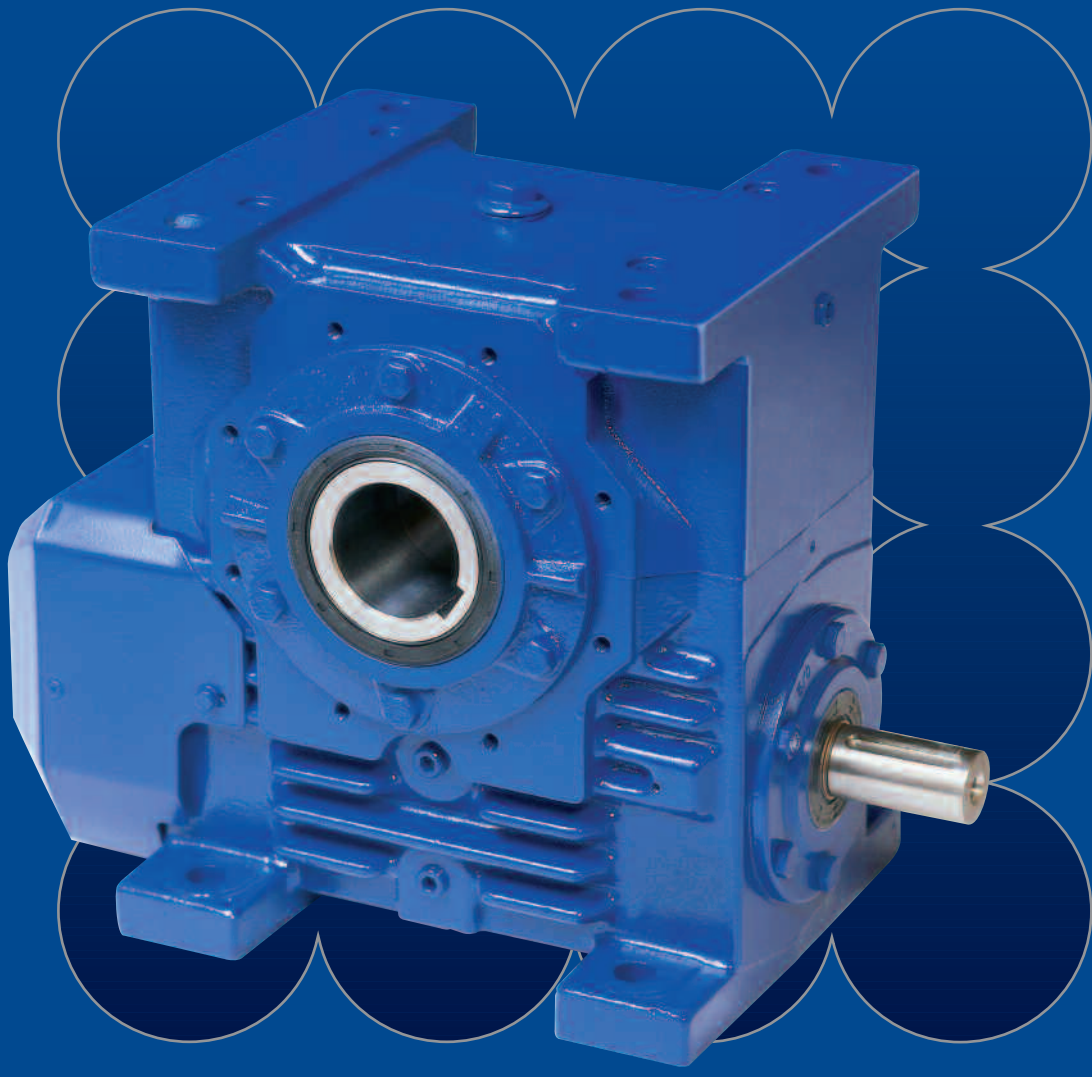
# WM Series

## Wormgear Units - Metric



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Superior Gear Technology

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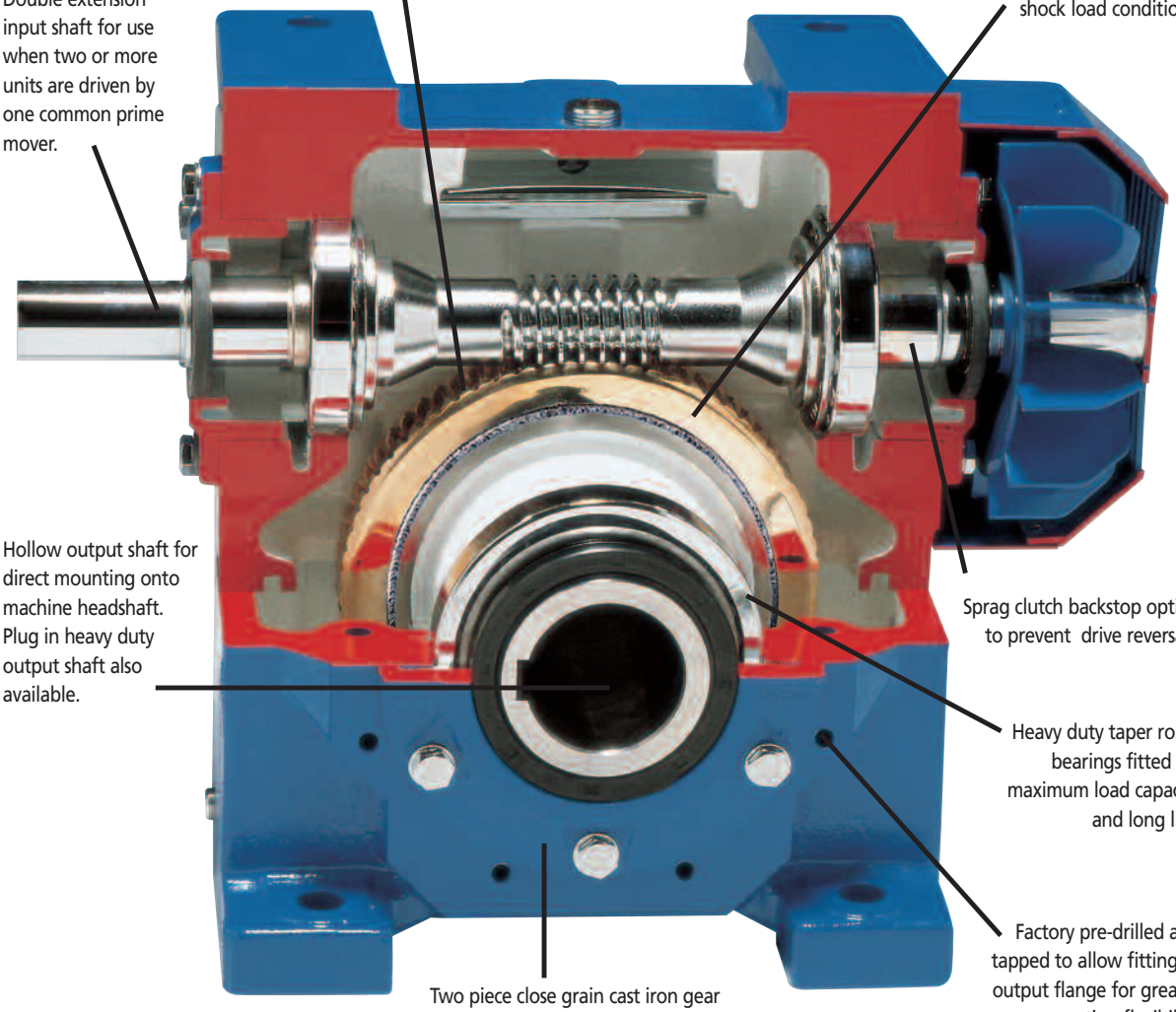
# WM Series - Product Specification




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
- Foundry Equipment

**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.**

# Contents

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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 utilize 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.

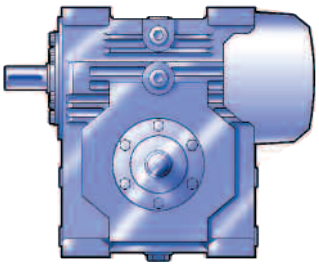
All WM Series worm gear units can be supplied in various standard types and assemblies and are suitable for combining with most of the Renold range of fixed and variable speed products.

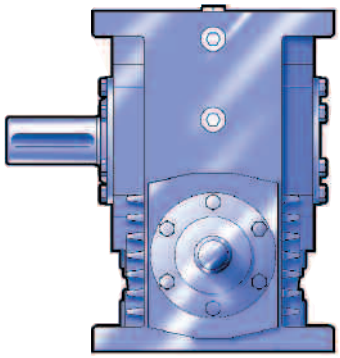
Most of the units included in the WM Series range are suitable for mounting in alternative positions. Available assemblies are detailed for each type of unit and also mounting position variations where applicable.

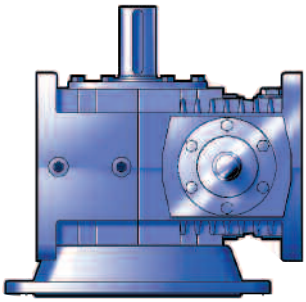
WM Series reducers are supplied with a hollow shaft as standard except for the 9" CRS which has a solid shaft. Plug-in output shafts, both single and double, are available for both standard mount and flange mount.

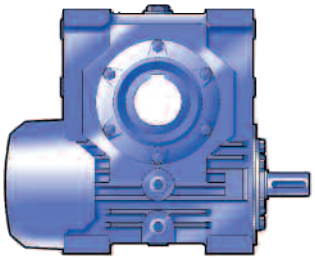
All of the WM Series units can be fitted with standard flange mounted electric motors.

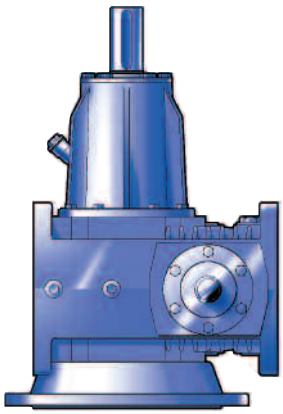
The WM Series units are available from 4" to 9" centre distance and this heavy duty unit range is the result of continuing research and development.











# 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 confers additional valuable properties to gear performance. This ensures that our gears will run correctly and transmit true uniform angular velocity when running under all load conditions. The modification also gives a tapered oil entry gap between the teeth, which drags the lubricant between the surfaces and results in more efficient lubrication. Standard worm gears have right-hand threads but left-hand threads can be made to order.

## Shafts

Standard shaft extensions are to 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 100mm to 200mm are supplied as hollow output shaft type as standard and all output shafts are plug-in design, single and double extension.

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 bold 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, the output of WM9 unit range and all agitator unit types.

## Dry Well Feature

The WM Series unit sizes 100mm to 900mm 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

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

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

## Cooling

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

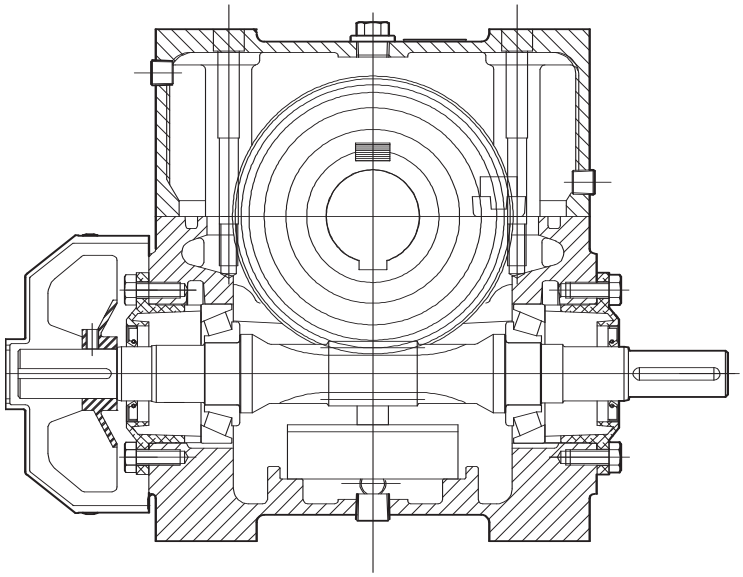
## Backstop

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

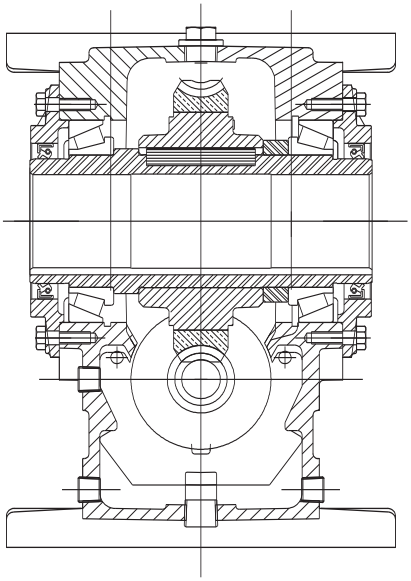
## Double Reduction Units

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

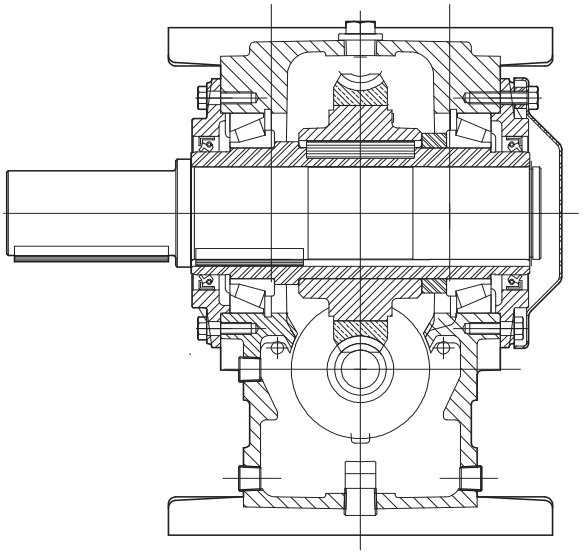
# WM Series - Product Specification



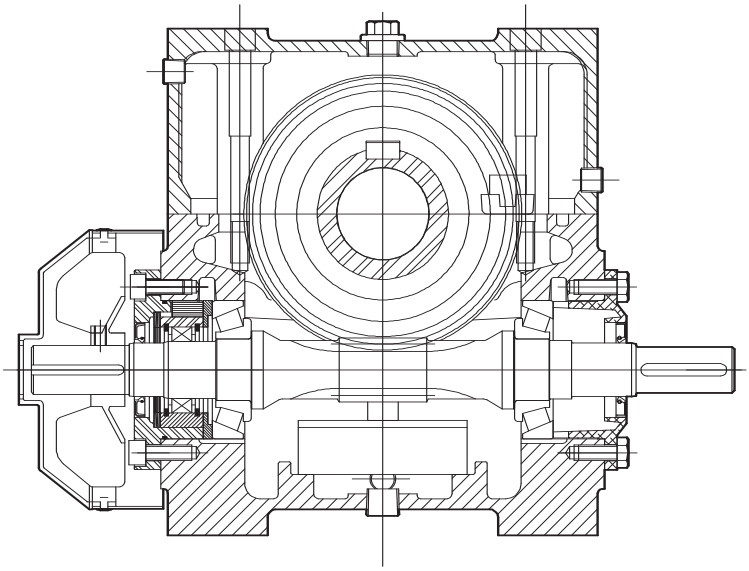
**Hollow output shaft unit showing standard American extension input shaft and metric extension at the fan end.**



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

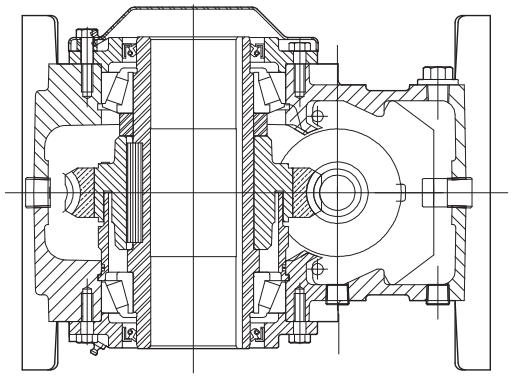


**Underdriven unit with standard plug-in output shaft. Single and double extension shafts are available.**

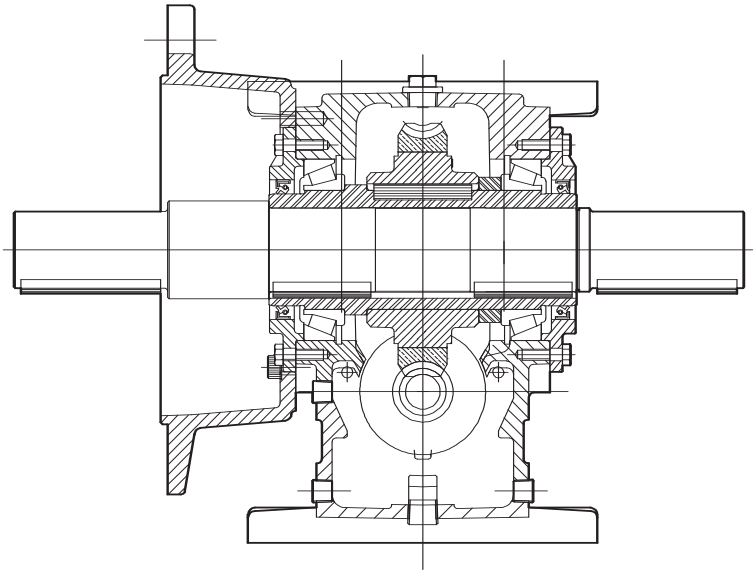


**Sprag Clutch, anti run-back assembly fitted to the fan extension end of the input shaft, to prevent unit run back. The Sprag Clutch can be supplied as a kit for retro fitting at any time.**

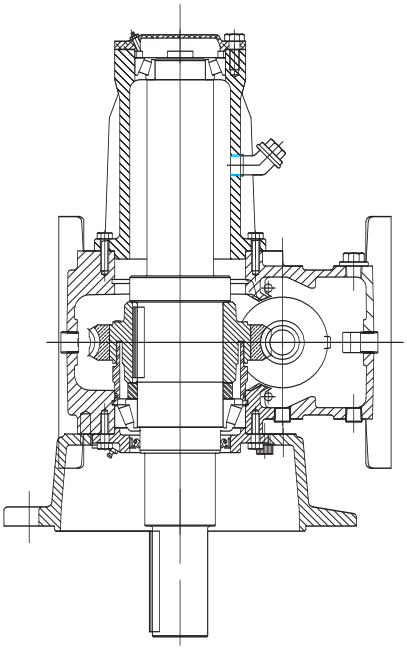
# WM Series - Product Specification



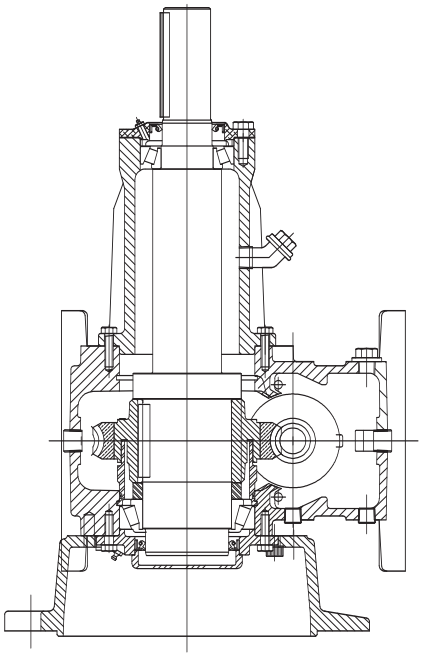
**Dry well adaption fitted at the output of the WM Series unit. The non leak feature is particularly important on mixer applications in the food and chemical Industry.**



**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

a) Prime mover, type and output power (HP).
b) Gear unit input and output power required (HP).
c) 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

a) The characteristics of the drive eg. degree of impulsiveness of the driven load.
b) Duration of service in hours/day.
c) Starting load (HP) and number of starts per day.
d) For intermittent duty, reversing or shock loading, state normal power (HP) and frequency.
e) Disposition and details of external loads imposed on input/output shafts.
f) 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 fd 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 fs 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 fd (Table 1 and Table 2) x starts factor fs (Table 3). Ratings based on 10,000 hours.

## 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 ft. 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:-

a) Establish the ratio required by dividing the input speed by the output, choosing the nearest nominal ratio available from tables 8 and 9.

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

b) Determine the load classification from Table 1 and the corresponding mechanical service factor fd from Table 2 and the starts factor fs from Table 3.
c) Multiply the actual power absorbed by the mechanical service factor fd and carefully select the size of unit by comparing this against the mechanical rating appropriate to the ratio and input speed.

Selection Output Torque =
actual output torque x fd x fs

or

$$\text{Selection Output Torque} = \frac{\text{absorbed power} \times 63{,}025 \times fd \times fs}{\text{output speed (rev/min).}}$$

d) 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 ft from Table 4.

e) Check the capability of the unit to withstand external loads applied to the output shaft. See Tables 5 and 6.

# Nominal and Actual Ratios

## Single Reduction

| Gear Size | WM100 | WM125 | WM160 | WM200 |
|---|---|---|---|---|
| Nominal Ratio | Actual Ratio | | | |
| 5 | 5 | 5 | 5.38 | 5 |
| *7.5* | *7.25* | *7.25* | *7.80* | *7.20* |
| 10 | 9.66 | 9.33 | 10.25 | 9.75 |
| *12.5* | *12.33* | *12* | *13.25* | *12* |
| 15 | 15.5 | 15.5 | 15.33 | 14.33 |
| 20 | 20.5 | 20 | 21.5 | 20 |
| 25 | 25 | 24 | 26 | 24 |
| 30 | 29 | 29 | 32 | 29 |
| *35* | *35* | *34* | *37* | *34* |
| 40 | 39 | 39 | 42 | 39 |
| *45* | *45* | *44* | *48* | *44* |
| 50 | 49 | 44 | 53 | 49 |
| 60 | 59 | 59 | 63 | 59 |
| 70 | 69 | 69 | 74 | 69 |

## Preferred Ratios

**Preferred ratios have been chosen with a view to providing a competitive lead time , the non preferred ratios have been shown in italics.**

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# Load Classification by Application

## Table 1

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Agitators** | | Sugar (1) | M | Medium duty | M | Individual drives | H | single acting: 1 or 2 cylinders | * |
| Pure liquids | S | **Dredges** | | Skip hoist | M | Reversing | * | double acting: single cylinder | * |
| Liquids and solids | M | Cable reels | M | **Laundry** | | 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** | | Cutter head drives | H | Tumblers | M | **Mills, rotary type** | | **Rubber and plastics industries** | |
| Centrifugal | S | Jig drives | H | **Line shafts** | | Ball (1) | M | Crackers (1) | H |
| Lobe | M | Manoeuvring winches | M | Driving processing equipment | M | Cement kilns (1) | M | Laboratory equipment | M |
| Vane | S | Pumps | M | Light | 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** | | 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** | | Sheeter (1) | M |
| Scale hopper-frequent starts | M | Auxiliary hoist | (2) | Chain transfer | H | Concrete mixers continuous | M | Tyre building machines | * |
| **Can filling machines** | S | Boom, luffing | (2) | Craneway transfer | H | Concrete mixers intermittent | M | Tyre and tube press openers | * |
| **Cane knives (1)** | M | Rotating, swing or slew | (3) | De-barking drum | H | Constant density | S | Tubers and strainers (1) | M |
| **Car dumpers** | H | Tracking, drive wheels | (4) | Edger feed | M | Variable density | M | Warming mills (1) | M |
| **Car pullers** | M | **Elevators** | | Gang feed | M | **Oil industry** | | **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 | H | Paraffin filter press | M | Rotary, stone or gravel | M |
| Brick press | H | Centrifugal discharge | S | Log haul-incline | H | 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 | H | Agitators (mixers) | M | Bar screens | S |
| Pug mill | M | Gravity discharge | S | Main log conveyor | H | Barker-auxiliaries hydraulic | M | Chemical feeders | S |
| **Compressors** | | Man 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)** | | 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** | | Coating | S | Roll cases | H | Calenders-super | H | Vacuum filters | M |
| Apron | S | Rods | S | Slab conveyor | H | Converting machine except | | **Slab pushers** | M |
| Assembly | S | Tubing | S | Small waste conveyor-belt | S | cutters, platers | M | **Steering gear** | * |
| Belt | S | Blow moulders | M | Small waste conveyor-chain | M | Conveyors | S | **Stokers** | S |
| Bucket | S | Pre-plasticiers | M | Sorting table | M | Couch | M | **Sugar industry** | |
| Chain | S | **Fans** | | Tipple hoist conveyor | M | Cutters, platers | H | Cane knives (1) | M |
| Flight | S | Centrifugal | S | Tipple hoist drive | M | Cylinders | M | Crushers (1) | M |
| Oven | S | Cooling towers | | Transfer conveyors | M | Dryers | M | Mills (1) | M |
| Screw | S | Induced draft | * | Transfer rolls | M | Fell stretcher | M | **Textile industry** | |
| **Conveyors - heavy duty** | | Forced draft | * | Tray drive | M | Fell whipper | H | Batchers | M |
| **not uniformly fed** | | Induced draft | M | Trimmer feed | M | Jordans | M | Calenders | M |
| Apron | M | Large, mine etc. | M | Waste conveyor | M | Log haul | H | Cards | M |
| Assembly | M | Large, industrial | M | **Machine tools** | | Presses | M | Dry cans | M |
| Belt | M | Light, small diameter | S | Bending roll | M | Pulp machine reel | M | Dryers | M |
| Bucket | M | **Feeders** | | Punch press-gear driven | H | Stock chest | M | Dyeing machinery | M |
| Chain | M | Apron | M | Notching press-belt drive | * | Suction roll | M | Looms | M |
| Flight | M | Belt | M | Plate planners | H | Washers and thickeners | M | Mangles | M |
| Live roll | * | Disc | S | Tapping machine | H | Winders | M | Nappers | M |
| Oven | M | Reciprocating | H | **Other machine tools** | | **Printing presses** | * | Pads | M |
| Reciprocating | H | Screw | M | Main drives | M | **Pullers** | | Range drives | * |
| Screw | M | **Food industry** | | Auxiliary drives | S | Barge haul | H | Slashers | M |
| Shaker | H | Beef slicer | M | **Metal mills** | | **Pumps** | | Soapers | M |
| **Crane Drives - not dry dock** | | Cereal cooker | S | Drawn bench carriage | | Centrifugal | S | Spinners | M |
| Main hoists | S | Dough mixer | M | and main drive | M | Proportioning | M | Tenter frames | M |
| Bridge travel | * | Meat grinder | M | Pinch, dryer and scrubber | | Reciprocating | | Washers | M |
| Trolley travel | * | **Generators - not welding** | S | rolls, reversing | * | single acting: | | Winders | M |
| **Crushers** | | **Hammer mills** | H | Slitters | M | 3 or more cylinders | M | Windlass | * |
| Ore | H | **Hoists** | | Table conveyors non- | | double acting: | | | |
| Stone | H | Heavy duty | H | reversing group drives | M | 2 or more cylinders | M | | |

## Service Factors

### Table 2 (Service Factor $f_D$)

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

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 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 |

### 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.

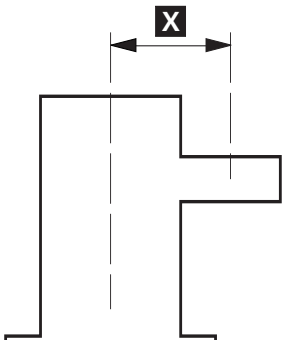
The maximum imposed axial thrust and overhung loads to which the units can be subjected are given in Tables 5 and 6.

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.

| 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 |




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 |

# Output Shaft Overhung Loads - Single Reduction

## Table 5 - Output Shaft Overhung Loads (lbs)

### At 1750 rpm input

| Ratio | Output Speed | Gear Unit Reference | | | |
|---|---|---|---|---|---|
| | | 100 | 125 | 160 | 200 |
| 5/1 | 350 | 2260 | 2810 | 2540 | 5840 |
| 7.5/1 | 233 | 2650 | 3410 | 4062 | 7210 |
| 10/1 | 175 | 2940 | 3790 | 4510 | 8050 |
| 12.5/1 | 140 | 3100 | 4060 | 4980 | 8460 |
| 15/1 | 117 | 3050 | 4320 | 5300 | 9190 |
| 20/1 | 88 | 3070 | 4390 | 5350 | 10650 |
| 25/1 | 70 | 3010 | 4430 | 5400 | 11310 |
| 30/1 | 58 | 2930 | 4170 | 5210 | 12000 |
| 35/1 | 50 | 3020 | 4170 | 5180 | 12360 |
| 40/1 | 44 | 3050 | 4310 | 5250 | 12360 |
| 45/1 | 39 | 3060 | 4350 | 5310 | 12360 |
| 50/1 | 35 | 3080 | 4400 | 5360 | 12360 |
| 60/1 | 29 | 3110 | 4460 | 5440 | 12360 |
| 70/1 | 25 | 3130 | 4520 | 5510 | 12360 |

### At 1160 rpm input

| Ratio | Output Speed | Gear Unit Reference | | | |
|---|---|---|---|---|---|
| | | 100 | 125 | 160 | 200 |
| 5/1 | 232 | 2500 | 2900 | 2320 | 5960 |
| 7.5/1 | 155 | 2970 | 3820 | 4530 | 8000 |
| 10/1 | 116 | 3090 | 4250 | 5130 | 9038 |
| 12.5/1 | 93 | 3040 | 4320 | 5300 | 9490 |
| 15/1 | 77 | 2990 | 4200 | 5240 | 10310 |
| 20/1 | 58 | 3020 | 4270 | 5190 | 11960 |
| 25/1 | 46 | 2930 | 4320 | 5240 | 12000 |
| 30/1 | 39 | 2870 | 3980 | 5000 | 12360 |
| 35/1 | 33 | 2950 | 4070 | 4970 | 12360 |
| 40/1 | 29 | 3000 | 4180 | 5050 | 12360 |
| 45/1 | 26 | 3010 | 4230 | 5140 | 12360 |
| 50/1 | 23 | 3030 | 4290 | 5210 | 12360 |
| 60/1 | 19 | 3070 | 4370 | 5330 | 12360 |
| 70/1 | 17 | 3100 | 4450 | 5420 | 12360 |

# 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 | | | |
|---|---|---|---|---|---|
| | | 100 | 125 | 160 | 200 |
| 5/1 | 350 | 2030 | 2060 | 1610 | 4010 |
| 7.5/1 | 233 | 2690 | 3110 | 2950 | 6260 |
| 10/1 | 175 | 3170 | 3690 | 3690 | 7450 |
| 12.5/1 | 140 | 3510 | 4010 | 4200 | 7940 |
| 15/1 | 117 | 3840 | 4380 | 4730 | 9020 |
| 20/1 | 88 | 4490 | 5240 | 5770 | 11140 |
| 25/1 | 70 | 4770 | 5760 | 6390 | 11950 |
| 30/1 | 58 | 4800 | 5950 | 6768 | 12000 |
| 35/1 | 50 | 4950 | 6460 | 7220 | 12360 |
| 40/1 | 44 | 4950 | 6920 | 7710 | 12360 |
| 45/1 | 39 | 4950 | 7200 | 8230 | 12360 |
| 50/1 | 35 | 4950 | 7420 | 8640 | 12360 |
| 60/1 | 29 | 4950 | 7420 | 9380 | 12360 |
| 70/1 | 25 | 4950 | 7420 | 9600 | 12360 |

### At 1160 rpm input

| Ratio | Output Speed | Gear Unit Reference | | | |
|---|---|---|---|---|---|
| | | 100 | 125 | 160 | 200 |
| 5/1 | 232 | 2160 | 2110 | 1450 | 4080 |
| 7.5/1 | 155 | 2980 | 3420 | 3170 | 6750 |
| 10/1 | 116 | 3510 | 4090 | 4080 | 8290 |
| 12.5/1 | 93 | 3900 | 4440 | 4620 | 8820 |
| 15/1 | 77 | 4300 | 4880 | 5240 | 10030 |
| 20/1 | 58 | 4800 | 5880 | 6460 | 12000 |
| 25/1 | 46 | 4950 | 6480 | 7170 | 12360 |
| 30/1 | 39 | 4950 | 6680 | 7820 | 12360 |
| 35/1 | 33 | 4950 | 7200 | 8020 | 12360 |
| 40/1 | 29 | 4950 | 7420 | 8710 | 12360 |
| 45/1 | 26 | 4950 | 7420 | 9280 | 12360 |
| 50/1 | 23 | 4950 | 7420 | 9600 | 12360 |
| 60/1 | 19 | 4950 | 7420 | 9900 | 12360 |
| 70/1 | 17 | 4950 | 7420 | 9900 | 12360 |

# 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. 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

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

Oils with three vicosity 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 vicosity. 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 requires a medium grade, and 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.

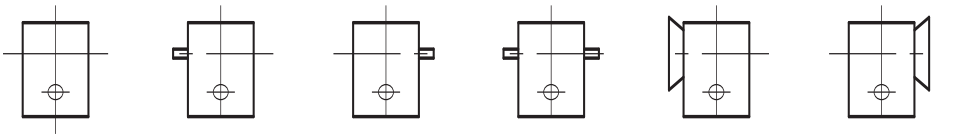
| Mineral Oil | Light | | Medium | | Heavy | |
|---|---|---|---|---|---|---|
| | | Temp˚C | | Temp˚C | | Temp˚C |
| Mobil Gear | 630 | -13 to 90 | 632 | -13 to 90 | 634 | -1 to 90 |
| Mobil DTE | BB | -7 to 90 | AA | 2 to 90 | HH | 2 to 90 |
| Castrol Optimol BM | 220 | -9 to 120 | 320 | -9 to 120 | 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 |

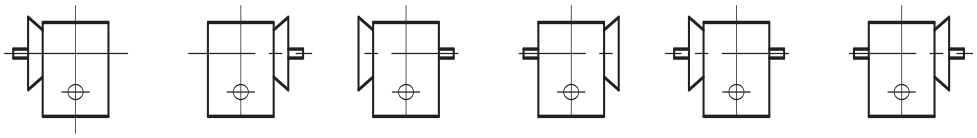
RENOLD

# Single Reduction - Mounting & Handing

## WMU - Underdriven
## WMSM - Shaft Mounted

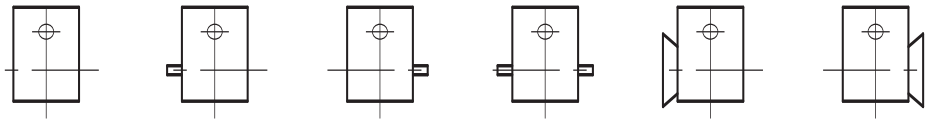


| | | | | | | |
|---|---|---|---|---|---|---|
| No Sprag backstop fitted. | UA | UC | UE | UG | UJ | UL |
| Sprag backstop fitted. | UB | UD | UF | UH | UK | UM |

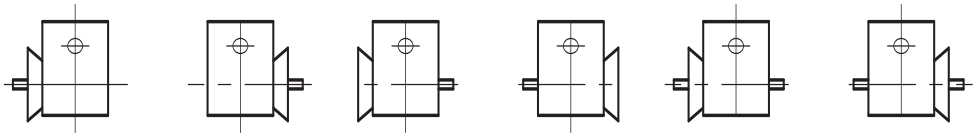


| | | | | | | |
|---|---|---|---|---|---|---|
| No Sprag backstop fitted. | UN | UQ | US | UU | UW | UY |
| Sprag backstop fitted. | UP | UR | UT | UV | UX | UZ |

## WMO - Overdriven

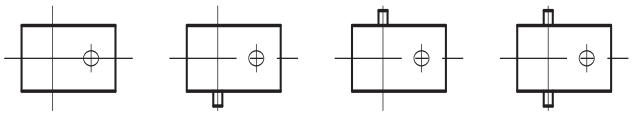


| | | | | | | |
|---|---|---|---|---|---|---|
| No Sprag backstop fitted. | OA | OC | OE | OG | OJ | OL |
| Sprag backstop fitted. | OB | OD | OF | OH | OK | OM |

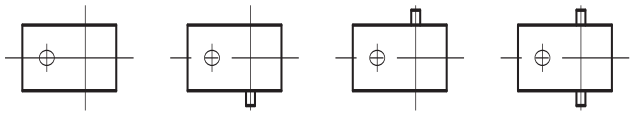


| | | | | | | |
|---|---|---|---|---|---|---|
| No Sprag backstop fitted. | ON | OQ | OS | OU | OW | OY |
| Sprag backstop fitted. | OP | OR | OT | OV | OX | OZ |

## WMU - WMO Suitable For Wall Mounting



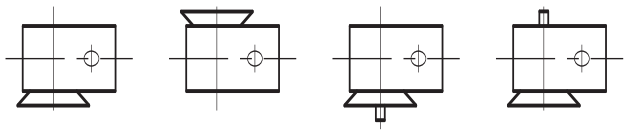
| | | | | |
|---|---|---|---|---|
| No Sprag backstop fitted. | WA | WC | WE | WG |
| Sprag backstop fitted. | WB | WD | WF | WH |



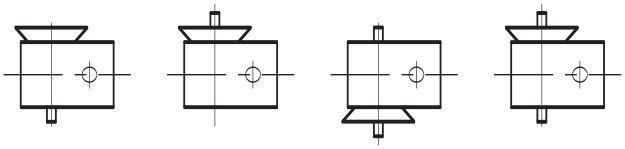
| | | | | |
|---|---|---|---|---|
| No Sprag backstop fitted. | WS | WL | WN | WQ |
| Sprag backstop fitted. | WT | WM | WP | WR |

# Single Reduction - Mounting & Handing

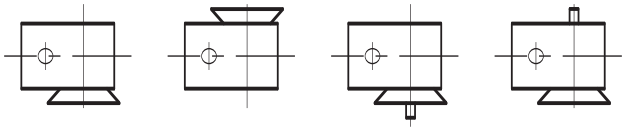
## WMV - Vertical



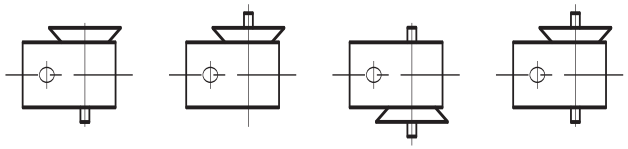
| | | | | |
|---|---|---|---|---|
| No Sprag backstop fitted. | VA | VC | VE | VG |
| Sprag backstop fitted. | VB | VD | VF | VH |



| | | | | |
|---|---|---|---|---|
| No Sprag backstop fitted. | VJ | VL | VN | VQ |
| Sprag backstop fitted. | VK | VM | VP | VR |

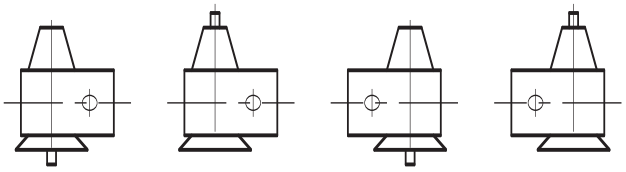


| | | | | |
|---|---|---|---|---|
| No Sprag backstop fitted. | VS | VU | VW | VY |
| Sprag backstop fitted. | VT | VV | VX | VZ |



| | | | | |
|---|---|---|---|---|
| No Sprag backstop fitted. | V1 | V3 | V5 | V7 |
| Sprag backstop fitted. | V2 | V4 | V6 | V8 |

## WMA - Agitator



| | | | | |
|---|---|---|---|---|
| No Sprag backstop fitted. | AA | AC | AE | AG |
| Sprag backstop fitted. | AB | AD | AF | AH |

# WM Series - Single Reduction - Selection Data

## Synthetic Oils

### Nominal ratio: 5/1 Preferred Ratio

| Input rpm | Output rpm | Centre Distance / Actual Ratio : 1 / Gear Ratings | 3.94" 5 | 4.92" 5 | 6.3" 5.38 | 7.87" 5 |
|---|---|---|---|---|---|---|
| 1800 | 360 | Input kW, Thermal | 31.6 | 50.7 | 76.1 | 136.7 |
| | | Output Torque Nm, Thermal | 5233 | 8471 | 13696 | 22857 |
| | | Input kW, Mechanical | 25.4 | 44.5 | 84.4 | 143.3 |
| | | Output Torque Nm, Mechanical | 4196 | 7444 | 15191 | 23960 |
| | | Efficiency % | 95% | 96% | 96% | 96% |
| 1500 | 300 | Input kW, Thermal | 27.1 | 43.0 | 64.7 | 116.8 |
| | | Output Torque Nm, Thermal | 5375 | 8542 | 13975 | 23449 |
| | | Input kW, Mechanical | 23.0 | 40.2 | 75.0 | 130.4 |
| | | Output Torque Nm, Mechanical | 4566 | 7991 | 16203 | 26178 |
| | | Efficiency % | 95% | 95% | 96% | 96% |
| 1200 | 240 | Input kW, Thermal | 22.5 | 35.6 | 53.3 | 96.5 |
| | | Output Torque Nm, Thermal | 5588 | 8848 | 14245 | 24202 |
| | | Input kW, Mechanical | 20.6 | 35.7 | 65.7 | 116.2 |
| | | Output Torque Nm, Mechanical | 5123 | 8855 | 17538 | 29136 |
| | | Efficiency % | 95% | 95% | 95% | 96% |
| 1000 | 200 | Input kW, Thermal | 19.6 | 30.8 | 45.8 | 82.8 |
| | | Output Torque Nm, Thermal | 5766 | 9181 | 14689 | 24928 |
| | | Input kW, Mechanical | 18.7 | 32.7 | 53.6 | 104.7 |
| | | Output Torque Nm, Mechanical | 5518 | 9748 | 17180 | 31503 |
| | | Efficiency % | 94% | 95% | 95% | 96% |
| 750 | 150 | Input kW, Thermal | 15.9 | 24.8 | 36.7 | 65.7 |
| | | Output Torque Nm, Thermal | 6267 | 9742 | 15691 | 26078 |
| | | Input kW, Mechanical | 15.6 | 27.4 | 52.3 | 90.5 |
| | | Output Torque Nm, Mechanical | 6140 | 10774 | 22334 | 35946 |
| | | Efficiency % | 94% | 94% | 95% | 95% |

**For ratings with input speeds below 750rpm please refer to Renold.**

# WM Series - Single Reduction - Selection Data

## Synthetic Oils

### Nominal ratio: 7.5/1 Non Preferred Ratio

| Input rpm | Output rpm | Centre Distance / Actual Ratio : 1 / Gear Ratings | 3.94" 7.25 | 4.92" 7 | 6.3" 7.8 | 7.87" 7.2 |
|---|---|---|---|---|---|---|
| 1800 | 240 | Input kW, Thermal | 28.1 | 45.3 | 69.5 | 125.8 |
| | | Output Torque Nm, Thermal | 6717 | 10493 | 17954 | 30301 |
| | | Input kW, Mechanical | 18.6 | 31.1 | 61.6 | 104.2 |
| | | Output Torque Nm, Mechanical | 4433 | 7206 | 15913 | 25096 |
| | | Efficiency % | 95% | 95% | 95% | 96% |
| 1500 | 200 | Input kW, Thermal | 24.0 | 38.5 | 59.0 | 106.8 |
| | | Output Torque Nm, Thermal | 6834 | 10692 | 18266 | 30862 |
| | | Input kW, Mechanical | 17.1 | 28.4 | 56.3 | 94.2 |
| | | Output Torque Nm, Mechanical | 4872 | 7909 | 17435 | 27218 |
| | | Efficiency % | 94% | 95% | 95% | 96% |
| 1200 | 160 | Input kW, Thermal | 20.0 | 31.8 | 48.4 | 87.5 |
| | | Output Torque Nm, Thermal | 7111 | 10921 | 18733 | 31278 |
| | | Input kW, Mechanical | 15.0 | 25.4 | 48.2 | 84.3 |
| | | Output Torque Nm, Mechanical | 5355 | 8718 | 18681 | 30138 |
| | | Efficiency % | 94% | 94% | 95% | 95% |
| 1000 | 133 | Input kW, Thermal | 17.4 | 27.5 | 41.5 | 74.8 |
| | | Output Torque Nm, Thermal | 7366 | 11335 | 19100 | 32073 |
| | | Input kW, Mechanical | 13.4 | 22.6 | 41.5 | 76.1 |
| | | Output Torque Nm, Mechanical | 5653 | 9306 | 19100 | 32625 |
| | | Efficiency % | 93% | 94% | 94% | 95% |
| 750 | 100 | Input kW, Thermal | 14.2 | 22.2 | 33.2 | 59.1 |
| | | Output Torque Nm, Thermal | 8008 | 12108 | 20374 | 33798 |
| | | Input kW, Mechanical | 11.4 | 19.2 | 36.2 | 63.4 |
| | | Output Torque Nm, Mechanical | 6424 | 10431 | 22181 | 36250 |
| | | Efficiency % | 93% | 93% | 94% | 95% |

**For ratings with input speeds below 750rpm please refer to Renold.**

# WM Series - Single Reduction - Selection Data

## Synthetic Oils

### Nominal ratio: 10/1 Preferred Ratio

| Input rpm | Output rpm | Centre Distance / Actual Ratio : 1 / Gear Ratings | 3.94" 9.66 | 4.92" 9.33 | 6.3" 10.25 | 7.87" 9.75 |
|---|---|---|---|---|---|---|
| 1800 | 180 | Input kW, Thermal | 24.1 | 38.9 | 61.6 | 112.4 |
| | | Output Torque Nm, Thermal | 7631 | 11874 | 20912 | 36280 |
| | | Input kW, Mechanical | 16.4 | 27.1 | 56.3 | 86.1 |
| | | Output Torque Nm, Mechanical | 5176 | 8287 | 19093 | 27779 |
| | | Efficiency % | 94% | 94% | 95% | 95% |
| 1500 | 150 | Input kW, Thermal | 20.5 | 33.0 | 52.1 | 95.0 |
| | | Output Torque Nm, Thermal | 7700 | 12087 | 21221 | 36791 |
| | | Input kW, Mechanical | 14.7 | 24.8 | 48.2 | 79.3 |
| | | Output Torque Nm, Mechanical | 5503 | 9080 | 19639 | 30709 |
| | | Efficiency % | 93% | 94% | 95% | 95% |
| 1200 | 120 | Input kW, Thermal | 17.2 | 27.3 | 42.9 | 77.6 |
| | | Output Torque Nm, Thermal | 8053 | 12396 | 21591 | 37556 |
| | | Input kW, Mechanical | 12.8 | 21.4 | 41.5 | 69.6 |
| | | Output Torque Nm, Mechanical | 6014 | 9692 | 20916 | 33677 |
| | | Efficiency % | 93% | 93% | 94% | 95% |
| 1000 | 100 | Input kW, Thermal | 14.9 | 23.6 | 36.7 | 66.2 |
| | | Output Torque Nm, Thermal | 8290 | 12833 | 22185 | 38046 |
| | | Input kW, Mechanical | 11.5 | 19.3 | 37.5 | 61.8 |
| | | Output Torque Nm, Mechanical | 6432 | 10507 | 22671 | 35497 |
| | | Efficiency % | 92% | 93% | 94% | 94% |
| 750 | 75 | Input kW, Thermal | 12.3 | 19.2 | 29.5 | 52.4 |
| | | Output Torque Nm, Thermal | 9111 | 13753 | 23498 | 40152 |
| | | Input kW, Mechanical | 9.7 | 16.2 | 30.8 | 52.5 |
| | | Output Torque Nm, Mechanical | 7229 | 11637 | 24566 | 40213 |
| | | Efficiency % | 92% | 92% | 93% | 94% |

**For ratings with input speeds below 750rpm please refer to Renold.**

# WM Series - Single Reduction - Selection Data

## Synthetic Oils

### Nominal ratio: 12.5/1 Non Preferred Ratio

| Input rpm | Output rpm | Centre Distance / Actual Ratio : 1 / Gear Ratings | 3.94" 12.33 | 4.92" 12 | 6.3" 13.25 | 7.87" 12 |
|---|---|---|---|---|---|---|
| 1800 | 144 | Input kW, Thermal | 20.6 | 33.2 | 54.0 | 97.2 |
| | | Output Torque Nm, Thermal | 8244 | 12921 | 23433 | 38586 |
| | | Input kW, Mechanical | 15.0 | 26.8 | 48.2 | 90.5 |
| | | Output Torque Nm, Mechanical | 6006 | 10431 | 20933 | 35946 |
| | | Efficiency % | 93% | 93% | 94% | 95% |
| 1500 | 120 | Input kW, Thermal | 17.6 | 28.3 | 45.6 | 82.0 |
| | | Output Torque Nm, Thermal | 8325 | 13192 | 23724 | 38674 |
| | | Input kW, Mechanical | 13.3 | 23.9 | 42.9 | 81.7 |
| | | Output Torque Nm, Mechanical | 6312 | 11141 | 22328 | 38510 |
| | | Efficiency % | 92% | 93% | 94% | 94% |
| 1200 | 96 | Input kW, Thermal | 14.7 | 23.3 | 37.5 | 67.0 |
| | | Output Torque Nm, Thermal | 8738 | 13452 | 24162 | 39496 |
| | | Input kW, Mechanical | 11.8 | 20.9 | 37.4 | 70.5 |
| | | Output Torque Nm, Mechanical | 6999 | 12076 | 24076 | 41534 |
| | | Efficiency % | 92% | 92% | 93% | 94% |
| 1000 | 80 | Input kW, Thermal | 12.9 | 20.2 | 32.2 | 57.1 |
| | | Output Torque Nm, Thermal | 9052 | 14009 | 24852 | 40381 |
| | | Input kW, Mechanical | 10.6 | 18.9 | 32.2 | 63.4 |
| | | Output Torque Nm, Mechanical | 7426 | 13062 | 24852 | 44836 |
| | | Efficiency % | 91% | 92% | 93% | 94% |
| 750 | 60 | Input kW, Thermal | 10.6 | 16.5 | 25.9 | 45.2 |
| | | Output Torque Nm, Thermal | 9823 | 15049 | 26361 | 42139 |
| | | Input kW, Mechanical | 8.8 | 15.8 | 28.1 | 53.5 |
| | | Output Torque Nm, Mechanical | 8206 | 14401 | 28682 | 49929 |
| | | Efficiency % | 90% | 91% | 92% | 93% |

For ratings with input speeds below 750rpm please refer to Renold.

# WM Series - Single Reduction - Selection Data

## Synthetic Oils

### Nominal ratio: 15/1 Preferred Ratio

| Input rpm | Output rpm | Centre Distance<br>Actual Ratio : 1<br>Gear Ratings | 3.94"<br>15.5 | 4.92"<br>15.5 | 6.3"<br>15.33 | 7.87"<br>14.33 |
|---|---|---|---|---|---|---|
| 1800 | 120 | Input kW, Thermal | 17.2 | 28.7 | 47.2 | 86.2 |
| | | Output Torque Nm, Thermal | 8457 | 14247 | 23429 | 40436 |
| | | Input kW, Mechanical | 13.7 | 24.3 | 42.9 | 76.9 |
| | | Output Torque Nm, Mechanical | 6751 | 12083 | 21299 | 36109 |
| | | Efficiency % | 91% | 92% | 93% | 94% |
| 1500 | 100 | Input kW, Thermal | 14.6 | 24.4 | 39.8 | 72.6 |
| | | Output Torque Nm, Thermal | 8613 | 14540 | 23722 | 40901 |
| | | Input kW, Mechanical | 12.4 | 21.8 | 37.5 | 68.8 |
| | | Output Torque Nm, Mechanical | 7301 | 13006 | 22364 | 38766 |
| | | Efficiency % | 91% | 92% | 93% | 94% |
| 1200 | 80 | Input kW, Thermal | 12.2 | 20.2 | 32.7 | 59.2 |
| | | Output Torque Nm, Thermal | 8890 | 14915 | 24099 | 41250 |
| | | Input kW, Mechanical | 10.9 | 19.3 | 33.5 | 59.3 |
| | | Output Torque Nm, Mechanical | 7930 | 14233 | 24691 | 41269 |
| | | Efficiency % | 90% | 91% | 92% | 93% |
| 1000 | 67 | Input kW, Thermal | 10.7 | 17.4 | 28.1 | 50.7 |
| | | Output Torque Nm, Thermal | 9378 | 15409 | 24889 | 42333 |
| | | Input kW, Mechanical | 9.6 | 17.1 | 28.1 | 53.9 |
| | | Output Torque Nm, Mechanical | 8433 | 15124 | 24889 | 45088 |
| | | Efficiency % | 90% | 91% | 92% | 93% |
| 750 | 50 | Input kW, Thermal | 8.8 | 14.2 | 22.8 | 40.2 |
| | | Output Torque Nm, Thermal | 10201 | 16568 | 26572 | 44315 |
| | | Input kW, Mechanical | 8.1 | 14.4 | 25.5 | 45.1 |
| | | Output Torque Nm, Mechanical | 9368 | 16798 | 29698 | 49721 |
| | | Efficiency % | 89% | 90% | 91% | 92% |

**For ratings with input speeds below 750rpm please refer to Renold.**

# WM Series - Single Reduction - Selection Data

## Synthetic Oils

### Nominal ratio: 20/1 Preferred Ratio

| Input rpm | Output rpm | Centre Distance<br>Actual Ratio : 1<br>Gear Ratings | 3.94"<br>20.5 | 4.92"<br>20 | 6.3"<br>21.5 | 7.87"<br>20 |
|---|---|---|---|---|---|---|
| 1800 | 90 | Input kW, Thermal | 14.2 | 22.9 | 35.1 | 63.9 |
| | | Output Torque Nm, Thermal | 9029 | 14370 | 23931 | 40975 |
| | | Input kW, Mechanical | 9.9 | 17.4 | 34.2 | 55.4 |
| | | Output Torque Nm, Mechanical | 6324 | 10908 | 23292 | 35529 |
| | | Efficiency % | 89% | 90% | 91% | 92% |
| 1500 | 75 | Input kW, Thermal | 12.2 | 19.4 | 29.7 | 54.0 |
| | | Output Torque Nm, Thermal | 9301 | 14622 | 24066 | 41090 |
| | | Input kW, Mechanical | 9.0 | 15.9 | 30.3 | 48.9 |
| | | Output Torque Nm, Mechanical | 6847 | 11980 | 24499 | 37236 |
| | | Efficiency % | 89% | 90% | 90% | 91% |
| 1200 | 60 | Input kW, Thermal | 10.2 | 16.2 | 24.4 | 44.2 |
| | | Output Torque Nm, Thermal | 9601 | 15083 | 24662 | 42059 |
| | | Input kW, Mechanical | 7.8 | 13.9 | 25.2 | 43.6 |
| | | Output Torque Nm, Mechanical | 7337 | 12971 | 25475 | 41498 |
| | | Efficiency % | 88% | 89% | 90% | 91% |
| 1000 | 50 | Input kW, Thermal | 9.0 | 14.1 | 21.0 | 37.8 |
| | | Output Torque Nm, Thermal | 10042 | 15529 | 25245 | 42656 |
| | | Input kW, Mechanical | 7.0 | 12.5 | 21.4 | 38.9 |
| | | Output Torque Nm, Mechanical | 7831 | 13764 | 25728 | 43926 |
| | | Efficiency % | 87% | 88% | 89% | 90% |
| 750 | 38 | Input kW, Thermal | 7.4 | 11.5 | 17.0 | 30.0 |
| | | Output Torque Nm, Thermal | 10864 | 16766 | 26923 | 44675 |
| | | Input kW, Mechanical | 5.9 | 10.5 | 18.8 | 32.7 |
| | | Output Torque Nm, Mechanical | 8648 | 15248 | 29679 | 48703 |
| | | Efficiency % | 86% | 87% | 88% | 89% |

**For ratings with input speeds below 750rpm please refer to Renold.**

# WM Series - Single Reduction - Selection Data

## Synthetic Oils

### Nominal ratio: 25/1 Preferred Ratio

| Input rpm | Output rpm | Centre Distance<br>Actual Ratio : 1<br>Gear Ratings | 3.94"<br>25 | 4.92"<br>24 | 6.3"<br>26 | 7.87"<br>24 |
|---|---|---|---|---|---|---|
| 1800 | 72 | Input kW, Thermal | 10.9 | 20.5 | 31.4 | 57.2 |
| | | Output Torque Nm, Thermal | 8130 | 15257 | 25563 | 43537 |
| | | Input kW, Mechanical | 10.2 | 14.3 | 26.8 | 47.9 |
| | | Output Torque Nm, Mechanical | 7607 | 10673 | 21849 | 36451 |
| | | Efficiency % | 86% | 89% | 90% | 91% |
| 1500 | 60 | Input kW, Thermal | 9.4 | 17.4 | 26.5 | 48.2 |
| | | Output Torque Nm, Thermal | 8431 | 15382 | 25668 | 43563 |
| | | Input kW, Mechanical | 9.1 | 13.0 | 24.1 | 43.0 |
| | | Output Torque Nm, Mechanical | 8215 | 11453 | 23335 | 38868 |
| | | Efficiency % | 86% | 88% | 89% | 90% |
| 1200 | 48 | Input kW, Thermal | 7.8 | 14.5 | 21.8 | 39.4 |
| | | Output Torque Nm, Thermal | 8631 | 15973 | 26117 | 44471 |
| | | Input kW, Mechanical | 8.0 | 11.2 | 21.4 | 37.9 |
| | | Output Torque Nm, Mechanical | 8872 | 12413 | 25636 | 42761 |
| | | Efficiency % | 85% | 88% | 88% | 90% |
| 1000 | 40 | Input kW, Thermal | 6.8 | 12.6 | 18.8 | 33.8 |
| | | Output Torque Nm, Thermal | 9000 | 16493 | 26918 | 45233 |
| | | Input kW, Mechanical | 7.2 | 10.1 | 18.1 | 33.8 |
| | | Output Torque Nm, Mechanical | 9434 | 13183 | 25956 | 45215 |
| | | Efficiency % | 84% | 87% | 88% | 89% |
| 750 | 30 | Input kW, Thermal | 5.6 | 10.3 | 15.3 | 26.8 |
| | | Output Torque Nm, Thermal | 9647 | 17807 | 28893 | 47328 |
| | | Input kW, Mechanical | 6.0 | 8.4 | 15.8 | 28.3 |
| | | Output Torque Nm, Mechanical | 10334 | 14551 | 29907 | 49978 |
| | | Efficiency % | 82% | 86% | 87% | 88% |

**For ratings with input speeds below 750rpm please refer to Renold.**

# WM Series - Single Reduction - Selection Data

## Synthetic Oils

### Nominal ratio: 30/1 Preferred Ratio

| Input rpm | Output rpm | Centre Distance<br>Actual Ratio : 1<br>Gear Ratings | 3.94"<br>29 | 4.92"<br>29 | 6.3"<br>32 | 7.87"<br>29 |
|---|---|---|---|---|---|---|
| 1800 | 60 | Input kW, Thermal | 10.3 | 16.6 | 25.3 | 53.9 |
| | | Output Torque Nm, Thermal | 8965 | 14606 | 24847 | 48983 |
| | | Input kW, Mechanical | 9.5 | 16.1 | 26.8 | 38.2 |
| | | Output Torque Nm, Mechanical | 8223 | 14123 | 26293 | 34715 |
| | | Efficiency % | 86% | 87% | 88% | 90% |
| 1500 | 50 | Input kW, Thermal | 8.8 | 14.1 | 21.4 | 45.3 |
| | | Output Torque Nm, Thermal | 9114 | 14671 | 24955 | 49422 |
| | | Input kW, Mechanical | 8.5 | 14.3 | 22.8 | 34.5 |
| | | Output Torque Nm, Mechanical | 8719 | 14924 | 26514 | 37637 |
| | | Efficiency % | 85% | 86% | 87% | 90% |
| 1200 | 40 | Input kW, Thermal | 7.5 | 11.8 | 17.7 | 37.0 |
| | | Output Torque Nm, Thermal | 9553 | 15191 | 25439 | 49885 |
| | | Input kW, Mechanical | 7.4 | 12.6 | 18.8 | 29.9 |
| | | Output Torque Nm, Mechanical | 9439 | 16178 | 26980 | 40360 |
| | | Efficiency % | 84% | 85% | 86% | 89% |
| 1000 | 33 | Input kW, Thermal | 6.6 | 10.2 | 15.3 | 31.6 |
| | | Output Torque Nm, Thermal | 9911 | 15558 | 26057 | 50611 |
| | | Input kW, Mechanical | 6.6 | 11.2 | 17.4 | 27.0 |
| | | Output Torque Nm, Mechanical | 10012 | 17158 | 29714 | 43170 |
| | | Efficiency % | 83% | 84% | 85% | 88% |
| 750 | 25 | Input kW, Thermal | 5.5 | 8.4 | 12.5 | 25.3 |
| | | Output Torque Nm, Thermal | 10791 | 16991 | 28009 | 53428 |
| | | Input kW, Mechanical | 5.5 | 9.4 | 16.3 | 22.1 |
| | | Output Torque Nm, Mechanical | 10886 | 18838 | 36744 | 46644 |
| | | Efficiency % | 81% | 83% | 84% | 87% |

**For ratings with input speeds below 750rpm please refer to Renold.**

# WM Series - Single Reduction - Selection Data

## Synthetic Oils

### Nominal ratio: 35/1 Non Preferred Ratio

| Input rpm | Output rpm | Centre Distance / Actual Ratio : 1 / Gear Ratings | 3.94" 35 | 4.92" 34 | 6.3" 37 | 7.87" 34 |
|---|---|---|---|---|---|---|
| 1800 | 51 | Input kW, Thermal | 9.1 | 14.9 | 23.2 | 43.1 |
| | | Output Torque Nm, Thermal | 9333 | 14976 | 25700 | 44978 |
| | | Input kW, Mechanical | 7.3 | 13.3 | 20.6 | 40.1 |
| | | Output Torque Nm, Mechanical | 7519 | 13387 | 22877 | 41793 |
| | | Efficiency % | 84% | 85% | 86% | 88% |
| 1500 | 43 | Input kW, Thermal | 7.8 | 12.7 | 19.7 | 36.4 |
| | | Output Torque Nm, Thermal | 9439 | 15200 | 26205 | 45074 |
| | | Input kW, Mechanical | 6.6 | 11.8 | 18.3 | 35.7 |
| | | Output Torque Nm, Mechanical | 8056 | 14080 | 24315 | 44113 |
| | | Efficiency % | 83% | 84% | 86% | 87% |
| 1200 | 34 | Input kW, Thermal | 6.6 | 10.6 | 16.3 | 29.9 |
| | | Output Torque Nm, Thermal | 9848 | 15612 | 26869 | 45662 |
| | | Input kW, Mechanical | 5.8 | 10.4 | 16.1 | 30.8 |
| | | Output Torque Nm, Mechanical | 8644 | 15391 | 26407 | 47075 |
| | | Efficiency % | 82% | 83% | 85% | 86% |
| 1000 | 29 | Input kW, Thermal | 5.8 | 9.2 | 14.1 | 25.6 |
| | | Output Torque Nm, Thermal | 10244 | 16166 | 27424 | 46932 |
| | | Input kW, Mechanical | 5.1 | 9.2 | 14.3 | 28.0 |
| | | Output Torque Nm, Mechanical | 9146 | 16159 | 27925 | 51354 |
| | | Efficiency % | 81% | 82% | 84% | 86% |
| 750 | 21 | Input kW, Thermal | 4.8 | 7.6 | 11.4 | 20.5 |
| | | Output Torque Nm, Thermal | 11153 | 17589 | 28895 | 48960 |
| | | Input kW, Mechanical | 4.3 | 7.8 | 11.9 | 23.3 |
| | | Output Torque Nm, Mechanical | 10019 | 17956 | 30289 | 55616 |
| | | Efficiency % | 79% | 81% | 82% | 84% |

**For ratings with input speeds below 750rpm please refer to Renold.**

# WM Series - Single Reduction - Selection Data

## Synthetic Oils

### Nominal ratio: 40/1 Preferred Ratio

| Input rpm | Output rpm | Centre Distance<br>Actual Ratio : 1<br>Gear Ratings | 3.94"<br>39 | 4.92"<br>39 | 6.3"<br>42 | 7.87"<br>39 |
|---|---|---|---|---|---|---|
| 1800 | 45 | Input kW, Thermal | 8.2 | 13.5 | 20.6 | 38.6 |
| | | Output Torque Nm, Thermal | 9122 | 15447 | 25667 | 45096 |
| | | Input kW, Mechanical | 6.0 | 10.9 | 20.8 | 34.9 |
| | | Output Torque Nm, Mechanical | 6733 | 12416 | 25833 | 40821 |
| | | Efficiency % | 82% | 84% | 85% | 86% |
| 1500 | 38 | Input kW, Thermal | 7.1 | 11.5 | 17.6 | 32.6 |
| | | Output Torque Nm, Thermal | 9380 | 15596 | 25892 | 45660 |
| | | Input kW, Mechanical | 5.5 | 9.8 | 18.6 | 31.1 |
| | | Output Torque Nm, Mechanical | 7242 | 13245 | 27473 | 43611 |
| | | Efficiency % | 81% | 83% | 84% | 86% |
| 1200 | 30 | Input kW, Thermal | 5.9 | 9.6 | 14.6 | 26.8 |
| | | Output Torque Nm, Thermal | 9613 | 16124 | 26609 | 46429 |
| | | Input kW, Mechanical | 4.8 | 8.6 | 16.1 | 27.0 |
| | | Output Torque Nm, Mechanical | 7763 | 14313 | 29294 | 46730 |
| | | Efficiency % | 80% | 82% | 83% | 85% |
| 1000 | 25 | Input kW, Thermal | 5.2 | 8.4 | 12.6 | 22.9 |
| | | Output Torque Nm, Thermal | 9970 | 16724 | 27205 | 47075 |
| | | Input kW, Mechanical | 4.3 | 7.6 | 14.2 | 24.3 |
| | | Output Torque Nm, Mechanical | 8127 | 15009 | 30678 | 49966 |
| | | Efficiency % | 78% | 81% | 82% | 84% |
| 750 | 19 | Input kW, Thermal | 4.4 | 7.0 | 10.3 | 18.4 |
| | | Output Torque Nm, Thermal | 11060 | 17928 | 29025 | 49269 |
| | | Input kW, Mechanical | 3.6 | 6.4 | 11.9 | 20.3 |
| | | Output Torque Nm, Mechanical | 8996 | 16573 | 33548 | 54592 |
| | | Efficiency % | 77% | 79% | 80% | 82% |

**For ratings with input speeds below 750rpm please refer to Renold.**

# WM Series - Single Reduction - Selection Data

## Synthetic Oils

### Nominal ratio: 45/1 Non Preferred Ratio

| Input rpm | Output rpm | Centre Distance / Actual Ratio : 1 / Gear Ratings | 3.94" 45 | 4.92" 44 | 6.3" 48 | 7.87" 44 |
|---|---|---|---|---|---|---|
| 1800 | 40 | Input kW, Thermal | 7.6 | 12.7 | 19.0 | 34.4 |
| | | Output Torque Nm, Thermal | 9580 | 16002 | 26411 | 44873 |
| | | Input kW, Mechanical | 5.3 | 9.4 | 14.9 | 30.7 |
| | | Output Torque Nm, Mechanical | 6655 | 11858 | 20664 | 39949 |
| | | Efficiency % | 80% | 82% | 83% | 85% |
| 1500 | 33 | Input kW, Thermal | 6.6 | 10.9 | 16.1 | 29.2 |
| | | Output Torque Nm, Thermal | 9808 | 16273 | 26557 | 45139 |
| | | Input kW, Mechanical | 4.8 | 8.5 | 13.2 | 27.6 |
| | | Output Torque Nm, Mechanical | 7112 | 12707 | 21861 | 42592 |
| | | Efficiency % | 79% | 82% | 82% | 84% |
| 1200 | 27 | Input kW, Thermal | 5.6 | 9.1 | 13.4 | 24.1 |
| | | Output Torque Nm, Thermal | 10324 | 16762 | 27227 | 46034 |
| | | Input kW, Mechanical | 4.1 | 7.4 | 11.6 | 24.2 |
| | | Output Torque Nm, Mechanical | 7571 | 13557 | 23660 | 46136 |
| | | Efficiency % | 78% | 80% | 81% | 83% |
| 1000 | 22 | Input kW, Thermal | 5.0 | 7.9 | 11.7 | 20.6 |
| | | Output Torque Nm, Thermal | 10774 | 17234 | 28074 | 46692 |
| | | Input kW, Mechanical | 3.7 | 6.5 | 10.4 | 21.7 |
| | | Output Torque Nm, Mechanical | 8071 | 14266 | 25096 | 49026 |
| | | Efficiency % | 77% | 79% | 80% | 82% |
| 750 | 17 | Input kW, Thermal | 4.2 | 6.6 | 9.5 | 16.5 |
| | | Output Torque Nm, Thermal | 11723 | 18842 | 29784 | 48511 |
| | | Input kW, Mechanical | 3.1 | 5.5 | 8.7 | 18.0 |
| | | Output Torque Nm, Mechanical | 8777 | 15905 | 27364 | 52928 |
| | | Efficiency % | 75% | 78% | 78% | 80% |

**For ratings with input speeds below 750rpm please refer to Renold.**

# WM Series - Single Reduction - Selection Data

## Synthetic Oils

### Nominal ratio: 50/1 Preferred Ratio

| Input rpm | Output rpm | Centre Distance<br>Actual Ratio : 1<br>Gear Ratings | 3.94"<br>49 | 4.92"<br>49 | 6.3"<br>53 | 7.87"<br>49 |
|---|---|---|---|---|---|---|
| 1800 | 36 | Input kW, Thermal | 7.2 | 11.5 | 17.6 | 31.9 |
| | | Output Torque Nm, Thermal | 9759 | 15935 | 26579 | 45733 |
| | | Input kW, Mechanical | 4.6 | 8.1 | 16.1 | 26.4 |
| | | Output Torque Nm, Mechanical | 6163 | 11210 | 24347 | 37836 |
| | | Efficiency % | 79% | 81% | 82% | 84% |
| 1500 | 30 | Input kW, Thermal | 6.3 | 9.9 | 15.0 | 27.1 |
| | | Output Torque Nm, Thermal | 10064 | 16251 | 26937 | 46024 |
| | | Input kW, Mechanical | 4.2 | 7.4 | 14.7 | 24.0 |
| | | Output Torque Nm, Mechanical | 6665 | 12078 | 26456 | 40852 |
| | | Efficiency % | 78% | 80% | 81% | 83% |
| 1200 | 24 | Input kW, Thermal | 5.4 | 8.3 | 12.5 | 22.4 |
| | | Output Torque Nm, Thermal | 10569 | 16594 | 27614 | 46989 |
| | | Input kW, Mechanical | 3.7 | 6.3 | 12.3 | 21.2 |
| | | Output Torque Nm, Mechanical | 7266 | 12660 | 27317 | 44570 |
| | | Efficiency % | 77% | 78% | 80% | 82% |
| 1000 | 20 | Input kW, Thermal | 4.7 | 7.2 | 10.9 | 19.2 |
| | | Output Torque Nm, Thermal | 10953 | 17121 | 28500 | 47695 |
| | | Input kW, Mechanical | 3.2 | 5.7 | 10.7 | 18.9 |
| | | Output Torque Nm, Mechanical | 7573 | 13602 | 28148 | 46961 |
| | | Efficiency % | 76% | 77% | 79% | 81% |
| 750 | 15 | Input kW, Thermal | 3.9 | 6.0 | 8.8 | 15.4 |
| | | Output Torque Nm, Thermal | 11782 | 18529 | 30179 | 49879 |
| | | Input kW, Mechanical | 2.8 | 4.9 | 9.6 | 15.9 |
| | | Output Torque Nm, Mechanical | 8491 | 14947 | 32922 | 51527 |
| | | Efficiency % | 74% | 75% | 77% | 79% |

**For ratings with input speeds below 750rpm please refer to Renold.**

# WM Series - Single Reduction - Selection Data

## Synthetic Oils

### Nominal ratio: 60/1 Preferred Ratio

| Input rpm | Output rpm | Centre Distance / Actual Ratio : 1 / Gear Ratings | 3.94" 59 | 4.92" 59 | 6.3" 63 | 7.87" 59 |
|---|---|---|---|---|---|---|
| 1800 | 30 | Input kW, Thermal | 6.6 | 10.5 | 15.8 | 28.8 |
| | | Output Torque Nm, Thermal | 10258 | 16758 | 27765 | 47969 |
| | | Input kW, Mechanical | 3.5 | 6.1 | 13.4 | 19.9 |
| | | Output Torque Nm, Mechanical | 5411 | 9784 | 23529 | 33132 |
| | | Efficiency % | 76% | 78% | 80% | 81% |
| 1500 | 25 | Input kW, Thermal | 5.6 | 9.0 | 13.5 | 24.4 |
| | | Output Torque Nm, Thermal | 10412 | 17052 | 27805 | 48727 |
| | | Input kW, Mechanical | 3.2 | 5.6 | 12.1 | 18.6 |
| | | Output Torque Nm, Mechanical | 5999 | 10639 | 24777 | 37108 |
| | | Efficiency % | 75% | 77% | 78% | 81% |
| 1200 | 20 | Input kW, Thermal | 4.7 | 7.5 | 11.3 | 20.1 |
| | | Output Torque Nm, Thermal | 10701 | 17584 | 28535 | 48960 |
| | | Input kW, Mechanical | 2.8 | 5.0 | 10.5 | 16.5 |
| | | Output Torque Nm, Mechanical | 6390 | 11744 | 26497 | 40213 |
| | | Efficiency % | 74% | 76% | 77% | 79% |
| 1000 | 17 | Input kW, Thermal | 4.3 | 6.6 | 9.8 | 17.4 |
| | | Output Torque Nm, Thermal | 11582 | 18221 | 29372 | 50274 |
| | | Input kW, Mechanical | 2.5 | 4.4 | 9.4 | 14.6 |
| | | Output Torque Nm, Mechanical | 6768 | 12271 | 28165 | 42114 |
| | | Efficiency % | 73% | 75% | 76% | 78% |
| 750 | 13 | Input kW, Thermal | 3.6 | 5.5 | 8.0 | 13.9 |
| | | Output Torque Nm, Thermal | 12673 | 19786 | 31341 | 52251 |
| | | Input kW, Mechanical | 2.1 | 3.7 | 7.4 | 12.2 |
| | | Output Torque Nm, Mechanical | 7228 | 13271 | 28729 | 45870 |
| | | Efficiency % | 71% | 73% | 74% | 76% |

**For ratings with input speeds below 750rpm please refer to Renold.**

# WM Series - Single Reduction - Selection Data

## Synthetic Oils

### Nominal ratio: 70/1 Preferred Ratio

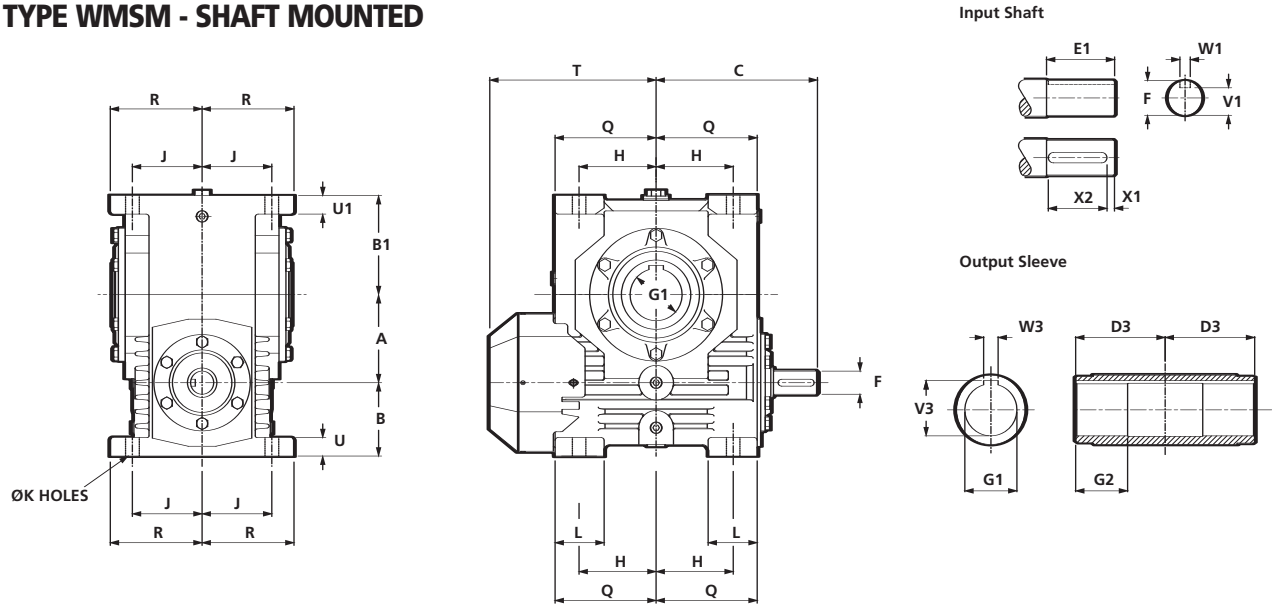
| Input rpm | Output rpm | Centre Distance<br>Actual Ratio : 1<br>Gear Ratings | 3.94"<br>69 | 4.92"<br>69 | 6.3"<br>74 | 7.87"<br>69 |
|---|---|---|---|---|---|---|
| 1800 | 26 | Input kW, Thermal | 5.5 | 8.8 | 13.4 | 24.1 |
| | | Output Torque Nm, Thermal | 9509 | 15733 | 26256 | 45227 |
| | | Input kW, Mechanical | 2.8 | 4.9 | 12.1 | 15.9 |
| | | Output Torque Nm, Mechanical | 4847 | 8653 | 23630 | 29850 |
| | | Efficiency % | 72% | 74% | 76% | 78% |
| 1500 | 21 | Input kW, Thermal | 4.8 | 7.5 | 11.4 | 20.5 |
| | | Output Torque Nm, Thermal | 9880 | 15802 | 26429 | 45540 |
| | | Input kW, Mechanical | 2.7 | 4.5 | 10.1 | 14.9 |
| | | Output Torque Nm, Mechanical | 5434 | 9560 | 23319 | 33069 |
| | | Efficiency % | 71% | 73% | 75% | 77% |
| 1200 | 17 | Input kW, Thermal | 4.0 | 6.4 | 9.5 | 16.9 |
| | | Output Torque Nm, Thermal | 10147 | 16699 | 26859 | 46271 |
| | | Input kW, Mechanical | 2.4 | 4.1 | 8.6 | 13.4 |
| | | Output Torque Nm, Mechanical | 5953 | 10715 | 24211 | 36759 |
| | | Efficiency % | 70% | 72% | 73% | 76% |
| 1000 | 14 | Input kW, Thermal | 3.6 | 5.6 | 8.3 | 14.7 |
| | | Output Torque Nm, Thermal | 10646 | 17047 | 27759 | 47198 |
| | | Input kW, Mechanical | 2.1 | 3.7 | 7.4 | 12.1 |
| | | Output Torque Nm, Mechanical | 6072 | 11162 | 24625 | 38703 |
| | | Efficiency % | 68% | 70% | 72% | 74% |
| 750 | 11 | Input kW, Thermal | 3.1 | 4.7 | 6.8 | 11.8 |
| | | Output Torque Nm, Thermal | 11736 | 18400 | 29600 | 48984 |
| | | Input kW, Mechanical | 1.8 | 3.1 | 5.8 | 10.2 |
| | | Output Torque Nm, Mechanical | 6735 | 12144 | 24957 | 42249 |
| | | Efficiency % | 66% | 68% | 70% | 72% |

**For ratings with input speeds below 750rpm please refer to Renold.**

RENOLD

# WM Series - Speed Reducer - Dimensions (inch)

## TYPE WMSM - SHAFT MOUNTED




| Size | A | B | B1 | C | D | H | J | K | L |
|---|---|---|---|---|---|---|---|---|---|
| WM100 | 3.94 | 4.17 | 4.75 | 8.86 | 8.86 | 4.23 | 4.04 | 0.94 | 2.56 |
| WM125 | 4.92 | 4.41 | 5.75 | 10.83 | 10.04 | 4.92 | 4.43 | 0.94 | 2.95 |
| WM160 | 6.30 | 4.92 | 6.75 | 12.20 | 11.61 | 5.71 | 4.72 | 1.10 | 3.35 |
| WM200 | 7.87 | 5.51 | 8.75 | 13.50 | 13.98 | 6.79 | 5.22 | 1.10 | 3.94 |

| Size | Q | R | R1 | T | U | U1 | Oil Capacity (approx) Imp. Pints | Weight (approx) lbs |
|---|---|---|---|---|---|---|---|---|
| WM100 | 5.51 | 4.92 | 4.92 | 9.45 | 0.91 | 0.98 | 4.0/4.8 | 160 |
| WM125 | 6.50 | 5.51 | 5.51 | 11.10 | 1.18 | 1.26 | 5.8/8.3 | 260 |
| WM160 | 6.89 | 6.10 | 6.10 | 12.48 | 1.26 | 1.26 | 7.9/12.5 | 370 |
| WM200 | 8.86 | 6.69 | 6.69 | 13.90 | 1.26 | 1.50 | 13.6/25.2 | 640 |

*** - Min/Max dependant on mounting positions.**

## INPUT SHAFT

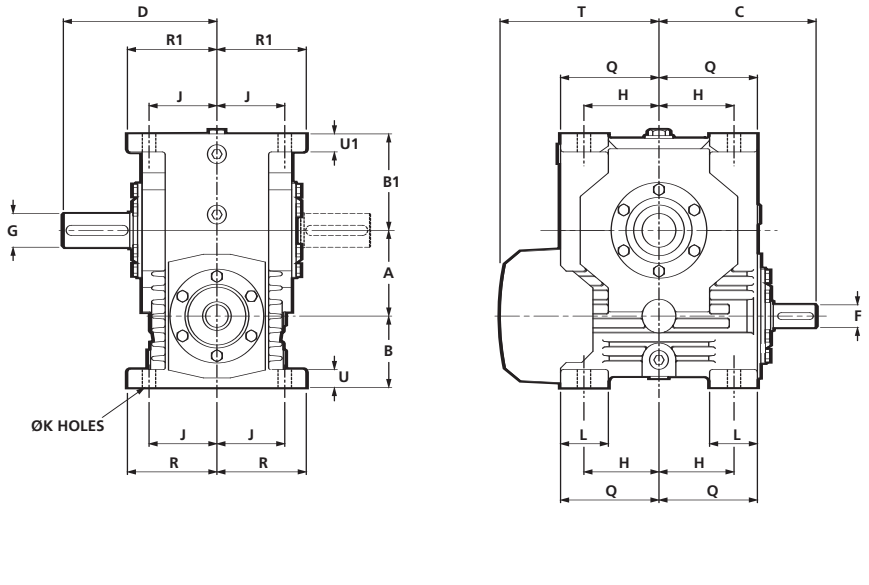
| Size | E1 | F | V1 | W1 | X2 |
|---|---|---|---|---|---|
| WM100 | 2.36 | 1.375<br>1.374 | 1.201 | 0.312 | 2.20 |
| WM125 | 3.23 | 1.625<br>1.624 | 1.416 | 0.375 | 2.875 |
| WM160 | 4.21 | 1.875<br>1.874 | 1.591 | 0.5 | 4.09 |
| WM200 | 3.82 | 2.000<br>1.999 | 1.718 | 0.5 | 3.625 |

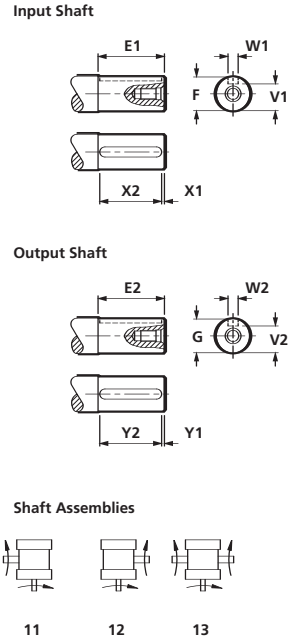
## OUTPUT SLEEVE

| G1 | G2 | V3 | W3 | D3 |
|---|---|---|---|---|
| 2.0024<br>2.0012 | 2.56 | 2.161 | 0.5 | 4.33 |
| 2.5024<br>2.5012 | 2.76 | 2.684 | 0.625 | 5.12 |
| 3.0024<br>3.0012 | 3.54 | 3.207 | 0.75 | 6.10 |
| 3.5028<br>3.5014 | 4.53 | 3.762 | 0.875 | 6.85 |

# Foot Mounted Worm Gear Units - Single Reduction - Dimensions (mm)

## TYPE WMU - UNDERDRIVEN




| Size | A | B | B1 | C | D | H | J | K | L |
|---|---|---|---|---|---|---|---|---|---|
| WM100 | 3.94 | 4.17 | 4.75 | 8.86 | 8.86 | 4.23 | 4.04 | 0.94 | 2.56 |
| WM125 | 4.92 | 4.41 | 5.75 | 10.83 | 10.04 | 4.92 | 4.43 | 0.94 | 2.95 |
| WM160 | 6.30 | 4.92 | 6.75 | 12.20 | 11.61 | 5.71 | 4.72 | 1.10 | 3.35 |
| WM200 | 7.87 | 5.51 | 8.75 | 13.50 | 13.98 | 6.79 | 5.22 | 1.10 | 3.94 |

| Size | Q | R | R1 | T | U | U1 | Oil Capacity (approx) Imp. Pints | Weight (approx) lbs |
|---|---|---|---|---|---|---|---|---|
| WM100 | 5.51 | 4.92 | 4.92 | 9.45 | 0.91 | 0.98 | 4.1 | 160 |
| WM125 | 6.50 | 5.51 | 5.51 | 11.10 | 1.18 | 1.26 | 5.9 | 260 |
| WM160 | 6.89 | 6.10 | 6.10 | 12.48 | 1.26 | 1.26 | 8.1 | 370 |
| WM200 | 8.86 | 6.69 | 6.69 | 13.90 | 1.26 | 1.50 | 13.8 | 640 |

## INPUT SHAFT

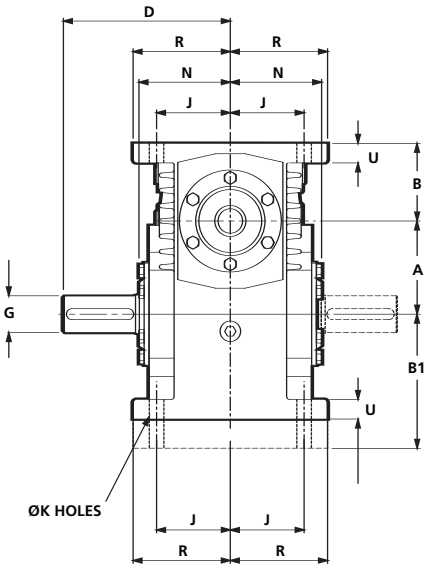
| Size | E1 | F | V1 | W1 | X2 |
|---|---|---|---|---|---|
| WM100 | 2.36 | 1.375<br>1.374 | 1.201 | 0.312 | 2.20 |
| WM125 | 3.23 | 1.625<br>1.624 | 1.416 | 0.375 | 2.875 |
| WM160 | 4.21 | 1.875<br>1.874 | 1.591 | 0.5 | 4.09 |
| WM200 | 3.82 | 2.000<br>1.999 | 1.718 | 0.5 | 3.625 |

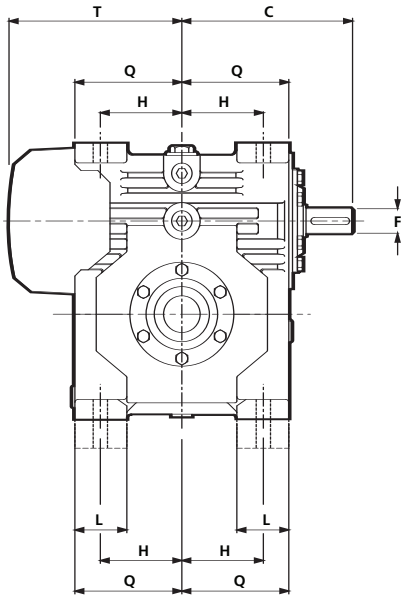
## OUTPUT SLEEVE

| E2 | G | V2 | W2 | Y2 | Tapped Hole |
|---|---|---|---|---|---|
| 3.94 | 2.000<br>1.999 | 1.718 | 0.5 | 3.94 | 3/4" UNF |
| 4.33 | 2.500<br>2.499 | 2.148 | 0.625 | 4.33 | 3/4" UNF |
| 4.92 | 3.000<br>2.999 | 2.577 | 0.75 | 4.92 | 7/8" UNF |
| 6.50 | 3.500<br>3.499 | 3.007 | 0.875 | 6.50 | 7/8" UNF |

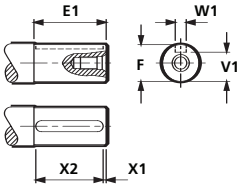
# Foot Mounted Worm Gear Units - Single Reduction - Dimensions (mm)

## TYPE WMO - OVERDRIVEN

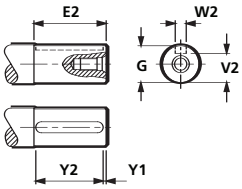


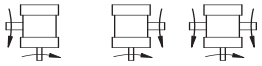

Input Shaft




Output Shaft




Shaft Assemblies



11 12 13

| Size | A | B | B1 | C | D | H | J | K | L |
|---|---|---|---|---|---|---|---|---|---|
| WM100 | 3.94 | 4.17 | 4.75 | 8.86 | 8.86 | 4.23 | 4.04 | 0.94 | 2.56 |
| WM125 | 4.92 | 4.41 | 5.75 | 10.83 | 10.04 | 4.92 | 4.43 | 0.94 | 2.95 |
| WM160 | 6.30 | 4.92 | 6.75 | 12.20 | 11.61 | 5.71 | 4.72 | 1.10 | 3.35 |
| WM200 | 7.87 | 5.51 | 8.75 | 13.50 | 13.98 | 6.79 | 5.22 | 1.10 | 3.94 |

| Size | Q | R | R1 | T | U | U1 | Oil Capacity (approx) Imp. Pints | Weight (approx) lbs |
|---|---|---|---|---|---|---|---|---|
| WM100 | 5.51 | 4.92 | 4.92 | 9.45 | 0.91 | 0.98 | 4.1 | 160 |
| WM125 | 6.50 | 5.51 | 5.51 | 11.10 | 1.18 | 1.26 | 5.9 | 260 |
| WM160 | 6.89 | 6.10 | 6.10 | 12.48 | 1.26 | 1.26 | 8.1 | 370 |
| WM200 | 8.86 | 6.69 | 6.69 | 13.90 | 1.26 | 1.50 | 13.8 | 640 |

## INPUT SHAFT

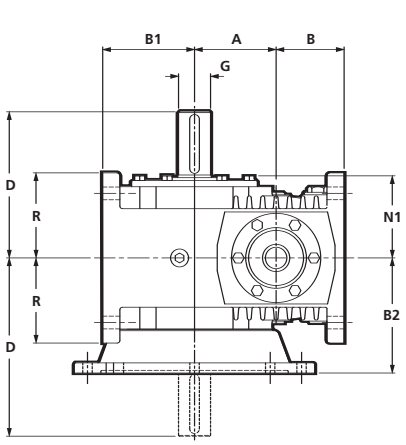
| Size | E1 | F | V1 | W1 | X2 |
|---|---|---|---|---|---|
| WM100 | 2.36 | 1.375<br>1.374 | 1.201 | 0.312 | 2.20 |
| WM125 | 3.23 | 1.625<br>1.624 | 1.416 | 0.375 | 2.875 |
| WM160 | 4.21 | 1.875<br>1.874 | 1.591 | 0.5 | 4.09 |
| WM200 | 3.82 | 2.000<br>1.999 | 1.718 | 0.5 | 3.625 |

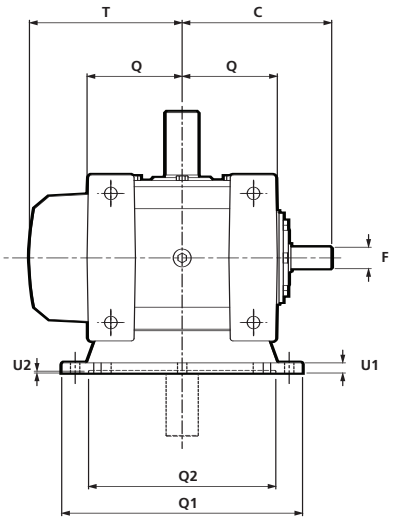
## OUTPUT SLEEVE

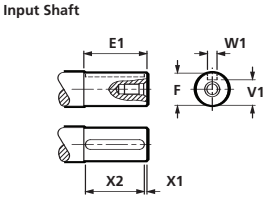
| E2 | G | V2 | W2 | Y2 | Tapped Hole |
|---|---|---|---|---|---|
| 3.94 | 2.000<br>1.999 | 1.718 | 0.5 | 3.94 | 3/4" UNF |
| 4.33 | 2.500<br>2.499 | 2.148 | 0.625 | 4.33 | 3/4" UNF |
| 4.92 | 3.000<br>2.999 | 2.577 | 0.75 | 4.92 | 7/8" UNF |
| 6.50 | 3.500<br>3.499 | 3.007 | 0.875 | 6.50 | 7/8" UNF |

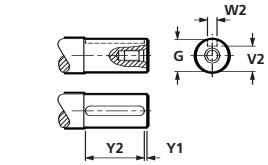
# Foot Mounted Worm Gear Units - Single Reduction - Dimensions (mm)

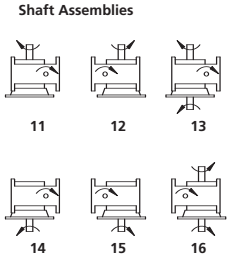
## TYPE WMV - VERTICAL

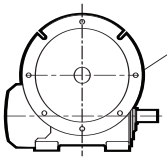


VIEW ON OUTPUT FLANGE (Reduced)

I HOLES Ø K1 ON M PCD
NOTE - SLOTS POSITIONED AS APPROPRIATE

| Size | A | B | B1 | B2 | C | D | I | K1 | M |
|---|---|---|---|---|---|---|---|---|---|
| WM100 | 3.94 | 4.17 | 5.91 | 6.30 | 8.86 | 8.86 | 0.15 | 0.59 | 10.43 |
| WM125 | 4.92 | 4.41 | 7.09 | 7.09 | 10.83 | 10.04 | 0.15 | 0.75 | 11.81 |
| WM160 | 6.30 | 4.92 | 8.35 | 7.87 | 12.20 | 11.61 | 0.15 | 0.75 | 13.78 |
| WM200 | 7.87 | 5.51 | 10.43 | 8.35 | 13.50 | 13.98 | 0.31 | 0.75 | 15.75 |

| Size | Q | R | Q1 | Q2 | T | U1 | U2 | Oil Capacity (approx) Imp. Pints | Weight (approx) lbs |
|---|---|---|---|---|---|---|---|---|---|
| WM100 | 5.51 | 4.92 | 11.81 | 9.06 | 9.45 | 0.63 | 0.24 | 4.8 | 195 |
| WM125 | 6.50 | 5.51 | 13.78 | 9.84 | 11.10 | 0.75 | 0.276 | 8.3 | 295 |
| WM160 | 6.89 | 6.10 | 15.75 | 11.81 | 12.48 | 0.63 | 0.276 | 12.5 | 415 |
| WM200 | 8.86 | 6.69 | 17.72 | 13.78 | 13.90 | 0.94 | 0.276 | 25.2 | 730 |

## INPUT SHAFT

| Size | E1 | F | V1 | W1 | X2 |
|---|---|---|---|---|---|
| WM100 | 2.36 | 1.375<br>1.374 | 1.201 | 0.312 | 2.20 |
| WM125 | 3.23 | 1.625<br>1.624 | 1.416 | 0.375 | 2.875 |
| WM160 | 4.21 | 1.875<br>1.874 | 1.591 | 0.5 | 4.09 |
| WM200 | 3.82 | 2.000<br>1.999 | 1.718 | 0.5 | 3.625 |

## OUTPUT SLEEVE

| E2 | G | V2 | W2 | Y2 | Tapped Hole |
|---|---|---|---|---|---|
| 3.94 | 2.000<br>1.999 | 1.718 | 0.5 | 3.94 | 3/4" UNF |
| 4.33 | 2.500<br>2.499 | 2.148 | 0.625 | 4.33 | 3/4" UNF |
| 4.92 | 3.000<br>2.999 | 2.577 | 0.75 | 4.92 | 7/8" UNF |
| 6.50 | 3.500<br>3.499 | 3.007 | 0.875 | 6.50 | 7/8" UNF |

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