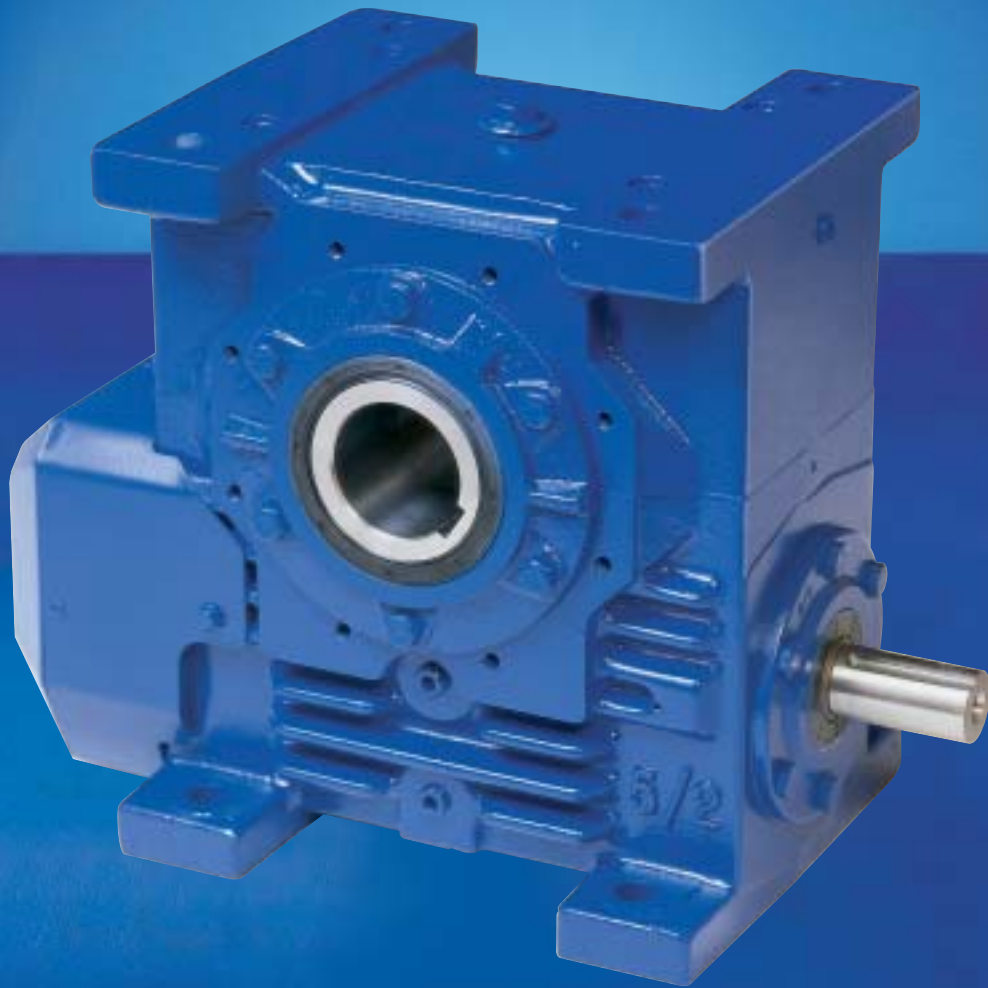


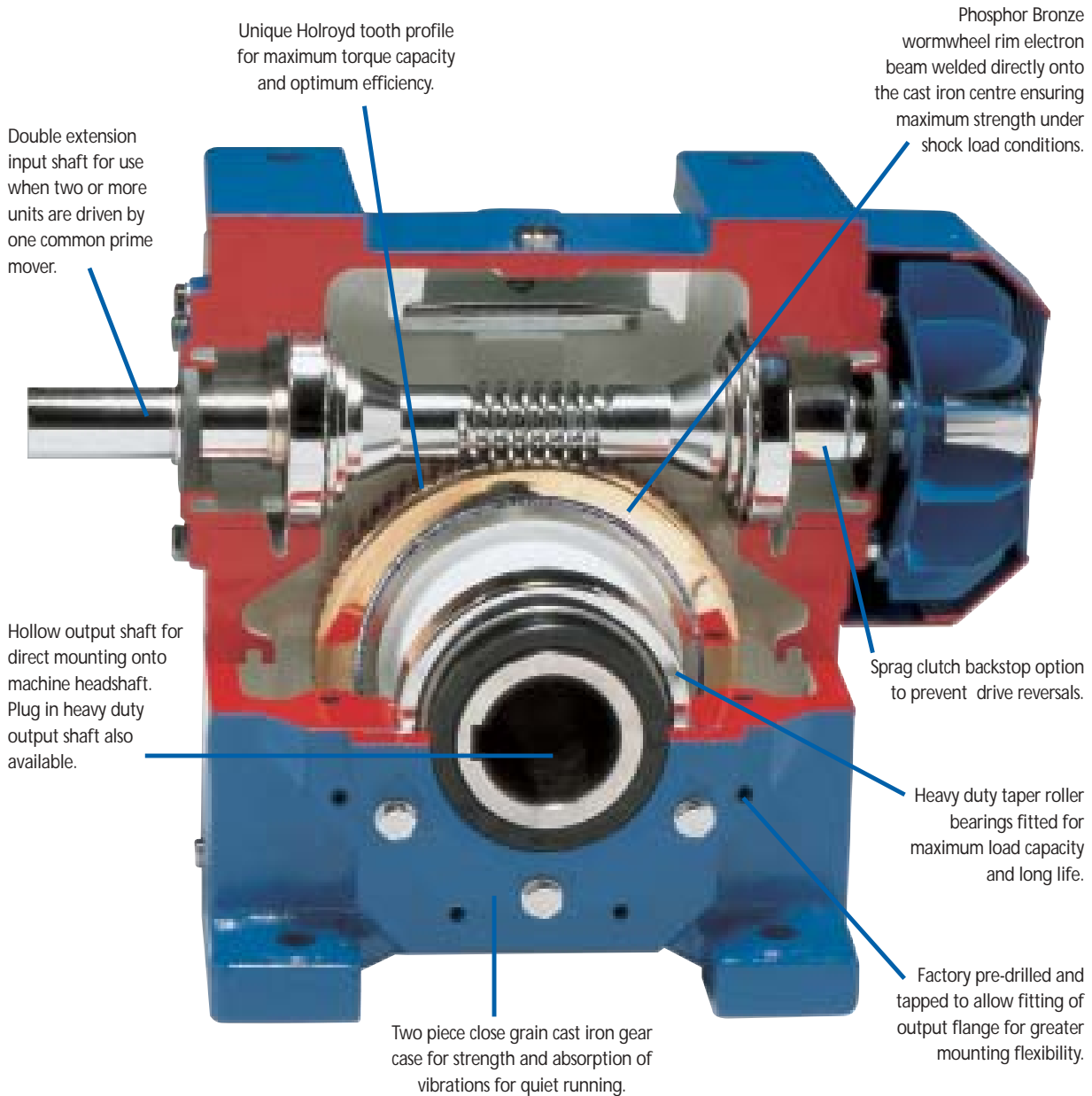
RENOLD

WM Series



Worm Gear Units

WM Series - Product Specification



The WM Series range of products has been designed and built to a modular form to allow the combination of other Renold products to extend the torque, ratio and speed range. Each unit is designed for use with NEMA and IEC electric motors, with B5 and B14 flanges.

Applications:

- Conveyors
- Mining
- Lumber
- Textiles
- Materials Handling
- Packaging Machinery
- Food Process Machinery
- Water Treatment
- Founding Equipment
- General Industrial Applications



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.

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Introduction

For over 100 years, Renold has played a leading role in the development of worm gearing and perfected the design and manufacture of HOLROYD worm gears, such that today the name HOLROYD is renowned world-wide for the quality and reliability of its products.

Renold WM Series worm gear units are available to satisfy the industrial demand for reliable and efficient speed reducers.

Renold WM Series worm gear units are single reduction and utilise the unique Renold patented electron beam welded wheel rims. Double reduction units are available - contact Renold.

Standard speed reduction ratios range from 5:1 up to 70:1 for single reduction worm gear units.

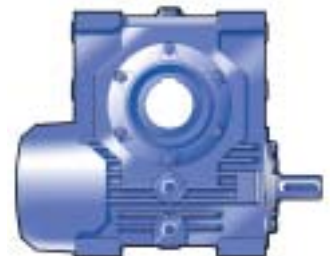
All WM Series worm gear units can be supplied in various standard types and assemblies and are suitable for combining with most of the other Renold range of fixed and variable speed products.

Most of the units included in the WM Series range are suitable for mounting in alternative positions. Available assemblies are detailed for each type of unit and mounting position variations where applicable.

WM Series reducers are supplied with a hollow shaft as standard except for the 9" CRS which has a solid shaft. Plug-in output shafts, both single and double, are available for both standard mount and flange mount.

All of the WM Series units can be fitted with standard flange mounted electric motors.

The WM Series units are available from 4" to 9" centre distance and this heavy duty unit range is the result of continuing research and development.



WM Series - Product Specification

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.

The Holroyd gear form used in the WM 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 confer 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 imperial dimensions, but metric shaft extensions are also available. The output Shaft is manufactured in carbon steel, but if required by applicational conditions, can be made from high tensile steel, in single or double extension.

WM Series unit sizes 4" to 8" are supplied as hollow output shaft type as standard and all output shafts are plug-in design, single and double extension.

The Agitator version WMA however uses a solid output shaft construction for maximum strength, particularly when used on mixer applications. The WM 9 Series units are supplied with solid construction output shaft throughout the range of design types. All input shafts in the WM Series range are standard double extension and are metric dimensions at one end and American standard - inch at the other.

Unless otherwise requested, the imperial extension will be the exposed input extension.

Preferred Ratios

Certain gear ratios have been nominated as preferred ratios and are shown in red on pages 28 to 41. This has been done with a view to providing a competitive lead time.

Bearings

Standard metric taper/roller bearings are fitted throughout the WM Series range of units in both single and double extension shaft options.

Oil Seals

Semi-dual lip oil seals are fitted to all hollow output shaft units and single lip seals are fitted to the input shaft of all unit sizes and the output of WM9 unit range and all agitator unit types.

Dry Well Feature

The WM Series unit sizes 4" to 8" can be factory fitted with a 'dry-well' adaption at the output shaft to create a non oil leak unit. The output shaft bearing within the dry well is grease lubricated.

The non leak feature is particularly important on mixer drive applications in food and chemical plants where the unit shaft is vertically down.

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 wheel line 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 Renolds Engineers. Full lubrication details can be found under the "Installation & Maintenance" section.

Cooling

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

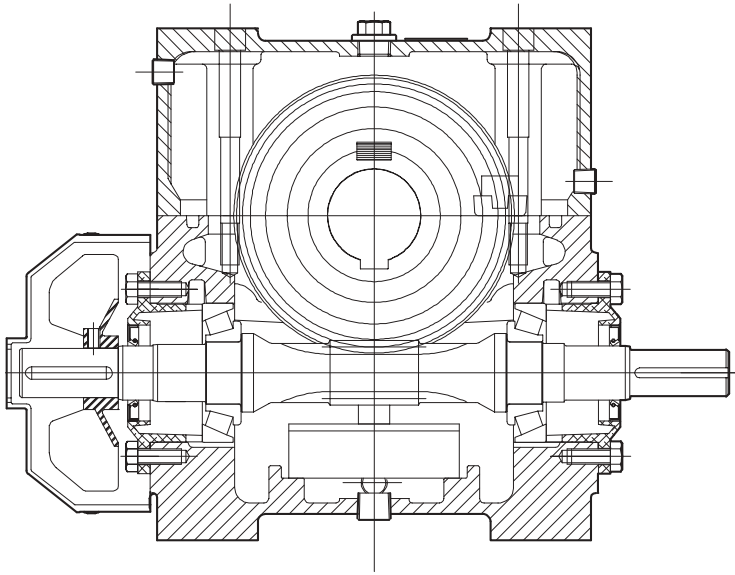
Backstop

Sprag clutch backstops can be fitted to most units to prevent unit run back when required.

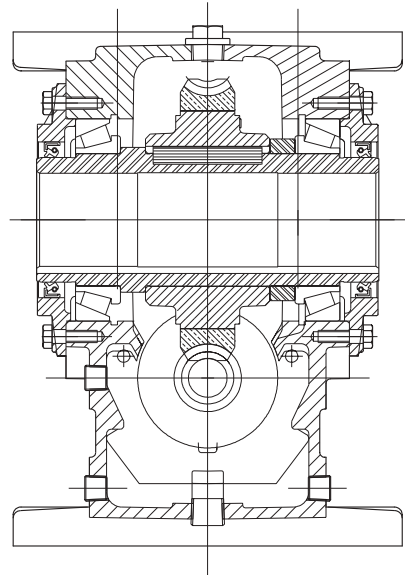
Double Reduction Units

Two stage, double reduction gear units are available with ratios from 75:1 to 4900:1.

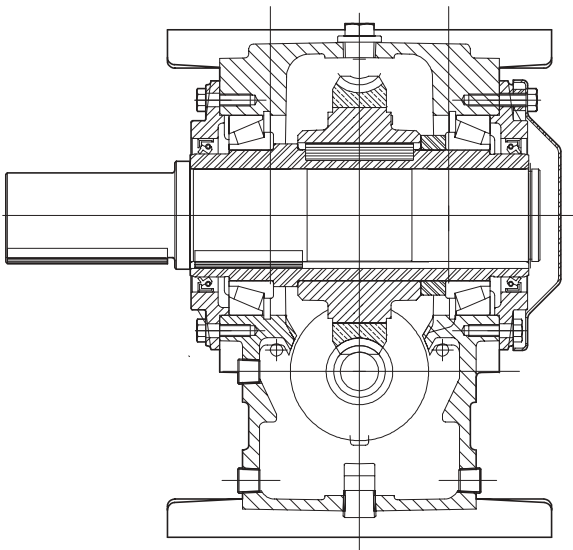
WM Series - Product Specification



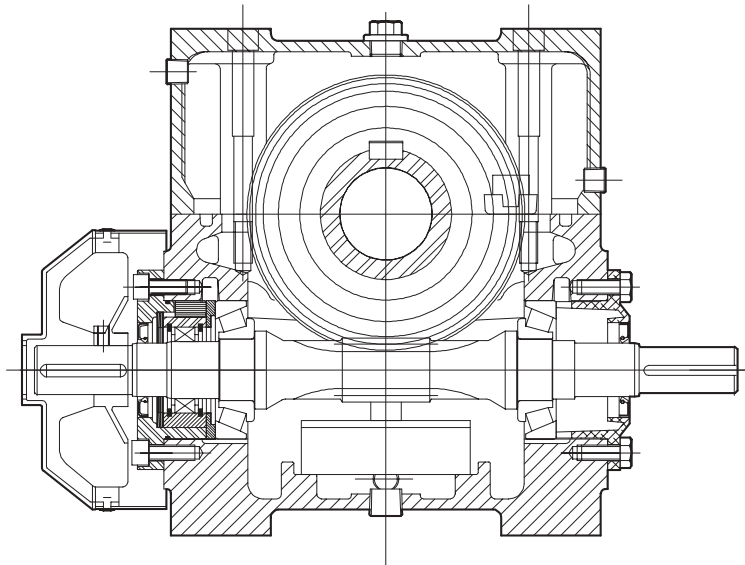
Hollow output shaft unit showing standard American extension input shaft and metric extension at the fan end.



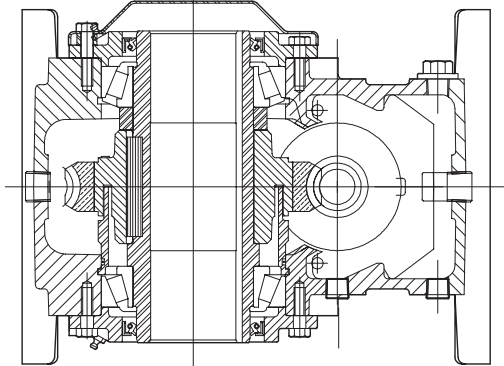
Standard hollow output shaft with semi dual lip oil seal for added oil retention.



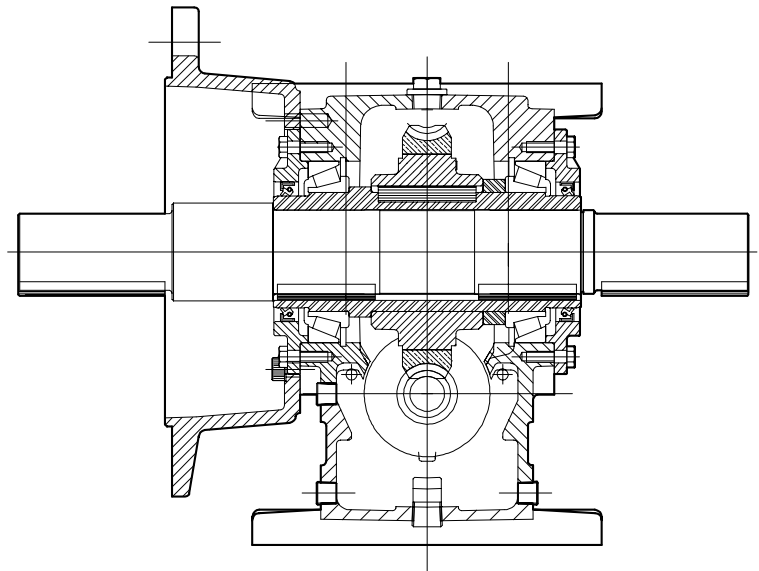
Underdriven unit with standard plug-in output shaft. Single and double extension shafts are available.



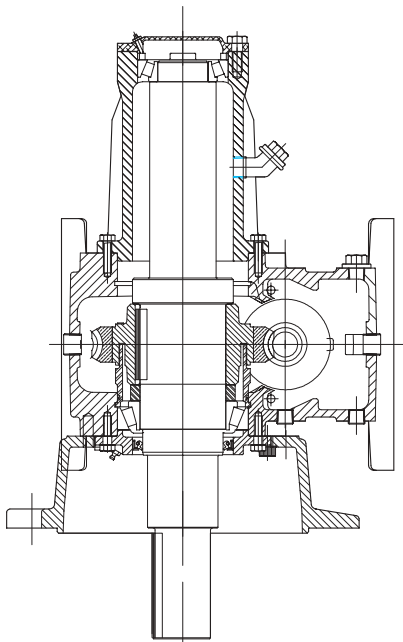
Sprag Clutch, anti run-back assembly fitted to the fan extension end of the input shaft, to prevent unit run back. The Sprag Clutch can be supplied as a kit for retro fitting at any time.

WM Series - Product Specification

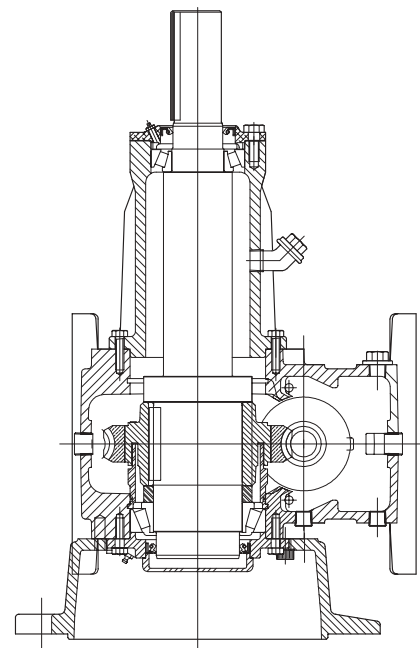
Dry well adaption fitted at the output of the WM Series unit. The non leak feature is particularly important on mixer applications in the food and chemical industry.



Unit fitted with output location flange and double extension output shaft, one standard extension and one longer than standard compensating for the flange.



WMA - Agitator unit with solid output shaft down. The unit is shown with the dry well feature. The output shaft bearings have a greater bearing span to allow for higher external loads imposed by mixer and agitator blades.



Agitator unit with solid output shaft up, particularly suited for cooling fan drives.

Selection of Worm Gears

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 (HP).
- Gear unit input and output power required (HP).
- For input speeds below 250 rev/min consult our Technical Sales Department, giving details of required output torque (lbf.ins) and diameter of driven shaft (ins).

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 (HP) and number of starts per day.
- For intermittent duty, reversing or shock loading, state normal power (HP) 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 is 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 keyways.

Mechanical Rating

The mechanical powers listed are those which the WM 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 starts 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 x application service factor f_d (Table 1 and Table 2) x 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 (68°F), 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 (68°F), 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.

Eg. Thermal selection torque = continuous torque requirement x 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 HP and mechanical and thermal output torque ratings in lbf.ins.

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, the actual 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 8 and 9.
$$\text{Gear ratio} = \frac{\text{Input speed rev/min}}{\text{Output speed rev/min}}$$
 - 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 tentatively 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 x f_d x f_s
- or
- $$\text{Selection Output Torque} = \frac{\text{absorbed power} \times 63,025 \times f_d \times f_s}{\text{output speed (rev/min)}}$$
- 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 x 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.

Selection Examples + Nominal and Actual Ratios

Mechanical Selection Torque	lbf. ins =	Actual Torque Requirement	(lbf. ins)	X	Mechanical Service Factor	(fd)	X	Starts Factor	(fs)
Thermal Selection Torque	lbf. ins =	Actual Torque Requirement	(lbf. ins)	X	Thermal Service Factor	(ft)			
Mechanical Selection Power	(HP) =	Actual Power Requirement	(HP)	X	Mechanical Service Factor	(fd)	X	Starts Factor	(fs)
Thermal Selection Power	(HP) =	Actual Power Requirement	(HP)	X	Thermal Service Factor	(ft)			

Example 1

A right angled underdriven wormgear unit is required to drive a belt conveyor with steady load conditions for 12 hours per day, continuous running. The ambient working temperature is 20°C (68°F) and the prime mover is an electric motor running at 1800 RPM nominal speed. Headshaft torque is 18,500 lbf.ins. The gear unit ratio would be 20/1.

- Mechanical Service (fd) Factor = 1.25
- Starts Factor (fs) = 1.00
- Thermal Service Factor (ft) = 1.00
- Mechanical Selection Torque (lbf.ins) = Actual Torque (lbf.ins) x fd x fs
= 18,500 x 1.25 x 1
= 23,125 lbf.ins
- Thermal Selection Torque (lbf.ins) = Actual (lbf.ins) x ft
= 18,500 x 1.00
= 18,500 lbf.ins

6. An 8" centre distance unit would be selected at 20/1 ratio using mineral oil. However, if synthetic oil could be used, the 7" centres unit would be suitable for the application, having a mechanical torque capacity of 24,650 lbf.ins and thermal capacity of 33,642 lbf.ins.

It can be seen from the ratings tables on pages 18 to 31 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 rating are used to make a selection.

Example 2

A wormgear unit is to be used on a heavy duty application, run at 24 hours per day continuous duty, maximum ambient temperature 40°C (105°F). The unit ratio is to be 60/1 and the electric drive motor is 1800 RPM nominal speed (1750 RPM actual).

The demand power from the motor is 3.75 HP.

- Mechanical Service Factor (fd) = 2.00
- Starts Factor (fs) = 1.00
- Thermal Service Factor (ft) = 1.35
- Mechanical Selection Power (HP) = Actual HP x fd x fs
= 3.75 x 2.0 x 1.0
= 7.5 HP
- Thermal Selection Power (HP) = Actual HP x ft
= 3.75 x 1.35
= 5 HP
- The selection for this application would be a 6" centres unit at 60/1 ratio using mineral oil. The unit mechanical power rating is 8.46 HP and the thermal power rating is 13.7 HP. Either mineral or synthetic oil could be used.

Single Reduction

Gear Size	WM4	WM5	WM6	WM7	WM8	WM9
Nominal Ratio	Actual Ratio					
5	5.16	5.16	5.13	5.13	5.13	5.13
*7.5	7.25	7.25	7.40	7.40	7.40	7.33
10	9.66	9.66	9.75	9.75	9.75	9.75
*12.5	12.33	12.33	12.25	12.25	12.25	12.25
15	15.5	15.5	14.66	14.66	14.66	14.66
20	20.5	20.5	20.5	20.5	20.5	20.5
25	25	24.5	24.5	24.5	24.5	24.5
30	30	30	30	29.5	29.5	29.5
*35	35	35	35	35	35	34.5
40	40	40	40	40	40	40
*45	45	45	45	45	45	45
50	50	50	50	50	50	50
60	60	60	60	60	60	60
70	70	70	70	70	70	70

* These ratios are made to order only

Load Classification by Application

Table 1

Agitators	S	Sugar (1)	M	Medium duty	M	Individual drives	H	single acting: 1 or 2 cylinders	*
Pure liquids	M	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	S	Cutter head drives	H	Tumblers	M	Mills, rotary type	M	Rubber and plastics industries	
Centrifugal	S	Jig drives	H	Line shafts	M	Ball (1)	M	Crackers (1)	H
Lobe	M	Manoeuvring winches	M	Driving processing equipment	M	Cement kilns (1)	M	Laboratory equipment	H
Vane	S	Pumps	M	Light	S	Dryers and coolers (1)	M	Mixed mills (1)	H
Brewing and Distilling		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		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	M	Sheeter (1)	M
Scale hopper-frequent starts	M	Auxiliary hoist	(2)	Chain transfer	H	Concrete mixers continuous	M	Tyre building machines	*
Can filling machines		Boom, luffing	(2)	Craneaway 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	*	Gaug feed	M	Oil industry		Sand muller	M
Clarifiers	S	Bucket - uniform load	S	Green chain	M	Chillers	M	Screens	*
Classifiers	M	Bucket - heavy load	M	Live rolls	H	Oil well pumping	*	Air washing	S
Clay working machinery		Bucket - continuous	S	Log deck	S	Paraffin filter press	M	Rotary, stone or gravel	M
Brick press	H	Centrifugal discharge	S	Log haul-incline	S	Rotary kilns	M	Travelling water intake	S
Briquette machine	H	Escalators	S	Log haul-well type	H	Paper mills		Sewage disposal equipment	
Clay working machinery	M	Freight	M	Log turning device	M	Agitators (mixers)	M	Bar screens	S
Pug mill	M	Gravity discharge	S	Main log conveyor	S	Barker-auxiliaries hydraulic	M	Chemical feeders	S
Compressors	M	Main lifts	*	Off bearing rolls	M	Barker-mechanical	H	Collectors	S
Centrifugal	S	Passenger	*	Planer feed chains	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 cutters, platers	M	Slab pushers	M
Assembly	S	Tubing	S	Small waste conveyor-belt	S	Conveyors	M	Steering gear	*
Belt	S	Blow moulders	M	Small waste conveyor-chain	M	Couch	S	Stokers	S
Bucket	S	Pre-plasticisers	M	Sorting table	M	Cutters, platers	M	Sugar industry	
Chain	S	Fans	S	Tipple hoist conveyor	M	Cylinders	M	Cane knives (1)	M
Flight	S	Centrifugal	M	Tipple hoist drive	M	Dryers	M	Crushers (1)	M
Oven	S	Cooling towers	*	Transfer conveyors	M	Fell stretcher	M	Mills (1)	M
Screw	S	Induced draft	*	Transfer rolls	M	Fell whipper	M	Textile industry	
Conveyors - heavy duty not uniformly fed	M	Forced draft	*	Tray drive	M	Jordans	H	Batchers	M
Apron	M	Induced draft	M	Trimmer feed	M	Log haul	H	Calenders	M
Assembly	M	Large, mine etc.	M	Waste conveyor	M	Presses	M	Cards	M
Belt	M	Large, industrial	M	Machine tools		Pulp machine reel	M	Dry cans	M
Bucket	M	Light, small diameter	S	Bending roll	S	Stock chest	M	Dryers	M
Chain	M	Feeders	M	Punch press-gear driven	H	Suction roll	M	Dyeing machinery	M
Flight	M	Apron	M	Notching press-belt drive	*	Washers and thickeners	M	Looms	M
Live roll	*	Belt	M	Plate planners	H	Winders	M	Mangles	M
Oven	M	Disc	S	Tapping machine	H	Printing presses	*	Nappers	M
Reciprocating	H	Reciprocating	H	Other machine tools		Pullers	M	Pads	M
Screw	M	Screw	M	Main drives	M	Barge haul	S	Range drives	*
Shaker	H	Food industry		Auxiliary drives	S	Pumps	H	Slashers	M
Crane Drives - not dry dock		Beef slicer	M	Metal mills	M	Centrifugal	S	Soapers	M
Main hoists	S	Cereal cooker	S	Drawn bench carriage and main drive	M	Proportioning	M	Spinners	M
Bridge travel	*	Dough mixer	M	Pinch, dryer and scrubber rolls, reversing	S	Reciprocating	M	Tenter frames	M
Trolley travel	*	Meat grinder	M	Slitters	H	* single acting;		Washers	M
Crushers	*	Generators - not welding		Table conveyors non-reversing group drives	H	M 3 or more cylinders	M	Winders	M
Ore	H	Hammer mills	H			double acting:		Windlass	*
Stone	H	Hoists	H			M 2 or more cylinders	M		

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 -	1.00	1.25	1.75
	3hrs/day max	1.25	1.50	2.00
	3 - 10 over 10	1.50	1.75	2.25
Single-cylinder I.C. engine (Highly impulsive input)	Intermittent -	1.25	1.50	2.00
	3hrs/day max	1.50	1.75	2.25
	3 - 10 over 10	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.

Table 2 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

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 to either select a larger unit or 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 overhung 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:

resultant overhung load = (lbf)

$$\frac{P \times 126,000 \times F}{D \times S}$$

Where P = Power absorbed at output shaft (HP)

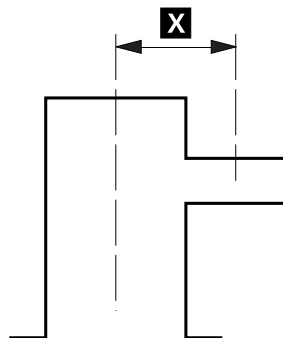
S = Speed of output shaft in rev/min

D = Pitch circle diameter of chain sprocket, spur or helical gear, or belt sheave in ins.

F = Overhung drive application factor as follows:

Chain sprocket	1,00
Spur or helical gear	1,25
Vee sheave	1,50
Flat belt sheave	2,00

Unit Size	Dimension X ins
	Standard Shaft
WM4	6.34
WM5	7.60
WM6	8.58
WM7	9.37
WM8	9.61
WM9	10.55



Output Shaft Overhung Loads - Single Reduction

Table 5 - Output Shaft Overhung Loads (lbs)

At 1750 rpm input

Ratio	Output Speed	Gear Unit Reference					
		WM4	WM5	WM6	WM7	WM8	WM9
5/1	350	2260	2810	2540	4460	5840	6560
7.5/1	233	2650	3410	4062	5770	7210	7720
10/1	175	2940	3790	4510	6420	8050	9180
12.5/1	140	3100	4060	4980	6840	8460	9530
15/1	117	3050	4320	5300	7390	9190	10480
20/1	88	3070	4390	5350	8450	10650	12150
25/1	70	3010	4430	5400	9070	11310	12820
30/1	58	2930	4170	5210	9260	12000	13100
35/1	50	3020	4170	5180	9440	12360	13490
40/1	44	3050	4310	5250	9440	12360	13490
45/1	39	3060	4350	5310	9440	12360	13490
50/1	35	3080	4400	5360	9440	12360	13490
60/1	29	3110	4460	5440	9440	12360	13490
70/1	25	3130	4520	5510	9440	12360	13490

At 1160 rpm input

Ratio	Output Speed	Gear Unit Reference					
		WM4	WM5	WM6	WM7	WM8	WM9
5/1	232	2500	2900	2320	4450	5960	6800
7.5/1	155	2970	3820	4530	6410	8000	8490
10/1	116	3090	4250	5130	7220	9038	10320
12.5/1	93	3040	4320	5300	7660	9490	10700
15/1	77	2990	4200	5240	8270	10310	11750
20/1	58	3020	4270	5190	9160	11960	13100
25/1	46	2930	4320	5240	9440	12000	13490
30/1	39	2870	3980	5000	9440	12360	13490
35/1	33	2950	4070	4970	9440	12360	13490
40/1	29	3000	4180	5050	9440	12360	13490
45/1	26	3010	4230	5140	9440	12360	13490
50/1	23	3030	4290	5210	9440	12360	13490
60/1	19	3070	4370	5330	9440	12360	13490
70/1	17	3100	4450	5420	9440	12360	13490

Output Shaft Axial Thrust Loads - Single Reduction

Table 6 - Output Shaft Axial Thrust Loads (lbs)

At 1750 rpm input

Ratio	Output Speed	Gear Unit Reference					
		WM4	WM5	WM6	WM7	WM8	WM9
5/1	350	2030	2060	1610	2880	4010	4300
7.5/1	233	2690	3110	2950	4680	6260	5800
10/1	175	3170	3690	3690	5580	7450	8150
12.5/1	140	3510	4010	4200	6130	7940	8490
15/1	117	3840	4380	4730	6930	9020	9900
20/1	88	4490	5240	5770	8450	11140	12260
25/1	70	4770	5760	6390	9220	11950	13050
30/1	58	4800	5950	6768	10200	12000	14170
35/1	50	4950	6460	7220	10510	12360	14600
40/1	44	4950	6920	7710	1090	12360	14600
45/1	39	4950	7200	8230	11240	12360	14600
50/1	35	4950	7420	8640	11240	12360	14600
60/1	29	4950	7420	9380	11240	12360	14600
70/1	25	4950	7420	9600	11240	12360	14600

At 1160 rpm input

Ratio	Output Speed	Gear Unit Reference					
		WM4	WM5	WM6	WM7	WM8	WM9
5/1	232	2160	2110	1450	2850	4080	4430
7.5/1	155	2980	3420	3170	5020	6750	6080
10/1	116	3510	4090	4080	6200	8290	9080
12.5/1	93	3900	4440	4620	6780	8820	9460
15/1	77	4300	4880	5240	7680	10030	11000
20/1	58	4800	5880	6460	9460	12000	13700
25/1	46	4950	6480	7170	10360	12360	14170
30/1	39	4950	6680	7820	10900	12360	14600
35/1	33	4950	7200	8020	11240	12360	14600
40/1	29	4950	7420	8710	11240	12360	14600
45/1	26	4950	7420	9280	11240	12360	14600
50/1	23	4950	7420	9600	11240	12360	14600
60/1	19	4950	7420	9900	11240	12360	14600
70/1	17	4950	7420	9900	12400	12360	14600

Installation and Maintenance

Initial running

All units are supplied without oil except for the jPM unit first stage reduction, used on WM Series unit sizes 4,5,6, and 7.

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.

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.

Grease lubrication of bearings

Where this feature is included, the bearing caps are fitted with a grease nipple or stauffer lubricator, which should be used to lubricate the bearings.

When mounted with wormshafts vertical, the top bearing requires grease lubrication. Standard units, therefore, need to be modified by the inclusion of a grease nipple and nylos ring adjacent to the top bearing. Customers must advise us of this requirement when placing enquiries and orders.

Couplings and bedplates

All couplings should be carefully fitted and shafts accurately aligned.

To prevent damage to the bearings, coupling half-bodies should not be hammered on to shafts.

Worm gear units and other drive components should be rigidly mounted on firm foundations to prevent movement and vibration which may affect the alignment of the shafts. Suitable bedplates can be supplied if required.

Abnormal ambient temperatures

If the gear unit is to be operated under extremes of temperature or humidity, special oils may be required and recommendations will be made on request.

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 and shafts should be occasionally turned by hand. When unit is returned to service, drain and refill with new oil to correct level.

Spare parts

Information relating to spare parts is available on request.

RENOLD WM Series - Lubrication Information

Oil Lubrication Worm Helical Gears

The correct fill of oil for the unit size and mounting position can be found. 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 it affects 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 100°C require a medium grade, with higher temperatures and loading heavy grade oils should be used.

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 lower cost, have a shorter 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.

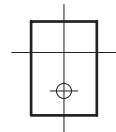
Mineral Oil	Light		Medium		Heavy	
		Temp°C		Temp°C		Temp°C
Mobil Gear	630	-13 to 90	632	-13 to 90	634	-1 to 90
Mobil DTE	BB	-7 to 90	AA	2 to 90	HH	2 to 90
Castrol Optimol BM	220	-9 to 120	320	-9 to 120	460	-9 to 120
Castrol MoLub - Alloy EP	220	-24 to 80	320	-18 to 80	460	-15 to 80
Shell Vitrea	220	-24 to 120	320	-18 to 120	460	-15 to 120
Shell Omala	220	-9 to 80	320	-9 to 80	460	-9 to 80
Esso Teresso	220	-18 to 120	320	-12 to 120	460	-9 to 120
Esso Spartan EP	220	-30 to 80	320	-27 to 80	460	-18 to 80
Petro - Canada Harmony	220	-18 to 120	320	-12 to 120	460	-9 to 120
Petro - Canada Ultima EP	220	-30 to 80	320	-27 to 80	460	-18 to 80

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
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
Petro - Canada Ultima Synthetic	220	-42 to 160	220	-42 to 160	460	-39 to 160

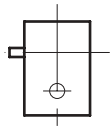
Single Reduction - Mounting & Handling

WMU - Underdriven WMSM - Shaft Mounted

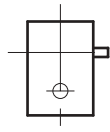
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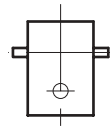
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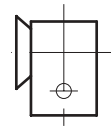
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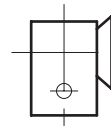
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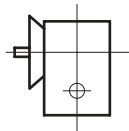
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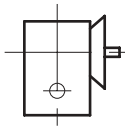
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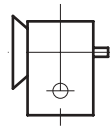
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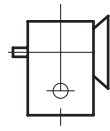
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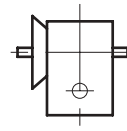
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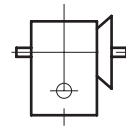
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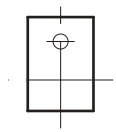
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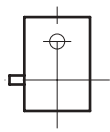
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WMO - Overdriven

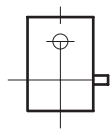
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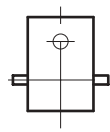
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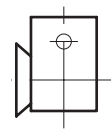
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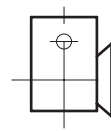
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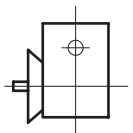
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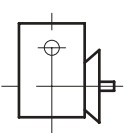
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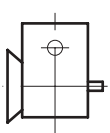
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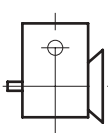
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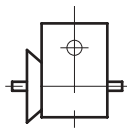
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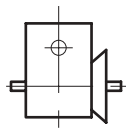
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OU
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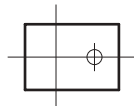
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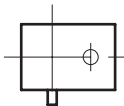
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WMU - WMO Suitable For Wall Mounting

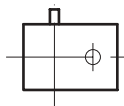
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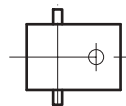
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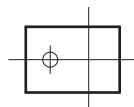
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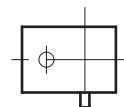
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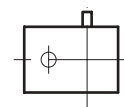
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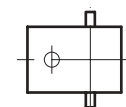
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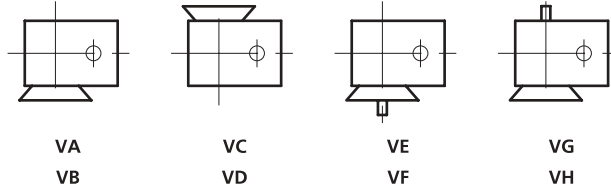


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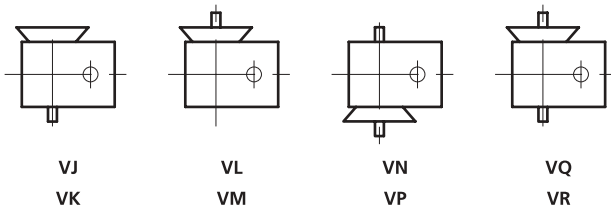
Single Reduction - Mounting & Handling

WMV - Vertical

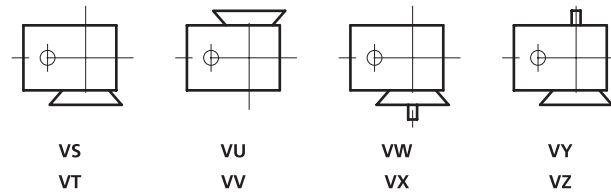
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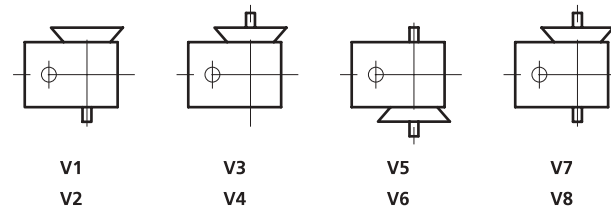
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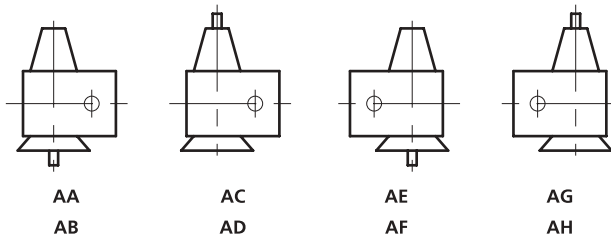


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WMA - Agitator

No Sprag backstop fitted.
Sprag backstop fitted.



WM Series - Single Reduction - Selection Data

Mineral and Synthetic Oil - Fan Cooled

Nominal ratio: 5/1

Input rpm	Output rpm	Gear Ratings	Center Distance											
			4"		5"		6"		7"		8"		9"	
			Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn
1800	360	Input HP, Thermal	26.4	31.6	42.2	50.6	63.5	76.2	92.1	111	114	136	153	184
		Output Torque lb in, Thermal	4515	5460	7246	8764	10838	13112	15760	19059	19466	23538	26294	31791
		Input HP, Mechanical	20.8	23.1	36.4	40.5	61.0	67.8	88.1	97.9	117	130	151	168
		Output Torque lb in, Mechanical	3549	3975	6247	6997	10415	11665	15073	16882	20079	22488	25858	28961
		Efficiency %	94.3	95.2	94.8	95.6	95.1	95.9	95.3	96.1	95.4	96.2	95.5	96.3
1500	300	Input HP, Thermal	22.6	27.0	36.0	43.1	54.0	64.8	78.6	94.3	97.5	117	132	159
		Output Torque lb in, Thermal	4610	5577	7382	8930	11032	13350	16096	19470	19990	24176	27148	32828
		Input HP, Mechanical	18.9	21.0	3.0	36.6	54.9	61.0	79.8	88.6	107	119	138	154
		Output Torque lb in, Mechanical	3860	4323	6762	7574	11213	12559	16336	18296	21904	24532	28400	31807
		Efficiency %	94.0	95.0	94.5	95.4	94.8	95.6	95.1	95.9	95.3	96.0	95.4	96.2
1200	240	Input HP, Thermal	18.8	22.5	29.8	35.7	44.6	53.4	64.8	77.7	80.6	96.6	110	131
		Output Torque lb in, Thermal	4775	5779	7603	9201	11320	13704	16523	19994	20585	24904	28049	33927
		Input HP, Mechanical	16.9	18.7	29.3	32.5	48.8	54.1	70.8	78.6	95.1	106	124	137
		Output Torque lb in, Mechanical	4296	4811	7485	8383	12402	13890	18051	20217	24326	27245	31703	35507
		Efficiency %	93.6	94.6	94.1	95.0	94.4	95.3	94.7	95.6	94.9	95.8	95.1	95.9
1000	200	Input HP, Thermal	16.3	19.6	25.7	30.8	38.3	45.9	55.6	66.6	69.1	82.8	94.0	113
		Output Torque lb in, Thermal	4959	6004	7848	9502	11631	14086	16945	20511	21117	25555	28785	34827
		Input HP, Mechanical	15.4	17.0	26.9	29.8	45.0	49.9	64.7	71.8	85.8	95.2	111	123
		Output Torque lb in, Mechanical	4667	5227	8212	9197	13668	15308	19738	22107	26247	29396	34046	38131
		Efficiency %	93.1	94.2	93.7	94.7	94.0	95.0	94.4	95.3	94.6	95.5	94.8	95.7
750	150	Input HP, Thermal	13.4	16.0	20.8	24.9	30.7	36.7	44.2	52.9	54.8	65.6	74.3	89.0
		Output Torque lb in, Thermal	5360	6494	8391	10166	12324	14935	17850	21620	22190	26869	30175	36528
		Input HP, Mechanical	12.8	14.2	22.5	24.9	37.9	40.1	55.2	61.1	74.2	82.3	96.6	107
		Output Torque lb in, Mechanical	5147	5765	9094	10185	15250	16320	22295	24970	30094	33705	39293	4400
		Efficiency %	92.4	93.6	93.0	94.1	93.4	94.5	93.8	94.8	94.1	95.0	94.3	95.3
500	100	Input HP, Thermal	10.4	12.5	16.0	19.1	23.2	27.8	33.1	39.6	40.7	48.8	54.8	65.7
		Output Torque lb in, Thermal	6213	7535	9571	11607	13862	16816	19855	24071	24510	29706	33095	40098
		Input HP, Mechanical	10.2	11.3	18.0	19.8	26.9	26.8	43.5	48.1	58.3	64.5	75.6	83.7
		Output Torque lb in, Mechanical	6083	6813	10762	12053	16032	6198	26083	29212	35095	39307	45667	51147
		Efficiency %	91.4	92.8	92.0	93.3	92.3	93.6	92.8	94.0	93.1	94.3	93.4	94.5
250	50	Input HP, Thermal	7.53	8.98	11.2	13.4	16.0	19.1	22.3	26.7	27.0	32.3	35.9	42.9
		Output Torque lb in, Thermal	8779	10664	13188	16022	18677	22705	26229	31860	31913	38750	42455	51533
		Input HP, Mechanical	6.20	6.17	10.6	10.5	13.5	13.4	24.6	24.5	37.6	37.8	49.1	52.9
		Output Torque lb in, Mechanical	7225	7324	12412	12576	15760	15971	28907	29263	44345	45274	58239	63557
		Efficiency %	89.5	91.1	90.1	91.6	90.4	92.0	91.0	92.4	91.3	92.7	91.7	93.0
Max Standard Plug-in Shaft Torque lb.in			9850	9850	17500	17500	21100	21100	29300	29300	36500	36500	59200	59200

Notes: Maximum torques stated apply for uniform loading applications (Starts/Hr <=5)
 For applications with combinations of high torques, overhung loads, or nos. of starts, consult Renold technical dept.
 For torques greater than the stated maximum, consult Renold technical dept. high tensile steel output shaft must be specified.

For more information telephone us - Canada: Toll Free 800.265.9970. USA: Toll Free 800.850.8141

WM Series - Single Reduction - Selection Data

Mineral and Synthetic Oil - Fan Cooled

Nominal ratio: 7.5/1 (This ratio made to order only)

Input rpm	Output rpm	Gear Ratings	Center Distance											
			4"		5"		6"		7"		8"		9"	
			Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn
1800	240	Input HP, Thermal	23.5	28.1	37.9	45.4	58.2	69.6	84.4	101	105	126	144	173
		Output Torque lb in, Thermal	5603	6773	9073	10963	14264	17236	20762	25085	25901	31290	35288	42632
		Input HP, Mechanical	15.3	16.9	25.5	28.3	4408	49.7	63.9	71.0	85.3	94.8	130	144
		Output Torque lb in, Mechanical	3621	4055	6097	6829	10961	12276	15699	17583	20997	23517	31741	35550
		Efficiency %	93.5	94.5	94.0	95.0	94.5	95.4	94.8	95.6	95.0	95.8	95.2	96.0
1500	200	Input HP, Thermal	20.1	24.0	32.2	38.5	49.3	59.0	71.5	85.6	89.3	107	123	147
		Output Torque lb in, Thermal	5713	6906	9214	11136	14443	17457	21031	25415	26314	31794	35929	43414
		Input HP, Mechanical	14.0	15.5	23.3	25.9	40.5	44.9	57.5	63.8	77.2	85.7	118	131
		Output Torque lb in, Mechanical	3981	4459	6658	7456	11858	13282	16889	18915	22733	25461	34577	38726
		Efficiency %	93.2	94.2	93.7	94.7	94.2	95.1	94.5	95.4	94.7	95.6	95.0	95.8
1200	160	Input HP, Thermal	16.7	20.0	26.6	31.8	40.5	48.4	58.6	70.1	73.2	87.6	101	120
		Output Torque lb in, Thermal	5916	7154	9474	11454	14770	17857	21455	25934	26861	32463	36679	44331
		Input HP, Mechanical	12.3	13.6	20.8	23.0	36.4	40.3	51.8	57.5	69.1	76.6	106	117
		Output Torque lb in, Mechanical	4349	4871	7377	8262	13251	14841	18958	21233	25342	28383	38546	43171
		Efficiency %	92.7	93.8	93.2	94.3	93.8	94.8	94.1	95.1	94.4	95.3	94.7	95.6
1000	133.3	Input HP, Thermal	14.6	17.4	23.0	27.5	34.8	41.6	50.2	60.0	62.5	74.8	85.8	103
		Output Torque lb in, Thermal	6150	7439	9779	11826	15161	18336	21945	26533	27436	33167	37407	45222
		Input HP, Mechanical	11.0	12.2	18.5	20.5	32.4	35.8	46.5	51.5	62.4	69.2	95.7	106
		Output Torque lb in, Mechanical	4635	5191	7861	8804	14098	15790	20327	22766	27390	30677	41749	46759
		Efficiency %	92.2	93.4	92.8	94.0	93.4	94.4	93.8	94.8	94.1	95.0	94.4	95.3
750	100	Input HP, Thermal	11.9	14.3	18.6	22.3	27.9	33.3	39.9	47.7	49.5	59.2	67.5	80.8
		Output Torque lb in, Thermal	6666	8068	10471	12669	16077	19453	23096	27938	28749	34769	39022	47194
		Input HP, Mechanical	9.40	10.4	15.7	17.4	27.5	30.4	39.1	43.2	52.0	57.6	79.7	88.3
		Output Torque lb in, Mechanical	5236	5864	8821	9880	15836	17736	22617	25331	30226	33853	46054	51581
		Efficiency %	91.5	92.8	92.1	93.4	92.7	93.9	93.1	94.2	93.4	94.5	93.7	94.8
500	66.7	Input HP, Thermal	9.40	11.2	14.4	17.2	21.2	25.3	30.0	35.8	36.9	44.1	49.9	59.6
		Output Torque lb in, Thermal	7770	9411	11993	14521	18157	21986	25767	31192	31798	38483	42794	51793
		Input HP, Mechanical	7.28	8.02	12.3	13.6	21.4	23.7	30.5	33.7	40.6	44.9	62.5	69.2
		Output Torque lb in, Mechanical	6014	6736	10223	11450	18329	20528	26175	29316	35017	39219	53668	60108
		Efficiency %	90.3	91.9	91.0	92.4	91.6	93.0	92.1	93.3	92.4	93.6	92.8	94.0
250	33.3	Input HP, Thermal	6.86	8.15	10.2	12.2	14.8	17.6	20.5	24.4	24.7	29.5	32.9	39.3
		Output Torque lb in, Thermal	11097	13459	16682	20224	24727	29983	34394	41692	41783	50634	55382	67121
		Input HP, Mechanical	4.62	5.07	7.84	8.61	13.7	14.1	19.7	21.6	26.3	29.0	40.5	43.9
		Output Torque lb in, Mechanical	7456	8351	12758	14289	22995	23940	33062	37030	44492	49831	68170	74967
		Efficiency %	88.4	90.2	89.1	90.8	89.7	91.3	90.1	91.7	90.5	92.0	90.9	92.4
Max Standard Plug-in Shaft Torque lb.in			9850	9850	17500	17500	21100	21100	29300	29300	36500	36500	59200	59200

Notes: Maximum torques stated apply for uniform loading applications (Starts/Hr <=5)
 For applications with combinations of high torques, overhung loads, or nos. of starts, consult Renold technical dept.
 For torques greater than the stated maximum, consult Renold technical dept. high tensile steel output shaft must be specified.

For more information telephone us - Canada: Toll Free 800.265.9970. USA: Toll Free 800.850.8141

WM Series - Single Reduction - Selection Data

Mineral and Synthetic Oil - Fan Cooled

Nominal ratio: 10/1

Input rpm	Output rpm	Gear Ratings	Center Distance											
			4"		5"		6"		7"		8"		9"	
			Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn
1800	180	Input HP, Thermal	20.2	24.1	32.6	38.9	51.6	61.7	75.1	89.8	94.1	113	128	154
		Output Torque lb in, Thermal	6344	7662	10288	12423	16559	20001	24183	29204	30345	36642	41477	50079
		Input HP, Mechanical	13.4	14.9	22.3	24.7	36.6	40.6	52.7	58.5	70.6	78.3	91.7	102
		Output Torque lb in, Mechanical	4204	4708	7022	7864	11714	13119	16934	18966	22728	25455	29583	33133
		Efficiency %	92.5	93.7	93.1	94.1	93.8	94.8	94.1	95.0	94.3	95.2	94.5	95.4
1500	150	Input HP, Thermal	17.3	20.6	27.7	33.0	43.6	52.1	63.4	75.8	79.5	95.0	109	130
		Output Torque lb in, Thermal	6466	7811	10437	12605	16726	20206	24403	29475	30670	37040	41995	50712
		Input HP, Mechanical	12.1	13.3	20.3	22.5	33.5	37.1	48.7	53.9	65.0	72.1	84.5	93.8
		Output Torque lb in, Mechanical	4511	5053	7644	8561	12834	14374	18701	20945	25065	28073	32654	36573
		Efficiency %	92.1	93.3	92.7	93.8	93.4	94.5	93.8	94.8	94.1	95.0	94.3	95.2
1200	120	Input HP, Thermal	14.4	17.1	22.9	27.3	35.9	42.8	51.9	62.0	65.0	77.6	88.7	106
		Output Torque lb in, Thermal	6699	8094	10727	12958	17081	20640	24830	29998	31184	37668	42680	51549
		Input HP, Mechanical	10.6	11.6	17.5	19.4	29.1	32.2	42.6	47.2	57.2	63.4	74.5	82.6
		Output Torque lb in, Mechanical	4901	5489	8208	9192	13845	15506	20358	22801	27421	30711	35833	40133
		Efficiency %	91.5	92.8	92.1	93.4	92.9	94.0	93.3	94.4	93.7	94.7	93.9	94.9
1000	100	Input HP, Thermal	12.6	14.9	19.8	23.6	30.8	36.8	44.4	53.0	55.5	66.2	75.5	90.2
		Output Torque lb in, Thermal	6969	8422	11075	13381	17532	21190	25376	30664	31799	38419	43435	52471
		Input HP, Mechanical	9.52	10.5	15.9	17.6	26.2	28.9	37.9	42.0	50.7	56.2	66.0	73.2
		Output Torque lb in, Mechanical	5276	5909	8887	9953	14876	16662	21664	24263	29080	32569	37959	42515
		Efficiency %	91.0	92.4	91.7	93.0	92.5	93.7	92.9	94.0	93.3	94.3	93.5	94.6
750	75	Input HP, Thermal	10.3	12.3	16.1	19.1	24.8	29.5	35.4	42.2	43.9	52.4	59.5	71.0
		Output Torque lb in, Thermal	7566	9148	11871	14349	18613	22505	26717	32297	33299	40245	45253	54686
		Input HP, Mechanical	8.04	8.85	13.4	14.8	22.0	24.3	32.3	35.6	43.2	47.8	56.2	62.2
		Output Torque lb in, Mechanical	5884	6590	9882	11068	16563	18550	24361	27284	32768	36700	42741	47870
		Efficiency %	90.1	91.7	90.8	92.3	91.7	93.0	92.2	93.4	92.6	93.7	92.9	94.0
500	50	Input HP, Thermal	8.16	9.68	12.5	14.8	18.9	22.5	26.7	31.8	32.8	39.1	44.0	52.5
		Output Torque lb in, Thermal	8844	10699	13631	16484	21089	25514	29885	36148	36895	44617	49681	60069
		Input HP, Mechanical	6.11	6.71	10.4	11.4	17.2	18.9	25.1	27.7	33.5	37.0	43.6	48.2
		Output Torque lb in, Mechanical	6616	7410	11328	12687	19100	21392	28064	31432	37709	42234	49217	55123
		Efficiency %	88.9	90.6	89.6	91.2	90.6	92.1	91.1	92.5	91.5	92.8	91.8	93.1
250	25	Input HP, Thermal	6.00	7.10	8.94	10.6	13.3	15.8	18.4	21.8	22.2	26.4	29.3	34.8
		Output Torque lb in, Thermal	12700	15378	19059	23071	28925	35034	40165	48635	48780	59054	64641	78241
		Input HP, Mechanical	3.89	4.26	6.61	7.24	10.9	11.1	16.0	17.5	21.3	23.5	27.8	30.5
		Output Torque lb in, Mechanical	8222	9209	14081	15771	23742	24563	34890	39077	46887	52514	61258	68609
		Efficiency %	86.7	88.7	87.4	89.4	88.5	90.3	89.0	90.7	89.4	91.1	89.8	91.4
Max Standard Plug-in Shaft Torque lb.in			9850	9850	17500	17500	21100	21100	29300	29300	36500	36500	59200	59200

Notes: Maximum torques stated apply for uniform loading applications (Starts/Hr <=5)
 For applications with combinations of high torques, overhung loads, or nos. of starts, consult Renold technical dept.
 For torques greater than the stated maximum, consult Renold technical dept. high tensile steel output shaft must be specified.

For more information telephone us - Canada: Toll Free 800.265.9970. USA: Toll Free 800.850.8141

WM Series - Single Reduction - Selection Data

Mineral and Synthetic Oil - Fan Cooled

Nominal ratio: 12.5/1 (This ratio made to order only)

Input rpm	Output rpm	Gear Ratings	Center Distance											
			4"		5"		6"		7"		8"		9"	
			Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn
1800	144	Input HP, Thermal	17.3	20.6	28.0	33.3	45.3	54.0	65.1	77.7	81.5	97.2	111	133
		Output Torque lb in, Thermal	6858	8280	11135	13440	18079	21827	26071	31468	32717	39486	44818	54088
		Input HP, Mechanical	12.4	13.6	22.1	24.4	34.0	37.6	52.6	58.3	74.3	82.3	99.8	111
		Output Torque lb in, Mechanical	4873	5458	8785	9839	13559	15186	21060	23587	29830	33410	40152	44971
		Efficiency %	91.3	92.7	92.1	93.3	93.0	94.1	93.3	94.3	93.6	94.6	93.8	94.8
1500	120	Input HP, Thermal	14.8	17.6	23.8	28.3	38.2	45.6	54.9	65.5	68.8	82.1	94.1	112
		Output Torque lb in, Thermal	6990	8440	11288	13627	18237	22022	26284	31730	33018	39855	45301	54677
		Input HP, Mechanical	11.0	12.1	19.7	21.8	30.4	33.6	47.4	52.4	67.1	74.3	90.5	100
		Output Torque lb in, Mechanical	5169	5789	9349	10470	14473	16210	22647	25364	32201	36065	43561	48788
		Efficiency %	90.8	92.2	91.6	92.9	92.5	93.7	92.9	94.0	93.3	94.3	93.5	94.5
1200	96	Input HP, Thermal	12.4	14.7	19.7	23.4	31.4	37.4	45.0	53.6	56.2	67.0	76.8	91.6
		Output Torque lb in, Thermal	7245	8749	11600	14007	18614	22483	26729	32273	33535	40486	45977	55502
		Input HP, Mechanical	9.75	10.7	17.3	19.1	26.5	29.3	40.9	45.3	58.0	64.1	78.7	87.1
		Output Torque lb in, Mechanical	5692	6375	10190	11413	15689	17571	24336	27256	34589	38740	47107	52760
		Efficiency %	90.1	91.7	90.9	92.3	92.0	93.2	92.4	93.6	92.7	93.9	93.1	94.2
1000	80	Input HP, Thermal	10.8	12.8	17.0	20.2	27.0	32.2	38.5	45.8	48.0	57.2	65.4	78.0
		Output Torque lb in, Thermal	7541	9109	11980	14468	19112	23089	27314	32985	34182	41273	46763	56459
		Input HP, Mechanical	8.72	9.60	15.6	17.2	24.0	26.5	37.1	41.0	52.2	57.7	69.7	77.1
		Output Torque lb in, Mechanical	6073	6801	10963	12279	16952	18986	26342	29503	37179	41640	49856	55839
		Efficiency %	89.6	91.2	90.4	91.9	91.5	92.8	91.9	93.2	92.3	93.5	92.6	93.8
750	60	Input HP, Thermal	8.92	10.6	13.9	16.4	21.8	25.9	30.7	36.5	38.0	45.3	51.5	61.4
		Output Torque lb in, Thermal	8198	9905	12854	15528	20317	24552	28765	34747	35793	43231	48706	58821
		Input HP, Mechanical	7.32	8.04	13.0	14.3	20.0	22.0	31.1	34.3	44.1	48.7	59.5	65.8
		Output Torque lb in, Mechanical	6725	7532	12082	13532	18616	20850	29116	32610	41526	46509	56296	63051
		Efficiency %	88.6	90.3	89.5	91.1	90.6	92.1	91.0	92.4	91.4	92.8	91.8	93.1
500	40	Input HP, Thermal	7.08	8.37	10.8	12.8	16.7	19.9	23.2	27.6	28.5	33.9	38.3	45.5
		Output Torque lb in, Thermal	9603	11609	14787	17870	23085	27911	32207	38923	39689	47958	53498	64636
		Input HP, Mechanical	5.63	6.17	10.1	11.1	15.6	17.1	24.3	26.8	34.4	37.9	46.2	51.0
		Output Torque lb in, Mechanical	7639	8555	13887	15553	21513	24095	33714	37760	47917	53667	64726	72494
		Efficiency %	87.2	89.1	88.1	89.9	89.3	91.0	89.8	91.4	90.2	91.7	90.6	92.1
250	20	Input HP, Thermal	5.24	6.18	7.79	9.19	11.8	14.0	16.1	19.0	19.4	22.9	25.6	30.3
		Output Torque lb in, Thermal	13844	16748	20754	25101	31847	38540	43390	52483	52603	63615	69755	84346
		Input HP, Mechanical	3.52	3.84	6.35	6.94	8.96	8.87	15.3	16.8	21.7	23.8	29.3	32.2
		Output Torque lb in, Mechanical	9284	10398	16914	18944	24102	24386	41322	46281	58943	66016	79919	89509
		Efficiency %	84.8	87.1	85.6	87.8	87.1	89.0	87.5	89.4	87.9	89.8	88.3	90.1
Max Standard Plug-in Shaft Torque lb.in			9850	9850	17500	17500	21100	21100	29300	29300	36500	36500	59200	59200

Notes: Maximum torques stated apply for uniform loading applications (Starts/Hr <=5)
 For applications with combinations of high torques, overhung loads, or nos. of starts, consult Renold technical dept.
 For torques greater than the stated maximum, consult Renold technical dept. high tensile steel output shaft must be specified.

For more information telephone us - Canada: Toll Free 800.265.9970. USA: Toll Free 800.850.8141

WM Series - Single Reduction - Selection Data

Mineral and Synthetic Oil - Fan Cooled

Nominal ratio: 15/1

Input rpm	Output rpm	Gear Ratings	Center Distance											
			4"		5"		6"		7"		8"		9"	
			Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn
1800	120	Input HP, Thermal	14.5	17.1	24.2	28.7	39.6	47.2	57.7	68.7	72.3	86.2	98.8	118
		Output Torque lb in, Thermal	7054	8512	11928	14394	18747	22624	27418	33085	34470	41591	47255	57015
		Input HP, Mechanical	11.3	12.5	20.1	22.2	30.5	33.7	45.6	50.4	63.2	70.0	81.8	90.5
		Output Torque lb in, Mechanical	5512	6174	9911	11100	14424	16155	21628	24223	30127	33743	39054	43740
		Efficiency %	89.7	91.3	90.9	92.3	92.0	93.2	92.4	93.6	92.8	93.9	93.0	94.1
1500	100	Input HP, Thermal	12.4	14.7	20.5	24.4	33.5	39.9	48.7	57.9	61.0	72.7	83.5	99.4
		Output Torque lb in, Thermal	7190	8677	12087	14587	18916	22831	27617	33330	34743	41926	47685	57539
		Input HP, Mechanical	10.2	11.3	18.0	19.8	27.1	29.9	40.6	44.8	56.6	62.6	73.5	81.3
		Output Torque lb in, Mechanical	5945	6658	10580	11850	15270	17102	22995	25754	32226	36093	41976	47014
		Efficiency %	89.1	90.7	90.3	91.8	91.5	92.8	92.0	93.2	92.4	93.6	92.7	93.8
1200	80	Input HP, Thermal	10.4	12.3	17.0	20.2	27.6	32.8	39.9	47.4	49.8	59.3	68.1	81.1
		Output Torque lb in, Thermal	7452	8995	12422	14993	19309	23309	28070	33882	35256	42551	48336	58333
		Input HP, Mechanical	9.01	9.89	15.9	17.5	24.0	26.4	35.4	39.1	48.8	54.0	63.5	70.2
		Output Torque lb in, Mechanical	6475	7252	11612	13005	16780	18793	24942	27935	34538	38683	45098	50510
		Efficiency %	88.3	90.1	89.6	91.2	90.9	92.3	91.4	92.7	91.8	93.1	92.1	93.4
1000	66.7	Input HP, Thermal	9.06	10.7	14.8	17.5	23.7	28.2	34.1	40.6	42.6	50.6	58.0	69.0
		Output Torque lb in, Thermal	7757	9365	12834	15493	19823	23934	28682	34625	35925	43364	49135	59305
		Input HP, Mechanical	8.00	8.77	14.1	15.5	21.5	23.7	32.1	35.4	44.5	49.1	57.6	63.6
		Output Torque lb in, Mechanical	6843	7664	12267	13739	17919	20069	26931	30163	37576	42085	48789	54644
		Efficiency %	87.6	89.5	88.9	90.6	90.3	91.8	90.8	92.3	91.3	92.6	91.7	92.9
750	50	Input HP, Thermal	7.48	8.83	12.0	14.2	19.1	22.7	27.3	32.4	33.8	40.1	45.7	54.3
		Output Torque lb in, Thermal	8434	10184	13785	16646	21066	25441	30215	36485	37619	45420	51166	61770
		Input HP, Mechanical	6.76	7.39	11.9	13.1	18.0	19.8	26.8	29.5	37.3	41.0	48.2	53.1
		Output Torque lb in, Mechanical	7611	8524	13668	15308	19812	22189	29740	33309	41503	46484	53900	60368
		Efficiency %	86.5	88.5	87.9	89.7	89.3	91.0	89.9	91.5	90.4	91.9	90.8	92.2
500	33.3	Input HP, Thermal	5.96	7.01	9.42	11.1	14.7	17.4	20.7	24.5	25.4	30.1	34.0	40.3
		Output Torque lb in, Thermal	9884	11939	15891	19195	23922	28902	33864	40907	41744	50419	56231	67910
		Input HP, Mechanical	5.23	5.68	9.24	9.64	14.0	15.4	20.9	23.0	29.0	31.9	37.5	41.2
		Output Torque lb in, Mechanical	8674	9672	15588	16648	22762	25494	34214	38319	47733	53461	61971	69408
		Efficiency %	84.9	87.1	86.3	88.4	87.9	89.7	88.5	90.3	89.0	90.7	89.4	91.1
250	16.7	Input HP, Thermal	4.44	5.20	6.84	8.04	10.4	12.3	14.4	17.0	17.3	20.5	22.9	27.0
		Output Torque lb in, Thermal	14259	17234	22392	27066	32972	39864	45728	55278	55440	67009	73466	88786
		Input HP, Mechanical	2.96	2.90	5.00	4.91	8.73	9.35	13.1	14.3	18.3	20.0	23.8	26.1
		Output Torque lb in, Mechanical	9495	9588	16343	16499	27551	30274	41667	46667	58512	65534	76473	85650
		Efficiency %	82.1	84.6	83.6	86.0	85.4	87.6	86.0	88.1	86.5	88.5	86.9	88.9
Max Standard Plug-in Shaft Torque lb.in			9850	9850	17500	17500	21100	21100	29300	29300	36500	36500	59200	59200

Notes: Maximum torques stated apply for uniform loading applications (Starts/Hr <=5)
 For applications with combinations of high torques, overhung loads, or nos. of starts, consult Renold technical dept.
 For torques greater than the stated maximum, consult Renold technical dept. high tensile steel output shaft must be specified.

For more information telephone us - Canada: Toll Free 800.265.9970. USA: Toll Free 800.850.8141

WM Series - Single Reduction - Selection Data

Mineral and Synthetic Oil - Fan Cooled

Nominal ratio: 20/1

Input rpm	Output rpm	Gear Ratings	Center Distance											
			4"		5"		6"		7"		8"		9"	
			Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn
1800	90	Input HP, Thermal	12.1	14.2	19.4	22.9	29.7	35.1	43.2	51.2	53.9	64.0	73.7	87.4
		Output Torque lb in, Thermal	7601	9169	12359	14908	19062	22992	27893	33641	35006	42217	47990	57874
		Input HP, Mechanical	8.25	9.05	14.4	15.8	23.3	25.6	34.1	37.6	45.8	50.4	59.2	65.3
		Output Torque lb in, Mechanical	5184	5807	9158	10257	14936	16728	22009	24650	29651	33209	38505	43126
		Efficiency %	87.5	89.4	88.5	90.2	89.3	90.9	89.9	91.4	90.3	91.8	90.6	92.0
1500	75	Input HP, Thermal	10.3	12.2	16.5	19.5	25.1	29.7	36.5	43.2	45.6	54.1	62.3	73.9
		Output Torque lb in, Thermal	7748	9348	12522	15106	19239	23207	28111	33906	35305	42580	48471	58457
		Input HP, Mechanical	7.45	8.16	13.2	14.5	21.0	23.1	30.3	33.4	40.5	44.6	52.7	58.1
		Output Torque lb in, Mechanical	5572	6241	10024	11226	16054	17980	23334	26134	31295	35050	40942	45855
		Efficiency %	86.8	88.8	87.9	89.7	88.7	90.4	89.3	90.9	89.8	91.3	90.1	91.6
1200	60	Input HP, Thermal	8.67	10.2	13.7	16.2	20.7	24.5	30.0	35.4	37.4	44.2	51.0	60.4
		Output Torque lb in, Thermal	8036	9697	12869	15526	19639	23693	28579	34475	35838	43227	49163	59298
		Input HP, Mechanical	6.48	7.09	11.6	12.7	18.5	20.3	27.0	29.7	36.1	39.7	46.5	51.2
		Output Torque lb in, Mechanical	5991	6710	10843	12144	17531	19634	25733	28821	34577	38726	44827	50206
		Efficiency %	85.9	88.0	87.0	88.9	87.9	89.7	88.5	90.3	89.1	90.7	89.5	91.1
1000	50	Input HP, Thermal	7.60	8.94	11.9	14.0	17.9	21.1	25.7	30.4	32.0	37.8	43.5	51.5
		Output Torque lb in, Thermal	8373	10104	13298	16045	20160	24323	29202	35229	36520	44054	49986	60295
		Input HP, Mechanical	5.83	6.37	10.4	11.4	16.5	18.1	24.0	26.3	32.2	35.4	41.8	46.0
		Output Torque lb in, Mechanical	6416	7185	11558	12945	18630	20866	27185	30448	36791	41206	48008	53768
		Efficiency %	85.1	87.3	86.2	88.3	87.1	89.1	87.8	89.7	88.4	90.1	88.9	90.5
750	37.5	Input HP, Thermal	6.30	7.40	9.75	11.5	14.5	17.0	20.6	24.3	25.5	30.0	34.4	40.7
		Output Torque lb in, Thermal	9119	11007	14288	17243	21418	25845	30755	37108	38235	46131	52050	62794
		Input HP, Mechanical	4.90	5.34	8.73	9.53	13.9	15.2	20.3	22.2	27.2	29.8	35.1	38.5
		Output Torque lb in, Mechanical	7081	7930	12781	14315	20549	23015	30264	33895	40801	45697	53024	59387
		Efficiency %	83.9	86.2	85.0	87.2	85.9	88.0	86.6	88.6	87.2	89.1	87.7	89.6
500	25	Input HP, Thermal	5.05	5.91	7.66	8.99	11.2	13.1	15.7	18.5	19.2	22.6	25.7	30.3
		Output Torque lb in, Thermal	10716	12937	16481	19895	24308	29340	34448	41575	42407	51176	57176	68995
		Input HP, Mechanical	3.75	4.07	6.69	7.28	10.8	11.7	15.7	17.1	20.9	22.8	26.9	29.4
		Output Torque lb in, Mechanical	7953	8907	14375	16100	23390	26197	34355	38478	46154	51692	59753	66923
		Efficiency %	82.0	84.6	83.1	85.6	84.1	86.4	84.8	87.1	85.4	87.6	86.0	88.1
250	12.5	Input HP, Thermal	3.80	4.42	5.61	6.55	8.00	9.34	11.0	12.9	13.2	15.5	17.4	20.4
		Output Torque lb in, Thermal	15533	18762	23255	28086	33477	40427	46470	56111	56272	67941	74627	90094
		Input HP, Mechanical	2.18	2.12	4.19	4.44	6.78	7.34	9.91	10.7	13.3	14.4	17.2	18.6
		Output Torque lb in, Mechanical	8901	8982	17343	19013	28341	31742	41815	46833	56434	63206	73423	82233
		Efficiency %	79.0	81.9	80.0	82.9	80.9	83.7	81.7	84.3	82.3	84.8	82.8	85.3
Max Standard Plug-in Shaft Torque lb.in			9850	9850	17500	17500	21100	21100	29300	29300	36500	36500	59200	59200

Notes: Maximum torques stated apply for uniform loading applications (Starts/Hr <=5)
 For applications with combinations of high torques, overhung loads, or nos. of starts, consult Renold technical dept.
 For torques greater than the stated maximum, consult Renold technical dept. high tensile steel output shaft must be specified.

For more information telephone us - Canada: Toll Free 800.265.9970. USA: Toll Free 800.850.8141

WM Series - Single Reduction - Selection Data

Mineral and Synthetic Oil - Fan Cooled

Nominal ratio: 25/1

Input rpm	Output rpm	Gear Ratings	Center Distance											
			4"		5"		6"		7"		8"		9"	
			Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn
1800	72	Input HP, Thermal	9.28	10.9	17.3	20.5	26.5	31.3	38.6	45.6	48.3	57.2	66.0	78.2
		Output Torque lb in, Thermal	6840	8247	13000	15680	20084	24221	29392	35445	37014	44634	50789	61244
		Input HP, Mechanical	8.47	9.24	11.9	13.0	18.9	20.7	27.9	30.6	39.6	43.6	53.6	58.9
		Output Torque lb in, Mechanical	6240	6989	8888	9955	14228	15935	21181	23723	30279	33913	41128	46063
		Efficiency %	84.1	86.4	87.1	89.0	88.0	89.8	88.6	90.3	89.1	90.8	89.5	91.1
1500	60	Input HP, Thermal	7.97	9.34	14.8	17.4	22.5	26.5	32.6	38.5	40.8	48.3	55.8	66.0
		Output Torque lb in, Thermal	6971	8406	13168	15884	20255	24429	29581	35675	37259	44934	51166	61701
		Input HP, Mechanical	7.64	8.32	10.7	11.7	17.2	18.8	25.4	27.9	35.6	39.1	48.2	53.0
		Output Torque lb in, Mechanical	6681	7483	9538	10683	15427	17278	23013	25774	32465	36360	44202	49506
		Efficiency %	83.2	85.6	86.4	88.3	87.3	89.2	88.0	89.8	88.6	90.3	89.0	90.7
1200	48	Input HP, Thermal	6.70	7.83	12.3	14.5	18.6	21.9	26.8	31.6	33.4	39.5	45.6	53.9
		Output Torque lb in, Thermal	7220	8707	13537	16331	20672	24935	30051	36246	37774	45558	51797	62469
		Input HP, Mechanical	6.70	7.27	9.37	10.2	14.9	16.3	22.2	24.3	31.4	34.5	42.4	46.6
		Output Torque lb in, Mechanical	7214	8079	10295	11530	16523	18506	24903	27891	35494	39753	48154	53933
		Efficiency %	82.0	84.6	85.4	87.5	86.4	88.4	87.1	89.0	87.8	89.6	88.3	90.0
1000	40	Input HP, Thermal	5.88	6.86	10.7	12.6	16.0	18.9	23.0	27.1	28.6	33.8	38.9	45.9
		Output Torque lb in, Thermal	7510	9057	13996	16885	21226	25606	30704	37036	38478	46411	52624	63471
		Input HP, Mechanical	6.02	6.52	8.40	9.16	13.4	14.7	19.9	21.7	28.0	30.7	37.7	41.4
		Output Torque lb in, Mechanical	7682	8604	10969	12285	17758	19889	26479	29656	37660	42179	51024	57147
		Efficiency %	81.0	83.7	84.6	86.8	85.6	87.7	86.4	88.4	87.0	88.9	87.5	89.4
750	30	Input HP, Thermal	4.89	5.69	8.77	10.3	13.0	15.3	18.5	21.7	22.8	26.9	30.8	36.3
		Output Torque lb in, Thermal	8152	9832	15056	18167	22569	27231	32356	39035	40294	48608	54787	66089
		Input HP, Mechanical	5.07	5.48	7.05	7.67	11.2	12.2	16.6	18.2	23.6	25.8	31.9	34.9
		Output Torque lb in, Mechanical	8453	9468	12073	13522	19427	21759	29141	32637	41686	46688	56660	63459
		Efficiency %	79.4	82.3	83.2	85.6	84.3	86.5	85.1	87.2	85.7	87.8	86.3	88.4
500	20	Input HP, Thermal	3.92	4.55	6.92	8.09	10.1	11.8	14.1	16.6	17.3	20.3	23.1	27.1
		Output Torque lb in, Thermal	9528	11495	17402	21004	25662	30969	36303	43807	44747	53992	60247	72690
		Input HP, Mechanical	3.91	4.21	5.40	5.86	8.72	9.47	13.0	14.1	18.3	20.0	24.6	26.8
		Output Torque lb in, Mechanical	9497	10636	13564	15191	22152	24811	33329	37329	47410	53099	64074	71763
		Efficiency %	77.1	80.2	81.3	83.9	82.3	84.8	83.1	85.6	83.8	86.2	84.4	86.7
250	10	Input HP, Thermal	2.96	3.41	5.10	5.93	7.26	8.45	9.97	11.6	12.0	14.0	15.8	18.4
		Output Torque lb in, Thermal	13692	16523	24646	29759	35467	42820	49152	59337	59571	71908	78892	95225
		Input HP, Mechanical	2.45	2.62	3.36	3.44	5.44	5.87	8.12	8.78	11.5	12.4	15.4	16.7
		Output Torque lb in, Mechanical	11332	12692	16209	17195	26526	29709	39993	44792	57015	63857	77229	86497
		Efficiency %	73.3	76.7	78.0	81.0	79.0	81.9	79.7	82.6	80.4	83.2	81.0	83.7
Max Standard Plug-in Shaft Torque lb.in			9850	9850	17500	17500	21100	21100	29300	29300	36500	36500	59200	59200

Notes: Maximum torques stated apply for uniform loading applications (Starts/Hr <=5)
 For applications with combinations of high torques, overhung loads, or nos. of starts, consult Renold technical dept.
 For torques greater than the stated maximum, consult Renold technical dept. high tensile steel output shaft must be specified.

For more information telephone us - Canada: Toll Free 800.265.9970. USA: Toll Free 800.850.8141

WM Series - Single Reduction - Selection Data

Mineral and Synthetic Oil - Fan Cooled

Nominal ratio: 30/1

Input rpm	Output rpm	Gear Ratings	Center Distance											
			4"		5"		6"		7"		8"		9"	
			Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn
1800	60	Input HP, Thermal	8.81	10.3	14.1	16.6	21.5	25.3	34.6	40.9	45.6	53.9	59.4	70.2
		Output Torque lb in, Thermal	7717	9306	12554	15137	19344	23323	31321	37769	41765	50366	54306	65481
		Input HP, Mechanical	7.91	8.61	13.4	14.6	19.0	20.7	21.8	23.9	31.7	34.8	41.8	45.9
		Output Torque lb in, Mechanical	6916	7746	11860	13283	17032	19076	19589	21940	28878	32343	38121	42695
		Efficiency %	83.3	85.7	84.5	86.8	85.4	87.5	87.2	89.0	88.3	90.0	88.2	90.0
1500	50	Input HP, Thermal	7.58	8.86	12.1	14.1	18.3	21.5	29.2	34.5	38.4	45.4	50.1	59.2
		Output Torque lb in, Thermal	7867	9487	12719	15337	19522	23539	31481	37964	41884	50513	54559	65790
		Input HP, Mechanical	7.08	7.70	12.0	13.0	17.1	18.7	19.7	21.5	28.6	31.4	37.6	41.2
		Output Torque lb in, Mechanical	7350	8232	12603	14115	18280	20473	21087	23618	31108	34841	40799	45695
		Efficiency %	82.3	84.8	83.6	86.0	84.6	86.8	86.5	88.5	87.7	89.5	87.6	89.5
1200	40	Input HP, Thermal	6.38	7.45	10.1	11.8	15.1	17.7	24.0	28.3	31.4	37.1	40.9	48.2
		Output Torque lb in, Thermal	8159	9841	13071	15763	19928	24030	31963	38549	42370	51105	55128	66480
		Input HP, Mechanical	6.22	6.75	10.5	11.4	15.0	16.3	17.1	18.7	24.9	27.2	32.6	35.8
		Output Torque lb in, Mechanical	7954	8908	13657	15296	19670	22031	22674	25395	33451	37466	43892	49159
		Efficiency %	81.1	83.8	82.4	85.0	83.5	85.9	85.5	87.6	86.8	88.8	86.8	88.7
1000	33.3	Input HP, Thermal	5.61	6.54	8.77	10.2	13.1	15.3	20.7	24.3	26.9	31.7	34.9	41.1
		Output Torque lb in, Thermal	8501	10253	13506	16288	20455	24668	32661	39394	43148	52047	55970	67501
		Input HP, Mechanical	5.58	6.04	9.41	10.2	13.5	14.7	15.4	16.8	22.4	24.5	29.2	31.9
		Output Torque lb in, Mechanical	8450	9464	14498	16238	21059	23586	24291	27206	35822	40120	46705	52310
		Efficiency %	80.1	82.9	81.4	84.1	82.5	85.0	84.7	86.9	86.1	88.1	86.0	88.1
750	25	Input HP, Thermal	4.68	5.44	7.21	8.40	10.7	12.4	16.6	19.5	21.5	25.3	27.7	32.6
		Output Torque lb in, Thermal	9258	11168	14510	17502	21730	26207	34450	41558	45246	54586	58277	70292
		Input HP, Mechanical	4.67	5.04	7.87	8.52	11.1	12.1	12.7	13.8	18.5	20.2	24.5	26.8
		Output Torque lb in, Mechanical	9231	10338	15847	17749	22717	25443	26198	29342	38790	43444	51481	57658
		Efficiency %	78.5	81.4	79.8	82.6	80.9	83.6	83.3	85.7	84.7	87.0	84.7	86.9
500	16.7	Input HP, Thermal	3.78	4.37	5.71	6.63	8.30	9.64	12.8	15.0	16.4	19.2	20.9	24.4
		Output Torque lb in, Thermal	10879	13126	16736	20190	24662	29749	38735	46736	50454	60882	64185	77433
		Input HP, Mechanical	3.60	3.87	6.13	6.60	8.80	9.50	10.0	10.8	14.5	15.8	19.1	20.7
		Output Torque lb in, Mechanical	10374	11619	17958	20113	26170	29310	30217	33843	44621	49976	58572	65601
		Efficiency %	76.2	79.4	77.5	80.6	78.6	81.6	81.3	83.9	82.8	85.3	82.7	85.1
250	8.3	Input HP, Thermal	2.88	3.31	4.24	4.88	6.01	6.94	9.10	10.6	11.5	13.3	14.3	16.7
		Output Torque lb in, Thermal	15773	19037	23617	28500	33970	40990	52674	63578	67771	81812	84398	101856
		Input HP, Mechanical	2.24	2.17	3.81	4.07	5.48	5.87	6.19	6.67	8.91	8.67	11.8	12.8
		Output Torque lb in, Mechanical	12275	12454	21216	23762	30953	34667	35781	40075	52640	53018	69521	77864
		Efficiency %	72.4	75.9	73.7	77.1	74.7	78.0	77.7	80.8	79.4	82.2	79.1	82.0
Max Standard Plug-in Shaft Torque lb.in			9850	9850	17500	17500	21100	21100	29300	29300	36500	36500	59200	59200

Notes: Maximum torques stated apply for uniform loading applications (Starts/Hr <=5)
 For applications with combinations of high torques, overhung loads, or nos. of starts, consult Renold technical dept.
 For torques greater than the stated maximum, consult Renold technical dept. high tensile steel output shaft must be specified.

For more information telephone us - Canada: Toll Free 800.265.9970. USA: Toll Free 800.850.8141

WM Series - Single Reduction - Selection Data

Mineral and Synthetic Oil - Fan Cooled

Nominal ratio: 35/1 (This ratio made to order only)

Input rpm	Output rpm	Gear Ratings	Center Distance											
			4"		5"		6"		7"		8"		9"	
			Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn
1800	51.4	Input HP, Thermal	7.80	9.11	12.7	14.9	19.8	23.2	28.8	33.8	36.7	43.2	49.2	57.9
		Output Torque lb in, Thermal	7768	9366	12939	15600	20441	24644	29998	36165	38692	46647	51192	61714
		Input HP, Mechanical	6.15	6.67	11.1	12.1	17.1	18.6	24.2	26.4	33.3	36.4	32.9	36.0
		Output Torque lb in, Mechanical	6105	6838	11269	12621	17617	19731	25141	28158	35027	39230	34111	38204
		Efficiency %	81.0	83.6	82.7	85.2	84.1	86.4	84.9	87.1	85.8	87.9	85.7	87.8
1500	42.9	Input HP, Thermal	6.72	7.83	10.9	12.7	16.8	19.7	24.4	28.6	31.1	36.5	41.7	49.0
		Output Torque lb in, Thermal	7918	9548	13107	15803	20614	24854	30192	36401	38911	46913	51593	62199
		Input HP, Mechanical	5.54	6.00	9.91	10.8	15.3	16.6	21.6	23.6	29.8	32.5	29.5	32.2
		Output Torque lb in, Mechanical	6512	7294	11918	13349	18685	20928	26756	29967	37245	41714	36392	40759
		Efficiency %	79.9	82.7	81.8	84.3	83.2	85.6	84.1	86.4	85.1	87.2	85.1	87.2
1200	34.3	Input HP, Thermal	5.67	6.59	9.10	10.6	13.9	16.3	20.1	23.5	25.5	29.9	34.2	40.1
		Output Torque lb in, Thermal	8213	9904	13471	16244	21038	25367	30672	36982	39422	47533	52244	62987
		Input HP, Mechanical	4.86	5.25	8.77	9.50	13.4	14.6	18.9	20.5	25.7	28.0	25.5	27.8
		Output Torque lb in, Mechanical	7021	7863	12978	14536	20280	22713	28777	32230	39705	44470	38866	43530
		Efficiency %	78.6	81.5	80.5	83.2	82.1	84.6	83.0	85.4	84.0	86.3	84.1	86.4
1000	28.6	Input HP, Thermal	5.00	5.79	7.94	9.24	12.1	14.1	17.3	20.2	21.9	25.7	29.3	34.3
		Output Torque lb in, Thermal	8557	10320	13923	16790	21601	26048	31337	37786	40149	48412	53081	64000
		Input HP, Mechanical	4.35	4.69	7.78	8.41	12.0	13.0	17.0	18.5	23.4	25.4	22.9	24.9
		Output Torque lb in, Mechanical	7434	8326	13628	15264	21478	24055	30822	34520	42818	47956	41429	46401
		Efficiency %	77.5	80.6	79.5	82.3	81.0	83.7	82.0	84.5	83.0	85.5	83.2	85.6
750	21.4	Input HP, Thermal	4.18	4.83	6.55	7.60	9.84	11.5	14.0	16.3	17.6	20.5	23.3	27.2
		Output Torque lb in, Thermal	9321	11242	14968	18052	22968	27700	33020	39819	42050	50709	55258	66631
		Input HP, Mechanical	3.66	3.94	6.58	7.10	10.0	10.9	14.2	15.4	19.5	21.2	19.3	20.9
		Output Torque lb in, Mechanical	8165	9144	15049	16855	23451	26265	33525	37548	46746	52356	45641	51118
		Efficiency %	75.8	79.0	77.7	80.8	79.3	82.2	80.3	83.1	81.4	84.1	81.7	84.3
500	14.3	Input HP, Thermal	3.38	3.89	5.20	6.01	7.70	8.92	10.8	12.5	13.4	15.6	17.6	20.5
		Output Torque lb in, Thermal	10956	13215	17284	20848	26118	31503	37042	44676	46732	56365	60746	73259
		Input HP, Mechanical	2.82	3.02	5.08	5.45	7.83	8.43	11.1	12.0	15.2	16.4	14.9	16.1
		Output Torque lb in, Mechanical	9135	10231	16871	18895	26580	29769	38127	42703	53030	59394	51537	57722
		Efficiency %	73.3	76.8	75.3	78.5	76.9	80.0	77.9	80.9	79.1	82.0	79.4	82.2
250	7.1	Input HP, Thermal	2.59	2.96	3.88	4.46	5.61	6.46	7.70	8.87	9.41	10.9	12.1	14.0
		Output Torque lb in, Thermal	15891	19174	24439	29487	36110	43568	50145	60499	62334	75205	79498	95902
		Input HP, Mechanical	1.76	1.87	3.17	3.38	4.89	5.22	6.94	7.42	9.50	10.2	9.36	10.0
		Output Torque lb in, Mechanical	10774	12067	19921	22312	31430	35201	45165	50585	62902	70450	61256	68607
		Efficiency %	69.3	73.1	71.2	74.9	72.9	76.4	73.8	77.2	75.1	78.4	75.2	78.5
Max Standard Plug-in Shaft Torque lb.in			9850	9850	17500	17500	21100	21100	29300	29300	36500	36500	59200	59200

Notes: Maximum torques stated apply for uniform loading applications (Starts/Hr <=5)
 For applications with combinations of high torques, overhung loads, or nos. of starts, consult Renold technical dept.
 For torques greater than the stated maximum, consult Renold technical dept. high tensile steel output shaft must be specified.

For more information telephone us - Canada: Toll Free 800.265.9970. USA: Toll Free 800.850.8141

WM Series - Single Reduction - Selection Data

Mineral and Synthetic Oil - Fan Cooled

Nominal ratio: 40/1

Input rpm	Output rpm	Gear Ratings	Center Distance											
			4"		5"		6"		7"		8"		9"	
			Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn
1800	45	Input HP, Thermal	7.05	8.20	11.6	13.6	17.7	20.7	26.1	30.6	32.9	38.6	44.6	52.3
		Output Torque lb in, Thermal	7820	9427	13210	15926	20419	24616	30533	36809	38856	46841	52863	63724
		Input HP, Mechanical	5.08	5.50	9.13	9.90	14.6	15.9	21.6	23.5	29.1	31.8	37.3	40.7
		Output Torque lb in, Mechanical	5613	6286	10349	11591	16812	18829	25194	28217	34330	38450	44182	49484
		Efficiency %	78.8	81.7	80.9	83.6	82.2	84.7	83.4	85.7	84.1	86.4	84.5	86.7
1500	37.5	Input HP, Thermal	6.08	7.05	9.94	11.6	15.1	17.6	22.1	25.9	27.9	32.6	37.7	44.2
		Output Torque lb in, Thermal	7971	9611	13381	16133	20592	24826	30712	37026	39063	47093	53195	64127
		Input HP, Mechanical	4.63	4.99	8.22	8.90	13.0	14.1	19.2	20.9	25.9	28.3	33.3	36.3
		Output Torque lb in, Mechanical	6048	6774	11044	12369	17781	19915	26611	29804	36330	40689	46906	52535
		Efficiency %	77.7	80.7	79.9	82.7	81.2	83.8	82.5	84.9	83.3	85.7	83.8	86.1
1200	30	Input HP, Thermal	5.14	5.95	8.32	9.66	12.5	14.6	18.3	21.3	22.9	26.8	30.9	36.2
		Output Torque lb in, Thermal	8268	9969	13755	16585	21015	25338	31191	37605	39569	47705	53808	64869
		Input HP, Mechanical	4.03	4.33	7.22	7.80	11.5	12.5	16.9	18.4	22.6	24.5	28.8	31.4
		Output Torque lb in, Mechanical	6455	7229	11918	13348	19360	21683	28890	32356	38990	43669	50101	56113
		Efficiency %	76.3	79.5	78.6	81.5	79.9	82.7	81.3	83.9	82.2	84.7	82.7	85.2
1000	25	Input HP, Thermal	4.53	5.24	7.27	8.43	10.9	12.6	15.8	18.4	19.7	23.0	26.5	31.0
		Output Torque lb in, Thermal	8614	10387	14221	17148	21577	26016	31868	38424	40297	48585	54648	65885
		Input HP, Mechanical	3.61	3.88	6.39	6.89	10.3	11.1	15.2	16.4	20.4	22.2	26.1	28.3
		Output Torque lb in, Mechanical	6841	7661	12476	13973	20405	22853	30693	34377	41797	46813	53734	60182
		Efficiency %	75.2	78.4	77.5	80.5	78.8	81.7	80.2	82.9	81.1	83.8	81.7	84.3
750	18.8	Input HP, Thermal	3.80	4.37	6.01	6.95	8.86	10.3	12.7	14.8	15.8	18.4	21.1	24.6
		Output Torque lb in, Thermal	9382	11314	15298	18448	22942	27664	33593	40507	42207	50893	56889	68593
		Input HP, Mechanical	3.06	3.28	5.45	5.85	8.63	9.30	12.7	13.7	17.1	18.4	21.8	23.6
		Output Torque lb in, Mechanical	7544	8450	13858	15521	22349	25031	33434	37446	45541	51006	58579	65609
		Efficiency %	73.3	76.7	75.7	78.9	77.0	80.1	78.4	81.4	79.4	82.3	80.0	82.8
500	12.5	Input HP, Thermal	3.09	3.54	4.79	5.52	6.95	8.02	9.86	11.4	12.1	14.0	16.0	18.6
		Output Torque lb in, Thermal	11027	13300	17684	21328	26085	31459	37721	45491	46920	56584	62588	75474
		Input HP, Mechanical	2.35	2.50	4.17	4.46	6.70	7.18	9.88	10.6	13.3	14.3	16.9	18.2
		Output Torque lb in, Mechanical	8382	9388	15379	17225	25132	28147	37779	42312	51418	57588	66071	74000
		Efficiency %	70.7	74.4	73.1	76.5	74.4	77.8	75.9	79.1	76.9	80.0	77.5	80.6
250	6.3	Input HP, Thermal	2.38	2.70	3.60	4.11	5.10	5.83	7.09	8.13	8.56	9.84	11.1	12.8
		Output Torque lb in, Thermal	15995	19295	25052	30223	36059	43499	51166	61722	62628	75547	82088	99014
		Input HP, Mechanical	1.47	1.56	2.62	2.78	4.22	4.49	6.23	6.64	8.36	8.93	10.7	11.4
		Output Torque lb in, Mechanical	9891	11077	18221	20408	29828	33408	44902	50291	61212	68557	78820	88279
		Efficiency %	66.5	70.5	68.9	72.7	70.1	73.8	71.5	75.2	72.6	76.1	73.1	76.6
Max Standard Plug-in Shaft Torque lb.in			9850	9850	17500	17500	21100	21100	29300	29300	36500	36500	59200	59200

Notes: Maximum torques stated apply for uniform loading applications (Starts/Hr <=5)
 For applications with combinations of high torques, overhung loads, or nos. of starts, consult Renold technical dept.
 For torques greater than the stated maximum, consult Renold technical dept. high tensile steel output shaft must be specified.

For more information telephone us - Canada: Toll Free 800.265.9970. USA: Toll Free 800.850.8141

WM Series - Single Reduction - Selection Data

Mineral and Synthetic Oil - Fan Cooled

Nominal ratio: 45/1 (This ratio made to order only)

Input rpm	Output rpm	Gear Ratings	Center Distance											
			4"		5"		6"		7"		8"		9"	
			Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn
1800	40	Input HP, Thermal	6.63	7.69	10.9	12.7	16.3	19.0	22.9	26.7	29.5	34.5	41.0	48.0
		Output Torque lb in, Thermal	8137	9810	13762	16591	20766	25033	29283	35297	38324	46197	53811	64864
		Input HP, Mechanical	4.44	4.79	7.89	8.54	12.5	13.5	18.4	19.7	26.0	27.9	33.9	36.5
		Output Torque lb in, Mechanical	5417	6067	9901	11089	15823	17711	23482	25939	33686	37243	44483	49235
		Efficiency %	77.4	80.4	79.6	82.4	80.6	83.2	81.0	83.6	82.3	84.8	83.2	85.5
1500	33.3	Input HP, Thermal	5.72	6.62	9.35	10.9	13.9	16.2	19.4	22.7	25.0	29.2	34.7	40.6
		Output Torque lb in, Thermal	8297	10002	13939	16805	20937	25240	29486	35544	38550	46470	54113	65231
		Input HP, Mechanical	4.02	4.33	7.14	7.71	11.1	12.0	16.3	17.7	23.1	25.1	30.2	32.9
		Output Torque lb in, Mechanical	5799	6495	10601	11873	16745	18754	24703	27667	35544	39810	47077	52727
		Efficiency %	76.3	79.4	78.6	81.5	79.5	82.3	80.0	82.8	81.4	84.0	82.4	84.8
1200	26.7	Input HP, Thermal	4.85	5.60	7.83	9.08	11.5	13.4	16.1	18.7	20.6	24.0	28.5	33.2
		Output Torque lb in, Thermal	8610	10381	14333	17281	21367	25760	29962	36119	39062	47089	54711	65954
		Input HP, Mechanical	3.47	3.72	6.21	6.69	9.86	10.6	14.5	15.6	20.3	21.9	26.3	28.6
		Output Torque lb in, Mechanical	6125	6861	11322	12680	18230	20418	26881	30107	38385	42991	50553	56619
		Efficiency %	74.8	78.1	77.2	80.2	78.2	81.1	78.7	81.6	80.2	82.9	81.2	83.8
10800	22.2	Input HP, Thermal	4.28	4.93	6.86	7.93	10.0	11.6	13.9	16.1	17.7	20.6	24.4	28.5
		Output Torque lb in, Thermal	8976	10823	14823	17873	21941	26453	30610	36902	39782	47960	55556	66976
		Input HP, Mechanical	3.15	3.37	5.54	5.96	8.80	9.48	12.9	14.0	18.2	19.7	23.8	25.8
		Output Torque lb in, Mechanical	6577	7366	11945	13379	19234	21542	28472	31889	40888	45795	54070	60558
		Efficiency %	73.6	77.0	76.0	79.2	77.0	80.1	77.5	80.6	79.1	81.9	80.2	82.9
750	16.7	Input HP, Thermal	3.60	4.13	5.68	6.55	8.21	9.48	11.3	13.0	14.3	16.5	19.5	22.7
		Output Torque lb in, Thermal	9788	11803	15959	19244	23338	28140	32245	38876	41660	50228	57836	69730
		Input HP, Mechanical	2.66	2.83	4.71	5.05	7.41	7.95	10.9	11.7	15.2	16.4	19.8	21.4
		Output Torque lb in, Mechanical	7200	8064	13210	14795	21047	23572	31054	34781	44522	49864	58748	65798
		Efficiency %	71.7	75.3	74.2	77.5	75.1	78.4	75.6	78.8	77.2	80.3	78.4	81.3
500	11.1	Input HP, Thermal	2.93	3.35	4.54	5.21	6.46	7.42	8.75	10.1	11.0	12.6	14.8	17.1
		Output Torque lb in, Thermal	11524	13898	18471	22276	26556	32025	36148	43586	46287	55813	63653	76753
		Input HP, Mechanical	2.03	2.16	3.58	3.82	5.72	6.11	8.45	9.03	11.8	12.7	15.4	16.5
		Output Torque lb in, Mechanical	7970	8926	14538	16283	23479	26296	34893	39080	50033	56036	66032	73956
		Efficiency %	69.1	72.9	71.5	75.1	72.4	75.9	72.8	76.3	74.4	77.8	75.7	78.9
250	5.6	Input HP, Thermal	2.27	2.57	3.43	3.90	4.76	5.43	6.32	7.21	7.79	8.91	10.4	11.9
		Output Torque lb in, Thermal	16763	20220	26226	31637	36766	44346	48872	58942	61710	74426	83571	100792
		Input HP, Mechanical	1.28	1.35	2.26	2.39	3.62	3.84	5.39	5.71	7.54	8.01	9.79	10.4
		Output Torque lb in, Mechanical	9404	10533	17267	19339	27937	31290	41620	46614	59751	66921	78981	88458
		Efficiency %	64.9	69.0	67.3	71.2	67.9	71.8	68.1	72.0	69.9	73.6	71.1	74.8
Max Standard Plug-in Shaft Torque lb.in			9850	9850	17500	17500	21100	21100	29300	29300	36500	36500	59200	59200

Notes: Maximum torques stated apply for uniform loading applications (Starts/Hr <=5)
 For applications with combinations of high torques, overhung loads, or nos. of starts, consult Renold technical dept.
 For torques greater than the stated maximum, consult Renold technical dept. high tensile steel output shaft must be specified.

For more information telephone us - Canada: Toll Free 800.265.9970. USA: Toll Free 800.850.8141

WM Series - Single Reduction - Selection Data

Mineral and Synthetic Oil - Fan Cooled

Nominal ratio: 50/1

Input rpm	Output rpm	Gear Ratings	Center Distance											
			4"		5"		6"		7"		8"		9"	
			Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn
1800	36	Input HP, Thermal	6.27	7.26	9.97	11.6	15.1	17.6	21.9	25.6	27.4	32.0	37.4	43.6
		Output Torque lb in, Thermal	8410	10138	13641	16444	21068	25395	30887	37231	38927	46921	53503	64489
		Input HP, Mechanical	3.93	4.15	6.86	7.31	10.9	11.6	16.2	17.0	22.8	24.0	30.7	32.5
		Output Torque lb in, Mechanical	5231	5747	9318	10305	15011	16593	22640	24613	32218	35089	43845	47842
		Efficiency %	76.0	79.1	77.6	80.6	79.0	81.8	80.1	82.8	80.9	83.5	81.5	84.1
1500	30	Input HP, Thermal	5.42	6.26	8.55	9.90	12.9	15.0	18.6	21.7	23.3	27.1	31.7	37.0
		Output Torque lb in, Thermal	8577	10340	13817	16657	21238	25602	31062	37443	39138	47177	53818	64871
		Input HP, Mechanical	3.53	3.79	6.22	6.69	9.80	10.6	14.4	15.6	20.2	21.9	27.3	29.6
		Output Torque lb in, Mechanical	5546	6212	9994	11193	16040	17965	23900	26768	33963	38039	46338	51899
		Efficiency %	74.8	78.1	76.5	79.6	77.9	80.9	79.0	81.9	79.9	82.7	80.7	83.3
1200	24	Input HP, Thermal	4.59	5.29	7.18	8.29	10.8	12.4	15.4	17.9	19.2	22.3	26.1	30.3
		Output Torque lb in, Thermal	8906	10737	14207	17128	21674	26129	31543	38025	39647	47792	54421	65601
		Input HP, Mechanical	3.06	3.28	5.41	5.81	8.62	9.28	12.8	13.8	17.9	19.3	24.0	26.0
		Output Torque lb in, Mechanical	5900	6608	10663	11943	17320	19399	26016	29138	36876	41301	50066	56074
		Efficiency %	73.3	76.7	75.0	78.3	76.5	79.6	77.7	80.7	78.6	81.5	79.4	82.3
1000	20	Input HP, Thermal	4.06	4.67	6.29	7.25	9.36	10.8	13.3	15.4	16.5	19.2	22.4	26.0
		Output Torque lb in, Thermal	9290	11201	14694	17715	22259	26835	32228	38853	40375	48672	55265	66620
		Input HP, Mechanical	2.78	2.97	4.84	5.19	7.71	8.28	11.4	12.2	16.0	17.2	21.6	23.3
		Output Torque lb in, Mechanical	6321	7080	11261	12612	18291	20486	27431	30723	39001	43681	53280	59674
		Efficiency %	72.1	75.6	73.8	77.2	75.3	78.5	76.5	79.6	77.5	80.5	78.3	81.3
750	15	Input HP, Thermal	3.42	3.92	5.22	6.00	7.67	8.83	10.8	12.5	13.3	15.4	17.9	20.7
		Output Torque lb in, Thermal	10140	12227	15820	19074	23683	28555	33977	40963	42286	50980	57531	69357
		Input HP, Mechanical	2.33	2.48	4.10	4.38	6.49	6.94	9.55	10.2	13.4	14.4	18.1	19.5
		Output Torque lb in, Mechanical	6869	7693	12389	13876	19985	22383	29911	33501	42637	47754	58128	65103
		Efficiency %	70.2	73.9	71.9	75.4	73.3	76.8	74.5	77.8	75.5	78.8	76.4	79.6
500	10	Input HP, Thermal	2.80	3.19	4.19	4.79	6.06	6.94	8.44	9.68	10.3	11.8	13.7	15.7
		Output Torque lb in, Thermal	11956	14419	18311	22081	26965	32515	38163	46016	47002	56671	63306	76328
		Input HP, Mechanical	1.78	1.89	3.12	3.31	4.99	5.31	7.40	7.89	10.4	11.1	14.0	14.9
		Output Torque lb in, Mechanical	7585	8496	13569	15197	22159	24818	33420	37431	47551	53257	64701	72465
		Efficiency %	67.5	71.4	69.1	72.9	70.5	74.2	71.7	75.3	72.7	76.2	73.6	77.0
250	5	Input HP, Thermal	2.17	2.46	3.18	3.60	4.49	5.10	6.12	6.97	7.32	8.35	9.58	10.9
		Output Torque lb in, Thermal	17435	21031	26003	31363	37372	45073	51801	62473	62724	75643	83081	100189
		Input HP, Mechanical	1.12	1.18	1.98	2.09	3.18	3.36	4.73	5.00	6.65	7.04	8.95	9.50
		Output Torque lb in, Mechanical	8955	10029	16150	18088	26419	29589	39918	44708	56901	63730	77575	86884
		Efficiency %	63.3	67.5	64.7	68.8	65.9	70.0	67.0	71.0	67.9	71.8	68.7	72.6
Max Standard Plug-in Shaft Torque lb.in			9850	9850	17500	17500	21100	21100	29300	29300	36500	36500	59200	59200

Notes: Maximum torques stated apply for uniform loading applications (Starts/Hr <=5)
 For applications with combinations of high torques, overhung loads, or nos. of starts, consult Renold technical dept.
 For torques greater than the stated maximum, consult Renold technical dept. high tensile steel output shaft must be specified.

For more information telephone us - Canada: Toll Free 800.265.9970. USA: Toll Free 800.850.8141

WM Series - Single Reduction - Selection Data

Mineral and Synthetic Oil - Fan Cooled

Nominal ratio: 60/1

Input rpm	Output rpm	Gear Ratings	Center Distance											
			4"		5"		6"		7"		8"		9"	
			Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn
1800	30	Input HP, Thermal	5.67	6.54	9.03	10.4	13.7	15.9	19.8	23.0	24.8	28.8	33.8	39.3
		Output Torque lb in, Thermal	8843	10661	14399	17357	22207	26768	32612	39309	41178	49633	56627	68252
		Input HP, Mechanical	3.09	3.15	5.41	5.55	8.46	8.76	12.5	12.9	17.6	18.1	23.8	24.5
		Output Torque lb in, Mechanical	4744	5053	8529	9109	13601	14634	20445	21908	29090	30943	39595	42187
		Efficiency %	73.2	76.4	75.1	78.2	76.5	79.5	77.7	80.6	78.6	81.4	79.4	82.1
1500	25	Input HP, Thermal	4.91	5.65	7.76	8.95	11.7	13.5	16.8	19.5	21.0	24.4	28.6	33.2
		Output Torque lb in, Thermal	9024	10879	14585	17582	22376	26973	32763	39492	41334	49823	56827	68496
		Input HP, Mechanical	2.74	2.93	4.86	5.14	7.69	8.13	11.3	12.0	15.8	16.9	21.1	22.8
		Output Torque lb in, Mechanical	4979	5565	9059	9996	14625	16114	21865	24198	30895	34362	41744	46627
		Efficiency %	72.0	75.4	73.9	77.2	75.4	78.6	76.6	79.7	77.6	80.6	78.4	81.3
1200	20	Input HP, Thermal	4.18	4.79	6.53	7.51	9.75	11.2	14.0	16.1	17.4	20.1	23.5	27.3
		Output Torque lb in, Thermal	9380	11308	15006	18090	22839	27532	33258	40090	41833	50425	57375	69159
		Input HP, Mechanical	2.42	2.58	4.25	4.54	6.71	7.19	9.90	10.6	13.9	15.0	18.7	20.2
		Output Torque lb in, Mechanical	5377	6023	9683	10844	15630	17506	23460	26276	33448	37462	45521	50983
		Efficiency %	70.5	74.1	72.3	75.8	73.9	77.3	75.2	78.4	76.2	79.3	77.1	80.1
1000	16.7	Input HP, Thermal	3.71	4.24	5.74	6.58	8.50	9.77	12.1	14.0	15.0	17.3	20.2	23.4
		Output Torque lb in, Thermal	9795	11809	15530	18723	23467	28291	33988	40972	42597	51348	58237	70200
		Input HP, Mechanical	2.18	2.32	3.81	4.07	6.01	6.43	8.86	9.50	12.4	13.3	16.7	18.0
		Output Torque lb in, Mechanical	5709	6394	10251	11481	16513	18495	24769	27742	35041	39246	47914	53664
		Efficiency %	69.2	72.9	71.1	74.7	72.6	76.1	73.9	77.3	75.0	78.2	75.9	79.0
750	12.5	Input HP, Thermal	3.13	3.57	4.78	5.46	6.99	8.01	9.86	11.3	12.1	13.9	16.3	18.7
		Output Torque lb in, Thermal	10710	12914	16744	20188	25001	30142	35866	43239	44640	53815	60641	73103
		Input HP, Mechanical	1.81	1.92	3.20	3.40	5.05	5.38	7.42	7.92	10.5	11.2	14.1	15.1
		Output Torque lb in, Mechanical	6136	6872	11150	12488	17988	20147	26877	30102	38443	43056	52554	58861
		Efficiency %	67.2	71.1	69.1	72.8	70.6	74.2	71.9	75.4	72.9	76.4	73.9	77.2
500	8.3	Input HP, Thermal	2.57	2.92	3.85	4.38	5.55	6.33	7.72	8.82	9.37	10.7	12.4	14.3
		Output Torque lb in, Thermal	12662	15269	19425	23422	28531	34401	40368	48672	49708	59930	66837	80580
		Input HP, Mechanical	1.39	1.46	2.43	2.57	3.86	4.08	5.74	6.09	8.08	8.59	10.9	11.6
		Output Torque lb in, Mechanical	6759	7570	12164	13624	19738	22106	29914	33503	42759	47890	58327	65326
		Efficiency %	64.5	68.6	66.2	70.2	67.7	71.6	68.9	72.7	70.0	73.7	70.9	74.5
250	4.2	Input HP, Thermal	2.02	2.27	2.95	3.32	4.15	4.69	5.65	6.40	6.75	7.65	8.81	10.0
		Output Torque lb in, Thermal	18544	22366	27691	33396	39707	47885	55017	66346	66595	80305	88066	106194
		Input HP, Mechanical	0.875	0.859	1.55	1.62	2.47	2.59	3.68	3.87	5.18	5.46	6.97	7.36
		Output Torque lb in, Mechanical	7980	8391	14484	16222	23558	26385	35684	39967	50981	57099	69505	77845
		Efficiency %	60.3	64.6	61.8	66.0	63.0	67.2	64.1	68.3	65.1	69.2	65.9	70.0
Max Standard Plug-in Shaft Torque lb.in			9850	9850	17500	17500	21100	21100	29300	29300	36500	36500	59200	59200

Notes: Maximum torques stated apply for uniform loading applications (Starts/Hr <=5)
 For applications with combinations of high torques, overhung loads, or nos. of starts, consult Renold technical dept.
 For torques greater than the stated maximum, consult Renold technical dept. high tensile steel output shaft must be specified.

For more information telephone us - Canada: Toll Free 800.265.9970. USA: Toll Free 800.850.8141

WM Series - Single Reduction - Selection Data

Mineral and Synthetic Oil - Fan Cooled

Nominal ratio: 70/1

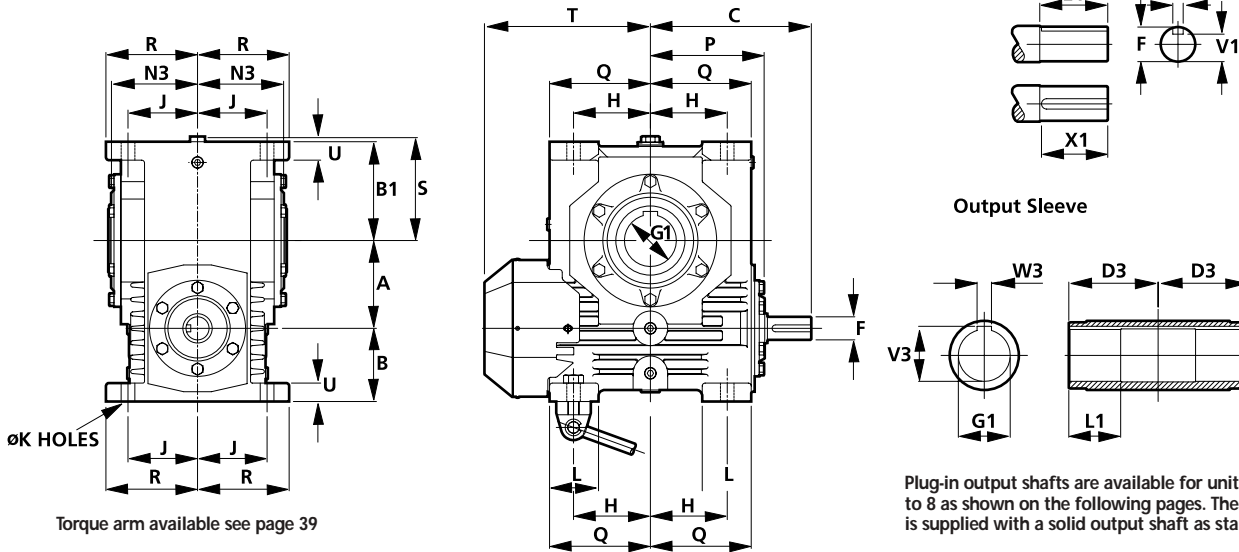
Input rpm	Output rpm	Gear Ratings	Center Distance											
			4"		5"		6"		7"		8"		9"	
			Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn
1800	25.7	Input HP, Thermal	4.85	5.54	7.68	8.81	11.6	13.3	16.7	19.3	20.8	24.1	28.3	32.7
		Output Torque lb in, Thermal	8288	9990	13474	16239	20768	25031	30480	36734	38391	46268	52732	63552
		Input HP, Mechanical	2.57	2.54	4.48	4.46	7.00	7.01	10.3	10.3	14.4	14.5	19.5	19.5
		Output Torque lb in, Mechanical	4329	4499	7762	8085	12406	12991	18483	19327	26350	27529	35939	37514
		Efficiency %	68.6	72.1	70.6	74.0	72.3	75.6	73.6	76.8	74.6	77.7	75.4	78.4
1500	21.4	Input HP, Thermal	4.21	4.80	6.61	7.57	9.93	11.4	14.3	16.4	17.8	20.5	24.1	27.8
		Output Torque lb in, Thermal	8452	10188	13647	16449	20940	25238	30665	36959	38624	46550	53090	63984
		Input HP, Mechanical	2.31	2.37	4.03	4.13	6.35	6.54	9.35	9.65	13.0	13.5	17.6	18.2
		Output Torque lb in, Mechanical	4569	4956	8219	8863	13278	14328	19914	21506	28158	30438	38484	41549
		Efficiency %	67.3	71.0	69.3	72.9	71.1	74.5	72.4	75.8	73.5	76.8	74.4	77.6
1200	17.1	Input HP, Thermal	3.59	4.08	5.58	6.37	8.31	9.50	11.9	13.6	14.7	16.9	19.9	22.9
		Output Torque lb in, Thermal	8774	10576	14030	16911	21369	25756	31145	37539	39139	47173	53717	64741
		Input HP, Mechanical	2.02	2.14	3.53	3.74	5.52	5.87	8.17	8.71	11.5	12.2	15.4	16.5
		Output Torque lb in, Mechanical	4882	5468	8784	9838	14077	15767	21263	23814	30291	33926	41393	46360
		Efficiency %	65.6	69.6	67.7	71.5	69.4	73.1	70.8	74.4	71.9	75.5	72.9	76.3
1000	14.3	Input HP, Thermal	3.19	3.62	4.92	5.59	7.27	8.29	10.3	11.8	12.8	14.6	17.2	19.7
		Output Torque lb in, Thermal	9150	11030	14506	17486	21943	26448	31820	38353	39860	48043	54560	65759
		Input HP, Mechanical	1.83	1.93	3.17	3.35	5.01	5.31	7.37	7.84	10.3	11.0	13.8	14.7
		Output Torque lb in, Mechanical	5180	5802	9266	10377	15021	16823	22574	25283	32046	35892	43582	48812
		Efficiency %	64.2	68.3	66.3	70.2	68.0	71.8	69.4	73.1	70.6	74.2	71.6	75.1
750	10.7	Input HP, Thermal	2.70	3.05	4.11	4.66	6.00	6.82	8.45	9.62	10.4	11.8	13.9	15.9
		Output Torque lb in, Thermal	9983	12034	15609	18817	23338	28132	33534	40422	41738	50308	56791	68452
		Input HP, Mechanical	1.52	1.59	2.67	2.81	4.18	4.42	6.17	6.53	8.67	9.20	11.7	12.4
		Output Torque lb in, Mechanical	5564	6199	10055	11261	16172	18112	24346	27268	34857	39040	47754	53484
		Efficiency %	62.1	66.2	64.0	68.1	65.7	69.7	67.1	71.0	68.3	72.1	69.4	73.1
500	7.1	Input HP, Thermal	2.23	2.51	3.33	3.75	4.79	5.41	6.65	7.52	8.06	9.14	10.7	12.1
		Output Torque lb in, Thermal	11763	14182	18052	21763	26554	32011	37639	45372	46361	55886	62457	75286
		Input HP, Mechanical	1.18	1.14	2.05	2.15	3.27	3.43	4.84	5.09	6.77	7.14	9.09	9.60
		Output Torque lb in, Mechanical	6146	6395	11039	12363	18016	20178	27275	30548	38872	43537	53002	59362
		Efficiency %	59.1	63.4	60.9	65.2	62.5	66.7	63.9	68.0	65.1	69.1	66.1	70.1
250	3.6	Input HP, Thermal	1.76	1.96	2.57	2.86	3.60	4.03	4.91	5.50	5.85	6.57	7.63	8.58
		Output Torque lb in, Thermal	17136	20663	25601	30867	36759	44320	51019	61510	61784	74487	81854	98682
		Input HP, Mechanical	0.696	0.644	1.32	1.22	2.10	2.05	3.11	3.22	4.35	4.54	5.84	6.11
		Output Torque lb in, Mechanical	6694	6694	13045	13054	21280	22422	32199	35874	45866	51369	62502	70003
		Efficiency %	54.5	58.9	56.1	60.5	57.5	61.9	58.7	63.1	59.7	64.1	60.6	64.9
Max Standard Plug-in Shaft Torque lb.in			9850	9850	17500	17500	21100	21100	29300	29300	36500	36500	59200	59200

Notes: Maximum torques stated apply for uniform loading applications (Starts/Hr <=5)
 For applications with combinations of high torques, overhung loads, or nos. of starts, consult Renold technical dept.
 For greater higher than the stated maximum, consult Renold technical dept. high tensile steel output shaft must be specified.

For more information telephone us - Canada: Toll Free 800.265.9970. USA: Toll Free 800.850.8141

WM Series - Speed Reducer - Dimensions (inch)

Single Reduction - Type WM Standard Hollow Shaft



Torque arm available see page 39

Size	Center Distance		B1	C	D3	H	J	K	L
	A	B							
4	4.00	4.25	4.75	9.02	4.33	4.25	4.00	0.866	2.56
5	5.00	4.50	5.75	10.24	5.12	4.87	4.37	0.866	2.95
6	6.00	5.00	6.75	10.98	6.10	5.25	4.75	0.866	3.35
7	7.00	5.75	7.75	12.52	6.85	6.00	5.25	0.866	3.74
8	8.00	5.75	8.75	13.50	6.85	6.75	5.25	1.024	3.94
9	9.00	6.25	9.75	15.24	7.95	7.63	5.87	1.024	4.33

Size	L1	N3	P	Q	R	S	T	U	Oil Capacity (approx.) Imp. Pints*	Weight (approx.) lbs
4	2.56	4.21	6.30	5.51	4.92	5.00	9.33	0.98	4.0/4.8	160
5	2.76	5.00	7.24	6.50	5.51	6.06	10.55	1.26	5.8/8.3	260
6	3.54	6.02	7.83	6.89	6.10	7.13	11.34	1.26	7.9/12.5	370
7	4.53	6.73	8.90	8.07	6.30	8.11	12.83	1.50	12.3/19.4	575
8	4.53	6.73	9.72	8.86	6.69	9.09	13.82	1.50	13.6/25.2	640
9	4.92	7.83	11.10	9.84	7.28	10.04	15.67	1.77	19.7/35.9	880

* - Min/Max dependent on mounting position.

Input Shaft

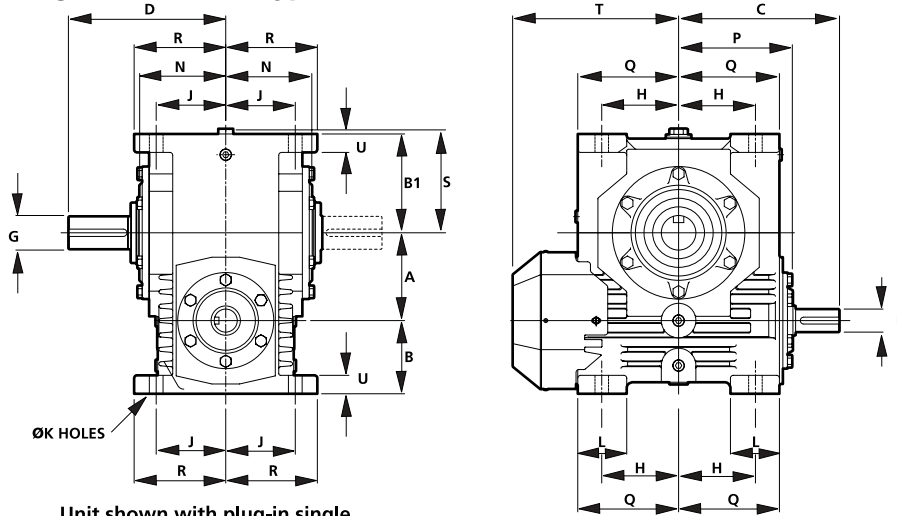
Size	E1	F		V1 min	W1	X1
		max	min			
4	2.52	1.2500	1.2495	1.102	0.250	2.38
5	2.99	1.5000	1.4995	1.283	0.375	2.88
6	2.99	1.5000	1.4995	1.283	0.375	2.88
7	3.50	1.7500	1.7490	1.536	0.375	3.38
8	3.74	1.7500	1.7490	1.536	0.375	3.63
9	4.02	2.0000	1.9990	1.712	0.500	3.88

Output Sleeve

Size	G1		V3 min	W3	
	max	min		max	min
4	2.3646	2.3634	2.54	0.7095	0.7078
5	2.7583	2.7571	2.95	0.7884	0.7864
6	3.5461	3.5447	3.72	0.9853	0.9832
7	3.9398	3.9384	4.19	1.1034	1.1013
8	3.9398	3.9384	4.19	1.1034	1.1013
9	4.3335	4.3321	4.58	1.0015	1.0994

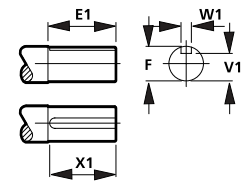
WM Series - Speed Reducer - Dimensions (inch)

Single Reduction - Type WMU - Underdriven

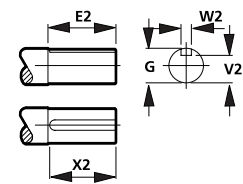


Unit shown with plug-in single extension output shaft

Input Shaft



Output Sleeve



Shafts can be plugged-in from either side of unit

Size	Center Distance								
	A	B	B1	C	D	H	J	K	L
4	4.00	4.25	4.75	9.02	8.50	4.25	4.00	0.866	2.56
5	5.00	4.50	5.75	10.24	9.75	4.87	4.37	0.866	2.95
6	6.00	5.00	6.75	10.98	10.75	5.25	4.75	0.866	3.35
7	7.00	5.75	7.75	12.52	11.75	6.00	5.25	0.866	3.74
8	8.00	5.75	8.75	13.50	12.25	6.75	5.25	1.024	3.94
9	9.00	6.25	9.75	15.24	13.50	7.63	5.87	1.024	4.33

Size	N	P	Q	R	S	T	U	Oil Capacity (approx.) Imp. Pints	Weight (approx.) lbs
4	4.21	6.30	5.51	4.92	5.00	9.33	0.98	4.1	160
5	5.00	7.24	6.50	5.51	6.06	10.55	1.26	5.9	260
6	6.02	7.83	6.89	6.10	7.13	11.34	1.26	8.1	370
7	6.73	8.90	8.07	6.30	8.11	12.83	1.50	12.6	575
8	6.73	9.72	8.86	6.69	9.09	13.82	1.50	13.8	640
9	7.83	11.10	9.84	7.28	10.04	15.67	1.77	20.1	880

Input Shaft

Size	E1	F		V1 min	W1	X1
		max	min			
4	2.52	1.2500	1.2495	1.102	0.250	2.38
5	2.99	1.5000	1.4995	1.283	0.375	2.88
6	2.99	1.5000	1.4995	1.283	0.375	2.88
7	3.50	1.7500	1.7490	1.536	0.375	3.38
8	3.74	1.7500	1.7490	1.536	0.375	3.63
9	4.02	2.0000	1.9990	1.712	0.500	3.88

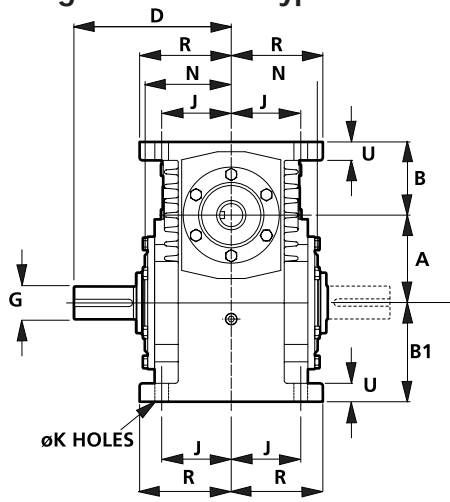
Output Shaft

Size	E2	G		V2 min	W2	X2
		max	min			
4	3.50	1.7500	1.7494	1.536	0.375	3.23
5	4.00	2.0000	2.0000	1.712	0.500	3.75
6	4.25	2.2500	2.2493	1.966	0.500	4.00
7	4.50	2.5000	2.4993	2.142	0.625	4.25
8	5.00	2.7500	2.7493	2.396	0.625	4.75
*9	5.75	3.0000	2.9990	2.571	0.750	5.50

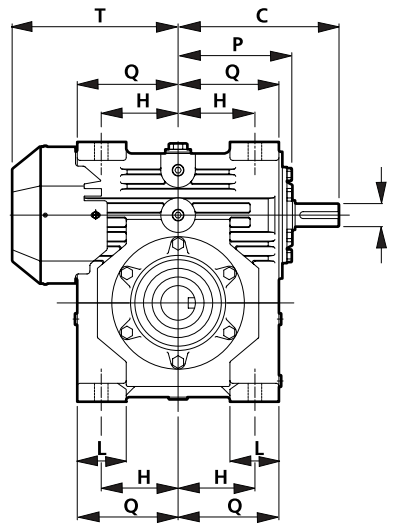
* solid shaft

WM Series - Speed Reducer - Dimensions (inch)

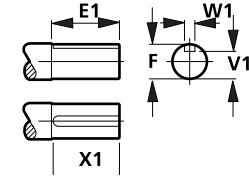
Single Reduction - Type WMO - Overdriven



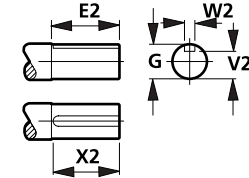
Unit shown with plug-in single extension output shaft



Input Shaft



Output Shaft



Shafts can be plugged-in from either side of unit

Size	Center Distance								
	A	B	B1	C	D	H	J	K	L
4	4.00	4.25	4.75	9.02	8.50	4.25	4.00	0.866	2.56
5	5.00	4.50	5.75	10.24	9.75	4.87	4.37	0.866	2.95
6	6.00	5.00	6.75	10.98	10.75	5.25	4.75	0.866	3.35
7	7.00	5.75	7.75	12.52	11.75	6.00	5.25	0.866	3.74
8	8.00	5.75	8.75	13.50	12.25	6.75	5.25	1.024	3.94
9	9.00	6.25	9.75	15.24	13.50	7.63	5.87	1.024	4.33

Size	N	P	Q	R	S	T	U	Oil Capacity (approx.) Imp. Pints	Weight (approx.) lbs
4	4.21	6.30	5.51	4.92	5.00	9.33	0.98	4.2	160
5	5.00	7.24	6.50	5.51	6.06	10.55	1.26	6.0	260
6	6.02	7.83	6.89	6.10	7.13	11.34	1.26	9.5	370
7	6.73	8.90	8.07	6.30	8.11	12.83	1.50	16.7	575
8	6.73	9.72	8.86	6.69	9.09	13.82	1.50	19.7	640
9	7.60	11.10	9.84	7.28	10.04	15.67	1.77	28.0	880

Input Shaft

Size	E1	F		V1 min	W1	X1
		max	min			
4	2.52	1.2500	1.2495	1.102	0.250	2.38
5	2.99	1.5000	1.4995	1.283	0.375	2.88
6	2.99	1.5000	1.4995	1.283	0.375	2.88
7	3.50	1.7500	1.7490	1.536	0.375	3.38
8	3.74	1.7500	1.7490	1.536	0.375	3.63
9	4.02	2.0000	1.9990	1.712	0.500	3.88

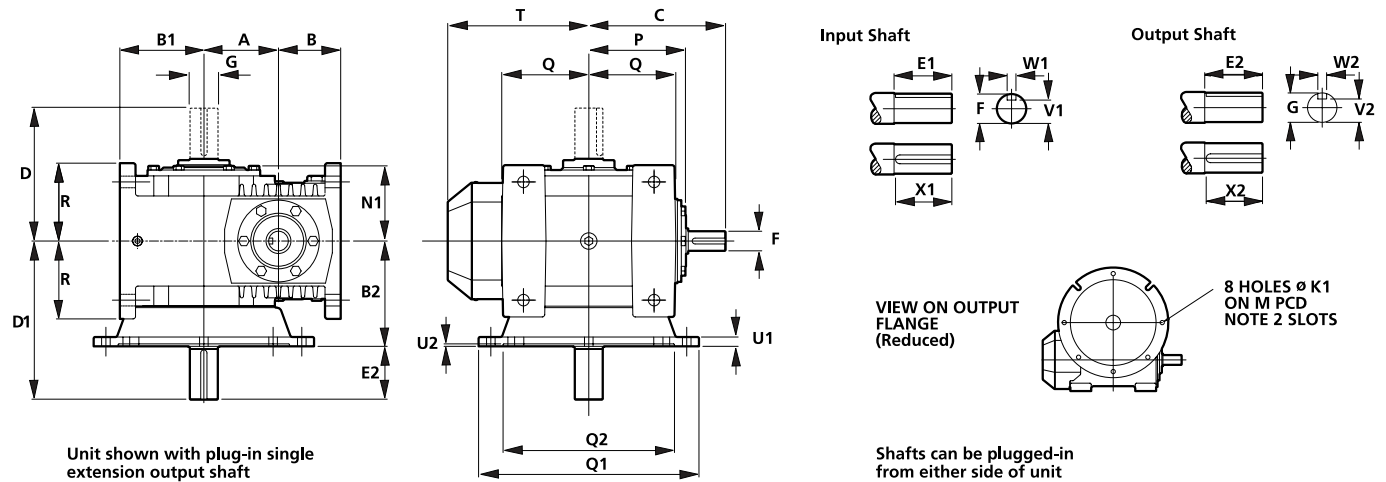
Output Shaft

Size	E2	G		V2 min	W2	X2
		max	min			
4	3.50	1.7500	1.7494	1.536	0.375	3.23
5	4.00	2.0000	2.0000	1.712	0.500	3.75
6	4.25	2.2500	2.2493	1.966	0.500	4.00
7	4.50	2.5000	2.4993	2.142	0.625	4.25
8	5.00	2.7500	2.7493	2.396	0.625	4.75
*9	5.75	3.0000	2.9990	2.571	0.750	5.50

* solid shaft

WM Series - Speed Reducer - Dimensions (inch)

Single Reduction - Type WMV - Vertical



Size	Center Distance									
	A	B	B1	B2	C	D	D1	K1	M	N1
4	4.00	4.25	4.75	7.20	9.02	8.50	10.75	0.69	11.811	4.17
5	5.00	4.50	5.75	7.76	10.24	9.75	11.75	0.69	13.780	4.96
6	6.00	5.00	6.75	8.46	10.98	10.75	12.75	0.69	15.748	6.02
7	7.00	5.75	7.75	9.76	12.52	11.75	14.25	0.69	19.685	6.73
8	8.00	5.75	8.75	9.76	13.50	12.25	14.75	0.69	19.685	6.73
9	9.00	6.25	9.75	11.22	15.24	13.50	17.00	0.87	23.622	7.72

Size	P	Q	Q1	Q2		R	T	U1	U2	Oil Capacity (approx.) Imp. Pints	Weight (approx.) lbs
				max	min						
4	6.30	5.51	13.78	9.845	9.843	4.92	9.33	0.75	0.24	4.8	195
5	7.24	6.50	15.75	11.814	11.811	5.51	10.55	0.75	0.24	8.3	295
6	7.83	6.89	17.72	13.783	13.780	6.10	11.34	0.75	0.24	12.5	415
7	8.90	8.07	21.65	17.720	17.717	6.30	12.83	0.94	0.24	19.4	630
8	9.72	8.86	21.65	17.720	17.717	6.69	13.82	0.94	0.24	25.2	730
9	11.10	9.84	25.98	21.658	21.654	7.28	15.67	0.98	0.28	35.9	985

Input Shaft

Size	E1	F		V1 min	W1	X1
		max	min			
4	2.52	1.2500	1.2495	1.102	0.250	2.38
5	2.99	1.5000	1.4995	1.283	0.375	2.88
6	2.99	1.5000	1.4995	1.283	0.375	2.88
7	3.50	1.7500	1.7490	1.536	0.375	3.38
8	3.74	1.7500	1.7490	1.536	0.375	3.63
9	4.02	2.0000	1.9990	1.712	0.500	3.88

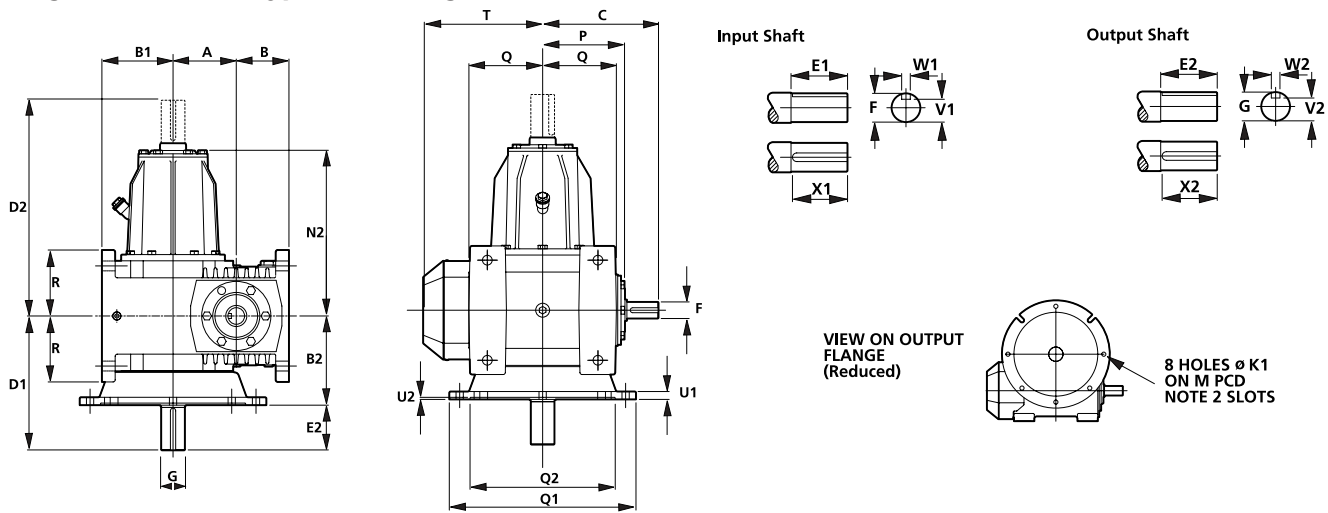
Output Shaft

Size	E2	G		V2 min	W2	X2
		max	min			
4	3.50	1.7500	1.7494	1.536	0.375	3.23
5	4.00	2.0000	2.0000	1.712	0.500	3.75
6	4.25	2.2500	2.2493	1.966	0.500	4.00
7	4.50	2.5000	2.4993	2.142	0.625	4.25
8	5.00	2.7500	2.7493	2.396	0.625	4.75
*9	5.75	3.0000	2.9990	2.571	0.750	5.50

* solid shaft

WM Series - Speed Reducer - Dimensions (inch)

Single Reduction - Type WMA - Agitator



Size	Center Distance		B1	B2	C	D1	D2	K1	M	N2
	A	B								
4	4.00	4.25	4.75	7.20	9.02	10.75	15.63	0.69	11.811	12.05
5	5.00	4.50	5.75	7.76	10.24	11.75	18.50	0.69	13.780	14.17
6	6.00	5.00	6.75	8.46	10.98	12.75	20.25	0.69	15.748	15.71
7	7.00	5.75	7.75	9.76	12.52	14.25	22.65	0.69	19.685	17.52
8	8.00	5.75	8.75	9.76	13.50	14.75	26.23	0.69	19.685	20.91
9	9.00	6.25	9.75	11.22	15.24	17.00	29.63	0.87	23.622	23.78

Size	P	Q	Q1	Q2		R	T	U1	U2	Oil Capacity (approx.) Imp. Pints	Weight (approx.) lbs
				max	min						
4	6.30	5.51	13.78	9.845	9.843	4.92	9.33	0.75	0.24	4.8	220
5	7.24	6.50	15.75	11.814	11.811	5.51	10.55	0.75	0.24	8.3	335
6	7.83	6.89	17.72	13.783	13.780	6.10	11.34	0.75	0.24	12.5	470
7	8.90	8.07	21.65	17.720	17.717	6.30	12.83	0.94	0.24	19.4	705
8	9.72	8.86	21.65	17.720	17.717	6.69	13.82	0.94	0.24	25.2	835
9	11.10	9.84	25.98	21.658	21.654	7.28	15.67	0.98	0.28	35.9	1155

Input Shaft

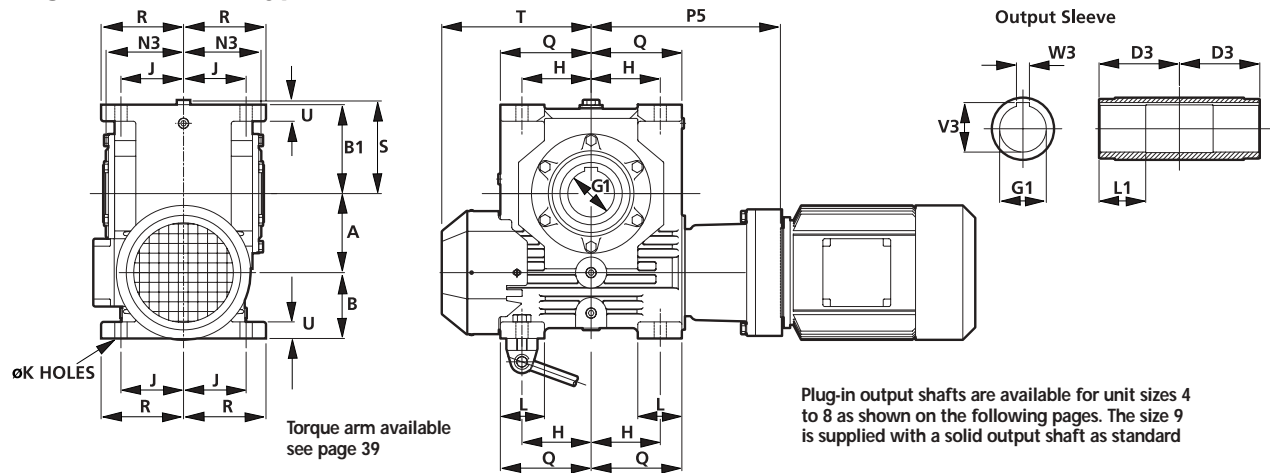
Size	E1	F		V1 min	W1	X1
		max	min			
4	2.52	1.2500	1.2495	1.102	0.250	2.38
5	2.99	1.5000	1.4995	1.283	0.375	2.88
6	2.99	1.5000	1.4995	1.283	0.375	2.88
7	3.50	1.7500	1.7490	1.536	0.375	3.38
8	3.74	1.7500	1.7490	1.536	0.375	3.63
9	4.02	2.0000	1.9990	1.712	0.500	3.88

Output Shaft

Size	E2	G		V2 min	W2	X2
		max	min			
4	3.50	1.7500	1.7494	1.536	0.375	3.23
5	4.00	2.0000	2.9993	1.712	0.500	3.75
6	4.25	2.2500	2.2493	1.966	0.500	4.00
7	4.50	2.5000	2.4993	2.142	0.625	4.25
8	5.00	2.7500	2.7493	2.396	0.625	4.75
9	5.75	3.0000	2.9990	2.571	0.750	5.50

WM Series - Motorized - Dimensions (inch)

Single Reduction - Type MWM Standard Hollow Shaft



Size	Center Distance							
	A	B	B1	D3	H	J	K	L
4	4.00	4.25	4.75	4.33	4.25	4.00	0.866	2.56
5	5.00	4.50	5.75	5.12	4.87	4.37	0.866	2.95
6	6.00	5.00	6.75	6.10	5.25	4.75	0.866	3.35
7	7.00	5.75	7.75	6.85	6.00	5.25	0.866	3.74
8	8.00	5.75	8.75	6.85	6.75	5.25	1.024	3.94
9	9.00	6.25	9.75	7.95	7.63	5.87	1.024	4.33

Size	L1	N3	Q	R	S	T	U	Oil Capacity (approx.) Imp. Pints*	Weight (approx.) lbs
4	2.56	4.21	5.51	4.92	5.00	9.33	0.98	4.0/4.8	160
5	2.76	5.00	6.50	5.51	6.06	10.55	1.26	5.8/8.3	260
6	3.54	6.02	6.89	6.10	7.13	11.34	1.26	7.9/12.5	370
7	4.53	6.73	8.07	6.30	8.11	12.83	1.50	12.3/19.4	575
8	4.53	6.73	8.86	6.69	9.09	13.82	1.50	13.6/25.2	640
9	4.92	7.83	9.84	7.28	10.04	15.67	1.77	19.7/35.9	880

* - Min/Max dependant on mounting position.

Input Shaft

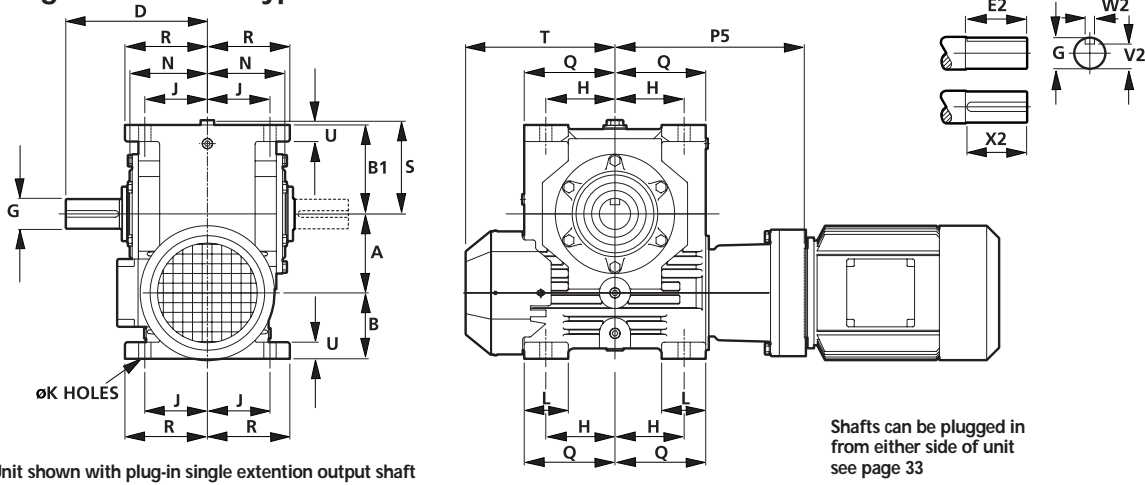
Size	P5 Suitable Motor Frame Sizes					
	182TC	213TC	254TC	284TC	324TC	364TC
4	12.40	12.40	12.99			
5	13.58	13.58	14.17	14.80		
6	14.37	14.37	14.96	15.59		
7		16.54	16.54	17.17	18.74	18.74
8		17.52	17.52	18.15	19.72	19.72
9		19.29	19.29	19.92	21.50	21.50

Output Sleeve

Size	G1		V3	W3	
	max	min	min	max	min
4	2.3646	2.3634	2.54	0.7095	0.7078
5	2.7583	2.7571	2.95	0.7884	0.7864
6	3.5461	3.5447	3.72	0.9853	0.9832
7	3.9398	3.9384	4.19	1.1034	1.1013
8	3.9398	3.9384	4.19	1.1034	1.1013
9	4.3335	4.3321	4.58	1.0015	1.0994

WM Series - Motorized - Dimensions (inch)

Single Reduction - Type MWMU - Underdriven



Unit shown with plug-in single extension output shaft

Shafts can be plugged in from either side of unit see page 33

Size	Center Distance							
	A	B	B1	D	H	J	K	L
4	4.00	4.25	4.75	8.50	4.25	4.00	0.866	2.56
5	5.00	4.50	5.75	9.75	4.87	4.37	0.866	2.95
6	6.00	5.00	6.75	10.75	5.25	4.75	0.866	3.35
7	7.00	5.75	7.75	11.75	6.00	5.25	0.866	3.74
8	8.00	5.75	8.75	12.25	6.75	5.25	1.024	3.94
9	9.00	6.25	9.75	13.50	7.63	5.87	1.024	4.33

Size	N	Q	R	S	T	U	Oil Capacity (approx.) Imp. Pints	Weight (approx.) lbs
4	4.21	5.51	4.92	5.00	9.33	0.98	4.0	160
5	5.00	6.50	5.51	6.06	10.55	1.26	5.8	260
6	6.02	6.89	6.10	7.13	11.34	1.26	7.9	370
7	6.73	8.07	6.30	8.11	12.83	1.50	12.3	575
8	6.73	8.86	6.69	9.09	13.82	1.50	13.6	640
9	7.60	9.84	7.28	10.04	15.67	1.77	19.7	880

Input Shaft

Size	P5 Suitable Motor Frame Sizes					
	182TC	213TC	254TC	284TC	324TC	364TC
	184TC	215TC	256TC	286TC	326TC	365TC
4	12.40	12.40	12.99			
5	13.58	13.58	14.17	14.80		
6	14.37	14.37	14.96	15.59		
7		16.54	16.54	17.17	18.74	18.74
8		17.52	17.52	18.15	19.72	19.72
9		19.29	19.29	19.92	21.50	21.50

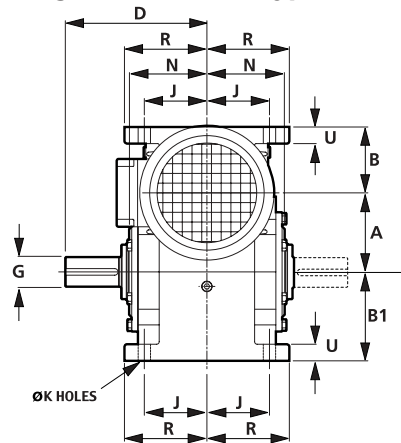
Output Sleeve

Size	E2	G		V2 min	W2	X2
		max	min			
4	3.50	1.7500	1.7494	1.536	0.375	3.23
5	4.00	2.0000	2.9993	1.712	0.500	3.75
6	4.25	2.2500	2.2493	1.966	0.500	4.00
7	4.50	2.5000	2.4993	2.142	0.625	4.25
8	5.00	2.7500	2.7493	2.396	0.625	4.75
*9	5.75	3.0000	2.9990	2.571	0.750	5.50

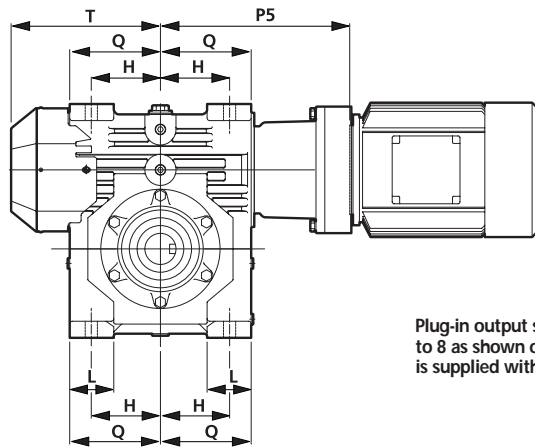
* solid shaft

WM Series - Motorized - Dimensions (inch)

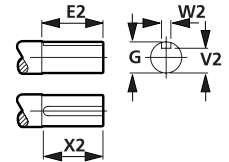
Single Reduction - Type MWMO - Overdriven



Torque arm available see page 39



Output Shaft



Plug-in output shafts are available for unit sizes 4 to 8 as shown on the following pages. The size 9 is supplied with a solid output shaft as standard

Size	Center Distance							
	A	B	B1	D	H	J	K	L
4	4.00	4.25	4.75	8.50	4.25	4.00	0.866	2.56
5	5.00	4.50	5.75	9.75	4.87	4.37	0.866	2.95
6	6.00	5.00	6.75	10.75	5.25	4.75	0.866	3.35
7	7.00	5.75	7.75	11.75	6.00	5.25	0.866	3.74
8	8.00	5.75	8.75	12.25	6.75	5.25	1.024	3.94
9	9.00	6.25	9.75	13.50	7.63	5.87	1.024	4.33

Size	N	Q	R	S	T	U	Oil Capacity (approx.) Imp. Pints	Weight (approx.) lbs
4	4.21	5.51	4.92	5.00	9.33	0.98	4.2	160
5	5.00	6.50	5.51	6.06	10.55	1.26	6.0	260
6	6.02	6.89	6.10	7.13	11.34	1.26	9.5	370
7	6.73	8.07	6.30	8.11	12.83	1.50	16.7	575
8	6.73	8.86	6.69	9.09	13.82	1.50	19.7	640
9	7.60	9.84	7.28	10.04	15.67	1.77	28.0	880

Input Shaft

Size	P5 Suitable Motor Frame Sizes					
	182TC	213TC	254TC	284TC	324TC	364TC
	184TC	215TC	256TC	286TC	326TC	365TC
4	12.40	12.40	12.99			
5	13.58	13.58	14.17	14.80		
6	14.37	14.37	14.96	15.59		
7		16.54	16.54	17.17	18.74	18.74
8		17.52	17.52	18.15	19.72	19.72
9		19.29	19.29	19.92	21.50	21.50

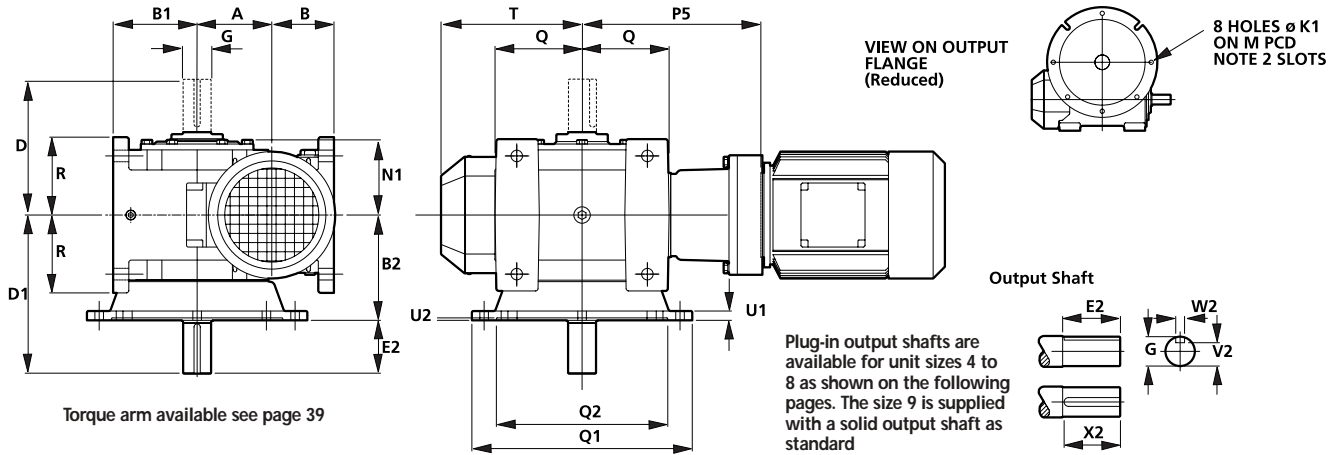
Output Shaft

Size	E2	G		V2 min	W2	X2
		max	min			
4	3.50	1.7500	1.7494	1.536	0.375	3.23
5	4.00	2.0000	2.19993	1.712	0.500	3.75
6	4.25	2.2500	2.2493	1.966	0.500	4.00
7	4.50	2.5000	2.4993	2.142	0.625	4.25
8	5.00	2.7500	2.7493	2.396	0.625	4.75
*9	5.75	3.0000	2.9990	2.571	0.750	5.50

* solid shaft

WM Series - Motorized - Dimensions (inch)

Single Reduction - Type MWMV - Vertical



Size	Center Distance		B1	B2	D	D1	K1	M	N1
	A	B							
4	4.00	4.25	4.75	7.20	8.50	10.75	0.69	11.811	4.17
5	5.00	4.50	5.75	7.76	9.75	11.75	0.69	13.780	4.96
6	6.00	5.00	6.75	8.46	10.75	12.75	0.69	15.748	6.02
7	7.00	5.75	7.75	9.76	11.75	14.25	0.69	19.685	6.73
8	8.00	5.75	8.75	9.76	12.25	14.75	0.69	19.685	6.73
9	9.00	6.25	9.75	11.22	13.50	17.00	0.87	23.622	7.72

Size	Q	Q1	Q2		R	T	U1	U2	Oil Capacity (approx.) Imp. Pints	Weight (approx.) lbs
			max	min						
4	5.51	13.78	9.845	9.843	4.92	9.33	0.75	0.24	4.8	195
5	6.50	15.75	11.814	11.811	5.51	10.55	0.75	0.24	8.3	295
6	6.89	17.72	13.783	13.780	6.10	11.34	0.75	0.24	12.5	415
7	8.07	21.65	17.720	17.717	6.30	12.83	0.94	0.24	19.4	630
8	8.86	21.65	17.720	17.717	6.69	13.82	0.94	0.24	25.2	730
9	9.84	25.98	21.658	21.654	7.28	15.67	0.98	0.28	35.9	985

Input Shaft

Size	P5 Suitable Motor Frame Sizes					
	182TC	213TC	254TC	284TC	324TC	364TC
	184TC	215TC	256TC	286TC	326TC	365TC
4	12.40	12.40	12.99			
5	13.58	13.58	14.17	14.80		
6	14.37	14.37	14.96	15.59		
7		16.54	16.54	17.17	18.74	18.74
8		17.52	17.52	18.15	19.72	19.72
9		19.29	19.29	19.92	21.50	21.50

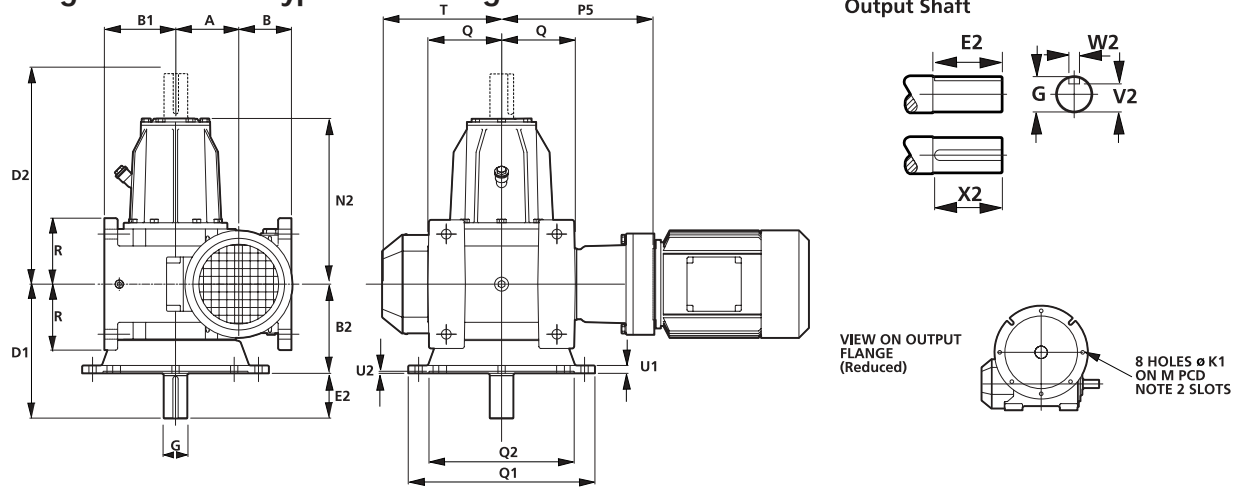
Output Shaft

Size	E2	G		V2 min	W2	X2
		max	min			
4	3.50	1.7500	1.7494	1.536	0.375	3.23
5	4.00	2.0000	2.19993	1.712	0.500	3.75
6	4.25	2.2500	2.2493	1.966	0.500	4.00
7	4.50	2.5000	2.4993	2.142	0.625	4.25
8	5.00	2.7500	2.7493	2.396	0.625	4.75
*9	5.75	3.0000	2.9990	2.571	0.750	5.50

* solid shaft

WM Series - Motorized - Dimensions (inch)

Single Reduction - Type MWMA - Agitator



Size	Center Distance								
	A	B	B1	B2	D1	D2	K1	M	N2
4	4.00	4.25	4.75	7.20	10.75	15.63	0.69	11.811	12.05
5	5.00	4.50	5.75	7.76	11.75	18.50	0.69	13.780	14.17
6	6.00	5.00	6.75	8.46	12.75	20.25	0.69	15.748	15.71
7	7.00	5.75	7.75	9.76	14.25	22.65	0.69	19.685	17.52
8	8.00	5.75	8.75	9.76	14.75	26.23	0.69	19.685	20.91
9	9.00	6.25	9.75	11.22	17.00	29.63	0.87	23.622	23.78

Size	Q	Q1	Q2		R	T	U1	U2	Oil Capacity (approx.) Imp. Pints	Weight (approx.) lbs
			max	min						
4	5.51	13.78	9.845	9.843	4.92	9.33	0.75	0.24	4.8	220
5	6.50	15.75	11.814	11.811	5.51	10.55	0.75	0.24	8.3	335
6	6.89	17.72	13.783	13.780	6.10	11.34	0.75	0.24	12.5	470
7	8.07	21.65	17.720	17.717	6.30	12.83	0.94	0.24	19.4	705
8	8.86	21.65	17.720	17.717	6.69	13.82	0.94	0.24	25.2	835
9	9.84	25.98	21.658	21.654	7.28	15.67	0.98	0.28	35.9	1155

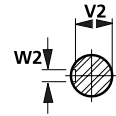
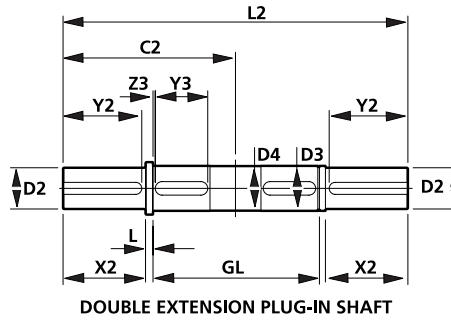
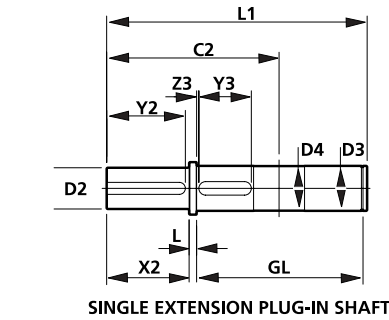
Input Shaft

Size	P5 Suitable Motor Frame Sizes					
	182TC	213TC	254TC	284TC	324TC	364TC
	184TC	215TC	256TC	286TC	326TC	365TC
4	12.40	12.40	12.99			
5	13.58	13.58	14.17	14.80		
6	14.37	14.37	14.96	15.59		
7		16.54	16.54	17.17	18.74	18.74
8		17.52	17.52	18.15	19.72	19.72
9		19.29	19.29	19.92	21.50	21.50

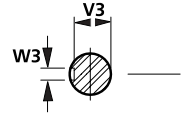
Output Shaft

Size	E2	G		V2 min	W2	X2
		max	min			
4	3.50	1.7500	1.7494	1.536	0.375	3.23
5	4.00	2.0000	2.9993	1.712	0.500	3.75
6	4.25	2.2500	2.2493	1.966	0.500	4.00
7	4.50	2.5000	2.4993	2.142	0.625	4.25
8	5.00	2.7500	2.7493	2.396	0.625	4.75
9	5.75	3.0000	2.9990	2.571	0.750	5.50

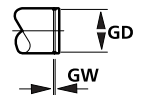
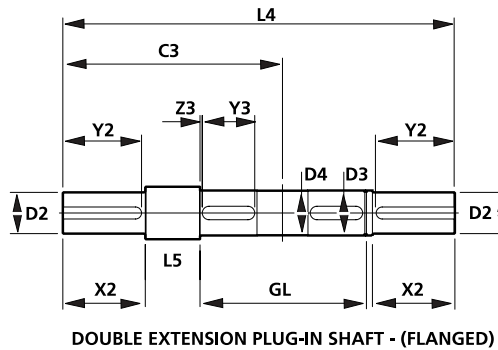
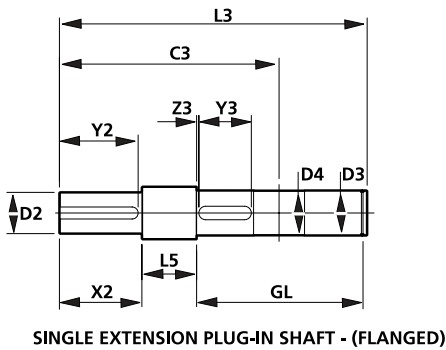
WM Series - Output Shaft - Dimensions (inch)



EXTENSION KEYWAY DETAILS



SHAFT KEYWAY DETAILS (BORE SLEEVE)



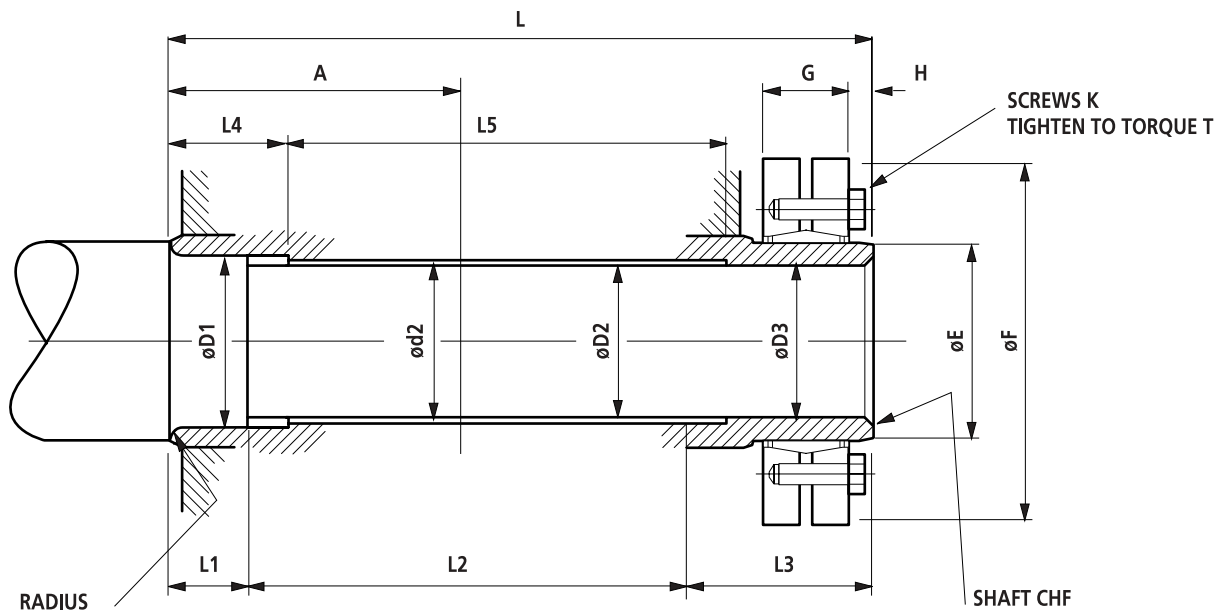
SNAPPING GROOVE DETAILS

Unit Size	C2	C3	L	L1	L2	L3	L4	L5	GD	GL	GW
4	8.50	10.75	0.67	13.13	17.00	15.38	19.25	2.92	2.244	8.746	0.090
									2.232	8.744	0.085
5	9.75	11.75	0.63	15.20	19.50	17.20	21.50	2.63	2.638	10.341	0.110
									2.626	10.339	0.104
6	10.75	12.75	0.40	17.23	21.50	19.23	23.50	2.40	3.406	12.329	0.131
									3.392	12.327	0.124
7	11.75	14.25	0.40	18.97	23.50	21.47	26.00	2.90	3.799	13.825	0.131
									3.785	13.823	0.124
8	12.25	14.75	0.40	19.47	24.50	21.97	27.00	2.90	3.799	13.825	0.131
									3.785	13.823	0.124

Unit Size	D2		V2 min	W2		X2	Y2
	max	min		max	min		
4	1.7500	1.7494	1.536	0.377	0.375	3.50	3.25
5	2.0000	1.9993	1.712	0.502	0.500	4.00	3.75
6	2.2500	2.2493	1.966	0.502	0.500	4.25	4.00
7	2.5000	2.4993	2.142	0.627	0.625	4.50	4.25
8	2.7500	2.7493	2.396	0.627	0.625	5.00	4.75

Unit Size	D3		V3 min	W3		Y3	Z3	D4
	max	min		max	min			
4	2.3622	2.3615	2.079	0.706	0.708	2.76	0.12	2.20
5	2.7559	2.7552	2.453	0.787	0.784	3.54	0.08	2.60
6	3.5433	3.5424	3.181	0.983	0.981	4.33	0.12	3.39
7	3.9370	3.9361	3.535	1.101	1.099	4.92	0.12	3.78
8	3.9370	3.9361	3.535	1.101	1.099	4.92	0.12	3.78

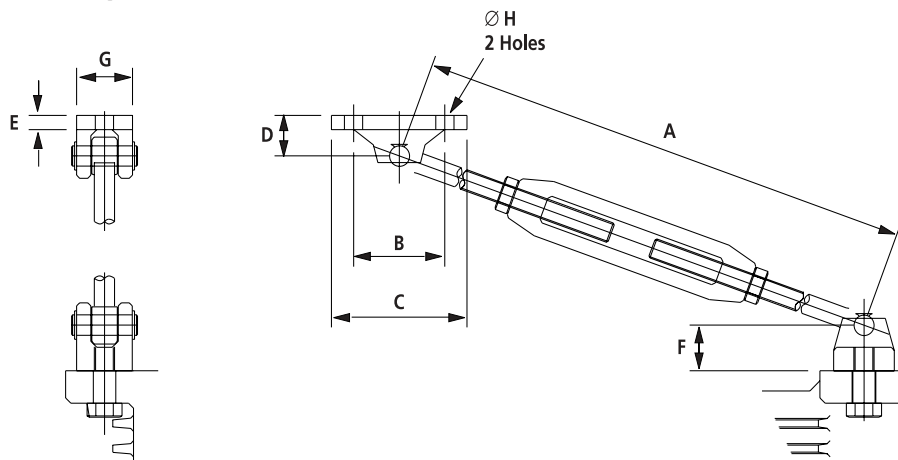
WM Series - Output Shaft Shrink Disc



Gear Size	Driven Shaft								Hollow Shaft					Shrink Disc							Max S/Disc Torque
	D1	D2	D3	L1	L2	L3	Rad	Chf	A	d2	L	L4	L5	REF	ØE	ØF	G	H	K	T	
WM4	65	60	60	30	150	85	1.5	3	110	62	265	40	150	75-4071	75	138	32.5	9	M8	30	1600
WM5	75	70	70	35	180	95	1.5	3	130	72	310	50	180	90-4071	90	155	39	9	M8	30	3000
WM6	90	85	85	40	220	115	2	3	155	88	375	55	220	110-4071	110	185	50	12	M10	59	5400
WM7	100	95	95	45	250	135	2	3	174	98	430	60	250	125-4071	125	215	54	23	M10	59	7500
WM8	100	95	95	45	250	135	2	3	174	98	430	60	250	125-4071	125	215	54	23	M10	59	7500
														125-4091	125	215	65	12	M12	100	10000
WM9	110	105	105	50	275	170	2	3	202	108	495	65	275	140-4071	140	230	60.5	25.5	M12	100	10000
														140-4091	140	230	74	12	M12	100	13500

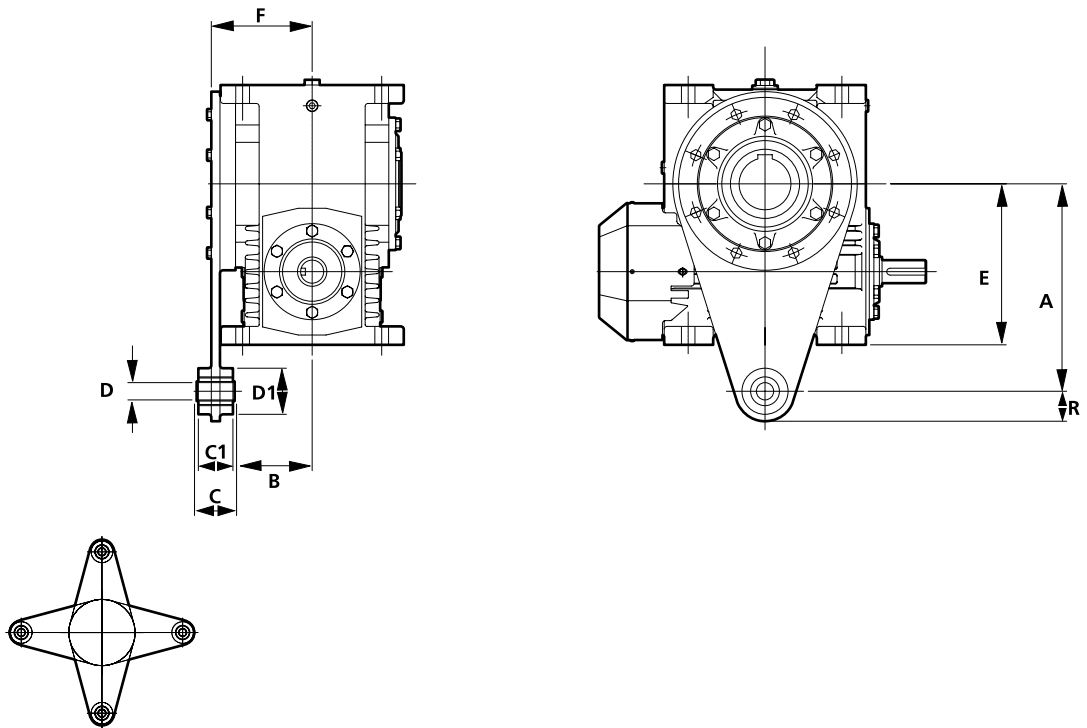
WM Series - Torque Arm

Shaft Mounted Unit Torque Arm - Dimensions (inches)



Unit Size	A	B	C	D	E	F	G	H
4	23.5	3.54	5.2	1.57	0.6	1.77	2.0	0.709
	29.5							
5	23.5	3.54	5.2	1.57	0.6	1.77	2.0	0.709
	29.5							
6	29.5	4.53	7.0	2.24	0.8	2.17	3.0	0.866
	35.5							
7	29.5	4.53	7.0	2.24	0.8	2.17	3.0	0.866
	35.5							
8	29.5	4.53	7.0	2.24	0.8	2.17	3.0	0.866
	35.5							
9	29.5	5.51	8.3	2.76	1.0	2.76	3.9	1.024
	35.5							

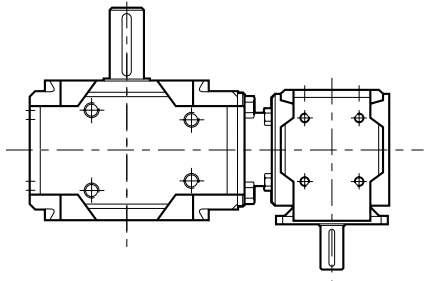
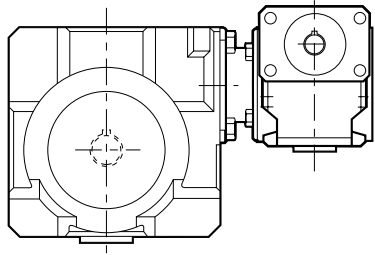
WM Series - Torque Restraint Bracket



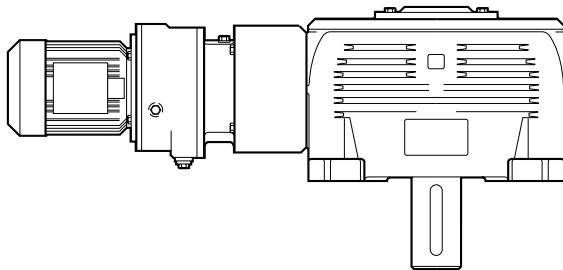
BRACKET CAN BE MOUNTED IN ANY OF 4 POSITIONS SHOWN
- ON EITHER SIDE OF GEAR UNIT

Unit Size	A	B	C	C1	D	D1	E	F	R
4	10.63	4.02	2.76	2.52	0.79	2.76	8.25	5.63	1.77
5	11.81	4.57	2.76	2.52	0.79	2.76	9.50	6.18	1.77
6	14.17	5.30	2.60	2.36	1.18	3.15	11.00	6.89	2.05
7	16.34	6.28	2.60	2.36	1.18	3.15	12.75	7.87	2.05
8	17.72	6.28	2.60	2.36	1.18	3.15	13.75	7.87	2.05

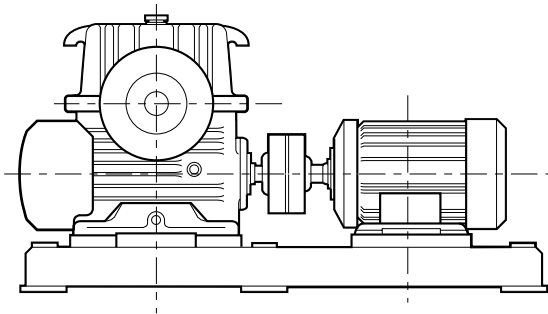
Renold Gear Unit Drive Combinations and Custom Unit Capabilities



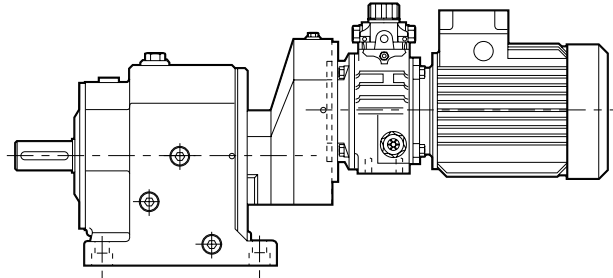
Combined jPM wormgear units increases the maximum unit ratio to 4900:1.



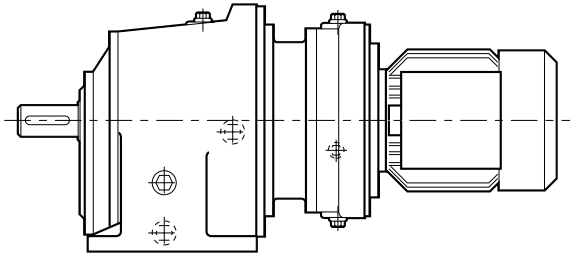
To extend the catalogue ratio of TW Series wormgear unit or to allow output shaft back driving a RS Series helical unit first stage reduction can be used.



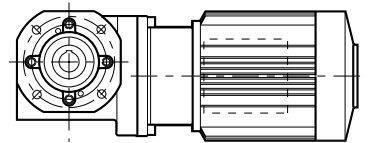
Wormgear or helical gear unit can be supplied as a package often with motor, couplings on the input and output shafts or chain drive, all mounted on a base plate.



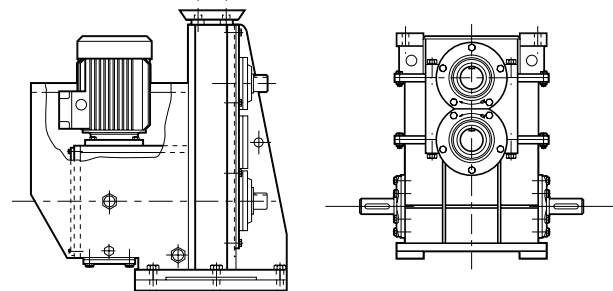
Combined triple and single reduction RP Series unit using a Carter disc unit as a prime mover. This offers a 5:1 variable speed range at low speed.



Motorised 'GMF' range flange mounted RS Series combined with 'GM' RS Series.



Custom units can be supplied such as stairlift or homelift units, motorised wheelchair and roller shutter drives.

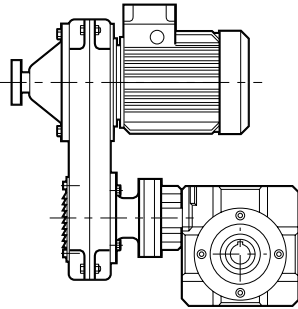


Special purpose units can be manufactured using bevel, helical and wormgear products, in cast iron or fabricated steel cases.

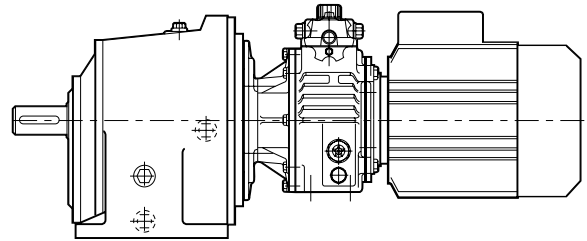
Renold Gear Unit Drive Combinations and Custom Unit Capabilities

All of the Renold gear products are designed and built to a modular concept and can be combined in such a way as to give the best drive package to suit the application.

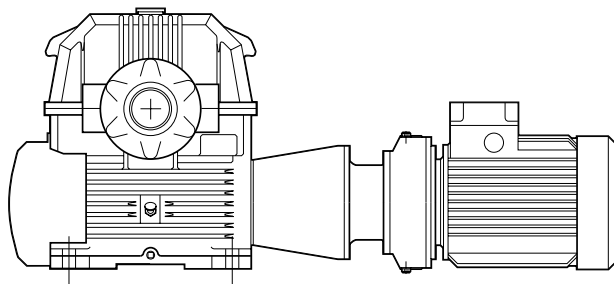
The following are some suggestions.



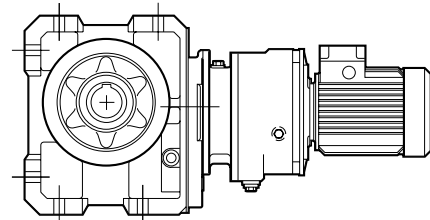
Carter belt variable speed drive driving a JPM wormgear unit giving up to 8.75:1 variable speed range with a right angle drive.



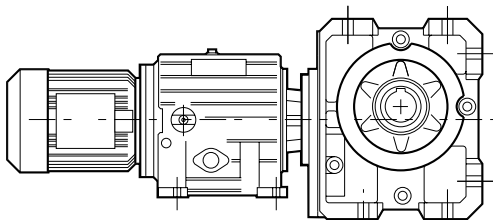
Carter disc variable speed unit, combined with electric motor and RS Series helical unit.



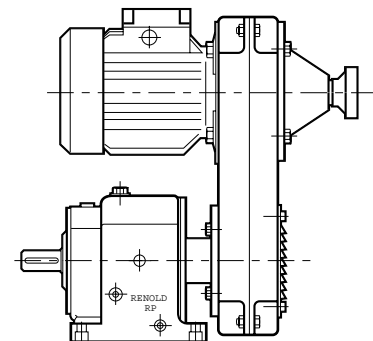
TW Series wormgear unit ratio can be extended beyond the catalogued figure by adding a helical first stage reduction such as RS Series or RP Series.



Combined flange mounted RS Series and ePM Series - PH Type helical/worm unit has a maximum ratio capability of up to 22,000:1.



Motorised Carter hydrostatic variable speed unit with a 27:1 variable speed range combined with e.PM Series - PH Type helical worm unit.



Carter belt variable speed unit combined with an RP Series single, double or triple reduction.



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