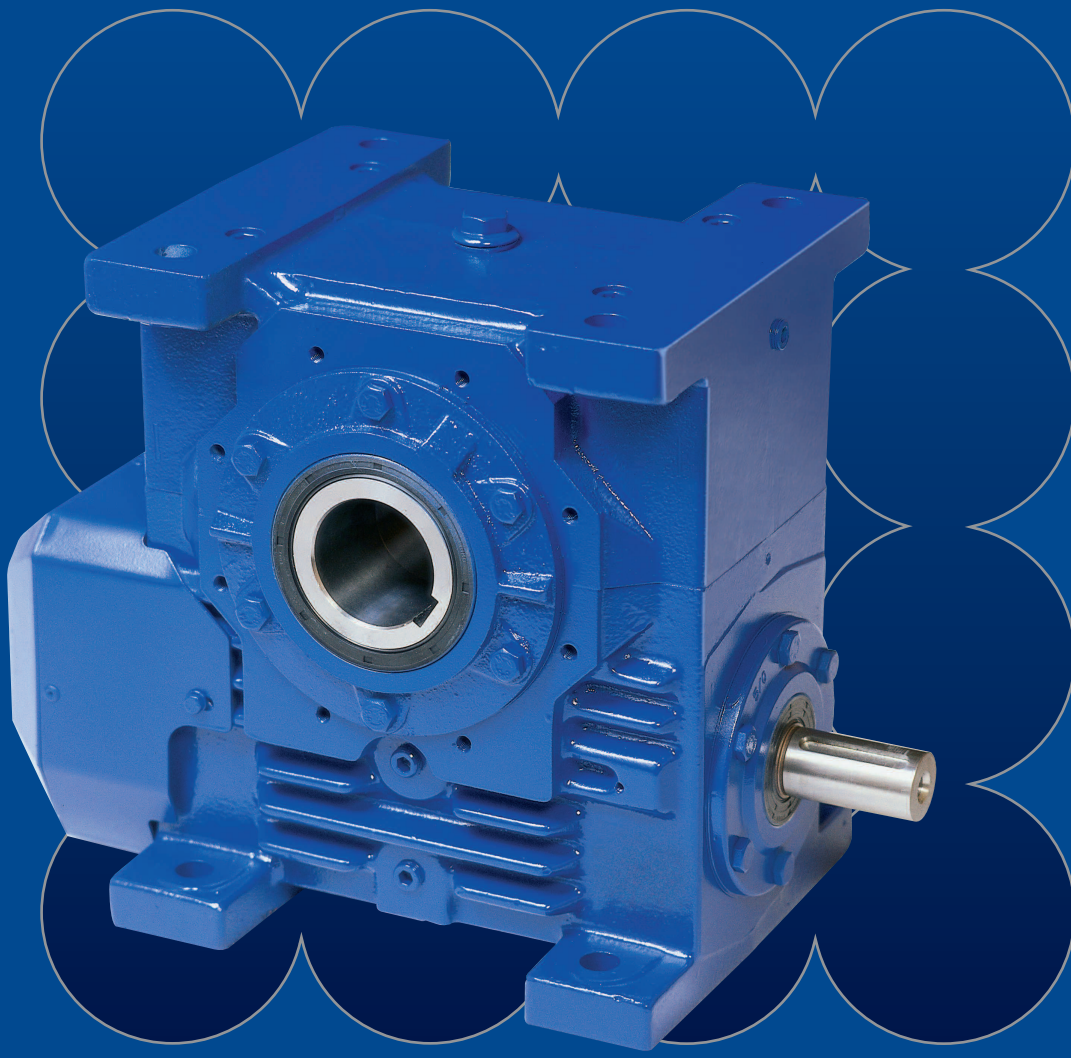
WM Series

Wormgear Units



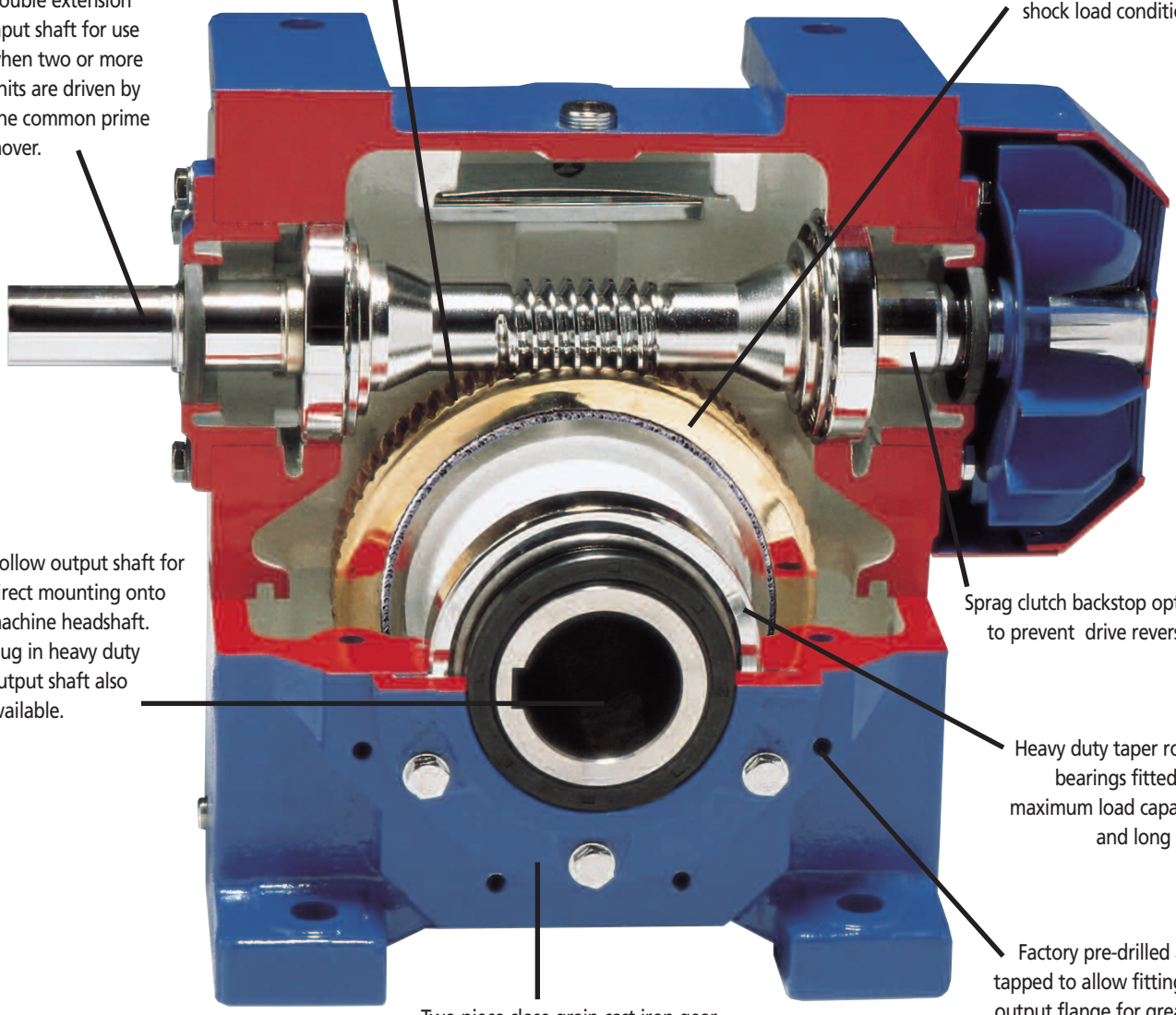
RENOLD

Superior Gear Technology

www.renold.com

RENOLD

WM Series - Product Features



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 IEC and NEMA electric motors, with B5 and B14 flanges.

Applications:

- Conveyors
- Mining
- Timber
- 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

ATEX Approval Details

ATEX Approval

RENOLD Gears products for operating in potentially explosive atmospheres.

General

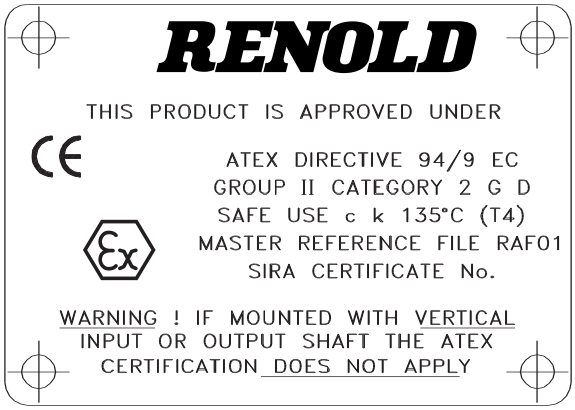
- **RENOLD** Gears units are classified as ATEX Group II Category 2 equipment, which embodies sufficient safeguards to be suitable for use in potentially explosive atmospheres for normal operation and for operation during an expected malfunction.
- It is essential that there is sufficient lubricant to prevent the gears and bearings running 'dry'. Gear units should be inspected daily for signs of oil leakage, overheating or noisy operation.
- Gear units should be cleaned at regular intervals depending on the operating conditions, to ensure that dust coatings never exceed 5mm. Plastic parts should be wiped clean with a damp cloth.
- Oil leaks should be dealt with as quickly as practical. Compound joint faces and shims should be cleaned and thread-locking sealant should be applied to bolts and plugs prior to re-assembly.
- The temperature of any external surfaces must not exceed the permitted maximum of 135°C (T4).
- Higher temperature class T3 is available dependant on unit mounting, ratio and gear type. For further details consult Renold.
- As a general rule, gear units should be mounted with their feet horizontal. For other mountings, particularly with shaft mounted units, consult **RENOLD** Gears.

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

Unit Selection

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

ATEX Nameplate



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 and 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 metric dimensions, but imperial shaft extensions for units complying with BS3027: 1968 or to suit the requirements of the North American market are also available. The 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 metric extension will be the exposed input extension except for those supplied to North America and Canada.

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 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 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.

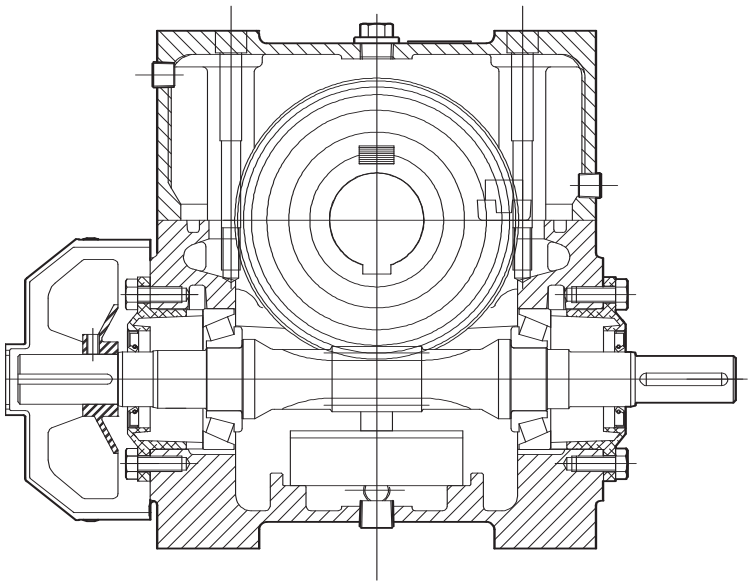
Backstop

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

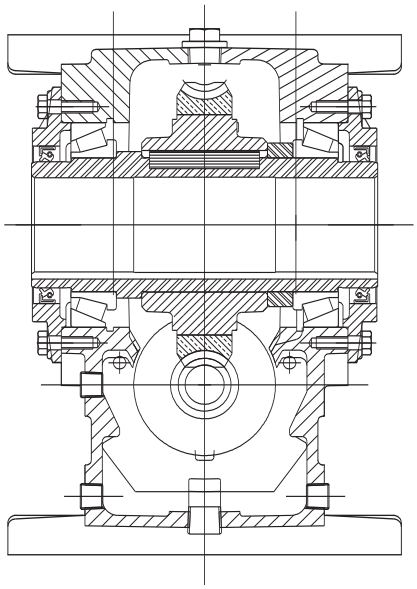
Double Reduction Units

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

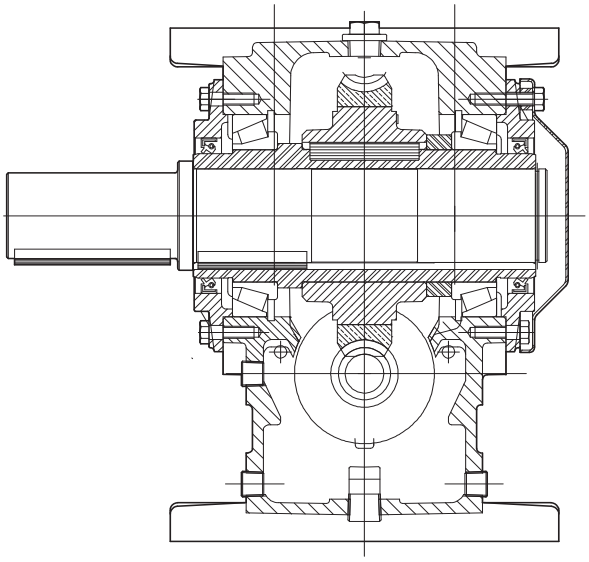
WM Series - Product Design Variations



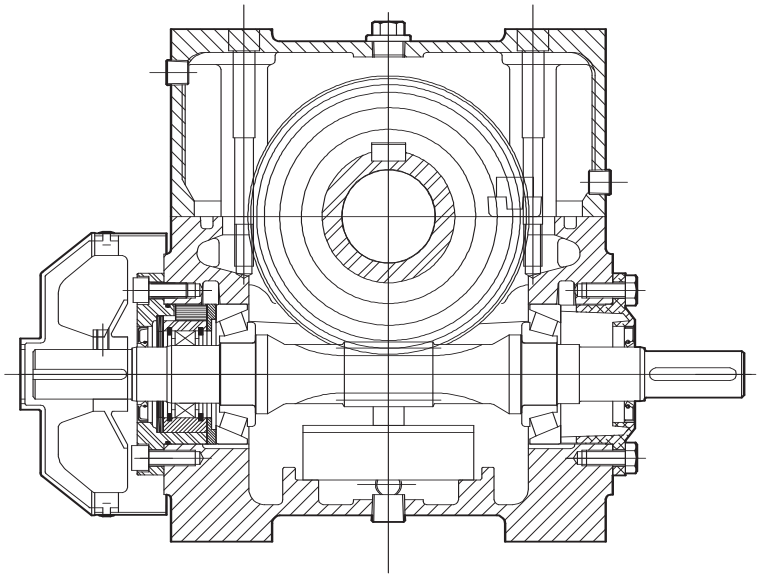
Hollow output shaft unit showing standard metric extension input shaft and American extension at the fan end.



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

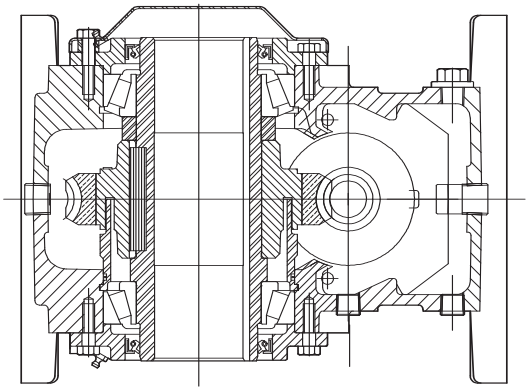


Underdriven unit with standard plug-in output shaft. Single and double extension shafts are available with metric American dimensions.

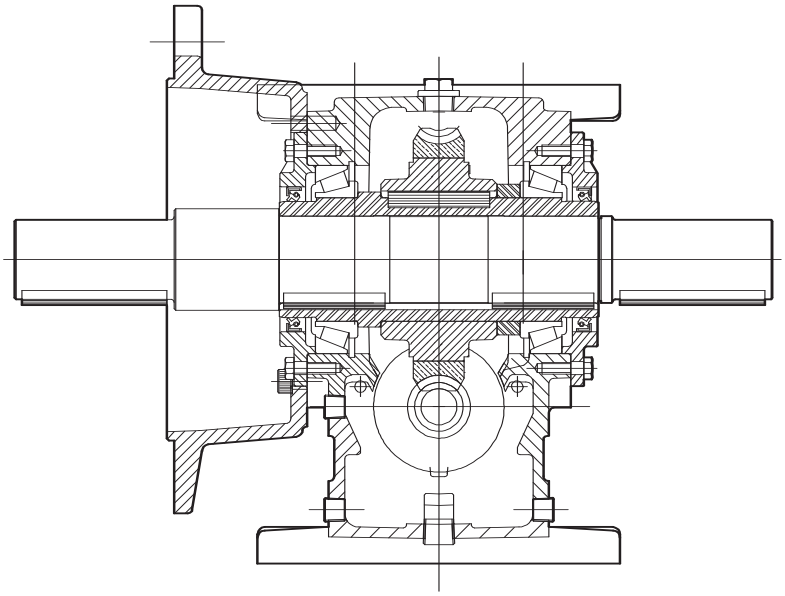


Sprag Clutch, anti run-back assembly fitted to the fan extension end of the input shaft, to prevent unit run back. The Sprag Clutch can be supplied as a kit for retro fitting at any time.

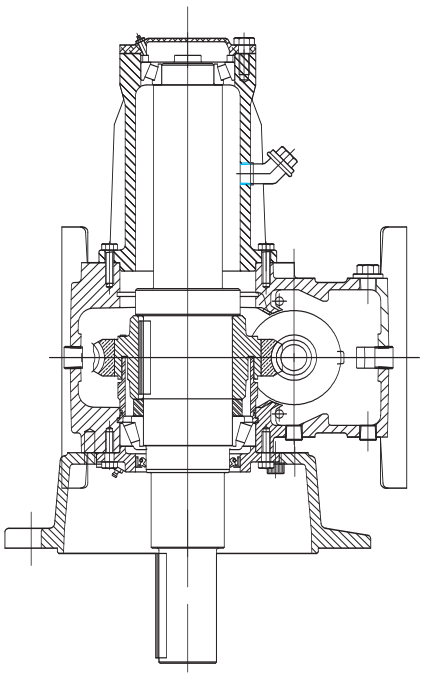
WM Series - Product Design Variations



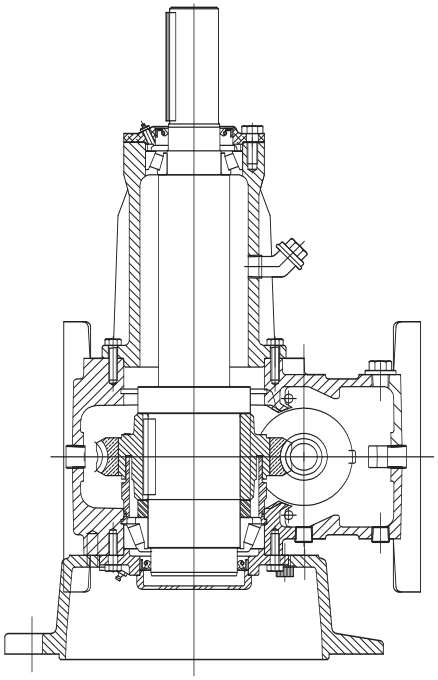
Dry well adaption fitted at the output of the WM Series unit. The non leak feature is particularly important on mixer applications in the food and chemical Industry.



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



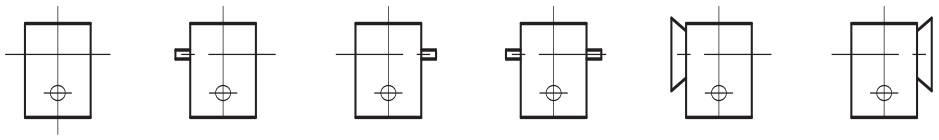
WMA - Agitator unit with output shaft down. The unit is shown with the dry well feature. The output shaft bearings have a greater bearing span to allow for higher external loads imposed by mixer and agitator blades.



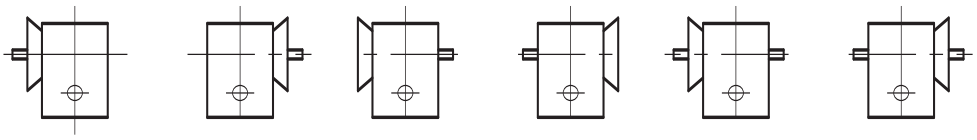
Agitator unit with output shaft up, particularly suited for cooling fan drives.

WM Series - Single Reduction - Mounting & Handling

WMU - Underdriven
WMSM - Shaft Mounted

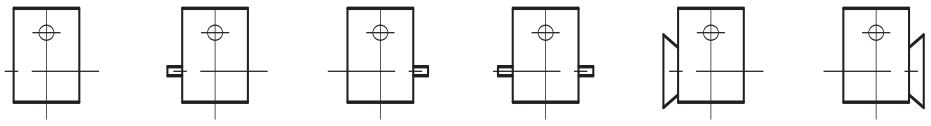


No Sprag backstop fitted.	**UA**	**UC**	**UE**	**UG**	**UJ**	**UL**
Sprag backstop fitted.	**UB**	**UD**	**UF**	**UH**	**UK**	**UM**

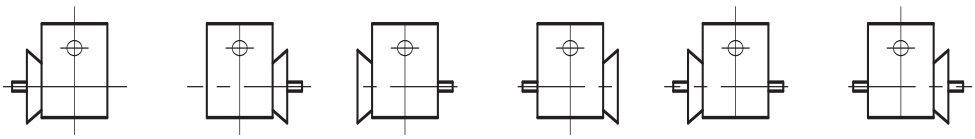


No Sprag backstop fitted.	**UN**	**UQ**	**US**	**UU**	**UW**	**UY**
Sprag backstop fitted.	**UP**	**UR**	**UT**	**UV**	**UX**	**UZ**

WMO - Overdriven

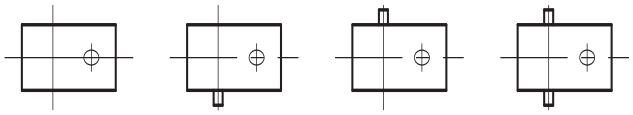


No Sprag backstop fitted.	**OA**	**OC**	**OE**	**OG**	**OJ**	**OL**
Sprag backstop fitted.	**OB**	**OD**	**OF**	**OH**	**OK**	**OM**

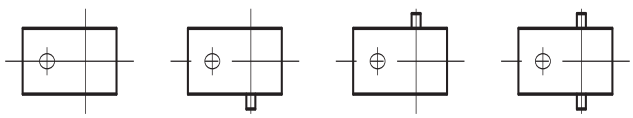


No Sprag backstop fitted.	**ON**	**OQ**	**OS**	**OU**	**OW**	**OY**
Sprag backstop fitted.	**OP**	**OR**	**OT**	**OV**	**OX**	**OZ**

WMU - WMO Suitable For Wall Mounting



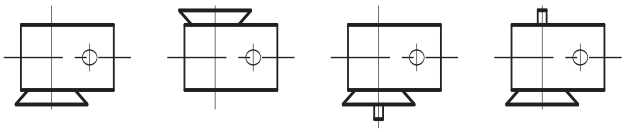
No Sprag backstop fitted.	**WA**	**WC**	**WE**	**WG**
Sprag backstop fitted.	**WB**	**WD**	**WF**	**WH**



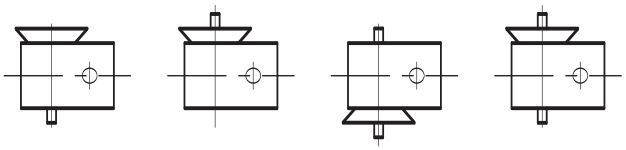
No Sprag backstop fitted.	**WS**	**WL**	**WN**	**WQ**
Sprag backstop fitted.	**WT**	**WM**	**WP**	**WR**

WM Series - Single Reduction - Mounting & Handling

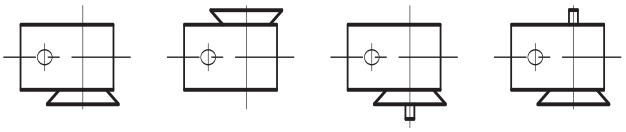
WMV - Vertical



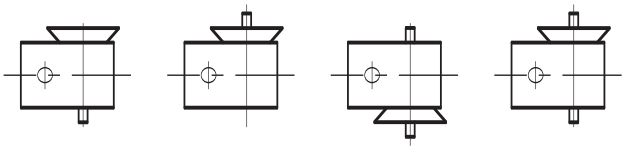
No Sprag backstop fitted.	VA	VC	VE	VG
Sprag backstop fitted.	VB	VD	VF	VH



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

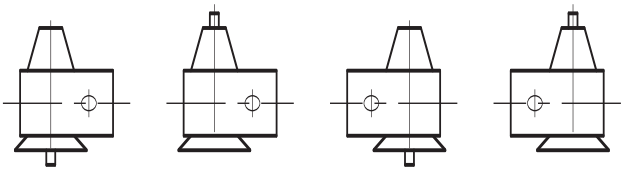


No Sprag backstop fitted.	VS	VU	VW	VY
Sprag backstop fitted.	VT	VV	VX	VZ



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

RENOLD

Electric Motor Specification

DM1 : 4 POLE/1500rpm

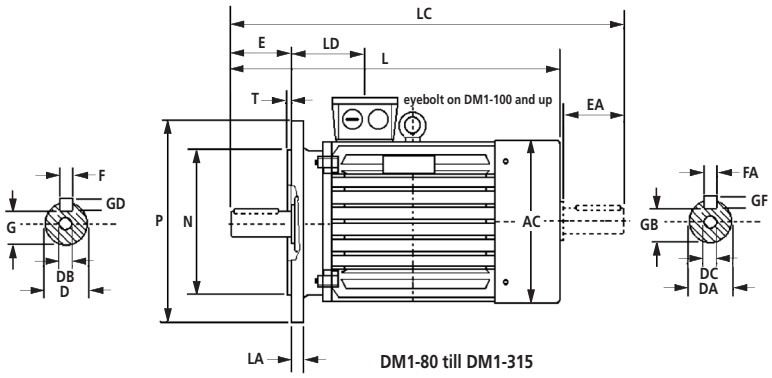
DM1 = cast iron series 1 MOTOR SIZE acc. to IEC-DIN			Rated Output Power	Full-load Curent			Full-load Speed	Full-load power factor	Full-load efficiency	Locked rotor current	Locked rotor torque	Break down torque	Moment of inertia	nett weight IM B3
				380 V	400 V	420 V								
			P_N K_W W	L_U A	L_N A	L_O A	n_N min^{-1}	cos φ	η %	L_a / L_N	M_a / M_N	M_k / M_N	J kgm^2	m kg
DM1	90	S4	1.1	2.80	2.70	2.80	1390	0.78	74.5	5.7	2.4	2.7	0.0021	22
DM1	90	L4	1.5	3.60	3.60	3.70	1410	0.77	78.7	5.7	2.9	3.2	0.0027	28
DM1	100	L4	2.2	4.90	4.90	5.0	1425	0.81	80.0	6.3	2.9	3.1	0.0054	34
DM1	100	LX4	3.0	6.40	6.40	6.50	1425	0.83	81.8	6.7	2.8	3.9	0.0067	38
DM1	112	M4	4.0	8.70	8.40	8.30	1445	0.85	83.8	6.7	2.1	2.9	0.0086	44
DM1	132	S4	5.5	10.70	11.1	10.8	1450	0.83	85.1	7.5	2.4	3.0	0.0205	61
DM1	132	M4	7.5	15.10	14.5	14.4	1450	0.86	87.5	7.3	2.7	3.3	0.0296	73
DM1	160	M4	11	22.10	21.2	21.3	1450	0.85	88.1	7.6	2.5	3.0	0.0724	113
DM1	160	L4	15	27.60	28.1	28.2	1460	0.86	89.5	7.9	2.7	3.1	0.0929	133
DM1	180	M4	18.5	35.30	33.4	33.4	1470	0.88	90.9	7.5	2.5	3.0	0.1350	167
DM1	180	L4	22	42.00	39.8	39.5	1465	0.88	90.9	7.5	2.2	3.1	0.1360	181
DM1	200	L4	30	55.60	53.3	52.0	1480	0.88	92.0	7.2	2.5	3.2	0.2450	232
DM1	225	S4	37	68.20	65.5	64.0	1485	0.88	92.3	7.3	2.0	2.8	0.3900	287
DM1	225	M4	45	81.30	79.1	76.0	1480	0.89	92.4	7.5	2.2	3.0	0.4500	322
DM1	250	M4	55	101	96.0	95.0	1480	0.89	93.0	7.0	2.3	3.1	0.6400	381
DM1	280	S4	75	137	131	126	1480	0.88	93.5	6.1	2.0	2.9	1.0450	510
DM1	280	M4	90	168	152	155	1485	0.88	94.2	7.8	2.7	3.3	1.3960	600

DM1 : 6 POLE/1000rpm

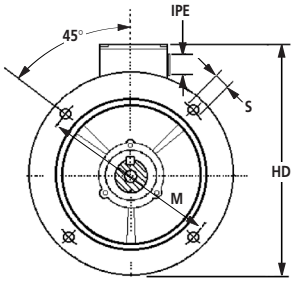
DM1	90	S6	0.75	2.30	2.18	2.10	920	0.72	69.0	3.6	2.3	2.3	0.0029	23
DM1	90	L6	1.1	3.00	3.10	3.20	930	0.71	72.6	4.4	2.1	2.9	0.0035	25
DM1	100	L6	1.5	3.90	4.00	4.20	930	0.73	73.5	4.7	2.4	2.9	0.0069	33
DM1	112	M6	2.2	5.10	5.10	5.10	940	0.79	78.8	5.2	1.6	2.4	0.0129	39
DM1	132	S6	3.0	6.80	7.00	7.40	970	0.75	81.0	6.4	1.5	2.0	0.0274	56
DM1	132	M6	4.0	9.20	9.40	9.90	975	0.71	82.0	6.8	2.1	3.1	0.0343	71
DM1	132	MX6	5.5	11.9	12.0	12.4	975	0.77	85.5	7.5	2.0	4.0	0.0431	75
DM1	160	M6	7.5	16.1	15.9	16.0	965	0.79	85.3	6.5	1.8	3.0	0.0800	108
DM1	160	L6	11	22.7	22.4	22.6	970	0.80	87.8	7.1	1.8	3.1	0.1080	131
DM1	180	L6	15	29.5	29.3	29.1	980	0.83	89.2	7.2	2.5	2.9	0.1670	171
DM1	200	L6	18.5	36.5	35.5	35.1	980	0.84	89.9	6.7	2.0	3.0	0.3020	216
DM1	200	LX6	22	42.3	40.6	39.8	975	0.87	89.8	6.7	2.0	2.8	0.3420	225
DM1	225	M6	30	57.6	55.4	54.2	985	0.85	91.7	6.2	2.3	2.8	0.5250	292
DM1	250	M6	37	69.5	67.3	65.7	985	0..87	91.5	6.8	2.1	3.1	0.8070	408
DM1	280	S6	45	79.1	80.2	77.3	985	0.88	92.4	6.5	2.0	2.9	1.3340	465
DM1	280	M6	55	97.6	99.0	95.4	985	0.87	92.7	6.7	2.1	3.0	1.5980	540

Electric Motor Dimensions

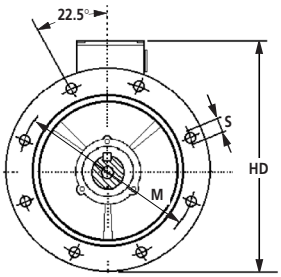
DM1 : 4 POLE/1500rpm



DM1-80 till DM1-315



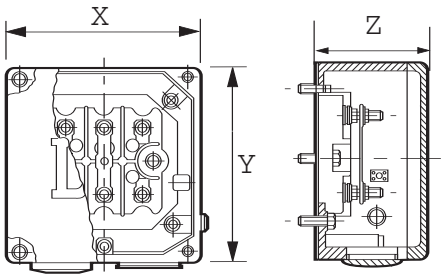
DM1-80 till DM1-200



DM1-225 till DM1-280

Type		Poles	AC	D	E	EA	HD	L	LC	LD	M	N	P	S	T	IPE	Flange
DM1	80	2/4/6/8	154	19	40	40	245	295	338	75	165	130j6	200	4Ø12	3.5	2xPg16	FF165
DM1	90S	2/4/6/8	174	24	50	50	225	315	368	78	165	130j6	200	4Ø12	3.5	2xPg16	FF165
DM1	90L	2/4/6/8	174	24	50	50	225	340	393	83	165	130j6	200	4Ø12	3.5	2xPg16	FF165
DM1	100L/LX	2/4/6/8	195	28	60	60	305	375	438	83	215	180j6	250	4Ø15	4	2xPg16	FF215
DM1	112M	2/4/6/8	217	28	60	60	315	400	463	84	215	180j6	250	4Ø15	4	2xPg21	FF215
DM1	132S/SX	2/4/6/8	256	38	80	80	360	465	553	100	265	230j6	300	4Ø15	4	2xPg21	FF265
DM1	132M	2/4/6/8	256	38	80	80	360	510	593	100	265	230j6	300	4Ø15	4	2xPg21	FF265
DM1	160M/MX	2/4/6/8	311	42	110	110	505	615	728	150	300	250j6	350	4Ø19	5	2xPg29	FF300
DM1	160L	2/4/6/8	311	42	110	110	505	670	783	150	300	250j6	350	4Ø19	5	2xPg29	FF300
DM1	180M	2/4/6/8	352	48	110	110	530	700	813	160	300	250j6	350	4Ø19	5	2xPg29	FF300
DM1	180L	2/4/6/8	352	48	110	110	530	740	853	160	300	250j6	350	4Ø19	5	2xPg29	FF300
DM1	200L/LX	2/4/6/8	394	55	110	110	580	770	883	190	350	300h6	400	4Ø19	5	2xPg36	FF350
DM1	225S	4/8	442	60	140	110	640	815	928	190	400	350h6	450	8Ø19	5	2xPg36	FF400
DM1	225M	2	442	55	110	110	640	820	933	190	400	350h6	450	8Ø19	5	2xPg36	FF400
DM1	225M	4/6/8	442	60	140	110	640	845	958	190	400	350h6	450	8Ø19	5	2xPg36	FF400
DM1	250M	2	481	60	140	110	695	910	1028	203	500	450h6	550	8Ø19	5	2xPg42	FF500
DM1	250M	4/6/8	481	65	140	110	695	910	1028	203	500	450h6	550	8Ø19	5	2xPg42	FF500
DM1	280S	2	543	65	140	110	770	995	1108	220	500	450h6	550	8Ø19	5	2xPg42	FF500
DM1	280S	4/6/8	543	75	140	140	770	995	1138	220	500	450h6	550	8Ø19	5	2xPg42	FF500
DM1	280M	2	543	65	140	110	770	1045	1158	220	500	450h6	550	8Ø19	5	2xPg42	FF500
DM1	280M	4/6/8	543	75	140	140	770	1045	1188	220	500	450h6	550	8Ø19	5	2xPg42	FF500

Type		IPE	X	Y	Z
DM1	80	2xPg 16	102	104	58
DM1	90 S	2xPg 16	102	104	58
DM1	90 L	2xPg 16	102	104	58
DM1	100 L/LX	2xPg 16	102	104	58
DM1	112 M	2xPg 21	108	123	68
DM1	132 S/SX	2xPg 21	108	123	68
DM1	132 M	2xPg 21	108	123	68
DM1	160 M/MX	2xPg 29	150	160	80
DM1	160 L	2xPg 29	150	160	80
DM1	180 M	2xPg 29	150	160	80
DM1	180 L	2xPg 29	150	160	80
DM1	200 L	2xPg 36	188	208	97
DM1	225 S	2xPg 36	188	208	97
DM1	225 S	2xPg 36	188	208	97
DM1	225 M	2xPg 36	188	208	97
DM1	225 M	2xPg 36	188	208	97
DM1	250 M	2xPg 42	216	246	112
DM1	250 M	2xPg 42	216	246	112
DM1	280 S	2xPg 42	216	246	112
DM1	280 S	2xPg 42	216	246	112
DM1	280 M	2xPg 42	216	246	112
DM1	280 M	2xPg 42	216	246	112



RENOLD

Ordering Procedure - Unit Designation Code

To ensure that the correct 'WM' Series unit is supplied and that your order is processed without delay, please quote the full designation code as detailed below:

Unit Designation Code - Speed Reducer Unit

1	2	3	4	5
WM	4	10	UA	M

1 Unit type - WM Series speed reducer unit

2 Unit size - 4, 5, 6 etc.

3 Unit nominal ratio - 5:1, 10:1, 30:1 etc

4 Unit mounting and assembly see pages 16 - 17

5 Unit shaft/bore details M - Metric A - American

Unit Designation Code - Motorised Unit

1	2	3	4	5	6	7	8
MWM	4	10	WA	5.5	4	132	M

1 Unit type - WM Series motorised

2 Unit size - 4, 5, 6 etc.

3 Unit nominal ratio - 5:1, 10:1, 30:1 etc

4 Unit mounting assembly. see page 16 - 17

5 Motor power (KW)

6 Motor speed in poles - 4, 6 etc.

7 Motor IEC frame sizes see page

8 Unit shaft/bore details M - Metric A - American

If a sprag clutch holdback is fitted into the unit, the shaft direction of rotation should be indicated at order stage.

WM Series -Selection Information

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 (kW).

b) Gear unit input and output power required (kW).

c) For input speeds below 250 rev/min consult our Technical Sales Department giving details of required output torque (Nm) and diameter of driven shaft (mm).

Speed

Gear unit input and output rev/min.

Duty

a) The characteristics of the drive eg. degree of impulsiveness of the driven load.

b) Duration of service in hours/day.

c) Starting load (kW) and number of starts per day.

d) For intermittent duty, reversing or shock loading, state normal power (kW) 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 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 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, when the heat generated within the gearbox is being dissipated at the same rate. Whilst these ratings can be exceeded under start up conditions, this situation could lead to overheating and subsequent damage if continuously applied.

Thermal torque ratings do not relate to mechanical gear life and are not affected by running time or momentary shock loads.

If the ambient temperature is likely to exceed 20˚C, this situation will have to be taken into account in the selection procedure. This is done by applying the thermal service factor given in table 4 when calculating the selection output torque.

E.g. Thermal selection torque = continuous torque requirement 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 which application, and when this type of operation is being considered full applicational details should be given to Renold for assessment.

Selection Procedure

The ratings tables for the single reduction wormgear units provide mechanical ratings in terms of input and output power in kW and mechanical and thermal output torque ratings in Newton Meters.

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

The procedure is as follows for single reduction units:-

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

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

b) 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.

c) 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

$$\text{Selection Output Torque} = \frac{\text{absorbed power} \times 9550 \times f_D \times f_S}{\text{output speed (rev/min)}}$$

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 f_T from table 4.

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

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

WM Series - Selection Examples

Mechanical Selection Torque	Nm =	Actual Torque (Nm) Requirement	X	Mechanical Service (f_D) Factor	X	Starts (f_S) Factors
Thermal Selection Torque	Nm =	Actual Torque (Nm) Requirement	X	Thermal Service (f_T) Factor		
Mechanical Selection Power	(kW) =	Actual Power (kW) Requirement	X	Mechanical Service (f_D) Factor	X	Starts (f_S) Factor
Thermal Selection Power	(kW) =	Actual Power (kW) Requirement	X	Thermal Service (f_T) Factor		

It can be seen from the ratings tables on pages 28 - 41 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 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 temperature is 20˚C and the prime mover is an electric motor running at 1500rpm nominal speed. Headshaft torque is 2800Nm. The gear unit ratio would be 20/1.

1. Mechanical Service (fD) Factor. = 1.25

2. Starts Factor (fS) = 1.0

3. Thermal Service (fT) Factor = 1.0

4. Mechanical Selection (Nm) Torque $= \frac{\text{Actual (Nm)}}{\text{Torque}} \times (f_D) \times (f_D)$
   $= 2800 \times 1.25 \times 1$
   $= 3500$ Nm.

5. Thermal Selection Torque (Nm) $= \frac{\text{Actual (Nm)}}{\text{Torque}} \times f_T$
   $= 2800 \times 1.00$
   $= 2800$ Nm.

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 2953 Nm and thermal capacity of 3831 Nm.

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. The unit ratio is to be 60/1 and the electric drive motor is 1500rpm nominal speed (1440 rpm actual). The demand power from the motor is 2.80kW.

1. Mechanical Service (fD) Factor = 2.00

2. Starts Factor (fs) = 1.00

3. Thermal Service (fT) Factor = 1.35

4. Mechanical Selection (kW) Power $= \frac{\text{Actual x } (f_D) \text{ x } (f_S)}{\text{kW}}$
   $= 2.8 \times 2.0 \times 1.0$
   $= 5.6$ kW.

5. Thermal Selection (kW) Power $= \frac{\text{Actual x } (f_T)}{\text{kW}}$
   $= 2.8 \times 1.35$
   $= 3.78$ kW.

6. The selection for this application would be 6" centres unit at 60/1 ratio using mineral oil. The unit mechanical power rating is 5.74 kW and the thermal power rating is 8.71kW. There is no advantage in using synthetic oil in this example.

WM Series - Load Classification by Application

Table 1

Agitators		Sugar (1)	M	Medium duty	M	Individual drives	H	single acting: 1 or 2 cylinders	*
Pure liquids	S	**Dredges**		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 not uniformly fed		Forced draft	*	Tray drive	M	Fell whipper	H	Batchers	M
		Induced draft	M	Trimmer feed	M	Jordans	M	Calenders	M
Apron	M	Large, mine etc.	M	Waste conveyor	M	Log haul	H	Cards	M
Assembly	M	Large, industrial	M	**Machine tools**		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 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	1.00	1.25	1.75
	over 10	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	1.25	1.50	2.00
	over 10	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	1.50	1.75	2.25
	over 10	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 Gears.

Table 3 Factor for Starts/Hours (fS)

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

Table 4 Thermal Service Factor f_T

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

WM Series - Overhung and Thrust Loads

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

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

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

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

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

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

The overhung load may be calculated by the following formula:

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

Where P = Power absorbed at output shaft (kW)

S = Speed of output shaft in rev/min

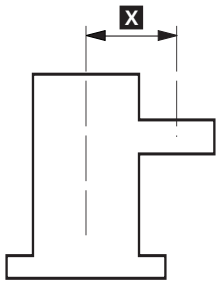
R = Pitch circle radius of chain pinion, spur or helical gear, or belt pulley in mm.

F = Overhung drive application factor as follows:

Chain pinion	1.00
Spur or helical gear	1.25
Vee pulley	1.50
Flat belt pulley	2.00

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

Unit Size	Dimension mm Standard Shaft
WM4	161
WM5	193
WM6	218
WM7	238
WM8	244
WM9	268



WM Series - Overhung Load Capacities

Table 5: Output Shaft Overhung Load Capacities (in newtons)

At 1450 rev/min input speed

Ratio	Output Speed	Gear Unit Reference					
		WM4	WM5	WM6	WM7	WM8	WM9
5/1	290	10370	12870	11640	20470	26760	30080
7.5/1	193	12130	15650	18360	26480	33070	35390
10/1	145	13490	17370	20980	29450	36920	42110
12.5/1	116	14200	18630	22830	31350	38790	43710
15/1	97	14000	19820	24320	33870	42150	48050
20/1	73	14100	20140	24550	38750	48830	55700
25/1	58	13790	20320	24750	41600	51880	58790
30/1	48	13560	19140	23910	42000	55000	60000
35/1	41	13830	19410	23770	42000	55000	60000
40/1	36	13970	19760	24060	42000	55000	60000
45/1	32	14040	19940	24360	42000	55000	60000
50/1	29	14110	20160	24570	42000	55000	60000
60/1	24	14250	20470	24960	42000	55000	60000
70/1	21	14340	20730	25290	42000	55000	60000

At 960 rev/min input speed

Ratio	Output Speed	Gear Unit Reference					
		WM4	WM5	WM6	WM7	WM8	WM9
5/1	192	11480	13280	10630	20390	27340	31170
7.5/1	128	13610	17510	20760	29380	36680	38950
10/1	96	14170	19510	23520	33090	41450	47310
12.5/1	77	13960	19790	24300	35120	43520	49100
15/1	64	13720	19250	24020	37930	47270	53870
20/1	48	13860	19560	23780	42000	54840	60000
25/1	38	13440	19790	24050	42000	55000	60000
30/1	32	13150	18230	22940	42000	55000	60000
35/1	27	13530	18670	22800	42000	55000	60000
40/1	24	13730	19170	23180	42000	55000	60000
45/1	21	13810	19380	23590	42000	55000	60000
50/1	19	13890	19670	23900	42000	55000	60000
60/1	16	14070	20060	24440	42000	55000	60000
70/1	14	14200	20410	24860	42000	55000	60000

WM Series - Axial Thrust Load Capacities

Table 6: Output Shaft Axial Thrust loads (in newtons)

At 1450 rev/min input speed

Ratio	Output Speed	Gear Unit Reference					
		WM4	WM5	WM6	WM7	WM8	WM9
5/1	290	9330	9450	7370	13220	18400	19710
7.5/1	193	12340	14270	13520	21440	28700	26590
10/1	145	14530	16900	16940	25600	34180	37380
12.5/1	116	16110	18380	19250	28100	36420	38980
15/1	97	17620	20080	21700	31780	41380	45380
20/1	73	20610	24020	26460	38750	51070	56224
25/1	58	21870	26430	29300	42300	54820	59840
30/1	48	22000	27280	31040	46750	55000	65000
35/1	41	22000	29630	33120	48220	55000	65000
40/1	36	22000	31740	35490	50000	55000	65000
45/1	32	22000	33000	37764	50000	55000	65000
50/1	29	22000	33000	39620	50000	55000	65000
60/1	24	22000	33000	43020	50000	55000	65000
70/1	21	22000	33000	44000	50000	55000	65000

At 960 rev/min input speed

Ratio	Output Speed	Gear Unit Reference					
		WM4	WM5	WM6	WM7	WM8	WM9
5/1	192	9890	9690	6660	13060	18690	20320
7.5/1	128	13680	15700	14560	23010	30940	27870
10/1	96	16110	18770	18690	28420	38020	41630
12.5/1	77	17900	20370	21180	31100	40450	43390
15/1	64	19730	22400	24030	35200	46020	50460
20/1	48	22000	26960	29630	43390	55000	62820
25/1	38	22000	29710	32880	47520	55000	65000
30/1	32	22000	30640	35850	50000	55000	65000
35/1	27	22000	33000	37250	50000	55000	65000
40/1	24	22000	33000	39940	50000	55000	65000
45/1	21	22000	33000	42564	50000	55000	65000
50/1	19	22000	33000	44000	50000	55000	65000
60/1	16	22000	33000	44000	50000	55000	65000
70/1	14	22000	33000	44000	50000	55000	65000

WM Series - Exact Ratio

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

Prefered Ratios

The preferred ratios printed in red above have been chosen with a view to providing a competitive leadtime.

WM Series - Single Reduction - Selection Data

Mineral and Synthetic Oils

Nominal ratio: 5/1 Preferred Ratio

Input rpm	Output rpm	Gear Ratings	Centre Distance											
			4"		5"		6"		7"		8"		9"	
			Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn
1800	360.0	Input kW, Thermal	19.7	**23.6**	31.5	**37.8**	47.4	**56.8**	68.7	**82.4**	84.8	**102**	114	**137**
		Output Torque Nm, Thermal	510	**617**	819	**990**	1225	**1481**	1781	**2153**	2199	**2659**	2971	**3592**
		Input kW, Mechanical	15.5	**17.2**	27.2	**30.2**	45.5	**50.6**	65.7	**73.0**	87.4	**97.2**	112	**125**
		Output Torque Nm, Mechanical	401	**449**	706	**791**	1177	**1318**	1703	**1907**	2269	**2541**	2921	**3272**
		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	300.0	Input kW, Thermal	16.8	**20.2**	26.8	**32.1**	40.3	**48.3**	58.6	**70.3**	72.7	**87.2**	98.5	**118**
		Output Torque Nm, Thermal	521	**630**	834	**1009**	1246	**1508**	1819	**2200**	2258	**2731**	3067	**3709**
		Input kW, Mechanical	14.1	**15.6**	24.6	**27.3**	41.0	**45.5**	59.5	**66.1**	79.6	**88.5**	103	**115**
		Output Torque Nm, Mechanical	436	**488**	764	**856**	1267	**1419**	1846	**2067**	2475	**2772**	3209	**3594**
		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	240.0	Input kW, Thermal	14.0	**16.8**	22.2	**26.6**	33.2	**39.8**	48.3	**57.9**	60.1	**72.0**	81.7	**98.0**
		Output Torque Nm, Thermal	539	**653**	859	**1040**	1279	**1548**	1867	**2259**	2326	**2814**	3169	**3833**
		Input kW, Mechanical	12.6	**14.0**	21.9	**24.2**	36.4	**40.4**	52.8	**58.6**	70.9	**78.8**	92.3	**103**
		Output Torque Nm, Mechanical	485	**544**	846	**947**	1401	**1569**	2039	**2284**	2748	**3078**	3582	**4012**
		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	200.0	Input kW, Thermal	12.2	**14.6**	19.2	**23.0**	28.6	**34.2**	41.4	**49.7**	51.5	**61.8**	70.1	**84.0**
		Output Torque Nm, Thermal	560	**678**	887	**1074**	1314	**1591**	1914	**2317**	2386	**2887**	3252	**3935**
		Input kW, Mechanical	11.5	**12.7**	20.1	**22.2**	33.5	**37.2**	48.2	**53.5**	64.0	**71.0**	82.8	**92.0**
		Output Torque Nm, Mechanical	527	**591**	928	**1039**	1544	**1730**	2230	**2498**	2965	**3321**	3847	**4308**
		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	150.0	Input kW, Thermal	9.96	**11.9**	15.5	**18.5**	22.9	**27.4**	33.0	**39.5**	40.9	**49.0**	55.4	**66.4**
		Output Torque Nm, Thermal	606	**734**	948	**1149**	1392	**1687**	2017	**2443**	2507	**3036**	3409	**4127**
		Input kW, Mechanical	9.56	**10.6**	16.8	**18.6**	28.3	**29.9**	41.1	**45.6**	55.3	**61.4**	72.1	**79.9**
		Output Torque Nm, Mechanical	582	**651**	1027	**1151**	1723	**1844**	2519	**2821**	3400	**3808**	4439	**4972**
		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	100.0	Input kW, Thermal	7.78	**9.30**	11.9	**14.2**	17.3	**20.7**	24.7	**29.6**	30.4	**36.4**	40.9	**49.0**
		Output Torque Nm, Thermal	702	**851**	1081	**1311**	1566	**1900**	2243	**2720**	2769	**3356**	3739	**4530**
		Input kW, Mechanical	7.62	**8.41**	13.4	**14.8**	20.0	**20.0**	32.4	**35.9**	43.5	**48.1**	56.4	**62.4**
		Output Torque Nm, Mechanical	687	**770**	1216	**1362**	1811	**1830**	2947	**3300**	3965	**4441**	5160	**5779**
		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	50.0	Input kW, Thermal	5.62	**6.69**	8.38	**10.0**	11.9	**14.2**	16.6	**19.9**	20.2	**24.1**	26.7	**32.0**
		Output Torque Nm, Thermal	992	**1205**	1490	**1810**	2110	**2565**	2963	**3600**	3606	**4378**	4797	**5822**
		Input kW, Mechanical	4.62	**4.60**	7.89	**7.86**	10.1	**10.0**	18.3	**18.3**	28.0	**28.2**	36.6	**39.4**
		Output Torque Nm, Mechanical	816	**827**	1402	**1421**	1781	**1804**	3266	**3306**	5010	**5115**	6580	**7181**
		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 Shaft Torque Nm	1800	**1800**	3085	**3085**	4960	**4960**	8140	**8140**	8140	**8140**	7370*	**7370***

Maximum torques stated apply for uniform load applications (starts / Hour < =5)

For applications with combinations of high torques, overhung loads, or number of starts, consult Renold

*** WM 9 unit only: For torques higher than the stated maximum, two keyways and high tensile steel output shaft must be specified.**

WM Series - Single Reduction - Selection Data

Mineral and Synthetic Oils

Nominal ratio: 7.5/1 Non Preferred Ratio

Input rpm	Output rpm	Gear Ratings	Centre Distance											
			4"		5"		6"		7"		8"		9"	
			Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn
1800	240.0	Input kW, Thermal	17.6	**21.0**	28.3	**33.8**	43.4	**51.9**	63.0	**75.4**	78.4	**93.9**	108	**129**
		Output Torque Nm, Thermal	633	**765**	1025	**1239**	1612	**1947**	2346	**2834**	2926	**3535**	3987	**4817**
		Input kW, Mechanical	11.4	**12.6**	19.0	**21.1**	33.4	**37.0**	47.7	**52.9**	63.6	**70.7**	96.8	**108**
		Output Torque Nm, Mechanical	409	**458**	689	**772**	1238	**1387**	1774	**1987**	2372	**2657**	3586	**4017**
		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	200.0	Input kW, Thermal	15.0	**17.9**	24.0	**28.7**	36.7	**44.0**	53.3	**63.8**	66.6	**79.7**	91.5	**110**
		Output Torque Nm, Thermal	645	**780**	1041	**1258**	1632	**1972**	2376	**2871**	2973	**3592**	4059	**4905**
		Input kW, Mechanical	10.5	**11.6**	17.4	**19.3**	30.2	**33.5**	42.9	**47.6**	57.5	**63.9**	88.1	**97.8**
		Output Torque Nm, Mechanical	450	**504**	752	**842**	1340	**1501**	1908	**2137**	2568	**2877**	3907	**4375**
		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	160.0	Input kW, Thermal	12.5	**14.9**	19.9	**23.7**	30.2	**36.1**	43.7	**52.3**	54.6	**65.3**	75.0	**89.8**
		Output Torque Nm, Thermal	668	**808**	1070	**1294**	1669	**2018**	2424	**2930**	3035	**3668**	4144	**5009**
		Input kW, Mechanical	9.19	**10.2**	15.5	**17.2**	27.1	**30.0**	38.6	**42.9**	51.5	**57.2**	78.8	**87.5**
		Output Torque Nm, Mechanical	491	**550**	833	**933**	1497	**1677**	2142	**2399**	2863	**3207**	4355	**4878**
		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 kW, Thermal	10.9	**13.0**	17.2	**20.5**	26.0	**31.0**	37.4	**44.7**	46.6	**55.8**	64.0	**76.6**
		Output Torque Nm, Thermal	695	**841**	1105	**1336**	1713	**2072**	2479	**2998**	3100	**3747**	4226	**5109**
		Input kW, Mechanical	8.20	**9.07**	13.8	**15.3**	24.1	**26.7**	34.7	**38.4**	46.6	**51.6**	71.4	**79.2**
		Output Torque Nm, Mechanical	524	**587**	888	**995**	1593	**1784**	2297	**2572**	3095	**3466**	4717	**5283**
		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	100.0	Input kW, Thermal	8.91	**10.6**	13.9	**16.6**	20.8	**24.8**	29.7	**35.6**	36.9	**44.1**	50.4	**60.3**
		Output Torque Nm, Thermal	753	**912**	1183	**1431**	1816	**2198**	2609	**3157**	3248	**3928**	4409	**5332**
		Input kW, Mechanical	7.01	**7.73**	11.7	**13.0**	20.5	**22.7**	29.1	**32.2**	38.8	**43.0**	59.4	**65.8**
		Output Torque Nm, Mechanical	592	**663**	997	**1116**	1789	**2004**	2555	**2862**	3415	**3825**	5203	**5828**
		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 kW, Thermal	7.01	**8.35**	10.7	**12.8**	15.8	**18.9**	22.4	**26.7**	27.5	**32.9**	37.2	**44.5**
		Output Torque Nm, Thermal	878	**1063**	1355	**1641**	2051	**2484**	2911	**3524**	3593	**4348**	4835	**5852**
		Input kW, Mechanical	5.43	**5.98**	9.17	**10.1**	16.0	**17.7**	22.7	**25.1**	30. 3	**33.5**	46.6	**51.6**
		Output Torque Nm, Mechanical	679	**761**	1155	**1294**	2071	**2319**	2957	**3312**	3956	**4431**	6063	**6791**
		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 kW, Thermal	5.12	**6.08**	7.64	**9.08**	11.0	**13.1**	15.2	**18.2**	18.5	**22.0**	24.6	**29.3**
		Output Torque Nm, Thermal	1254	**1521**	1885	**2285**	2794	**3387**	3886	**4710**	4721	**5721**	6257	**7583**
		Input kW, Mechanical	3.44	**3.78**	5.85	**6.42**	10.2	**10.5**	14.7	**16.1**	19.6	**21.6**	30.2	**32.7**
		Output Torque Nm, Mechanical	842	**944**	1441	**1614**	2598	**2705**	3735	**4184**	5027	**5630**	7702	**8470**
		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 Shaft Torque Nm	1800	**1800**	3085	**3085**	4960	**4960**	8140	**8140**	8140	**8140**	7370*	**7370***

Maximum torques stated apply for uniform load applications (starts / Hour < =5)

For applications with combinations of high torques, overhung loads, or number of starts, consult Renold

*** WM 9 unit only: For torques higher than the stated maximum, two keyways and high tensile steel output shaft must be specified.**

WM Series - Single Reduction - Selection Data

Mineral and Synthetic Oils

Nominal ratio: 10/1 Preferred Ratio

Input rpm	Output rpm	Gear Ratings	Centre Distance											
			4"		5"		6"		7"		8"		9"	
			Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn
1800	180.0	Input kW, Thermal	15.1	**18.0**	24.3	**29.0**	38.5	**46.0**	56.0	**67.0**	70.1	**83.9**	95.7	**114**
		Output Torque Nm, Thermal	717	**866**	1162	**1404**	1871	**2260**	2732	**3300**	3428	**4140**	4686	**5658**
		Input kW, Mechanical	10.0	**11.1**	16.6	**18.4**	27.3	**30.2**	39.3	**43.6**	52.6	**58.4**	68.4	**75.9**
		Output Torque Nm, Mechanical	475	**532**	793	**889**	1323	**1482**	1913	**2143**	2568	**2876**	3342	**3743**
		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	150.0	Input kW, Thermal	12.9	**15.3**	20.6	**24.6**	32.5	**38.9**	47.3	**56.5**	59.3	**70.9**	81.0	**96.8**
		Output Torque Nm, Thermal	731	**883**	1179	**1424**	1890	**2283**	2757	**3330**	3465	**4185**	4745	**5729**
		Input kW, Mechanical	9.00	**9.94**	15.1	**16.8**	25.0	**27.7**	36.3	**40.2**	48.5	**53.8**	63.0	**69.9**
		Output Torque Nm, Mechanical	510	**571**	864	**967**	1450	**1624**	2113	**2366**	2832	**3172**	3689	**4132**
		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	120.0	Input kW, Thermal	10.7	**12.8**	17.1	**20.4**	26.7	**31.9**	38.7	**46.2**	48.5	**57.9**	66.1	**79.0**
		Output Torque Nm, Thermal	757	**915**	1212	**1464**	1930	**2332**	2805	**3389**	3523	**4256**	4822	**5824**
		Input kW, Mechanical	7.87	**8.69**	13.1	**14.5**	21.7	**24.0**	31.8	**35.2**	42.6	**47.2**	55.6	**61.6**
		Output Torque Nm, Mechanical	554	**620**	927	**1039**	1564	**1752**	2300	**2576**	3098	**3470**	4049	**4534**
		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	100.0	Input kW, Thermal	9.36	**11.1**	14.8	**17.6**	23.0	**27.4**	33.1	**39.5**	41.4	**49.4**	56.3	**67.3**
		Output Torque Nm, Thermal	787	**952**	1251	**1512**	1981	**2394**	2867	**3464**	3593	**4341**	4907	**5928**
		Input kW, Mechanical	7.10	**7.83**	11.9	**13.1**	19.5	**21.6**	28.3	**31.3**	37.8	**41.9**	49.3	**54.6**
		Output Torque Nm, Mechanical	596	**668**	1004	**1125**	1681	**1882**	2448	**2741**	3285	**3680**	4289	**4803**
		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	75.0	Input kW, Thermal	7.70	**9.15**	12.0	**14.3**	18.5	**22.0**	26.4	**31.4**	32.7	**39.1**	44.3	**52.9**
		Output Torque Nm, Thermal	855	**1034**	1341	**1621**	2103	**2543**	3019	**3649**	3762	**4547**	5113	**6179**
		Input kW, Mechanical	5.99	**6.60**	9.99	**11.0**	16.4	**18.1**	24.0	**26.6**	32.2	**35.6**	41.9	**46.3**
		Output Torque Nm, Mechanical	665	**745**	1116	**1250**	1871	**2096**	2752	**3083**	3702	**4146**	4829	**5408**
		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	50.0	Input kW, Thermal	6.08	**7.22**	9.30	**11.0**	14.1	**16.8**	19.9	**23.7**	24.5	**29.2**	32.8	**39.1**
		Output Torque Nm, Thermal	999	**1209**	1540	**1862**	2383	**2883**	3376	**4084**	4168	**5041**	5613	**6787**
		Input kW, Mechanical	4.56	**5.01**	7.74	**8.51**	12.8	**14.1**	18.7	**20.6**	25.0	**27.6**	32.5	**35.9**
		Output Torque Nm, Mechanical	748	**837**	1280	**1433**	2158	**2417**	3171	**3551**	4260	**4772**	5561	**6228**
		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	25.0	Input kW, Thermal	4.48	**5.29**	6.66	**7.89**	9.91	**11.8**	13.7	**16.3**	16.5	**19.7**	21.8	**26.0**
		Output Torque Nm, Thermal	1435	**1737**	2153	**2607**	3268	**3958**	4538	**5495**	5511	**6672**	7303	**8840**
		Input kW, Mechanical	2.90	**3.18**	4.93	**5.40**	8.14	**8.25**	11.9	**13.1**	15.9	**17.5**	20.7	**22.8**
		Output Torque Nm, Mechanical	929	**1040**	1591	**1782**	2682	**2775**	3942	**4415**	5297	**5933**	6921	**7752**
		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 Shaft Torque Nm	1800	**1800**	3085	**3085**	4960	**4960**	8140	**8140**	8140	**8140**	7370*	**7370***

Maximum torques stated apply for uniform load applications (starts / Hour < =5)

For applications with combinations of high torques, overhung loads, or number of starts, consult Renold

*** WM 9 unit only: For torques higher than the stated maximum, two keyways and high tensile steel output shaft must be specified.**

WM Series - Single Reduction - Selection Data

Mineral and Synthetic Oils

Nominal ratio: 12.5/1 Non Preferred Ratio

Input rpm	Output rpm	Gear Ratings	Centre Distance											
			4"		5"		6"		7"		8"		9"	
			Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn
1800	144.0	Input kW, Thermal	12.9	**15.4**	20.9	**24.8**	33.8	**40.3**	48.5	**57.9**	60.7	**72.5**	83.0	**99.1**
		Output Torque Nm, Thermal	775	**935**	1258	**1519**	2043	**2466**	2946	**3555**	3696	**4461**	5064	**6111**
		Input kW, Mechanical	9.21	**10.2**	16.5	**18.2**	25.4	**28.1**	39.2	**43.5**	55.4	**61.4**	74.4	**82.5**
		Output Torque Nm, Mechanical	551	**617**	993	**1112**	1532	**1716**	2379	**2665**	3370	**3775**	4536	**5081**
		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	120.0	Input kW, Thermal	11.1	**13.1**	17.7	**21.1**	28.5	**34.0**	41.0	**48.8**	51.3	**61.2**	70.2	**83.7**
		Output Torque Nm, Thermal	790	**954**	1275	**1540**	2060	**2488**	2970	**3585**	3730	**4503**	5118	**6177**
		Input kW, Mechanical	8.19	**9.03**	14.7	**16.2**	22.7	**25.1**	35.3	**39.1**	50.0	**55.4**	67.5	**74.8**
		Output Torque Nm, Mechanical	584	**654**	1056	**1183**	1635	**1831**	2559	**2866**	3638	**4075**	4922	**5512**
		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	96.0	Input kW, Thermal	9.24	**11.0**	14.7	**17.4**	23.4	**27.9**	33.5	**39.9**	41.9	**50.0**	57.3	**68.3**
		Output Torque Nm, Thermal	819	**988**	1311	**1583**	2103	**2540**	3020	**3646**	3789	**4574**	5195	**6271**
		Input kW, Mechanical	7.27	**8.01**	12.9	**14.2**	19.8	**21.8**	30.5	**33.8**	43.2	**47.8**	58.7	**64.9**
		Output Torque Nm, Mechanical	643	**720**	1151	**1289**	1773	**1985**	2750	**3079**	3908	**4377**	5322	**5961**
		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	80.0	Input kW, Thermal	8.07	**9.57**	12.7	**15.1**	20.2	**24.0**	28.7	**34.2**	35.8	**42.6**	48.8	**58.1**
		Output Torque Nm, Thermal	852	**1029**	1354	**1635**	2159	**2609**	3086	**3727**	3862	**4663**	5283	**6379**
		Input kW, Mechanical	6.50	**7.16**	11.6	**12.8**	17.9	**19.8**	27.7	**30.6**	38.9	**43.0**	52.0	**57.5**
		Output Torque Nm, Mechanical	686	**768**	1239	**1387**	1915	**2145**	2976	**3333**	4201	**4705**	5633	**6309**
		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	60.0	Input kW, Thermal	6.65	**7.88**	10.3	**12.3**	16.2	**19.3**	22.9	**27.2**	28.4	**33.7**	38.4	**45.8**
		Output Torque Nm, Thermal	926	**1119**	1452	**1754**	2295	**2774**	3250	**3926**	4044	**4884**	5503	**6646**
		Input kW, Mechanical	5.46	**6.00**	9.72	**10.7**	14.9	**16.4**	23.2	**25.6**	32.9	**36.3**	44.4	**49.0**
		Output Torque Nm, Mechanical	760	**851**	1365	**1529**	2103	**2356**	3290	**3684**	4692	**5255**	6360	**7124**
		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	40.0	Input kW, Thermal	5.28	**6.24**	8.05	**9.53**	12.5	**14.8**	17.3	**20.6**	21.3	**25.3**	28.5	**33.9**
		Output Torque Nm, Thermal	1085	**1312**	1671	**2019**	2608	**3153**	3639	**4398**	4484	**5418**	6044	**7303**
		Input kW, Mechanical	4.20	**4.60**	7.56	**8.30**	11.6	**12.8**	18.1	**20.0**	25.6	**28.2**	34.5	**38.0**
		Output Torque Nm, Mechanical	863	**967**	1569	**1757**	2431	**2722**	3809	**4266**	5414	**6063**	7313	**8190**
		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	20.0	Input kW, Thermal	3.91	**4.61**	5.81	**6.85**	8.82	**10.4**	12.0	**14.2**	14.5	**17.1**	19.1	**22.6**
		Output Torque Nm, Thermal	1564	**1892**	2345	**2836**	3598	**4354**	4902	**5930**	5943	**7187**	7881	**9530**
		Input kW, Mechanical	2.63	**2.86**	4.74	**5.17**	6.68	**6.61**	11.4	**12.5**	16.2	**17.8**	21.8	**24.0**
		Output Torque Nm, Mechanical	1049	**1175**	1911	**2140**	2723	**2755**	4669	**5229**	6659	**7459**	9029	**10113**
		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 Shaft Torque Nm	1800	**1800**	3085	**3085**	4960	**4960**	8140	**8140**	8140	**8140**	7370*	**7370***

Maximum torques stated apply for uniform load applications (starts / Hour < =5)

For applications with combinations of high torques, overhung loads, or number of starts, consult Renold

*** WM 9 unit only: For torques higher than the stated maximum, two keyways and high tensile steel output shaft must be specified.**

WM Series - Single Reduction - Selection Data

Mineral and Synthetic Oils

Nominal ratio: 15/1 Preferred Ratio

Input rpm	Output rpm	Gear Ratings	Centre Distance											
			4"		5"		6"		7"		8"		9"	
			Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn
1800	120.0	Input kW, Thermal	10.8	**12.8**	18.0	**21.4**	29.5	**35.2**	43.0	**51.2**	53.9	**64.3**	73.7	**87.9**
		Output Torque Nm, Thermal	797	**962**	1348	**1626**	2118	**2556**	3098	**3738**	3894	**4699**	5339	**6442**
		Input kW, Mechanical	8.44	**9.29**	15.0	**16.5**	22.8	**25.2**	34.0	**37.6**	47.2	**52.2**	61.0	**67.5**
		Output Torque Nm, Mechanical	623	**697**	1120	**1254**	1630	**1825**	2444	**2737**	3404	**3812**	4412	**4942**
		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	100.0	Input kW, Thermal	9.23	**10.9**	15.3	**18.2**	25.0	**29.7**	36.3	**43.2**	45.5	**54.2**	62.2	**74.2**
		Output Torque Nm, Thermal	812	**980**	1366	**1648**	2137	**2579**	3120	**3766**	3925	**4737**	5388	**6501**
		Input kW, Mechanical	7.64	**8.40**	13.4	**14.8**	20.2	**22.3**	30.2	**33.4**	42.2	**46.7**	54.8	**60.7**
		Output Torque Nm, Mechanical	672	**752**	1195	**1339**	1725	**1932**	2598	**2910**	3641	**4078**	4743	**5312**
		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	80.0	Input kW, Thermal	7.72	**9.14**	12.7	**15.1**	20.6	**24.4**	29.7	**35.3**	37.2	**44.2**	50.8	**60.4**
		Output Torque Nm, Thermal	842	**1016**	1403	**1694**	2182	**2634**	3171	**3828**	3983	**4807**	5461	**6591**
		Input kW, Mechanical	6.72	**7.38**	11.9	**13.1**	17.9	**19.7**	26.4	**29.2**	36.4	**40.2**	47.4	**52.4**
		Output Torque Nm, Mechanical	732	**819**	1312	**1469**	1896	**2123**	2818	**3156**	3902	**4370**	5095	**5707**
		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 kW, Thermal	6.75	**7.98**	11.0	**13.0**	17.7	**21.0**	25.5	**30.3**	31.8	**37.8**	43.2	**51.5**
		Output Torque Nm, Thermal	876	**1058**	1450	**1750**	2240	**2704**	3241	**3912**	4059	**4899**	5551	**6700**
		Input kW, Mechanical	5.96	**6.54**	10.5	**11.6**	16.0	**17.6**	23.9	**26.4**	33.2	**36.6**	42.9	**47.4**
		Output Torque Nm, Mechanical	773	**866**	1386	**1552**	2024	**2267**	3043	**3408**	4245	**4755**	5512	**6174**
		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	50.0	Input kW, Thermal	5.58	**6.58**	8.98	**10.6**	14.3	**16.9**	20.3	**24.1**	25.2	**29.9**	34.1	**40.5**
		Output Torque Nm, Thermal	953	**1151**	1557	**1881**	2380	**2874**	3414	**4122**	4250	**5132**	5781	**6979**
		Input kW, Mechanical	5.04	**5.51**	8.90	**9.77**	13.4	**14.8**	20.0	**22.0**	27.8	**30.6**	35.9	**39.6**
		Output Torque Nm, Mechanical	860	**963**	1544	**1730**	2238	**2507**	3360	**3763**	4689	**5252**	6090	**6820**
		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 kW, Thermal	4.44	**5.23**	7.02	**8.29**	11.0	**13.0**	15.4	**18.3**	18.9	**22.4**	25.4	**30.1**
		Output Torque Nm, Thermal	1117	**1349**	1795	**2169**	2703	**3265**	3826	**4622**	4716	**5696**	6353	**7673**
		Input kW, Mechanical	3.90	**4.24**	6.89	**7.19**	10.4	**11.5**	15.6	**17.1**	21.6	**23.8**	27.9	**30.7**
		Output Torque Nm, Mechanical	980	**1093**	1761	**1881**	2572	**2880**	3866	**4329**	5393	**6040**	7002	**7842**
		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 kW, Thermal	3.31	**3.88**	5.10	**6.00**	7.78	**9.17**	10.7	**12.7**	12.9	**15.3**	17.0	**20.1**
		Output Torque Nm, Thermal	1611	**1947**	2530	**3058**	3725	**4504**	5166	**6245**	6264	**7571**	8300	**10031**
		Input kW, Mechanical	2.21	**2.16**	3.73	**3.66**	6.51	**6.97**	9.77	**10.7**	13.6	**14.9**	17.7	**19.4**
		Output Torque Nm, Mechanical	1073	**1083**	1846	**1864**	3113	**3420**	4708	**5272**	6611	**7404**	8640	**9677**
		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 Shaft Torque Nm	1800	**1800**	3085	**3085**	4960	**4960**	8140	**8140**	8140	**8140**	7370*	**7370***

Maximum torques stated apply for uniform load applications (starts / Hour < =5)

For applications with combinations of high torques, overhung loads, or number of starts, consult Renold

*** WM 9 unit only: For torques higher than the stated maximum, two keyways and high tensile steel output shaft must be specified.**

WM Series - Single Reduction - Selection Data

Mineral and Synthetic Oils

Nominal ratio: 20/1 Preferred Ratio

Input rpm	Output rpm	Gear Ratings	Centre Distance											
			4"		5"		6"		7"		8"		9"	
			Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn
1800	90.0	Input kW, Thermal	8.99	**10.6**	14.5	**17.1**	22.1	**26.2**	32.2	**38.2**	40.2	**47.7**	54.9	**65.2**
		Output Torque Nm, Thermal	859	**1036**	1396	**1684**	2154	**2598**	3151	**3801**	3955	**4770**	5422	**6539**
		Input kW, Mechanical	6.15	**6.75**	10.7	**11.8**	17.4	**19.1**	25.4	**28.0**	34.1	**37.6**	44.2	**48.7**
		Output Torque Nm, Mechanical	586	**656**	1035	**1159**	1687	**1890**	2487	**2785**	3350	**3752**	4350	**4872**
		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	75.0	Input kW, Thermal	7.70	**9.09**	12.3	**14.5**	18.7	**22.2**	27.2	**32.2**	34.0	**40.3**	46.5	**55.1**
		Output Torque Nm, Thermal	875	**1056**	1415	**1707**	2174	**2622**	3176	**3831**	3989	**4811**	5476	**6605**
		Input kW, Mechanical	5.56	**6.09**	9.88	**10.8**	15.7	**17.2**	22.6	**24.9**	30.2	**33.2**	39.3	**43.3**
		Output Torque Nm, Mechanical	630	**705**	1132	**1268**	1814	**2031**	2636	**2953**	3536	**3960**	4626	**5181**
		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	60.0	Input kW, Thermal	6.46	**7.61**	10.2	**12.1**	15.5	**18.3**	22.3	**26.4**	27.9	**33.0**	38.0	**45.0**
		Output Torque Nm, Thermal	908	**1096**	1454	**1754**	2219	**2677**	3229	**3895**	4049	**4884**	5555	**6700**
		Input kW, Mechanical	4.83	**5.28**	8.63	**9.46**	13.8	**15.2**	20.1	**22.1**	26.9	**29.6**	34.7	**38.2**
		Output Torque Nm, Mechanical	677	**758**	1225	**1372**	1981	**2218**	2907	**3256**	3907	**4375**	5065	**5672**
		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	50.0	Input kW, Thermal	5.67	**6.66**	8.89	**10.5**	13.3	**15.7**	19.2	**22.7**	23.8	**28.2**	32.5	**38.4**
		Output Torque Nm, Thermal	946	**1142**	1502	**1813**	2278	**2748**	3299	**3980**	4126	**4977**	5648	**6812**
		Input kW, Mechanical	4.35	**4.75**	7.74	**8.46**	12.3	**13.5**	17.9	**19.6**	24.0	**26.4**	31.2	**34.3**
		Output Torque Nm, Mechanical	725	**812**	1306	**1463**	2105	**2357**	3071	**3440**	4157	**4655**	5424	**6075**
		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 kW, Thermal	4.70	**5.52**	7.27	**8.55**	10.8	**12.7**	15.4	**18.1**	19.0	**22.4**	25.7	**30.3**
		Output Torque Nm, Thermal	1030	**1244**	1614	**1948**	2420	**2920**	3475	**4193**	4320	**5212**	5881	**7095**
		Input kW, Mechanical	3.66	**3.98**	6.51	**7.11**	10.4	**11.3**	15.1	**16.6**	20.2	**22.2**	26.2	**28.7**
		Output Torque Nm, Mechanical	800	**896**	1444	**1617**	2322	**2600**	3419	**3830**	4610	**5163**	5991	**6710**
		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	25.0	Input kW, Thermal	3.76	**4.40**	5.72	**6.70**	8.34	**9.79**	11.7	**13.8**	14.3	**16.9**	19.2	**22.6**
		Output Torque Nm, Thermal	1211	**1462**	1862	**2248**	2746	**3315**	3892	**4697**	4791	**5782**	6460	**7795**
		Input kW, Mechanical	2.80	**3.04**	4.99	**5.43**	8.03	**8.75**	11.7	**12.8**	15.6	**17.0**	20.1	**21.9**
		Output Torque Nm, Mechanical	899	**1006**	1624	**1819**	2643	**2960**	3882	**4347**	5214	**5840**	6751	**7561**
		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 kW, Thermal	2.83	**3.30**	4.19	**4.88**	5.96	**6.97**	8.21	**9.60**	9.87	**11.6**	13.0	**15.2**
		Output Torque Nm, Thermal	1755	**2120**	2627	**3173**	3782	**4568**	5250	**6340**	6358	**7676**	8431	**10179**
		Input kW, Mechanical	1.63	**1.58**	3.13	**3.31**	5.05	**5.48**	7.39	**8.02**	9.90	**10.7**	12.8	**13.9**
		Output Torque Nm, Mechanical	1006	**1015**	1959	**2148**	3202	**3586**	4724	**5291**	6376	**7141**	8295	**9291**
		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 Shaft Torque Nm	1800	**1800**	3085	**3085**	4960	**4960**	8140	**8140**	8140	**8140**	7370*	**7370***

Maximum torques stated apply for uniform load applications (starts / Hour < =5)

For applications with combinations of high torques, overhung loads, or number of starts, consult Renold

*** WM 9 unit only: For torques higher than the stated maximum, two keyways and high tensile steel output shaft must be specified.**

WM Series - Single Reduction - Selection Data

Mineral and Synthetic Oils

Nominal ratio: 25/1 Preferred Ratio

Input rpm	Output rpm	Gear Ratings	Centre Distance											
			4"		5"		6"		7"		8"		9"	
			Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn
1800	72.0	Input kW, Thermal	6.92	**8.12**	12.9	**15.3**	19.8	**23.4**	28.8	**34.0**	36.0	**42.7**	49.2	**58.3**
		Output Torque Nm, Thermal	773	**932**	1469	**1772**	2269	**2737**	3321	**4005**	4182	**5043**	5738	**6919**
		Input kW, Mechanical	6.32	**6.89**	8.87	**9.73**	14.1	**15.4**	20.8	**22.8**	29.5	**32.5**	39.9	**44.0**
		Output Torque Nm, Mechanical	705	**790**	1004	**1125**	1608	**1800**	2393	**2680**	3421	**3832**	4647	**5204**
		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	60.0	Input kW, Thermal	5.94	**6.96**	11.0	**13.0**	16.8	**19.8**	24.3	**28.7**	30.4	**36.0**	41.6	**49.2**
		Output Torque Nm, Thermal	788	**950**	1488	**1795**	2288	**2760**	3342	**4031**	4210	**5077**	5781	**6971**
		Input kW, Mechanical	5.70	**6.20**	8.00	**8.76**	12.8	**14.0**	18.9	**20.8**	26.6	**29.2**	36.0	**39.6**
		Output Torque Nm, Mechanical	755	**845**	1078	**1207**	1743	**1952**	2600	**2912**	3668	**4108**	4994	**5593**
		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	48.0	Input kW, Thermal	5.00	**5.84**	9.16	**10.8**	13.8	**16.3**	20.0	**23.5**	24.9	**29.4**	34.0	**40.2**
		Output Torque Nm, Thermal	816	**984**	1529	**1845**	2336	**2817**	3395	**4095**	4268	**5147**	5852	**7058**
		Input kW, Mechanical	4.99	**5.42**	6.99	**7.63**	11.1	**12.1**	16.6	**18.2**	23.4	**25.7**	31.6	**34.7**
		Output Torque Nm, Mechanical	815	**913**	1163	**1303**	1867	**2091**	2814	**3151**	4010	**4491**	5441	**6093**
		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	40.0	Input kW, Thermal	4.39	**5.12**	7.97	**9.37**	12.0	**14.1**	17.2	**20.2**	21.4	**25.2**	29.0	**34.3**
		Output Torque Nm, Thermal	848	**1023**	1581	**1908**	2398	**2893**	3469	**4184**	4347	**5244**	5946	**7171**
		Input kW, Mechanical	4.49	**4.86**	6.26	**6.83**	10.0	**11.0**	14.8	**16.2**	20.9	**22.9**	28.1	**30.9**
		Output Torque Nm, Mechanical	868	**972**	1239	**1388**	2006	**2247**	2992	**3351**	4255	**4765**	5765	**6457**
		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	30.0	Input kW, Thermal	3.64	**4.24**	6.54	**7.67**	9.69	**11.4**	13.8	**16.2**	17.0	**20.0**	23.0	**27.1**
		Output Torque Nm, Thermal	921	**1111**	1701	**2053**	2550	**3077**	3656	**4410**	4552	**5492**	6190	**7467**
		Input kW, Mechanical	3.78	**4.09**	5.25	**5.72**	8.35	**9.11**	12.4	**13.5**	17.6	**19.2**	23.8	**26.0**
		Output Torque Nm, Mechanical	955	**1070**	1364	**1528**	2195	**2458**	3292	**3687**	4710	**5275**	6402	**7170**
		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	20.0	Input kW, Thermal	2.93	**3.39**	5.16	**6.03**	7.52	**8.80**	10.5	**12.4**	12.9	**15.1**	17.2	**20.2**
		Output Torque Nm, Thermal	1077	**1299**	1966	**2373**	2899	**3499**	4102	**4949**	5056	**6100**	6807	**8213**
		Input kW, Mechanical	2.92	**3.14**	4.03	**4.37**	6.50	**7.06**	9.68	**10.5**	13.7	**14.9**	18.3	**20.0**
		Output Torque Nm, Mechanical	1073	**1202**	1532	**1716**	2503	**2803**	3766	**4217**	5356	**5999**	7239	**8108**
		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	10.0	Input kW, Thermal	2.21	**2.54**	3.81	**4.42**	5.42	**6.30**	7.44	**8.67**	8.94	**10.4**	11.8	**13.7**
		Output Torque Nm, Thermal	1547	**1867**	2784	**3362**	4007	**4838**	5553	**6704**	6730	**8124**	8913	**10759**
		Input kW, Mechanical	1.83	**1.96**	2.51	**2.56**	4.06	**4.38**	6.06	**6.55**	8.56	**9.27**	11.5	**12.5**
		Output Torque Nm, Mechanical	1280	**1434**	1831	**1943**	2997	**3357**	4518	**5061**	6442	**7215**	8726	**9773**
		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 Shaft Torque Nm	1800	**1800**	3085	**3085**	4960	**4960**	8140	**8140**	8140	**8140**	7370*	**7370***

Maximum torques stated apply for uniform load applications (starts / Hour < =5)

For applications with combinations of high torques, overhung loads, or number of starts, consult Renold

*** WM 9 unit only: For torques higher than the stated maximum, two keyways and high tensile steel output shaft must be specified.**

WM Series - Single Reduction - Selection Data

Mineral and Synthetic Oils

Nominal ratio: 30/1 Preferred Ratio

Input rpm	Output rpm	Gear Ratings	Centre Distance											
			4"		5"		6"		7"		8"		9"	
			Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn
1800	60.0	Input kW, Thermal	6.57	**7.70**	10.5	**12.4**	16.1	**18.9**	25.8	**30.5**	34.0	**40.2**	44.3	**52.4**
		Output Torque Nm, Thermal	872	**1051**	1418	**1710**	2185	**2635**	3539	**4267**	4719	**5690**	6136	**7398**
		Input kW, Mechanical	5.90	**6.42**	9.96	**10.9**	14.2	**15.5**	16.2	**17.8**	23.6	**25.9**	31.2	**34.3**
		Output Torque Nm, Mechanical	781	**875**	1340	**1501**	1924	**2155**	2213	**2479**	3263	**3654**	4307	**4824**
		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	50.0	Input kW, Thermal	5.65	**6.61**	9.00	**10.5**	13.6	**16.0**	21.8	**25.7**	28.6	**33.8**	37.4	**44.1**
		Output Torque Nm, Thermal	889	**1072**	1437	**1733**	2206	**2659**	3557	**4289**	4732	**5707**	6164	**7433**
		Input kW, Mechanical	5.28	**5.74**	8.91	**9.71**	12.8	**13.9**	14.7	**16.1**	21.3	**23.4**	28.0	**30.7**
		Output Torque Nm, Mechanical	830	**930**	1424	**1595**	2065	**2313**	2382	**2668**	3515	**3936**	4610	**5163**
		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	40.0	Input kW, Thermal	4.76	**5.55**	7.50	**8.78**	11.3	**13.2**	17.9	**21.1**	23.4	**27.6**	30.5	**36.0**
		Output Torque Nm, Thermal	922	**1112**	1477	**1781**	2251	**2715**	3611	**4355**	4787	**5774**	6228	**7511**
		Input kW, Mechanical	4.64	**5.03**	7.84	**8.52**	11.1	**12.1**	12.8	**13.9**	18.5	**20.3**	24.3	**26.7**
		Output Torque Nm, Mechanical	899	**1006**	1543	**1728**	2222	**2489**	2562	**2869**	3779	**4233**	4959	**5554**
		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 kW, Thermal	4.19	**4.88**	6.54	**7.64**	9.78	**11.4**	15.4	**18.1**	20.1	**23.6**	26.1	**30.7**
		Output Torque Nm, Thermal	960	**1158**	1526	**1840**	2311	**2787**	3690	**4451**	4875	**5880**	6324	**7626**
		Input kW, Mechanical	4.16	**4.50**	7.02	**7.62**	10.1	**10.9**	11.5	**12.6**	16.7	**18.3**	21.8	**23.8**
		Output Torque Nm, Mechanical	955	**1069**	1638	**1835**	2379	**2665**	2744	**3074**	4047	**4533**	5277	**5910**
		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	25.0	Input kW, Thermal	3.49	**4.05**	5.38	**6.26**	7.94	**9.27**	12.4	**14.6**	16.0	**18.9**	20.7	**24.3**
		Output Torque Nm, Thermal	1046	**1262**	1639	**1977**	2455	**2961**	3892	**4695**	5112	**6167**	6584	**7942**
		Input kW, Mechanical	3.48	**3.76**	5.87	**6.35**	8.30	**9.00**	9.46	**10.3**	13.8	**15.0**	18.3	**20.0**
		Output Torque Nm, Mechanical	1043	**1168**	1790	**2005**	2567	**2875**	2960	**3315**	4383	**4908**	5816	**6514**
		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 kW, Thermal	2.82	**3.26**	4.26	**4.94**	6.19	**7.19**	9.54	**11.1**	12.2	**14.3**	15.6	**18.2**
		Output Torque Nm, Thermal	1229	**1483**	1891	**2281**	2786	**3361**	4376	**5280**	5700	**6879**	7252	**8748**
		Input kW, Mechanical	2.69	**2.89**	4.57	**4.92**	6.56	**7.09**	7.46	**8.09**	10.8	**11.8**	14.2	**15.5**
		Output Torque Nm, Mechanical	1172	**1313**	2029	**2272**	2957	**3311**	3414	**3824**	5041	**5646**	6618	**7412**
		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 kW, Thermal	2.14	**2.47**	3.16	**3.64**	4.48	**5.18**	6.78	**7.88**	8.54	**9.95**	10.7	**12.4**
		Output Torque Nm, Thermal	1782	**2151**	2668	**3220**	3838	**4631**	5951	**7183**	7657	**9243**	9535	**11508**
		Input kW, Mechanical	1.67	**1.62**	2.84	**3.04**	4.09	**4.38**	4.62	**4.98**	6.65	**6.46**	8.82	**9.52**
		Output Torque Nm, Mechanical	1387	**1407**	2397	**2685**	3497	**3917**	4043	**4528**	5947	**5990**	7855	**8797**
		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 Shaft Torque Nm	1800	**1800**	3085	**3085**	4960	**4960**	8140	**8140**	8140	**8140**	7370*	**7370***

Maximum torques stated apply for uniform load applications (starts / Hour < =5)

For applications with combinations of high torques, overhung loads, or number of starts, consult Renold

*** WM 9 unit only: For torques higher than the stated maximum, two keyways and high tensile steel output shaft must be specified.**

WM Series - Single Reduction - Selection Data

Mineral and Synthetic Oils

Nominal ratio: 35/1 Non Preferred Ratio

Input rpm	Output rpm	Gear Ratings	Centre Distance											
			4"		5"		6"		7"		8"		9"	
			Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn
1800	51.4	Input kW, Thermal	5.82	**6.79**	9.50	**11.1**	14.8	**17.3**	21.5	**25.2**	27.4	**32.2**	36.7	**43.2**
		Output Torque Nm, Thermal	878	**1058**	1462	**1762**	2309	**2784**	3389	**4086**	4371	**5270**	5784	**6973**
		Input kW, Mechanical	4.59	**4.98**	8.29	**9.02**	12.7	**13.9**	18.0	**19.7**	24.8	**27.2**	24.6	**26.9**
		Output Torque Nm, Mechanical	690	**773**	1273	**1426**	1990	**2229**	2840	**3181**	3957	**4432**	3854	**4316**
		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 kW, Thermal	5.01	**5.84**	8.12	**9.49**	12.5	**14.7**	18.2	**21.3**	23.2	**27.2**	31.1	**36.5**
		Output Torque Nm, Thermal	895	**1079**	1481	**1785**	2329	**2808**	3411	**4113**	4396	**5300**	5829	**7027**
		Input kW, Mechanical	4.13	**4.47**	7.39	**8.03**	11.4	**12.4**	16.1	**17.6**	22.2	**24.2**	22.0	**24.0**
		Output Torque Nm, Mechanical	736	**824**	1347	**1508**	2111	**2364**	3023	**3386**	4208	**4713**	4112	**4605**
		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 kW, Thermal	4.23	**4.92**	6.78	**7.91**	10.4	**12.2**	15.0	**17.5**	19.0	**22.3**	25.5	**29.9**
		Output Torque Nm, Thermal	928	**1119**	1522	**1835**	2377	**2866**	3465	**4178**	4454	**5370**	5903	**7116**
		Input kW, Mechanical	3.62	**3.91**	6.54	**7.08**	10.0	**10.9**	14.1	**15.3**	19.2	**20.9**	19.0	**20.7**
		Output Torque Nm, Mechanical	793	**888**	1466	**1642**	2291	**2566**	3251	**3641**	4486	**5024**	4391	**4918**
		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 kW, Thermal	3.73	**4.32**	5.92	**6.89**	9.01	**10.5**	12.9	**15.1**	16.3	**19.1**	21.8	**25.6**
		Output Torque Nm, Thermal	967	**1166**	1573	**1897**	2440	**2943**	3540	**4269**	4536	**5470**	5997	**7231**
		Input kW, Mechanical	3.24	**3.49**	5.80	**6.27**	8.96	**9.72**	12.7	**13.8**	17.4	**19.0**	17.1	**18.6**
		Output Torque Nm, Mechanical	840	**941**	1540	**1725**	2427	**2718**	3482	**3900**	4838	**5418**	4681	**5242**
		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 kW, Thermal	3.11	**3.60**	4.88	**5.66**	7.34	**8.54**	10.4	**12.1**	13.1	**15.3**	17.4	**20.3**
		Output Torque Nm, Thermal	1053	**1270**	1691	**2040**	2595	**3130**	3731	**4499**	4751	**5729**	6243	**7528**
		Input kW, Mechanical	2.73	**2.94**	4.91	**5.29**	7.49	**8.10**	10.6	**11.5**	14.5	**15.8**	14.4	**15.6**
		Output Torque Nm, Mechanical	922	**1033**	1700	**1904**	2650	**2968**	3788	**4242**	5281	**5915**	5157	**5775**
		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 kW, Thermal	2.52	**2.90**	3.88	**4.48**	5.74	**6.65**	8.04	**9.33**	9.99	**11.6**	13.1	**15.3**
		Output Torque Nm, Thermal	1238	**1493**	1953	**2355**	2951	**3559**	4185	**5048**	5280	**6368**	6863	**8277**
		Input kW, Mechanical	2.11	**2.25**	3.79	**4.07**	5.84	**6.29**	8.27	**8.92**	11.3	**12.2**	11.1	**12.0**
		Output Torque Nm, Mechanical	1032	**1156**	1906	**2135**	3003	**3363**	4308	**4825**	5991	**6710**	5823	**6522**
		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 kW, Thermal	1.93	**2.21**	2.90	**3.32**	4.19	**4.82**	5.74	**6.61**	7.02	**8.10**	9.05	**10.5**
		Output Torque Nm, Thermal	1795	**2166**	2761	**3332**	4080	**4922**	5666	**6835**	7043	**8497**	8982	**10835**
		Input kW, Mechanical	1.31	**1.39**	2.36	**2.52**	3.65	**3.90**	5.17	**5.54**	7.08	**7.59**	6.98	**7.49**
		Output Torque Nm, Mechanical	1217	**1363**	2251	**2521**	3551	**3977**	5103	**5715**	7107	**7960**	6921	**7751**
		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 Shaft Torque Nm	1800	**1800**	3085	**3085**	4960	**4960**	8140	**8140**	8140	**8140**	7370*	**7370***

Maximum torques stated apply for uniform load applications (starts / Hour < =5)

For applications with combinations of high torques, overhung loads, or number of starts, consult Renold

*** WM 9 unit only: For torques higher than the stated maximum, two keyways and high tensile steel output shaft must be specified.**

WM Series - Single Reduction - Selection Data

Mineral and Synthetic Oils

Nominal ratio: 40/1 Preferred Ratio

Input rpm	Output rpm	Gear Ratings	Centre Distance											
			4"		5"		6"		7"		8"		9"	
			Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn
1800	45.0	Input kW, Thermal	5.26	**6.11**	8.66	**10.1**	13.2	**15.4**	19.5	**22.8**	24.5	**28.8**	33.2	**39.0**
		Output Torque Nm, Thermal	883	**1065**	1493	**1799**	2307	**2781**	3450	**4159**	4390	**5292**	5972	**7200**
		Input kW, Mechanical	3.79	**4.10**	6.81	**7.38**	10.9	**11.8**	16.1	**17.5**	21.7	**23.7**	27.8	**30.4**
		Output Torque Nm, Mechanical	634	**710**	1169	**1310**	1899	**2127**	2846	**3188**	3879	**4344**	4992	**5591**
		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 kW, Thermal	4.53	**5.26**	7.41	**8.63**	11.2	**13.1**	16.5	**19.3**	20.8	**24.3**	28.1	**33.0**
		Output Torque Nm, Thermal	901	**1086**	1512	**1823**	2327	**2805**	3470	**4183**	4413	**5321**	6010	**7245**
		Input kW, Mechanical	3.45	**3.72**	6.13	**6.64**	9.71	**10.5**	14.3	**15.6**	19.3	**21.1**	24.8	**27.1**
		Output Torque Nm, Mechanical	683	**765**	1248	**1398**	2009	**2250**	3007	**3367**	4105	**4597**	5300	**5936**
		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	30.0	Input kW, Thermal	3.83	**4.44**	6.20	**7.21**	9.32	**10.9**	13.6	**15.9**	17.1	**20.0**	23.1	**27.0**
		Output Torque Nm, Thermal	934	**1126**	1554	**1874**	2374	**2863**	3524	**4249**	4471	**5390**	6079	**7329**
		Input kW, Mechanical	3.00	**3.23**	5.38	**5.81**	8.60	**9.30**	12.6	**13.7**	16.8	**18.3**	21.5	**23.4**
		Output Torque Nm, Mechanical	729	**817**	1346	**1508**	2187	**2450**	3264	**3656**	4405	**4934**	5660	**6340**
		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	25.0	Input kW, Thermal	3.38	**3.90**	5.42	**6.29**	8.09	**9.40**	11.8	**13.7**	14.7	**17.1**	19.8	**23.1**
		Output Torque Nm, Thermal	973	**1174**	1607	**1937**	2438	**2939**	3600	**4341**	4553	**5489**	6174	**7444**
		Input kW, Mechanical	2.69	**2.89**	4.76	**5.14**	7.66	**8.27**	11.3	**12.3**	15.2	**16.5**	19.4	**21.1**
		Output Torque Nm, Mechanical	773	**866**	1410	**1579**	2305	**2582**	3468	**3884**	4722	**5289**	6071	**6799**
		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 kW, Thermal	2.83	**3.26**	4.48	**5.18**	6.61	**7.65**	9.50	**11.0**	11.8	**13.7**	15.8	**18.4**
		Output Torque Nm, Thermal	1060	**1278**	1728	**2084**	2592	**3126**	3795	**4577**	4769	**5750**	6427	**7750**
		Input kW, Mechanical	2.28	**2.44**	4.06	**4.37**	6.44	**6.93**	9.46	**10.2**	12.7	**13.8**	16.2	**17.6**
		Output Torque Nm, Mechanical	852	**955**	1566	**1754**	2525	**2828**	3777	**4231**	5145	**5763**	6618	**7413**
		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 kW, Thermal	2.30	**2.64**	3.57	**4.11**	5.18	**5.98**	7.35	**8.50**	9.03	**10.5**	11.9	**13.9**
		Output Torque Nm, Thermal	1246	**1503**	1998	**2410**	2947	**3554**	4262	**5140**	5301	**6393**	7071	**8527**
		Input kW, Mechanical	1.75	**1.87**	3.11	**3.33**	5.00	**5.35**	7.37	**7.91**	9.89	**10.6**	12.6	**13.6**
		Output Torque Nm, Mechanical	947	**1061**	1738	**1946**	2839	**3180**	4268	**4781**	5809	**6506**	7465	**8361**
		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 kW, Thermal	1.77	**2.02**	2.68	**3.07**	3.80	**4.35**	5.29	**6.07**	6.38	**7.34**	8.30	**9.55**
		Output Torque Nm, Thermal	1807	**2180**	2830	**3415**	4074	**4915**	5781	**6973**	7076	**8535**	9274	**11187**
		Input kW, Mechanical	1.10	**1.16**	1.96	**2.08**	3.15	**3.35**	4.64	**4.95**	6.24	**6.66**	7.97	**8.52**
		Output Torque Nm, Mechanical	1117	**1252**	2059	**2306**	3370	**3774**	5073	**5682**	6916	**7746**	8905	**9974**
		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 Shaft Torque Nm	1800	**1800**	3085	**3085**	4960	**4960**	8140	**8140**	8140	**8140**	7370*	**7370***

Maximum torques stated apply for uniform load applications (starts / Hour < =5)

For applications with combinations of high torques, overhung loads, or number of starts, consult Renold

*** WM 9 unit only: For torques higher than the stated maximum, two keyways and high tensile steel output shaft must be specified.**

WM Series - Single Reduction - Selection Data

Mineral and Synthetic Oils

Nominal ratio: 45/1 Non Preferred Ratio

Input rpm	Output rpm	Gear Ratings	Centre Distance											
			4"		5"		6"		7"		8"		9"	
			Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn
1800	40.0	Input kW, Thermal	4.94	**5.73**	8.14	**9.48**	12.2	**14.2**	17.1	**19.9**	22.0	**25.7**	30.5	**35.8**
		Output Torque Nm, Thermal	919	**1108**	1555	**1874**	2346	**2828**	3308	**3988**	4330	**5219**	6080	**7328**
		Input kW, Mechanical	3.31	**3.57**	5.89	**6.37**	9.29	**10.1**	13.7	**14.7**	19.4	**20.8**	25.3	**27.2**
		Output Torque Nm, Mechanical	612	**686**	1119	**1253**	1788	**2001**	2653	**2931**	3806	**4208**	5026	**5563**
		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 kW, Thermal	4.27	**4.94**	6.97	**8.10**	10.3	**12.0**	14.5	**16.9**	18.7	**21.8**	25.9	**30.3**
		Output Torque Nm, Thermal	937	**1130**	1575	**1899**	2365	**2852**	3331	**4016**	4355	**5250**	6114	**7370**
		Input kW, Mechanical	3.00	**3.23**	5.32	**5.75**	8.30	**8.98**	12.2	**13.2**	17.2	**18.7**	22.5	**24.5**
		Output Torque Nm, Mechanical	655	**734**	1198	**1341**	1892	**2119**	2791	**3126**	4016	**4498**	5319	**5957**
		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 kW, Thermal	3.61	**4.17**	5.84	**6.77**	8.60	**9.99**	12.0	**13.9**	15.4	**17.9**	21.2	**24.8**
		Output Torque Nm, Thermal	973	**1173**	1619	**1952**	2414	**2910**	3385	**4081**	4413	**5320**	6181	**7452**
		Input kW, Mechanical	2.58	**2.77**	4.63	**4.99**	7.36	**7.94**	10.8	**11.6**	15.1	**16.4**	19.6	**21.3**
		Output Torque Nm, Mechanical	692	**775**	1279	**1433**	2060	**2307**	3037	**3402**	4337	**4857**	5712	**6397**
		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**
1000	22.2	Input kW, Thermal	3.19	**3.68**	5.11	**5.91**	7.48	**8.66**	10.4	**12.0**	13.2	**15.4**	18.2	**21.2**
		Output Torque Nm, Thermal	1014	**1223**	1675	**2019**	2479	**2989**	3458	**4169**	4495	**5419**	6277	**7567**
		Input kW, Mechanical	2.35	**2.52**	4.13	**4.44**	6.57	**7.07**	9.66	**10.4**	13.6	**14.7**	17.7	**19.2**
		Output Torque Nm, Mechanical	743	**832**	1350	**1512**	2173	**2434**	3217	**3603**	4620	**5174**	6109	**6842**
		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 kW, Thermal	2.68	**3.08**	4.23	**4.88**	6.12	**7.07**	8.41	**9.72**	10.6	**12.3**	14.6	**16.9**
		Output Torque Nm, Thermal	1106	**1334**	1803	**2174**	2637	**3179**	3643	**4392**	4707	**5675**	6534	**7878**
		Input kW, Mechanical	1.98	**2.11**	3.51	**3.76**	5.52	**5.93**	8.10	**8.70**	11.4	**12.2**	14.8	**16.0**
		Output Torque Nm, Mechanical	813	**911**	1493	**1672**	2378	**2663**	3509	**3930**	5030	**5634**	6637	**7434**
		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 kW, Thermal	2.19	**2.50**	3.39	**3.89**	4.82	**5.54**	6.53	**7.51**	8.17	**9.43**	11.1	**12.8**
		Output Torque Nm, Thermal	1302	**1570**	2087	**2517**	3000	**3618**	4084	**4924**	5230	**6306**	7192	**8672**
		Input kW, Mechanical	1.52	**1.61**	2.67	**2.85**	4.26	**4.55**	6.30	**6.74**	8.83	**9.46**	11.5	**12.3**
		Output Torque Nm, Mechanical	900	**1008**	1643	**1840**	2653	**2971**	3942	**4415**	5653	**6331**	7460	**8356**
		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 kW, Thermal	1.69	**1.92**	2.55	**2.91**	3.55	**4.05**	4.71	**5.38**	5.81	**6.64**	7.72	**8.86**
		Output Torque Nm, Thermal	1894	**2285**	2963	**3574**	4154	**5010**	5522	**6659**	6972	**8409**	9442	**11388**
		Input kW, Mechanical	0.953	**1.00**	1.69	**1.78**	2.70	**2.86**	4.02	**4.26**	5.62	**5.98**	7.30	**7.78**
		Output Torque Nm, Mechanical	1063	**1190**	1951	**2185**	3156	**3535**	4702	**5267**	6751	**7561**	8923	**9994**
		Efficiency %	64.9	**6.90**	67.3	**71.2**	67.9	**71.8**	68.1	**72.0**	69.9	**73.6**	71.1	**74.8**
		Max Standard Shaft Torque Nm	1800	**1800**	3085	**3085**	4960	**4960**	8140	**8140**	8140	**8140**	7370*	**7370***

Maximum torques stated apply for uniform load applications (starts / Hour < =5)

For applications with combinations of high torques, overhung loads, or number of starts, consult Renold

*** WM 9 unit only: For torques higher than the stated maximum, two keyways and high tensile steel output shaft must be specified.**

WM Series - Single Reduction - Selection Data

Mineral and Synthetic Oils

Nominal ratio: 50/1 Preferred Ratio

Input rpm	Output rpm	Gear Ratings	Centre Distance											
			4"		5"		6"		7"		8"		9"	
			Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn
1800	36.0	Input kW, Thermal	4.67	**5.41**	7.44	**8.63**	11.3	**13.1**	16.4	**19.1**	20.4	**23.8**	27.9	**32.5**
		Output Torque Nm, Thermal	950	**1145**	1541	**1858**	2380	**2869**	3490	**4206**	4398	**5301**	6045	**7286**
		Input kW, Mechanical	2.93	**3.10**	5.11	**5.45**	8.09	**8.64**	12.0	**12.7**	17.0	**17.9**	22.9	**24.2**
		Output Torque Nm, Mechanical	591	**649**	1053	**1164**	1696	**1875**	2558	**2781**	3640	**3964**	4954	**5405**
		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	30.0	Input kW, Thermal	4.04	**4.66**	6.38	**7.38**	9.63	**11.2**	13.9	**16.2**	17.3	**20.2**	23.6	**27.6**
		Output Torque Nm, Thermal	969	**1168**	1561	**1882**	2399	**2893**	3509	**4230**	4422	**5330**	6080	**7329**
		Input kW, Mechanical	2.63	**2.83**	4.64	**4.99**	7.30	**7.88**	10.7	**11.6**	15.1	**16.3**	20.4	**22.1**
		Output Torque Nm, Mechanical	627	**702**	1129	**1265**	1812	**2030**	2700	**3024**	3837	**4298**	5235	**5864**
		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	24.0	Input kW, Thermal	3.43	**3.95**	5.35	**6.18**	8.02	**9.28**	11.5	**13.3**	14.3	**16.6**	19.4	**22.6**
		Output Torque Nm, Thermal	1006	**1213**	1605	**1935**	2449	**2952**	3564	**4296**	4479	**5400**	6149	**7412**
		Input kW, Mechanical	2.29	**2.45**	4.04	**4.33**	6.43	**6.92**	9.51	**10.3**	13.3	**14.4**	17.9	**19.4**
		Output Torque Nm, Mechanical	667	**747**	1205	**1349**	1957	**2192**	2939	**3292**	4166	**4666**	5657	**6335**
		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	20.0	Input kW, Thermal	3.03	**3.48**	4.69	**5.41**	6.98	**8.06**	9.95	**11.5**	12.3	**14.3**	16.7	**19.4**
		Output Torque Nm, Thermal	1050	**1266**	1660	**2002**	2515	**3032**	3641	**4390**	4562	**5499**	6244	**7527**
		Input kW, Mechanical	2.07	**2.22**	3.61	**3.87**	5.75	**6.17**	8.49	**9.13**	11.9	**12.8**	16.1	**17.4**
		Output Torque Nm, Mechanical	714	**800**	1272	**1425**	2067	**2315**	3099	**3471**	4406	**4935**	6020	**6742**
		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	15.0	Input kW, Thermal	2.55	**2.92**	3.89	**4.47**	5.72	**6.59**	8.08	**9.32**	9.93	**11.5**	13.4	**15.5**
		Output Torque Nm, Thermal	1146	**1381**	1787	**2155**	2676	**3226**	3839	**4628**	4778	**5760**	6500	**7836**
		Input kW, Mechanical	1.74	**1.85**	3.06	**3.27**	4.84	**5.18**	7.12	**7.64**	10.0	**10.8**	13.5	**14.5**
		Output Torque Nm, Mechanical	776	**869**	1400	**1568**	2258	**2529**	3379	**3785**	4817	**5395**	6567	**7355**
		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	10.0	Input kW, Thermal	2.09	**2.38**	3.13	**3.57**	4.52	**5.17**	6.29	**7.22**	7.65	**8.79**	10.2	**11.7**
		Output Torque Nm, Thermal	1351	**1629**	2069	**2495**	3047	**3674**	4312	**5199**	5310	**6403**	7152	**8624**
		Input kW, Mechanical	1.33	**1.41**	2.32	**2.47**	3.72	**3.96**	5.52	**5.88**	7.74	**8.27**	10.4	**11.1**
		Output Torque Nm, Mechanical	857	**960**	1533	**1717**	2504	**2804**	3776	**4229**	5372	**6017**	7310	**8187**
		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	5.0	Input kW, Thermal	1.62	**1.83**	2.37	**2.69**	3.34	**3.80**	4.57	**5.20**	5.46	**6.22**	7.15	**8.16**
		Output Torque Nm, Thermal	1970	**2376**	2938	**3543**	4222	**5092**	5853	**7058**	7087	**8546**	9387	**11320**
		Input kW, Mechanical	0.837	**0.879**	1.48	**1.56**	2.37	**2.50**	3.53	**3.73**	4.96	**5.25**	6.68	**7.08**
		Output Torque Nm, Mechanical	1012	**1133**	1825	**2044**	2985	**3343**	4510	**5051**	6429	**7200**	8765	**9816**
		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 Shaft Torque Nm	1800	**1800**	3085	**3085**	4960	**4960**	8140	**8140**	8140	**8140**	7370*	**7370***

Maximum torques stated apply for uniform load applications (starts / Hour < =5)

For applications with combinations of high torques, overhung loads, or number of starts, consult Renold

*** WM 9 unit only: For torques higher than the stated maximum, two keyways and high tensile steel output shaft must be specified.**

WM Series - Single Reduction - Selection Data

Mineral and Synthetic Oils

Nominal ratio: 60/1 Preferred Ratio

Input rpm	Output rpm	Gear Ratings	Centre Distance											
			4"		5"		6"		7"		8"		9"	
			Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn
1800	30.0	Input kW, Thermal	4.23	**4.88**	6.74	**7.79**	10.2	**11.8**	14.8	**17.2**	18.5	**21.5**	25.2	**29.3**
		Output Torque Nm, Thermal	999	**1204**	1627	**1961**	2509	**3024**	3685	**4441**	4652	**5608**	6398	**7711**
		Input kW, Mechanical	2.30	**2.35**	4.03	**4.14**	6.31	**6.53**	9.34	**9.65**	13.1	**13.5**	17.7	**18.2**
		Output Torque Nm, Mechanical	536	**571**	964	**1029**	1537	**1653**	2310	**2475**	3287	**3496**	4473	**4766**
		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	25.0	Input kW, Thermal	3.66	**4.21**	5.79	**6.67**	8.71	**10.1**	12.6	**14.6**	15.7	**18.2**	21.3	**24.8**
		Output Torque Nm, Thermal	1020	**1229**	1648	**1986**	2528	**3047**	3702	**4462**	4670	**5629**	6420	**7739**
		Input kW, Mechanical	2.05	**2.18**	3.63	**3.83**	5.74	**6.07**	8.44	**8.98**	11.8	**12.6**	15.8	**17.0**
		Output Torque Nm, Mechanical	563	**629**	1023	**1129**	1652	**1821**	2470	**2734**	3491	**3882**	4716	**5268**
		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	20.0	Input kW, Thermal	3.12	**3.57**	4.87	**5.60**	7.27	**8.38**	10.4	**12.0**	12.9	**15.0**	17.6	**20.3**
		Output Torque Nm, Thermal	1060	**1278**	1695	**2044**	2580	**3111**	3758	**4529**	4726	**5697**	6482	**7814**
		Input kW, Mechanical	1.81	**1.92**	3.17	**3.38**	5.00	**5.36**	7.39	**7.93**	10.4	**11.2**	14.0	**15.1**
		Output Torque Nm, Mechanical	608	**680**	1094	**1225**	1766	**1978**	2651	**2969**	3779	**4232**	5143	**5760**
		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 kW, Thermal	2.76	**3.16**	4.28	**4.91**	6.34	**7.29**	9.03	**10.4**	11.2	**12.9**	15.1	**17.5**
		Output Torque Nm, Thermal	1107	**1334**	1755	**2115**	2651	**3196**	3840	**4629**	4813	**5801**	6580	**7931**
		Input kW, Mechanical	1.63	**1.73**	2.84	**3.03**	4.48	**4.79**	6.61	**7.08**	9.22	**9.89**	12.5	**13.4**
		Output Torque Nm, Mechanical	645	**722**	1158	**1297**	1866	**2090**	2798	**3134**	3959	**4434**	5413	**6063**
		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 kW, Thermal	2.34	**2.66**	3.56	**4.07**	5.22	**5.98**	7.35	**8.44**	9.03	**10.4**	12.1	**14.0**
		Output Torque Nm, Thermal	1210	**1459**	1892	**2281**	2825	**3406**	4052	**4885**	5044	**6080**	6851	**8259**
		Input kW, Mechanical	1.35	**1.43**	2.39	**2.54**	3.77	**4.01**	5.53	**5.90**	7.79	**8.33**	10.5	**11.3**
		Output Torque Nm, Mechanical	693	**776**	1260	**1411**	2032	**2276**	3037	**3401**	4343	**4865**	5938	**6650**
		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 kW, Thermal	1.92	**2.18**	2.87	**3.27**	4.14	**4.72**	5.76	**6.57**	6.99	**8.00**	9.28	**10.6**
		Output Torque Nm, Thermal	1431	**1725**	2195	**2646**	3223	**3887**	4561	**5499**	5616	**6771**	7551	**9104**
		Input kW, Mechanical	1.03	**1.09**	1.81	**1.91**	2.88	**3.05**	4.28	**4.54**	6.02	**6.41**	8.11	**8.64**
		Output Torque Nm, Mechanical	764	**855**	1374	**1539**	2230	**2498**	3380	**3785**	4831	**5411**	6590	**7381**
		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 kW, Thermal	1.50	**1.69**	2.20	**2.48**	3.09	**3.49**	4.21	**4.77**	5.03	**5.71**	6.57	**7.47**
		Output Torque Nm, Thermal	2095	**2527**	3129	**3773**	4486	**5410**	6216	**7496**	7524	**9073**	9950	**11998**
		Input kW, Mechanical	0.652	**0.641**	1.16	**1.21**	1.84	**1.93**	2.74	**2.89**	3.86	**4.07**	5.20	**5.49**
		Output Torque Nm, Mechanical	902	**948**	1636	**1833**	2662	**2981**	4032	**4515**	5760	**6451**	7853	**8795**
		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 Shaft Torque Nm	1800	**1800**	3085	**3085**	4960	**4960**	8140	**8140**	8140	**8140**	7370*	**7370***

Maximum torques stated apply for uniform load applications (starts / Hour < =5)

For applications with combinations of high torques, overhung loads, or number of starts, consult Renold

*** WM 9 unit only: For torques higher than the stated maximum, two keyways and high tensile steel output shaft must be specified.**

WM Series - Single Reduction - Selection Data

Mineral and Synthetic Oils

Nominal ratio: 70/1 Preferred Ratio

Input rpm	Output rpm	Gear Ratings	Centre Distance											
			4"		5"		6"		7"		8"		9"	
			Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn	Min	Syn
1800	25.7	Input kW, Thermal	3.61	**4.13**	5.73	**6.57**	8.64	**9.94**	12.5	**14.4**	15.5	**17.9**	21.1	**24.4**
		Output Torque Nm, Thermal	936	**1129**	1522	**1835**	2346	**2828**	3444	**4150**	4337	**5227**	5958	**7180**
		Input kW, Mechanical	1.92	**1.90**	3.34	**3.32**	5.22	**5.23**	7.64	**7.66**	10.8	**10.8**	14.5	**14.6**
		Output Torque Nm, Mechanical	489	**508**	877	**913**	1402	**1468**	2088	**2184**	2977	**3110**	4060	**4238**
		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 kW, Thermal	3.14	**3.58**	4.93	**5.64**	7.40	**8.49**	10.6	**12.2**	13.2	**15.3**	18.0	**20.8**
		Output Torque Nm, Thermal	955	**1151**	1542	**1858**	2366	**2851**	3465	**4176**	4364	**5259**	5998	**7229**
		Input kW, Mechanical	1.72	**1.77**	3.01	**3.08**	4.74	**4.87**	6.97	**7.19**	9.72	**10.1**	13.1	**13.6**
		Output Torque Nm, Mechanical	516	**560**	929	**1001**	1500	**1619**	2250	**2430**	3181	**3439**	4348	**4694**
		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 kW, Thermal	2.68	**3.04**	4.16	**4.75**	6.20	**7.09**	8.86	**10.2**	11.0	**12.6**	14.9	**17.1**
		Output Torque Nm, Thermal	991	**1195**	1585	**1911**	2414	**2910**	3519	**4241**	4422	**5330**	6069	**7315**
		Input kW, Mechanical	1.51	**1.59**	2.63	**2.79**	4.12	**4.38**	6.09	**6.49**	8.54	**9.12**	11.5	**12.3**
		Output Torque Nm, Mechanical	552	**618**	992	**1111**	1590	**1781**	2402	**2691**	3422	**3833**	4677	**5238**
		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 kW, Thermal	2.38	**2.70**	3.67	**4.17**	5.42	**6.18**	7.70	**8.81**	9.51	**10.9**	12.8	**14.7**
		Output Torque Nm, Thermal	1034	**1246**	1639	**1976**	2479	**2988**	3595	**4333**	4503	**5428**	6164	**7430**
		Input kW, Mechanical	1.36	**1.44**	2.36	**2.50**	3.73	**3.96**	5.50	**5.84**	7.67	**8.17**	10.3	**11.0**
		Output Torque Nm, Mechanical	585	**656**	1047	**1172**	1697	**1901**	2550	**2856**	3621	**4055**	4924	**5515**
		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 kW, Thermal	2.02	**2.28**	3.07	**3.47**	4.48	**5.08**	6.30	**7.17**	7.72	**8.81**	10.3	**11.8**
		Output Torque Nm, Thermal	1128	**1360**	1764	**2126**	2637	**3178**	3789	**4567**	4716	**5684**	6416	**7734**
		Input kW, Mechanical	1.14	**1.19**	1.99	**2.10**	3.12	**3.29**	4.60	**4.87**	6.47	**6.86**	8.73	**9.27**
		Output Torque Nm, Mechanical	629	**700**	1136	**1272**	1827	**2046**	2751	**3081**	3938	**4411**	5395	**6043**
		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 kW, Thermal	1.66	**1.87**	2.48	**2.80**	3.57	**4.03**	4.96	**5.61**	6.01	**6.81**	7.97	**9.05**
		Output Torque Nm, Thermal	1329	**1602**	2040	**2459**	3000	**3617**	4252	**5126**	5238	**6314**	7056	**8506**
		Input kW, Mechanical	0.879	**0.853**	1.53	**1.60**	2.43	**2.56**	3.61	**3.80**	5.05	**5.32**	6.78	**7.16**
		Output Torque Nm, Mechanical	694	**723**	1247	**1397**	2035	**2280**	3082	**3451**	4392	**4919**	5988	**6707**
		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 kW, Thermal	1.31	**1.46**	1.91	**2.14**	2.69	**3.01**	3.66	**4.10**	4.36	**4.90**	5.69	**6.40**
		Output Torque Nm, Thermal	1936	**2335**	2892	**3487**	4153	**5007**	5764	**6950**	6980	**8416**	9248	**11149**
		Input kW, Mechanical	0.519	**0.480**	0.982	**0.912**	1.56	**1.53**	2.32	**2.40**	3.25	**3.39**	4.36	**4.55**
		Output Torque Nm, Mechanical	756	**756**	1474	**1475**	2404	**2533**	3638	**4053**	5182	**5804**	7062	**7909**
		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 Shaft Torque Nm	1800	**1800**	3085	**3085**	4960	**4960**	8140	**8140**	8140	**8140**	7370*	**7370***

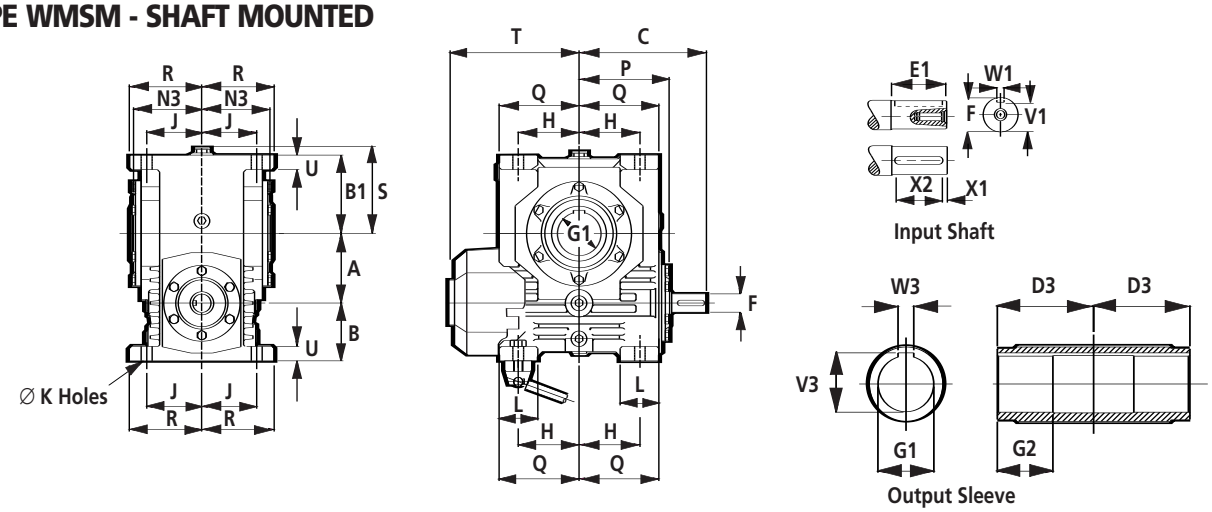
Maximum torques stated apply for uniform load applications (starts / Hour < =5)

For applications with combinations of high torques, overhung loads, or number of starts, consult Renold

*** WM 9 unit only: For torques higher than the stated maximum, two keyways and high tensile steel output shaft must be specified.**

WM Series - Single Reduction - Dimensions (mm)

TYPE WMSM - SHAFT MOUNTED



Size	Centre Distance		B	B1	C	H	J	K	L
	A	A							
	Ins								
4	4.00	101.6	108.0	120.7	229	108.0	101.6	22	65
5	5.00	127.0	114.3	146.1	260	123.8	111.1	22	75
6	6.00	152.4	127.0	171.5	279	133.4	120.7	22	85
7	7.00	177.8	146.1	196.9	318	152.4	133.4	22	95
8	8.00	203.2	146.1	222.3	343	171.5	133.4	26	100
9	9.00	228.6	158.8	247.7	387	193.7	149.2	26	110

Size	L3	N3	P	Q	R	S	T	U	Oil Capacity (approx) Litres*	Weight (approx) Kg
4	65	108	159	140	125	127	240	25	2.2/3.0	74
5	70	128	184	165	140	154	275	32	3.3/4.7	118
6	90	153	197	175	155	181	295	32	4.5/7.5	168
7	115	171	227	205	160	206	330	38	7.0/12.0	261
8	115	171	246	225	170	231	355	38	7.7/15.0	290
9	125	193	282	250	185	255	400	45	11.2/20.0	400

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

INPUT SHAFT

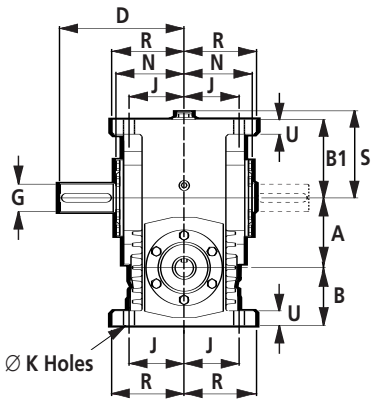
Size	E1	F	V1	W1	X1	X2	Tapped Hole
4	64	30k6	26.0	8P9	5	56	M10x22
5	76	38k6	33.0	10P9	5	63	M12X28
6	76	45k6	39.5	14P9	5	63	M16X36
7	89	45k6	39.5	14P9	5	80	M16X36
8	95	50k6	44.5	14P9	5	80	M16X36
9	102	55m6	49.0	16P9	5	90	M20X42

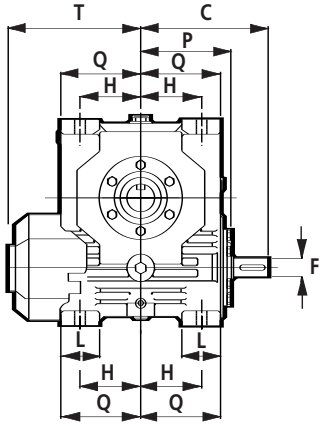
OUTPUT SLEEVE

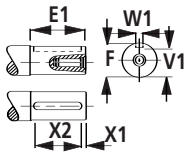
Size	G1	G2	V3	W3	D3
4	60F7	65	64.4	18Js9	110
5	70F7	70	74.9	20Js9	130
6	90F7	90	95.4	25Js9	155
7	100F7	115	106.4	28Js9	174
8	100F7	115	106.4	28Js9	174
9	110F7	125	116.4	28Js9	202

WM Series - Single Reduction - Dimensions (mm)

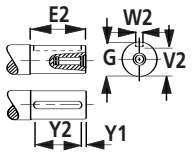
TYPE WMU - UNDERDRIVEN







Input Shaft



Output Shaft

Unit Shown with Plug-in output shaft.

Size	Centre Distance		B	B1	C	D	H	J	K	L
	A	A								
	Ins									
4	4.00	101.6	108.0	120.7	229	230	108.0	101.6	22	65
5	5.00	127.0	114.3	146.1	260	280	123.8	111.1	22	75
6	6.00	152.4	127.0	171.5	279	305	133.4	120.7	22	85
7	7.00	177.8	146.1	196.9	318	355	152.4	133.4	22	95
8	8.00	203.2	146.1	222.3	343	355	171.5	133.4	26	100
9	9.00	228.6	158.8	247.7	387	343	193.7	149.2	26	110

Size	N	P	Q	R	S	T	U	Oil Capacity (approx) Litres*	Weight (approx) Kg
4	108	160	140	125	128	240	25	2.3	80
5	128	184	165	140	154	275	32	3.3	100
6	153	199	175	155	181	293	32	4.5	182
7	171	226	205	160	206	330	38	7.0	265
8	171	246	225	170	231	350	38	7.7	312
9	193	282	250	185	256	400	45	11.2	396

INPUT SHAFT

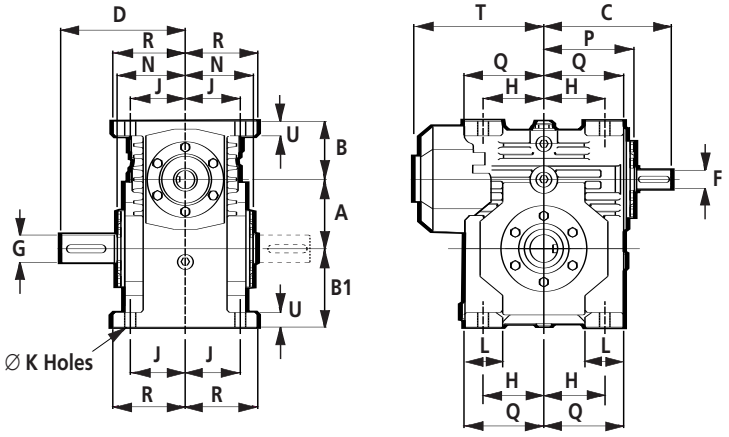
Size	E1	F	V1	W1	X1	X2	Tapped Hole
4	64	30k6	26	8P9	5	56	M10x22
5	76	38k6	33.0	10P9	5	63	M12X28
6	76	45k6	39.5	14P9	5	63	M16X36
7	89	45k6	39.5	14P9	5	80	M16X36
8	95	50k6	44.5	14P9	5	80	M16X36
9	102	55m6	49.0	16P9	5	90	M20X42

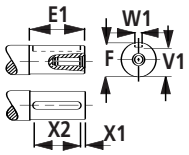
OUTPUT SHAFT

Size	E2	G	V2	W2	Y1	Y2	Tapped Hole
4	110	55m6	49.0	16P9	5	100	M20X42
5	140	65m6	58.0	18P9	5	125	M20X42
6	140	75m6	67.5	20P9	5	125	M20X42
7	170	85m6	76.0	22P9	5	160	M20X42
8	170	95m6	86.0	25P9	5	160	M24X60
9	146	85m6	76.0	22P9	5	140	M20X42

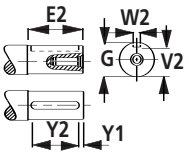
WM Series - Single Reduction - Dimensions (mm)

TYPE WMO - OVERDRIVEN





Input Shaft



Output Shaft

Unit Shown with Plug-in output shaft.

Size	Centre Distance		B	B1	C	D	H	J	K	L
	A	A								
	Ins									
4	4.00	101.6	108.0	120.7	229	230	108.0	101.6	22	65
5	5.00	127.0	114.3	146.1	260	280	123.8	111.1	22	75
6	6.00	152.4	127.0	171.5	279	305	133.4	120.7	22	85
7	7.00	177.8	146.1	196.9	318	355	152.4	133.4	22	95
8	8.00	203.2	146.1	222.3	343	355	171.5	133.4	26	100
9	9.00	228.6	158.8	247.7	387	343	193.7	149.2	26	110

Size	N	P	Q	R	T	U	Oil Capacity (approx) Litres*	Weight (approx) Kg
4	108	160	140	125	240	25	2.4	80
5	128	184	165	140	275	32	3.4	100
6	153	199	175	155	293	32	5.4	182
7	171	226	205	160	330	38	9.5	265
8	171	246	225	170	350	38	11.2	312
9	193	282	250	185	400	45	15.9	396

INPUT SHAFT

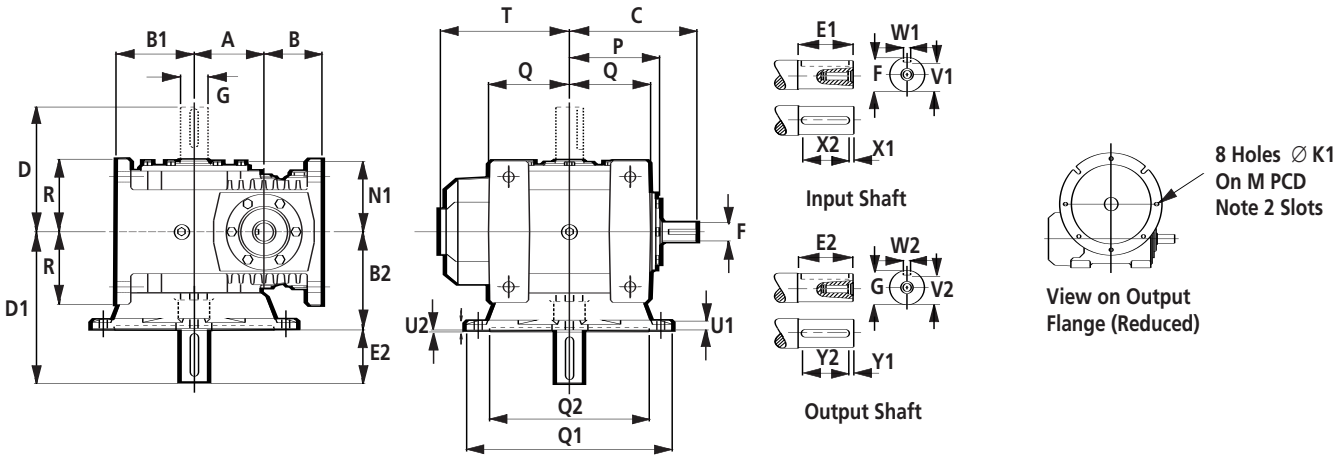
Size	E1	F	V1	W1	X1	X2	Tapped Hole
4	64	30k6	26	8P9	5	56	M10x22
5	76	38k6	33.0	10P9	5	63	M12X28
6	76	45k6	39.5	14P9	5	63	M16X36
7	89	45k6	39.5	14P9	5	80	M16X36
8	95	50k6	44.5	14P9	5	80	M16X36
9	102	55m6	49.0	16P9	5	90	M20X42

OUTPUT SHAFT

Size	E2	G	V2	W2	Y1	Y2	Tapped Hole
4	110	55m6	49.0	16P9	5	100	M20X42
5	140	65m6	58.0	18P9	5	125	M20X42
6	140	75m6	67.5	20P9	5	125	M20X42
7	170	85m6	76.0	22P9	5	160	M20X42
8	170	95m6	86.0	25P9	5	160	M24X60
9	146	85m6	76.0	22P9	5	140	M20X42

WM Series - Single Reduction - Dimensions (mm)

TYPE WMV - VERTICAL



Unit Shown with plug-in output shaft.

Size	Centre Distance		B	B1	B2	C	D	D1	K1	M
	A	A								
	Ins									
4	4.00	101.6	108.0	120.7	183	229	230	293	17.5	300
5	5.00	127.0	114.3	146.1	197	260	280	337	17.5	350
6	6.00	152.4	127.0	171.5	215	279	305	355	17.5	400
7	7.00	177.8	146.1	196.9	248	318	355	418	17.5	500
8	8.00	203.2	146.1	222.3	248	343	355	418	17.5	500
9	9.00	228.6	158.8	247.7	285	387	343	431	22.0	600

Size	N1	P	Q	Q1	Q2	R	T	U1	U2	Oil Capacity (approx) Litres*	Weight (approx) Kg
4	108	160	140	350	250H8	125	240	19	6	2.7	94
5	128	184	165	400	300H8	140	275	19	6	4.7	116
6	153	199	175	450	350H8	155	293	19	6	7.1	202
7	171	226	205	550	450H8	160	330	24	6	11.0	300
8	171	246	225	550	450H8	170	350	24	6	14.3	350
9	193	282	250	660	550H8	185	400	25	6	20.4	447

INPUT SHAFT

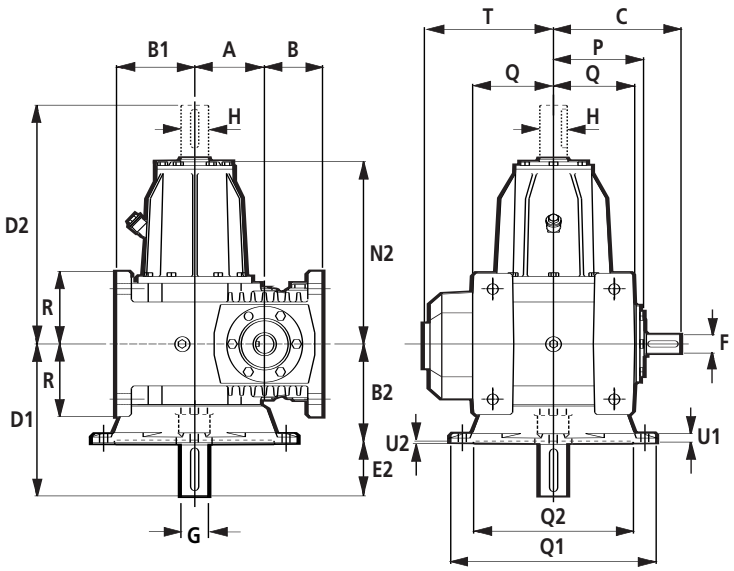
Size	E1	F	V1	W1	X1	X2	Tapped Hole
4	64	30k6	26	8P9	5	56	M10x22
5	76	38k6	33.0	10P9	5	63	M12X28
6	76	45k6	39.5	14P9	5	63	M16X36
7	89	45k6	39.5	14P9	5	80	M16X36
8	95	50k6	44.5	14P9	5	80	M16X36
9	102	55m6	49.0	16P9	5	90	M20X42

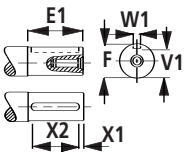
OUTPUT SHAFT

Size	E2	G	V2	W2	Y1	Y2	Tapped Hole
4	110	55m6	49.0	16P9	5	100	M20X42
5	140	65m6	58.0	18P9	5	125	M20X42
6	140	75m6	67.5	20P9	5	125	M20X42
7	170	85m6	76.0	22P9	5	160	M20X42
8	170	95m6	86.0	25P9	5	160	M24X50
9	146	85m6	76.0	22P9	5	140	M20X42

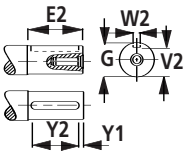
WM Series - Single Reduction - Dimensions (mm)

TYPE WMA - AGITATOR

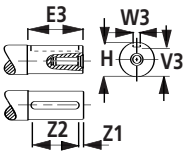




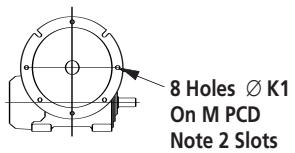
Input Shaft



Output Shaft Down



Output Shaft Up



View on Output Flange (Reduced)

Unit Shown with solid output shaft.

Size	Centre Distance		B	B1	B2	C	D1	D2	K1	M
	A	A								
	Ins									
4	4.00	101.6	108.0	120.7	183	229	293	416	17.5	300
5	5.00	127.0	114.3	146.1	197	260	337	482	17.5	350
6	6.00	152.4	127.0	171.5	215	279	355	523	17.5	400
7	7.00	177.8	146.1	196.9	248	318	418	572	17.5	500
8	8.00	203.2	146.1	222.3	248	343	418	672	17.5	500
9	9.00	228.6	158.8	247.7	285	387	431	735	22.0	600

Size	N2	P	Q	Q1	Q2	R	T	U1	U2	Oil Capacity (approx) Litres*	Weight (approx) Kg
4	306	160	140	350	250H8	125	240	19	6	2.7	106
5	360	184	165	400	300H8	140	275	19	6	4.7	135
6	399	199	175	450	350H8	155	293	19	6	7.1	227
7	445	226	205	550	450H8	160	330	24	6	11.0	335
8	531	246	225	550	450H8	170	350	24	6	14.3	398
9	604	282	250	660	550H8	185	400	25	6	20.4	523

INPUT SHAFT

Size	E1	F	V1	W1	X1	X2	Tapped Hole
4	64	30k6	26.0	8P9	5	56	M10x22
5	76	38k6	33.0	10P9	5	63	M12X28
6	76	45k6	39.5	14P9	5	63	M16X36
7	89	45k6	39.5	14P9	5	80	M16X36
8	95	50k6	44.5	14P9	5	80	M16X36
9	102	55m6	49.0	16P9	5	90	M20X42

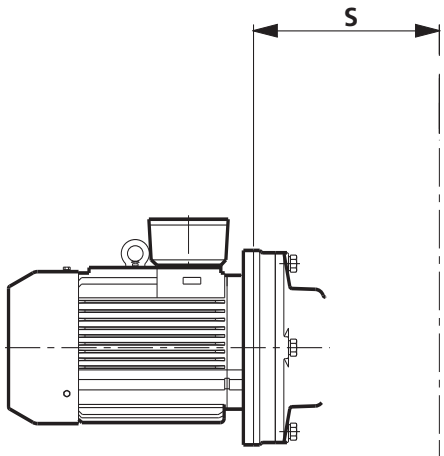
OUTPUT SHAFT DOWN

SIZE	E2	G	V2	W2	Y1	Y2	Tapped Hole
4	110	55m6	49.0	16P9	5	100	M20x42
5	140	65m6	58.0	18P9	5	125	M20X42
6	140	75m6	67.5	20P9	5	125	M20X42
7	170	85m6	76.0	22P9	5	160	M20X42
8	170	95m6	86.0	25P9	5	160	M24X50
9	146	85m6	76.0	22P9	5	140	M20X42

OUTPUT SHAFT UP

SIZE	E3	H	V3	W3	Z1	Z2	Tapped Hole
4	108	45k6	39.5	14P9	5	100	M16x36
5	115	55m6	49.0	16P9	5	100	M20X42
6	115	60m6	53.0	18P9	5	100	M20X42
7	120	75m6	67.5	20P9	5	110	M20X42
8	135	80m6	71.0	22P9	5	125	M20X42
9	146	85m6	76.0	22P9	5	140	M20X42

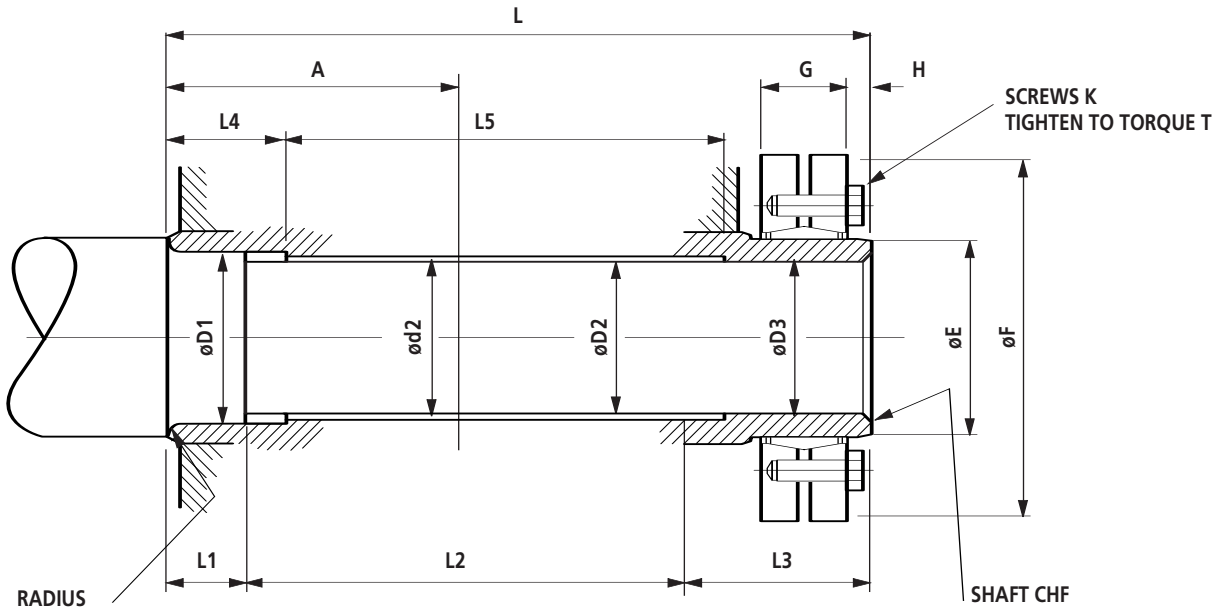
WM Series - Motorised Unit - Dimensions (mm)



	S								
UNIT REF	D80D	D90D	D100D	D112D	D132D	D160D	D180D	D200D	D225D
WM4	285	285	295	295	315	-	-	-	-
WM5	-	315	325	325	345	375	-	-	-
WM6	-	-	345	345	365	395	395	-	-
WM7	-	-	-	-	405	435	435	435	465
WM8	-	-	-	-	430	460	460	460	490
WM9	-	-	-	-	475	505	505	505	535

Motor dimensions please see page 11

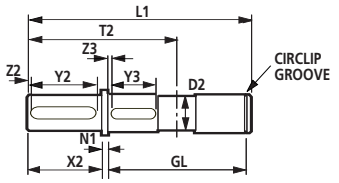
WM Series - Output Shaft Shrink Disc

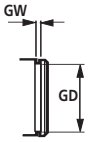


Gear Size	Driven Shaft								Hollow Shaft					Shrink Disc							Max S/Disc Torque
	D1	D2	D3	L1	L2	L3	Rad	Chf	A	d2	L	L4	L5	REF	ØE	ØF	G	H	K	T	
WM4	65	60	60	30	150	85	1.5	3	110	62	265	40	150	75-4071	75	138	32.5	9	M8	30	1600
WM5	75	70	70	35	180	95	1.5	3	130	72	310	50	180	90-4071	90	155	39	9	M8	30	3000
WM6	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 - Output Shaft - Dimensions (mm)

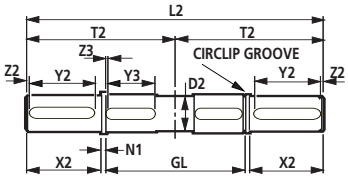
Single Extension Foot Mount

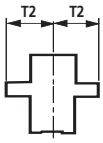




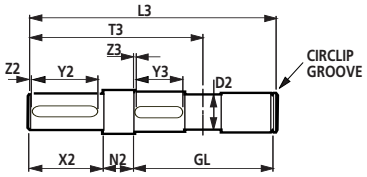
Circlip Groove Detail

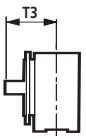
Double Extension Foot Mount

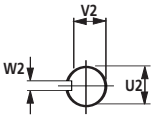




Single Extension Flange Mount

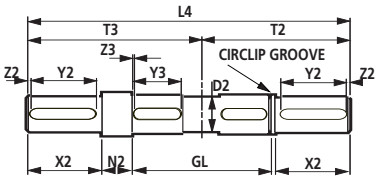


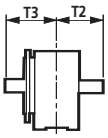


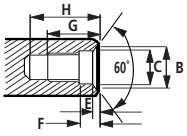


Extension Keyway Details

Double Extension Flange Mount





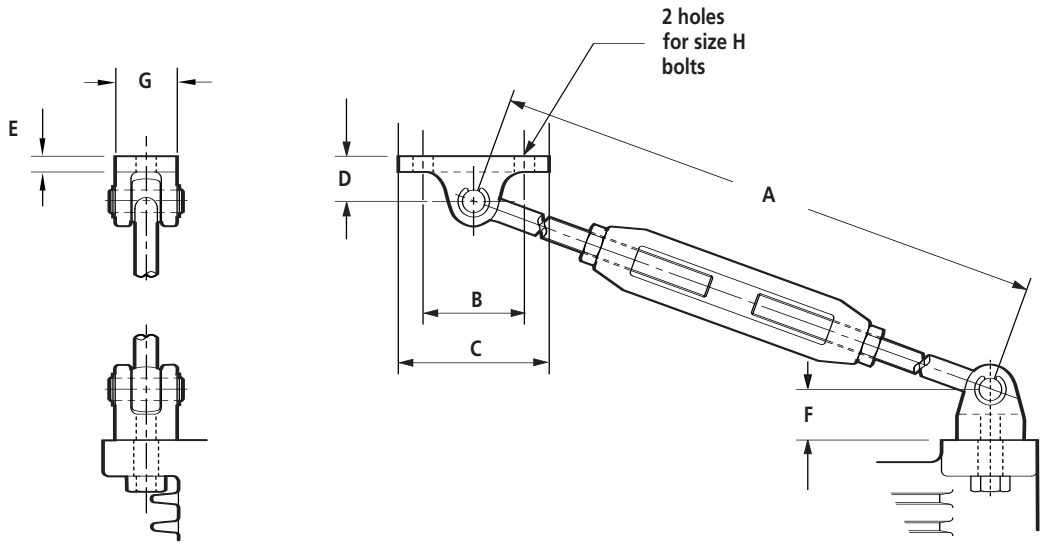


Extension Threads

Unit Size	L1	L2	L3	L4	T2 T3	X2	Y2	Z2	GD	GW	GL	N1	N2	D2	Y3	Z3
WM4	347.5	460	410.5	523	230 293	110	100	5	57.00 56.70	2.29 2.15	222.15 222.10	10	73	56	70	3
WM5	418.5	560	475.5	617	280 337	140	125	5	67.00 66.70	2.79 2.65	262.65 262.60	10	67	66	90	2
WM6	469.5	610	519.5	660	305 355	140	125	5	86.50 86.15	3.33 3.15	313.15 313.10	10	60	86	110	3
WM7	538.5	710	601.5	773	355 418	170	160	5	96.50 96.15	3.33 3.15	351.15 351.10	11	74	96	125	3
WM8	538.5	710	601.5	773	355 418	170	160	5	96.50 96.15	3.33 3.15	351.15 351.10	11	74	96	125	3
WM9	THE WM9 UNIT HAS SOLID SHAFT ONLY															

Unit Size	U2	V2	W2	B	C	E	F	G	H	Threads
WM4	55.030 55.011	49.0 48.8	15.982 15.939	28.4	21	6.4	15	42	53	M20X2.5-6H
WM5	65.030 65.011	58.0 57.8	17.982 17.939	28.4	21	6.4	15	42	53	M20X2.5-6H
WM6	75.030 75.011	67.5 67.3	19.978 19.926	28.4	21	6.4	15	42	53	M20X2.5-6H
WM7	85.035 85.013	76.0 75.8	21.978 21.926	28.4	21	6.4	15	42	53	M20X2.5-6H
WM8	95.035 95.013	86.0 85.8	24.978 24.926	34.2	25	8	18	50	63	M24X3.0-6H

WM Series - Torque Arm - Dimensions (mm)



Unit Size	A	B	C	D	E	F	G	H
4	600 750	90	133	40	14	45	52	M16
5	600 750	90	133	40	14	45	52	M16
6	760 910	115	178	57	21	55	76	M20
7	760 910	115	178	57	21	55	76	M20
8	760 910	115	178	57	21	55	76	M20
9	760 910	140	210	70	25	70	100	M24

WM Series - Installation, Maintenance & Storage

Initial Running

All units are supplied without oil.

First Filling

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 visable 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.

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 onto 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 he 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 10minutes 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.

External shaft extensions and oil seals can be protected by the use of grease impregnated tape. Full long term storage specification details can be obtained from Renold on request.

Spare Parts

Information relating to spare parts is available on request.

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 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 effects 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 cheaper, have a lower life and are less efficient. Synthetic (Polyalphaolefin) can operate over a higher temperature range, are more efficient, give higher ratings and have a longer life and as such are preferred.

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

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

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 Alpha ZN	220	-9 to 120	320	-9 to 120	460	-9 to 120
Castrol AlphaMax	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
Kluber Gem	220	-18 to 100	320	0 to 100	460	0 to 100

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

Notes

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