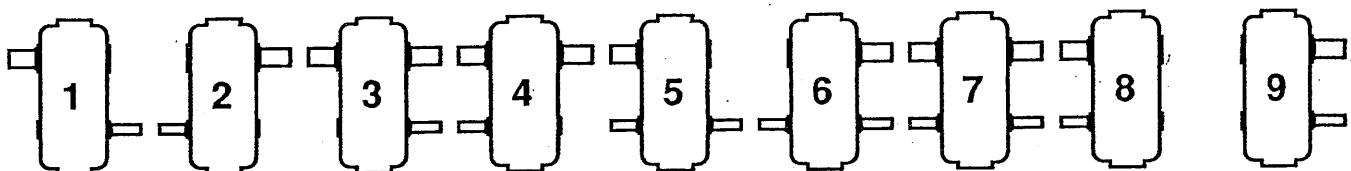
UNIT SIZE	A	B	C	D <sup>(2)</sup>	D1	E	F	G	H	K	L	M	O	S	T	Z	APPROX WT. LBS.
WQ7	26.0	15.3	26.3	8.25	11.75	6.75	20.00	1.1	0.75	3.7	9.1	12.500	15.8	0.9	3.0	6.00	850
WQ8	33.0	18.0	33.3	10.25	13.75	8.00	25.50	1.5	1.00	4.3	11.1	14.548	20.0	1.0	3.8	7.25	1,200
WQ9	33.0	18.0	33.3	10.25	13.75	8.00	25.50	1.5	1.00	4.3	11.1	16.500	20.0	1.0	3.8	7.25	1,400

UNIT SIZE	U <sup>(1)</sup>	LOW SPEED SHAFT KEY	N	Y	R <sup>(1)</sup>	HIGH SPEED SHAFT KEY	P	X
WQ7	2.875	.750 x .750 x 4.0	5.0	11.3	1.125	.250 x .250 x 2.5	3.3	9.3
WQ8	3.375	.875 x .875 x 4.5	6.0	13.6	1.125	.250 x .250 x 2.5	3.3	10.3
WQ9	3.875	1.000 x 1.000 x 5.3	6.6	14.3	1.375	.312 x .312 x 2.5	3.5	10.5

<sup>(1)</sup> TOLERANCE = +.0000, -.0005 for diameters up to and including 2 inches; +.000, -.001 for dimensions above 2 inches.

<sup>(2)</sup> THIS DIMENSION will never be exceeded. When exact dimension is required, shims up to 1/16 inch may be necessary.

STANDARD ASSEMBLY POSITIONS



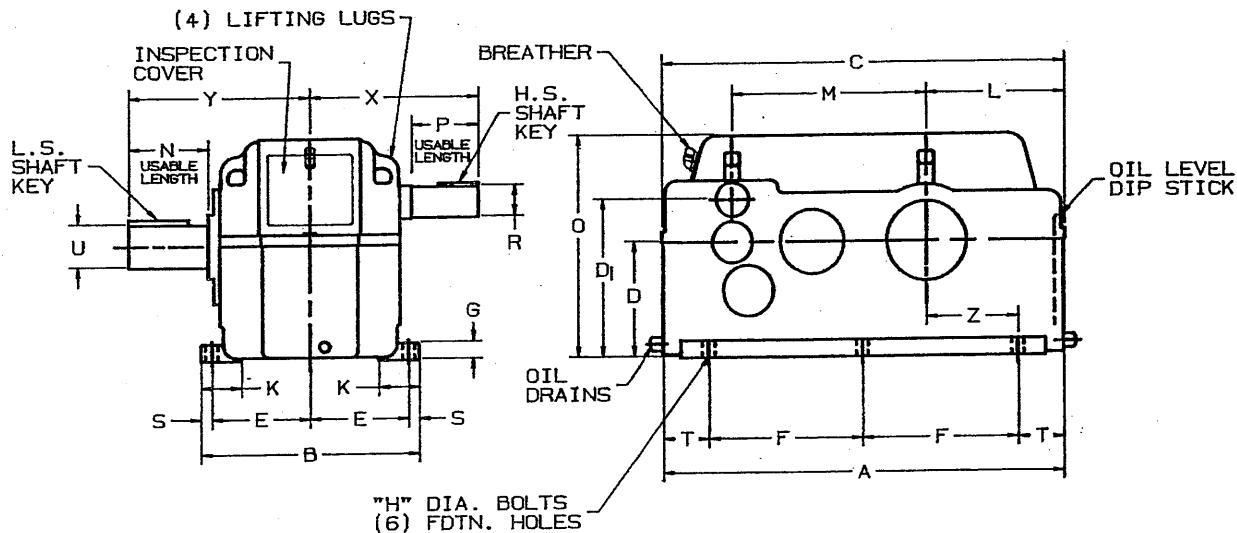
Not to be used for construction unless both appropriate unit and supplemental dimensions are CERTIFIED.

CUSTOMER ORDER:	ITEM NO.:	S.O. NO.:	UNIT SIZE:	ASSEMBLY:
PRELIMINARY <input type="checkbox"/>	CERTIFIED <input type="checkbox"/>	BY:		DATE:

## Type TDS

## Parallel Shaft Speed Reducers

## Quadruple Reduction-Steel Construction



ALL UNITS FURNISHED WITH SINGLE END  
SHAFT EXTENSION UNLESS OTHERWISE SPECIFIED.

## DIMENSIONS - INCHES

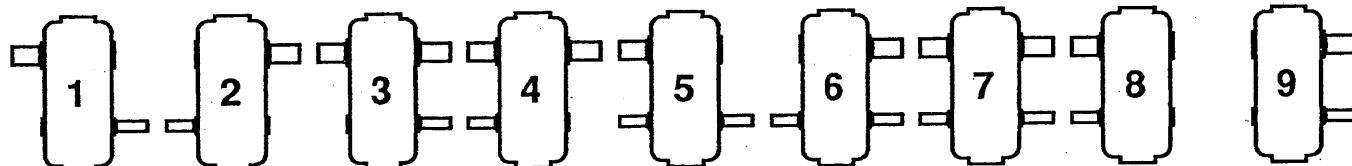
UNIT SIZE	A	B	C	D <sup>(2)</sup>	D1	E	F	G	H	K	L	M	O	S	T	Z	APPROX WT. LBS.
WQ11	39.5	25.0	39.8	11.50	15.50	11.25	14.75	1.8	1.00	5.8	14.0	18.638	23.0	1.3	5.0	8.88	2,300
WQ12	43.0	27.0	43.3	12.50	16.50	12.25	16.25	2.0	1.25	5.8	15.3	20.866	25.0	1.3	5.3	9.88	3,150
WQ13	47.3	28.0	47.6	13.50	17.50	12.75	18.25	2.0	1.25	5.9	16.2	22.969	27.0	1.3	5.4	10.70	3,700
WQ15	49.5	29.5	49.8	15.00	19.00	13.25	19.25	2.3	1.50	6.5	17.4	24.524	30.0	1.5	5.5	11.75	4,300
WQ16	55.5	33.0	55.8	16.50	21.50	14.75	21.88	2.5	1.50	7.3	19.6	27.198	33.0	1.8	5.9	13.62	5,850
WQ18	58.8	29.0	59.0	18.00	23.00	12.75	23.00	2.8	1.75	5.0	20.8	29.270	35.5	1.8	6.4	14.25	7,050
WQ20	65.3	31.0	65.5	20.00	26.00	13.75	25.50	3.0	1.75	5.8	23.1	32.523	39.5	1.8	7.1	15.88	7,500
WQ22	68.3	33.0	68.5	22.00	28.00	14.50	26.50	3.3	2.00	6.3	24.6	34.077	43.5	2.0	7.6	16.88	9,000
WQ25	77.5	35.0	77.8	25.00	31.00	15.25	30.50	3.5	2.25	7.0	27.1	39.891	49.5	2.3	8.3	18.75	10,750

UNIT SIZE	LOW SPEED SHAFT				HIGH SPEED SHAFT			
	U <sup>(1)</sup>	KEY	N	Y	R <sup>(1)</sup>	KEY	P	X
WQ11	4.500	1.000 x 1.000 x 6.0	7.8	18.5	1.375	.312 x .312 x 2.5	3.5	14.0
WQ12	4.750	1.250 x 1.250 x 6.8	8.5	20.3	1.625	.375 x .375 x 2.8	3.8	15.3
WQ13	5.000	1.250 x 1.250 x 7.0	9.1	21.3	1.625	.375 x .375 x 2.8	4.0	16.0
WQ15	5.250	1.250 x 1.250 x 7.8	9.5	22.0	1.875	.500 x .500 x 3.0	4.0	16.3
WQ16	5.500	1.250 x 1.250 x 8.3	9.5	23.5	2.125	.500 x .500 x 3.0	4.0	17.8
WQ18	6.000	1.500 x 1.500 x 8.8	10.5	25.0	2.125	.500 x .500 x 3.5	4.5	18.5
WQ20	6.500	1.500 x 1.500 x 9.3	11.3	26.5	2.375	.625 x .625 x 3.8	4.8	19.8
WQ22	7.000	1.750 x 1.750 x 9.8	12.0	28.8	2.625	.625 x .625 x 4.0	5.3	21.5
WQ25	8.000	2.000 x 2.000 x 10.8	13.5	30.8	2.875	.750 x .750 x 4.0	5.5	22.3

(1) TOLERANCE = +.0000, -.0005 for diameters up to and including 2 inches; +.000, -.001 for dimensions above 2 inches.

(2) THIS DIMENSION will never be exceeded. When exact dimension is required, shims up to 1/16 inch may be necessary.

## STANDARD ASSEMBLY POSITIONS



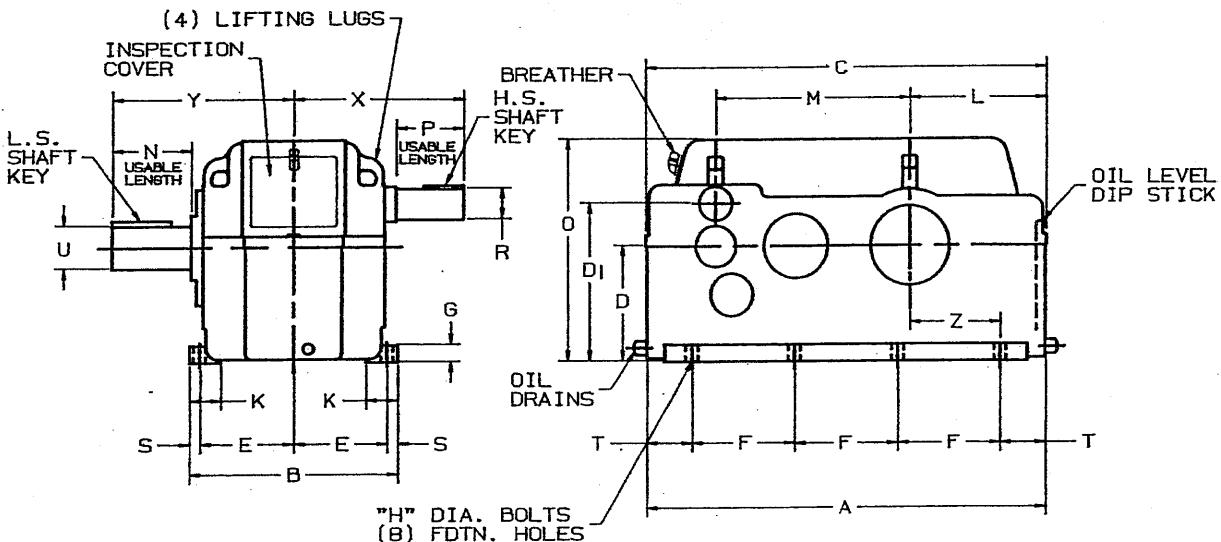
Not to be used for construction unless both appropriate unit and supplemental dimensions are CERTIFIED.

CUSTOMER ORDER:	ITEM NO.:	S.O. NO.:	UNIT SIZE:	ASSEMBLY:
<input type="checkbox"/> PRELIMINARY	<input type="checkbox"/> CERTIFIED	BY:	DATE:	

## Type TDS

## Parallel Shaft Speed Reducers

## Quadruple Reduction-Steel Construction WQ28 to WQ40



ALL UNITS FURNISHED WITH SINGLE END SHAFT EXTENSION UNLESS OTHERWISE SPECIFIED.

## DIMENSIONS - INCHES

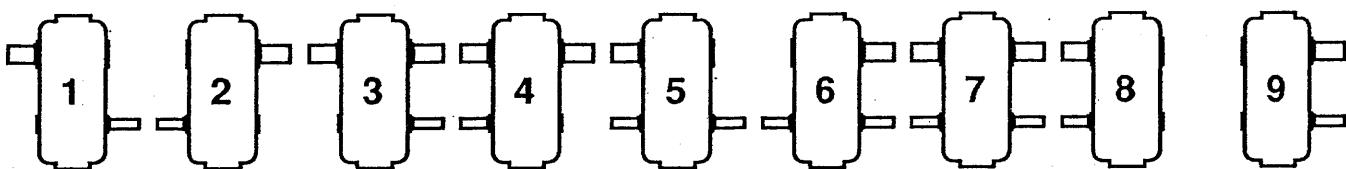
UNIT SIZE	A	B	C	D <sup>(2)</sup>	D1	E	F	G	H	K	L	M	O	S	T	Z	APPROX WT. LBS.
WQ28	88.0	40.5	88.3	28.00	35.50	17.75	23.50	3.5	2.25	7.5	30.6	46.108	55.5	2.5	8.8	21.75	12,500
WQ30	93.0	42.8	93.3	30.00	37.50	18.62	24.50	3.6	2.50	8.1	32.9	48.180	59.0	2.8	9.8	23.00	15,500
WQ32	100.6	45.0	101.1	32.00	40.50	19.75	25.75	3.1	2.50	8.3	34.3	52.325	63.0	2.8	11.7	22.25	19,200
WQ34	105.5	47.5	106.0	34.00	42.50	20.75	27.00	3.1	2.75	9.0	36.0	55.951	67.0	3.0	12.3	23.50	22,450
WQ36	114.0	49.0	114.5	36.00	44.50	21.50	29.50	3.1	2.75	9.0	37.5	61.132	71.0	3.0	12.8	24.50	26,500
WQ38	117.0	51.0	117.5	38.00	47.50	22.25	30.50	3.1	3.00	9.8	39.0	62.867	75.0	3.3	12.8	26.00	30,900
WQ40	121.5	53.0	122.0	40.00	49.50	23.25	32.00	3.1	3.00	9.8	40.8	64.867	79.0	3.3	12.8	27.75	36,600

UNIT SIZE	LOW SPEED SHAFT				HIGH SPEED SHAFT			
	U <sup>(1)</sup>	KEY	N	Y	R <sup>(1)</sup>	KEY	P	X
WQ28	9.000	2.500 x 2.500 x 12.3	15.0	34.3	3.375	.875 x .875 x 4.5	6.5	25.0
WQ30	9.500	2.500 x 2.500 x 12.5	15.8	35.5	3.625	.875 x .875 x 5.0	7.0	26.3
WQ32	10.500	2.500 x 2.500 x 13.5	17.0	38.3	3.625	.875 x .875 x 5.0	7.0	27.5
WQ34	11.500	3.000 x 3.000 x 14.3	18.0	40.3	3.625	.875 x .875 x 5.0	7.0	28.5
WQ36	12.500	3.000 x 3.000 x 15.0	19.0	43.0	3.875	1.000 x 1.000 x 5.5	8.0	30.5
WQ38	13.250	3.500 x 3.500 x 16.0	20.0	45.0	3.875	1.000 x 1.000 x 5.5	8.0	31.5
WQ40	14.000	3.500 x 3.500 x 17.0	21.0	47.0	3.875	1.000 x 1.000 x 5.5	8.0	33.0

<sup>(1)</sup> TOLERANCE = +.0000, -.0005 for diameters up to and including 2 inches; +.000, -.001 for dimensions above 2 inches.

<sup>(2)</sup> THIS DIMENSION will never be exceeded. When exact dimension is required, shims up to 1/16 inch may be necessary.

## STANDARD ASSEMBLY POSITIONS



Not to be used for construction unless both appropriate unit and supplemental dimensions are CERTIFIED.

CUSTOMER ORDER:	ITEM NO.:	S.O. NO.:	UNIT SIZE:	ASSEMBLY:
<input type="checkbox"/> PRELIMINARY	<input type="checkbox"/> CERTIFIED	BY:		DATE:

Type TDS  
Parallel Shaft Speed Reducers

**NOTES**

# Type TDS

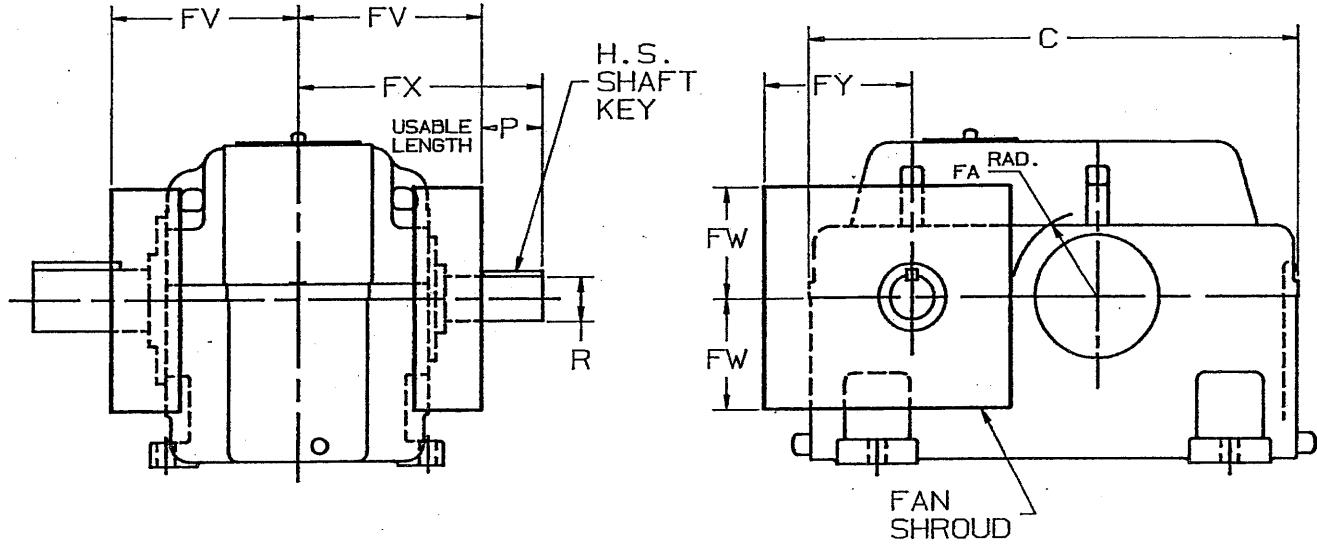
## Parallel Shaft Speed Reducers

### Fan Cooled

Section 320

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Dimensions



① H.S. SHAFT length is longer than standard on fan cooled unit to accomodate the fan and maintain usable shaft length

#### SINGLE REDUCTION

UNIT SIZE	C	FA	FV	FW	FY	P	FX <sup>①</sup>
7	27.7	3.0	8.3	4.3	11.1	4.0	12.3
8	34.8	3.0	9.5	5.0	15.1	4.3	13.8
9	34.8	4.3	9.5	5.0	14.1	4.8	14.3
11	35.3	3.9	11.5	8.0	10.0	5.5	17.0
12	37.7	5.1	12.5	8.0	10.3	6.5	19.0
13	49.1	5.2	15.5	8.0	19.4	6.6	21.7
15	44.2	5.5	14.0	9.5	11.6	7.3	21.3
16	57.3	6.2	17.5	9.5	21.1	7.4	25.2
18	51.2	8.6	15.3	9.5	13.0	8.0	23.3
20	55.7	10.7	15.8	9.5	13.4	8.5	24.3
22	61.0	11.3	16.9	11.0	14.9	9.0	26.0
25	69.5	12.9	17.9	12.0	16.8	10.0	18.0
28	78.5	13.9	19.1	12.0	19.5	11.0	30.1
30	83.5	14.9	20.4	12.0	20.5	12.0	32.5

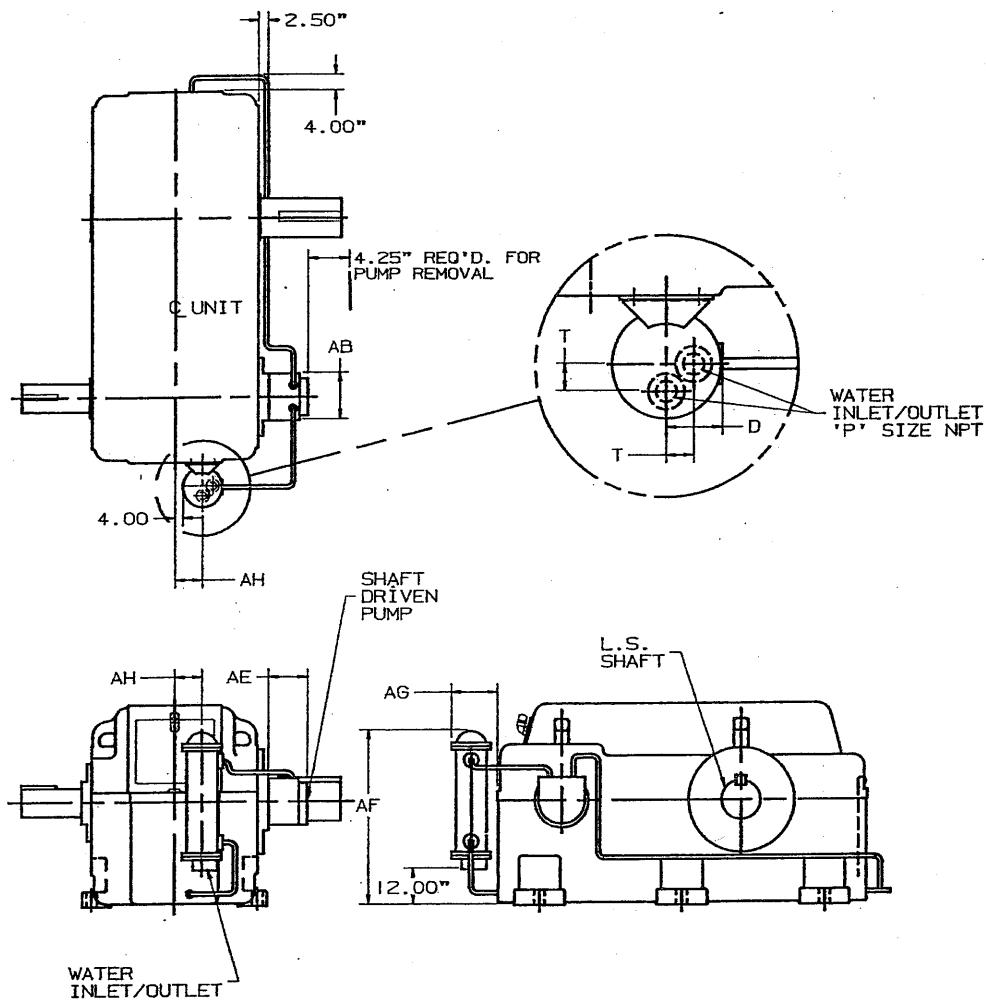
#### DOUBLE AND TRIPLE REDUCTION

UNIT SIZE	C	FA	FV	FW	FY	DOUBLE		TRIPLE	
						P	FX <sup>①</sup>	P	FX <sup>①</sup>
7	27.7	4.6	8.3	5.0	6.1	3.5	11.8	3.3	11.5
8	34.8	7.0	10.0	7.0	9.1	3.7	13.7	3.3	13.3
9	34.8	9.0	10.0	7.0	7.1	4.0	14.0	3.5	13.5
11	41.2	10.1	13.0	7.0	8.6	4.5	17.5	3.5	16.5
12	44.8	11.4	14.8	8.0	8.6	5.3	20.1	3.8	18.6
13	49.1	12.5	15.5	8.0	9.9	5.6	20.7	4.0	19.1
15	51.3	14.0	15.5	8.0	9.4	6.0	21.6	4.0	19.5
16	57.3	15.5	16.8	9.5	10.5	6.0	22.8	4.0	20.8
18	60.5	17.0	17.8	9.5	10.5	6.5	24.3	4.5	22.3
20	67.0	19.1	18.8	9.5	11.4	6.5	25.3	4.8	23.5
22	70.0	20.7	20.5	11.0	11.3	7.0	27.5	5.3	25.8
25	79.3	26.4	21.0	11.0	12.3	7.3	28.3	5.5	26.5
28	89.7	30.1	23.0	12.0	13.0	8.0	31.0	6.5	29.5
30	94.8	32.2	23.6	12.0	13.7	9.0	33.0	7.0	31.0
32	102.4	34.1	26.0	14.0	15.8	9.0	35.0	7.0	33.0
34	107.3	38.0	27.0	14.0	15.8	10.0	37.0	7.0	34.0
36	115.8	43.1	29.0	16.0	17.2	10.0	39.0	8.0	37.0
38	118.8	44.9	30.0	16.0	17.2	10.0	40.0	8.0	38.0
40	123.3	46.9	31.3	16.0	17.6	10.0	41.3	8.0	39.3

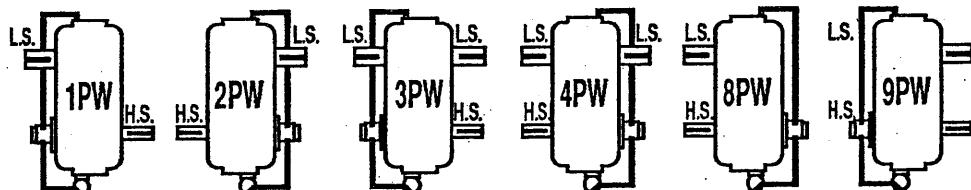
Not to be used for construction unless both appropriate unit and supplemental dimensions are CERTIFIED.

CUSTOMER ORDER:	ITEM NO.:	S.O. NO.:	UNIT SIZE:	ASSEMBLY:
<input type="checkbox"/> PRELIMINARY	<input type="checkbox"/> CERTIFIED	BY:		DATE:

# Type TDS Parallel Shaft Speed Reducers Water Cooled Units



UNIT SIZE	AB	AE	AF	AG	AH	D	T	P
1	5.2	2.8	39.9	7.1	7.0	3.13	1.25	0.75
2	5.2	2.8	39.9	5.6	6.3	2.31	1.00	0.75
3	6.6	3.4	52.8	8.0	7.4	3.44	1.69	1.00
4	6.6	3.4	40.8	8.0	7.4	3.44	1.69	1.00
5	6.5	4.1	65.1	9.1	7.9	4.06	2.00	1.50
6	6.5	4.1	52.8	8.0	7.4	3.44	1.69	1.00



Not to be used for construction unless both appropriate unit and supplemental dimensions are CERTIFIED.

CUSTOMER ORDER:	ITEM NO.:	S.O. NO.:	UNIT SIZE:	ASSEMBLY:
PRELIMINARY <input type="checkbox"/>	CERTIFIED <input type="checkbox"/>	BY:	DATE:	

# Type TDS

## Parallel Shaft Speed Reducers

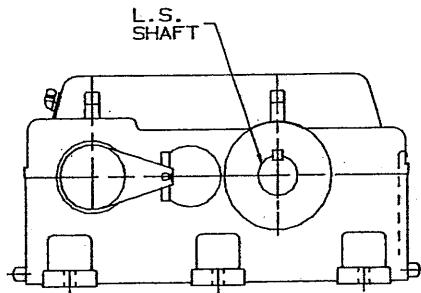
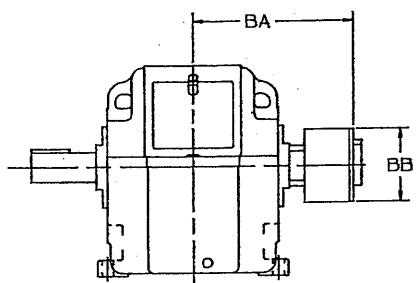
### Backstops

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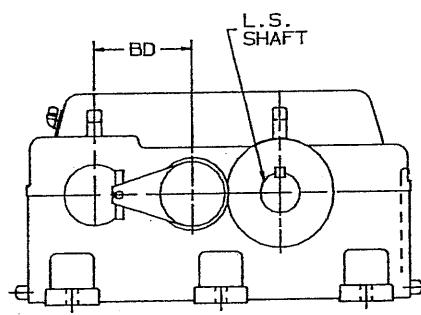
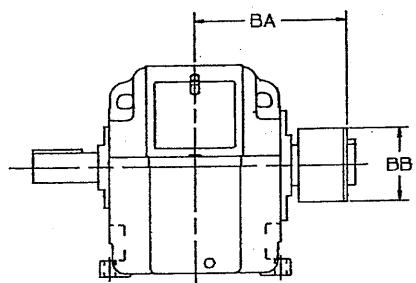
Dimensions

Size 7 thru 18



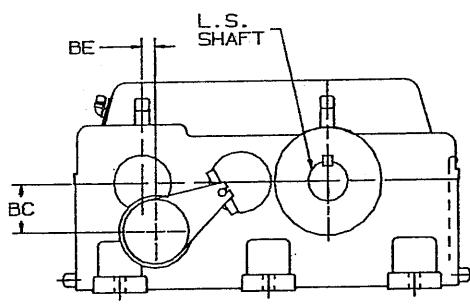
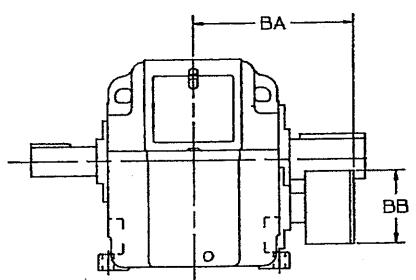
#### ASSEMBLY A

Backstop mounted on high speed shaft extension.  
(Double, Triple, Quadruple Reduction)



#### ASSEMBLY B

Backstop mounted on intermediate shaft extension.  
(Double Reduction)



#### ASSEMBLY C

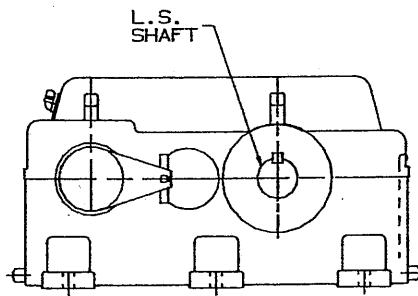
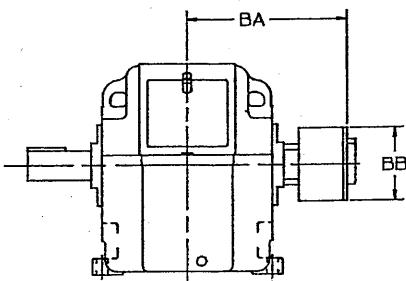
Backstop mounted on intermediate shaft extension.  
(Triple, Quadruple Reduction)

	BACKSTOP MODEL NUMBER							
TORQUE (x1000 IN. LBS.)	B20	B50	B80	B110	B120	B130	B150	
	3.6	12.0	26.4	48.0	81.6	138	216	
MAXIMUM RPM	2900	2650	2300	2000	1800	1400	1300	
BB DIMENSION	3.5	4.3	5.4	7.2	8.8	10.0	12.0	
UNIT	BC	BD	BE	BA DIMENSIONS				
7	3.7	1.6	5.0	12.3	14.0			
8	3.8	1.3	6.0	13.3	15.0			
9	4.7	1.8	7.0	13.3	15.0			
11	4.7	1.7	7.5	16.8	18.5	18.8		
12	5.6	2.1	8.5	17.8	19.5	19.8		
13	5.7	1.9	9.5	18.2	19.9	20.2		
15	5.7	1.9	9.5	18.6	20.3	20.6		
16	7.0	2.6	10.6	20.1	21.8	22.1	24.3	26.3
18	7.0	2.5	11.1	20.3	22.0	22.3	24.5	26.5

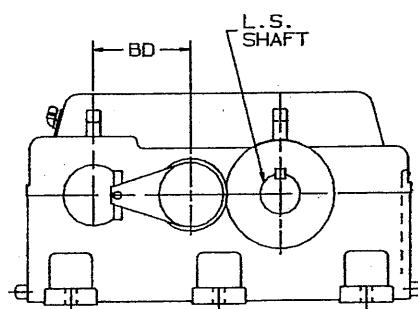
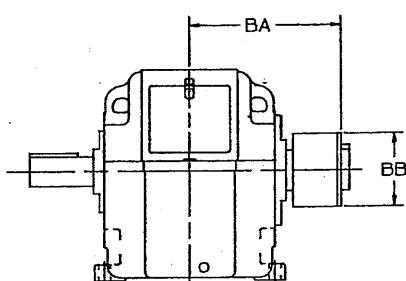
Not to be used for construction unless both appropriate unit and supplemental dimensions are CERTIFIED.

CUSTOMER ORDER:	ITEM NO.:	S.O. NO.:	UNIT SIZE:	ASSEMBLY:
PRELIMINARY <input type="checkbox"/>	CERTIFIED <input type="checkbox"/>	BY:		DATE:

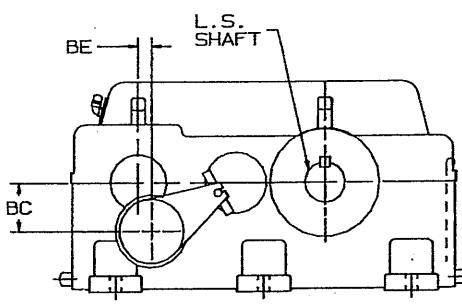
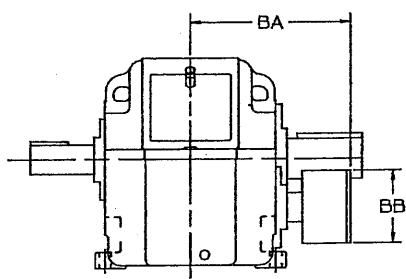
# Type TDS Parallel Shaft Speed Reducers Backstops



**ASSEMBLY A**  
Backstop mounted on  
high speed shaft  
extension.  
(Double, Triple,  
Quadruple Reduction)



**ASSEMBLY B**  
Backstop mounted on  
intermediate shaft  
extension.  
(Double Reduction)



**ASSEMBLY C**  
Backstop mounted on  
intermediate shaft  
extension.  
(Triple, Quadruple  
Reduction)

	BACKSTOP MODEL NUMBER							
TORQUE (x1000 IN. LBS.)	B20	B50	B80	B110	B120	B130	B150	
MAXIMUM RPM	2950	2650	2300	2000	1800	1400	1300	
BB DIMENSION	3.5	4.3	5.4	7.2	8.8	10.0	12.0	
UNIT	BC	BD	BE	BA DIMENSIONS				
20	8.0	3.0	12.3	21.3	23.0	23.3	25.5	27.5
22	8.0	3.0	12.3	22.6	24.3	24.6	26.8	28.8
25	9.0	3.0	15.0	23.1	24.8	25.1	27.3	29.3
28	10.6	3.4	18.1	24.8	26.5	26.8	29.0	31.0
30	10.6	3.4	18.1	25.6	27.3	27.6	29.8	31.8
32	11.7	3.8	20.2	26.8	28.5	28.8	31.0	33.0
34	12.8	4.2	21.8	27.8	29.5	29.8	32.0	34.0
36	14.3	4.5	24.9	28.8	30.5	30.8	33.0	35.0
38	14.3	4.5	24.9	29.8	31.5	31.8	34.0	36.0
40	14.3	4.5	24.9	30.8	32.5	32.8	35.0	37.0

Not to be used for construction unless both appropriate unit and supplemental dimensions are CERTIFIED.

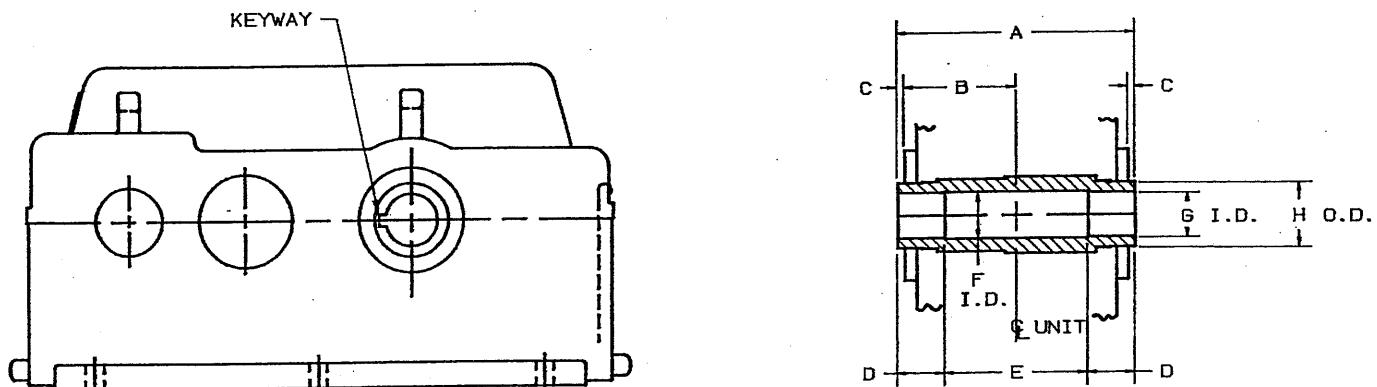
CUSTOMER ORDER:	ITEM NO.:	S.O. NO.:	UNIT SIZE:	ASSEMBLY:
PRELIMINARY <input type="checkbox"/>	CERTIFIED <input type="checkbox"/>	BY:	DATE:	

**Type TDS**  
**Parallel Shaft Speed Reducers**  
**Hollow Shaft Construction**

Section 320

Page 29

Dimensions



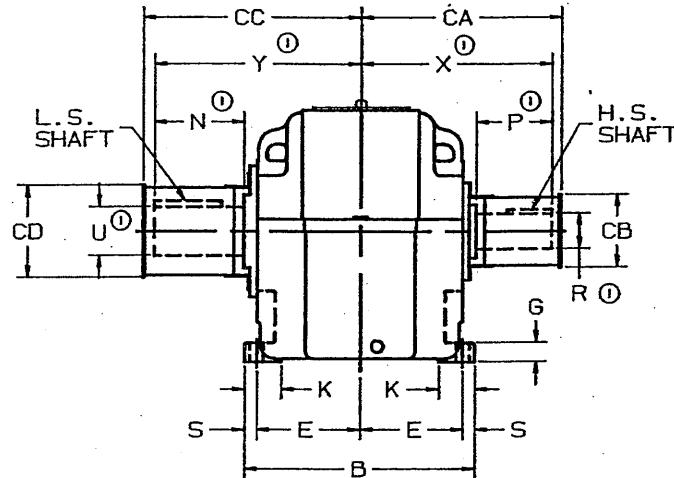
UNIT SIZE <sup>(1)</sup>	A	B	C	D	E	F	G	H	KEYS <sup>(2)</sup>
7	13.1	6.3	.25	3.3	6.50	3.125	2.875	4.250	.750 x .750 x 3.1
8	15.7	7.6	.25	3.9	7.90	3.625	3.375	5.000	.875 x .875 x 3.7
9	15.9	7.7	.25	4.0	7.90	4.125	3.875	5.750	1.000 x 1.000 x 3.8
11	21.9	10.7	.25	5.5	10.90	4.750	4.500	6.750	1.000 x 1.000 x 5.3
12	24.1	11.8	.25	6.0	12.10	5.000	4.750	7.000	1.250 x 1.250 x 5.8
13	24.9	12.2	.25	6.2	12.50	5.250	5.000	7.500	1.250 x 1.250 x 6.0
15	25.5	12.5	.25	6.4	12.70	5.500	5.250	8.000	1.250 x 1.250 x 6.2
16	29.0	14.0	.50	7.3	14.40	5.750	5.500	8.250	1.250 x 1.250 x 7.1
18	30.0	14.5	.50	7.5	15.00	6.250	6.000	9.000	1.500 x 1.500 x 7.3
20	31.4	15.2	.50	7.9	15.60	6.750	6.500	9.750	1.500 x 1.500 x 7.7
22	34.6	16.8	.50	8.6	17.40	7.250	7.000	10.500	1.750 x 1.750 x 8.4
25	35.6	17.3	.50	8.9	17.80	8.250	8.000	12.000	2.000 x 2.000 x 8.7
28	40.6	19.3	1.00	10.1	20.40	9.250	9.000	13.500	2.500 x 2.500 x 9.9
30	41.4	19.7	1.00	10.3	20.80	9.750	9.500	14.000	2.500 x 2.500 x 10.1
32	44.6	21.3	1.00	11.1	22.40	10.750	10.500	16.000	2.500 x 2.500 x 10.9
34	46.6	22.3	1.00	11.6	23.40	11.750	11.500	17.000	3.000 x 3.000 x 11.4
36	50.0	24.0	1.00	12.5	23.00	12.750	12.500	18.750	3.000 x 3.000 x 12.3
38	52.0	25.0	1.00	13.0	25.24	13.500	13.250	20.000	3.500 x 3.500 x 12.8
40	54.0	26.0	1.00	13.5	25.74	14.250	14.000	21.000	3.500 x 3.500 x 13.3

<sup>(1)</sup> Above dimensions for multiple reduction units only. For single reduction, please contact Nuttall Gear  
<sup>(2)</sup> 2 Keys Supplied

Not to be used for construction unless both appropriate unit and supplemental dimensions are CERTIFIED.

CUSTOMER ORDER:	ITEM NO.:	S.O. NO.:	UNIT SIZE:	ASSEMBLY:
<input type="checkbox"/> PRELIMINARY	<input type="checkbox"/> CERTIFIED	BY:	DATE:	

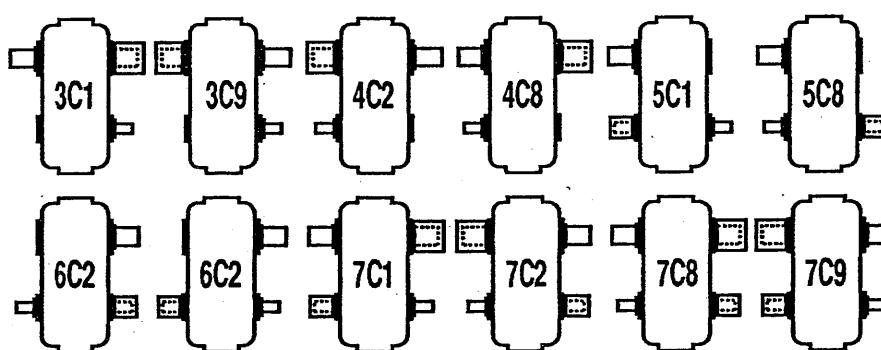
# Type TDS Parallel Shaft Speed Reducers Shaft Covers



UNIT SIZE	SINGLE REDUCTION				DOUBLE, TRIPLE, QUADRUPLE REDUCTION			
	CA	CB	CC	CD	CA	CB	CC	CD
7	11.3	3.87	11.5	5.20	9.8	2.62	11.5	5.12
8	12.0	5.12	13.8	6.62	11.0	3.38	13.9	6.62
9	12.5	5.12	14.5	6.62	11.3	3.38	14.5	6.62
11	15.5	5.62	16.8	7.12	15.3	3.87	18.8	7.12
12	17.0	6.62	19.6	8.12	17.0	4.62	21.5	8.62
13	19.5	7.12	21.5	8.62	18.3	5.00	21.6	8.62
15	18.5	7.12	21.4	8.62	18.5	5.00	23.3	8.62
16	22.2	8.62	23.7	10.62	20.1	5.62	23.8	10.62
18	20.5	8.62	24.1	10.62	20.8	5.62	26.9	10.62
20	21.0	8.62	26.0	12.12	21.8	5.62	28.4	12.12
22	22.0	8.62	27.0	12.12	23.5	6.62	30.5	12.12
25	24.0	10.62	29.3	12.62	24.8	7.12	32.8	12.62
28	24.0	10.62	28.6	13.25	25.8	8.12	35.0	14.62
30	26.0	11.62	30.5	13.62	28.7	8.62	36.0	11.12
32					28.7	8.62	38.5	12.12
34					31.1	9.12	40.5	12.12
36					32.5	9.62	43.5	13.12
38					33.5	10.12	45.5	14.12
40					33.5	10.12	47.5	15.12

① NOTE: For Dimensions N, P, U, R, X, Y see appropriate unit drawing.

STANDARD ASSEMBLY POSITIONS



Not to be used for construction unless both appropriate unit and supplemental dimensions are CERTIFIED.

CUSTOMER ORDER:	ITEM NO.:	S.O. NO.:	UNIT SIZE:	ASSEMBLY:
<input type="checkbox"/> PRELIMINARY	<input type="checkbox"/> CERTIFIED	BY:	DATE:	