

# TW Series Heavy Duty Worm Gear Units



**RENOLD**  
Superior Gear Technology

## TW Series - Product Features

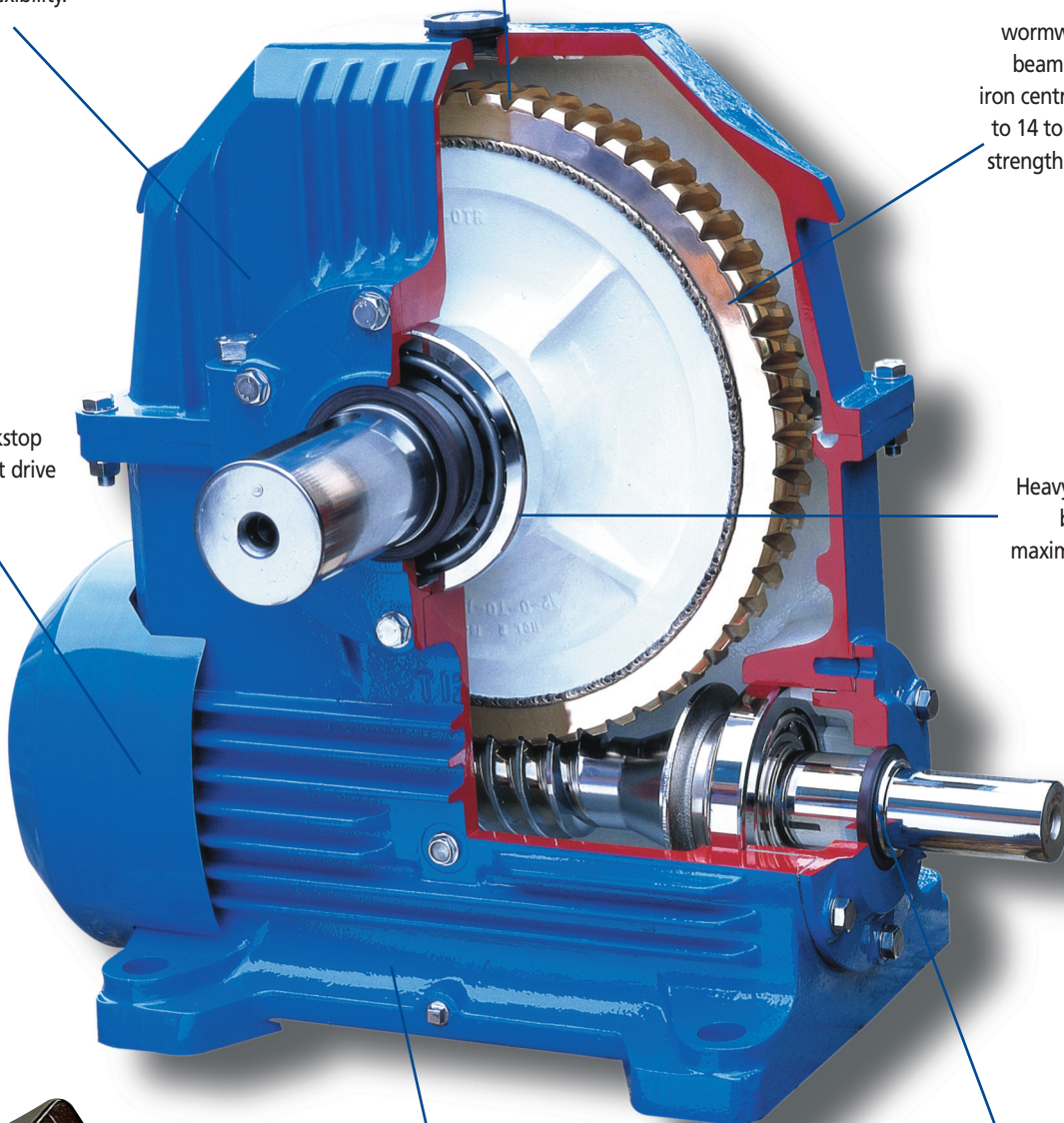
Wide range of gear unit type single and double reduction options for complete design flexibility.

Unique Holroyd tooth form for maximum torque capacity and optimum efficiency.

Phosphor bronze wormwheel rim electron beam welded onto cast iron centre on unit sizes up to 14 to ensure maximum strength under shock load conditions.

Sprag clutch backstop option to prevent drive reversals.

Heavy duty taper roller bearings fitted for maximum load capacity and long life.



Enhanced sealing available using a grease packed labyrinth system for use in hostile environments.

Two piece close grained cast iron gear case for strength and absorption of vibration for quiet running.



Section of electron beam welded wormwheel rim and centre showing the fusion of the bronze wormwheel rim onto the cast iron centre.

This high security fit allows transmission of power under shock load conditions.

### Applications

- Conveyors
- Mining
- Timber
- Materials Handling
- Packaging Machines
- Water Treatment
- Foundry Equipment
- General Industrial applications

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## ATEX Approval Details

### ATEX Approval

**RENOLD** Gears products for operating in potentially explosive atmospheres.

### General

- **RENOLD** Gears units are classified as ATEX Group II Category 2 equipment, which embodies sufficient safeguards to be suitable for use in potentially explosive atmospheres for normal operation and for operation during an expected malfunction.
- It is essential that there is sufficient lubricant to prevent the gears and bearings running 'dry'. Gear units should be inspected daily for signs of oil leakage, overheating or noisy operation.
- Gear units should be cleaned at regular intervals depending on the operating conditions, to ensure that dust coatings never exceed 5mm. Plastic parts should be wiped clean with a damp cloth.
- Oil leaks should be dealt with as quickly as practical. Compound joint faces and shims should be cleaned and thread-locking sealant should be applied to bolts and plugs prior to re-assembly.
- The temperature of any external surfaces must not exceed the

permitted maximum of 135°C (T4).

- Higher temperature class T3 is available dependant on unit mounting, ratio and gear type. For further details consult
- **RENOLD** rule, gear units should be mounted with their feet horizontal. For other mountings, particularly with shaft mounted units, consult **RENOLD** Gears.

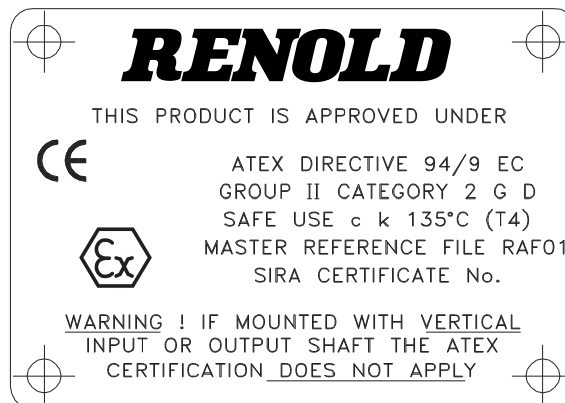
**RENOLD**

**WARNING: IF MOUNTING WITH VERTICAL INPUT OR OUTPUT SHAFTS, THE ATEX CERTIFICATION DOES NOT APPLY.**

### Unit Selection

- The gear unit selection procedures must include an additional reliability factor of 1.25 for mechanical ratings and 1.25 for thermal ratings.

### ATEX Nameplate



## TW Series - General Specification

The **RENOLD** range of TW Series heavy duty units is the result of continuing research and development, and enables significant increases in the power transmission and overhung load capabilities of each unit to be achieved.

Ten standard types of TW Series units are available with centre distances from 10" to 28" and with ratios ranging from 5:1 to 70:1 for single reduction units and from 75:1 to 4900:1 for double reduction units. All units incorporate metric taper roller bearings, and use the finest quality alloy steels for the wormshafts and centrifugally cast phosphor bronze rims for the wormwheels.

### Gear Case

The gear cases are of close grained cast iron with all joints and bearing bores accurately machined to ensure oil tightness and precise gear location.

### Wormshaft and Wormwheel

The worm is integral with its shaft and manufactured from alloy steel, casehardened on the threads, and ground and polished on the thread profiles.

The wormwheel rim is made from bronze complying with BS 1400 PB2-C (centrifugally cast) and secured to the cast iron centre by the electron beam welding process on the 10" - 14" sizes.

The Holroyd gear form used in the TW Series gear units corresponds to British Standard recommendations but, in addition has an exclusive feature which consists principally of an important modification to the worm threads and wheel teeth which confers additional valuable properties to gear performance. This ensures that our gears will run correctly and transmit true uniform angular velocity when running under all load conditions. The modification also gives a tapered oil entry gap between the teeth, which drags the lubricant between the surfaces and results in more efficient lubrication. Standard worm gears have right-hand threads but left-hand threads can be made to order.

### Shafts

Standard shaft extensions are to metric dimensions but imperial shaft extensions for units complying with BS3027: 1968 or to suit the requirements of the North American market are also available. The wheelshaft is produced in carbon steel but, if required by applicational conditions, can be made from high tensile steel. Double extension wormshafts or wheelshafts are also available on request, as well as special shaft extensions.

### Bearings

Standard metric taper roller bearings are fitted throughout in the 10", 12" and 14" units, with a face to face arrangement on both the worm and the wheeline to impart the maximum possible stiffness. A similar arrangement is used on the wheeline of the larger sized gear boxes, but on the wormline, a matched set of taper roller bearings is installed at one end to accommodate radial and thrust forces, with a deep groove ball bearing at the opposite end accommodating radial forces only. This bearing is free to move axially in the casing, to allow for expansion of the wormshaft. Where necessary an optional higher capacity bearing arrangement can be specified for the wheeline which considerably increases the overhung load or thrust capacity.

### Oil Seals

Viton oil seals are fitted as standard on all TW Series gear units.

### Lubrication

Gear and bearings are positively lubricated by oil from the sump in the underdriven and overdriven versions at normal motor speeds. With the vertical and agitator types, grease lubrication is necessary to the wheeline bearings.

For lower speeds it may be necessary to consider grease lubrication of certain bearings, and in this instance it is advisable to consult with Renold Engineers. Full lubrication details can be found under the "Installation & Maintenance" section.

### Cooling

Maximum heat dissipation by air cooling is carried out by a radial fan directing air over the ribbed gear case. Where applicational circumstances permit, standard units can be supplied without a fan.

### Backstop

A Sprag Clutch Backstop can be fitted internally to certain units when required, or alternatively an externally mounted backstop with manual tension release is available.

To select a worm gear unit the following basic information must be known and, if we are to make the selection, should be submitted in full to our Technical Sales Department.

### Power

- Prime mover, type and output power (kW).
- Gear unit input and output power required (kW).
- For input speeds below 250 rev/min consult our Technical Sales Department giving details of required output torque (Nm) and diameter of driven shaft (mm).

### Speed

Gear unit input and output rev/min.

### Duty

- The characteristics of the drive eg. degree of impulsiveness of the driven load.
- Duration of service in hours/day.
- Starting load (kW) and number of starts per day.
- For intermittent duty, reversing or shock loading, state normal power (kW) and frequency.
- Disposition and details of external loads imposed on input/output shafts.
- Working conditions, i.e. clean, dusty, moist, abnormal temperatures etc.  
If the operating conditions are in any way unusual it is advisable to consult our Technical Sales Department.

### Enquiry/Ordering Procedure

At the order or enquiry stage, please quote the catalogue reference, shaft assembly number and nominal ratio or exact ratio if this important (see tables). Non standard mounting positions should be indicated with a sketch. Where a double extension wormwheel shaft is required, please state any special requirements regarding alignment of 3 keyways.

### Mechanical Rating

The mechanical powers listed are those which the TW Series class units will transmit for 10 hours each day and correspond to a service factor of 1.0. Where non-uniform loading or a working day other than 10 hours is involved, a service factor  $f_D$  should be applied to the selection power or torque which is taken from table 2. High numbers

of starts per hour also influence the mechanical selection. Table 3 shows the start factor  $f_s$  which should also be applied to the selection power or torque. For guidance a comprehensive list of the various load conditions for a number of applications is given in Table 1. When confirming the mechanical selection powers therefore, the rating must be equal to or greater than calculated power or torque demand  $\times$  application service factor  $f_D$  (table 1 and table 2)  $\times$  starts factor  $f_s$  (table 3)

### Efficiencies

The efficiency figures are approximate only and are those that could be expected from a gearbox which is fully run-in and operating under full load with the lubricant at its full working temperature.  
For intermittent rating where the lubricant may remain comparatively cool, the efficiency may be somewhat lower due to the increased oil churning losses associated with the higher viscosity of the cool oil. We shall be pleased to advise on any particular application.

### Thermal Rating

The thermal ratings given are those which the gear units will transmit at an ambient temperature of 20°C, when the heat generated within the gearbox is being dissipated at the same rate. Whilst these ratings can be exceeded under start up conditions, this situation could lead to overheating and subsequent damage if continuously applied.  
Thermal torque ratings do not relate to mechanical gear life and are not affected by running time or momentary shock loads. If the ambient temperature is likely to exceed 20°C, this situation will have to be taken into account in the selection procedure. This is done by applying the thermal service factor given in table 4 when calculating the selection output torque.  
E.g. Thermal selection torque = continuous torque requirement  $\times$  thermal service factor  $f_T$ . Where intermittent running is involved it is possible the thermal limitation can be ignored, such as on a crane or winch application, and when this type of operation is being considered full applicational details should be given to Renold for assessment.

### Selection Procedure

The ratings tables for the single reduction wormgear units provide mechanical ratings

in terms of input and output power in kW and mechanical and thermal output torque ratings in Newton Meters.

Tables 1 and 2 list the service factors relative to the operational hours each working day and the load classification with regard to the nature of the service. When determining the selection, power absorbed and not the rating of the prime mover should be used.

The procedure is as follows for single reduction units:-

- Establish the ratio required by dividing the input speed by the output, choosing the nearest nominal ratio available from tables 7 and 8.

$$\text{Gear ratio} = \frac{\text{Input speed rev/min}}{\text{Output speed rev/min}}$$

- Determine the load classification from table 1 and the corresponding mechanical service factor  $f_D$ , from table 2 and the starts factor  $f_s$  from table 3.
- Multiply the actual power absorbed by the mechanical service factor  $f_D$  and carefully select the size of unit by comparing this against the mechanical rating appropriate to the ratio and input speed.  
Selection Output Torque = actual output torque  $\times f_D \times f_s$   
or  
Selection Output Torque =  $\frac{\text{absorbed power} \times 9550 \times f_D \times f_s}{\text{output speed (rev/min)}}$

- For continuous operation check that the thermal rating is at least equal to the thermal torque requirement.  
External cooling can be offered to increase thermal rate.  
Thermal torque requirement = continuous torque  $\times$  thermal service factor  $f_T$  from table 4.

- Check the capability of the unit to withstand external loads applied to the output shaft, see tables 5 and 6.

For the selection of units from the double reduction range, the thermal rating is ignored since at the speeds involved only the mechanical rating needs to be considered.

## TW - Series - Selection Examples

Mechanical Selection Torque	Nm =	Actual Torque (Nm) Requirement	X	Mechanical Service (fd) Factor	X	Starts (fs) Factors
Thermal Selection Torque	Nm =	Actual Torque (Nm) Requirement	X	Thermal Service (fr) Factor		
Mechanical Selection Power	(kW) =	Actual Power (kW) Requirement	X	Mechanical Service (fd) Factor	X	Starts (fs) Factor
Thermal Selection Power	(kW) =	Actual Power (kW) Requirement	X	Thermal Service (fr) Factor		

6. The selection for this application would be TW14 unit at 30/1 ratio using synthetic oil. Mechanical power rating = 96 kW. Thermal power rating = 81 kW. If mineral oil had to be used the selection would increase to a TW17 unit.

### Example 3

A gear unit is required to raise and lower sluice gate 4/5 times each day. The torque required is 30,000 Nm at a speed of 1.5rpm. The electric motor speed is 906 rpm. A selection of both unit and motor power is required.

$$1. \text{ Gear ratio } = \frac{960}{1.5} = 640/1$$

The nearest standard ratio from table 8 is: 750/1.

2. As this unit is a double reduction type - The thermal ratings are ignored.

$$\text{Mechanical Service Factor (fd)} = 1.0$$

$$3. \text{ Starts Factor (fs)} = 1.0$$

$$4. \text{ Mechanical Selection (Nm) Torque} = \text{Actual Torque} \times (\text{fd}) \times (\text{fs}) = 30,000 \times 1 \times 1 = 30,000 \text{ Nm.}$$

5. A TWDU14 double reduction unit selection for this application having a mechanical rating of 34,000 Nm.

6. The efficiency of this unit is listed at 63%, the input or motor power required to develop 30,000 Nm output:-

$$= \frac{\text{Actual torque} \times \text{input RPM} \times 100}{9500 \times \text{efficiency} \times \text{ratio}} = \frac{30,000 \times 960 \times 100}{9500 \times 63 \times 750} = 6.38 \text{ kW.}$$

The normal power of the required motor will be 7.5kW.

It can be seen from the ratings tables on pages 12 - 27 that both mineral and synthetic oil ratings are included. Depending upon which type of oil is to be used inside the gear unit will determine which ratings are used to make a selection.

### Example 1

A right angled underdriven wormgear unit is required to drive a steady load conveyor operating for 24 hours per day under ambient temperature conditions of 20°C. Stops/starts will not exceed 5 per hour. The electric motor speed is 1440 rpm and the conveyor headshaft torque is 13,800 Nm at 30 rpm.

$$1. \text{ Gear Ratio} = \frac{1440}{30} = 48/1$$

The nearest standard ratio is 50/1.

$$2. \text{ Mechanical Service (fd) Factor} = 1.25$$

$$3. \text{ Starts Factor (fs)} = 1.0$$

$$4. \text{ Thermal Service (ft) Factor} = 1.0$$

$$5. \text{ Mechanical Selection (Nm) Torque} = \text{Actual (Nm) Torque} \times (\text{fd}) \times (\text{fs}) = 13,800 \times 1.25 \times 1 = 17,250 \text{ Nm.}$$

$$6. \text{ Thermal Selection Torque (Nm)} = \text{Actual (Nm) Torque} \times (\text{ft}) = 13,800 \times 1 = 13,800 \text{ Nm.}$$

7. TWU17 unit is selected using 50/1 ratio.

Using mineral oil.

The mechanical torque rating is 23825 Nm and thermal rating is 16,176 Nm. However by using synthetic oil to lubricate the unit the selection would change to: TWU14 at 50/1 ratio. Using synthetic oil.

### Example 2

A wormgear unit is required to drive an ore crusher in a mining complex. The duty is 16 hours per day continuous duty, maximum temperatures 30°C. The limit ratio is 30/1 and the prime mover is an electric motor of 45kW at 1440 rpm (1500 rpm).

$$1. \text{ Mechanical Service (fd) Factor} = 2.0$$

$$2. \text{ Starts Factor (fs)} = 1.0$$

$$3. \text{ Thermal Service (fr) Factor} = 1.16$$

$$4. \text{ Mechanical Selection (kW) Power} = \text{Actual (kW) Power} \times (\text{fd}) \times (\text{fs}) = 45 \times 2.0 \times 1 = 90 \text{ kW.}$$

$$5. \text{ Thermal Selection (kW) Power} = \text{Actual (kW) Power} \times (\text{fr}) = 45 \times 1.16 = 52.2 \text{ kW.}$$

## TW Series - Load Classification by Application

Table 1

Agitators		Sugar (1)	M	Medium duty	M	Individual drives	H	single acting: 1 or 2 cylinders	*
Pure liquids	S	Dredges	M	Skip hoist	M	Reversing	*	double acting: single cylinder	*
Liquids and solids	M	Cable reels	M	Laundry	M	Wire drawing and flattening machine	M	Rotary - gear type	S
Liquids-variable density	M	Conveyors	M	Washers - reversing	M	Wire winding machine	M	Rotary - lobe, vane	S
Blowers	H	Cutter head drives	H	Tumblers	M	Mills, rotary type	M	Rubber and plastics industries	
Centrifugal	S	Jig drives	H	Line shafts	H	Ball (1)	M	Crackers (1)	H
Lobe	M	Manoeuvring winches	M	Driving processing equipment	M	Cement kilns (1)	M	Laboratory equipment	M
Vane	S	Pumps	M	Light	M	Dryers and coolers (1)	M	Mixed mills (1)	H
Brewing and Distilling	S	Screen drive	H	Other line shafts	S	Kilns other than cement	M	Refiners (1)	M
Bottling machinery	S	Stackers	M	Lumber industry	M	Pebble (1)	M	Rubber calenders (1)	M
Brew kettles-continuous duty	S	Utility winches	M	Barkers, hydraulic, mechanical	M	Rod, plain & wedge bar (1)	M	Rubber mill, 2 on line (1)	M
Cookers-continuous duty	S	Dry dock cranes	S	Burner conveyor	M	Tumbling barrels	H	Rubber mill, 3 on line (1)	S
Mash tubs-continuous duty	S	Main hoist	(2)	Chain saw and drag saw	H	Mixers	H	Sheeter (1)	M
Scale hopper-frequent starts	M	Auxiliary hoist	(2)	Chain transfer	H	Concrete mixers continuous	M	Tyre building machines	*
Can filling machines	S	Boom, luffing	(2)	Crane/way transfer	H	Concrete mixers intermittent	M	Tyre and tube press openers	*
Cane knives (1)	M	Rotating, swing or slew	(3)	De-barking drum	H	Constant density	S	Tubers and strainers (1)	M
Car dumpers	H	Tracking, drive wheels	(4)	Edger feed	M	Variable density	M	Warming mills (1)	M
Car pullers	M	Elevators		Gang feed	M	Oil industry	M	Sand muller	M
Classifiers	S	Bucket - uniform load	S	Green chain	M	Chillers	M	Screens	S
Classifiers	M	Bucket - heavy load	M	Live rolls	H	Oil well pumping	*	Air washing	S
Clay working machinery	S	Bucket - continuous	S	Log deck	H	Paraffin filter press	M	Rotary, stone or gravel	M
Brick press	H	Centrifugal discharge	S	Log haul-implode	H	Rotary kilns	M	Travelling water intake	S
Briquette machine	H	Escalators	S	Log haul-well type	H	Paper mills	H	Sewage disposal equipment	S
Clay working machinery	M	Freight	M	Log turning device	H	Agitators (mixers)	M	Bar screens	S
Pug mill	M	Gravity discharge	S	Main log conveyor	M	Barker-auxiliaries hydraulic	M	Chemical feeders	S
Compressors	S	Man lifts	*	Off bearing rolls	M	Barker-mechanical	H	Collectors	S
Centrifugal	S	Passenger	*	Planer feed rolls	M	Barking drum	H	Dewatering screws	M
Lobe	M	Extruders (plastic)	S	Planer floor chains	M	Beater and pulper	M	Scum breakers	M
Reciprocating - multi-cylinder	M	Film	S	Planer tilting hoist	M	Bleacher	S	Slow or rapid mixers	M
Reciprocating - single cylinder	H	Sheet	S	Re-saw merry-go-round conveyor	M	Calenders	M	Thickeners	M
Conveyors - uniformly loaded or fed	S	Coating	S	Roll cases	H	Calenders-super	H	Vacuum filters	M
Apron	S	Rods	S	Slab conveyor	M	Converting machine except	M	Slab pushers	M
Assembly	S	Tubing	S	Small waste conveyor-belt	S	cutters, platers	M	Steering gear	*
Belt	S	Blow moulders	M	Small waste conveyor-chain	M	Conveyors	S	Stokers	S
Bucket	S	Pre-plasticisers	M	Sorting table	M	Couch	M	Sugar industry	M
Chain	S	Fans	S	Tipple hoist conveyor	M	Cutters, platers	H	Cane knives (1)	M
Flight	S	Centrifugal	S	Tipple hoist drive	M	Cylinders	M	Crushers (1)	M
Oven	S	Cooling towers	M	Transfer conveyors	M	Dryers	M	Mills (1)	M
Screw	S	Induced draft	*	Transfer rolls	M	Fell stretcher	M	Textile industry	M
Conveyors - heavy duty	M	Forced draft	*	Tray drive	M	Fell whipper	H	Batchers	M
not uniformly fed	M	Induced draft	M	Trimmer feed	M	Jordans	M	Calenders	M
Apron	M	Large, mine etc.	M	Waste conveyor	M	Log haul	H	Cards	M
Assembly	M	Large, industrial	M	Machine tools	M	Presses	M	Dry cans	M
Belt	M	Light, small diameter	S	Bending roll	M	Pulp machine reel	M	Dryers	M
Bucket	M	Feeders	M	Punch press-gear driven	H	Stock chest	M	Dyeing machinery	M
Chain	M	Apron	M	Nothing press-belt drive	*	Suction roll	M	Looms	M
Flight	M	Belt	M	Plate planners	H	Washers and thickeners	M	Mangles	M
Live roll	*	Disc	S	Tapping machine	H	Winders	M	Nappers	M
Oven	M	Reciprocating	H	Other machine tools	M	Printing presses	*	Pads	M
Reciprocating	H	Screw	M	Main drives	M	Pullers	M	Range drives	M
Screw	M	Food industry	M	Auxiliary drives	S	Barge haul	H	Slashers	M
Shaker	H	Beef slicer	M	Metal mills	S	Pumps	M	Soapers	M
Crane Drives - not dry dock	S	Cereal cooker	S	Drawn bench carriage	M	Centrifugal	S	Spinners	M
Main hoists	S	Dough mixer	M	and main drive	M	Proportioning	M	Tenter frames	M
Bridge travel	*	Meat grinder	M	Pinch, dryer and scrubber	M	Reciprocating	M	Washers	M
Trolley travel	*	Generators - not welding	S	rolls, reversing	*	single acting;		Winders	M
Crushers	H	Hammer mills	H	Slitters	M	3 or more cylinders	M	Windlass	*
Ore	H	Hoists	H	Table conveyors non-		double acting:			
Stone	H	Heavy duty	H	reversing group drives		2 or more cylinders			

### Service Factors

Table 2 (Service Factor  $f_D$ )

Prime mover (Drive input)	Driven machinery characteristics			
	Duration Service	Steady load	Medium impulsive	Highly impulsive
Electric, Air & Hydraulic Motors or Steam Turbine (Steady input)	Intermittent - 3hrs/day max	0.90	1.00	1.50
	3 - 10 over 10	1.00	1.25	1.75
		1.25	1.50	2.00
Multi-cylinder I.C. engine (Medium impulsive input)	Intermittent - 3hrs/day max	1.00	1.25	1.75
	3 - 10 over 10	1.25	1.50	2.00
		1.50	1.75	2.25
Single-cylinder I.C. engine (Highly)	Intermittent - 3hrs/day max	1.25	1.50	2.00
	3 - 10 over 10	1.50	1.75	2.25
		1.75	2.00	2.50

Table 3 Factor for Starts/Hours ( $f_S$ )

Maximum number of starts per hour	5	50	100	300
Starts Factor $f_S$	1.0	1.1	1.15	1.2

S = Steady

M = Medium Impulsive

H = Highly Impulsive

\* = Refer to Renold

(1) = Select on 24 hours per day service factor only.

(2) = Use service factor of 1.00 for any duration of service.

(3) = Use service factor of 1.25 for any duration of service.

(4) = Use service factor of 1.50 for any duration of service.

### Note

Machinery characteristics and service factors listed in this catalogue are a guide only. Some applications (e.g. constant power) may require special considerations. Consult Renold Gears.



**IMPORTANT**

Units to ATEX approval must be selected with a minimum service factor of 1.25.

Table 4 Thermal Service Factor  $f_T$

Ambient °C	10	20	30	40	50	60
Temp °F	50	68	86	105	122	140
Factor $f_T$	0.87	1.0	1.16	1.35	1.62	1.97



## TW Series - Overhung and Thrust Loads

Output shafts of worm gear units are frequently fitted with a spur pinion, chain pinion or belt pulley causing an overhung load to be imposed on the output shaft and bearings. These loads can generally be sustained by the gear unit; however, if the load is greater than the maximum allowable load for the unit, it may be necessary either to select a larger unit or to lessen the effect of the load on the shaft bearings. This can be done in two ways. The pinion can be mounted on a shaft in its own bearings and the shaft coupled to the gear unit; or the wheel shaft may be extended beyond the overhung load and fitted with an outboard bearing. In order to obtain the best possible arrangement for a particular application (where large over hung loads are anticipated) customers are advised to submit details of the load to our Sales Technical Staff for their consideration.

In the interests of good design, the overhung member should be fitted as close as possible to the gear case in order to minimise the stresses and reduce the deflecting moment on the unit.

The maximum imposed axial thrust and overhung loads to which the units can be subjected are given in tables 5 and 6.

Imposed axial thrust loads can also be minimised by the use of flexible couplings on the input and output shafts.

For drives where both imposed thrust and overhung loads are encountered, it is advisable to consult our Technical Sales Staff.

Where a double extension shaft is fitted, the maximum overhung loads listed apply in full to each shaft extension.

The overhung load may be calculated by the following formula:

$$\frac{9.55P \times 10^6 \times F \text{ (Newtons)}}{R \times S}$$

Where P = Power absorbed at output shaft (kW)

S = Speed of output shaft in rev/min

R = Pitch circle radius of chain pinion, spur or helical gear, or belt pulley in mm.

F = Overhung drive application factor as follows:

Chain pinion 1.00

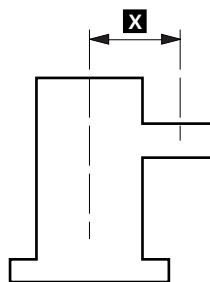
Spur or helical gear 1.25

Vee pulley 1.50

Flat belt pulley 2.00

The overhung load capacities listed in table 5 assume the load is applied mid-way along the output shaft extension, the relevant dimension from the centre line of the unit being as given below.

Unit Size	Dimension X
10	265
12	295
14	355
17	415
20	510
24	565
28	645



## TW Series - Overhung and Thrust Capacities

**TABLE 5: OUTPUT SHAFT OVERHUNG LOAD CAPACITIES FOR TWU, TWO AND TWV IN NEWTONS**

At 1450 rev/min input speed

Centre Distance

Ratio	Output Speed	10	12	14	17	20	24	28
5	290	37300	40600	45200	59100	81700	122700	161800
10	145	44900	48600	53600	69000	93600	141400	187000
15	95	53300	57800	63500	82700	113100	164000	215100
20	73	62300	67200	72400	94000	126400	184900	240700
25	58	66500	72900	80900	104400	138900	203700	262100
30	48	70900	77800	87500	112200	150700	220200	284300
40	36	78700	89000	97400	127100	168800	245500	312700
50	29	79100	91700	99100	138000	184600	267600	315700
60	24	79100	91700	99600	147100	197000	269100	316600
70	21	79700	92800	101000	147900	198000	271700	371400

At 960 rev/min input speed

Centre Distance

Ratio	Output Speed	10	12	14	17	20	24	28
5	192	41900	45600	50100	64900	90100	134800	176800
10	96	50800	55200	60500	77500	105300	157300	206400
15	64	60300	65800	71900	93000	127400	183800	239400
20	48	70500	76300	82000	105600	142800	207700	269100
25	38	75200	82700	91500	117400	157100	229400	294000
30	32	77800	88300	97000	126500	170400	248100	309200
40	24	78800	91400	97600	143300	190900	264700	310300
50	19	79100	92000	99300	145900	194500	268300	313600
60	16	79200	92100	99800	146700	196800	268300	314700
70	14	79800	93000	101000	148500	197800	270800	315700

For ratios not included above consult Renold.

The double reduction worm versions of the above will also accept overhung loads and when these are involved send applicational details to our technical department.

The loads listed apply to the standard bearing fitment. Higher loads are available which, when used in conjunction with a high tensile steel shaft, can allow an increase in the values given. When a load has to be supported which is in excess of the value listed, send full applicational details to our technical department.

**Table 6: OUTPUT SHAFT THRUST LOAD CAPACITIES FOR TWU, TWO AND TWV IN NEWTONS.**

At 1450 and 960 rev/min input speed Centre Distance

Ratio	10	12	14	17	20
5	36280	34930	37700	46890	80480
10	49370	52060	54210	65280	107530
15	62020	66000	66000	81650	140000
20	65000	66000	66000	94500	140000
25	65000	66000	66000	94500	140000
30	65000	66000	66000	94500	140000
40	65000	66000	66000	94500	140000
50	65000	66000	66000	94500	140000
60	65000	66000	66000	94500	140000
70	65000	66000	66000	94500	140000

Allowable thrust loads for unit sizes 24 and 28 will be supplied upon receipt of information relative to a specific application.

## TW Series - Exact Ratios

TABLE 7: NOMINAL AND EXACT REDUCTION RATIOS: SINGLE REDUCTION.

Ratio Nominal Ratio	10	12	14	17	20	24	28
	Exact Ratio						
5	41/8	46/9	51/10	51/10	56/11	61/12	61/12
7.5	44/6	44/6	52/7	52/7	52/7	59/8	59/8
10	39/4	39/4	49/5	49/5	49/5	59/6	59/6
12.5	49/4	49/4	49/4	49/4	49/4	62/5	62/5
15	44/3	44/3	59/4	59/4	59/4	59/4	59/4
20	41/2	41/2	59/3	59/3	59/3	59/3	59/3
25	49/2	49/2	49/2	49/2	49/2	74/3	74/3
30	59/2	59/2	59/2	59/2	59/2	59/2	59/2
35	69/2	69/2	69/2	69/2	69/2	69/2	69/2
40	40/1	40/1	79/2	79/2	79/2	79/2	79/2
45	45/1	45/1	45/1	45/1	45/1	89/2	89/2
50	50/1	50/1	50/1	50/1	50/1	50/1	50/1
60	60/1	60/1	60/1	60/1	60/1	60/1	60/1

TABLE 8: NOMINAL AND EXACT REDUCTION RATIOS: DOUBLE REDUCTION.

Ratio Nominal Ratio	10	12	14	17	20	24	28
	Exact Ratio and Ratio Combinations						
75	31/6 X 44/3 = 76/1	41/8 X 44/3 = 75/1	41/8 X 59/4 = 76/1	41/8 X 59/4 = 76/1	41/8 X 59/4 = 76/1	46/9 X 59/4 = 75/1	51/8 X 59/4 = 75/1
150	29/3 X 44/3 = 142/1	39/4 X 44/3 = 143/1	41/8 X 59/2 = 151/1	39/4 X 59/4 = 143/1	39/4 X 59/4 = 143/1	46/9 X 59/2 = 151/1	51/10 X 59/2 = 150/1
250	29/3 X 49/2 = 237/1	39/4 X 49/2 = 239/1	39/4 X 49/2 = 239/1	39/4 X 49/2 = 239/1	39/4 X 49/2 = 239/1	39/4 X 74/3 = 241/1	49/5 X 74/3 = 241/1
300	31/2 X 41/2 = 317/1	44/3 X 41/2 = 301/1	44/3 X 59/3 = 288/1	39/4 X 59/2 = 287/1	44/3 X 59/3 = 288/1	44/3 X 59/3 = 288/1	59/4 X 59/3 = 290/1
500	41/2 X 49/2 = 502/1	41/2 X 49/2 = 502/1	49/2 X 59/3 = 482/1	49/2 X 59/3 = 482/1	49/2 X 59/3 = 482/1	49/2 X 59/3 = 482/1	49/2 X 59/3 = 482/1
750	30/1 X 49/2 = 735/1	30/1 X 49/2 = 735/1	59/2 X 49/2 = 723/1	49/2 X 59/2 = 723/1	59/2 X 49/2 = 723/1	49/2 X 59/2 = 723/1	59/2 X 74/3 = 727/1
1000	40/1 X 49/2 = 980/1	40/1 X 49/2 = 980/1	40/1 X 49/2 = 980/1	40/1 X 49/2 = 980/1	40/1 X 49/2 = 980/1	40/1 X 74/3 = 986/1	79/2 X 74/3 = 974/1
1500	50/1 X 59/2 = 1475/1	50/1 X 59/2 = 1475/1	50/1 X 59/2 = 1475/1	50/1 X 59/2 = 1475/1	50/1 X 59/2 = 1475/1	50/1 X 59/2 = 1475/1	50/1 X 59/2 = 1475/1
2000	40/1 X 50/1 = 2000/1	40/1 X 50/1 = 2000/1	40/1 X 50/1 = 2000/1	40/1 X 50/1 = 2000/1	40/1 X 50/1 = 2000/1	40/1 X 50/1 = 2000/1	79/2 X 50/1 = 1975/1
2500	50/1 X 50/1 = 2500/1	50/1 X 50/1 = 2500/1	50/1 X 50/1 = 2500/1	50/1 X 50/1 = 2500/1	50/1 X 50/1 = 2500/1	50/1 X 50/1 = 2500/1	50/1 X 50/1 = 2500/1
3000	50/1 X 60/1 = 3000/1	50/1 X 60/1 = 3000/1	50/1 X 60/1 = 3000/1	50/1 X 60/1 = 3000/1	50/1 X 60/1 = 3000/1	50/1 X 60/1 = 3000/1	50/1 X 60/1 = 3000/1
4200	60/1 X 70/1 = 4200/1	60/1 X 70/1 = 4200/1	60/1 X 70/1 = 4200/1	60/1 X 70/1 = 4200/1	60/1 X 70/1 = 4200/1	60/1 X 70/1 = 4200/1	60/1 X 70/1 = 4200/1
4900	70/1 X 70/1 = 4900/1	70/1 X 70/1 = 4900/1	70/1 X 70/1 = 4900/1	70/1 X 70/1 = 4900/1	70/1 X 70/1 = 4900/1	70/1 X 70/1 = 4900/1	70/1 X 70/1 = 4900/1

It is possible to obtain ratios between those shown above - consult the technical sales department, at Renold Gears.

## TW Series - Single Reduction - Selection Data

Mineral and Synthetic Oils

Nominal ratio: 5/1 Preferred Ratio Unit Sizes 10", 12", 14".


Input rpm	Output rpm	Gear Ratings	Centre Distance													
			10"		12"		14"		17"		20"		24"		28"	
			Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn
1800	360	Input kW, Thermal	94	<b>112</b>	134	<b>160</b>	175	<b>210</b>	229	<b>275</b>	317	<b>380</b>	381	<b>457</b>	426	<b>510</b>
		Output Torque Nm, Thermal	2428	<b>2935</b>	3454	<b>4177</b>	4510	<b>5455</b>	5888	<b>7121</b>	8107	<b>9809</b>	9681	<b>11719</b>	10722	<b>12979</b>
		Input kW, Mechanical	164	<b>182</b>	269	<b>314</b>	364	<b>433</b>	540	<b>601</b>	711	<b>790</b>	932	<b>1035</b>	1314	<b>1459</b>
		Output Torque Nm, Mechanical	4264	<b>4776</b>	6970	<b>8218</b>	9429	<b>11291</b>	13969	<b>15645</b>	18303	<b>20500</b>	23849	<b>26710</b>	33497	<b>37517</b>
		Efficiency %	96	<b>96</b>	96	<b>96</b>	96	<b>96</b>	96	<b>96</b>	96	<b>96</b>	96	<b>96</b>	96	<b>96</b>
1500	300.0	Input kW, Thermal	86	<b>103</b>	123	<b>148</b>	163	<b>195</b>	216	<b>259</b>	308	<b>369</b>	380	<b>455</b>	437	<b>523</b>
		Output Torque Nm, Thermal	2676	<b>3236</b>	3819	<b>4619</b>	5063	<b>6124</b>	6679	<b>8078</b>	9477	<b>11465</b>	11624	<b>14067</b>	13308	<b>16103</b>
		Input kW, Mechanical	149	<b>166</b>	243	<b>285</b>	333	<b>405</b>	503	<b>559</b>	667	<b>761</b>	863	<b>959</b>	1225	<b>1361</b>
		Output Torque Nm, Mechanical	4659	<b>5219</b>	7570	<b>8930</b>	10364	<b>12676</b>	15629	<b>17504</b>	20662	<b>23733</b>	26605	<b>29798</b>	37658	<b>42177</b>
		Efficiency %	96	<b>96</b>	96	<b>96</b>	96	<b>96</b>	96	<b>96</b>	96	<b>96</b>	96	<b>96</b>	96	<b>96</b>
1200	240.0	Input kW, Thermal	78	<b>93</b>	110	<b>132</b>	150	<b>179</b>	205	<b>246</b>	286	<b>344</b>	365	<b>438</b>	438	<b>525</b>
		Output Torque Nm, Thermal	3012	<b>3643</b>	4268	<b>5134</b>	5789	<b>7002</b>	7922	<b>9581</b>	11057	<b>13375</b>	14034	<b>16978</b>	16773	<b>20288</b>
		Input kW, Mechanical	134	<b>149</b>	219	<b>256</b>	295	<b>371</b>	448	<b>507</b>	601	<b>709</b>	784	<b>903</b>	1101	<b>1224</b>
		Output Torque Nm, Mechanical	5230	<b>5858</b>	8516	<b>10039</b>	11453	<b>14494</b>	17420	<b>19832</b>	23282	<b>27686</b>	30307	<b>35145</b>	42502	<b>47602</b>
		Efficiency %	95	<b>96</b>	96	<b>96</b>	96	<b>96</b>	96	<b>96</b>	96	<b>96</b>	96	<b>96</b>	96	<b>96</b>
1000	200.0	Input kW, Thermal	68	<b>82</b>	96	<b>116</b>	133	<b>160</b>	187	<b>225</b>	263	<b>316</b>	344	<b>413</b>	427	<b>512</b>
		Output Torque Nm, Thermal	3177	<b>3843</b>	4474	<b>5413</b>	6188	<b>7486</b>	8695	<b>10517</b>	12197	<b>14754</b>	15911	<b>19248</b>	19698	<b>23823</b>
		Input kW, Mechanical	121	<b>135</b>	199	<b>233</b>	271	<b>331</b>	404	<b>464</b>	545	<b>652</b>	717	<b>852</b>	1019	<b>1133</b>
		Output Torque Nm, Mechanical	5644	<b>6322</b>	9266	<b>10924</b>	12604	<b>15496</b>	18835	<b>21771</b>	25334	<b>30541</b>	33293	<b>39844</b>	47300	<b>52976</b>
		Efficiency %	95	<b>96</b>	95	<b>96</b>	96	<b>96</b>	96	<b>96</b>	96	<b>96</b>	96	<b>96</b>	96	<b>96</b>
750	150.0	Input kW, Thermal	53	<b>63</b>	74	<b>88</b>	105	<b>126</b>	151	<b>181</b>	221	<b>265</b>	301	<b>361</b>	392	<b>470</b>
		Output Torque Nm, Thermal	3255	<b>3939</b>	4538	<b>5494</b>	6473	<b>7834</b>	9333	<b>11292</b>	13652	<b>16518</b>	18528	<b>22417</b>	24161	<b>29219</b>
		Input kW, Mechanical	105	<b>117</b>	173	<b>192</b>	236	<b>262</b>	355	<b>395</b>	470	<b>547</b>	601	<b>744</b>	864	<b>969</b>
		Output Torque Nm, Mechanical	6503	<b>7283</b>	10669	<b>11949</b>	14595	<b>16346</b>	22005	<b>24646</b>	29088	<b>34192</b>	37152	<b>46402</b>	53522	<b>60483</b>
		Efficiency %	95	<b>96</b>	95	<b>96</b>	95	<b>96</b>	95	<b>96</b>	96	<b>96</b>	96	<b>96</b>	96	<b>96</b>
500	100.0	Input kW, Thermal	36	<b>43</b>	49	<b>59</b>	72	<b>87</b>	105	<b>126</b>	164	<b>196</b>	233	<b>279</b>	321	<b>385</b>
		Output Torque Nm, Thermal	3251	<b>3938</b>	4468	<b>5415</b>	6634	<b>8035</b>	9651	<b>11685</b>	15074	<b>18248</b>	21426	<b>25935</b>	29656	<b>35874</b>
		Input kW, Mechanical	82	<b>91</b>	134	<b>149</b>	183	<b>203</b>	281	<b>312</b>	377	<b>419</b>	496	<b>576</b>	701	<b>795</b>
		Output Torque Nm, Mechanical	7525	<b>8428</b>	12353	<b>13835</b>	16867	<b>18891</b>	25930	<b>29041</b>	34879	<b>39065</b>	45812	<b>53685</b>	65031	<b>74258</b>
		Efficiency %	94	<b>95</b>	94	<b>95</b>	94	<b>95</b>	95	<b>96</b>	95	<b>96</b>	95	<b>96</b>	96	<b>96</b>
250	50.0	Input kW, Thermal	21	<b>25</b>	28	<b>33</b>	43	<b>51</b>	61	<b>73</b>	92	<b>111</b>	140	<b>168</b>	206	<b>247</b>
		Output Torque Nm, Thermal	3693	<b>4481</b>	4973	<b>6038</b>	7741	<b>9393</b>	11081	<b>13438</b>	16784	<b>20350</b>	25450	<b>30852</b>	37670	<b>45620</b>
		Input kW, Mechanical	54	<b>59</b>	89	<b>94</b>	121	<b>134</b>	184	<b>204</b>	245	<b>272</b>	325	<b>360</b>	467	<b>518</b>
		Output Torque Nm, Mechanical	9687	<b>10849</b>	15986	<b>17151</b>	21927	<b>24558</b>	33427	<b>37438</b>	44689	<b>50052</b>	59256	<b>66367</b>	85646	<b>95923</b>
		Efficiency %	92	<b>93</b>	93	<b>94</b>	93	<b>94</b>	93	<b>94</b>	94	<b>95</b>	94	<b>95</b>	94	<b>95</b>
Max Output Torque Nm	Single Key	11200		12000		17000		24000		41000		51000		72000		
	Standard Shaft	15800		21000		27300		43400		77700		108000		146400		

Notes: Ratings in the grey shaded area require force feed lubrication.

Higher thermal ratings may be obtained using oil coolers.

Two keys must be specified for the wheel and output shaft when maximum output torque for single key is exceeded.

High tensile steel output shaft must be specified when maximum output torque for standard shaft is exceeded.



**IMPORTANT** Units to ATEX approval must be selected with a minimum service factor of 1.25.


## TW Series - Single Reduction - Selection Data

Mineral and Synthetic Oils

Nominal ratio: 7.5/1 Non Preferred Ratio.

Input rpm	Output rpm	Gear Ratings	Centre Distance													
			10"		12"		14"		17"		20"		24"		28"	
			Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn
1800	240	Input kW, Thermal	90	<b>107</b>	132	<b>158</b>	178	<b>213</b>	241	<b>289</b>	349	<b>419</b>	439	<b>525</b>	506	<b>606</b>
		Output Torque Nm, Thermal	3319	<b>4010</b>	4890	<b>5907</b>	6689	<b>8081</b>	9039	<b>10920</b>	13116	<b>15850</b>	16281	<b>19679</b>	18701	<b>22608</b>
		Input kW, Mechanical	120	<b>134</b>	185	<b>205</b>	306	<b>340</b>	492	<b>547</b>	709	<b>788</b>	935	<b>1083</b>	1183	<b>1314</b>
		Output Torque Nm, Mechanical	4459	<b>4994</b>	6856	<b>7679</b>	11530	<b>12193</b>	18547	<b>20773</b>	26714	<b>29920</b>	34911	<b>40736</b>	44017	<b>49300</b>
		Efficiency %	95	<b>96</b>	96	<b>96</b>	96	<b>96</b>	96	<b>96</b>	96	<b>96</b>	96	<b>96</b>	96	<b>96</b>
1500	200.0	Input kW, Thermal	81	<b>97</b>	119	<b>143</b>	162	<b>194</b>	221	<b>265</b>	328	<b>393</b>	422	<b>506</b>	501	<b>600</b>
		Output Torque Nm, Thermal	3594	<b>4342</b>	5309	<b>6414</b>	7313	<b>8835</b>	9952	<b>12022</b>	14791	<b>17874</b>	18858	<b>22791</b>	22311	<b>26966</b>
		Input kW, Mechanical	110	<b>122</b>	170	<b>189</b>	279	<b>310</b>	451	<b>501</b>	652	<b>725</b>	866	<b>1043</b>	1084	<b>1237</b>
		Output Torque Nm, Mechanical	4891	<b>5478</b>	7585	<b>8495</b>	12609	<b>14122</b>	20400	<b>22848</b>	29513	<b>33055</b>	38889	<b>47177</b>	48537	<b>55820</b>
		Efficiency %	95	<b>96</b>	95	<b>96</b>	96	<b>96</b>	96	<b>96</b>	96	<b>96</b>	96	<b>96</b>	96	<b>96</b>
1200	160.0	Input kW, Thermal	72	<b>86</b>	105	<b>126</b>	145	<b>173</b>	203	<b>243</b>	294	<b>352</b>	390	<b>467</b>	479	<b>574</b>
		Output Torque Nm, Thermal	3978	<b>4807</b>	5831	<b>7045</b>	8138	<b>9834</b>	11416	<b>13793</b>	16576	<b>20032</b>	21815	<b>26363</b>	26757	<b>32336</b>
		Input kW, Mechanical	99	<b>110</b>	153	<b>170</b>	252	<b>280</b>	395	<b>439</b>	571	<b>635</b>	767	<b>964</b>	970	<b>1184</b>
		Output Torque Nm, Mechanical	5465	<b>6121</b>	8519	<b>9541</b>	14194	<b>15897</b>	22320	<b>24998</b>	32301	<b>36178</b>	43073	<b>54572</b>	54434	<b>66935</b>
		Efficiency %	95	<b>96</b>	95	<b>96</b>	95	<b>96</b>	96	<b>96</b>	96	<b>96</b>	96	<b>96</b>	96	<b>96</b>
1000	133.3	Input kW, Thermal	63	<b>75</b>	91	<b>109</b>	127	<b>152</b>	182	<b>218</b>	263	<b>315</b>	357	<b>428</b>	450	<b>540</b>
		Output Torque Nm, Thermal	4159	<b>5027</b>	6052	<b>7313</b>	8559	<b>10344</b>	12264	<b>14819</b>	17780	<b>21488</b>	23962	<b>28959</b>	30222	<b>36522</b>
		Input kW, Mechanical	89	<b>99</b>	140	<b>155</b>	230	<b>256</b>	366	<b>407</b>	522	<b>580</b>	682	<b>883</b>	868	<b>1113</b>
		Output Torque Nm, Mechanical	5921	<b>6632</b>	9297	<b>10413</b>	15568	<b>17436</b>	24786	<b>27760</b>	35409	<b>39658</b>	45939	<b>59944</b>	58482	<b>75600</b>
		Efficiency %	95	<b>96</b>	95	<b>96</b>	95	<b>96</b>	96	<b>96</b>	96	<b>96</b>	96	<b>96</b>	96	<b>96</b>
750	100.0	Input kW, Thermal	48	<b>58</b>	69	<b>83</b>	98	<b>118</b>	143	<b>172</b>	214	<b>257</b>	300	<b>359</b>	393	<b>471</b>
		Output Torque Nm, Thermal	4230	<b>5115</b>	6083	<b>7354</b>	8807	<b>10647</b>	12856	<b>15539</b>	19243	<b>23263</b>	26788	<b>32380</b>	35127	<b>42454</b>
		Input kW, Mechanical	74	<b>82</b>	117	<b>130</b>	194	<b>215</b>	312	<b>347</b>	450	<b>501</b>	595	<b>742</b>	740	<b>971</b>
		Output Torque Nm, Mechanical	6533	<b>7317</b>	10317	<b>11555</b>	17399	<b>19486</b>	28108	<b>31482</b>	40620	<b>45495</b>	53396	<b>67026</b>	66463	<b>87880</b>
		Efficiency %	94	<b>95</b>	94	<b>95</b>	95	<b>96</b>	95	<b>96</b>	95	<b>96</b>	96	<b>96</b>	96	<b>96</b>
500	66.7	Input kW, Thermal	32	<b>39</b>	46	<b>55</b>	67	<b>80</b>	98	<b>117</b>	154	<b>185</b>	224	<b>268</b>	306	<b>367</b>
		Output Torque Nm, Thermal	4218	<b>5105</b>	5968	<b>7219</b>	8939	<b>10814</b>	13073	<b>15811</b>	20685	<b>25020</b>	29873	<b>36125</b>	40894	<b>49443</b>
		Input kW, Mechanical	59	<b>65</b>	92	<b>102</b>	152	<b>169</b>	244	<b>270</b>	350	<b>389</b>	469	<b>554</b>	600	<b>757</b>
		Output Torque Nm, Mechanical	7656	<b>8574</b>	12082	<b>13531</b>	20305	<b>22742</b>	32642	<b>36559</b>	47075	<b>52724</b>	62798	<b>74778</b>	80442	<b>102347</b>
		Efficiency %	93	<b>94</b>	94	<b>95</b>	94	<b>95</b>	94	<b>95</b>	95	<b>96</b>	95	<b>96</b>	95	<b>96</b>
250	33.3	Input kW, Thermal	19	<b>23</b>	26	<b>31</b>	40	<b>48</b>	57	<b>68</b>	87	<b>104</b>	132	<b>158</b>	190	<b>228</b>
		Output Torque Nm, Thermal	4824	<b>5846</b>	6670	<b>8079</b>	10448	<b>12657</b>	14947	<b>18099</b>	22089	<b>27626</b>	34802	<b>42138</b>	50153	<b>60705</b>
		Input kW, Mechanical	38	<b>42</b>	60	<b>66</b>	99	<b>109</b>	158	<b>174</b>	229	<b>235</b>	309	<b>342</b>	391	<b>470</b>
		Output Torque Nm, Mechanical	9725	<b>10892</b>	15349	<b>17190</b>	25775	<b>28868</b>	41508	<b>46489</b>	60632	<b>62956</b>	81367	<b>91131</b>	103443	<b>125660</b>
		Efficiency %	91	<b>93</b>	92	<b>93</b>	92	<b>94</b>	93	<b>94</b>	93	<b>94</b>	94	<b>95</b>	94	<b>95</b>
Max Output Torque Nm	Single Key		11200		12000		17000		24000		41000		51000		72000	
	Standard Shaft		15800		21000		27300		43400		77700		108000		146400	

Notes: Ratings in the grey shaded area require force feed lubrication.  
 Higher thermal ratings may be obtained using oil coolers.  
 Two keys must be specified for the wheel and output shaft when maximum output torque for single key is exceeded.  
 High tensile steel output shaft must be specified when maximum output torque for standard shaft is exceeded.

 **IMPORTANT** Units to ATEX approval must be selected with a minimum service factor of 1.25.


## TW Series - Single Reduction - Selection Data

Mineral and Synthetic Oils

Nominal ratio: 10/1 Preferred Ratio Unit Sizes 10", 12", 14".

Input rpm	Output rpm	Gear Ratings	Centre Distance													
			10"		12"		14"		17"		20"		24"		28"	
			Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn
1800	180.0	Input kW, Thermal	80	<b>96</b>	119	<b>143</b>	162	<b>194</b>	220	<b>263</b>	332	<b>398</b>	432	<b>517</b>	508	<b>607</b>
		Output Torque Nm, Thermal	3936	<b>4752</b>	5857	<b>7070</b>	8015	<b>9676</b>	10820	<b>13061</b>	16419	<b>19825</b>	21378	<b>25816</b>	25006	<b>30201</b>
		Input kW, Mechanical	81	<b>90</b>	125	<b>139</b>	237	<b>263</b>	386	<b>429</b>	513	<b>571</b>	797	<b>983</b>	1084	<b>1251</b>
		Output Torque Nm, Mechanical	3974	<b>4450</b>	6129	<b>6864</b>	11703	<b>13107</b>	19100	<b>21392</b>	25428	<b>28479</b>	39571	<b>49243</b>	53698	<b>62517</b>
		Efficiency %	95	<b>96</b>	95	<b>96</b>	95	<b>96</b>	95	<b>96</b>	95	<b>96</b>	96	<b>96</b>	96	<b>96</b>
1500	150.0	Input kW, Thermal	72	<b>86</b>	107	<b>128</b>	147	<b>176</b>	200	<b>239</b>	308	<b>369</b>	409	<b>490</b>	494	<b>591</b>
		Output Torque Nm, Thermal	4228	<b>5106</b>	6297	<b>7603</b>	8683	<b>10483</b>	11808	<b>14254</b>	18279	<b>22070</b>	24324	<b>29373</b>	29282	<b>35361</b>
		Input kW, Mechanical	75	<b>83</b>	115	<b>128</b>	214	<b>238</b>	346	<b>384</b>	461	<b>513</b>	722	<b>891</b>	985	<b>1218</b>
		Output Torque Nm, Mechanical	4391	<b>4917</b>	6786	<b>7601</b>	12178	<b>14244</b>	20512	<b>22973</b>	27439	<b>30731</b>	43092	<b>53625</b>	58735	<b>73197</b>
		Efficiency %	95	<b>95</b>	95	<b>96</b>	95	<b>96</b>	95	<b>96</b>	95	<b>96</b>	96	<b>96</b>	96	<b>96</b>
1200	120.0	Input kW, Thermal	64	<b>76</b>	94	<b>112</b>	130	<b>155</b>	181	<b>217</b>	273	<b>326</b>	371	<b>444</b>	462	<b>553</b>
		Output Torque Nm, Thermal	4649	<b>5614</b>	6855	<b>8277</b>	9577	<b>11564</b>	13451	<b>16195</b>	20208	<b>24401</b>	27581	<b>33306</b>	34354	<b>41484</b>
		Input kW, Mechanical	66	<b>74</b>	103	<b>115</b>	194	<b>215</b>	309	<b>343</b>	407	<b>452</b>	640	<b>790</b>	878	<b>1141</b>
		Output Torque Nm, Mechanical	4842	<b>5423</b>	7565	<b>8473</b>	14313	<b>16031</b>	22868	<b>25612</b>	30238	<b>33867</b>	47753	<b>59425</b>	65527	<b>85871</b>
		Efficiency %	94	<b>95</b>	95	<b>95</b>	95	<b>96</b>	95	<b>96</b>	95	<b>96</b>	96	<b>96</b>	96	<b>96</b>
1000	100.0	Input kW, Thermal	55	<b>66</b>	81	<b>97</b>	113	<b>136</b>	162	<b>194</b>	242	<b>289</b>	335	<b>401</b>	428	<b>512</b>
		Output Torque Nm, Thermal	4844	<b>5851</b>	7080	<b>8551</b>	10021	<b>12102</b>	14326	<b>17297</b>	21482	<b>25942</b>	29874	<b>36077</b>	38178	<b>46102</b>
		Input kW, Mechanical	59	<b>65</b>	93	<b>103</b>	174	<b>194</b>	281	<b>313</b>	372	<b>413</b>	570	<b>704</b>	788	<b>1054</b>
		Output Torque Nm, Mechanical	5153	<b>5771</b>	8114	<b>9087</b>	15442	<b>17295</b>	24984	<b>27982</b>	33095	<b>37067</b>	51016	<b>63486</b>	70552	<b>95203</b>
		Efficiency %	94	<b>95</b>	94	<b>95</b>	95	<b>95</b>	95	<b>96</b>	95	<b>96</b>	95	<b>96</b>	96	<b>96</b>
750	75.0	Input kW, Thermal	43	<b>51</b>	61	<b>73</b>	88	<b>105</b>	127	<b>152</b>	195	<b>233</b>	277	<b>331</b>	366	<b>438</b>
		Output Torque Nm, Thermal	4916	<b>5940</b>	7089	<b>8563</b>	10263	<b>12937</b>	14928	<b>18027</b>	23017	<b>27081</b>	32838	<b>39662</b>	43461	<b>52487</b>
		Input kW, Mechanical	50	<b>55</b>	77	<b>85</b>	145	<b>161</b>	237	<b>263</b>	317	<b>353</b>	499	<b>615</b>	684	<b>904</b>
		Output Torque Nm, Mechanical	5754	<b>6445</b>	8942	<b>10015</b>	17000	<b>19041</b>	27971	<b>31328</b>	37550	<b>42056</b>	59373	<b>73887</b>	81615	<b>108649</b>
		Efficiency %	93	<b>94</b>	94	<b>95</b>	94	<b>95</b>	94	<b>95</b>	95	<b>96</b>	95	<b>96</b>	95	<b>96</b>
500	50.0	Input kW, Thermal	29	<b>34</b>	40	<b>48</b>	60	<b>71</b>	87	<b>103</b>	140	<b>167</b>	204	<b>244</b>	280	<b>335</b>
		Output Torque Nm, Thermal	4904	<b>5929</b>	6946	<b>8396</b>	10394	<b>12562</b>	15123	<b>18271</b>	24564	<b>29682</b>	36120	<b>43644</b>	49668	<b>60003</b>
		Input kW, Mechanical	39	<b>43</b>	60	<b>67</b>	114	<b>126</b>	187	<b>207</b>	250	<b>277</b>	391	<b>482</b>	541	<b>692</b>
		Output Torque Nm, Mechanical	6660	<b>7459</b>	10433	<b>11685</b>	19878	<b>22264</b>	32781	<b>36715</b>	43944	<b>49218</b>	69363	<b>86318</b>	96311	<b>124207</b>
		Efficiency %	92	<b>93</b>	93	<b>94</b>	93	<b>94</b>	94	<b>95</b>	94	<b>95</b>	95	<b>95</b>	95	<b>96</b>
250	25.0	Input kW, Thermal	17	<b>20</b>	23	<b>27</b>	36	<b>43</b>	50	<b>60</b>	78	<b>94</b>	120	<b>144</b>	173	<b>206</b>
		Output Torque Nm, Thermal	5635	<b>6819</b>	7789	<b>9423</b>	12170	<b>14723</b>	17284	<b>20900</b>	27059	<b>32729</b>	41856	<b>50623</b>	60309	<b>72924</b>
		Input kW, Mechanical	25	<b>27</b>	39	<b>43</b>	73	<b>81</b>	119	<b>131</b>	158	<b>175</b>	251	<b>295</b>	347	<b>408</b>
		Output Torque Nm, Mechanical	8318	<b>9316</b>	13125	<b>14700</b>	25051	<b>28058</b>	40769	<b>45661</b>	54769	<b>61342</b>	87476	<b>104030</b>	121689	<b>144479</b>
		Efficiency %	90	<b>92</b>	91	<b>92</b>	91	<b>93</b>	92	<b>93</b>	92	<b>94</b>	93	<b>94</b>	93	<b>94</b>
Max Output Torque Nm	Single Key		11200		12000		17000		24000		41000		51000		72000	
	Standard Shaft		15800		21000		27300		43400		77700		108000		146400	

Notes: Ratings in the grey shaded area require force feed lubrication.  
 Higher thermal ratings may be obtained using oil coolers.  
 Two keys must be specified for the wheel and output shaft when maximum output torque for single key is exceeded.  
 High tensile steel output shaft must be specified when maximum output torque for standard shaft is exceeded.

 **IMPORTANT** Units to ATEX approval must be selected with a minimum service factor of 1.25.

## TW Series - Single Reduction - Selection Data

### Mineral and Synthetic Oils

Nominal ratio: 12.5/1 Non Preferred Ratio.


Input rpm	Output rpm	Gear Ratings	Centre Distance													
			10"		12"		14"		17"		20"		24"		28"	
			Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn
1800	144.0	Input kW, Thermal	70	<b>84</b>	104	<b>125</b>	145	<b>173</b>	200	<b>239</b>	306	<b>366</b>	373	<b>446</b>	474	<b>566</b>
		Output Torque Nm, Thermal	4269	<b>5152</b>	6374	<b>7692</b>	8887	<b>10724</b>	12261	<b>14796</b>	18785	<b>22673</b>	23066	<b>27836</b>	29295	<b>35631</b>
		Input kW, Mechanical	88	<b>97</b>	134	<b>148</b>	198	<b>220</b>	320	<b>355</b>	428	<b>476</b>	736	<b>908</b>	1002	<b>1166</b>
		Output Torque Nm, Mechanical	5350	<b>5992</b>	8185	<b>9167</b>	12166	<b>13626</b>	19656	<b>22015</b>	26376	<b>29541</b>	45762	<b>56948</b>	62365	<b>73198</b>
		Efficiency %	94	<b>95</b>	94	<b>95</b>	95	<b>95</b>	95	<b>95</b>	95	<b>96</b>	95	<b>95</b>	95	<b>95</b>
1500	120.0	Input kW, Thermal	63	<b>75</b>	93	<b>111</b>	130	<b>156</b>	180	<b>216</b>	281	<b>336</b>	353	<b>421</b>	456	<b>545</b>
		Output Torque Nm, Thermal	4574	<b>5520</b>	6830	<b>8242</b>	9573	<b>11553</b>	13263	<b>16006</b>	20727	<b>25016</b>	26234	<b>31659</b>	33955	<b>40983</b>
		Input kW, Mechanical	80	<b>88</b>	123	<b>137</b>	183	<b>203</b>	290	<b>322</b>	389	<b>432</b>	673	<b>830</b>	919	<b>1123</b>
		Output Torque Nm, Mechanical	5835	<b>6535</b>	9029	<b>10113</b>	13458	<b>15074</b>	21373	<b>23938</b>	28752	<b>32202</b>	50278	<b>62568</b>	68769	<b>84836</b>
		Efficiency %	94	<b>95</b>	94	<b>95</b>	94	<b>95</b>	95	<b>95</b>	95	<b>96</b>	95	<b>96</b>	95	<b>96</b>
1200	96.0	Input kW, Thermal	55	<b>66</b>	81	<b>97</b>	115	<b>137</b>	163	<b>194</b>	246	<b>295</b>	319	382	422	<b>505</b>
		Output Torque Nm, Thermal	5016	<b>6054</b>	7411	<b>8944</b>	10501	<b>12675</b>	14929	<b>18017</b>	22705	<b>27405</b>	29738	<b>35887</b>	39373	<b>47522</b>
		Input kW, Mechanical	70	<b>77</b>	109	<b>121</b>	163	<b>181</b>	258	<b>287</b>	342	<b>380</b>	591	<b>728</b>	812	<b>1001</b>
		Output Torque Nm, Mechanical	6349	<b>7111</b>	9944	<b>11137</b>	14963	<b>16759</b>	23778	<b>26631</b>	31564	<b>35352</b>	55180	<b>68669</b>	76045	<b>94634</b>
		Efficiency %	93	<b>94</b>	94	<b>95</b>	94	<b>95</b>	94	<b>95</b>	95	<b>96</b>	95	<b>95</b>	95	<b>96</b>
1000	80.0	Input kW, Thermal	48	<b>57</b>	70	<b>84</b>	100	<b>119</b>	144	<b>172</b>	217	<b>260</b>	288	<b>345</b>	388	<b>463</b>
		Output Torque Nm, Thermal	5221	<b>6303</b>	7641	<b>9224</b>	10955	<b>13224</b>	15855	<b>19136</b>	23994	<b>28963</b>	32205	<b>38865</b>	43390	<b>52372</b>
		Input kW, Mechanical	62	<b>68</b>	97	<b>107</b>	146	<b>162</b>	236	<b>261</b>	315	<b>350</b>	521	<b>642</b>	718	<b>886</b>
		Output Torque Nm, Mechanical	6719	<b>7525</b>	10573	<b>11842</b>	16044	<b>17969</b>	25946	<b>29060</b>	34837	<b>39018</b>	58331	<b>72589</b>	80716	<b>100447</b>
		Efficiency %	93	<b>94</b>	93	<b>94</b>	94	<b>95</b>	94	<b>95</b>	95	<b>95</b>	95	<b>95</b>	95	<b>96</b>
750	60.0	Input kW, Thermal	37	<b>44</b>	53	<b>63</b>	77	<b>92</b>	113	<b>135</b>	174	<b>208</b>	238	<b>285</b>	328	<b>392</b>
		Output Torque Nm, Thermal	5295	<b>6393</b>	7641	<b>9225</b>	11189	<b>13509</b>	16428	<b>19831</b>	25542	<b>30837</b>	35388	<b>42711</b>	48880	<b>59004</b>
		Input kW, Mechanical	53	<b>58</b>	82	<b>91</b>	123	<b>136</b>	198	<b>219</b>	266	<b>295</b>	465	<b>573</b>	637	<b>786</b>
		Output Torque Nm, Mechanical	7583	<b>8493</b>	11876	<b>13301</b>	17903	<b>20052</b>	28896	<b>32364</b>	39063	<b>43750</b>	69237	<b>86161</b>	95308	<b>118606</b>
		Efficiency %	92	<b>93</b>	93	<b>94</b>	93	<b>94</b>	94	<b>95</b>	94	<b>95</b>	94	<b>95</b>	94	<b>96</b>
500	40.0	Input kW, Thermal	25	<b>30</b>	35	<b>42</b>	53	<b>63</b>	77	<b>91</b>	125	<b>149</b>	176	<b>210</b>	249	<b>298</b>
		Output Torque Nm, Thermal	5284	<b>6383</b>	7486	<b>9042</b>	11320	<b>13673</b>	16588	<b>20031</b>	27139	<b>32777</b>	38904	<b>46968</b>	55636	<b>66484</b>
		Input kW, Mechanical	41	<b>45</b>	64	<b>70</b>	95	<b>106</b>	154	<b>170</b>	206	<b>228</b>	362	<b>434</b>	498	<b>613</b>
		Output Torque Nm, Mechanical	8723	<b>9770</b>	13676	<b>15317</b>	20594	<b>23065</b>	33400	<b>37408</b>	44952	<b>50346</b>	80116	<b>97224</b>	110863	<b>137962</b>
		Efficiency %	91	<b>92</b>	92	<b>93</b>	92	<b>93</b>	93	<b>94</b>	93	<b>94</b>	94	<b>95</b>	94	<b>95</b>
250	20.0	Input kW, Thermal	15	<b>17</b>	20	<b>24</b>	32	<b>37</b>	45	<b>53</b>	70	<b>83</b>	104	<b>124</b>	153	<b>183</b>
		Output Torque Nm, Thermal	6081	<b>7353</b>	8404	<b>10159</b>	13271	<b>16042</b>	18963	<b>22918</b>	29890	<b>36128</b>	45046	<b>54420</b>	66929	<b>80872</b>
		Input kW, Mechanical	26	<b>29</b>	41	<b>45</b>	62	<b>68</b>	99	<b>109</b>	132	<b>145</b>	231	<b>236</b>	317	<b>326</b>
		Output Torque Nm, Mechanical	10819	<b>12118</b>	17122	<b>19177</b>	25972	<b>29089</b>	41969	<b>47006</b>	56358	<b>63121</b>	100466	<b>104030</b>	138742	<b>144479</b>
		Efficiency %	89	<b>90</b>	89	<b>92</b>	90	<b>92</b>	91	<b>92</b>	91	<b>93</b>	92	<b>93</b>	92	<b>94</b>
Max Output Torque Nm	Single Key		11200	12000	17000	24000	41000	51000	72000							
	Standard Shaft		15800	21000	27300	43400	77700	108000	146400							

Notes: Ratings in the grey shaded area require force feed lubrication.

Higher thermal ratings may be obtained using oil coolers.

Two keys must be specified for the wheel and output shaft when maximum output torque for single key is exceeded.

High tensile steel output shaft must be specified when maximum output torque for standard shaft is exceeded.



**IMPORTANT** Units to ATEX approval must be selected with a minimum service factor of 1.25.

## TW Series - Single Reduction - Selection Data

Mineral and Synthetic Oils

Nominal ratio: 15/1 Preferred Ratio Unit Sizes 10", 12", 14".

Input rpm	Output rpm	Gear Ratings	Centre Distance													
			10"		12"		14"		17"		20"		24"		28"	
			Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn
1800	120.0	Input kW, Thermal	62	<b>74</b>	93	<b>111</b>	131	<b>156</b>	180	<b>214</b>	264	<b>315</b>	367	<b>439</b>	438	<b>523</b>
		Output Torque Nm, Thermal	4517	<b>5449</b>	6764	<b>8160</b>	9588	<b>11568</b>	13170	<b>15889</b>	19321	<b>23310</b>	27000	<b>32579</b>	32083	<b>38715</b>
		Input kW, Mechanical	72	<b>79</b>	110	<b>121</b>	183	<b>202</b>	294	<b>326</b>	415	<b>461</b>	639	<b>788</b>	871	<b>1077</b>
		Output Torque Nm, Mechanical	5204	<b>5828</b>	7976	<b>8933</b>	13417	<b>15027</b>	21606	<b>24199</b>	30556	<b>34223</b>	47156	<b>58683</b>	64152	<b>80141</b>
		Efficiency %	93	<b>94</b>	94	<b>95</b>	94	<b>95</b>	94	<b>95</b>	94	<b>95</b>	94	<b>95</b>	95	<b>95</b>
1500	100.0	Input kW, Thermal	56	<b>66</b>	83	<b>99</b>	117	<b>140</b>	161	<b>193</b>	242	<b>289</b>	343	<b>409</b>	419	<b>501</b>
		Output Torque Nm, Thermal	4828	<b>5825</b>	7226	<b>8718</b>	10279	<b>12402</b>	14184	<b>17112</b>	21345	<b>25751</b>	30254	<b>36505</b>	36966	<b>44065</b>
		Input kW, Mechanical	65	<b>72</b>	100	<b>111</b>	167	<b>185</b>	262	<b>291</b>	374	<b>415</b>	579	<b>714</b>	799	<b>1032</b>
		Output Torque Nm, Mechanical	5622	<b>6297</b>	8713	<b>9759</b>	14681	<b>16442</b>	23131	<b>25906</b>	33005	<b>36966</b>	51327	<b>63873</b>	70788	<b>92332</b>
		Efficiency %	93	<b>94</b>	94	<b>94</b>	94	<b>95</b>	94	<b>95</b>	94	<b>95</b>	94	<b>95</b>	95	<b>95</b>
1200	80.0	Input kW, Thermal	49	<b>58</b>	72	<b>86</b>	103	<b>122</b>	145	<b>173</b>	213	<b>254</b>	306	<b>365</b>	386	<b>461</b>
		Output Torque Nm, Thermal	5284	<b>6376</b>	7818	<b>9434</b>	11225	<b>13545</b>	15891	<b>19173</b>	23411	<b>28245</b>	33740	<b>40712</b>	42577	<b>51375</b>
		Input kW, Mechanical	56	<b>62</b>	88	<b>98</b>	149	<b>165</b>	238	<b>264</b>	334	<b>371</b>	500	<b>612</b>	696	<b>909</b>
		Output Torque Nm, Mechanical	6067	<b>6795</b>	9566	<b>10714</b>	16302	<b>18258</b>	26154	<b>29292</b>	36856	<b>41279</b>	55344	<b>68872</b>	77166	<b>101677</b>
		Efficiency %	93	<b>94</b>	93	<b>94</b>	94	<b>95</b>	94	<b>95</b>	94	<b>95</b>	94	<b>95</b>	95	<b>95</b>
1000	66.7	Input kW, Thermal	43	<b>51</b>	62	<b>74</b>	89	<b>106</b>	128	<b>153</b>	188	<b>224</b>	273	<b>326</b>	353	<b>421</b>
		Output Torque Nm, Thermal	5495	<b>6632</b>	8051	<b>9715</b>	11681	<b>14097</b>	16829	<b>20307</b>	24759	<b>29874</b>	36137	<b>43607</b>	46698	<b>56348</b>
		Input kW, Mechanical	51	<b>56</b>	78	<b>86</b>	132	<b>146</b>	214	<b>237</b>	304	<b>337</b>	469	<b>578</b>	648	<b>846</b>
		Output Torque Nm, Mechanical	6520	<b>7303</b>	10124	<b>11339</b>	17348	<b>19429</b>	28160	<b>31359</b>	40120	<b>44935</b>	62311	<b>77542</b>	86186	<b>113562</b>
		Efficiency %	92	<b>93</b>	93	<b>94</b>	93	<b>94</b>	94	<b>95</b>	94	<b>95</b>	94	<b>95</b>	94	<b>95</b>
750	50.0	Input kW, Thermal	33	<b>39</b>	47	<b>56</b>	69	<b>82</b>	100	<b>119</b>	151	<b>180</b>	223	<b>266</b>	297	<b>355</b>
		Output Torque Nm, Thermal	5569	<b>6723</b>	8041	<b>9706</b>	11905	<b>14370</b>	17390	<b>20987</b>	26376	<b>31829</b>	39204	<b>47315</b>	52299	<b>63114</b>
		Input kW, Mechanical	43	<b>47</b>	67	<b>74</b>	112	<b>124</b>	181	<b>200</b>	258	<b>285</b>	399	<b>491</b>	552	<b>720</b>
		Output Torque Nm, Mechanical	7254	<b>8124</b>	11431	<b>12803</b>	19496	<b>21836</b>	31505	<b>35286</b>	75112	<b>50525</b>	70361	<b>87561</b>	97545	<b>128530</b>
		Efficiency %	91	<b>93</b>	92	<b>93</b>	92	<b>94</b>	93	<b>94</b>	93	<b>94</b>	94	<b>95</b>	94	<b>95</b>
500	33.3	Input kW, Thermal	22	<b>26</b>	31	<b>37</b>	47	<b>56</b>	68	<b>81</b>	108	<b>129</b>	163	<b>195</b>	225	<b>268</b>
		Output Torque Nm, Thermal	5560	<b>6715</b>	7877	<b>9511</b>	12035	<b>14532</b>	17533	<b>21165</b>	28033	<b>33838</b>	42692	<b>51538</b>	58946	<b>71152</b>
		Input kW, Mechanical	33	<b>36</b>	52	<b>57</b>	87	<b>96</b>	139	<b>154</b>	196	<b>217</b>	305	<b>375</b>	426	<b>543</b>
		Output Torque Nm, Mechanical	8343	<b>9344</b>	13166	<b>14746</b>	22451	<b>25145</b>	36034	<b>40358</b>	50975	<b>57092</b>	80028	<b>99590</b>	112155	<b>144479</b>
		Efficiency %	90	<b>91</b>	91	<b>92</b>	91	<b>93</b>	92	<b>93</b>	92	<b>94</b>	93	<b>94</b>	93	<b>94</b>
250	16.7	Input kW, Thermal	13	<b>16</b>	18	<b>21</b>	28	<b>34</b>	40	<b>47</b>	61	<b>72</b>	96	<b>115</b>	138	<b>164</b>
		Output Torque Nm, Thermal	6410	<b>7746</b>	8855	<b>10698</b>	14131	<b>17074</b>	20049	<b>24218</b>	30861	<b>37275</b>	49318	<b>59577</b>	71097	<b>85872</b>
		Input kW, Mechanical	21	<b>23</b>	33	<b>36</b>	56	<b>61</b>	90	<b>96</b>	127	<b>139</b>	196	<b>200</b>	271	<b>276</b>
		Output Torque Nm, Mechanical	10330	<b>11570</b>	16362	<b>18326</b>	27965	<b>31321</b>	45207	<b>49113</b>	64279	<b>71992</b>	100492	<b>104030</b>	139891	<b>144479</b>
		Efficiency %	87	<b>89</b>	88	<b>90</b>	89	<b>91</b>	90	<b>91</b>	90	<b>92</b>	91	<b>93</b>	92	<b>93</b>
Max Output Torque Nm	Single Key	11200		12000		17000		24000		41000		51000		72000		
	Standard Shaft	15800		21000		27300		43400		77700		108000		146400		

Notes: Ratings in the grey shaded area require force feed lubrication.

Higher thermal ratings may be obtained using oil coolers.

Two keys must be specified for the wheel and output shaft when maximum output torque for single key is exceeded.

High tensile steel output shaft must be specified when maximum output torque for standard shaft is exceeded.





## TW Series - Single Reduction - Selection Data

Mineral and Synthetic Oils

Nominal ratio: 20/1 Preferred Ratio Unit Sizes 10", 12", 14".

Input rpm	Output rpm	Gear Ratings	Centre Distance													
			10"		12"		14"		17"		20"		24"		28"	
			Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn
1800	90.0	Input kW, Thermal	46	<b>55</b>	72	<b>86</b>	106	<b>127</b>	147	<b>174</b>	225	<b>268</b>	307	<b>365</b>	369	<b>439</b>
		Output Torque Nm, Thermal	4594	<b>5541</b>	7192	<b>8873</b>	10252	<b>12364</b>	14106	<b>17012</b>	21766	<b>26252</b>	29661	<b>35776</b>	35510	<b>42833</b>
		Input kW, Mechanical	52	<b>57</b>	81	<b>90</b>	138	<b>153</b>	219	<b>242</b>	321	<b>355</b>	546	<b>605</b>	795	<b>880</b>
		Output Torque Nm, Mechanical	5149	<b>5767</b>	8114	<b>9087</b>	13352	<b>14954</b>	21112	<b>23646</b>	31097	<b>34829</b>	53065	<b>59433</b>	77130	<b>86385</b>
		Efficiency %	91	<b>92</b>	92	<b>93</b>	93	<b>94</b>	93	<b>94</b>	93	<b>94</b>	93	<b>94</b>	93	<b>94</b>
1500	75.0	Input kW, Thermal	42	<b>49</b>	64	<b>76</b>	95	<b>113</b>	131	<b>156</b>	205	<b>244</b>	284	<b>339</b>	350	<b>417</b>
		Output Torque Nm, Thermal	4914	<b>5926</b>	7661	<b>9240</b>	10953	<b>13211</b>	15131	<b>18248</b>	23811	<b>28719</b>	33033	<b>39843</b>	40626	<b>49002</b>
		Input kW, Mechanical	47	<b>51</b>	74	<b>81</b>	127	<b>140</b>	193	<b>213</b>	284	<b>314</b>	486	<b>538</b>	714	<b>791</b>
		Output Torque Nm, Mechanical	5517	<b>6179</b>	8794	<b>9849</b>	14681	<b>16442</b>	22288	<b>24962</b>	32995	<b>36594</b>	56748	<b>63558</b>	83364	<b>93367</b>
		Efficiency %	91	<b>92</b>	92	<b>93</b>	93	<b>94</b>	93	<b>94</b>	93	<b>94</b>	93	<b>94</b>	93	<b>94</b>
1200	60.0	Input kW, Thermal	37	<b>43</b>	56	<b>66</b>	83	<b>99</b>	117	<b>140</b>	179	<b>213</b>	252	<b>300</b>	320	<b>381</b>
		Output Torque Nm, Thermal	5379	<b>6487</b>	8268	<b>9972</b>	11922	<b>14381</b>	16879	<b>20357</b>	25858	<b>31189</b>	36601	<b>44147</b>	46425	<b>55996</b>
		Input kW, Mechanical	41	<b>45</b>	65	<b>72</b>	112	<b>124</b>	179	<b>198</b>	261	<b>289</b>	444	<b>491</b>	651	<b>721</b>
		Output Torque Nm, Mechanical	6062	<b>6746</b>	9635	<b>10791</b>	16111	<b>18044</b>	25850	<b>28952</b>	37937	<b>42489</b>	64701	<b>72466</b>	95051	<b>106457</b>
		Efficiency %	90	<b>92</b>	91	<b>92</b>	92	<b>93</b>	92	<b>93</b>	93	<b>94</b>	93	<b>94</b>	93	<b>94</b>
1000	50.0	Input kW, Thermal	32	<b>38</b>	48	<b>57</b>	72	<b>86</b>	104	<b>123</b>	157	<b>187</b>	224	<b>267</b>	291	<b>346</b>
		Output Torque Nm, Thermal	5994	<b>6747</b>	8503	<b>10256</b>	12385	<b>14941</b>	17831	<b>21507</b>	27177	<b>32781</b>	39032	<b>47083</b>	50638	<b>61080</b>
		Input kW, Mechanical	37	<b>41</b>	58	<b>64</b>	101	<b>111</b>	161	<b>178</b>	236	<b>261</b>	400	<b>443</b>	582	<b>644</b>
		Output Torque Nm, Mechanical	6462	<b>7237</b>	10288	<b>11522</b>	17263	<b>19335</b>	27842	<b>31183</b>	40994	<b>45913</b>	69912	<b>78302</b>	101830	<b>114049</b>
		Efficiency %	90	<b>91</b>	91	<b>92</b>	92	<b>93</b>	92	<b>93</b>	93	<b>94</b>	93	<b>94</b>	93	<b>94</b>
750	37.5	Input kW, Thermal	25	<b>29</b>	36	<b>43</b>	56	<b>66</b>	81	<b>96</b>	125	<b>149</b>	183	<b>217</b>	243	<b>290</b>
		Output Torque Nm, Thermal	5670	<b>6840</b>	8485	<b>10237</b>	12604	<b>15207</b>	18381	<b>22173</b>	28758	<b>34693</b>	42137	<b>50833</b>	56334	<b>67956</b>
		Input kW, Mechanical	31	<b>34</b>	48	<b>53</b>	83	<b>92</b>	134	<b>148</b>	197	<b>218</b>	337	<b>372</b>	492	<b>545</b>
		Output Torque Nm, Mechanical	7117	<b>7971</b>	11281	<b>12635</b>	18901	<b>21169</b>	30666	<b>34346</b>	45378	<b>50823</b>	77992	<b>87351</b>	114463	<b>128199</b>
		Efficiency %	88	<b>90</b>	90	<b>91</b>	91	<b>92</b>	91	<b>93</b>	92	<b>93</b>	93	<b>94</b>	93	<b>94</b>
500	25.0	Input kW, Thermal	17	<b>20</b>	24	<b>29</b>	38	<b>45</b>	55	<b>65</b>	90	<b>106</b>	133	<b>159</b>	184	<b>218</b>
		Output Torque Nm, Thermal	5659	<b>6828</b>	8312	<b>10030</b>	12736	<b>15370</b>	18507	<b>22331</b>	30435	<b>36724</b>	45716	<b>55162</b>	63143	<b>76183</b>
		Input kW, Mechanical	24	<b>26</b>	38	<b>41</b>	65	<b>72</b>	104	<b>115</b>	152	<b>168</b>	258	<b>285</b>	376	<b>413</b>
		Output Torque Nm, Mechanical	8078	<b>9047</b>	12961	<b>14516</b>	21799	<b>24414</b>	35211	<b>39436</b>	51871	<b>58096</b>	88712	<b>99357</b>	129922	<b>144479</b>
		Efficiency %	87	<b>89</b>	88	<b>90</b>	89	<b>91</b>	90	<b>91</b>	91	<b>92</b>	92	<b>93</b>	92	<b>93</b>
250	12.5	Input kW, Thermal	10.0	<b>12</b>	14	<b>17</b>	23	<b>27</b>	32	<b>38</b>	51	<b>60</b>	79	<b>94</b>	113	<b>134</b>
		Output Torque Nm, Thermal	6516	<b>7866</b>	9353	<b>11291</b>	14968	<b>18072</b>	21166	<b>25551</b>	33518	<b>40465</b>	52758	<b>63691</b>	75967	<b>91699</b>
		Input kW, Mechanical	15	<b>17</b>	24	<b>26</b>	41	<b>45</b>	66	<b>73</b>	96	<b>106</b>	164	<b>162</b>	243	<b>239</b>
		Output Torque Nm, Mechanical	9931	<b>11122</b>	15933	<b>17845</b>	26859	<b>30083</b>	43346	<b>48548</b>	63849	<b>71511</b>	110203	<b>110203</b>	163854	<b>163854</b>
		Efficiency %	83	<b>86</b>	85	<b>87</b>	86	<b>88</b>	87	<b>89</b>	88	<b>90</b>	89	<b>91</b>	90	<b>91</b>
Max Output Torque Nm	Single Key		11200	12000	17000	24000	41000	51000	72000							
	Standard Shaft		15800	21000	27300	43400	77700	108000	146400							

Notes: Ratings in the grey shaded area require force feed lubrication.  
 Higher thermal ratings may be obtained using oil coolers.  
 Two keys must be specified for the wheel and output shaft when maximum output torque for single key is exceeded.  
 High tensile steel output shaft must be specified when maximum output torque for standard shaft is exceeded.

 **IMPORTANT** Units to ATEX approval must be selected with a minimum service factor of 1.25.

## TW Series - Single Reduction - Selection Data

Mineral and Synthetic Oils

Nominal ratio: 25/1 Preferred Ratio Unit Sizes 10", 12", 14".


Input rpm	Output rpm	Gear Ratings	Centre Distance													
			10"		12"		14"		17"		20"		24"		28"	
			Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn
1800	72.0	Input kW, Thermal	42	<b>50</b>	63	<b>74</b>	88	<b>105</b>	121	<b>143</b>	194	<b>230</b>	256	<b>304</b>	322	<b>382</b>
		Output Torque Nm, Thermal	4879	<b>5883</b>	7331	<b>8840</b>	10415	<b>12558</b>	14210	<b>17134</b>	23010	<b>27747</b>	30564	<b>36857</b>	38390	<b>46297</b>
		Input kW, Mechanical	47	<b>52</b>	73	<b>81</b>	108	<b>119</b>	173	<b>191</b>	251	<b>277</b>	398	<b>439</b>	599	<b>661</b>
		Output Torque Nm, Mechanical	5525	<b>6188</b>	8619	<b>9653</b>	12717	<b>14243</b>	20409	<b>22858</b>	29857	<b>33440</b>	47693	<b>53416</b>	71924	<b>80555</b>
		Efficiency %	90	<b>91</b>	91	<b>92</b>	91	<b>92</b>	91	<b>92</b>	92	<b>93</b>	92	<b>93</b>	92	<b>93</b>
1500	60.0	Input kW, Thermal	37	<b>44</b>	56	<b>66</b>	79	<b>94</b>	108	<b>128</b>	176	<b>209</b>	237	<b>281</b>	304	<b>361</b>
		Output Torque Nm, Thermal	5200	<b>6271</b>	7804	<b>9410</b>	11125	<b>13415</b>	15255	<b>18393</b>	25069	<b>30230</b>	33999	<b>40998</b>	43643	<b>52630</b>
		Input kW, Mechanical	43	<b>47</b>	67	<b>73</b>	103	<b>114</b>	162	<b>179</b>	235	<b>260</b>	362	<b>400</b>	550	<b>608</b>
		Output Torque Nm, Mechanical	5954	<b>6668</b>	9339	<b>10459</b>	14571	<b>16320</b>	22974	<b>25731</b>	33586	<b>37616</b>	52234	<b>58502</b>	79493	<b>89032</b>
		Efficiency %	90	<b>91</b>	90	<b>92</b>	91	<b>92</b>	91	<b>92</b>	92	<b>93</b>	92	<b>93</b>	92	<b>93</b>
1200	48.0	Input kW, Thermal	33	<b>39</b>	48	<b>57</b>	69	<b>82</b>	97	<b>115</b>	152	<b>181</b>	210	<b>249</b>	275	<b>327</b>
		Output Torque Nm, Thermal	5677	<b>6846</b>	8416	<b>10148</b>	12107	<b>14599</b>	17026	<b>20530</b>	27112	<b>32695</b>	37624	<b>45370</b>	49524	<b>59722</b>
		Input kW, Mechanical	37	<b>41</b>	58	<b>64</b>	91	<b>100</b>	143	<b>158</b>	207	<b>228</b>	316	<b>349</b>	483	<b>534</b>
		Output Torque Nm, Mechanical	6461	<b>7237</b>	10184	<b>11406</b>	15946	<b>17860</b>	25276	<b>28309</b>	36809	<b>41226</b>	56926	<b>63757</b>	87329	<b>97809</b>
		Efficiency %	89	<b>90</b>	90	<b>91</b>	91	<b>92</b>	91	<b>92</b>	91	<b>93</b>	92	<b>93</b>	92	<b>93</b>
1000	40.0	Input kW, Thermal	29	<b>34</b>	42	<b>49</b>	60	<b>71</b>	86	<b>101</b>	134	<b>159</b>	187	<b>222</b>	249	<b>296</b>
		Output Torque Nm, Thermal	5897	<b>7112</b>	8651	<b>10433</b>	12575	<b>15166</b>	17993	<b>21697</b>	28423	<b>34277</b>	40090	<b>48346</b>	53758	<b>64830</b>
		Input kW, Mechanical	33	<b>37</b>	52	<b>57</b>	81	<b>89</b>	129	<b>142</b>	186	<b>205</b>	284	<b>314</b>	429	<b>474</b>
		Output Torque Nm, Mechanical	6657	<b>7680</b>	10810	<b>12107</b>	16973	<b>19010</b>	27095	<b>30346</b>	39561	<b>44308</b>	61273	<b>68625</b>	92938	<b>104091</b>
		Efficiency %	88	<b>90</b>	89	<b>91</b>	90	<b>91</b>	90	<b>92</b>	91	<b>93</b>	92	<b>93</b>	92	<b>93</b>
750	30.0	Input kW, Thermal	22	<b>26</b>	32	<b>37</b>	46	<b>55</b>	67	<b>79</b>	107	<b>127</b>	152	<b>180</b>	208	<b>247</b>
		Output Torque Nm, Thermal	5973	<b>7205</b>	8631	<b>10410</b>	12796	<b>15433</b>	18555	<b>22377</b>	29996	<b>36178</b>	43234	<b>52142</b>	59461	<b>71713</b>
		Input kW, Mechanical	22	<b>31</b>	43	<b>47</b>	67	<b>73</b>	106	<b>117</b>	154	<b>170</b>	238	<b>263</b>	362	<b>400</b>
		Output Torque Nm, Mechanical	7612	<b>8525</b>	11842	<b>13263</b>	18471	<b>20688</b>	29627	<b>33182</b>	43416	<b>48626</b>	67996	<b>76156</b>	10419	<b>116647</b>
		Efficiency %	87	<b>89</b>	88	<b>90</b>	89	<b>90</b>	89	<b>91</b>	91	<b>92</b>	91	<b>92</b>	92	<b>93</b>
500	20.0	Input kW, Thermal	15	<b>18</b>	21	<b>25</b>	32	<b>38</b>	46	<b>54</b>	76	<b>90</b>	111	<b>132</b>	156	<b>185</b>
		Output Torque Nm, Thermal	5966	<b>7198</b>	8455	<b>10199</b>	12928	<b>15596</b>	18683	<b>22536</b>	31962	<b>38231</b>	46864	<b>56529</b>	66346	<b>80028</b>
		Input kW, Mechanical	22	<b>24</b>	34	<b>37</b>	52	<b>57</b>	83	<b>91</b>	120	<b>132</b>	185	<b>204</b>	282	<b>311</b>
		Output Torque Nm, Mechanical	8598	<b>9630</b>	13561	<b>15189</b>	21245	<b>23794</b>	34069	<b>38157</b>	49915	<b>55904</b>	78286	<b>87680</b>	120229	<b>134657</b>
		Efficiency %	85	<b>87</b>	86	<b>88</b>	87	<b>89</b>	88	<b>90</b>	89	<b>91</b>	90	<b>91</b>	91	<b>92</b>
250	10.0	Input kW, Thermal	9.0	<b>11</b>	12	<b>14</b>	19	<b>23</b>	27	<b>32</b>	43	<b>51</b>	66	<b>78</b>	97	<b>114</b>
		Output Torque Nm, Thermal	6890	<b>8316</b>	9516	<b>11484</b>	15188	<b>18330</b>	21352	<b>25764</b>	34913	<b>42134</b>	50052	<b>65225</b>	79689	<b>96161</b>
		Input kW, Mechanical	14	<b>15</b>	21	<b>23</b>	33	<b>36</b>	52	<b>57</b>	75	<b>82</b>	116	<b>124</b>	179	<b>175</b>
		Output Torque Nm, Mechanical	10389	<b>11635</b>	16470	<b>18446</b>	25895	<b>29003</b>	41474	<b>46451</b>	60630	<b>67906</b>	95410	<b>104030</b>	148060	<b>148060</b>
		Efficiency %	82	<b>84</b>	83	<b>85</b>	84	<b>86</b>	85	<b>87</b>	86	<b>88</b>	87	<b>89</b>	88	<b>90</b>
Max Output Torque Nm	Single Key		11200		12000		17000		24000		41000		51000		72000	
	Standard Shaft		15800		21000		27300		43400		77700		108000		146400	

Notes: Ratings in the grey shaded area require force feed lubrication.

Higher thermal ratings may be obtained using oil coolers.

Two keys must be specified for the wheel and output shaft when maximum output torque for single key is exceeded.

High tensile steel output shaft must be specified when maximum output torque for standard shaft is exceeded.



**IMPORTANT** Units to ATEX approval must be selected with a minimum service factor of 1.25.


## TW Series - Single Reduction - Selection Data

Mineral and Synthetic Oils

Nominal ratio: 30/1 Preferred Ratio Unit Sizes 10", 12", 14".

Input rpm	Output rpm	Gear Ratings	Centre Distance													
			10"		12"		14"		17"		20"		24"		28"	
			Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn
1800	60.0	Input kW, Thermal	38	<b>45</b>	57	<b>67</b>	77	<b>91</b>	107	<b>126</b>	165	<b>195</b>	216	<b>256</b>	260	<b>308</b>
		Output Torque Nm, Thermal	5230	<b>6306</b>	7900	<b>9525</b>	10805	<b>13028</b>	14927	<b>17996</b>	23200	<b>27971</b>	30266	<b>36491</b>	36253	<b>43710</b>
		Input kW, Mechanical	41	<b>45</b>	65	<b>71</b>	96	<b>106</b>	154	<b>170</b>	226	<b>249</b>	372	<b>410</b>	535	<b>590</b>
		Output Torque Nm, Mechanical	5682	<b>6364</b>	9024	<b>10107</b>	13522	<b>15145</b>	21651	<b>24249</b>	31900	<b>35728</b>	52487	<b>58785</b>	75337	<b>84377</b>
		Efficiency %	89	<b>91</b>	90	<b>91</b>	90	<b>91</b>	90	<b>91</b>	91	<b>92</b>	91	<b>92</b>	91	<b>91</b>
1500	50.0	Input kW, Thermal	34	<b>40</b>	50	<b>59</b>	69	<b>81</b>	95	<b>113</b>	150	<b>177</b>	200	<b>237</b>	247	<b>292</b>
		Output Torque Nm, Thermal	5554	<b>6697</b>	8366	<b>10087</b>	11514	<b>13882</b>	15957	<b>19239</b>	25280	<b>30480</b>	33740	<b>40679</b>	41506	<b>50043</b>
		Input kW, Mechanical	37	<b>40</b>	58	<b>64</b>	87	<b>96</b>	138	<b>152</b>	203	<b>223</b>	337	<b>371</b>	490	<b>539</b>
		Output Torque Nm, Mechanical	6095	<b>6826</b>	9724	<b>10891</b>	14645	<b>16403</b>	23171	<b>25952</b>	34321	<b>38440</b>	57109	<b>63962</b>	82988	<b>92947</b>
		Efficiency %	89	<b>90</b>	89	<b>91</b>	90	<b>91</b>	90	<b>91</b>	91	<b>92</b>	91	<b>92</b>	91	<b>92</b>
1200	40.0	Input kW, Thermal	29	<b>35</b>	43	<b>51</b>	60	<b>71</b>	85	<b>101</b>	130	<b>154</b>	177	<b>210</b>	225	<b>267</b>
		Output Torque Nm, Thermal	6045	<b>7290</b>	8982	<b>10831</b>	12500	<b>15072</b>	17737	<b>21385</b>	27346	<b>32972</b>	37424	<b>45121</b>	47475	<b>57240</b>
		Input kW, Mechanical	32	<b>35</b>	51	<b>56</b>	76	<b>84</b>	122	<b>134</b>	177	<b>195</b>	292	<b>322</b>	428	<b>472</b>
		Output Torque Nm, Mechanical	6561	<b>7349</b>	10510	<b>11772</b>	15923	<b>17384</b>	25455	<b>28510</b>	37409	<b>41899</b>	61868	<b>69292</b>	90884	<b>101790</b>
		Efficiency %	88	<b>89</b>	89	<b>90</b>	89	<b>90</b>	90	<b>91</b>	90	<b>91</b>	91	<b>92</b>	91	<b>92</b>
1000	33.3	Input kW, Thermal	26	<b>30</b>	37	<b>44</b>	52	<b>62</b>	75	<b>89</b>	114	<b>135</b>	158	<b>187</b>	205	<b>243</b>
		Output Torque Nm, Thermal	6272	<b>7564</b>	9214	<b>11111</b>	12969	<b>15638</b>	18698	<b>22545</b>	28671	<b>34570</b>	39936	<b>48151</b>	51817	<b>62475</b>
		Input kW, Mechanical	28	<b>31</b>	45	<b>49</b>	68	<b>75</b>	109	<b>119</b>	159	<b>175</b>	261	<b>288</b>	379	<b>418</b>
		Output Torque Nm, Mechanical	6904	<b>7732</b>	11076	<b>12405</b>	16861	<b>18884</b>	27156	<b>30415</b>	40100	<b>44912</b>	66291	<b>74246</b>	96373	<b>107938</b>
		Efficiency %	87	<b>89</b>	88	<b>89</b>	88	<b>90</b>	89	<b>90</b>	90	<b>91</b>	90	<b>92</b>	91	<b>92</b>
750	25.0	Input kW, Thermal	20	<b>23</b>	28	<b>33</b>	40	<b>48</b>	59	<b>69</b>	91	<b>108</b>	129	<b>153</b>	172	<b>204</b>
		Output Torque Nm, Thermal	6351	<b>7659</b>	9179	<b>11070</b>	13183	<b>15898</b>	19238	<b>23198</b>	30259	<b>36488</b>	43136	<b>52014</b>	57680	<b>69548</b>
		Input kW, Mechanical	24	<b>26</b>	38	<b>42</b>	57	<b>62</b>	90	<b>98</b>	132	<b>145</b>	221	<b>243</b>	324	<b>356</b>
		Output Torque Nm, Mechanical	7701	<b>8625</b>	12299	<b>13775</b>	18544	<b>20769</b>	19530	<b>33073</b>	44000	<b>49280</b>	74131	<b>83027</b>	109169	<b>122270</b>
		Efficiency %	86	<b>88</b>	87	<b>88</b>	87	<b>89</b>	88	<b>90</b>	89	<b>90</b>	90	<b>91</b>	90	<b>91</b>
500	16.7	Input kW, Thermal	14	<b>16</b>	19	<b>22</b>	28	<b>33</b>	40	<b>47</b>	65	<b>77</b>	95	<b>112</b>	130	<b>154</b>
		Output Torque Nm, Thermal	6351	<b>7662</b>	8995	<b>10850</b>	13316	<b>16061</b>	19349	<b>23335</b>	31966	<b>38552</b>	46800	<b>56438</b>	64654	<b>77966</b>
		Input kW, Mechanical	19	<b>20</b>	29	<b>32</b>	44	<b>48</b>	70	<b>77</b>	103	<b>113</b>	172	<b>189</b>	253	<b>278</b>
		Output Torque Nm, Mechanical	8698	<b>9742</b>	13896	<b>15563</b>	21014	<b>23536</b>	33932	<b>38003</b>	50533	<b>56597</b>	85291	<b>95526</b>	126298	<b>141454</b>
		Efficiency %	83	<b>86</b>	84	<b>87</b>	85	<b>87</b>	86	<b>88</b>	87	<b>89</b>	88	<b>90</b>	89	<b>90</b>
250	8.3	Input kW, Thermal	8.2	<b>9.6</b>	11	<b>13</b>	17	<b>20</b>	24	<b>28</b>	37	<b>44</b>	57	<b>67</b>	81	<b>95</b>
		Output Torque Nm, Thermal	7364	<b>8887</b>	10160	<b>12260</b>	15660	<b>18895</b>	22130	<b>26698</b>	35204	<b>42472</b>	53956	<b>65089</b>	77701	<b>93726</b>
		Input kW, Mechanical	12	<b>12</b>	18	<b>20</b>	28	<b>30</b>	45	<b>48</b>	65	<b>71</b>	109	<b>106</b>	160	<b>156</b>
		Output Torque Nm, Mechanical	10337	<b>11578</b>	16664	<b>18664</b>	25473	<b>28530</b>	41358	<b>46321</b>	61383	<b>68749</b>	103783	<b>104030</b>	154572	<b>154572</b>
		Efficiency %	80	<b>83</b>	81	<b>83</b>	82	<b>84</b>	83	<b>85</b>	84	<b>86</b>	85	<b>87</b>	88	<b>88</b>
Max Output Torque Nm	Single Key		11200		12000		17000		24000		41000		51000		72000	
	Standard Shaft		15800		21000		27300		43400		77700		108000		146400	

Notes: Ratings in the grey shaded area require force feed lubrication.  
 Higher thermal ratings may be obtained using oil coolers.  
 Two keys must be specified for the wheel and output shaft when maximum output torque for single key is exceeded.  
 High tensile steel output shaft must be specified when maximum output torque for standard shaft is exceeded.

 **IMPORTANT** Units to ATEX approval must be selected with a minimum service factor of 1.25.

## TW Series - Single Reduction - Selection Data

### Mineral and Synthetic Oils

Nominal ratio: 35/1 Non Preferred Ratio.

Input rpm	Output rpm	Gear Ratings	Centre Distance													
			10"		12"		14"		17"		20"		24"		28"	
			Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn
1800	51.4	Input kW, Thermal	30	<b>35</b>	45	<b>53</b>	63	<b>74</b>	93	<b>110</b>	146	<b>173</b>	192	<b>227</b>	232	<b>274</b>
		Output Torque Nm, Thermal	4658	<b>5615</b>	7171	<b>8645</b>	10041	<b>12104</b>	15008	<b>18093</b>	23766	<b>28651</b>	31080	<b>37469</b>	37313	<b>44984</b>
		Input kW, Mechanical	32	<b>35</b>	50	<b>55</b>	75	<b>82</b>	125	<b>137</b>	193	<b>212</b>	305	<b>336</b>	420	<b>462</b>
		Output Torque Nm, Mechanical	4967	<b>5563</b>	7982	<b>8640</b>	11940	<b>13373</b>	20138	<b>22555</b>	31402	<b>35170</b>	49678	<b>55639</b>	68176	<b>76357</b>
		Efficiency %	86	<b>88</b>	87	<b>89</b>	88	<b>89</b>	89	<b>90</b>	89	<b>91</b>	89	<b>91</b>	89	<b>90</b>
1500	42.9	Input kW, Thermal	27	<b>31</b>	40	<b>48</b>	57	<b>67</b>	83	<b>98</b>	133	<b>157</b>	178	<b>210</b>	220	<b>260</b>
		Output Torque Nm, Thermal	4980	<b>6003</b>	7650	<b>9222</b>	10769	<b>12982</b>	16046	<b>19343</b>	25849	<b>31162</b>	34571	<b>41677</b>	42620	<b>51381</b>
		Input kW, Mechanical	28	<b>31</b>	45	<b>50</b>	67	<b>74</b>	111	<b>122</b>	172	<b>189</b>	275	<b>302</b>	382	<b>420</b>
		Output Torque Nm, Mechanical	5324	<b>5963</b>	8606	<b>9639</b>	12861	<b>14405</b>	21440	<b>24013</b>	33578	<b>37608</b>	53701	<b>60145</b>	74581	<b>83530</b>
		Efficiency %	86	<b>87</b>	87	<b>88</b>	87	<b>89</b>	88	<b>90</b>	89	<b>91</b>	89	<b>91</b>	89	<b>91</b>
1200	34.3	Input kW, Thermal	24	<b>28</b>	35	<b>41</b>	50	<b>59</b>	74	<b>88</b>	115	<b>136</b>	157	<b>186</b>	200	<b>236</b>
		Output Torque Nm, Thermal	5449	<b>6559</b>	8265	<b>9964</b>	11758	<b>14175</b>	17834	<b>21500</b>	27909	<b>33647</b>	38256	<b>46120</b>	48620	<b>58614</b>
		Input kW, Mechanical	25	<b>27</b>	40	<b>43</b>	59	<b>65</b>	98	<b>107</b>	150	<b>165</b>	237	<b>261</b>	334	<b>367</b>
		Output Torque Nm, Mechanical	5719	<b>6405</b>	9302	<b>10419</b>	13987	<b>15665</b>	23495	<b>26314</b>	36518	<b>40900</b>	57894	<b>64842</b>	81566	<b>91354</b>
		Efficiency %	85	<b>87</b>	86	<b>88</b>	87	<b>88</b>	88	<b>89</b>	89	<b>90</b>	89	<b>91</b>	89	<b>91</b>
1000	28.6	Input kW, Thermal	21	<b>24</b>	31	<b>36</b>	43	<b>51</b>	66	<b>77</b>	101	<b>119</b>	140	<b>166</b>	182	<b>215</b>
		Output Torque Nm, Thermal	5666	<b>6831</b>	8504	<b>10252</b>	12236	<b>14751</b>	18800	<b>22665</b>	29227	<b>35237</b>	40760	<b>49140</b>	52969	<b>63858</b>
		Input kW, Mechanical	22	<b>24</b>	35	<b>38</b>	53	<b>57</b>	88	<b>96</b>	135	<b>148</b>	214	<b>235</b>	296	<b>326</b>
		Output Torque Nm, Mechanical	6042	<b>6767</b>	9810	<b>10987</b>	14833	<b>16613</b>	25098	<b>28109</b>	39235	<b>43944</b>	62469	<b>69966</b>	86732	<b>97140</b>
		Efficiency %	84	<b>86</b>	85	<b>87</b>	86	<b>88</b>	87	<b>89</b>	88	<b>90</b>	89	<b>90</b>	89	<b>91</b>
750	21.4	Input kW, Thermal	16	<b>19</b>	23	<b>27</b>	34	<b>40</b>	51	<b>60</b>	81	<b>95</b>	114	<b>135</b>	152	<b>180</b>
		Output Torque Nm, Thermal	5742	<b>6923</b>	8490	<b>10236</b>	12470	<b>15034</b>	19342	<b>23321</b>	30808	<b>37146</b>	43949	<b>52988</b>	58832	<b>70929</b>
		Input kW, Mechanical	19	<b>20</b>	30	<b>32</b>	44	<b>48</b>	73	<b>80</b>	114	<b>125</b>	182	<b>200</b>	255	<b>280</b>
		Output Torque Nm, Mechanical	6696	<b>7500</b>	10890	<b>12197</b>	16407	<b>18376</b>	27664	<b>30984</b>	43525	<b>48748</b>	70390	<b>78837</b>	98940	<b>110813</b>
		Efficiency %	82	<b>84</b>	83	<b>86</b>	85	<b>87</b>	86	<b>88</b>	87	<b>89</b>	88	<b>90</b>	89	<b>90</b>
500	14.3	Input kW, Thermal	11	<b>13</b>	16	<b>18</b>	23	<b>27</b>	35	<b>41</b>	58	<b>68</b>	84	<b>99</b>	115	<b>136</b>
		Output Torque Nm, Thermal	5730	<b>6909</b>	8315	<b>10026</b>	12601	<b>15194</b>	19453	<b>23457</b>	35523	<b>39219</b>	47620	<b>57421</b>	65826	<b>79369</b>
		Input kW, Mechanical	14	<b>16</b>	23	<b>25</b>	34	<b>37</b>	57	<b>62</b>	88	<b>96</b>	140	<b>153</b>	197	<b>216</b>
		Output Torque Nm, Mechanical	7560	<b>8467</b>	12334	<b>13814</b>	18600	<b>20832</b>	31520	<b>35302</b>	49375	<b>55299</b>	79788	<b>86362</b>	113101	<b>126673</b>
		Efficiency %	79	<b>82</b>	81	<b>84</b>	82	<b>85</b>	84	<b>86</b>	86	<b>88</b>	86	<b>88</b>	87	<b>89</b>
250	7.1	Input kW, Thermal	6.7	<b>7.7</b>	9.3	<b>11</b>	14	<b>17</b>	21	<b>25</b>	33	<b>39</b>	50	<b>59</b>	72	<b>84</b>
		Output Torque Nm, Thermal	6594	<b>7953</b>	9341	<b>11266</b>	14768	<b>17811</b>	22243	<b>26828</b>	35823	<b>43211</b>	54887	<b>66200</b>	79048	<b>95336</b>
		Input kW, Mechanical	9.1	<b>9.8</b>	15	<b>16</b>	22	<b>24</b>	36	<b>39</b>	56	<b>60</b>	89	<b>93</b>	125	<b>127</b>
		Output Torque Nm, Mechanical	9029	<b>10112</b>	14829	<b>16608</b>	22503	<b>25203</b>	38254	<b>42845</b>	60023	<b>67226</b>	97118	<b>104030</b>	137899	<b>144479</b>
		Efficiency %	75	<b>78</b>	77	<b>80</b>	78	<b>81</b>	80	<b>83</b>	82	<b>84</b>	83	<b>85</b>	84	<b>86</b>
Max Output Torque Nm	Single Key		11200		12000		17000		24000		41000		51000		72000	
	Standard Shaft		15800		21000		27300		43400		77700		108000		146400	

Notes: Ratings in the grey shaded area require force feed lubrication.  
 Higher thermal ratings may be obtained using oil coolers.  
 Two keys must be specified for the wheel and output shaft when maximum output torque for single key is exceeded.  
 High tensile steel output shaft must be specified when maximum output torque for standard shaft is exceeded.

 **IMPORTANT** Units to ATEX approval must be selected with a minimum service factor of 1.25.

## TW Series - Single Reduction - Selection Data

Mineral and Synthetic Oils

Nominal ratio: 40/1 Preferred Ratio Unit Sizes 10", 12", 14".

Input rpm	Output rpm	Gear Ratings	Centre Distance													
			10"		12"		14"		17"		20"		24"		28"	
			Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn
1800	45.0	Input kW, Thermal	28	<b>33</b>	42	<b>50</b>	64	<b>75</b>	80	<b>94</b>	132	<b>156</b>	173	<b>205</b>	219	<b>258</b>
		Output Torque Nm, Thermal	5089	<b>6135</b>	7667	<b>9242</b>	11633	<b>14024</b>	14415	<b>17376</b>	24176	<b>29144</b>	31670	<b>38177</b>	39880	<b>48079</b>
		Input kW, Mechanical	33	<b>36</b>	50	<b>55</b>	64	<b>70</b>	103	<b>113</b>	159	<b>175</b>	252	<b>277</b>	372	<b>408</b>
		Output Torque Nm, Mechanical	5925	<b>6636</b>	9180	<b>10281</b>	11718	<b>13125</b>	18644	<b>20881</b>	29255	<b>32765</b>	46336	<b>51897</b>	68469	<b>76685</b>
		Efficiency %	86	<b>87</b>	86	<b>88</b>	88	<b>89</b>	87	<b>88</b>	88	<b>90</b>	88	<b>89</b>	89	<b>90</b>
1500	37.5	Input kW, Thermal	25	<b>30</b>	38	<b>44</b>	57	<b>67</b>	72	<b>84</b>	119	<b>141</b>	160	<b>189</b>	206	<b>243</b>
		Output Torque Nm, Thermal	5414	<b>6526</b>	8142	<b>9814</b>	12328	<b>14862</b>	15477	<b>18656</b>	26260	<b>31656</b>	35175	<b>42403</b>	45259	<b>54559</b>
		Input kW, Mechanical	29	<b>32</b>	45	<b>50</b>	58	<b>63</b>	92	<b>100</b>	141	<b>155</b>	227	<b>249</b>	337	<b>370</b>
		Output Torque Nm, Mechanical	6311	<b>7068</b>	9847	<b>11029</b>	12597	<b>14108</b>	19819	<b>22197</b>	31169	<b>34909</b>	49990	<b>55989</b>	74630	<b>83586</b>
		Efficiency %	85	<b>87</b>	86	<b>87</b>	88	<b>89</b>	87	<b>88</b>	88	<b>89</b>	88	<b>90</b>	89	<b>90</b>
1200	30.0	Input kW, Thermal	22	<b>26</b>	33	<b>38</b>	49	<b>58</b>	64	<b>76</b>	103	<b>122</b>	142	<b>167</b>	186	<b>220</b>
		Output Torque Nm, Thermal	5900	<b>7113</b>	8760	<b>10561</b>	13321	<b>16059</b>	17270	<b>20818</b>	28316	<b>34135</b>	38864	<b>46850</b>	51262	<b>61796</b>
		Input kW, Mechanical	25	<b>28</b>	39	<b>43</b>	50	<b>55</b>	80	<b>88</b>	124	<b>136</b>	195	<b>214</b>	293	<b>321</b>
		Output Torque Nm, Mechanical	6738	<b>7546</b>	10588	<b>11859</b>	13572	<b>15201</b>	21645	<b>24242</b>	33912	<b>37982</b>	53744	<b>60193</b>	81116	<b>90850</b>
		Efficiency %	84	<b>86</b>	85	<b>87</b>	87	<b>88</b>	86	<b>88</b>	88	<b>89</b>	88	<b>89</b>	89	<b>90</b>
1000	25.0	Input kW, Thermal	19	<b>23</b>	28	<b>33</b>	43	<b>50</b>	57	<b>67</b>	91	<b>107</b>	126	<b>149</b>	168	<b>199</b>
		Output Torque Nm, Thermal	6124	<b>7383</b>	8996	<b>10845</b>	13785	<b>16620</b>	18249	<b>21998</b>	29628	<b>35718</b>	41637	<b>49868</b>	55572	<b>66993</b>
		Input kW, Mechanical	23	<b>25</b>	35	<b>38</b>	44	<b>49</b>	73	<b>79</b>	112	<b>123</b>	178	<b>195</b>	263	<b>289</b>
		Output Torque Nm, Mechanical	7201	<b>8065</b>	11180	<b>12522</b>	14292	<b>16607</b>	23294	<b>26089</b>	36621	<b>41016</b>	58621	<b>65655</b>	87346	<b>97861</b>
		Efficiency %	83	<b>85</b>	84	<b>86</b>	86	<b>87</b>	86	<b>87</b>	87	<b>89</b>	88	<b>89</b>	88	<b>90</b>
750	18.8	Input kW, Thermal	15	<b>18</b>	22	<b>25</b>	33	<b>39</b>	45	<b>52</b>	73	<b>85</b>	103	<b>121</b>	140	<b>165</b>
		Output Torque Nm, Thermal	6201	<b>7477</b>	8968	<b>10812</b>	13985	<b>16863</b>	18818	<b>22686</b>	31205	<b>37621</b>	44552	<b>53711</b>	61367	<b>73982</b>
		Input kW, Mechanical	19	<b>21</b>	30	<b>32</b>	38	<b>41</b>	61	<b>67</b>	94	<b>103</b>	151	<b>166</b>	225	<b>247</b>
		Output Torque Nm, Mechanical	7861	<b>8805</b>	12404	<b>13892</b>	15914	<b>17824</b>	25835	<b>28935</b>	40694	<b>45577</b>	65822	<b>73721</b>	98937	<b>110810</b>
		Efficiency %	81	<b>84</b>	82	<b>85</b>	84	<b>86</b>	84	<b>86</b>	86	<b>88</b>	87	<b>89</b>	88	<b>89</b>
500	12.5	Input kW, Thermal	10	<b>12</b>	15	<b>17</b>	23	<b>27</b>	31	<b>36</b>	52	<b>61</b>	76	<b>89</b>	106	<b>125</b>
		Output Torque Nm, Thermal	6193	<b>7472</b>	8785	<b>10593</b>	14126	<b>17034</b>	18944	<b>22840</b>	32925	<b>39699</b>	48233	<b>58154</b>	68361	<b>82422</b>
		Input kW, Mechanical	15	<b>16</b>	23	<b>25</b>	29	<b>32</b>	47	<b>51</b>	72	<b>79</b>	115	<b>126</b>	173	<b>189</b>
		Output Torque Nm, Mechanical	8861	<b>9925</b>	14031	<b>15714</b>	18018	<b>20180</b>	29167	<b>35667</b>	45796	<b>51292</b>	73792	<b>82647</b>	111835	<b>125255</b>
		Efficiency %	79	<b>81</b>	80	<b>82</b>	82	<b>84</b>	82	<b>84</b>	84	<b>86</b>	85	<b>87</b>	86	<b>88</b>
250	6.3	Input kW, Thermal	6.4	<b>7.3</b>	8.7	<b>10</b>	14	<b>17</b>	19	<b>22</b>	30	<b>35</b>	46	<b>53</b>	66	<b>77</b>
		Output Torque Nm, Thermal	7167	<b>8644</b>	9898	<b>11938</b>	16660	<b>20096</b>	21631	<b>26085</b>	36721	<b>43745</b>	55582	<b>67030</b>	82000	<b>98890</b>
		Input kW, Mechanical	9.4	<b>10</b>	15	<b>16</b>	18	<b>20</b>	30	<b>33</b>	46	<b>50</b>	74	<b>80</b>	110	<b>113</b>
		Output Torque Nm, Mechanical	10591	<b>11862</b>	16828	<b>18848</b>	21631	<b>24227</b>	35403	<b>39651</b>	55694	<b>62377</b>	90075	<b>100884</b>	136144	<b>144479</b>
		Efficiency %	74	<b>77</b>	75	<b>78</b>	78	<b>81</b>	78	<b>80</b>	80	<b>83</b>	81	<b>84</b>	82	<b>85</b>
Max Output Torque Nm	Single Key	11200	12000	17000	24000	41000	51000	72000								
	Standard Shaft	15800	21000	27300	43400	77700	108000	146400								

Notes: Ratings in the grey shaded area require force feed lubrication.  
 Higher thermal ratings may be obtained using oil coolers.  
 Two keys must be specified for the wheel and output shaft when maximum output torque for single key is exceeded.  
 High tensile steel output shaft must be specified when maximum output torque for standard shaft is exceeded.

 **IMPORTANT** Units to ATEX approval must be selected with a minimum service factor of 1.25.


## TW Series - Single Reduction - Selection Data

Mineral and Synthetic Oils

Nominal ratio: 45/1 Non Preferred Ratio

Input rpm	Output rpm	Gear Ratings	Centre Distance													
			10"		12"		14"		17"		20"		24"		28"	
			Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn
1800	40.0	Input kW, Thermal	26	<b>30</b>	38	<b>45</b>	55	<b>65</b>	76	<b>89</b>	117	<b>137</b>	164	<b>193</b>	182	<b>214</b>
		Output Torque Nm, Thermal	5196	<b>6263</b>	7635	<b>9203</b>	11234	<b>13542</b>	15375	<b>18532</b>	23952	<b>28871</b>	33354	<b>40206</b>	36398	<b>43874</b>
		Input kW, Mechanical	30	<b>32</b>	45	<b>49</b>	71	<b>78</b>	111	<b>122</b>	162	<b>178</b>	216	<b>237</b>	311	<b>340</b>
		Output Torque Nm, Mechanical	5942	<b>6587</b>	9078	<b>10096</b>	14556	<b>16211</b>	22745	<b>25474</b>	33416	<b>37426</b>	44234	<b>49542</b>	62719	<b>70246</b>
		Efficiency %	84	<b>86</b>	85	<b>86</b>	86	<b>88</b>	86	<b>88</b>	87	<b>88</b>	88	<b>89</b>	86	<b>87</b>
1500	33.3	Input kW, Thermal	23	<b>27</b>	34	<b>40</b>	49	<b>58</b>	68	<b>79</b>	106	<b>125</b>	150	<b>177</b>	173	<b>203</b>
		Output Torque Nm, Thermal	5524	<b>6659</b>	8110	<b>9775</b>	11935	<b>14387</b>	16409	<b>19779</b>	26027	<b>31373</b>	36851	<b>44421</b>	41707	<b>50272</b>
		Input kW, Mechanical	27	<b>29</b>	41	<b>44</b>	64	<b>70</b>	99	<b>108</b>	144	<b>158</b>	194	<b>212</b>	285	<b>312</b>
		Output Torque Nm, Mechanical	6312	<b>7070</b>	9724	<b>10891</b>	15647	<b>17524</b>	24076	<b>26965</b>	35561	<b>39829</b>	47651	<b>53369</b>	69380	<b>77706</b>
		Efficiency %	84	<b>86</b>	84	<b>86</b>	85	<b>87</b>	86	<b>87</b>	87	<b>88</b>	88	<b>89</b>	86	<b>88</b>
1200	26.7	Input kW, Thermal	21	<b>24</b>	30	<b>35</b>	43	<b>50</b>	60	<b>71</b>	92	<b>108</b>	132	<b>156</b>	158	<b>186</b>
		Output Torque Nm, Thermal	6017	<b>7253</b>	8728	<b>10521</b>	12922	<b>15577</b>	18204	<b>21943</b>	28076	<b>33843</b>	40492	<b>48810</b>	47751	<b>57558</b>
		Input kW, Mechanical	23	<b>25</b>	35	<b>38</b>	56	<b>61</b>	88	<b>96</b>	127	<b>139</b>	168	<b>185</b>	251	<b>274</b>
		Output Torque Nm, Mechanical	6737	<b>7545</b>	10466	<b>11721</b>	16933	<b>18965</b>	26648	<b>29846</b>	39123	<b>43818</b>	51696	<b>57899</b>	76350	<b>85513</b>
		Efficiency %	82	<b>85</b>	83	<b>85</b>	85	<b>87</b>	85	<b>87</b>	86	<b>88</b>	87	<b>89</b>	86	<b>88</b>
1000	22.2	Input kW, Thermal	18	<b>21</b>	26	<b>30</b>	37	<b>44</b>	53	<b>62</b>	81	<b>95</b>	117	<b>138</b>	144	<b>169</b>
		Output Torque Nm, Thermal	6244	<b>7528</b>	8694	<b>10805</b>	13387	<b>16138</b>	19171	<b>23109</b>	29384	<b>35421</b>	42946	<b>51770</b>	52154	<b>62865</b>
		Input kW, Mechanical	21	<b>23</b>	32	<b>35</b>	50	<b>55</b>	79	<b>87</b>	115	<b>126</b>	154	<b>168</b>	224	<b>245</b>
		Output Torque Nm, Mechanical	7237	<b>8106</b>	11158	<b>12497</b>	18055	<b>20222</b>	28669	<b>32110</b>	42294	<b>47369</b>	56331	<b>63091</b>	81766	<b>91578</b>
		Efficiency %	81	<b>84</b>	82	<b>84</b>	84	<b>86</b>	84	<b>86</b>	86	<b>87</b>	87	<b>88</b>	86	<b>88</b>
750	16.7	Input kW, Thermal	14	<b>16</b>	20	<b>23</b>	29	<b>34</b>	42	<b>49</b>	65	<b>76</b>	96	<b>112</b>	121	<b>142</b>
		Output Torque Nm, Thermal	6323	<b>7623</b>	8936	<b>10773</b>	13593	<b>16387</b>	19704	<b>23753</b>	30954	<b>37315</b>	40673	<b>55542</b>	58097	<b>70030</b>
		Input kW, Mechanical	17	<b>19</b>	27	<b>29</b>	42	<b>46</b>	66	<b>72</b>	97	<b>106</b>	130	<b>142</b>	190	<b>208</b>
		Output Torque Nm, Mechanical	7842	<b>8783</b>	12249	<b>13719</b>	19825	<b>22204</b>	31500	<b>35280</b>	46679	<b>52280</b>	62709	<b>70234</b>	91893	<b>102920</b>
		Efficiency %	79	<b>82</b>	80	<b>83</b>	82	<b>84</b>	83	<b>85</b>	84	<b>86</b>	86	<b>88</b>	86	<b>87</b>
500	11.1	Input kW, Thermal	9.6	<b>11</b>	13	<b>15</b>	20	<b>23</b>	29	<b>34</b>	47	<b>54</b>	70	<b>82</b>	92	<b>108</b>
		Output Torque Nm, Thermal	6319	<b>7619</b>	8754	<b>10554</b>	13728	<b>16551</b>	19807	<b>23879</b>	32662	<b>39378</b>	49752	<b>59983</b>	65137	<b>78523</b>
		Input kW, Mechanical	13	<b>14</b>	21	<b>22</b>	33	<b>36</b>	51	<b>56</b>	74	<b>80</b>	98	<b>107</b>	146	<b>159</b>
		Output Torque Nm, Mechanical	8817	<b>9875</b>	13847	<b>15509</b>	22463	<b>25158</b>	35534	<b>39798</b>	52141	<b>58398</b>	69539	<b>77884</b>	103847	<b>116309</b>
		Efficiency %	77	<b>80</b>	78	<b>81</b>	80	<b>82</b>	81	<b>83</b>	82	<b>85</b>	84	<b>86</b>	84	<b>86</b>
250	5.6	Input kW, Thermal	5.9	<b>6.8</b>	7.9	<b>9.1</b>	13	<b>15</b>	17	<b>20</b>	27	<b>31</b>	43	<b>49</b>	58	<b>67</b>
		Output Torque Nm, Thermal	7312	<b>8819</b>	9859	<b>11890</b>	16163	<b>19492</b>	22651	<b>27314</b>	35973	<b>43380</b>	57337	<b>69144</b>	78224	<b>94317</b>
		Input kW, Mechanical	8.6	<b>9.1</b>	13	<b>14</b>	21	<b>22</b>	33	<b>35</b>	48	<b>51</b>	63	<b>68</b>	93	<b>101</b>
		Output Torque Nm, Mechanical	10568	<b>11836</b>	16614	<b>18608</b>	26963	<b>30198</b>	42947	<b>48101</b>	63464	<b>71079</b>	85131	<b>95347</b>	125904	<b>141012</b>
		Efficiency %	72	<b>76</b>	73	<b>76</b>	75	<b>78</b>	79	<b>79</b>	78	<b>81</b>	80	<b>82</b>	80	<b>83</b>
Max Output Torque Nm	Single Key	11200		12000		17000		24000		41000		51000		72000		
	Standard Shaft	15800		21000		27300		43400		77700		108000		146400		

Notes: Ratings in the grey shaded area require force feed lubrication.  
 Higher thermal ratings may be obtained using oil coolers.  
 Two keys must be specified for the wheel and output shaft when maximum output torque for single key is exceeded.  
 High tensile steel output shaft must be specified when maximum output torque for standard shaft is exceeded.

 **IMPORTANT** Units to ATEX approval must be selected with a minimum service factor of 1.25.

## TW Series - Single Reduction - Selection Data

Mineral and Synthetic Oils

Nominal ratio: 50/1 Preferred Ratio Unit Sizes 10", 12", 14".

Input rpm	Output rpm	Gear Ratings	Centre Distance													
			10"		12"		14"		17"		20"		24"		28"	
			Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn
1800	36.0	Input kW, Thermal	24	<b>28</b>	35	<b>41</b>	50	<b>59</b>	68	<b>80</b>	108	<b>127</b>	142	<b>167</b>	172	<b>202</b>
		Output Torque Nm, Thermal	5158	<b>6217</b>	7776	<b>9372</b>	11115	<b>13397</b>	15312	<b>18239</b>	24323	<b>29317</b>	31750	<b>38269</b>	38188	<b>46030</b>
		Input kW, Mechanical	27	<b>29</b>	42	<b>45</b>	64	<b>69</b>	101	<b>109</b>	148	<b>159</b>	245	<b>265</b>	356	<b>385</b>
		Output Torque Nm, Mechanical	5938	<b>6492</b>	9182	<b>10080</b>	14304	<b>15750</b>	22521	<b>24873</b>	33387	<b>36907</b>	55215	<b>61199</b>	79863	<b>88771</b>
		Efficiency %	83	<b>85</b>	84	<b>85</b>	85	<b>86</b>	85	<b>86</b>	86	<b>87</b>	86	<b>87</b>	86	<b>87</b>
1500	30.0	Input kW, Thermal	21	<b>25</b>	32	<b>37</b>	45	<b>52</b>	61	<b>71</b>	98	<b>115</b>	131	<b>154</b>	163	<b>191</b>
		Output Torque Nm, Thermal	5483	<b>6609</b>	8250	<b>9944</b>	11825	<b>14253</b>	16176	<b>19497</b>	26416	<b>31840</b>	35271	<b>42513</b>	43553	<b>52496</b>
		Input kW, Mechanical	24	<b>26</b>	38	<b>41</b>	58	<b>52</b>	89	<b>97</b>	131	<b>143</b>	219	<b>240</b>	322	<b>352</b>
		Output Torque Nm, Mechanical	6304	<b>7060</b>	9838	<b>11018</b>	15427	<b>17278</b>	23825	<b>26684</b>	35492	<b>39751</b>	59513	<b>66655</b>	87356	<b>97839</b>
		Efficiency %	82	<b>84</b>	83	<b>85</b>	84	<b>86</b>	84	<b>86</b>	86	<b>87</b>	86	<b>87</b>	86	<b>87</b>
1200	24.0	Input kW, Thermal	19	<b>22</b>	27	<b>32</b>	39	<b>46</b>	55	<b>64</b>	85	<b>100</b>	116	<b>136</b>	148	<b>173</b>
		Output Torque Nm, Thermal	5973	<b>7199</b>	8871	<b>10693</b>	12818	<b>15451</b>	17981	<b>21662</b>	28481	<b>34329</b>	38977	<b>46980</b>	49604	<b>59789</b>
		Input kW, Mechanical	21	<b>23</b>	33	<b>36</b>	51	<b>56</b>	80	<b>87</b>	117	<b>127</b>	192	<b>210</b>	283	<b>310</b>
		Output Torque Nm, Mechanical	6769	<b>7582</b>	10642	<b>11919</b>	16824	<b>18842</b>	26541	<b>29726</b>	39269	<b>43981</b>	65043	<b>72848</b>	96113	<b>107647</b>
		Efficiency %	81	<b>83</b>	82	<b>84</b>	83	<b>85</b>	84	<b>86</b>	85	<b>87</b>	86	<b>87</b>	86	<b>87</b>
1000	20.0	Input kW, Thermal	16	<b>19</b>	24	<b>28</b>	34	<b>40</b>	48	<b>57</b>	75	<b>87</b>	103	<b>121</b>	134	<b>157</b>
		Output Torque Nm, Thermal	6198	<b>7471</b>	9106	<b>10977</b>	13288	<b>16017</b>	18943	<b>22832</b>	29798	<b>35919</b>	41491	<b>50011</b>	53979	<b>65052</b>
		Input kW, Mechanical	19	<b>21</b>	30	<b>32</b>	46	<b>50</b>	72	<b>79</b>	106	<b>115</b>	174	<b>190</b>	252	<b>275</b>
		Output Torque Nm, Mechanical	7246	<b>8115</b>	11351	<b>12714</b>	17946	<b>20100</b>	28529	<b>31953</b>	42350	<b>47432</b>	70303	<b>78739</b>	102399	<b>114687</b>
		Efficiency %	80	<b>82</b>	81	<b>83</b>	82	<b>84</b>	83	<b>85</b>	85	<b>86</b>	85	<b>87</b>	86	<b>87</b>
750	15.0	Input kW, Thermal	13	<b>15</b>	18	<b>21</b>	27	<b>31</b>	38	<b>44</b>	60	<b>70</b>	84	<b>99</b>	112	<b>132</b>
		Output Torque Nm, Thermal	6276	<b>7556</b>	9076	<b>10941</b>	13498	<b>16272</b>	19486	<b>23488</b>	31380	<b>37827</b>	44689	<b>53868</b>	59867	<b>72162</b>
		Input kW, Mechanical	16	<b>17</b>	25	<b>27</b>	38	<b>41</b>	61	<b>66</b>	88	<b>96</b>	147	<b>160</b>	214	<b>233</b>
		Output Torque Nm, Mechanical	7889	<b>8836</b>	12393	<b>13880</b>	19527	<b>21871</b>	31200	<b>34994</b>	46504	<b>52084</b>	78094	<b>87465</b>	114809	<b>128586</b>
		Efficiency %	89	<b>80</b>	79	<b>82</b>	81	<b>83</b>	81	<b>84</b>	83	<b>85</b>	84	<b>86</b>	85	<b>87</b>
500	10.0	Input kW, Thermal	8.8	<b>10</b>	12	<b>14</b>	18	<b>21</b>	26	<b>31</b>	43	<b>50</b>	62	<b>73</b>	85	<b>100</b>
		Output Torque Nm, Thermal	6272	<b>7562</b>	8891	<b>10719</b>	13631	<b>16434</b>	19593	<b>23620</b>	33103	<b>39908</b>	48376	<b>58318</b>	66896	<b>80640</b>
		Input kW, Mechanical	12	<b>13</b>	19	<b>21</b>	30	<b>32</b>	47	<b>51</b>	68	<b>73</b>	111	<b>121</b>	163	<b>178</b>
		Output Torque Nm, Mechanical	8767	<b>9819</b>	13939	<b>15612</b>	22139	<b>24795</b>	35166	<b>39386</b>	52070	<b>58318</b>	86295	<b>97356</b>	128762	<b>144213</b>
		Efficiency %	75	<b>78</b>	79	<b>79</b>	78	<b>81</b>	79	<b>81</b>	81	<b>83</b>	82	<b>84</b>	83	<b>85</b>
250	5.0	Input kW, Thermal	5.5	<b>6.3</b>	7.4	<b>8.5</b>	12	<b>13</b>	16	<b>18</b>	25	<b>29</b>	38	<b>44</b>	54	<b>63</b>
		Output Torque Nm, Thermal	7257	<b>8751</b>	10021	<b>12084</b>	16035	<b>19335</b>	22393	<b>27000</b>	36460	<b>43693</b>	55728	<b>67193</b>	80259	<b>96766</b>
		Input kW, Mechanical	7.9	<b>8.4</b>	12	<b>13</b>	19	<b>20</b>	30	<b>32</b>	43	<b>47</b>	71	<b>69</b>	105	<b>101</b>
		Output Torque Nm, Mechanical	10531	<b>11795</b>	16729	<b>18736</b>	26552	<b>29738</b>	42348	<b>47429</b>	62950	<b>70505</b>	105737	<b>105737</b>	156728	<b>156728</b>
		Efficiency %	70	<b>73</b>	71	<b>75</b>	73	<b>76</b>	74	<b>77</b>	76	<b>79</b>	77	<b>80</b>	78	<b>81</b>
Max Output Torque Nm	Single Key		11200	12000	17000	24000	41000	51000	72000							
	Standard Shaft		15800	21000	27300	43400	77700	108000	146400							

Notes: Ratings in the grey shaded area require force feed lubrication.  
 Higher thermal ratings may be obtained using oil coolers.  
 Two keys must be specified for the wheel and output shaft when maximum output torque for single key is exceeded.  
 High tensile steel output shaft must be specified when maximum output torque for standard shaft is exceeded.

 **IMPORTANT** Units to ATEX approval must be selected with a minimum service factor of 1.25.


## TW Series - Single Reduction - Selection Data

Mineral and Synthetic Oils

Nominal ratio: 60/1 Preferred Ratio Unit Sizes 10", 12", 14".

Input rpm	Output rpm	Gear Ratings	Centre Distance													
			10"		12"		14"		17"		20"		24"		28"	
			Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn
1800	30.0	Input kW, Thermal	21	<b>25</b>	32	<b>37</b>	44	<b>51</b>	60	<b>70</b>	87	<b>101</b>	124	<b>145</b>	151	<b>176</b>
		Output Torque Nm, Thermal	5474	<b>6597</b>	8285	<b>9986</b>	11364	<b>13696</b>	15522	<b>18708</b>	22343	<b>26928</b>	32356	<b>38996</b>	38985	<b>46987</b>
		Input kW, Mechanical	23	<b>24</b>	36	<b>38</b>	53	<b>56</b>	86	<b>89</b>	120	<b>125</b>	212	<b>220</b>	310	<b>321</b>
		Output Torque Nm, Mechanical	5890	<b>6287</b>	9403	<b>10074</b>	13847	<b>14895</b>	22267	<b>23946</b>	31013	<b>33267</b>	55811	<b>59764</b>	81274	<b>86745</b>
		Efficiency %	81	<b>83</b>	82	<b>84</b>	83	<b>84</b>	83	<b>84</b>	82	<b>84</b>	84	<b>85</b>	84	<b>85</b>
1500	25.0	Input kW, Thermal	19	<b>22</b>	29	<b>33</b>	39	<b>46</b>	54	<b>62</b>	79	<b>92</b>	114	<b>133</b>	142	<b>166</b>
		Output Torque Nm, Thermal	5802	<b>6993</b>	8752	<b>10549</b>	12072	<b>14550</b>	16556	<b>19954</b>	24484	<b>29509</b>	35882	<b>43247</b>	44380	<b>53489</b>
		Input kW, Mechanical	21	<b>22</b>	33	<b>35</b>	49	<b>52</b>	77	<b>82</b>	108	<b>113</b>	191	<b>201</b>	280	<b>295</b>
		Output Torque Nm, Mechanical	6248	<b>6966</b>	10098	<b>11220</b>	15072	<b>16681</b>	23954	<b>26317</b>	33481	<b>36244</b>	60479	<b>65530</b>	88700	<b>96279</b>
		Efficiency %	80	<b>82</b>	81	<b>83</b>	82	<b>84</b>	82	<b>84</b>	82	<b>84</b>	84	<b>85</b>	84	<b>85</b>
1200	20.0	Input kW, Thermal	17	<b>20</b>	25	<b>29</b>	34	<b>40</b>	48	<b>56</b>	69	<b>81</b>	101	<b>118</b>	129	<b>150</b>
		Output Torque Nm, Thermal	6305	<b>7600</b>	9377	<b>11302</b>	13069	<b>15752</b>	18355	<b>22122</b>	26633	<b>32099</b>	39582	<b>47706</b>	50442	<b>60795</b>
		Input kW, Mechanical	18	<b>20</b>	29	<b>31</b>	43	<b>47</b>	69	<b>74</b>	94	<b>102</b>	166	<b>180</b>	244	<b>266</b>
		Output Torque Nm, Mechanical	6787	<b>7601</b>	10953	<b>12268</b>	16451	<b>18425</b>	26457	<b>29362</b>	36461	<b>40836</b>	65512	<b>73373</b>	96773	<b>108385</b>
		Efficiency %	79	<b>81</b>	80	<b>82</b>	81	<b>83</b>	81	<b>83</b>	82	<b>84</b>	83	<b>85</b>	84	<b>85</b>
1000	16.7	Input kW, Thermal	15	<b>17</b>	21	<b>25</b>	30	<b>35</b>	42	<b>49</b>	61	<b>71</b>	90	<b>105</b>	117	<b>136</b>
		Output Torque Nm, Thermal	6537	<b>7880</b>	9609	<b>11583</b>	13539	<b>16318</b>	19321	<b>23287</b>	28017	<b>33767</b>	42086	<b>50725</b>	54813	<b>66064</b>
		Input kW, Mechanical	16	<b>17</b>	26	<b>28</b>	38	<b>42</b>	62	<b>67</b>	85	<b>92</b>	149	<b>163</b>	216	<b>235</b>
		Output Torque Nm, Mechanical	7163	<b>8023</b>	11603	<b>12995</b>	17432	<b>19523</b>	28255	<b>31646</b>	39259	<b>43970</b>	70534	<b>78998</b>	102514	<b>114816</b>
		Efficiency %	78	<b>80</b>	79	<b>81</b>	80	<b>82</b>	81	<b>83</b>	81	<b>83</b>	83	<b>85</b>	83	<b>85</b>
750	12.5	Input kW, Thermal	12	<b>13</b>	16	<b>19</b>	23	<b>27</b>	33	<b>39</b>	49	<b>57</b>	73	<b>86</b>	98	<b>114</b>
		Output Torque Nm, Thermal	6618	<b>7978</b>	9567	<b>11532</b>	13746	<b>16569</b>	19851	<b>23927</b>	29667	<b>35757</b>	45270	<b>54564</b>	60690	<b>73148</b>
		Input kW, Mechanical	14	<b>15</b>	22	<b>23</b>	32	<b>34</b>	51	<b>55</b>	71	<b>77</b>	125	<b>136</b>	183	<b>198</b>
		Output Torque Nm, Mechanical	7855	<b>8798</b>	12640	<b>14156</b>	18759	<b>21010</b>	30648	<b>34326</b>	43006	<b>48166</b>	77779	<b>87112</b>	114340	<b>128061</b>
		Efficiency %	75	<b>78</b>	77	<b>79</b>	78	<b>80</b>	79	<b>81</b>	80	<b>82</b>	82	<b>84</b>	882	<b>85</b>
500	8.3	Input kW, Thermal	8.1	<b>9.2</b>	11	<b>13</b>	16	<b>19</b>	23	<b>27</b>	36	<b>42</b>	54	<b>63</b>	75	<b>87</b>
		Output Torque Nm, Thermal	6623	<b>7984</b>	9378	<b>11305</b>	13881	<b>16733</b>	19950	<b>24048</b>	31389	<b>37834</b>	48959	<b>59015</b>	67723	<b>81631</b>
		Input kW, Mechanical	11	<b>11</b>	17	<b>18</b>	25	<b>27</b>	40	<b>43</b>	55	<b>59</b>	96	<b>104</b>	139	<b>150</b>
		Output Torque Nm, Mechanical	8698	<b>9741</b>	14129	<b>15824</b>	21326	<b>23885</b>	34613	<b>38766</b>	48151	<b>53929</b>	86842	<b>97264</b>	127284	<b>142559</b>
		Efficiency %	72	<b>76</b>	73	<b>77</b>	75	<b>78</b>	76	<b>79</b>	77	<b>80</b>	79	<b>82</b>	80	<b>83</b>
250	4.2	Input kW, Thermal	5.0	<b>5.7</b>	6.8	<b>7.8</b>	10	<b>12</b>	14	<b>16</b>	21	<b>24</b>	33	<b>38</b>	47	<b>55</b>
		Output Torque Nm, Thermal	7692	<b>9275</b>	10607	<b>12789</b>	16339	<b>19700</b>	22813	<b>27503</b>	34510	<b>41604</b>	56391	<b>67985</b>	81210	<b>97901</b>
		Input kW, Mechanical	6.8	<b>7.1</b>	11	<b>11</b>	16	<b>17</b>	26	<b>27</b>	35	<b>38</b>	61	<b>59</b>	90	<b>87</b>
		Output Torque Nm, Mechanical	10358	<b>11601</b>	16832	<b>18852</b>	25432	<b>28484</b>	41360	<b>46323</b>	57661	<b>64580</b>	104705	<b>104705</b>	155711	<b>155711</b>
		Efficiency %	67	<b>71</b>	68	<b>72</b>	70	<b>73</b>	71	<b>74</b>	72	<b>75</b>	74	<b>77</b>	75	<b>78</b>
Max Output Torque Nm	Single Key	11200		12000		17000		24000		41000		51000		72000		
	Standard Shaft	15800		21000		27300		43400		77700		108000		146400		

Notes: Ratings in the grey shaded area require force feed lubrication.  
 Higher thermal ratings may be obtained using oil coolers.  
 Two keys must be specified for the wheel and output shaft when maximum output torque for single key is exceeded.  
 High tensile steel output shaft must be specified when maximum output torque for standard shaft is exceeded.

 **IMPORTANT** Units to ATEX approval must be selected with a minimum service factor of 1.25.



## TW Series - Single Reduction - Selection Data

Mineral and Synthetic Oils

Nominal ratio: 70/1 Preferred Ratio Unit Sizes 10", 12", 14".

Input rpm	Output rpm	Gear Ratings	Centre Distance													
			10"		12"		14"		17"		20"		24"		28"	
			Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn
1800	25.7	Input kW, Thermal	18	<b>21</b>	27	<b>31</b>	36	<b>42</b>	54	<b>62</b>	76	<b>88</b>	103	<b>119</b>	135	<b>157</b>
		Output Torque Nm, Thermal	5082	<b>6125</b>	7649	<b>9218</b>	10427	<b>12566</b>	15666	<b>18879</b>	21977	<b>26486</b>	29808	<b>35924</b>	39546	<b>47661</b>
		Input kW, Mechanical	19	<b>19</b>	30	<b>30</b>	44	<b>44</b>	72	<b>72</b>	107	<b>107</b>	174	<b>174</b>	247	<b>247</b>
		Output Torque Nm, Mechanical	5344	<b>5573</b>	8541	<b>8890</b>	12666	<b>13158</b>	21079	<b>21880</b>	31386	<b>32526</b>	51274	<b>53035</b>	73438	<b>75911</b>
		Efficiency %	76	<b>79</b>	78	<b>80</b>	79	<b>81</b>	80	<b>82</b>	80	<b>82</b>	80	<b>82</b>	82	<b>83</b>
1500	21.4	Input kW, Thermal	16	<b>19</b>	24	<b>28</b>	33	<b>38</b>	48	<b>55</b>	69	<b>80</b>	95	<b>110</b>	127	<b>147</b>
		Output Torque Nm, Thermal	5408	<b>6518</b>	8126	<b>9794</b>	11159	<b>13448</b>	16697	<b>20122</b>	24126	<b>29076</b>	33344	<b>40185</b>	44962	<b>54187</b>
		Input kW, Mechanical	17	<b>18</b>	27	<b>28</b>	40	<b>41</b>	64	<b>66</b>	96	<b>98</b>	156	<b>160</b>	222	<b>227</b>
		Output Torque Nm, Mechanical	5742	<b>6190</b>	9241	<b>9931</b>	13736	<b>14711</b>	22551	<b>24067</b>	33707	<b>35472</b>	55425	<b>58457</b>	79176	<b>84196</b>
		Efficiency %	76	<b>79</b>	78	<b>80</b>	78	<b>80</b>	80	<b>82</b>	80	<b>82</b>	80	<b>82</b>	82	<b>83</b>
1200	17.1	Input kW, Thermal	14	<b>16</b>	21	<b>24</b>	29	<b>33</b>	43	<b>49</b>	61	<b>70</b>	85	<b>98</b>	115	<b>133</b>
		Output Torque Nm, Thermal	5895	<b>7104</b>	8747	<b>10542</b>	12158	<b>14653</b>	18497	<b>22292</b>	26292	<b>31686</b>	37121	<b>44737</b>	51031	<b>61502</b>
		Input kW, Mechanical	15	<b>16</b>	24	<b>26</b>	35	<b>38</b>	57	<b>61</b>	83	<b>89</b>	135	<b>144</b>	192	<b>206</b>
		Output Torque Nm, Mechanical	6169	<b>6910</b>	9994	<b>11182</b>	14968	<b>16710</b>	24761	<b>27579</b>	36348	<b>40402</b>	59880	<b>66166</b>	86475	<b>95597</b>
		Efficiency %	75	<b>77</b>	76	<b>79</b>	77	<b>79</b>	79	<b>81</b>	79	<b>81</b>	80	<b>82</b>	82	<b>83</b>
1000	14.3	Input kW, Thermal	13	<b>14</b>	18	<b>21</b>	25	<b>29</b>	38	<b>44</b>	54	<b>62</b>	76	<b>88</b>	104	<b>121</b>
		Output Torque Nm, Thermal	6119	<b>7374</b>	8984	<b>10827</b>	12638	<b>15231</b>	19462	<b>23456</b>	27689	<b>33370</b>	39707	<b>47854</b>	55399	<b>66766</b>
		Input kW, Mechanical	13	<b>14</b>	21	<b>23</b>	31	<b>34</b>	51	<b>55</b>	75	<b>81</b>	121	<b>131</b>	170	<b>184</b>
		Output Torque Nm, Mechanical	6481	<b>7258</b>	10527	<b>11790</b>	15841	<b>17742</b>	26335	<b>29495</b>	39130	<b>43826</b>	63795	<b>71450</b>	91252	<b>102203</b>
		Efficiency %	74	<b>76</b>	75	<b>78</b>	76	<b>79</b>	78	<b>80</b>	79	<b>81</b>	80	<b>82</b>	81	<b>83</b>
750	10.7	Input kW, Thermal	9.9	<b>11</b>	14	<b>16</b>	20	<b>23</b>	30	<b>34</b>	43	<b>50</b>	62	<b>72</b>	87	<b>101</b>
		Output Torque Nm, Thermal	6195	<b>7467</b>	8957	<b>10795</b>	12867	<b>15508</b>	19988	<b>24091</b>	29354	<b>35377</b>	42995	<b>51817</b>	61267	<b>73840</b>
		Input kW, Mechanical	11	<b>12</b>	18	<b>19</b>	26	<b>28</b>	42	<b>45</b>	63	<b>68</b>	101	<b>107</b>	143	<b>155</b>
		Output Torque Nm, Mechanical	7123	<b>7978</b>	11366	<b>12730</b>	16985	<b>19023</b>	28414	<b>31824</b>	42709	<b>47835</b>	70399	<b>78847</b>	101409	<b>113578</b>
		Efficiency %	71	<b>74</b>	73	<b>76</b>	74	<b>77</b>	76	<b>79</b>	77	<b>79</b>	78	<b>81</b>	80	<b>82</b>
500	7.1	Input kW, Thermal	6.9	<b>7.9</b>	9.6	<b>11</b>	14	<b>16</b>	21	<b>24</b>	32	<b>37</b>	47	<b>54</b>	67	<b>77</b>
		Output Torque Nm, Thermal	6189	<b>7460</b>	8772	<b>10574</b>	12996	<b>15665</b>	20084	<b>24208</b>	31077	<b>37456</b>	46703	<b>56289</b>	68304	<b>82326</b>
		Input kW, Mechanical	8.8	<b>9.3</b>	14	<b>15</b>	21	<b>22</b>	33	<b>35</b>	49	<b>52</b>	78	<b>84</b>	110	<b>119</b>
		Output Torque Nm, Mechanical	7897	<b>8845</b>	12835	<b>14375</b>	19277	<b>21590</b>	32104	<b>35956</b>	48034	<b>53798</b>	79041	<b>88526</b>	113741	<b>127390</b>
		Efficiency %	68	<b>71</b>	69	<b>73</b>	71	<b>74</b>	73	<b>76</b>	74	<b>77</b>	76	<b>79</b>	78	<b>80</b>
250	3.6	Input kW, Thermal	4.4	<b>4.9</b>	5.9	<b>6.6</b>	8.9	<b>10</b>	13	<b>15</b>	19	<b>22</b>	29	<b>33</b>	43	<b>49</b>
		Output Torque Nm, Thermal	7151	<b>8621</b>	9876	<b>11905</b>	15235	<b>18365</b>	22968	<b>27688</b>	34156	<b>41172</b>	53781	<b>64827</b>	81878	<b>98700</b>
		Input kW, Mechanical	5.7	<b>5.9</b>	9.0	<b>9.5</b>	13	<b>14</b>	21	<b>22</b>	31	<b>33</b>	51	<b>53</b>	71	<b>71</b>
		Output Torque Nm, Mechanical	9314	<b>10432</b>	15198	<b>17022</b>	22922	<b>25673</b>	38184	<b>42766</b>	56961	<b>63796</b>	94964	<b>104030</b>	137828	<b>144479</b>
		Efficiency %	62	<b>66</b>	63	<b>67</b>	65	<b>69</b>	67	<b>71</b>	68	<b>72</b>	77	<b>75</b>	73	<b>76</b>
Max Output Torque Nm	Single Key		11200	12000	17000	24000	41000	51000	72000							
	Standard Shaft		15800	21000	27300	43400	77700	108000	146400							

Notes: Ratings in the grey shaded area require force feed lubrication.  
 Higher thermal ratings may be obtained using oil coolers.  
 Two keys must be specified for the wheel and output shaft when maximum output torque for single key is exceeded.  
 High tensile steel output shaft must be specified when maximum output torque for standard shaft is exceeded.

 **IMPORTANT** Units to ATEX approval must be selected with a minimum service factor of 1.25.

## TW Series - Double Reduction - Selection Data

Mineral or Synthetic Oil



Units to ATEX approval must be selected with a minimum service factor of 1.25.

Input Speed: 1450 rev/min

Ratio	Output rpm	Gear Ratings	TW Series Unit						
			TWD 10	TWD 12	TWD 14	TWD 17	TWD 20	TWD 24	TWD 28
75	19.0	Input kW, Mechanical	14.7	20.3	31.6	44.7	69.6	109	156
		Output Torque Nm, Mechanical	6137	8787	13470	19204	30196	47768	68331
		Efficiency %	83	84	85	86	87	88	88
150	10.0	Input kW, Mechanical	13.3	20.5	31.4	41.3	73	122	186
		Output Torque Nm, Mechanical	10000	15720	24695	32520	58303	100564	149689
		Efficiency %	79	81	78	83	84	82	83
250	6.0	Input kW, Mechanical	10.2	16.0	24.5	38.8	53.9	85	126
		Output Torque Nm, Mechanical	11887	18836	29561	47284	67800	108500	165000
		Efficiency %	76	76	76	77	79	80	82
300	5.0	Input kW, Mechanical	8.3	13.4	23.0	32.8	44.9	71	107
		Output Torque Nm, Mechanical	12600	19778	33651	47041	67800	108500	165000
		Efficiency %	71	74	76	75	79	80	81
500	3.0	Input kW, Mechanical	6.2	9.4	15.0	21	28.7	45	68.2
		Output Torque Nm, Mechanical	13872	21050	33902	48132	67800	108500	165000
		Efficiency %	67	69	71	72	74	75	76
750	2.0	Input kW, Mechanical	4.9	6.8	10.7	15.2	20.2	32.4	48
		Output Torque Nm, Mechanical	14780	20150	34000	48800	67800	108500	165000
		Efficiency %	62	64	66	67	70	70	72
1000	1.5	Input kW, Mechanical	14.1	5.5	8.6	12.1	16.0	25.4	37
		Output Torque Nm, Mechanical	15607	21050	34000	48800	67800	108500	165000
		Efficiency %	59	60	62	63	66	67	70
1500	1.0	Input kW, Mechanical	30	3.9	6.2	8.8	11.8	18.6	27.4
		Output Torque Nm, Mechanical	15817	21050	34000	48800	67800	108500	165000
		Efficiency %	54	56	57	58	60	61	63
2000	0.73	Input kW, Mechanical	2.4	3.3	5.1	7.3	9.6	14.8	21.7
		Output Torque Nm, Mechanical	15284	21050	34000	48800	67800	108500	165000
		Efficiency %	47	48	51	51	54	56	58
2500	0.58	Input kW, Mechanical	2.1	2.7	4.3	6.0	7.9	12.4	18.5
		Output Torque Nm, Mechanical	15817	21050	34000	48800	67800	108500	165000
		Efficiency %	44	46	48	49	52	53	54
3000	0.48	Input kW, Mechanical	1.8	2.4	3.8	5.4	7.2	10.9	16.2
		Output Torque Nm, Mechanical	15380	21050	34000	48800	67800	108500	165000
		Efficiency %	42	44	45	45	47	50	51
4200	0.35	Input kW, Mechanical	1.3	2.1	3.2	4.3	6.0	9.2	13.1
		Output Torque Nm, Mechanical	14184	21050	34000	48800	67800	108500	165000
		Efficiency %	36	37	38	41	41	43	46
4900	0.30	Input kW, Mechanical	1.2	1.9	2.9	4.0	5.4	8.3	12.0
		Output Torque Nm, Mechanical	14491	21050	34000	48800	67800	108500	165000
		Efficiency %	33	35	36	38	39	41	43

## TW Series - Double Reduction - Selection Data

Mineral or Synthetic Oil



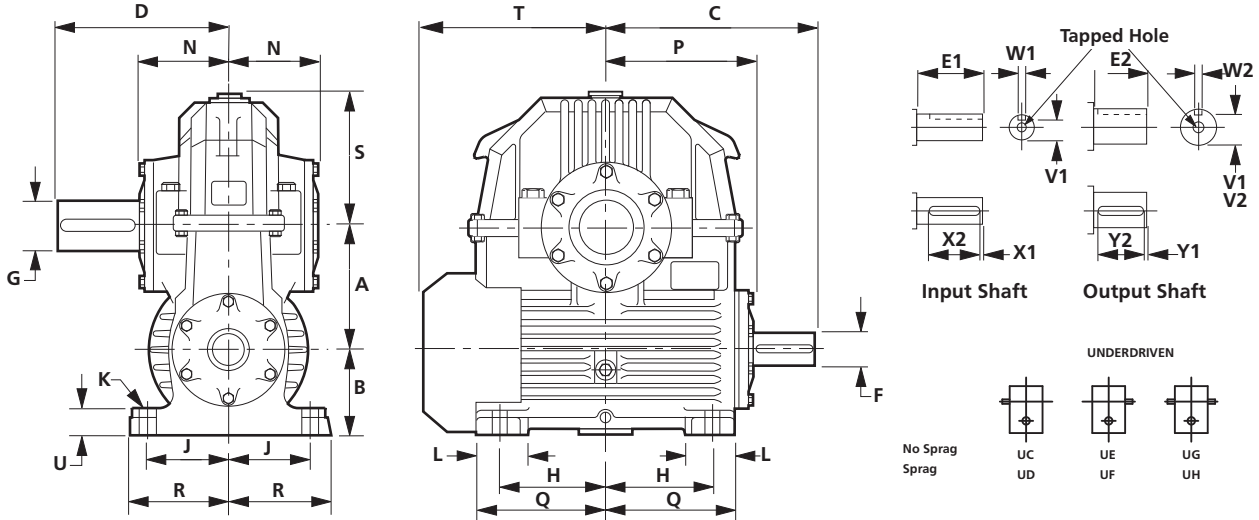
Units to ATEX approval must be selected with a minimum service factor of 1.25.

Input Speed: 960 rev/min

Ratio	Output rpm	Gear Ratings	TW Series Unit						
			TWD 10	TWD 12	TWD 14	TWD 17	TWD 20	TWD 24	TWD 28
75	12.8	Input kW, Mechanical	11.9	16.2	25.6	35.6	50.5	82	119
		Output Torque Nm, Mechanical	7302	9971	16078	22577	32403	53068	77644
		Efficiency %	81	82	83	84	85	86	87
150	6.4	Input kW, Mechanical	9.4	16.2	27	31	54.6	91	138
		Output Torque Nm, Mechanical	10824	18926	27317	37115	66912	108200	165000
		Efficiency %	77	78	76	80	82	80	80
250	3.8	Input kW, Mechanical	7.3	11.3	17.4	25.9	35	53.3	83
		Output Torque Nm, Mechanical	13028	20574	32453	48800	67800	108500	165000
		Efficiency %	71	72	74	75	77	78	79
300	3.2	Input kW, Mechanical	6.6	10.1	15.4	22.7	29.9	46.6	70
		Output Torque Nm, Mechanical	13596	21050	34000	48800	67800	108500	165000
		Efficiency %	69	71	74	72	76	78	79
500	1.9	Input kW, Mechanical	4.6	6.4	9.9	14.0	19	29.5	44.3
		Output Torque Nm, Mechanical	14877	21050	34000	48800	37800	108500	165000
		Efficiency %	64	66	68	69	71	73	74
750	1.3	Input kW, Mechanical	3.6	4.8	7.3	10.3	13.7	22.0	32
		Output Torque Nm, Mechanical	15817	21050	34000	48800	37800	108500	165000
		Efficiency %	59	61	63	64	67	67	70
1000	0.96	Input kW, Mechanical	2.8	3.8	5.8	8.1	10.8	10.9	24.7
		Output Torque Nm, Mechanical	15847	21050	34000	48800	37800	108500	165000
		Efficiency %	56	57	59	60	63	64	67
1500	0.64	Input kW, Mechanical	2.2	2.7	4.2	5.9	7.9	12.5	18.4
		Output Torque Nm, Mechanical	15817	21050	34000	48800	67800	108500	165000
		Efficiency %	47	52	54	55	57	58	60
2000	0.48	Input kW, Mechanical	1.8	2.4	3.5	5.1	6.6	10.2	15.0
		Output Torque Nm, Mechanical	15817	21050	34000	48800	67800	108500	165000
		Efficiency %	44	45	48	48	51	53	55
2500	0.38	Input kW, Mechanical	1.5	2.0	3.0	4.3	5.6	8.6	12.8
		Output Torque Nm, Mechanical	15817	21050	34000	48800	67800	108500	165000
		Efficiency %	41	43	45	45	48	50	51
3000	0.32	Input kW, Mechanical	1.3	1.7	2.7	3.9	5.1	7.9	11.5
		Output Torque Nm, Mechanical	15817	21050	34000	48800	67800	108500	165000
		Efficiency %	39	41	42	42	44	46	48
4200	0.23	Input kW, Mechanical	1.0	1.5	2.3	3.1	4.3	6.5	9.2
		Output Torque Nm, Mechanical	14899	21050	34000	48000	67800	108500	165000
		Efficiency %	33	34	35	38	38	40	42
4900	0.19	Input kW, Mechanical	0.9	1.3	2.0	2.7	3.7	5.6	8.2
		Output Torque Nm, Mechanical	15091	21050	34000	48800	67800	108400	165000
		Efficiency %	31	32	33	35	36	38	40

## TW Series - Single Reduction - Dimensions (mm)

### TYPE TWU UNDERDRIVEN



Catalogue Number	A		B	C	D	F	G	H	J
	in.	mm.							
TWU 10	10.0	254.0	171.5	419	349	60.011/60.030	100.013/100.035	215.9	165.1
TWU 12	12.0	304.8	190.5	470	387	65.011/65.030	110.013/110.035	260.3	184.2
TWU 14	14.0	355.6	215.9	552	457	75.011/75.030	120.013/120.035	298.5	215.9
TWU 17‡	17.0	431.8	254.0	648	521	80.011/80.030	140.015/140.040	381.0	254.0
TWU 20‡	20.0	508.0	292.1	762	660	100.013/100.035	170.015/170.040	444.5	292.1
TWU 24‡	24.0	609.6	355.6	914	711	110.013/110.035	190.017/190.046	533.4	393.7
TWU 28§	28.0	711.2	406.4	1041	813	130.015/130.040	210.017/210.046	609.6	457.2

Catalogue Number	K	L	N	P	Q	R	S	T	U	Oil Capacity (approx) Litres	Weight (approx) Kg
TWU 12	38.5	102	198	335	302	229	318	427	30	12.5	507
TWU 14	44.5	127	235	400	362	270	375	505	86	18.6	840
TWU 17‡	44.5	152	286	481	438	324	448	603	89	34.1	1397
TWU 20‡	48	152	349	559	514	381	521	692	102	70.5	2034
TWU 24‡	52	209	419	632	584	483	597	800	114	132.0	3632
TWU 28§	52	216	465	716	660	559	740	889	127	168.0	5029

### Input Shaft

Catalogue Number	E1	V1	W1	X1	X2	Tapped Hole
TWU 10	119	53/52.8	17.939/17.982	5	100	M20X42
TWU 12	130	58/57.8	17.939/17.982	10	100	M20X42
TWU 14	148	67.5/67.3	19.926/19.978	5	125	M20X42
TWU 17‡	171	71/70.8	21.926/21.978	10	140	M24X50
TWU 20‡	200	90/89.8	27.926/27.978	10	160	M24X50
TWU 24‡	286	100/99.8	27.926/27.978	10	220	M24X50
TWU 28§	291	119/118.8	31.912/31.974	10	220	M24X50

### Output Shaft

E2	V2	W2	Y1	Y2	Tapped Hole
167	90/98.8	27.926/27.978	3	160	M24X50
181	100/99.8	27.926/27.978	3	160	M24X50
208	109/108.8	31.912/31.974	5	180	M24X50
216	128/127.8	35.912/35.974	10	200	M30X60
302	157/156.7	39.912/39.974	10	250	M30X60
289	175/174.7	44.912/44.974	10	250	M30X60
330	193/192.7	49.912/49.974	10	250	M30X60

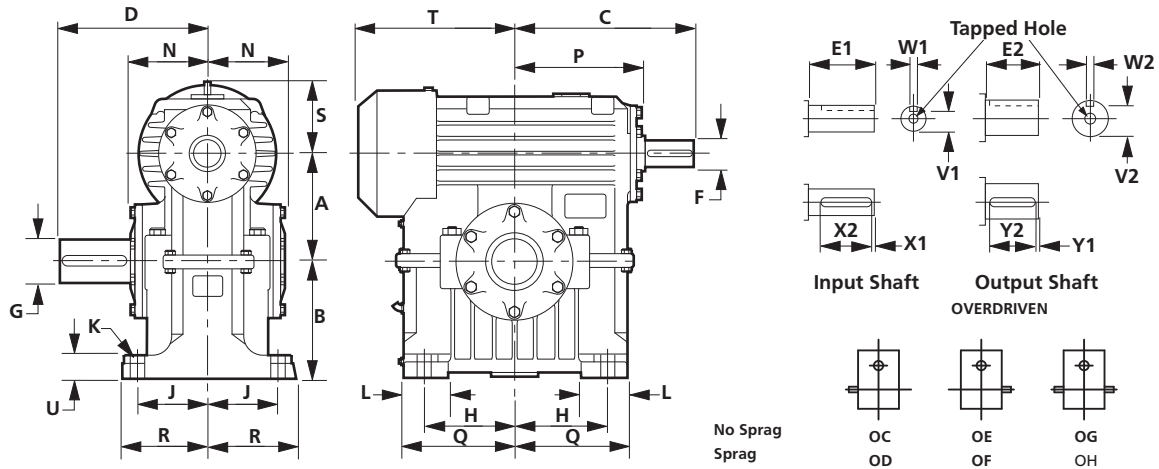
‡ Units with central mounting pads. § Units with central mounting pad and bolt hole via K.

If non reversible unit is essential, a sprag clutch backstop should be fitted. Weights quoted are without oil.

FOR DETAILS OF UNITS WITH FLANGE MOUNTING MOTORS REFER TO PAGE 38.

## TW Series - Single Reduction - Dimensions (mm)

### TYPE TWO OVERDRIVEN



Catalogue Number	A		B	C	D	F	G	H	J
	in.	mm.							
TWO 10	10.0	254.0	273.1	419	349	60.011/60.030	100.013/100.035	215.9	165.1
TWO 12	12.0	304.8	336.6	470	387	65.011/65.030	110.013/110.035	260.3	184.2
TWO 14	14.0	355.6	393.7	552	457	75.011/75.030	120.013/120.035	298.5	215.9
TWO 17‡	17.0	431.8	469.9	648	521	80.011/80.030	140.015/140.040	381.00	254.0
TWO 20‡	20.0	508.0	546.1	762	660	100.013/100.035	170.015/170.040	444.5	292.1
TWO 24‡	24.0	609.6	622.3	914	711	110.013/110.035	190.017/190.046	533.4	393.7
TWO 28§	28.0	711.2	736.6	1041	813	130.015/130.040	210.017/210.046	609.6	457.2

Catalogue Number	K	L	N	P	Q	R	S	T	U	Oil Capacity (approx) Litres	Weight (approx) Kg
TWO 12	38.5	114	198	335	302	229	168	427	60	14.5	489
TWO 14	44.5	152	235	400	362	270	181	505	86	23.2	836
TWO 17‡	44.5	178	286	481	438	324	216	603	89	27.3	1408
TWO 20‡	48	178	349	559	514	381	254	692	102	90.9	2032
TWO 24‡	52	203	419	632	584	483	279	806	114	155.0	3632
TWO 28§	52	216	465	716	686	559	298	889	127	292.1	5029

### Input Shaft

Catalogue Number	E1	V1	W1	X1	X2	Tapped Hole
TWO 10	119	53/52.8	17.939/17.982	5	100	M20X42
TWO 12	130	58/57.8	17.939/17.982	10	100	M20X42
TWO 14	148	67.5/67.3	19.926/19.978	5	125	M20X42
TWO 17‡	171	71/70.8	21.926/21.978	10	140	M24X50
TWO 20‡	200	90/89.8	27.926/27.978	10	160	M24X50
TWO 24‡	286	100/99.8	27.926/27.978	10	220	M24X50
TWO 28§	291	119/118.8	31.912/31.974	10	220	M24X50

### Output Shaft

E2	V2	W2	Y1	Y2	Tapped Hole
167	90/98.8	27.926/27.978	3	160	M24X50
181	100/99.8	27.926/27.978	3	160	M24X50
208	109/108.8	31.912/31.974	5	180	M24X50
216	128/127.8	35.912/35.974	10	200	M30X60
302	157/156.7	39.912/39.974	10	250	M30X60
289	175/174.7	44.912/44.974	10	250	M30X60
330	193/192.7	49.912/49.974	10	250	M30X60

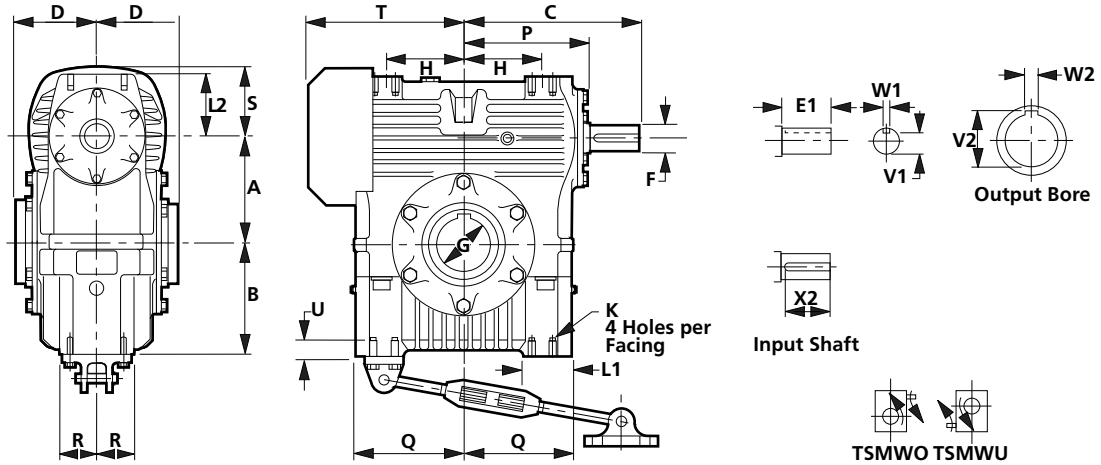
‡ Units with central mounting pads. § Units with central mounting pad and bolt hole via K.

If non reversible unit is essential, a sprag clutch backstop should be fitted. Weights quoted are without oil.

FOR DETAILS OF UNITS WITH FLANGE MOUNTING MOTORS REFER TO PAGE 38.

## TW Series - Single Reduction - Dimensions (mm)

### TYPE TSMW SHAFT MOUNTED



### TORQUE ARM AND FIXING DIMENSIONS SEE PAGE 39

Catalogue Number	A		B	C	D	F	G	H
	in.	mm.						
TSMW 10	10.0	254.0	266.7	419	194	60.011/60.030	125.043/125.083	187
TSMW 12	12.0	304.8	317.5	470	211	65.011/65.030	150.043/150.083	213
TSMW 14	14.0	355.6	368.3	552	232	75.011/75.030	165.043/165.083	254
TSMW 17	17.0	431.8	438.2	648	276	80.011/80.030	180.043/180.083	333
TSMW 20	20.0	508.0	520.7	762	327	100.013/100.038	200.050/200.096	433
TSMW 24	24.0	609.6	628.7	914	387	110.013/110.035	230.050/230.096	501

Catalogue Number	K	L1	L2	P	Q	R	S	T	U	Oil Capacity (approx) Litres	Weight (approx) Kg
TSMW 12	M12	127	159	335	295	95	190	427	30	22.7	499
TSMW 14	M12	152	171	400	356	102	196	505	33	33	832
TSMW 17	M12	152	184	481	425	108	226	603	25	60	1384
TSMW 20	M20	162	216	559	514	127	262	699	47	*	*
TSMW 24	M24	171	260	632	584	152	314	800	54	*	*

### Input Shaft

Catalogue Number	E1	V1	W1	X1	X2	Tapped Hole
TSMW 12	130	58/57.8	17.939/17.982	10	100	M20X42
TSMW 14	148	67.5/67.3	19.926/19.978	5	125	M20X42
TSMW 17	171	71/70.8	21.926/21.978	10	140	M24X50
TSMW 20	200	90/89.8	27.926/27.978	10	220	M24X50
TSMW 24	286	100/99.8	27.926/27.978	10	220	M24X50

### Output Shaft

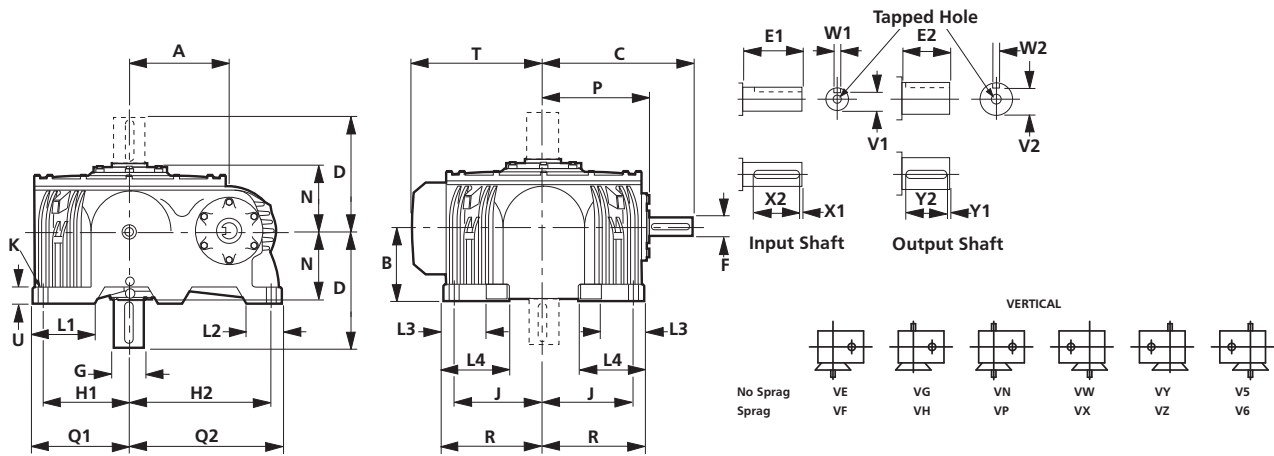
V2	W2
132.4/132.631	969/32.031
158.4/158.735	969/36.031
174.4/174.739	969/40.031
190.4/190.744	969/45.031
210.4/210.744	969/45.031
241.4/241.749	969/50.031

If non reversible unit is essential, a sprag clutch backstop should be fitted. Weights quoted are without oil.  
FOR DETAILS OF UNITS WITH FLANGE MOUNTING MOTORS REFER TO PAGE 38.

\* DETAILS ON REQUEST

## TW Series - Single Reduction - Dimensions (mm)

### TYPE TWV VERTICAL



Catalogue Number	A		B	C	D	F	G		H1	H2	J	K
	in.	mm.										
TWV 10	10.0	254.0	190.5	419	349	60.011/60.030	100.013/100.035	228.6	400.1	228.6	32.5	
TWV 12	12.0	304.8	215.9	470	387	65.011/65.030	110.013/110.035	263.5	463.5	263.5	38.5	
TWV 14	14.0	355.6	254.0	552	457	75.011/75.030	120.013/120.035	320.7	520.7	317.5	44.5	
TWV 17	17.0	431.8	311.2	648	521	80.011/80.030	140.015/140.040	393.7	616.0	393.7	44.5	
TWV 20	20.0	508.0	362.0	762	660	100.013/100.035	170.015/170.040	463.6	727.1	463.6	48	
TWV 24	24.0	609.6	444.4	914	711	110.013/110.035	190.017/190.046	552.5	863.6	552.5	52	
TWV 28	28.0	711.2	508.0	1041	813	130.015/130.040	210.017/210.046	635.0	965.2	635.0	52	

Catalogue Number	L1	L2	L3	L4	N	P	Q1	Q2	R	T	U	Oil Capacity (approx) Litres	Weight (approx) Kg
TWV 10	165	116	117	165	182	296	263	443	264	378	41	15.0	350
TWV 12	191	149	133	191	202	335	302	511	302	435	51	18.6	501
TWV 14	235	146	137	235	235	400	368	572	368	502	61	50.0	848
TWV 17	289	149	168	289	289	481	451	670	448	603	76	77.3	1453
TWV 20	337	191	216	337	349	559	530	791	527	692	83	155	2070
TWV 24	394	216	260	394	413	632	616	927	616	806	102	218	3681
TWV 24	432	254	305	432	465	716	711	1041	699	902	114	432	5089

### Input Shaft

Catalogue Number	E1	V1	W1	X1	X2	Tapped Hole
TWV 10	119	53/52.8	17.939/17.982	5	100	M20X42
TWV 12	130	58/57.8	17.939/17.982	10	100	M20X42
TWV 14	148	67.5/67.3	19.926/19.978	5	125	M20X42
TWV 17	171	71/70.8	21.926/21.978	10	140	M24X50
TWV 20	200	90/89.8	27.926/27.978	10	160	M24X50
TWV 24	286	100/99.8	27.926/27.978	10	220	M24X50
TWV 28	286	119/118.8	31.912/31.974	10	220	M24X50

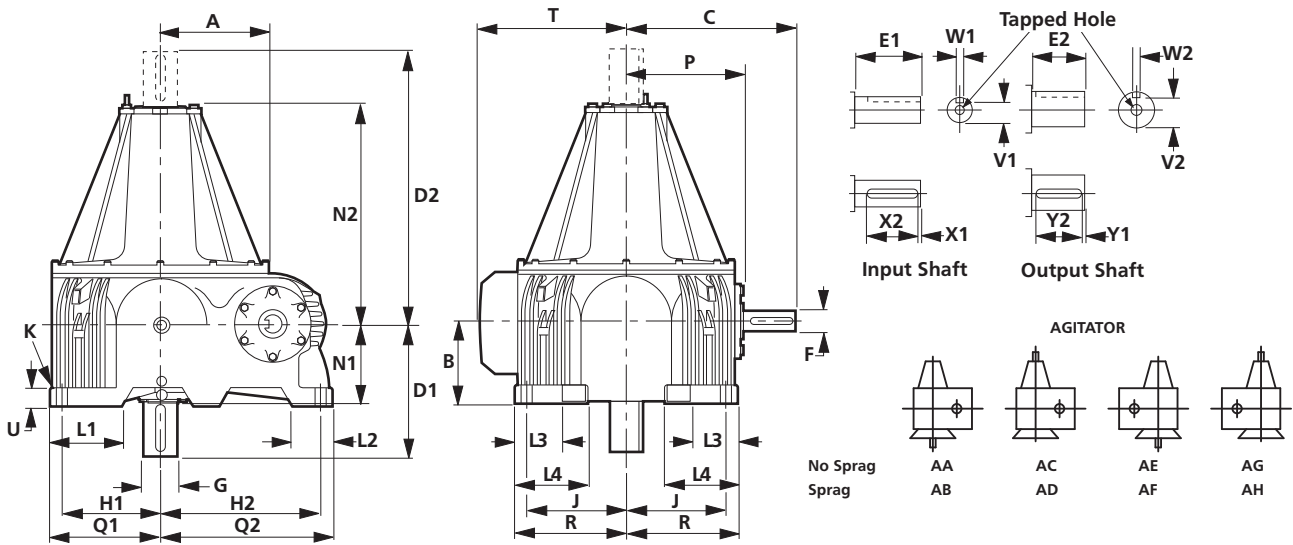
### Output Shaft

E2	V2	W2	Y1	Y2	Tapped Hole
167	90/89.8	27.926/27.978	3	160	M24X42
181	100/99.8	27.926/27.978	3	160	M24X50
208	109/108.8	31.912/31.974	5	180	M24X50
216	128/127.8	35.912/35.974	10	200	M30X60
302	157/156.7	39.912/39.974	10	250	M30X60
289	175/174.7	44.912/44.974	10	250	M30X60
330	193/192.7	49.912/49.974	10	250	M30X60

If non reversible unit is essential, a sprag clutch backstop should be fitted. Weights quoted are without oil.  
FOR DETAILS OF UNITS WITH FLANGE MOUNTING MOTORS REFER TO PAGE 38.

## TW Series - Single Reduction - Dimensions (mm)

### TYPE TWA AGITATOR



Catalogue Number	A		B	C	D1	D2	F	G	H1	H2	J	K	L1
	in.	mm.											
TWA 10	10.0	254.0	190.5	419	349	829	60.011/60.030	100.013/100.035	228.6	400.1	228.6	32.5	173
TWA 12	12.0	304.8	215.9	470	387	923	65.011/65.030	110.013/110.035	263.5	463.6	263.5	38.5	191
TWA 14	14.0	355.6	254.0	552	457	1047	75.011/75.030	120.013/120.035	320.7	520.7	317.5	44.5	235
TWA 17	17.0	431.8	311.2	648	521	1181	80.011/80.030	140.015/140.040	393.7	616.0	393.7	44.5	289
TWA 20	20.0	508.0	362.0	762	660	1305	100.013/100.035	170.015/170.040	463.6	727.1	463.6	48	337
TWA 24	24.0	609.6	444.5	914	711	1486	110.013/110.035	190.017/190.046	552.5	863.6	552.5	52	394
TWA 28	28.0	711.2	508.0	1014	813	1168	130.015/130.040	210.017/210.046	635.0	965.0	635.0	52	432

Catalogue Number	L2	L3	L4	N1		N2	P	Q1	Q2	R	T	U	Oil Capacity (approx) Litres	Weight (approx) Kg
				no pump	with pump									
TWA 10	116	117	165	182	279	635	296	263	443	264	378	41	15.0	436
TWA 12	149	133	191	202	298	714	335	302	511	302	435	51	18.6	611
TWA 14	146	137	235	235	330	800	400	368	572	368	502	64	50.0	1060
TWA 17	149	168	289	289	381	923	481	451	670	448	603	76	77.3	1816
TWA 20	191	216	337	349	438	1121	559	530	791	527	692	83	155	2588
TWA 24	216	260	394	413	495	1184	632	616	927	616	806	102	218	4602
TWA 28	254	302	432	484	-	840	716	711	1041	699	902	114	432	6389

#### Input Shaft

Catalogue Number	E1	V1	W1	X1	X2	Tapped Hole
TWA 12	130	58/57.8	17.939/17.982	10	100	M20X42
TWA 14	148	67.5/67.3	19.926/19.978	5	125	M20X42
TWA 17	171	71/70.8	21.926/21.978	10	140	M24X50
TWA 20	200	90/89.8	27.926/27.978	10	160	M24X50
TWA 24	286	100/99.8	27.926/27.978	10	220	M24X50
TWA 28	291	119/118.8	31.912/31.974	10	220	M24X50

#### Output Shaft

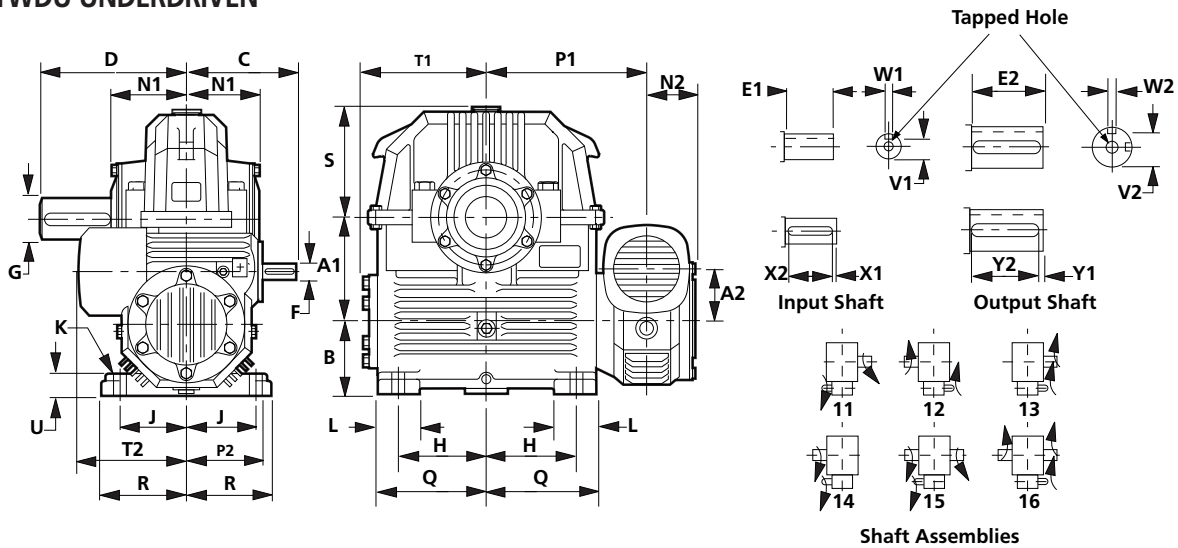
E2	V2	W2	Y1	Y2	Tapped Hole
181	100/99.8	27.926/27.978	3	160	M24X50
208	109/108.8	31.912/31.974	5	180	M24X50
216	128/127.8	35.912/35.974	10	200	M30X60
302	157/156.7	39.912/39.974	10	250	M30X60
289	175/174.7	44.912/44.974	10	250	M30X60
330	193/192.7	49.912/49.974	10	250	M30X60

If non reversible unit is essential, a sprag clutch backstop should be fitted. Weights quoted are without oil.  
FOR DETAILS OF UNITS WITH FLANGE MOUNTING MOTORS REFER TO PAGE 38.



## TW Series - Double Reduction - Dimensions (mm)

### TYPE TWDU UNDERDRIVEN



Shaft Assemblies

Catalogue Number	A1		A2		B	C	D	F	G	H	J	K
	in.	mm.	in.	mm.								
TWDU 10	10.0	254.0	5.00	127.0	171.5	260	349	38.002/38.018	100.013/100.035	215.9	165.1	32.5
TWDU 12	12.0	304.8	6.00	152.4	190.5	279	387	40.002/40.018	110.013-110.035	260.4	184.2	38.5
TWDU 14	14.0	355.6	7.00	177.8	215.9	318	457	45.002/45.018	120.013/120.035	298.5	215.9	44.5
TWDU 17‡	17.0	431.8	8.00	203.2	254.0	343	521	50.002/50.018	140.015/140.040	381.0	254.0	44.5
TWDU 20‡	20.0	508.0	10.00	254.0	292.1	419	660	60.011/60.030	170.015/170.040	444.5	292.1	48
TWDU 24‡	24.0	609.6	12.00	304.8	355.6	470	711	65.011/65.030	190.017/190.046	533.4	393.7	52
TWDU 28§	28.0	711.2	14.00	355.6	406.4	552	813	75.011/75.030	210.017/120.046	609.6	457.2	52

Catalogue Number	L	N1	N2	P1	P2	Q	R	S	T1	T2	U	Oil Capacity (approx) Litres	Weight (approx) Kg
TWDU 12	102	198	140	435	200	302	229	318	335	283	60	4.9/12.5	601
TWDU 14	127	235	156	495	229	362	270	375	401	311	86	7.7/18.6	956
TWDU 17‡	152	286	162	591	248	438	324	448	483	333	89	10.4/34.1	1577
TWDU 20‡	152	349	188	680	297	514	381	521	559	378	95	14.4/70.5	2280
TWDU 24‡	203	419	182	775	335	584	483	597	632	432	144	*	*
TWDU 28§	216	465	165	876	400	660	559	740	751	508	127	*	*

### Input Shaft

Catalogue Number	E1	V1	W1	X1	X2	Tapped Hole
TWDU10	76	33/32.8	9.949/9.985	5	63	M12X28
TWDU 12	76	35/34.8	11.939/11.982	5	63	M16X36
TWDU 14	89	39.5/39.3	13.939/13.982	5	80	M16X36
TWDU 17	95	44.5/44.3	13.939/13.982	5	80	M16X36
TWDU 20	119	53/52.8	17.939/17.982	5	100	M20X42
TWDU 24	130	58/57.8	17.939/17.982	10	100	M20X42
TWDU 28	148	67.5/37.3	19.926/19.978	5	125	M20X42

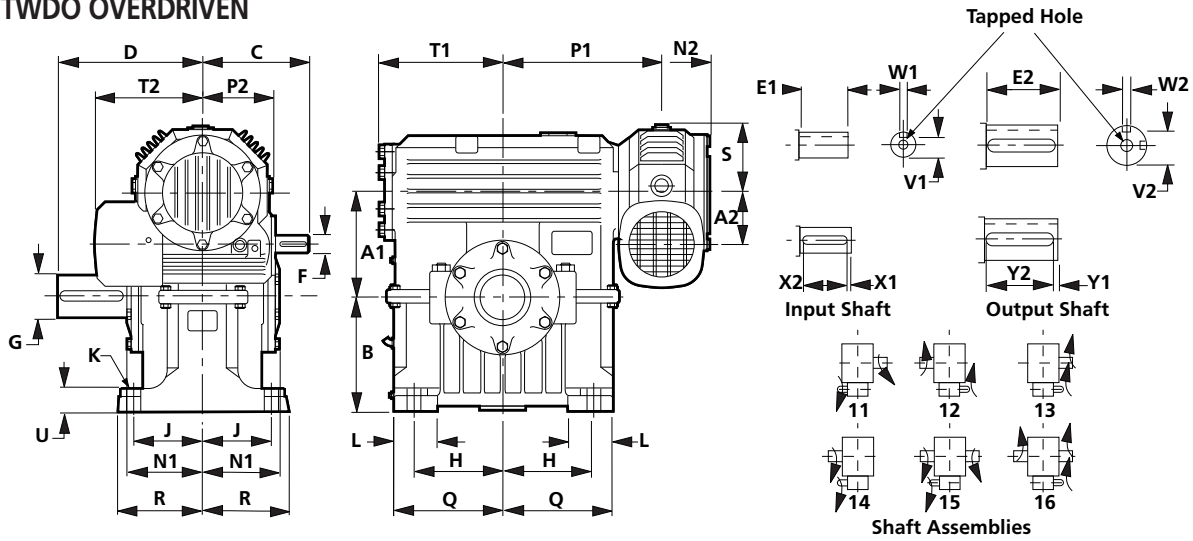
### Output Shaft

E2	V2	W2	Y1	Y2	Tapped Hole
167	90/89.8	27.926/27.978	3	160	M24X50
181	100/99.8	27.926/27.978	3	160	M24X50
208	109/108.8	31.912/31.974	5	180	M24X50
216	128/127.8	35.912/35.974	10	200	M30X60
302	157/156.7	39.912/39.974	10	250	M30X60
289	175/174.7	44.912/44.974	10	250	M30X60
330	193/192.7	49.192/49.974	10	250	M30X60

Wheelshafts have two output keys as a standard feature. ‡ 2nd reduction units with blank central mounting pads. § 2nd reduction unit with central mounting pad and bolt hole dia K. If a non reversible unit is essential, a sprag clutch backstop should be fitted. Weights quoted are without oil. \* Figures on request. FOR DETAILS OF UNITS WITH FLANGE MOUNTING REFER TO PAGE 38.

## TW Series - Double Reduction - Dimensions (mm)

### TYPE TWDO OVERDRIVEN



Catalogue Number	A1		A2		B	C	D	F	G		H	J	K
	in.	mm.	in.	mm.									
TWDO 10	10.0	254.0	5.00	127.0	273.1	260	349	38.002/38.018	100.013/100.035	215.9	165.1	32.5	
TWDO 12	12.0	304.8	6.00	152.4	336.6	279	387	40.002/40.018	110.013/110.035	260.4	184.2	38.5	
TWDO 14	14.0	355.6	7.00	177.8	393.7	318	457	45.002/45.018	120.013/120.035	298.5	215.9	44.5	
TWDO 17‡	17.0	431.8	8.00	203.2	469.9	343	521	50.002/50.018	140.015/140.040	381.0	254.0	44.5	
TWDO 20‡	20.0	508.0	10.00	254.0	546.1	419	660	60.011/60.030	170.015/170.040	444.5	292.1	48	
TWDO 24‡	24.0	609.6	12.00	304.8	622.3	470	711	65.011/65.030	190.017/190.046	533.4	393.7	52	
TWDO 28§	28.0	711.2	14.00	355.6	736.6	552	813	75.011/75.030	210.017/210.046	609.6	457.2	52	

Catalogue Number	L	N1	N2	P1	P2	Q	R	S	T1	T2	U	Oil Capacity (approx) Litres	Weight (approx)
													Kg
TWDO 10	102	182	127	384	184	264	206	165	297	257	54	2.1/9.1	406
TWDO 12	114	198	140	435	200	302	229	184	335	283	60	2.5/14.6	583
TWDO 14	152	235	156	495	229	362	270	213	401	311	86	3.6/23.2	952
TWDO 17‡	178	286	162	591	248	438	324	236	483	333	89	4.4/54.6	1588
TWDO 20‡	178	349	188	680	297	514	381	278	559	378	102	6.9/90	2278
TWDO 24‡	203	419	182	775	335	584	483	*	632	432	114	*	*
TWDO 28§	216	465	165	876	400	660	559	*	751	508	127	*	*

### Input Shaft

Catalogue Number	E1	V1	W1	X1	X2	Tapped Hole
TWDO 10	76	33/32.8	9.949/9.985	5	63	M12X28
TWDO 12	76	35/34.8	11.939/11.982	5	63	M16X36
TWDO 14	89	39.5/39.3	13.939/13.982	5	80	M16X36
TWDO 17	95	44.5/44.3	13.939/13.982	5	80	M16X36
TWDO 20	119	53/52.8	17.939/17.982	5	100	M20X42
TWDO 24	130	58/57.8	17.939/17.982	10	100	M20X42
TWDO 28	148	67.5/67.3	19.926/19.978	5	125	M20X42

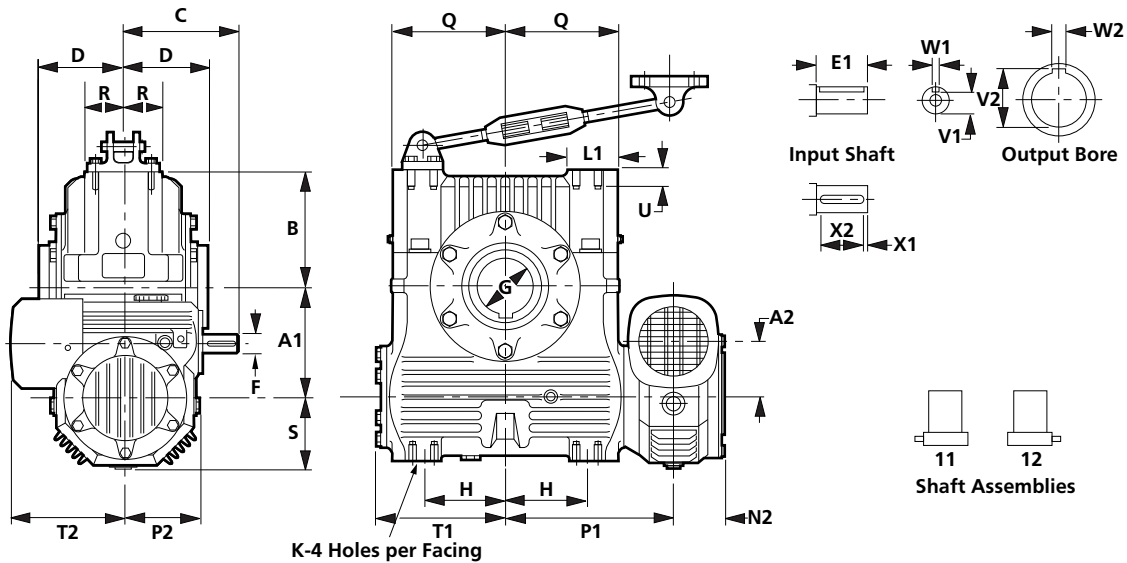
### Output Shaft

	E2	V2	W2	Y1	Y2	Tapped Hole
	167	90/89.8	27.926/27.978	3	160	M24X50
	181	100/99.8	27.926/27.978	3	160	M24X50
	208	109/108.8	31.912/31.974	5	180	M24X50
	216	128/127.8	35.912/35.974	10	200	M30X60
	302	157/156.7	39.912/39.974	10	250	M30X60
	289	175/174.7	44.912/44.974	10	250	M30X60
	330	193/192.7	49.192/49.974	10	250	M30X60

Wheelshafts have two output keys as a standard feature. ‡ 2nd reduction units with blank central mounting pads. § 2nd reduction unit with central mounting pad and bolt hole dia K. If a non reversible unit is essential, a sprag clutch backstop should be fitted. Weights quoted are without oil. \* Figures on request. FOR DETAILS OF UNITS WITH FLANGE MOUNTING REFER TO PAGE 38.

## TW Series - Double Reduction - Dimensions (mm)

### TYPE TSMWD SHAFT MOUNTED



K-4 Holes per Facing

### TORQUE ARM AND FIXING DIMENSIONS SEE PAGE 39

Catalogue Number	A1		A2		B	C	D	F	G	H	K
	in.	mm.	in.	mm.							
TSMWD 10	10.0	254.0	5.00	127.0	266.7	260	194	38.002/38.018	125.043/125.083	187	M12
TSMWD 12	12.0	304.8	6.00	152.4	317.5	279	211	40.002/40.018	150.043/150.083	213	M12
TSMWD 14	14.0	355.6	7.00	177.8	368.3	318	232	45.002/45.018	165.043/165.083	254	M12
TSMWD 17	17.0	431.8	8.00	203.2	438.2	343	276	50.002/50.018	180.043/180.083	333	M12
TSMWD 20	20.0	508.0	10.00	254.0	520.7	419	327	65.011/65.030	200.013/200.096	433	M20
TSMWD 24	24.0	609.6	12.00	607.8	628.7	470	387	75.011/75.030	230.050/230.096	501	M24

Catalogue Number	L1	N2	P1	P2	Q	R	S	T1	T2	U	Oil Capacity (approx) Litres	Weight (approx) Kg
TSMWD 12	127	140	435	200	295	95	184	335	283	30	4.9/14.6	593
TSMWD 14	152	156	495	229	356	102	213	401	311	33	7.7/23.2	948
TSMWD 17	152	162	591	248	425	108	236	483	333	25	10.4/54.6	1564
TSMWD 20	162	188	680	297	514	127	278	559	378	47	*	*
TSMWD 24	171	182	775	335	584	152	*	632	432	54	*	*

### Input Shaft

Catalogue Number	E1	V1	W1	X1	X2	Tapped Hole
TSMWD 12	76	35/34.8	11.939/11.982	5	63	M16X36
TSMWD 14	89	39.5/39.3	13.939/13.982	5	80	M16X36
TSMWD 17	95	44.5/44.3	13.939/13.982	5	80	M16X36
TSMWD 20	119	53/52.8	17.939/17.982	5	100	M20X42
TSMWD 24	130	58/57.8	17.939/17.982	10	100	M20X42

### Output Shaft

V2	W2
158.4/158.7	35.969/36.031
174.4/174.7	39.969/40.031
190.4/190.7	44.969/45.031
210.4/210.7	44.969/45.031
241.4/241.7	49.969/50.031

Flanged Torque Restraint available - details on request

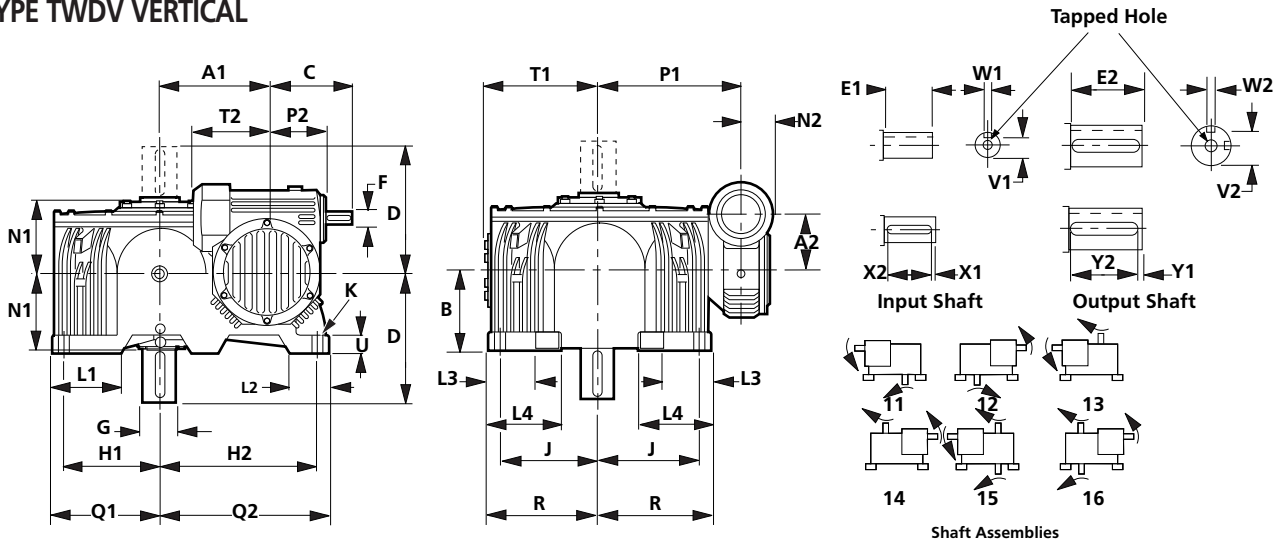
If a non reversible unit is essential, a sprag clutch backstop should be fitted. Weights quoted are without oil.

FOR DETAILS OF UNITS WITH FLANGE MOUNTING REFER TO PAGE 38.

\* DETAILS ON REQUEST

## TW Series - Double Reduction - Dimensions (mm)

### TYPE TWDV VERTICAL



Catalogue Number	A1		A2		B	C	D	F	G	H1	H2	J	K	L1
	in.	mm.	in.	mm.										
TWDV 10	10.0	254.0	5.00	127.0	190.5	260	349	38.002/38.018	100.013/100.035	228.6	400.1	228.6	32.5	173
TWDV 12	12.0	304.8	6.00	152.4	215.9	279	387	40.002/40.018	110.013/110.035	263.5	463.6	263.5	38.5	191
TWDV 14	14.0	355.6	7.00	177.8	254.0	318	457	45.002/45.018	120.013/120.035	320.7	520.7	317.5	44.5	235
TWDV 17	17.0	431.8	8.00	203.2	311.2	343	521	50.002/50.018	140.015/140.035	393.7	616.0	393.7	44.5	289
TWDV 20	20.0	508.0	10.00	254.0	362.0	419	660	60.011/60.018	170.015/170.035	463.6	727.1	463.6	48	337
TWDV 24	24.0	609.6	12.00	304.8	444.5	470	711	65.011/65.018	190.017/190.046	552.5	863.6	552.5	52	394
TWDV 28	28.0	711.2	14.00	355.6	508.0	552	813	75.011/75.018	210.017/210.046	635.0	965.2	635.0	52	432

Catalogue Number	L2	L3	L4	N1	N2	P1	P2	Q1	Q2	R	T1	T2	U	Oil Capacity (approx) Litres	Weight (approx) Kg
TWDV 12	149	133	191	202	140	435	200	302	511	302	335	283	51	4.9/18.6	595
TWDV 14	146	137	235	235	156	495	229	368	572	368	401	311	64	7.7/50.0	964
TWDV 17	149	168	289	289	162	591	248	451	670	448	483	333	76	10.4/77.3	1633
TWDV 20	191	216	337	349	188	680	297	530	791	527	559	378	83	14.4/155	2316
TWDV 24	216	260	394	413	182	775	335	616	927	616	632	432	102	*	*
TWDV 28	254	305	432	465	165	876	400	711	1041	699	751	508	114	*	*

### Input Shaft

Catalogue Number	E1	V1	W1	X1	X2	Tapped Hole
TWDV 10	76	33/32.8	9.949/9.985	5	63	M12X28
TWDV 12	76	35/34.8	11.939/11.982	5	63	M16X36
TWDV 14	89	39.5/39.3	13.939/13.982	5	80	M16X36
TWDV 17	95	44.5/44.3	13.939/13.982	5	80	M16X36
TWDV 20	119	53/52.8	17.939/17.982	5	100	M20X42
TWDV 24	130	58/57.8	17.939/17.982	10	100	M20X42
TWDV 28	148	67.5/37.3	19.926/19.978	5	125	M20X42

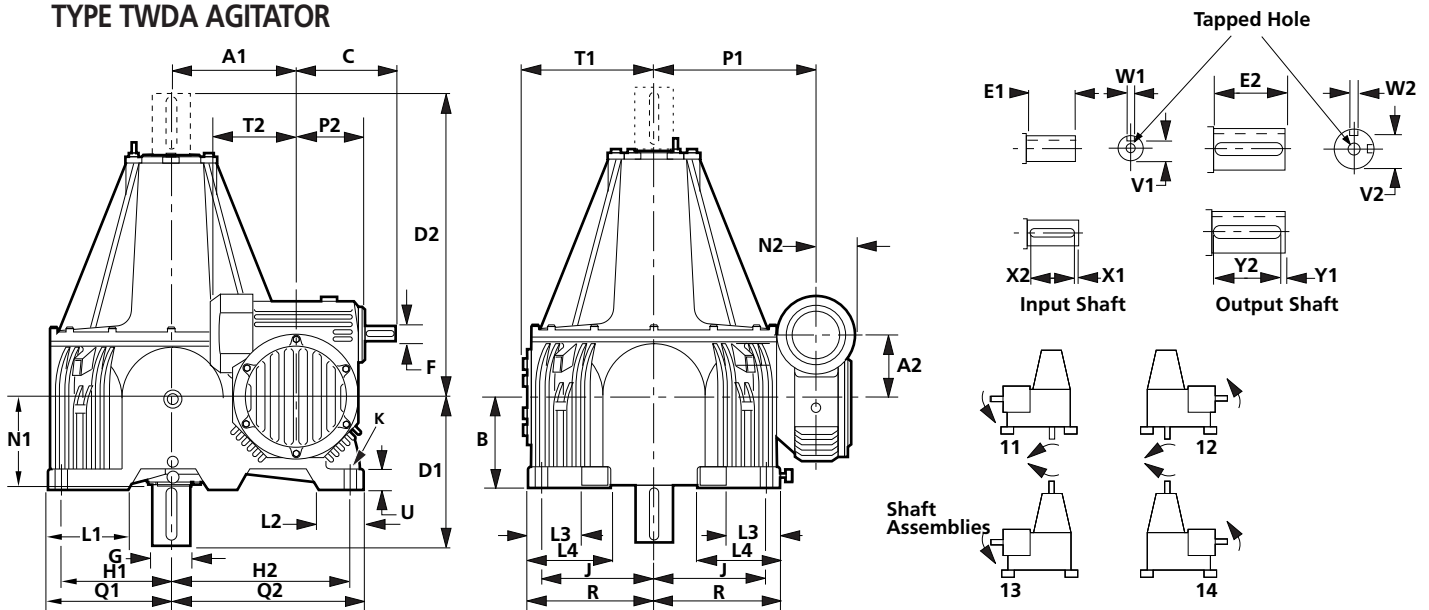
### Output Shaft

E2	V2	W2	Y1	Y2	Tapped Hole
167	90/89.8	27.926/27.978	3	160	M24X50
181	100/99.8	27.926/27.978	3	160	M24X50
208	109/108.8	31.912/31.974	5	180	M24X50
216	128/127.8	35.912/35.974	10	200	M30X60
302	157/156.7	39.912/39.974	10	250	M30X60
289	175/174.7	44.912/44.974	10	250	M30X60
330	193/192.7	49.912/49.974	10	250	M30X60

Wheelshafts have two output keys as a standard feature. † 2nd reduction units with blank central mounting pads. § 2nd reduction unit with central mounting pad and bolt hole dia K. If a non reversible unit is essential, a sprag clutch backstop should be fitted. Weights quoted are without oil. \* DETAILS ON REQUEST. FOR DETAILS OF UNITS WITH FLANGE MOUNTING REFER TO PAGE 38.

## TW Series - Double Reduction - Dimensions (mm)

### TYPE TWDA AGITATOR



Catalogue Number	A1 in.	A1 mm.	A2 in.	A2 mm.	B	C	D1	D2	F	G	H1	H2	J	K	L1
TWDA 10	10.0	254.0	5.00	127.0	190.5	260	349	829	38.002/38.018	100.013/100.035	228.6	400.1	228.6	32.5	173
TWDA 12	12.0	304.8	6.00	152.4	215.9	279	387	926	40.002/40.018	110.013/110.035	263.5	463.6	263.5	38.5	191
TWDA 14	14.0	355.6	7.00	177.8	254.0	318	457	1047	45.002/45.018	120.013/120.035	320.7	520.7	320.7	44.5	235
TWDA 17	17.0	431.8	8.00	203.2	311.2	343	521	1181	50.002/50.018	140.015/140.035	393.7	616.0	393.7	44.5	289
TWDA 20	20.0	508.0	10.00	254.0	362.0	419	660	1305	60.011/60.018	170.015/170.035	463.6	727.1	463.6	48	337
TWDA 24	24.0	609.6	12.00	304.8	444.5	470	711	1486	65.011/65.018	190.017/190.046	552.5	863.6	552.5	52	394
TWDA 28	28.0	711.2	14.00	355.6	508.0	552	813	1168	75.011/75.018	210.017/210.046	635.0	965.2	635.0	52	432

Catalogue Number	L2	L3	L4	N1	N2	P1	P2	Q1	Q2	R	T1	T2	U	Oil Capacity (approx) Litres	Weight (approx) Kg
TWDA 10	116	117	165	182	127	384	184	263	443	264	297	257	41	3.8/15.0	504
TWDA 12	149	133	191	202	140	435	200	302	511	302	335	283	51	4.9/18.6	705
TWDA 14	146	137	235	235	156	495	229	368	572	368	401	311	64	7.7/50.0	1176
TWDA 17	149	168	289	289	162	591	248	451	670	448	483	333	76	10.4/77.3	1996
TWDA 20	191	216	337	349	188	680	297	530	791	527	559	378	83	14.4/155	2834
TWDA 24	216	260	394	413	182	775	335	616	927	616	632	432	102	*	*
TWDA 28	254	305	432	465	165	876	400	711	1041	699	751	508	114	*	*

### Input Shaft

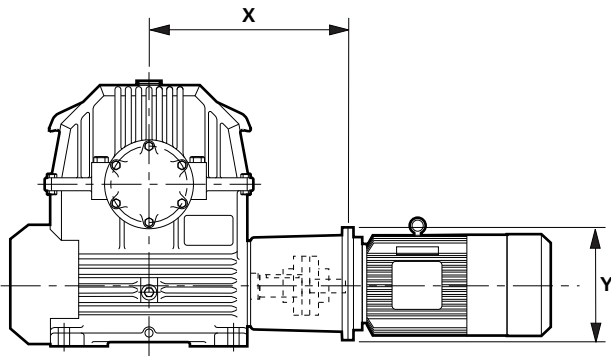
Catalogue Number	E1	V1	W1	X1	X2	Tapped Hole
TWDA 10	76	33/32.8	9.949/9.985	5	63	M12X28
TWDA 12	76	35/34.8	11.939/11.982	5	63	M16X36
TWDA 14	89	39.5/39.3	13.939/13.982	5	80	M16X36
TWDA 17	95	44.5/44.3	13.939/13.982	5	80	M16X36
TWDA 20	119	53/52.8	17.939/17.982	5	100	M20X42
TWDA 24	130	58/57.8	17.939/17.982	10	100	M20X42
TWDA 28	148	67.5/67.3	19.926/19.978	5	125	M20X42

### Output Shaft

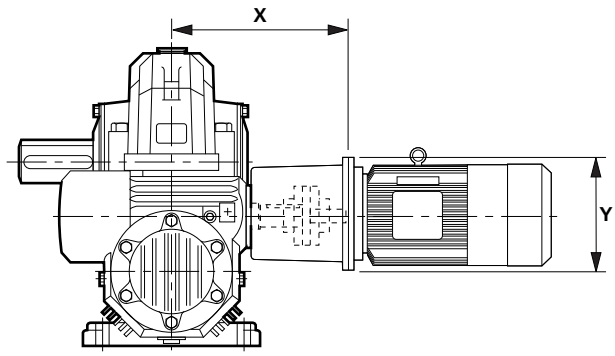
Catalogue Number	E2	V2	W2	Y1	Y2	Tapped Hole
TWDA 10	167	90/89.8	27.926/27.978	3	160	M24X50
TWDA 12	181	100/99.8	27.926/27.978	3	160	M24X50
TWDA 14	208	109/108.8	31.912/31.974	5	180	M24X50
TWDA 17	216	128/127.8	35.912/35.974	10	200	M30X60
TWDA 20	302	157/156.7	39.912/39.974	10	250	M30X60
TWDA 24	289	175/174.7	44.912/44.974	10	250	M30X60
TWDA 28	330	193/192.7	49.912/49.974	10	250	M30X60

Wheelshafts have two output keys as a standard feature. ‡ 2nd reduction units with blank central mounting pads. § 2nd reduction unit with central mounting pad and bolt hole dia K. If a non reversible unit is essential, a sprag clutch backstop should be fitted. Weights quoted are without oil. \* Details on request. FOR DETAILS OF UNITS WITH FLANGE MOUNTING REFER TO PAGE 38.

## TW Series - Motorised - Dimensions (mm)



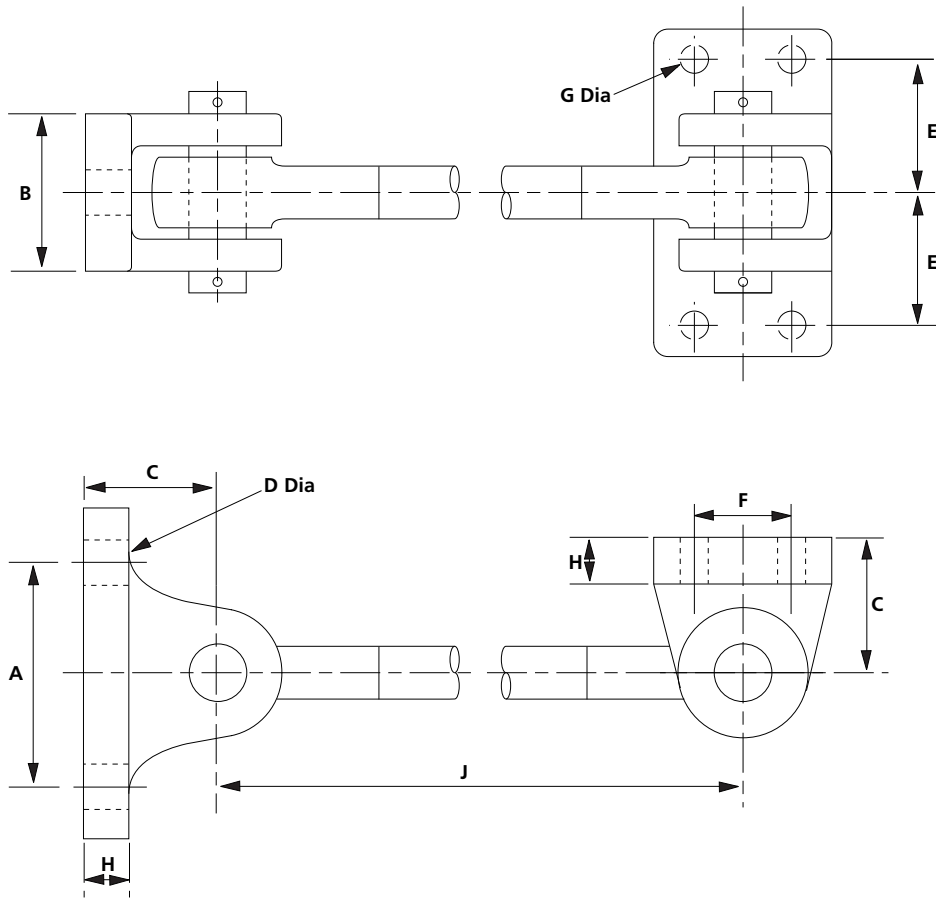
Unit types TW10, TW12, TW14, TW17.



Unit types TWD10, TWD12, TWD14, TWD17, TWD20, TWD24, TWD28.

SINGLE REDUCTION				
Unit Size	Motor Reference	Couplings Catalogue No.	X (mm)	Y (mm)
TW 10	D160/F300	D71 BB NP	539	350
	D180/F300	D71 BB NP	539	350
	D200/F350	D71 BB NP	539	400
	D225/F400	D71 BB NP	569	450
TW 12	D180/F300	D71 BB NP	609	350
	D200/F350	D71 BB NP	609	400
	D225/F400	D71 BB NP	639	450
TW 14	D200/F350	D89 BB NP	691	400
	D225/F400	D89 BB NP	715	450
TW 17	D225/F400	D108 BB NP	835	450
DOUBLE REDUCTION				
TWD 10	D100/F215	D52 BB NP	327	250
	D112/F215	D52 BB NP	327	250
	D132/F265	D52 BB NP	343	300
	D160/F300	D52 BB NP	375	350
TWD 12	D100/F215	D52 BB NP	346	250
	D112/F215	D52 BB NP	346	250
	D132/F265	D52 BB NP	362	300
	D160/F300	D52 BB NP	394	350
TWD 14	D132/F265	D52 BB NP	400	300
	D160/F300	D52 BB NP	432	350
	D180/F300	D71 BB NP	432	350
TWD 17	D132/F265	D52 BB NP	425	300
	D160/F300	D52 BB NP	457	350
	D180/F300	D71 BB NP	457	350
	D200/F350	D71 BB NP	457	400
TWD 20	D160/F300	D71 BB NP	539	350
	D180/F300	D71 BB NP	539	350
	D200/F350	D71 BB NP	539	400
	D225/F400	D71 BB NP	569	450
TWD 24	D160/F300	D71 BB NP	609	350
	D180/F300	D71 BB NP	609	350
	D200/F350	D71 BB NP	609	400
	D225/F400	D71 BB NP	639	450
TWD 28	D180/F300	D89 BB NP	691	350
	D200/F350	D89 BB NP	691	400
	D225/F400	D89 BB NP	715	450

## TW Series - Torque Arm - Dimensions (mm)



Size	A	B	C	D	E	F	G	H	J
T10	114.3	76.2	57.2	22	63.5	50.8	13.5	20.6	762/915
T12									
T14	127.0	88.9	76.2	26	76.2	57.2	13.5	25.4	762/915
T17									
T20	228.6	136.5	117.48	39	98.4	88.9	22	38.1	865/1010
T20	266.7	165.1	133.35	42	120.7	95.25	26	44.4	1040/1180

SUITABLE FOR UNIT TYPES TSMW AND TSMWD

### Initial Running

All worm gear units are supplied without oil and should be filled to correct level with suitable lubricant before running.

### First Filling

#### Single Reduction Units

When installed and before running, the unit should be filled with new lubricant to the correct level as follows.

With the gear stationary, remove the filler and breather plug and oil level plug. Fill until the lubricant level is visible at the indicator (if fitted) or until lubricant overflows from oil level aperture.

Replace and secure both plugs. Care should be taken to avoid overfilling, as this may cause subsequent leakage.

#### Double Reduction Units

The 1st and 2nd stage reduction gears are positively and independently lubricated by oil from the sumps in the 1st and 2nd reduction gear cases. It is important, therefore, that both 1st and 2nd stage reduction gear cases are filled with oil following the procedure given above for single reduction units.

### Starting Up

All units have been subjected to a short test before despatch to the customer but it takes many hours running under full load for the gear to attain its highest efficiency. The gear may if necessary be put to work immediately on full load, but if circumstances permit it is better for the ultimate life of the gear to run it in under gradually increasing load. Attaining the full load after about 20 to 40 hours.

Reasonable precautions should however, be taken to avoid overloads in the early stage of running. Temperature rise on the initial run will be higher than that eventually attained after the gear is fully run in.

### Routine Maintenance

The oil level in the unit should be regularly maintained, and should be checked at least once a month. To avoid false readings, examination of the oil level should be made with the gear stationary, and to maintain free ventilation of the unit under all conditions, the breather hole in the filler plug should be kept clear at all times. In the case of double reduction units, ensure that maintenance requirements given above are applied to both 1st and 2nd stage reduction gears.

### Changing Oil

The oil should be changed completely at intervals depending upon the working conditions.

### Storage

All worm gear units stored or left inactive for long periods should be adequately protected, particularly those on exposed sites and those operating in corrosive atmospheres.

The following precautions will generally be adequate, but advice on the protection of particular units will be given, if required.

If empty of oil: spray the gear case interior with rust preventative oil; compatible with lubricant recommended for service conditions. If filled with oil: operate at full speed once per month for not less than 10 minutes to ensure liberal coating of all internal parts with oil.

For indefinite storage: completely fill unit with oil ensuring complete submersion of all internal components. Shafts should be occasionally turned by hand. When unit is returned to service, drain and refill with new oil to correct level.

External shaft extensions and oil seals can be protected by the use of grease impregnated tape.

Full long term storage specification details can be obtained from Renold on request.

### Spare Parts

Information relating to spare parts is available on request.



## RENOLD TW Series - Lubrication Information

The correct fill of oil for the unit size and mounting position can be found in either the appropriate catalogue or the Installation and Maintenance Guide. Only good quality oils should be used, such as those listed below, as the use of inferior or unsuitable products may cause rapid wear and possible damage to the gearbox. Some EP additives such as Sulphur can attack Bronze especially at operating temperatures above 80°C and therefore should be avoided.

Oils with three viscosity ranges (Light, medium and heavy) are listed below, the correct choice depends on the application, operating speed, load and temperature. Temperature and speed can often be the main factor as they effect the operating viscosity. If the unit runs below the catalogue rating and operates at a temperature below 60°C then a light grade oil should be used. Operating at catalogue rating with temperatures up to 90°C requires a medium grade and with higher temperatures and loading, heavy grade oils should be used. When using POA oils this temperature can be increased by about 5°C.

If the unit is operating with gear speeds below 2.5 m/s (500ft/min) then the next higher grade should be used. Using too heavy a grade than required will result in reduced efficiency, too light a grade will result in premature wear, if in doubt ask Renold Gears

### Technical Department. Which Oil to Select

There are three main oils Mineral, Synthetic (Polyalphaolefin) and Synthetic (Polyglycol). Mineral oils tend to be cheaper, have a lower life and are less efficient. Synthetic (Polyalphaolefin) can operate over a higher temperature range, are more efficient, give higher ratings and have a longer life and as such are preferred.

The use of Synthetic (Polyglycol) are not recommended without prior discussion with Renold as special paints and seals are required.

If necessary a list of recommended food grade oils is available on request.

If a Sprag Clutch backstop is fitted internally to the gear unit, oils with EP type additives must not be used.

The oils shown below are all suitable for use with Sprag Clutch backstops.

Mineral Oil	Light		Medium		Heavy	
		Temp°C		Temp°C		Temp°C
Mobil DTE	BB	-7 to 90	AA	2 to 90	HH	2 to 90
Castrol Alpha ZN	220	-9 to 120	320	-9 to 120	460	-9 to 120
Shell Vitrea	220	-24 to 120	320	-18 to 120	460	-15 to 120
Esso Teresso	220	-18 to 120	320	-12 to 120	460	-9 to 120
Kluberoil GEM 1	220	-18 to 100	320	0 to 100	460	0 to 100

Synthetic (Polyalphaolefin)	Light		Medium		Heavy	
		Temp°C		Temp°C		Temp°C
Mobil Gear SHC	630	-42 to 160	632	-42 to 160	634	-39 to 160
Castrol Alpha T	220	-36 to 80	320	-33 to 80	460	-33 to 80
Shell Omala RL	220	-40 to 80	320	-40 to 80	460	-40 to 80
Esso Teresso SHP	220	-42 to 150	320	-36 to 150	460	-30 to 150

Notes

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