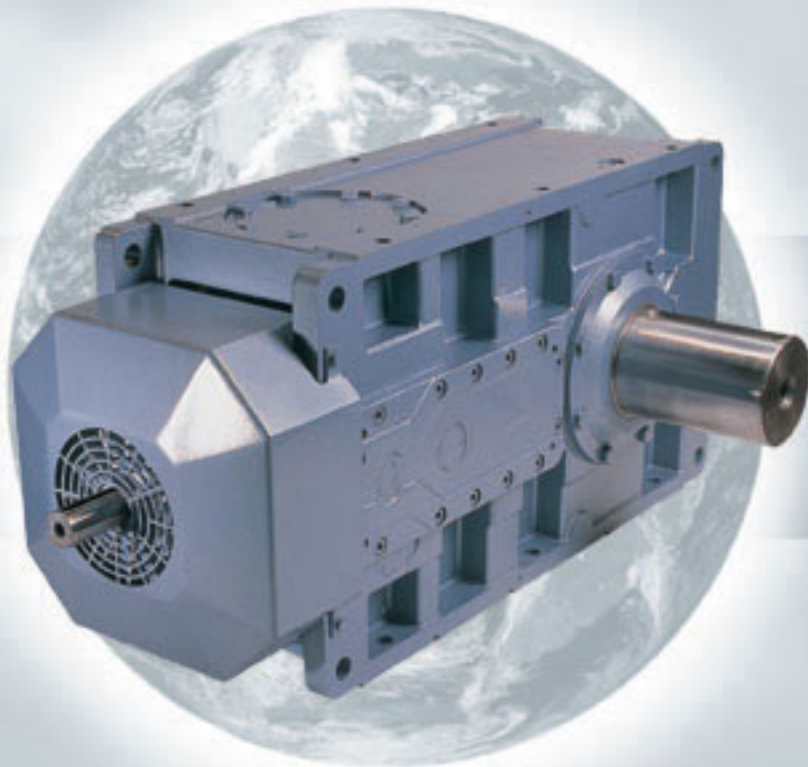


Series G

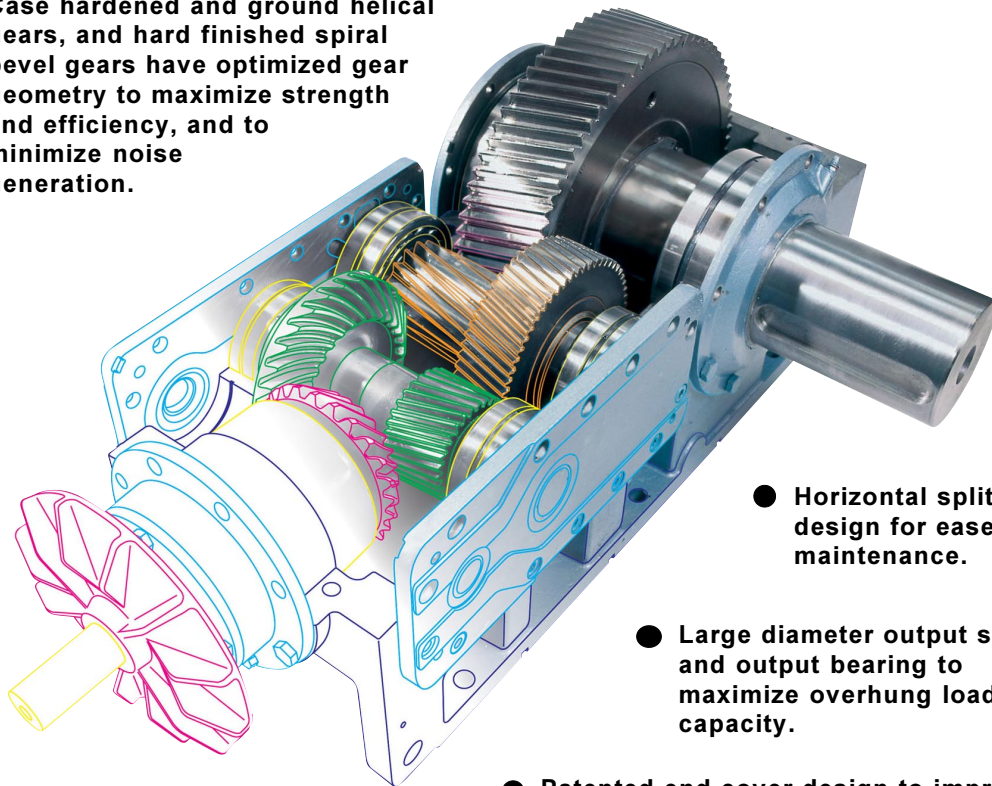


TEXTRON POWER TRANSMISSION

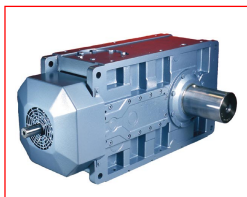
The new Series G helical parallel shaft and bevel helical right angle drive gear units have been introduced to meet the requirements of today's demanding applications in the medium and heavy duty sector of the power transmission market. Innovative modular construction using proven gear design technology has minimized manufactured part count to maximize availability of product.

Gear tooth geometry design combines maximum efficiency with high load carrying capacity and minimal noise generation. Serviceability of the product was key in the design of the Series G range allowing easy maintenance for long life and reliability which are synonymous with our field reputation.

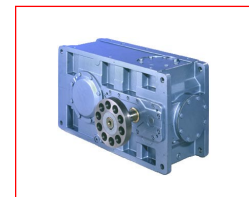
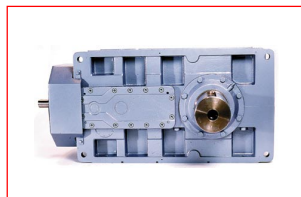
- **Case hardened and ground helical gears, and hard finished spiral bevel gears have optimized gear geometry to maximize strength and efficiency, and to minimize noise generation.**



- **Horizontal split case design for ease of maintenance.**
- **Large diameter output shaft and output bearing to maximize overhung load capacity.**
- **Patented end cover design to improve bearing lubrication and increase thermal capacity.**



Triple reduction, fan cooled, bevel helical, foot mounted reducer.



Triple reduction helical foot mounted reducer.



Double reduction helical output flanged coupling reducer.

0204

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SERIES G

General Description

0204

Series G

Series G gear units are available in parallel shaft helical units and right angle shaft bevel/helical units in double, triple and quadruple reduction gear stages having a maximum output torque of up to 1,150,500 lb.in.

The modular design and construction of the Series G offers many engineering and performance benefits including a high degree of interchangeability of parts and sub assemblies. This in turn provides considerable economies of production while maintaining the highest standard of component integrity.

Adding to the new range of geared motors this product takes advantage of our many years of accumulated design expertise together with the use of high quality materials and components. The end result is a series of speed reducing gear units offering high load carrying capacities, increased efficiency, quiet running and reliability.

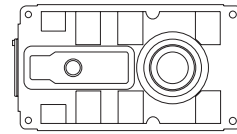
The Range Includes

- 7 sizes of units with a ratio coverage of 6.3:1 to 315:1.
- Parallel shaft helical units and Right angle bevel/helical units.

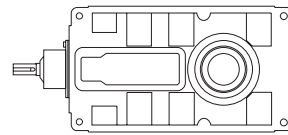
Design Features Include

- Profile ground helical gears / hard finished spiral bevel gears.
- High level of surface finish for quiet running.
- Units can be offered in horizontal mounting positions or alternatively vertical mounting.
- Specially designed units are available for heavy duty agitator applications.
- All units are also available with a hollow bore for output shaft mounting. Output bores are connected by a shrink disc or can be supplied with a KIBO bush.
- Backstops can be fitted to all Series G units when required to operate in non-reversing drives.

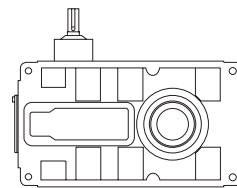
As improvements in design are being made continually this specification is not to be regarded as binding in detail and drawings and capacities are subject to alteration without notice. Certified drawings will be sent on request.



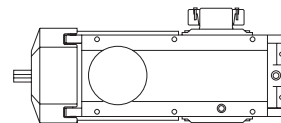
Parallel shaft unit



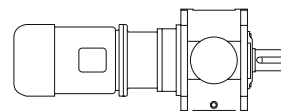
Right angle shaft unit



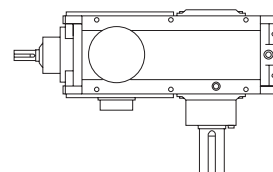
Type 'J' right angle shaft unit



Right angle shaft unit with mechanical fan and hollow output shaft with shrink disc



Parallel shaft unit with a lantern housing coupling and motor

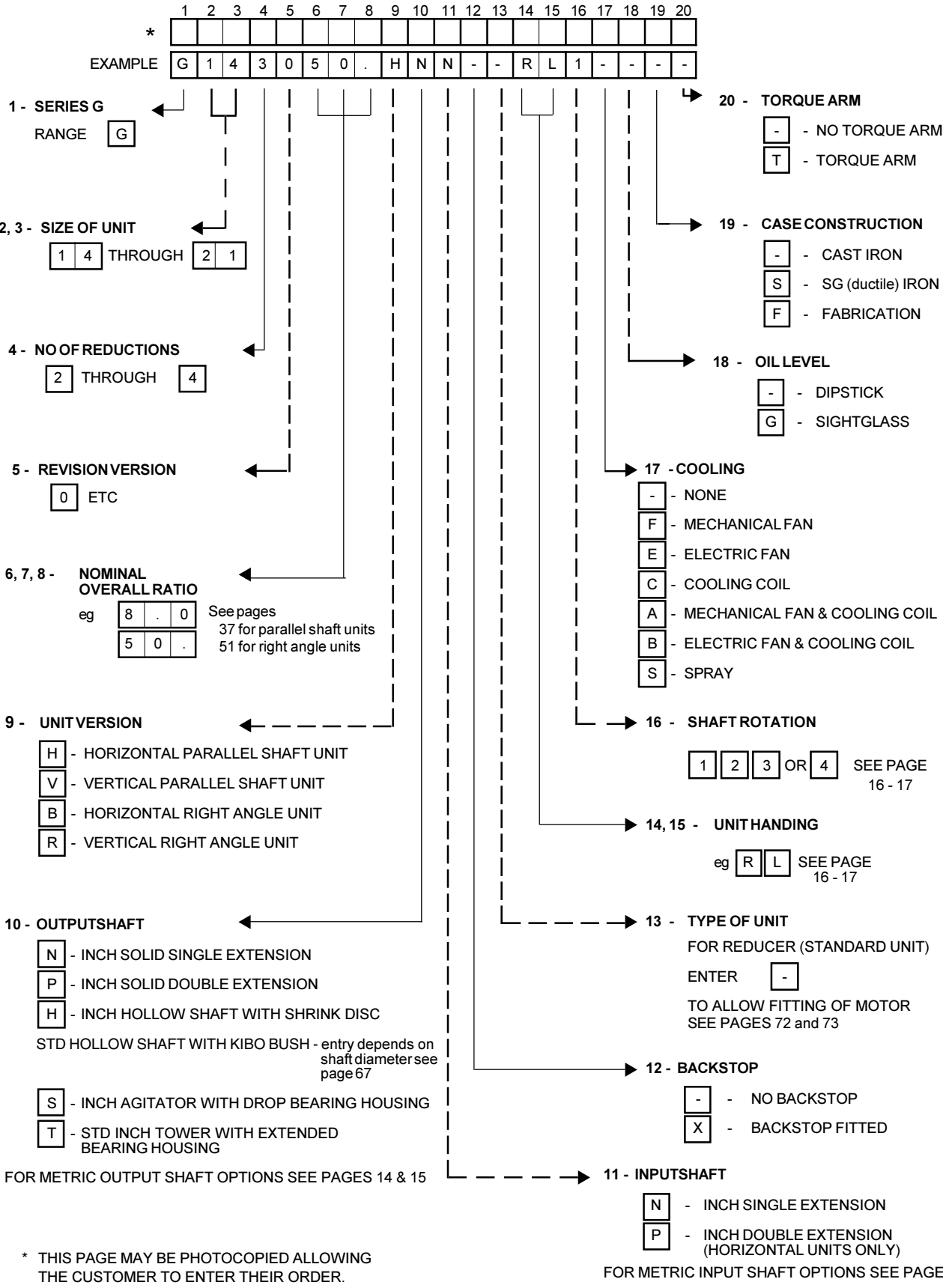


Right angle heavy duty agitator unit

SERIES G

Unit Designations

0204



0204

Shaft Mounted Units

Shaft mounted units can be mounted on the driven machine shaft extension and connected to the foundation by a torque arm, supplied as an optional extra.

Additionally, unit feet are available for mounting on a baseplate with motor and coupling, the complete assembly being mounted on the driven machine shaft extension and connected to the foundation by a torque arm.

Shaft mounted units are fitted with a 'shrink disc' device to provide positive clamping on the driven machine shaft extension. It is positioned on the input side of the gear unit.

Shaft mounted units with KIBO bushes may also be supplied for fitting on to a keyed shaft. KIBO bushings make the gear unit easier to mount onto the shaft, eliminating fretting corrosion ensuring easy dismounting.

Motorized Gear Units

Gear units are available as standard assemblies comprising NEMA 'C' motors and IEC standard metric (B5) flanged motors directly mounted on the gearcase input shaft housings by adaptors. Motor and gear unit shafts are connected by flexible couplings.

Baseplates

Standard baseplates can be supplied for units with parallel or right angle shafts. Assemblies comprise of gear units and foot mounted motors correctly aligned in manufacture and connected by flexible couplings. Coupling guards are fitted.

Baseplates for right angle shaft gear units are designed for use with either foot or shaft mounted arrangements, and provision is made for attaching torque arms where required.

Designs provide ample stiffness to prevent distortion under load. Full details are available.

Backstops

Externally mounted Backstops can be fitted to all Series G gear units, when required to operate in non-reversing drives. They are located on the helical pinion shaft and have adequate capacities to deal with full rated torques. All backstops are centrifugal lift off type. Changing the direction of locking rotation is a simple operation. If required, a torque limiting backstop with controllable tension release can be fitted to all units (call us).

Preservation / Protection

Series G gear units are shipped without oil.

Prior to shipped they are test run with a rust preventative oil giving adequate protection to internal parts for a period of six months covering normal transport and covered storage.

Shaft extensions and hollow output shafts are protected with a rust inhibitor which is protection against sea water and suitable for under-cover storage up to 12 months.

Note: Where gear units are to operate in abnormal conditions, or where they are to stand for long periods without running, eg in plant installation, we must be notified so that suitable protective arrangements can be made.

9903

Gears

High quality alloy case hardening materials provide long life wear resistance and fatigue strength.

Profile ground single helical gears and hard finished spiral bevel gears ensure high standards of accuracy, surface finish and quiet running characteristics. Helical gears are fitted in parallel shaft units. Units with shafts at right angles incorporate spiral bevel and helical gears.

Gearcases

Standard gearcases are of rigid cast iron construction with modern styling, special cases can be supplied as SG (ductile) iron or fabricated steel.

Horizontal split case design for ease of maintenance.

Gearcase design using finite element analysis to give high strength to weight ratio.

Inspection cover provided for viewing gear contacts.

Oil level dipstick, breather and drain plugs are fitted.

With an option to fit an oil level sight glass.

Gearcase Finish

Gearcases are shotblasted to SA 2^{1/2} or better.

External surfaces are finished with an alkyde gloss blue paint.

These paints are resistant to dilute acids and alkalis, oils and solvents, sea water and temperatures up to 284°F (140°C).

Lubrication

Lubrication in most instances is by the transfer of oil by gears dipping in the sumps of gear unit bases. Where high pitch line speeds could cause churning of the lubricant. Spray lubrication is necessary where shown and complete systems can be supplied when required.

The unit oil grade and change period will be stamped on the nameplate. The change period will be 6 months for mineral oil based lubricants and 18 months for synthetic oil based lubricants. These figures assume a sump temperature of 230°F (110°C). Oil change periods can be extended for lower sump temperatures see installation and maintenance section.

Units are provided with a dipstick, ventilator and drain plugs.

Cooling

Depending on the application standard gear units are cooled by:-

Normal heat dissipation by convection from external surfaces.

Mechanical fan fitted to high speed shaft.

Electric thermostatically controlled fan.

Cooling water coil fitted in gear unit base.

Fan and cooling coil.

Separate oil cooler incorporated in forced lubrication system.

As improvements in design are being made continually this specification is not to be regarded as binding in detail and drawings and capacities are subject to alteration without notice. Certified drawings will be sent on request.

Explanation and Use of Ratings & Associated Rating Factors

0202

Gear unit selection is made by comparing actual loads with catalog ratings. Catalog ratings are based on a standard set of loading conditions, whereas actual load conditions vary according to type of application. Service Factors are therefore used to calculate an equivalent load to compare with catalog ratings. i.e. Equivalent Load = Actual Load x Service Factor

Mechanical and Thermal Service Factor must be considered:

Mechanical Service Factors F_m and F_s
Thermal Service Factors F_t, F_d, F_h and F_v

Mechanical ratings and service factors F_m and F_s

Mechanical ratings measure capacity in terms of life and/or strength, assuming 10 hr/day continuous running under uniform load conditions.

Catalog ratings allow 100% overload at starting, braking or momentarily during operation up to 10 times per day.

The unit selected must therefore have a catalog rating at least equal to half maximum overload.

Mechanical Service Factor F_m (Table 1) is used to modify the actual load according to daily operating time, and type of loading.

Load characteristics for a wide range of applications are detailed in Table 3 opposite, which are used in deciding the appropriate Service Factor F_m from Table 1.

If loading can be calculated, or accurately assessed, actual loads should be used instead of F_m.

For units subject to torque reversal or frequent stop/start overloads in excess of 10 times per day, multiply factor F_m x Factor F_s (table 2).

For applications where high inertia loads are involved e.g. crane travel drives, slewing motion etc, or when units are to operate in extremely dusty or moist/humid atmospheres, unit selection should be referred to our application engineers.

Table 1. Mechanical Service Factor (F_m)

Prime mover	Duration of service-hours per day	Load classification-driven machine		
		Uniform	Moderate Shock	Heavy Shock
Electric motor, steam turbine or hydraulic motor	Under 3	0.80	1.00	1.50
	3 to 10	1.00	1.25	1.75
	Over 10	1.25	1.50	2.00
Multi-cylinder internal combustion engine	Under 3	1.00	1.25	1.75
	3 to 10	1.25	1.50	2.00
	Over 10	1.50	1.75	2.25
Single cylinder internal combustion engine	Under 3	1.25	1.50	2.00
	3 to 10	1.50	1.75	2.25
	Over 10	1.75	2.00	2.50

Table 2. Number of Starts Factor (F_s)

Start / Stops per hour (1)	Up to 1	3	5	10	20	40	60	100
Unidirectional	1.0	1.11	1.18	1.30	1.43	1.56	1.70	1.82
Reversing	1.41	1.54	1.64	1.82	2.0	2.18	2.38	2.56

Note: (1) Intermediate values are obtained by linear interpolation

Explanation and Use of Ratings & Associated Rating Factors

9901

Thermal ratings and service factors

The Thermal ratings are a measure of the gear units ability to dissipate heat. If they are exceeded the lubricant may overheat and breakdown, resulting in gear failure.

Thermal ratings are given on pages 42 and 43 for parallel shaft units and pages 56 and 57 for right angle shaft units. The following choices are available:

- i) No additional cooling
- ii) Unit fitted with fan cooling
- iii) Unit fitted with water cooling coil
- iv) Unit fitted with cooling coil and fan

Catalog thermal limitations are based on the unit operating continuously in an environment with an ambient temperature equal to 68°F (20°C) and in a horizontal mounting position. The thermal rating is affected by ambient temperature, duration of running per hour, altitude and operating area. To account for these varying conditions, the service factors given in tables 4, 5, 6 and 7 should be applied as follows:

$$P_{\text{therm}} = \frac{\text{Absorbed Power}}{F_t \times F_d \times F_h \times F_v}$$

- P_{therm} = Required thermal rating (kW)
- F_t = Service factor for ambient temperature (see Table 4)
- F_d = Service factor for intermittent duty (see Table 5)
- F_h = Thermal service factor for altitude (see Table 6)
- F_v = Thermal service factor for air velocity correction (operating area) (see Table 7)

Table 4. Ambient Temperature Adjustment Factor (Ft)

Unit Type	Ambient Temperature °F							
	-4 (-20°C)	14 (-10°C)	32 (0°C)	50 (10°C)	68 (20°C)	86 (30°C)	104 (40°C)	122 (50°C)
All Units	1.57	1.43	1.29	1.14	1.00	0.86	0.71	0.5

Table 5. Intermittent Duty Factor (Fd)

Unit Output Speed (Rev / min)		% Running time per hour				
		100	80	60	40	20
0	to 10	1.00	1.18	1.45	1.72	2.38
>10	to 25	1.00	1.16	1.39	1.64	2.22
>25	to 50	1.00	1.14	1.31	1.54	2.00
>50	to 100	1.00	1.08	1.19	1.33	1.64
>100	to 150	1.00	1.04	1.08	1.19	1.41
>150	to 200	1.00	1.00	1.00	1.06	1.23
>200		1.00	1.00	1.00	1.00	1.00

Table 6. Altitude Adjustment Factor (Fh)

Altitude m	Factor Fh
Sea Level	1.0
500 (1640')	0.97
1000 (3280')	0.93
1500 (4921')	0.90
2000 (6562')	0.87
3000 (9843')	0.81
4000 (13123')	0.75
5000 (16404')	0.70

Table 7. Ambient Air Velocity Correction Factor (Fv)

Operating Area	If Vv is not known use this value for Fv	Air Velocity Vv m/sec	Factor Fv If Vv is known use this formula for Fv
Small confined space	0.86	0 - 1.4 (0 - 3 mph)	$F_v = 0.1 V_v + 0.86$
Large indoor space	1.0	> 1.4 - < 6 (3 - 14 mph)	$F_v = 0.2 V_v + 0.72$
Sheltered outdoor space	1.3	> 2 - < 6 (5 - 14 mph)	$F_v = 0.17 V_v + 0.9$
Outdoor space	1.5	> 2 (5 mph)	$F_v = 0.17 V_v + 0.9$ (max $F_v = 1.92$)

General

When checking thermal capacities of units, use actual load required to be transmitted, not rating of prime mover.

SERIES G

Selection Procedure

0002

EXAMPLE APPLICATION DETAILS

Absorbed power of driven machine = 120 HP
 Output speed of gearbox or Input speed of machine = 81 rev/min
 Application = Uniformly loaded belt conveyor operating in a large indoor space
 Duration of service (hours per day) = 24hrs
 Motor speed = 3 phase electric motor, 4 pole, 1750 rev/min
 Mounting position = Horizontal, Right Angle Shaft
 Ambient temperature = 86°F (30°C)
 Running time (%) = 100%
 Altitude = Sea Level

1 DETERMINE RATIO OF GEARBOX REQUIRED

$$\frac{\text{Motor speed}}{\text{Gearbox output speed}} = \frac{1750}{81} = 21.605$$

Refer to exact ratios (page 51) for nearest standard ratio = 22:1

3 DETERMINE REQUIRED MECHANICAL OUTPUT TORQUE CAPACITY OF GEARBOX

Required mechanical = Absorbed power x Fm rating (P_{mech})

$$P_{mech} = 120 \times 1.25 = 150 \text{ HP}$$

2 DETERMINE MECHANICAL SERVICE FACTOR (F_m)

Refer to Load Classification by Application, table 3, page 9

Application = Uniformly loaded belt conveyor

Conveyors-uniformly loaded or fed

apron	U	U = Uniform load
assembly	U	
belt	U	
bucket	U	
chain	U	

Refer to mechanical service factor (F_m), table 1, page 8

Duration of service (hours per day) = 24hrs

Prime mover	Duration of service-hrs per day	Load classification-drive	
		Uniform	Moderate Shock
Electric motor, steam turbine or hydraulic motor	Under 3	0.80	1.00
	3 to 10	1.00	1.25
	Over 10	1.25	1.50

Therefore mechanical service factor (F_m) = 1.25

4 DETERMINE SIZE OF GEAR BOX REQUIRED

Unit input power capacity ≥ P_{mech}

Refer to ratings tables, Input speed = 1750rev/min, therefore refer to page 52.

NOMINAL RATIO	NOMINAL OUTPUT SPEED REV / MIN	CAPACITY	RIGHT ANGLE UNIT - SIZE			
			G14	G15	G16	G17
22.	79.5	Input Power - HP	112	166	282	361
		Output Torque - lb-in	84000	123000	213000	390000

Mechanical input power capacity must be equal or more than required mechanical input power capacity of the gear box (P_{mech}). Required mechanical input power = 150 HP. At a 22:1 ratio, nominal output speed 79.5 a G15 unit has a mechanical input power capacity of 166 HP. Therefore the unit is acceptable.

If the unit is subject to torque reversal or frequent stop/starts the input power capacity must be checked in accordance with the formulae on page 8.

5 DETERMINE EXACT RATIO OF GEARBOX

Refer to exact ratios table, page 51

Nominal Ratio Column Entry	14	15	16	17
6 7 8				
2 2 .	21.775	21.541	21.756	22.894

Exact ratio = 21.541

Go to point 6 page 12

SERIES G

Selection Procedure

9902

6 DETERMINE THERMAL SERVICE FACTOR (Ft)

Refer to table 4, page 10
Ambient temperature = 80°F (30°C)

Ambient temperature °F	-4 (-20°C)	-14 (10°C)	32 (0°C)	50 (10°C)	68 (20°C)	86 (30°C)
Factor Ft	1.57	1.43	1.29	1.14	1.00	0.86

Ft = 0.86

7 DETERMINE THERMAL SERVICE FACTOR (Fd)

Refer to table 5, page 10
Unit running time per hour = 100%
Nominal output speed (rev/min) = 80

Unit Output Speed (Rev / min)	% Running time per hour	
	100	80
>10 to 25	1.0	1.16
>25 to 50	1.0	1.14
>50 to 100	1.0	1.08

Fd = 1.0

8 DETERMINE ALTITUDE ADJUSTMENT THERMAL SERVICE FACTOR (Fh)

Refer to table 6, page 10

Altitude (m)	Factor Fh
Sea Level	1.0
500	0.97
1000	0.93

Fh = 1.0

9 DETERMINE AMBIENT AIR VELOCITY FACTOR (Fv)

Operating Area	If Vv is not known use this value for Fv	Air Velocity Vv m/sec	Factor Fv If Vv is known use this formula for Fv
Small confined space	0.86	0 - 1.4	Fv = 0.1 Vv + 0.86
Large indoor space	1.0	> 1.4 - < 6	Fv = 0.2 Vv + 0.72

Fv = 1.0

10 CALCULATE REQUIRED THERMAL RATING P_{therm}

$$P_{therm} = \frac{\text{Absorbed Power (HP)}}{F_t \times F_d \times F_h \times F_v}$$

$$P_{therm} = \frac{120}{0.86 \times 1.0 \times 1.0 \times 1.0}$$

$$P_{therm} = 140 \text{ HP}$$

11 CHECK THERMAL CAPACITY Thermal Rating \geq P_{therm}

Thermal Ratings HP Right Angle Shaft Units - Triple Reduction

Type of Cooling	Input Speed (rev/min)	RIGHT ANGLE SHAFT UNIT SIZE			
		14	15	16	17
Units with no Additional Cooling	1750	101	101	168	168
	1450	93	93	154	154
	1160	90	90	149	149
	875	85	85	143	143
Units with Fan Cooling	1750	227	227	377	377
	1450	185	185	308	308
	1160	166	166	276	276
	875	135	135	225	225

P_{therm} = 140 HP therefore unit requires cooling.
Thermal rating for a fan cooled G15 unit = 227 HP.
Thermal capacity is therefore acceptable.

12 CHECK OVERHUNG LOADS

If sprocket, gear, etc is mounted on the input or output shaft then refer to Overhung loads procedure, pages 30 & 31

13 CHECK COUPLING HUB CAPACITIES

NOTES: It is advisable that all selections are verified by our Application Engineers.
If any of the following conditions occur then our Application Engineers **must** be consulted:

a) Inertia of the Driven Machine (Referred to motor speed) >1.0 b) Ambient temperature is above 122°F (50°C)
Inertia of Gear Unit plus Motor

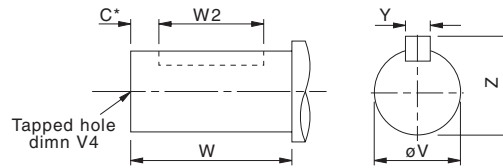
SERIES G

Input Shaft Options

0204

INPUTSHAFT OPTIONS

* Inch shaft has an open ended keyway, therefore no 'C' dimension is required.



Column 11 Entry

Inch		Metric	
Single	N	Single	-
Double	P	Double	D

Parallel Shaft Units

SIZE OF UNIT	TYPE OF INPUTSHAFT	NO OF REDUCTIONS	DIMENSIONS IN INCHES (Metric Shaft in mm)						
			C*	øV	V4	W	W2	Y	Z
14 and 15	Inch	2 Stage	-	1.8750" 1.8740"	5/8" UNF x 1.25 deep	5.31"	4.13"	0.500"	2.10"
		3 and 4 Stage	-	1.3750" 1.3745"	1/2" UNF x 1 deep	3.74"	3.00"	0.3125"	1.51"
16 and 17	Inch	2 Stage	-	2.2500" 2.2490"	3/4" UNF x 1.62 deep	5.71"	4.13"	0.500"	2.47"
		3 and 4 Stage	-	1.7500" 1.7490"	5/8" UNF x 1.25 deep	4.53"	4.13"	0.375"	1.92"
18 and 19	Inch	2 Stage	-	3.2500" 3.2490"	1" UNF x 2 deep	7.48"	5.88"	0.750"	3.58"
		3 and 4 Stage	-	2.2500" 2.2490"	3/4" UNF x 1.62 deep	5.71"	4.13"	0.500"	2.47"
21	Inch	2 Stage	-	4.2500" 4.2490"	1" UNF x 2 deep	8.27"	7.5"	1.000"	4.69"
		3 and 4 Stage	-	3.0000" 2.9990"	3/4" UNF x 1.62 deep	7.48"	6.50"	0.750"	3.33"

14 and 15	Metric	2 Stage	3	50.018 50.002	M16 x 36	138	130	14	53.5
		3 and 4 Stage	3	35.018 35.002	M12 x 25	99	90	10	38
16 and 17	Metric	2 Stage	3	60.030 60.011	M20 x 43	148	140	18	64
		3 and 4 Stage	3	45.018 45.002	M16 x 36	118	110	14	48.5
18 and 19	Metric	2 Stage	3	85.035 85.013	M24 x 52	190	180	22	90
		3 and 4 Stage	3	60.030 60.011	M20 x 43	150	140	18	64
21	Metric	2 Stage	3	110.035 110.013	M30 x 63	210	200	28	116
		3 and 4 Stage	3	80.030 80.011	M20 x 43	190	180	22	85

Right Angle Shaft Units

SIZE OF UNIT	TYPE OF INPUTSHAFT	NO OF REDUCTIONS	DIMENSIONS IN INCHES (Metric Shaft in mm)						
			C*	øV	V4	W	W2	Y	Z
14 and 15	Inch	3 Stage	-	1.5000" 1.4995"	5/8" UNF x 1.25 deep	3.94"	3.44"	0.375"	1.66"
16 and 17	Inch	3 Stage	-	1.8750" 1.8740"	5/8" UNF x 1.25 deep	5.51"	4.13"	0.500"	2.10"
		4 Stage	-	1.5000" 1.4995"	5/8" UNF x 1.25 deep	3.94"	3.44"	0.375"	1.66"
18 and 19	Inch	3 Stage	-	3.0000" 2.9990"	3/4" UNF x 1.62 deep	6.30"	5.25"	0.750"	3.33"
		4 Stage	-	1.8750" 1.8740"	5/8" UNF x 1.25 deep	5.51"	4.13"	0.500"	2.10"
21	Inch	3 Stage	-	4.0000" 3.9990"	1" UNF x 2 deep	8.27"	7.5"	1.00"	4.44"
		4 Stage	-	3.0000" 2.9990"	3/4" UNF x 1.62 deep	6.30"	5.25"	0.750"	3.33"

14 and 15	Metric	3 Stage	3	38.018 38.002	M12 x 32	100	90	10	41
16 and 17	Metric	3 Stage	3	50.018 50.002	M16 x 36	140	130	14	53.5
		4 Stage	3	38.018 38.002	M12 x 32	100	90	10	41
18 and 19	Metric	3 Stage	3	75.030 75.011	M20 x 43	160	150	20	79.5
		4 Stage	3	50.018 50.002	M16 x 36	140	130	14	53.5
21	Metric	3 Stage	3	100.035 100.013	M24 x 52	210	200	28	106
		4 Stage	3	75.030 75.011	M20 x 43	160	150	20	79.5

SERIES G

Output Shaft Options

0204

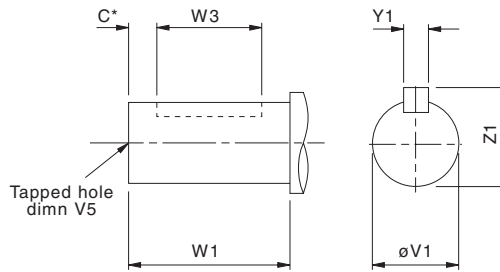
Column 10 Entry

Inch

Single N Agitator S
 Double P Tower T

Metric

Single - Agitator A
 Double D Tower C



* Inch shaft has an open ended keyway, therefore no 'C' dimension is required.

SIZE OF UNIT	TYPE OF OUTPUTSHAFT	DIMENSIONS IN MM (Inch Shaft in Inches)						
		C*	øV1	V5	W1	W3	Y1	Z1
14	Inch Single	-	4.500"	1" UNF x 2" deep	7.09"	6.50"	1.00"	4.94"
	Inch Double							
	Inch Agitator / Tower							
15	Inch Single	-	5.000"	1" UNF x 2" deep	7.48"	7.13"	1.25"	5.55"
	Inch Double							
	Inch Agitator / Tower							
16	Inch Single	-	6.000"	1.25" UNF x 2.5" deep	9.06"	8.75"	1.50"	6.66"
	Inch Double							
	Inch Agitator / Tower							
17	Inch Single	-	6.750"	1.25" UNF x 2.5" deep	9.84"	9.38"	1.75"	7.39"
	Inch Double							
	Inch Agitator / Tower							
18	Inch Single	-	7.500"	1.5" UNF x 3" deep	11.81"	11.38"	1.75"	8.15"
	Inch Double							
	Inch Agitator / Tower							
19	Inch Single	-	8.250"	1.5" UNF x 3" deep	13.78"	13.00"	2.00"	8.88"
	Inch Double							
	Inch Agitator / Tower							
21	Inch Single	-	8.500"	1.5" UNF x 3" deep	13.78"	13.00"	2.00"	9.13"
	Inch Double							
	Inch Agitator / Tower							

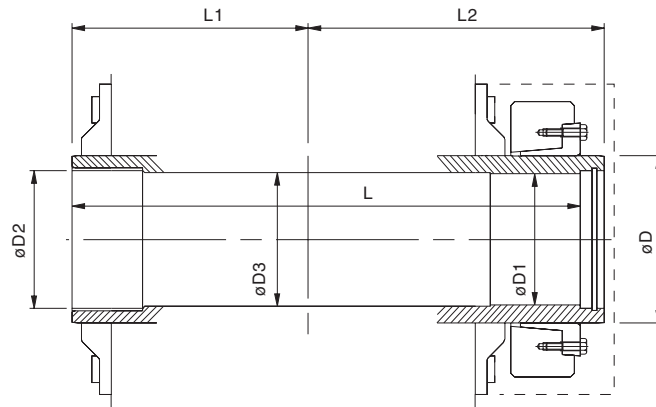
14	Metric Single	5	110.035	M30 x 3.5 63 deep	180	170	28	116
	Metric Double							
	Metric Agitator / Tower							
15	Metric Single	5	130.040	M30 x 3.5 63 deep	190	180	32	137
	Metric Double							
	Metric Agitator / Tower							
16	Metric Single	5	145.040	M42 x 4.5 81 deep	230	220	36	153
	Metric Double							
	Metric Agitator / Tower							
17	Metric Single	5	170.040	M42 x 4.5 81 deep	250	240	40	179
	Metric Double							
	Metric Agitator / Tower							
18	Metric Single	5	190.046	M42 x 4.5 81 deep	300	290	45	200
	Metric Double							
	Metric Agitator / Tower							
19	Metric Single	5	210.046	M42 x 4.5 81 deep	350	340	50	221
	Metric Double							
	Metric Agitator / Tower							
21	Metric Single	5	220.046	M42 x 4.5 81 deep	350	340	50	231
	Metric Double							
	Metric Agitator / Tower							

SERIES G

Output Bore Options

0204

OUTPUT BORE OPTIONS



Column 10 Entry *

Inch

With Shrink Disc H

Metric

With Shrink Disc H

SIZE OF UNIT	TYPE OF OUTPUTBORE	DIMENSIONS IN INCHES (Metric Bore in mm)						
		øD	øD1	øD2	øD3	L	L1	L2
14	Inch with Shrink Disc	4.72"	3.7415" 3.7402"	3.940" 3.937"	3.78"	16.34"	7.09"	10.04"
15	Inch with Shrink Disc	5.51"	4.3321" 4.3307"	4.531" 4.528"	4.37"	16.54"	7.09"	10.24"
16	Inch with Shrink Disc	6.30"	4.9228" 4.9213"	5.122" 5.118"	4.96"	20.98"	9.06"	12.80"
17	Inch with Shrink Disc	7.09"	5.7102" 5.7087"	5.909" 5.906"	5.79"	21.57"	9.06"	13.39"
18	Inch with Shrink Disc	7.87"	6.3008" 6.2992"	6.697" 6.693"	6.38"	27.09"	11.81"	16.14"
19	Inch with Shrink Disc	8.66"	6.6945" 6.6929"	7.091" 7.087"	6.77"	27.87"	11.81"	16.93"
21	Inch with Shrink Disc	10.24"	8.2695" 8.2677"	8.665" 8.661"	8.35"	32.44"	13.78"	19.69"
14	Metric with Shrink Disc	120	95.035 95.000	100.087 100.000	96	415	180	255
15	Metric with Shrink Disc	140	110.035 110.000	115.087 115.000	111	420	180	260
16	Metric with Shrink Disc	160	125.040 125.000	130.100 130.000	126	533	230	325
17	Metric with Shrink Disc	180	145.040 145.000	150.100 150.000	147	548	230	340
18	Metric with Shrink Disc	200	160.040 160.000	170.100 170.000	162	688	300	410
19	Metric with Shrink Disc	220	170.040 170.000	180.100 180.000	172	708	300	430
21	Metric with Shrink Disc	260	210.046 210.000	220.100 220.000	212	824	350	500

* Please see pages 66 & 67 for details of the hollow output shaft with Kibo bush

SERIES G

Unit Handings & Shaft Rotations Parallel Shaft Units

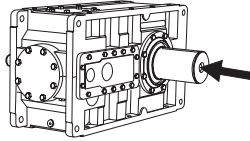
0204

Column 14 Entry - Output Shaft Positions

L		R		D	
SINGLE EXTENSION ON LEFT		SINGLE EXTENSION ON RIGHT		DOUBLE EXTENSION	
Horizontal	Vertical	Horizontal	Vertical	Horizontal (Not applicable on vertical units)	

Note: for shaft mounted units driven machine side (opposite to shrink disc) is assumed as extension side.

Column 16 Entry - Shaft Rotations



For parallel shaft units all rotations should be viewed from output shaft end** (This side if double extended).

** driven machine side for shaft mounted units

Column 15 Entry - Input Shaft Positions

L		R		D	
SINGLE EXTENSION ON LEFT		SINGLE EXTENSION ON RIGHT		DOUBLE EXTENSION	
Horizontal	Vertical	Horizontal (Not applicable on vertical units)		Horizontal (Not applicable on vertical units)	

Rotation		Parallel Shafts	
Outputshaft	Inputshaft	2 Stage & 4 Stage	3 Stage
Clockwise	Clockwise	1 (std)	n/a
Anticlockwise	Anticlockwise	2	n/a
Clockwise	Anticlockwise	n/a	1 (std)
Anticlockwise	Clockwise	n/a	2

All units are rotation reversible, except when fitted with a backstop (anti-runback device).

(std) if no rotation is entered rotation will be assumed as standard build

Double & Quadruple Reduction	Horizontal Mounting	L R 1 	R R 1 	D R 1 	R L 1 	L L 1
	Vertical Mounting	D L 1 	L D 1 	R D 1 	D D 1 	
Triple Reduction	Horizontal Mounting	L R 1 	R R 1 	D R 1 	R L 1 	L L 1
	Vertical Mounting	D L 1 	L D 1 	R D 1 	D D 1 	

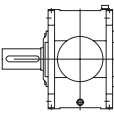
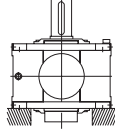
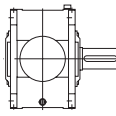
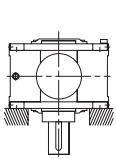
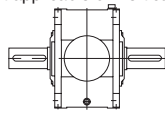
Note: parallel shaft unit handings **R R** or **L L** are subject to a reduction in external overhung load capacities

SERIES G

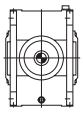
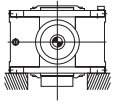
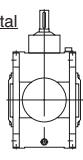
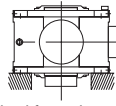
Unit Handings & Shaft Rotations Right Angle Shaft Units

0204

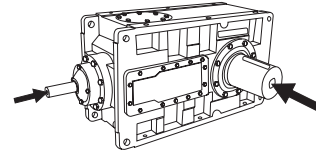
Column 14 Entry - Output Shaft Positions

L		R		D	
SINGLE EXTENSION ON LEFT		SINGLE EXTENSION ON RIGHT		DOUBLE EXTENSION	
Horizontal	Vertical	Horizontal	Vertical	Horizontal (Not applicable on vertical units)	
					
Note: for shaft mounted units driven machine side (opposite to shrink disc) is assumed as extension side.					

Column 15 Entry - Input Shaft Positions

B		J	
STANDARD RIGHT ANGLE EXTENSION		RIGHT ANGLE UNIT TYPE J	
Horizontal	Vertical	Horizontal	Vertical
			
Note: Only available as standard for ratios: G14, G16, G18 - 22:1 to 63:1 G15, G17, G19 - 28:1 to 80:1			

Column 16 Entry - Shaft Rotations



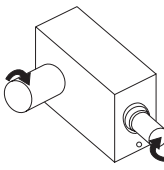
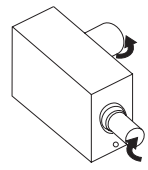
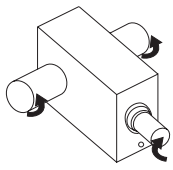
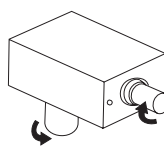
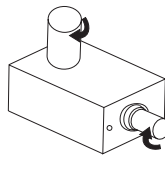
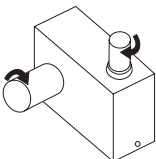
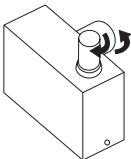
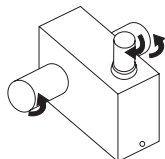
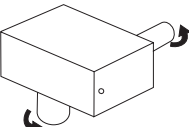
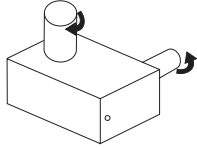
Right angle units rotations as viewed looking on shaft ends (This side if double extended).

Rotation		Right Angle Shafts
Outputshaft	Inputshaft	3 Stage & 4 Stage
Clockwise	Clockwise	1 (std)
Anticlockwise	Anticlockwise	2
Clockwise	Anticlockwise	3 *
Anticlockwise	Clockwise	4 *

All units are rotation reversible, except when fitted with a backstop (anti-runback device).

(std) if no rotation is entered rotation will be assumed as standard build

* Right angle unit rotations 3 & 4 are subject to a reduction in output shaft external overhung load capacities

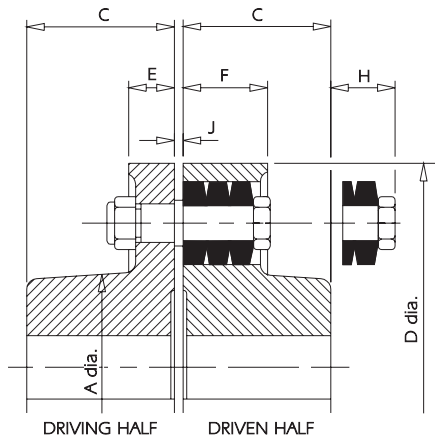
Right Angle Shafts - Triple & Quadruple Reduction	Horizontal Mounting	L B 1 	R B 1 	D B 1 
	Vertical Mounting	R B 1 	L B 1 	
Type J Shafts - Triple & Quadruple Reduction	Horizontal Mounting	L J 1 	R J 1 	D J 1 
	Vertical Mounting	R J 1 	L J 1 	

Note: For units fitted with a backstop please see page 69 for backstop position.

SERIES G

Cone Ring Flexible Couplings

9902



This type of coupling compensates for normal angular and parallel misalignment of shafts, together with a limited freedom of axial movement. The conical section rubber rings provide greatly improved torsional flexibility in drives where shock or cyclic loadings are present.

Coupling Size	A	D	E	F	H	J
01	2.52	5.28	0.55	1.10	0.79	0.12
02	2.76	5.79	0.55	1.10	0.47	0.12
03	3.27	6.73	0.75	1.38	1.02	0.12
04	3.28	7.60	0.75	1.38	0.75	0.12
05	4.61	8.46	0.75	1.38	0.43	0.12
06	5.00	10.00	1.22	2.20	1.81	0.12
07	5.79	10.98	1.22	2.20	1.34	0.12
08	7.09	12.99	1.18	2.40	0.87	0.12
09	8.11	14.61	1.81	3.19	1.77	0.24
10	9.06	16.50	1.81	3.19	1.18	0.24
11	10.08	17.99	1.81	3.19	0.47	0.24
12	11.65	20.98	1.81	3.19	0	0.24

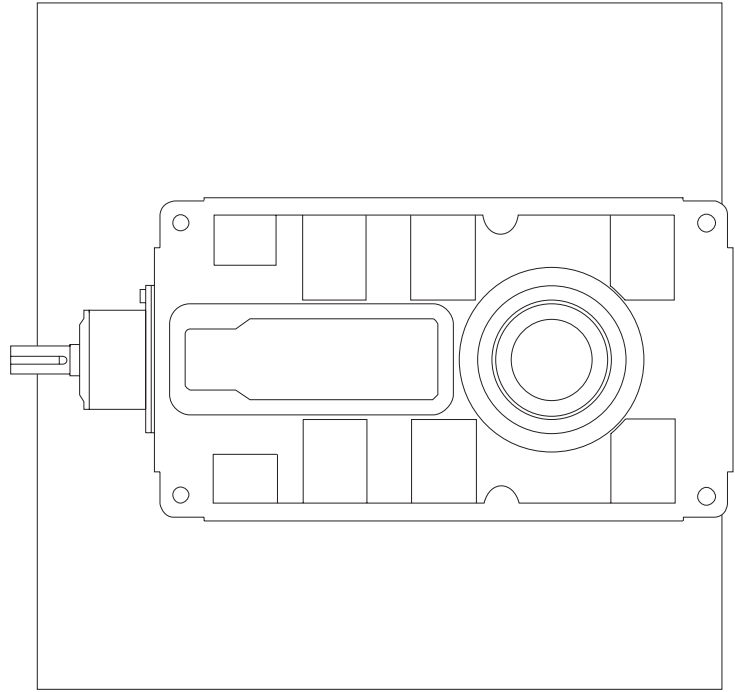
The coupling pin withdrawal distance is dimension H for straight bored couplings

Coupling Type 611 Straight bored							
Coupling size	Max. bore	Min. bore		Hub length C	Torque lbf-in	Max HP per 100 rpm	Max rpm un-balanced
		Driving half	Driven half				
01	1.50	*	0.75	1.89	1575	2.5	4780
02	1.65	*	0.87	2.20	2365	3.75	4355
03	1.89	*	0.98	2.40	4098	6.5	3745
04	2.36	*	1.10	2.68	6363	10.1	3320
05	2.76	*	1.26	2.99	9071	14.4	3000
06	3.15	0.98	1.65	3.46	18904	30.0	2520
07	3.54	1.18	2.17	3.94	28355	45.0	2295
08	3.94	1.57	2.36	4.61	44870	71.2	1940
09	4.72	1.97	2.56	5.20	74995	119.0	1725
10	5.51	3.15	3.15	5.79	98943	157.0	1530
11	5.90	3.54	3.54	6.50	133635	212.0	1400
12	6.69	3.94	3.94	7.40	207356	329.0	1200

* Note: up to size 05 the Driving half hubs are solid.

Rating may be increased by 20% for speeds below 10 rpm.

For applications in ambient temperatures above 212°F (100°C) or below -4°F (-20°C) contact our Application Engineers.



**INSTALLATION,
MAINTENANCE,
LUBRICATION**


SERIES G

0204

GENERAL

The following instructions will help you achieve a satisfactory installation of your Series G unit, ensuring the best possible conditions for a long and trouble free operation.

WARNING: The customer shall be responsible for the proper use of articles supplied by the company, particularly the rotating shafts between their driving and driven members, and their guarding for safety, and the company shall not be responsible for any injury or damage sustained as a result of the improper use of the articles supplied.



Attention is hereby drawn to the danger of using exposed lights in proximity to openings in gearboxes and gear units supplied by the company, and the company shall not be liable for any claim for injury or damage arising from any action in contravention of this warning.

WARNING: All units and couplings are shipped without oil or grease, on installing the unit fill with recommended lubricant to correct level.

1.0 FITTING OF COMPONENTS TO EITHER THE UNIT INPUT OR OUTPUT SHAFT

The input or output shaft extension diameter tolerance is + 0 to - 0.0005 inches for shafts up to 1.5 inches diameter and +0 to -0.001 for shafts larger than 1.5 inches diameter. The fitted component should be machined to ensure a proper fit.

- Items (such as gears, sprockets, couplings etc) should not be hammered onto these shafts since this would damage the shaft support bearings.
- The item should be pushed onto the shaft using a screw jack device fitted into the threaded hole provided in the end of the shaft.
- Items being fitted maybe heated to 176/212°F (80/100°C) to aid assembly further.

THREADED HOLE DETAILS

UNIT SIZE	TYPE OF UNIT	INPUT SHAFT	OUTPUT SHAFT
14 & 15	Parallel 2 Stage	5/8" UNF x 1.25 deep	1" UNF x 2 deep
	Parallel 3 & 4 Stage	1/2" UNF x 1 deep	
	Right Angle 3 Stage	5/8" UNF x 1.25 deep	
16 & 17	Parallel 2 Stage	3/4" UNF x 1.62 deep	1.25" UNF x 2.5 deep
	Parallel 3 & 4 Stage	5/8" UNF x 1.25 deep	
	Right Angle 3 Stage	5/8" UNF x 1.25 deep	
	Right Angle 4 Stage	5/8" UNF x 1.25 deep	
18 & 19	Parallel 2 Stage	1" UNF x 2 deep	1.5" UNF x 3 deep
	Parallel 3 & 4 Stage	3/4" UNF x 1.62 deep	
	Right Angle 3 Stage	3/4" UNF x 1.62 deep	
	Right Angle 4 Stage	5/8" UNF x 1.25 deep	
21	Parallel 2 Stage	1" UNF x 2 deep	1.5" UNF x 3 deep
	Parallel 3 & 4 Stage	3/4" UNF x 1.62 deep	
	Right Angle 3 Stage	1" UNF x 2 deep	
	Right Angle 4 Stage	3/4" UNF x 1.62 deep	

2.0 WEATHER PROTECTION OF UNIT

All Series G units are provided with protection against normal weather conditions. Where units are to operate in extreme conditions, or where they are to stand for long periods without running, eg during plant construction, we should be notified when ordering so that arrangements for adequate protection can be made.

0204

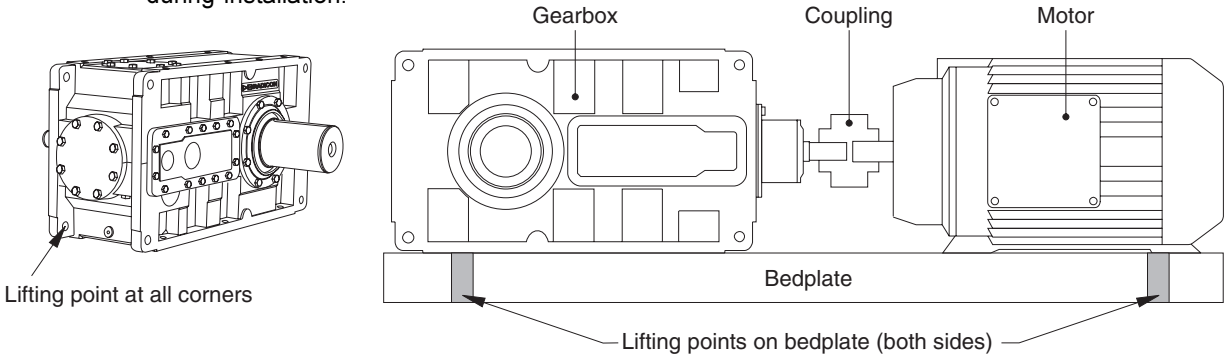
3.0 INSTALLATION

All units are shipped less oil, for the customer to fill on site once installed. Care should be taken to ensure the correct type and quantity of lubricant for the chosen mounting position is used. Ensure that the breather/filling plug, dipstick and drain plugs are installed in the correct position

- Page 25 gives approximate lubricant quantities for each mounting position
- Pages 26 and 27 show a list of lubricants approved for use in the gear unit.
- See appropriate dimension page for positions of breather/filling plug, dipstick and drain plugs

3.1 LIFTING

Only the lifting points identified on the gearbox or bedplate must be used for lifting operations during installation.



Gearbox Only

The gearbox can be lifted using any of the eight lifting points.

Gearbox on Bedplate

The lifting points on the bedplate must be used to lift the whole drive assembly. Do **NOT** use the lifting points on the gearbox to lift the bedplate assembly.

Note: Failure to use these lifting points could result in personal injury/or damage to the product and surrounding equipment.

3.2 GENERAL

Drives must be installed on rigid, flat and vibration free beds. Align the driving and driven units carefully to avoid any increased loads on the shafts and bearings due to misalignment.

The unit should be fixed by means of bolts to ISO grade 8.8 minimum and torque tightened to:

Screw Size	Tightening Torque	
1/2" (M12)	750 lb-ins	(85 Nm)
5/8" (M16)	1770 lb-ins	(200 Nm)
3/4" (M20)	3100 lb-ins	(350 Nm)
1" (M20)	5400 lb-ins	(610 Nm)
1 1/4" (M30)	10,800 lb-ins	(1220 Nm)
1 1/2" (M36)	19,030 lb-ins	(2150 Nm)
1 3/4" (M42)	30,600 lb-ins	(3460 Nm)

3.3 GUARDS

The customer must ensure that any exposed rotating shafts and couplings, guards must be fitted in accordance with the relevant state and local safety regulations.

3.4 CONNECTING ELECTRIC MOTOR

Connection of the electric motor to the mains supply should be made by a qualified person. The current rating of the motor will be identified on the motor plate, and correct sizing of the cables to electrical regulations is essential.

9902

3.5 FOOT-MOUNTED UNITS

The following procedure is recommended for all foot mounted units.

Foot mounted units are supplied either as free standing units, or if required, mounted on a standard baseplate with a foot mounted motor correctly aligned and connected by a flexible coupling.

- a) Clean shaft extensions and breather when fitted.
- b) Secure unit, or baseplate if fitted to a rigid foundation using heavy duty bolts to ISO grade 8.8 minimum.
- c) Ensure baseplate is not distorted
 Note: Units not supplied on baseplates should if possible be mounted on the same bedplate as the prime mover.
- d) Align unit
 Note: It is important to ensure when aligning unit on baseplate that all machined mounting points are supported over their full area.
 If steel shims are used these should be placed either side of the foundation bolt as close as possible. During the final bolting ensure the unit or baseplate is not distorted this will cause strains in the gear case resulting in errors of alignment of shafts and gearing.
- e) For units mounted on bedplates after alignment select any two diagonally opposite feet, drill ream and dowel in position.
- f) Fit guards in accordance with the factory acts.
- g) Check motor wiring for correct direction of rotation this is important when a backstop device is fitted.
- h) Fill gear unit with oil (if not factory filled) as detailed on page 25.

3.6 SHAFT MOUNTED UNITS

The following procedure is recommended for all shaft and foot/shaft mounted units.

- a) Clean shaft extensions, driven machine shaft, gear unit bore and breather when fitted.
- b) Locate in position, ensuring it is as close as possible to the bearing on the driven machine.
- c) Secure unit onto the shaft. For units using a shrink disc device refer to section 3.6.1
- d) Fit torque arm to the side of the unit adjacent to the driven machine where possible, as detailed below. Note: Unless specified otherwise, the torque arm will be supplied loose.
- e) Anchor case to a secure point by means of the torque arm.
- f) Fit guards in accordance with local and state regulations.
- g) Check motor wiring for correct direction of rotation, this is important when a backstop device is fitted.
- h) Fill gear unit with oil (if not factory filled) as detailed on page 25.

Figure 1

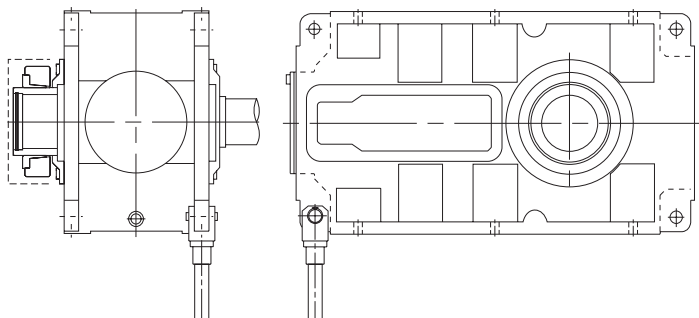
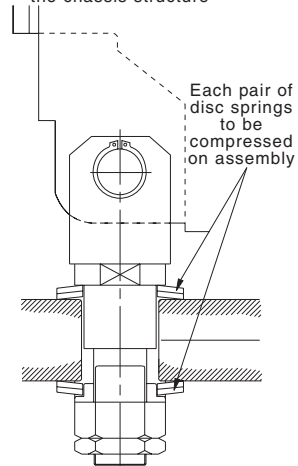


Figure 2

The torque arm must be flexibly mounted to the chassis structure



9902

3.6.1 SHAFT MOUNTED UNITS USING A SHRINK DISC DEVICE

The gear unit is fitted with a 'shrink disc' device located on the hollow output shaft to provide a positive outer locking connection between gear unit and driven shaft. The 'shrink disc' is a friction device, without keys, which exerts an external clamping force on the hollow output shaft, thus establishing a mechanical shrink fit between the gear unit hollow shaft and driven shaft. 'Shrink disc' capacities have ample margins in dealing with transmitted torques and external loading imposed on gear units.

The 'shrink disc' consists of a locking collar, a tapered inner ring and locking screws. By tightening the locking screws, the locking collar and tapered inner ring are pulled together, exerting radial forces on the inner ring, thus creating a positive friction connection between hollow shaft and driven shaft (See Figure 2).

As the tapered surfaces of locking collar and inner ring are lubricated with Molykote 321R or similar and the taper angle is not self locking, locking collar will not seize on the inner ring and can be released easily when removal is necessary.

When the shrink disc is clamped in position the high contact pressures between tapered surfaces and screw heads and their seatings ensure hermetic sealing and eliminate the possibility of fretting corrosion.

INSTALLATION

'Shrink discs' are supplied with shaft mounted units. The following procedures should be followed when fitting or removing units from the driven shaft.

- 1 Release locking screws gradually and in succession. Initially a quarter of a turn on each screw will avoid tilting and jamming - do not remove locking bolts completely.
- 2 Remove 'shrink disc' - from gear unit hollow shaft.
- 3 Clean and degrease locating diameters of gear unit hollow shaft, driven shaft and 'shrink disc' locating diameter on hollow shaft extension.
- 4 Draw the gear unit onto the driven shaft (See Figure 3).
- 5 Grease tapered surfaces of outer ring and inner ring with Molykote 321R or similar.
- 6 Fit 'shrink disc' on gear unit hollow shaft to position shown in Figure 1 page 65.
- 7 Tighten all locking screws gradually and in succession. Do not tighten in a diametrically opposite sequence. Several passes are required until all screws are tightened until the inner and outer ring faces are in-line and the torque figures T_a shown in the table on page 65 are achieved.
- 8 Fit protective cover.

Note: When the hollow output shaft is to operate in a vertical position it is essential that the shaft of the driven machine is provided with a shoulder. When the thrust load is not taken by the shoulder on the driven shaft, a thrust plate, as shown in Figure 1 page 65, must be fitted.

It is recommended that customers' shafts at the non-clamped end of the sleeve should be coated with Molykote 321R or equivalent.

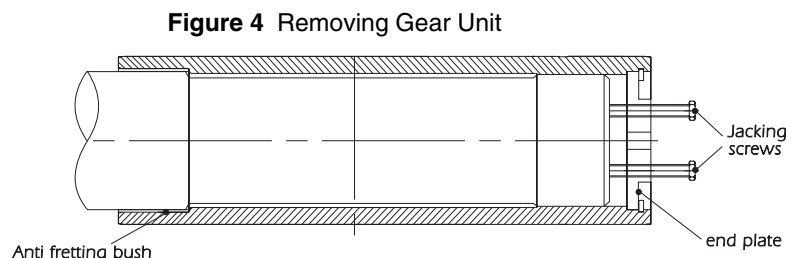
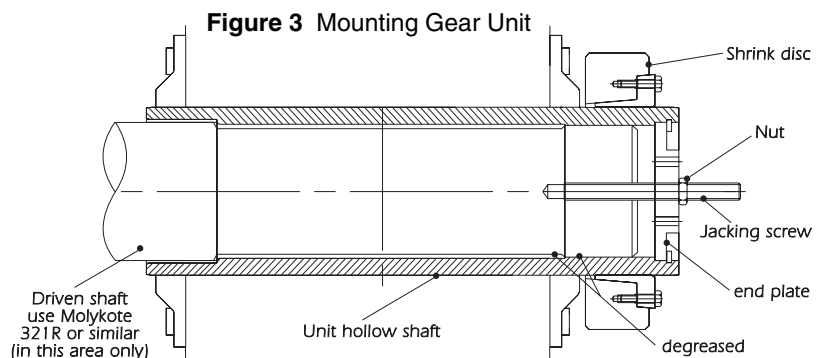
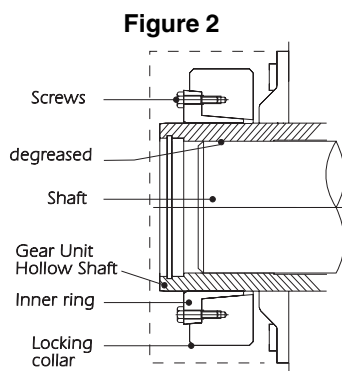
REMOVAL

- 1 Removal procedure is similar to the reverse of installation.
- 2 Remove any rust and dirt from gear unit hollow shaft.
- 3 Withdraw gear unit from driven shaft (See Figure 4).

Note: Do not remove 'shrink disc' locking screws completely.

Note: 'Shrink disc' should be removed and cleaned thoroughly, and Molykote 321R or similar applied to the tapered surfaces of inner ring and locking collar before re-use.

Note: Protective covers are supplied with all 'shrink discs'. Assembly or removal kits and thrust plates are not provided.



9902

3.7 OIL / GREASE CHANGES

On all sizes regular oil changes are essential and the following factors should be used to determine the frequency at which these are carried out.

- a. Oil temperature - unit operating under load.
- b. Type of oil.
- c. Environment - humidity, dust, etc.
- d. Operating conditions - shock, loading, etc.

At elevated temperatures the effective life of the oil is very much reduced. This is most pronounced with oils containing fatty and E.P. additives. To prevent damage to the unit through lubricant breakdown the oil should be renewed as detailed in the following table:

UNIT OPERATING TEMPERATURE °F	RENEWAL PERIOD	
	MINERAL OIL	SYNTHETIC OIL
167 (75°C) OR LESS	17000 HOURS or 3 YEARS	26000 HOURS or 3 YEARS
176 (80°C)	12000 HOURS or 3 YEARS	26000 HOURS or 3 YEARS
185 (85°C)	8500 HOURS or 3 YEARS	21000 HOURS or 3 YEARS
194 (90°C)	6000 HOURS or 2 YEARS	15000 HOURS or 3 YEARS
203 (95°C)	4200 HOURS or 17 MONTHS	10500 HOURS or 3 YEARS
212 (100°C)	3000 HOURS or 12 MONTHS	7500 HOURS or 2.5 YEARS
NB: INITIAL FILL OF OIL SHOULD BE CHANGED IN A NEW GEAR UNIT AFTER 1000 HOURS OPERATION OR ONE YEAR OR HALF THE ABOVE LIFE WHICHEVER IS THE SOONEST		

Note:

Figures quoted are for oil temperatures when the unit has attained normal running temperature when operating under load. These figures are based on normal running but where conditions are particularly severe it may be necessary to change the oil more frequently. When changing lubricant, if same lubricant is not used then unit must be flushed out and filled only with one type of lubricant.

The procedure for changing an oil should be to drain the oil preferably when hot and after circulation. If the gear unit is to be flushed, the unit should be filled to the appropriate level with an oil of the same viscosity grade and type as the lubricating oil and run before the flushing oil is drained. This procedure should be followed especially if the type of oil is being changed. The unit should be filled with the approved oil to the level marked on the dipstick. Re-check the oil level after a short period of running and top up as necessary. On certain units the output shaft bearings are grease lubricated, these should be re-greased at 2000 to 3000 hour intervals unless otherwise instructed.

3.8 ROUTINE MAINTENANCE

Periodically check that the fixing bolts are properly tightened and that everything is correctly aligned.

Once a week the oil level should be checked and lubricant added if required. Carry out oil changes in accordance with the Table above. On certain units the output shaft bearings are grease lubricated, these should be re-greased at 2000 to 3000 hour intervals unless otherwise instructed.

3.9 CLEANING

With the drive stationary periodically clean any dirt or dust from the gear unit and the electric motor cooling fins and fan guard to aid cooling.

3.10 GENERAL SAFETY

Potential hazards which can be encountered during installation, maintenance and operation of drives is covered in greater detail in the product safety page at the back of this booklet.

Advice is also given on sensible precautions which need to be taken to avoid injury or damage.

PLEASE READ !

Any further information or clarification required may be obtained by contacting our Application Engineers.

SERIES G

Lubrication

0204

All Series G units are despatched without oil (a warning label is attached), and therefore filled by the client. The grade and type of oil will be stamped on the nameplate in accordance with either of the types of oil from tables 3 or 4. The oil change period will be as stated in section 3.7 of the installation and maintenance on page 24.

The approximate quantity of oil required is given in Table 1, but the unit should always be filled to the level marked on the dipstick or any other level indicator fitted (sight glass etc). Warning: Do not overfill the unit as this can cause leakage and overheating.

Where possible run the unit without load for a short time to circulate the lubricant thoroughly, then stop the unit and recheck the oil level after allowing the unit to stand for 10 minutes and if necessary top off to the correct mark on the dipstick or any other level indicator fitted (sight glass etc).

In addition where bearings are grease packed, the greases approved are given in table 2.

TABLE 1 LUBRICANT QUANTITY (Liters)

Unit Type		UNIT SIZE						
		14	15	16	17	18	19	21
Parallel Shaft 2 Stage	Horizontal	22	20	47	42	92	95	180
	Vertical	18	18	40	37	80	85	140
Parallel Shaft 3 Stage	Horizontal	21	19	46	41	91	94	185
	Vertical	18	18	40	37	80	85	140
Parallel Shaft 4 Stage	Horizontal	21	19	46	41	91	94	185
	Vertical	18	18	40	37	80	85	140
Right Angle 3 Stage	Horizontal	21	19	47	42	92	95	185
	Vertical	20	20	43	39	87	92	140
Right Angle 4 Stage	Horizontal	-	-	48	43	94	96	190
	Vertical	-	-	45	39	89	89	140

CONVERSION TABLE

Liters to US gallons = liters x 0.26
 Liters to Imperial gallons = liters x 0.22

TABLE 2 APPROVED BEARING GREASES

SUPPLIER	DESIGNATION	ALLOWABLE OPERATING TEMPERATURE RANGE °F	
		ABOVE	TO
BP Oil International Limited	Energrease LS-EP	-22 (-30°C)	266 (130°C)
Caltex	Multifak EP	32 (0°C)	248 (120°C)
Castrol International	LMX Grease	-40 (-40°C)	302 (150°C)
	Spheerol AP	-22 (-30°C)	230 (110°C)
	Spheerol EPL	50 (10°C)	248 (120°C)
Klüber Lubrication	Klüberlub BE 41-542	-4 (-20°C)	284 (140°C)
Mobil Oil Company Limited	Mobilgrease XHP	-5 (15°C)	302 (150°C)
	Mobilith SHC	-4 (-20°C)	356 (180°C)
Omega Manufacturing Division	Omega 85	-40 (-40°C)	446 (230°C)
Optimol Ölwerke GmbH	Longtime PD	-49 (-45°C)	284 (140°C)
Shell Oils	Albida RL	-4 (-20°C)	302 (150°C)
	Alvania EP B	-4 (-20°C)	248 (120°C)
	Nerita HV	-22 (-30°C)	266 (130°C)
Texaco Limited	Multifak All Purpose EP	-22 (-30°C)	284 (140°C)

Notes: All the above greases are NLGI grade 2.

Contact our Application Engineers if the unit is operating in an ambient temperature outside the range of -22°F to 122°F (-30°C to 50°C).

SERIES G

Approved Lubrication

0203

TABLE 3 APPROVED LUBRICANTS

Type E Mineral oil containing industrial EP additives. These have a high load carrying capacity

SUPPLIER	LUBRICANT RANGE	See notes page 27	GRADE NUMBERS		
			5E	6E	7E
			AMBIENT TEMPERATURE RANGE °F		
			23°F to 77 (-5 to 25°C)	32°F to 104 (0 to 40°C)	50°F to 122 (10 to 50°C)
Ampol Limited	Gearlube SP		SP220 (-1)	SP320 (-1)	SP460 (-1)
Batoyle Freedom Group	Remus		220 (-2)	320 (-2)	460 (-2)
Boxer Services Limited	Indus	e	220 (-10)	320 (-10)	460 (-10)
BP Oil International Limited	Energol GR-XF	c,e	220 (-16)	320 (-13)	460 (-1)
	Energol GR-XP	e	220 (-15)	320 (-10)	460 (-7)
Caltex	Meropa		220 (-4)	320 (-4)	460 (-4)
	RPM Borate EP Lubricant		220 (-7)	320 (-4)	460 (-7)
Carl Bechem GmbH	Berugear GS BM		220 (-20)	320 (-13)	460 (-10)
	Staroil G		220 (-13)	320 (-13)	460 (-10)
Castrol International	Alpha Max	c,e	220 (-19)	320 (-13)	460 (-10)
	Alpha SP	e	220 (-16)	320 (-16)	460 (-1)
Chevron International Oil Company Limited	Gear Comp EP (USA ver)		220 (-16)	320 (-13)	460 (-10)
	Gear CompEP (Eastern ver)		220 (-13)	320 (-13)	460 (-13)
	Ultra Gear		220 (-10)	320 (-7)	460 (-7)
Eko-Elda (Greece)	Gearlub		220 (-13)	320 (-10)	460 (-1)
Engen Petroleum Limited	Gengear		220 (-13)	320 (-10)	460 (-1)
Esso	Spartan EP	c	220 (-16)	320 (-13)	460 (-7)
Esso/Exxon	Spartan EP	h	220 (-12)	320 (-12)	460 (-4)
Fina	Giran		220 (-13)	320 (-10)	460 (-10)
Fuchs Lubricants (UK) Plc	Powergear			P/Gear (-16)	M460 (-4)
	Renogear V		220EP (-13)	320EP (-4)	460EP (-4)
	Renogear WE		220 (-7)	320 (-4)	400 (-4)
Fuchs Mineraloelwerke GmbH	Renolin CLPF Super	e	6 (-13)	8 (-10)	10 (-10)
Klüber Lubrication	Klüberoil GEM1		220 (-5)	320 (-5)	460 (-5)
Kuwait Petroleum International	Q8 Goya		220 (-16)	320 (-13)	460 (-10)
Lubrication Engineers Inc	Almasol Vari-Purpose Gear		607 (-18)	605 (-13)	608 (-10)
Mobil Oil Company Limited	Mobil gear 600 Series		630 (-13)	632 (-13)	634 (-1)
	Mobil gear XMP	c	220 (-19)	320 (-13)	460 (-7)
Omega Manufacturing Division	Omega 690	e		85w/140 (-15)	
Optimol Ölwerke GmbH	Optigear BM		220 (-11)	320 (-10)	460 (-7)
	Optigear		220 (-18)	320 (-9)	460 (-7)
Pertamina (Indonesia)	Masri	e	220 (-4)	320 (-4)	460 (-4)
Petro-Canada	Ultima EP	e	220 (-22)	320 (-16)	460 (-10)
Petromin Lubricating Oil Co.	Gear Lube EP	e	EP220 (-1)	EP320 (0)	EP460 (0)
Rocol	Sapphire Hi-Torque	e	220 (-13)	320 (-13)	460 (-13)
Sasol Oil (Pty) Limited	Cobalt	e	220 (-4)	320 (-1)	460 (-4)
	Hemat	e	220 (-10)	320 (-7)	460 (-4)
Shell Oils	Omala		220 (-4)	320 (-4)	460 (-4)
	Omala F	c	220 (-13)	320 (-10)	460 (-4)
Texaco Limited	Meropa	c	220 (-11)	320 (-11)	460 (-5)
	Meropa WM	c	220 (-19)	320 (-16)	460 (-10)
Total	Carter EP		220 (-7)	320 (-7)	460 (-4)
Tribol GmbH	Molub-Alloy Gear Oil		90 (-18)	690 (-16)	140 (-13)
	Tribol 1100		220 (-20)	320 (-18)	460 (-16)

DANGER

Numbers in brackets indicate recommended minimum operating temperature in °C.

THE UNIT MUST NOT RUN BELOW THIS TEMPERATURE.

SERIES G

Approved Lubrication

9902

TABLE 4 APPROVED LUBRICANTS

Type H Polyalphaolefin based synthetic lubricants with Anti-Wear or EP additives. These have a medium to high load carrying capacity.

SUPPLIER	LUBRICANT RANGE	See notes	GRADE NUMBERS		
			5H	6H	7H
			AMBIENT TEMPERATURE RANGE °F		
			14°F to 86 (-10 to 30°C)	32°F to 113 (0 to 45°C)	50°F to 122 (10 to 50°C)
Batoyle Freedom Group	Titan		220 (-31)	320 (-28)	
Boxer Services Limited	Silkgear		220 (-35)	320 (-35)	460 (-35)
BP Oil International Limited	Enersyn EPX	e		320 (-28)	
Caltex	Pinnacle EP		220 (-43)	320 (-43)	460 (-37)
Carl Bechem GmbH	Berusrsynth GP		220 (-38)	320 (-35)	460 (-32)
Castrol International	Alphasyn EP	c	220 (-37)	320 (-31)	460 (-31)
	Alphasyn T		220 (-31)	320 (-28)	460 (-28)
Chevron International Oil Co	Tegra		220 (-46)	320 (-33)	460 (-31)
Esso/Exxon	Spartan Synthetic EP	e	220 (-46)	320 (-43)	460 (-40)
Fina	Giran P		220 (-30)	320 (-25)	460 (-19)
Fuchs Lubricants (UK) Plc	Renogear SG		220 (-32)	320 (-30)	
Fuchs Mineraloelwerke GmbH	Renolin Unisyn CLP		220 (-37)	320 (-34)	460 (-28)
Klüber Lubrication	Klübersynth GEM 4		220 (-35)	320 (-35)	460 (-30)
Kuwait Petroleum International	Q8 EL Greco		220 (-22)	320 (-19)	460 (-16)
Lubrication Engineers Inc	Synolec Gear Lubricant		9920 (-40)		
Mobil Oil Company Limited	Mobilgear SHC		220 (-40)	320 (-37)	460 (-32)
	Mobilgear SHC XMP	c	220 (-40)	320 (-33)	460 (-31)
Optimol Ölwerke GmbH	Optigear Synthetic A		220 (-31)	320 (-31)	
Petro-Canada	Super Gear Fluid	e	220 (-43)	320 (-37)	460 (-37)
Shell Oils	Omala HD	c	220 (-43)	320 (-40)	460 (-37)
Texaco Limited	Pinnacle EP		220 (-43)	320 (-33)	460 (-33)
	Pinnacle WM	c	220 (-43)	320 (-43)	460 (-40)
Total	Carter EP/HT		220 (-34)	320 (-31)	460 (-28)
Tribol GmbH	Tribol 1510		220 (-36)	320 (-33)	460 (-28)

- NOTES:**
- c) These lubricants have been tested for micro-pitting (FZG Type C), test results are available.
 - e) These lubricants contain additives which may adversely affect silvered or white metal components; consult oil supplier.
 - h) Minimum operating temperatures of these lubricants are based on worst case values, lower operating temperatures may be available, please check with local supplier.

DANGER

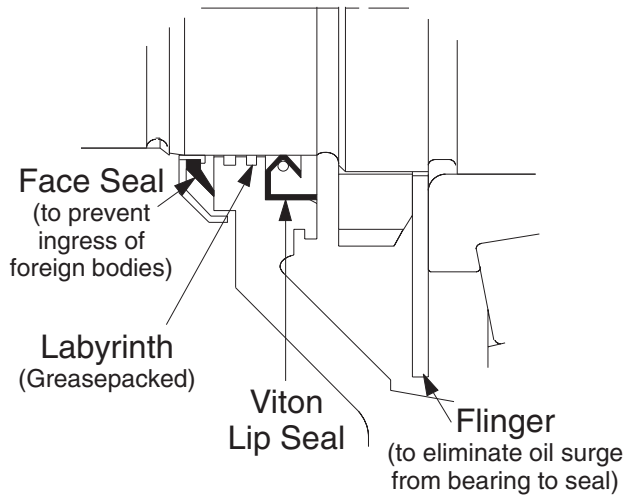
Numbers in brackets indicate recommended minimum operating temperature in °C.
THE UNIT MUST NOT RUN BELOW THIS TEMPERATURE.

SERIES G

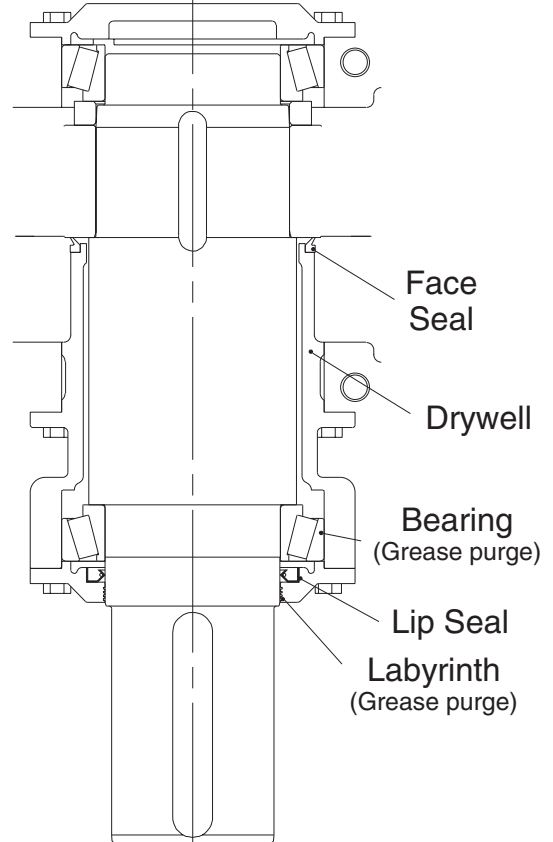
Standard Shaft Sealing Arrangements

0204

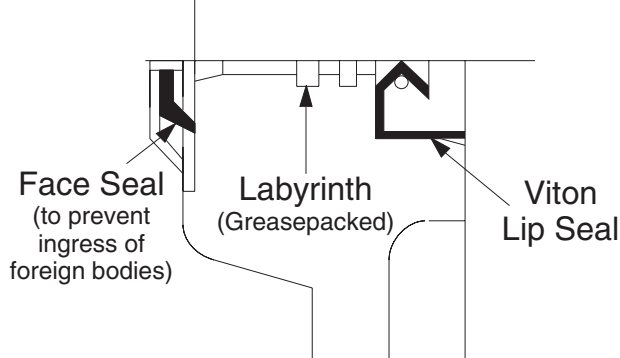
Right Angle Unit Input Shaft



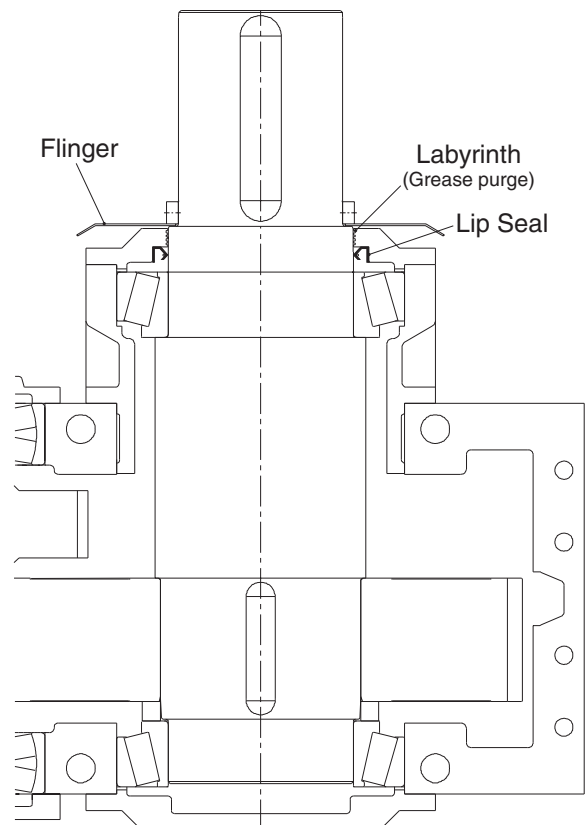
Heavy Duty Agitator Unit Output Shaft



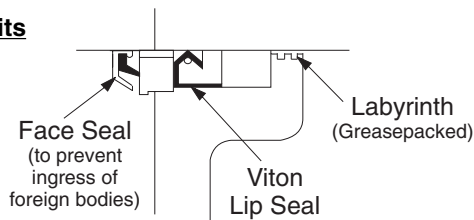
Parallel Unit Input Shaft



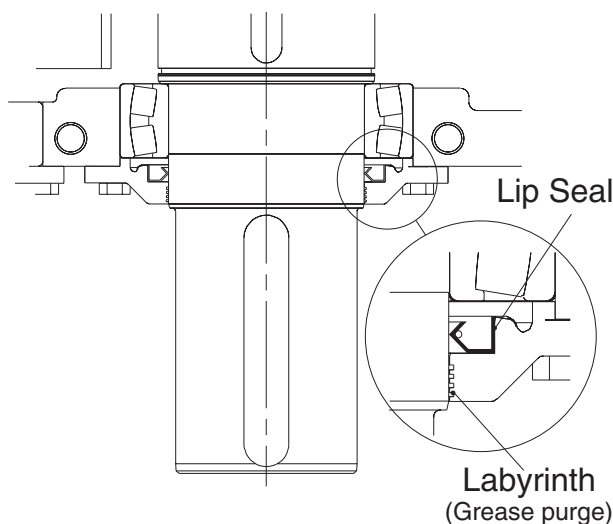
Heavy Duty Tower Unit Output Shaft

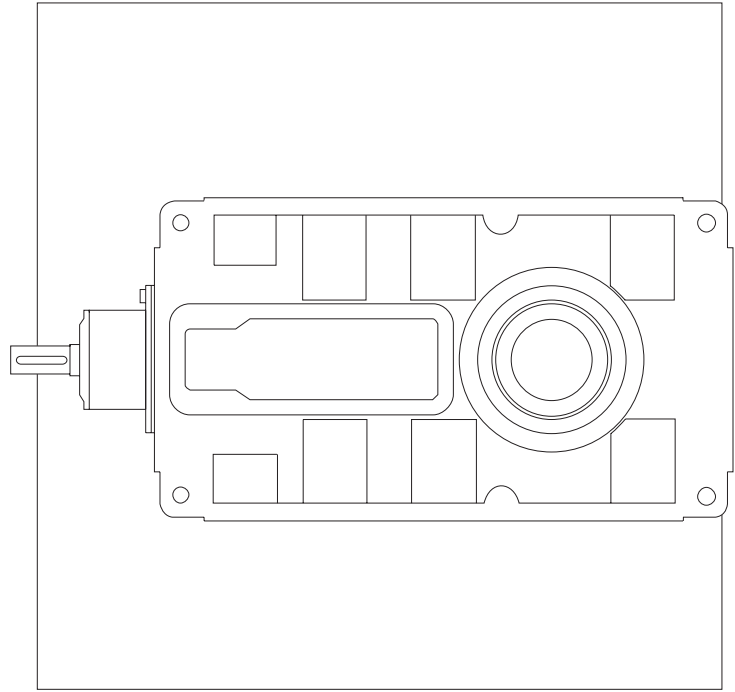


G21 units



Standard Unit Output Shaft





REDUCER
SERIES G

SERIES G

Overhung & Axial Loads (lbs) On Shafts

0204

Maximum permissible overhung loads

When a sprocket, gear etc. is mounted on the shaft a calculation, as below, must be made to determine the overhung load on the shaft, and the results compared to the maximum permissible overhung loads tabulated. Overhung loads can be reduced by increasing the diameter of the sprocket, gear, etc. If the maximum permissible overhung load is exceeded, the sprocket, gear, etc. should be mounted on a separate shaft, flexibly coupled and supported in its own bearings, or the gear unit shaft should be extended to run in an outboard bearing. Alternatively, a larger gear is often a less expensive solution.

Permissible overhung loads vary according to the direction of rotation. The values tabulated are for the most unfavorable direction with the unit transmitting full rated power and the load P applied midway along the shaft extension. Hence they can sometimes be increased for a more favorable direction of rotation, or if the power transmitted is less than the rated capacity of the gear unit, or if the load is applied nearer to the gear unit case. Call us for further details. In any event, the sprocket, gear etc. should be positioned as close as possible to the gear unit case in order to reduce bearing loads and shaft stresses, and to prolong life.

All units will accept 100% momentary overload on stated capacities.

Overhung load (lbs)

$$P = \frac{HP \times 126,000 \times K}{N \times D}$$

Key:

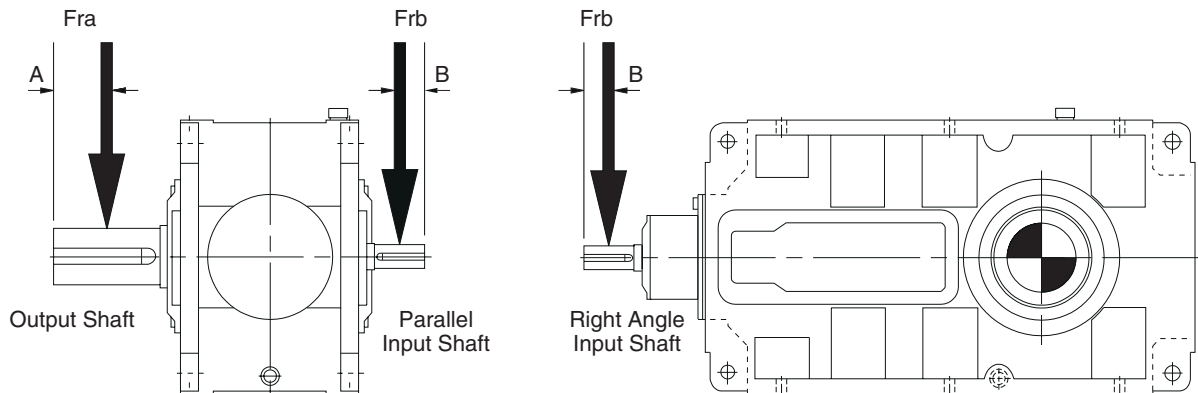
- P = equivalent overhung load (lb)
- HP = power transmitted by the shaft (HP)
- N = speed of shaft (rev/min)
- D = pitch diameter of sprocket, etc. (in)
- K = factor

Overhung member K (factor)

Chain sprocket*	1.00
Spur or helical pinion	1.25
Vee belt sheave	1.50
Flat belt pulley	2.00

* If multistrand chain drives are equally loaded and the outer strand is further than dimension Fra output or Frb input, contact our Application Engineers.

Note: 1 lb = 0.4536 kg = 4.4484 Newtons.



Output Shaft Distance 'A' (midway along the shaft extension)

Size of unit	Dimension A (inches)
G14	3.55
G15	3.74
G16	4.53
G17	4.92
G18	5.91
G19	6.89
G21	6.89

Input Shaft Distance 'B' (midway along the shaft extension)

Size of unit	Parallel Shaft Unit		Right Angle Shaft Unit	
	2 Stage	3 & 4 Stage	3 Stage	4 Stage
G14 and G15	2.66	1.87	1.97	-
G16 and G17	2.86	2.27	2.76	1.97
G18 and G19	3.74	2.86	3.15	2.76
G21	4.134	3.74	4.134	3.15

Axial Thrust Capacities (lbs)

Permissible axial thrust capacities vary according to the direction of rotation and the direction of thrust, towards or away from the unit. The values tabulated are for the most unfavourable direction and hence can sometimes be increased. Similarly they can sometimes be increased if the power transmitted is less than the rated capacity of the gear unit.

Thrust capacities tabulated refer to output shafts, and are calculated without any overhung loads being applied. In cases where combined axial thrusts and overhung loads are to be applied, contact our Application Engineers.

SERIES G

Overhung & Axial Loads (lbs) On Shafts

0204

OVERHUNG LOADS (Fra) ON OUTPUT SHAFT (lbs)

Parallel Shaft Units Handings: LR, RL, DL and DR
Right Angle Shaft Units All handings with preferred shaft rotations

Shaft Speed (Rev/min)	Unit Size						
	14	15	16	17	18	19	21
<240	5625	9000	9675	18450	19125	26100	39400
<180	6075	9675	10350	18450	19575	26100	39400
<130	6525	10575	11025	18450	20250	26100	40500
<90	7200	11250	11700	18450	21375	26100	45000
<45	7650	12375	12375	18450	24750	26100	56000
<20	7650	12375	12375	18450	26100	26100	78000

OVERHUNG LOADS (Fra) ON OUTPUT SHAFT (lbs)

Parallel Shaft Units Handings: LL and RR
Right Angle Shaft Units All handings with non-preferred shaft rotations

Shaft Speed (Rev/min)	Unit Size						
	14	15	16	17	18	19	21
<240	3825	7200	6300	13500	13500	18000	29200
<180	4050	7875	6525	13500	13725	18000	30300
<130	4275	8325	6975	13500	14175	18000	31500
<90	4725	9000	6975	13500	15300	18000	34400
<45	4725	10125	6975	13500	18000	18000	46100
<20	4725	10125	6975	13500	18000	18000	67500

AXIAL THRUST ON OUTPUT SHAFT (lbs)

Shaft Speed (Rev/min)	Unit Size						
	14	15	16	17	18	19	21
<240	1125	1912	1800	5625	3600	5850	7200
<180	1147	1935	1912	5625	3825	6075	7600
<130	1192	2227	2137	6075	4050	6750	8300
<90	1395	2700	2250	6525	4275	7650	9900
<45	2475	4500	3375	9000	8100	10125	14600
<20	4275	7200	6300	14625	14625	14625	24700

OVERHUNG LOADS (Frb) ON INPUT SHAFT (lbs)

Unit Type		Unit Size						
		14	15	16	17	18	19	21
Parallel Shaft	2 Stage	3375	3375	4950	4950	8775	8775	15700
	3 and 4 Stage	1553	1553	2048	2048	3600	3600	5600
Right Angle	3 Stage	2475	2475	3600	3600	9225	9225	12600
	4 Stage	-	-	2475	2475	3600	3600	9200

SERIES G

Agitator Applications Bending Moment Capacity

0204

To calculate the Bending Moment on the gearbox output shaft using the method recommended in The Engineering Equipment Users' Association Handbook No. 9:

$$\text{Bending Moment} = \frac{\text{Absorbed Power (HP)} \times 63000 \times L}{\text{Shaft Speed} \times 0.75 R} = \text{lb.in}$$

The above information is given for guidance. When more precise bending moment values are available they should be used.

Check the Bending Moment Capacity of the Gearbox Agitator units are suitable for supporting a paddle directly coupled to the gearbox output shaft and for accepting the bending moments and axial thrusts generated from the forces at the paddle. Agitator type units have an extended bearing span and taper bearings to accept higher loads than the standard unit.

Check the Bending Moment Capacity limited by shaft stress, using Table 2.

Check the Bending Moment Capacity limited by bearing life, using Table 3.

Note: Bearing Capacities are based on 10,000 hours, L10 life. For other bearing lives multiply the values in Table 3 by the factors in Table 1.

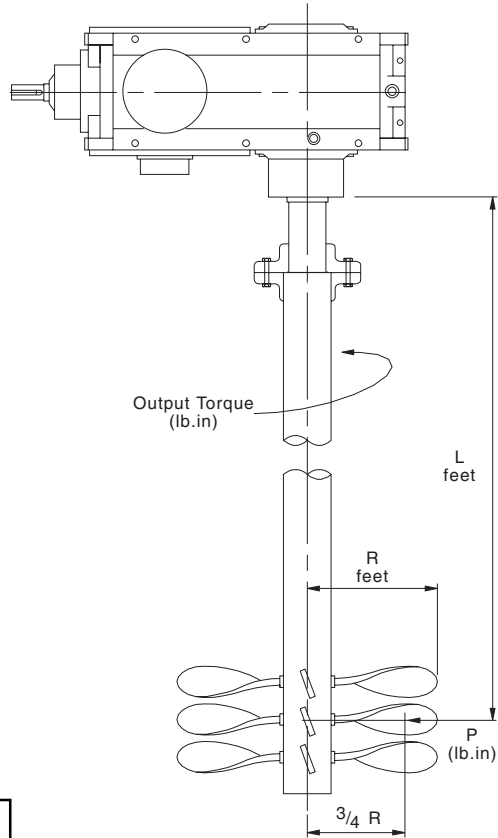


Table 1 Bearing Life Factors (F_B)

	Required Life (hours)				
	5000	10000	25000	50000	100000
Factor	1.23	1	0.76	0.62	0.50
For intermediate values					
$F_B = \left(\frac{10000}{\text{Required Life (hours)}} \right)^{0.3}$					

Table 2 Bending Moment Capacity (lb.in)

Allowable Bending Moment at output shaft lower bearing, limited by SHAFT STRESS

Unit type	Unit size						
	14	15	16	17	18	19	21
Agitator Units	100000	153000	214000	330000	443000	602000	903000

Table 3 Bending Moment Capacity (lb.in)

Allowable Bending Moment on output shaft bearings, limited by BEARING LIFE (10,000 hrs L10)*

Unit type	Output speed rev/min	Unit size						
		14	15	16	17	18	19	21
Agitator Units	<240	52200	96500	102000	227000	238000	326000	354000
	<180	65500	114000	128000	266000	298000	398000	469000
	<130	93800	149000	188000	344000	432000	540000	743000
	<90	102000	163000	203000	377000	469000	602000	805000
	<45	147000	223000	295000	487000	646000	788000	1177000
	<20	213000	291000	413000	628000	859000	1036000	1557000

* For other lives multiply values by the factors in table 1

SERIES G

Agitator Applications

Axial Thrust Loads

0204

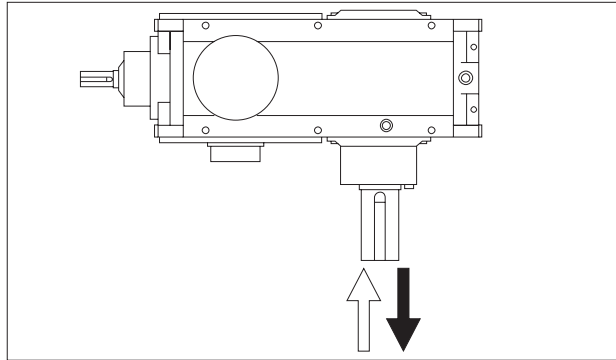


Table 4 Axial thrust capacity (lbs) Allowable thrust on output shaft, limited by COVER BOLT STRESS

Unit type	Unit size						
	14	15	16	17	18	19	21
Agitator Units	6750	9000	12400	14700	14700	14700	33700

Note: The values in table 4 are calculated for the most adverse direction of rotation. For the opposite rotation they can be increased. Contact our Application Engineers for an analysis where necessary.

Table 5 Axial thrust capacity (lbs) Allowable thrust on output shaft, limited by BEARING LIFE (10,000 hrs L10)*

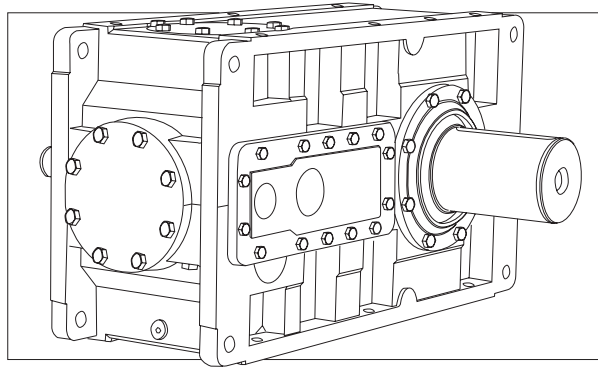
Direction of thrust	Unit type	Output speed rev/min	Unit size						
			14	15	16	17	18	19	21
↑	Agitator Units	<240	3150	5850	5175	11475	9000	12375	12600
		<180	3150	6075	5400	11700	9225	12600	13050
		<130	3375	6300	5625	11700	9225	12825	13050
		<90	3600	6750	6300	12825	10350	14175	14850
		<45	5850	9675	10125	18225	16875	21825	24700
		<20	9000	14175	15750	26100	25875	32850	39400
↓	Agitator Units	<240	2250	4950	3825	9900	6975	10125	9000
		<180	2475	5175	4050	10125	7200	10350	9230
		<130	2475	5400	4050	10350	7200	10575	9230
		<90	2925	5625	4725	11250	8325	11925	11250
		<45	5175	8775	8550	16650	14625	19350	20900
		<20	8100	13275	14400	24750	23850	30375	35300

* For other lives multiply values by the factors in table 1 page 32.

Note: Values are based on the most unfavourable directions of rotation. Higher values may be permitted after analysis by our Application Engineers.

SERIES G

Notes



PARALLEL SHAFT UNITS

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SERIES G

Moments of Inertia Parallel Shaft Units

0204

MOMENTS OF INERTIA (lb.in²) Referred to Input Shaft

PARALLEL SHAFT UNITS - without fans

NOMINAL RATIO COLUMN ENTRY	PARALLEL SHAFT UNITS - SIZE							
	G14	G15	G16	G17	G18	G19	G21	
	6	7	8					
6 . 3	140.2	-	485.5	-	2280.3	-	-	DOUBLE REDUCTION
7 . 1	114.5	-	451.3	-	1969.2	-	12800	
8 . 0	100.9	165.8	389.7	603.4	1588.0	2721.4	11200	
9 . 0	87.2	135.0	333.3	553.8	1370.9	2345.3	9800	
1 0 .	76.9	117.9	285.5	478.6	1276.9	1876.9	8500	
1 1 .	66.7	102.6	239.3	398.3	1104.3	1601.7	7200	
1 2 .	58.1	88.9	200.0	336.8	854.7	1473.5	6300	
1 4 .	49.6	75.2	165.8	282.1	798.3	1259.8	5400	
1 6 .	42.7	65.0	152.1	235.9	665.0	977.8	4500	
1 8 .	35.9	56.4	141.9	193.2	591.5	892.3	4200	
2 0 .	33.5	46.2	129.9	172.6	569.2	735.0	3700	TRIPLE REDUCTION
2 2 .	30.8	39.3	119.7	157.3	523.1	653.0	3400	
2 5 .	29.1	35.9	109.4	143.6	459.8	618.8	3200	
2 8 .	27.0	33.2	101.2	129.9	446.2	564.1	2900	
3 2 .	25.0	30.4	99.8	117.9	410.3	488.9	2760	
3 6 .	15.4	28.4	51.3	107.7	208.5	470.1	2670	
4 0 .	13.3	26.3	48.2	106.0	203.4	427.4	1340	
4 5 .	12.6	14.7	45.5	56.4	191.5	223.9	1270	
5 0 .	12.0	14.0	43.1	51.3	176.1	215.4	1200	
5 6 .	11.6	13.3	41.0	47.9	172.6	201.7	1150	
6 3 .	11.3	12.6	40.3	46.2	162.4	182.9	1100	QUADRUPLEREDUCTION
7 1 .	10.6	12.0	38.3	42.7	148.7	177.8	1080	
8 0 .	10.6	11.6	36.9	41.7	147.0	167.5	940	
9 0 .	10.3	10.9	36.6	39.3	141.9	152.1	910	
1 0 0	10.3	10.6	31.5	37.9	124.8	148.7	895	
1 1 2	9.9	10.6	31.1	37.6	123.1	145.3	730	
1 2 5	9.9	10.3	30.8	32.5	119.7	124.8	720	
1 4 0	6.2	10.3	19.5	31.5	85.5	123.1	710	
1 6 0	6.2	9.9	18.1	31.1	76.9	121.4	470	
1 8 0	6.2	6.2	17.8	20.5	75.2	85.5	410	
2 0 0	6.2	6.2	17.8	18.1	75.2	76.9	405	
2 2 5	-	6.2	-	17.8	-	75.2	400	
2 5 0	-	6.2	-	17.8	-	75.2	-	

PARALLEL SHAFT UNITS - with fans

If fan cooling is required the inertia of the fan must be added to the table above.

MOMENTS OF INERTIA of fans (lb.in²)

	G14 / G15	G16 / G17	G18 / G19	G21
DOUBLE REDUCTION	41.7	135.7	451.3	740
TRIPLE REDUCTION	10.3	41.7	135.7	740

GD² (lb.in²) = 4 x Moment of Inertia (lb.in²)

SERIES G

Exact Ratios Parallel Shaft Units

0204

EXACT RATIOS - PARALLEL SHAFT UNITS

Double Reduction

Nominal Ratio Column Entry 6 7 8	UNIT SIZE						
	14	15	16	17	18	19	21
6 . 3	6.100	-	6.528	-	6.324	-	-
7 . 1	7.029	-	7.060	-	6.986	-	7.360
8 . 0	7.752	7.700	7.729	8.393	8.016	7.930	8.153
9 . 0	8.578	8.873	8.820	9.078	8.935	8.760	9.221
1 0 .	9.531	9.785	9.929	9.938	9.765	10.051	10.104
1 1 .	10.643	10.828	11.063	11.340	10.957	11.204	11.324
1 2 .	11.957	12.031	12.641	12.766	12.797	12.245	12.765
1 4 .	13.534	13.435	14.360	14.223	14.092	13.739	14.494
1 6 .	15.462	15.094	15.504	16.253	15.982	16.047	16.608
1 8 .	-	17.084	-	18.463	-	17.671	17.851
2 0 .	-	19.517	-	19.934	-	20.040	-

Triple Reduction

Nominal Ratio Column Entry 6 7 8	UNIT SIZE						
	14	15	16	17	18	19	21
1 8 .	17.401	-	17.934	-	17.539	-	-
2 0 .	19.335	-	20.190	-	19.168	-	20.569
2 2 .	21.591	21.966	22.494	23.058	21.507	21.994	23.051
2 5 .	24.256	24.406	25.704	25.958	25.120	24.036	25.985
2 8 .	27.455	27.254	29.199	28.921	27.662	26.969	29.506
3 2 .	31.365	30.619	31.525	33.048	31.371	31.499	33.809
3 6 .	34.721	34.657	35.770	37.542	35.182	34.688	36.340
4 0 .	38.579	39.592	40.269	40.532	38.450	39.339	41.011
4 5 .	43.080	43.828	44.865	45.990	43.141	44.117	45.960
5 0 .	48.399	48.698	51.268	51.774	50.388	48.215	51.810
5 6 .	54.782	54.379	58.239	57.683	55.488	54.098	58.829
6 3 .	62.583	61.094	62.877	65.916	62.928	63.185	67.408
7 1 .	-	69.151	-	74.879	-	69.580	72.455
8 0 .	-	78.999	-	80.842	-	78.909	-

Quadruple Reduction

Nominal Ratio Column Entry 6 7 8	UNIT SIZE						
	14	15	16	17	18	19	21
7 1 .	70.494	-	71.590	-	73.105	-	-
8 0 .	78.327	-	81.324	-	80.504	-	79.169
9 0 .	87.465	88.984	87.800	92.044	91.298	91.671	90.715
1 0 0	98.265	98.872	104.001	104.559	102.455	100.949	97.506
1 1 2	111.224	110.407	118.142	112.886	112.825	114.485	115.479
1 2 5	127.063	124.039	127.550	133.716	127.953	128.475	132.320
1 4 0	136.419	140.398	140.233	151.897	140.825	141.479	142.226
1 6 0	153.263	160.392	166.109	163.993	158.034	160.449	159.476
1 8 0	173.476	172.201	188.694	180.299	174.029	176.590	188.872
2 0 0	198.181	193.464	203.721	213.568	197.364	198.170	216.416
2 2 5	-	218.978	-	242.607	-	218.227	232.618
2 5 0	-	250.163	-	261.927	-	247.488	-

SERIES G

Parallel Shaft Unit Mechanical Ratings At 1750 RPM Input

0204

NOMINAL RATIO	NOMINAL OUTPUT SPEED REV / MIN	CAPACITY	PARALLEL SHAFT UNITS - SIZE							
			G14	G15	G16	G17	G18	G19		G21
6.3	278	Input Power - HP	358	-	738	-	1680	-	-	DOUBLE REDUCTION
		Output Torque - lb.in	77000	-	169000	-	375000	-	-	
7.1	246	Input Power - HP	320	-	695	-	1570	-	3017	
		Output Torque - lb.in	79000	-	172000	-	388000	-	787650	
8.0	219	Input Power - HP	295	390	646	739	1421	1676	3017	
		Output Torque - lb.in	80000	105000	175000	217000	401000	469000	867300	
9.0	194	Input Power - HP	272	351	581	716	1322	1569	3017	
		Output Torque - lb.in	82000	108000	180000	228000	415000	486000	973500	
10.	175	Input Power - HP	250	327	528	666	1274	1421	2883	
		Output Torque - lb.in	83000	112000	185000	231000	438000	504000	1026600	
11.	156	Input Power - HP	230	304	484	618	1173	1322	2655	
		Output Torque - lb.in	85000	115000	187000	245000	451000	522000	1053150	
12.	140	Input Power - HP	208	279	435	569	1021	1274	2434	
		Output Torque - lb.in	87000	116000	192000	253000	457000	549000	1088550	
14.	125	Input Power - HP	188	253	393	519	971	1173	2186	
		Output Torque - lb.in	89000	118000	197000	258000	478000	566000	1106250	
16.	109.4	Input Power - HP	169	228	369	499	869	1021	1971	
		Output Torque - lb.in	91000	120000	200000	282000	484000	574000	1150500	
18.	97.2	Input Power - HP	156	205	319	421	764	971	1824	
		Output Torque - lb.in	93000	120000	198000	270000	466000	600000	1150500	
20.	87.5	Input Power - HP	145	182	307	396	758	869	1589	
		Output Torque - lb.in	97000	123000	214000	275000	508000	608000	1150500	
22.	79.5	Input Power - HP	131	156	282	319	677	764	1421	
		Output Torque - lb.in	97000	117000	218000	254000	505000	584000	1150500	
25.	70.0	Input Power - HP	118	143	256	319	581	764	1262	
		Output Torque - lb.in	97000	121000	226000	286000	505000	638000	1150500	
28.	62.5	Input Power - HP	105	130	225	287	528	687	1113	
		Output Torque - lb.in	97000	122000	226000	290000	505000	650000	1150500	
32.	54.7	Input Power - HP	92.8	116	209	252	466	620	974	
		Output Torque - lb.in	97000	123000	226000	290000	505000	680000	1150500	
36.	48.6	Input Power - HP	80.2	104	184	222	409	564	907	
		Output Torque - lb.in	97000	123000	226000	290000	500000	680000	1150500	
40.	43.8	Input Power - HP	73.0	91.7	164	206	381	498	805	
		Output Torque - lb.in	97000	123000	226000	290000	505000	680000	1150500	
45.	38.9	Input Power - HP	66.0	79.3	148	181	340	409	719	
		Output Torque - lb.in	97000	120000	226000	290000	505000	620000	1150500	
50.	35.0	Input Power - HP	59.3	72.0	129	161	292	409	638	
		Output Torque - lb.in	97000	121000	226000	290000	505000	687000	1150500	
56.	31.3	Input Power - HP	52.8	65.2	113	145	265	363	563	
		Output Torque - lb.in	97000	122000	226000	290000	505000	680000	1150500	
63.	27.8	Input Power - HP	46.7	58.5	105	127	234	311	492	
		Output Torque - lb.in	97000	123000	226000	290000	505000	680000	1150500	
71.	24.6	Input Power - HP	39.4	52.2	93.1	112	184	283	459	
		Output Torque - lb.in	94000	123000	226000	290000	455000	680000	1150500	
80.	21.9	Input Power - HP	35.8	46.1	82.1	103	173	250	422	
		Output Torque - lb.in	95000	123000	226000	290000	471000	680000	1150500	
90.	19.4	Input Power - HP	32.3	38.5	76.0	90.5	158	205	369	
		Output Torque - lb.in	96000	117000	226000	290000	492000	640000	1150500	
100	17.5	Input Power - HP	29.1	35.2	64.2	80.6	145	193	343	
		Output Torque - lb.in	97000	118000	226000	290000	504000	665000	1150500	
112	15.6	Input Power - HP	25.9	31.8	56.6	74.7	132	174	291	
		Output Torque - lb.in	97000	120000	226000	290000	505000	680000	1150500	
125	14.0	Input Power - HP	22.9	28.5	52.6	63.2	117	155	255	
		Output Torque - lb.in	97000	122000	226000	290000	505000	680000	1150500	
140	12.5	Input Power - HP	20.8	25.4	47.7	55.7	106	141	237	
		Output Torque - lb.in	97000	123000	226000	290000	505000	680000	1150500	
160	10.9	Input Power - HP	18.6	22.5	40.4	51.5	94.3	124	212	
		Output Torque - lb.in	97000	123000	226000	290000	505000	680000	1150500	
180	9.7	Input Power - HP	16.6	20.4	35.5	46.9	85.7	113	178	
		Output Torque - lb.in	97000	123000	226000	290000	505000	680000	1150500	
200	8.8	Input Power - HP	14.6	18.3	33.0	39.5	75.7	101	156	
		Output Torque - lb.in	97000	123000	226000	290000	505000	680000	1150500	
225	7.8	Input Power - HP	-	16.3	-	34.9	-	91.5	145	
		Output Torque - lb.in	-	123000	-	290000	-	680000	1150500	
250	7.0	Input Power - HP	-	14.4	-	32.4	-	80.8	-	
		Output Torque - lb.in	-	123000	-	290000	-	680000	-	

SERIES G

Parallel Shaft Unit Mechanical Ratings At 1450 RPM Input

0204

NOMINAL RATIO	NOMINAL OUTPUT SPEED REV / MIN	CAPACITY	PARALLEL SHAFT UNITS - SIZE							
			G14	G15	G16	G17	G18	G19	G21	
6.3	230	Input Power - HP	308	-	635	-	1470	-	-	DOUBLE REDUCTION
		Output Torque - lb.in	79300	-	176000	-	396000	-	-	
7.1	204	Input Power - HP	274	-	597	-	1381	-	2494	
		Output Torque - lb.in	82000	-	178000	-	410000	-	787650	
8.0	181	Input Power - HP	254	342	555	648	1250	1470	2494	
		Output Torque - lb.in	83000	115000	181000	230000	425000	496000	867300	
9.0	161	Input Power - HP	234	308	499	628	1160	1381	2494	
		Output Torque - lb.in	85000	117000	186000	241000	440000	515000	973500	
10.	145	Input Power - HP	214	286	453	583	1120	1250	2494	
		Output Torque - lb.in	86000	118000	190000	245000	463000	533000	1079700	
11.	129	Input Power - HP	196	260	416	542	1030	1160	2360	
		Output Torque - lb.in	88000	119000	194000	260000	477000	552000	1141650	
12.	116	Input Power - HP	179	237	374	499	894	1120	2105	
		Output Torque - lb.in	90000	121000	199000	269000	505000	580000	1150500	
14.	104	Input Power - HP	162	215	337	455	848	1030	1851	
		Output Torque - lb.in	92000	122000	204000	273000	505000	600000	1150500	
16.	90.6	Input Power - HP	146	193	317	419	749	894	1623	
		Output Torque - lb.in	95000	123000	207000	290000	505000	607000	1150500	
18.	80.6	Input Power - HP	130	173	280	369	671	852	1515	
		Output Torque - lb.in	95000	123000	209000	290000	493000	635000	1150500	
20.	72.5	Input Power - HP	120	153	270	342	629	762	1320	
		Output Torque - lb.in	97000	123000	226000	290000	505000	643000	1150500	
22.	65.9	Input Power - HP	109	130	241	280	561	671	1179	
		Output Torque - lb.in	99000	119000	226000	269000	505000	618000	1150500	
25.	58.0	Input Power - HP	97.6	119	212	265	482	671	1046	
		Output Torque - lb.in	99000	121000	226000	290000	505000	680000	1150500	
28.	51.8	Input Power - HP	87.0	107	186	238	438	600	924	
		Output Torque - lb.in	100000	122000	226000	290000	505000	680000	1150500	
32.	45.3	Input Power - HP	76.8	96.4	173	209	386	514	807	
		Output Torque - lb.in	100000	123000	226000	290000	505000	680000	1150500	
36.	40.3	Input Power - HP	66.4	86.0	153	184	345	467	752	
		Output Torque - lb.in	97000	123000	226000	290000	505000	680000	1150500	
40.	36.3	Input Power - HP	60.3	75.9	135	170	316	412	668	
		Output Torque - lb.in	97000	123000	226000	290000	505000	680000	1150500	
45.	32.2	Input Power - HP	54.6	65.6	122	150	282	358	597	
		Output Torque - lb.in	98000	120000	226000	290000	505000	660000	1150500	
50.	29.0	Input Power - HP	49.1	59.7	107	133	242	337	530	
		Output Torque - lb.in	99000	121000	226000	290000	505000	680000	1150500	
56.	25.9	Input Power - HP	43.7	53.9	94.0	120	219	301	468	
		Output Torque - lb.in	100000	122000	226000	290000	505000	680000	1150500	
63.	23.0	Input Power - HP	38.6	48.4	87.2	105	194	258	408	
		Output Torque - lb.in	100000	123000	226000	290000	505000	680000	1150500	
71.	20.4	Input Power - HP	32.6	43.2	77.1	92.4	161	234	380	
		Output Torque - lb.in	94000	123000	226000	290000	482000	680000	1150500	
80.	18.1	Input Power - HP	29.6	38.2	68.0	85.7	152	207	350	
		Output Torque - lb.in	95000	123000	226000	290000	500000	680000	1150500	
90.	16.1	Input Power - HP	26.8	32.1	63.0	75.3	135	180	306	
		Output Torque - lb.in	96000	117000	226000	290000	505000	680000	1150500	
100	14.5	Input Power - HP	24.0	29.1	53.2	66.3	120	163	286	
		Output Torque - lb.in	97000	118000	226000	290000	505000	680000	1150500	
112	12.9	Input Power - HP	21.5	26.3	46.9	61.9	109	144	241	
		Output Torque - lb.in	98000	120000	226000	290000	505000	680000	1150500	
125	11.6	Input Power - HP	18.9	23.6	43.4	52.3	96.6	128	211	
		Output Torque - lb.in	99000	122000	226000	290000	505000	680000	1150500	
140	10.4	Input Power - HP	17.2	21.1	39.4	46.1	87.6	117	196	
		Output Torque - lb.in	97000	123000	226000	290000	505000	680000	1150500	
160	9.1	Input Power - HP	15.4	18.6	33.4	42.7	78.1	103	176	
		Output Torque - lb.in	97000	123000	226000	290000	505000	680000	1150500	
180	8.1	Input Power - HP	13.8	16.9	29.4	38.3	71.0	93.5	148	
		Output Torque - lb.in	98000	123000	226000	290000	505000	680000	1150500	
200	7.3	Input Power - HP	12.2	15.2	27.2	32.3	62.7	83.4	129	
		Output Torque - lb.in	99000	123000	226000	290000	505000	680000	1150500	
225	6.4	Input Power - HP	-	13.5	-	28.9	-	75.8	120	
		Output Torque - lb.in	-	123000	-	290000	-	680000	1150500	
250	5.8	Input Power - HP	-	11.9	-	26.3	-	66.9	-	
		Output Torque - lb.in	-	123000	-	290000	-	680000	-	

SERIES G

Parallel Shaft Unit Mechanical Ratings At 1160 RPM Input

0204

NOMINAL RATIO	NOMINAL OUTPUT SPEED REV / MIN	CAPACITY	PARALLEL SHAFT UNITS - SIZE							
			G14	G15	G16	G17	G18	G19	G21	
6.3	184	Input Power - HP	257	-	530	-	1257	-	-	DOUBLE REDUCTION
		Output Torque - lb.in	83000	-	183000	-	422000	-	-	
7.1	163	Input Power - HP	229	-	498	-	1181	-	1998	
		Output Torque - lb.in	85000	-	186000	-	438000	-	787650	
8.0	145	Input Power - HP	211	283	463	554	1067	1257	1998	
		Output Torque - lb.in	87000	115000	190000	246000	454000	530000	867300	
9.0	129	Input Power - HP	195	251	416	536	992	1181	1998	
		Output Torque - lb.in	88000	117000	195000	254000	469000	550000	973500	
10.	116	Input Power - HP	179	229	379	499	956	1067	1998	
		Output Torque - lb.in	90000	118000	200000	260000	494000	570000	1079700	
11.	104	Input Power - HP	164	209	347	463	871	992	1891	
		Output Torque - lb.in	92000	119000	200000	280000	505000	590000	1141650	
12.	93	Input Power - HP	150	190	312	426	747	956	1690	
		Output Torque - lb.in	94000	121000	210000	290000	505000	620000	1150500	
14.	83	Input Power - HP	136	173	283	383	679	880	1489	
		Output Torque - lb.in	97000	122000	215000	290000	505000	640000	1150500	
16.	72.5	Input Power - HP	123	154	267	335	600	764	1301	
		Output Torque - lb.in	100000	123000	220000	290000	505000	650000	1150500	
18.	64.4	Input Power - HP	104	138	240	295	551	725	1207	
		Output Torque - lb.in	95000	123000	226000	290000	505000	680000	1150500	
20.	58.0	Input Power - HP	96.1	122	216	274	504	641	1057	
		Output Torque - lb.in	97000	123000	226000	290000	505000	680000	1150500	
22.	52.7	Input Power - HP	86.9	104	193	238	450	574	944	
		Output Torque - lb.in	98000	119000	226000	290000	505000	660000	1150500	
25.	46.4	Input Power - HP	78.0	95.0	169	212	386	538	838	
		Output Torque - lb.in	99000	121000	226000	290000	505000	680000	1150500	
28.	41.4	Input Power - HP	69.6	85.8	149	190	350	480	740	
		Output Torque - lb.in	100000	122000	226000	290000	505000	680000	1150500	
32.	36.3	Input Power - HP	61.6	77.1	138	167	309	412	646	
		Output Torque - lb.in	100000	123000	226000	290000	505000	680000	1150500	
36.	32.2	Input Power - HP	53.1	68.8	122	147	276	374	602	
		Output Torque - lb.in	97000	123000	226000	290000	505000	680000	1150500	
40.	29.0	Input Power - HP	48.3	60.7	108	136	253	330	535	
		Output Torque - lb.in	97000	123000	226000	290000	505000	680000	1150500	
45.	25.8	Input Power - HP	43.7	52.4	97.4	120	225	295	479	
		Output Torque - lb.in	98000	119000	226000	290000	505000	686000	1150500	
50.	23.2	Input Power - HP	39.3	47.7	85.4	107	193	270	425	
		Output Torque - lb.in	99000	121000	226000	290000	505000	680000	1150500	
56.	20.7	Input Power - HP	35.0	43.2	75.2	95.3	176	241	374	
		Output Torque - lb.in	100000	122000	226000	290000	505000	680000	1150500	
63.	18.4	Input Power - HP	30.8	38.8	69.7	83.9	155	206	327	
		Output Torque - lb.in	100000	123000	226000	290000	505000	680000	1150500	
71.	16.3	Input Power - HP	26.0	34.6	61.7	73.9	134	187	304	
		Output Torque - lb.in	94000	123000	226000	290000	505000	680000	1150500	
80.	14.5	Input Power - HP	23.7	30.6	54.3	68.5	122	165	280	
		Output Torque - lb.in	95000	123000	226000	290000	505000	680000	1150500	
90.	12.9	Input Power - HP	21.5	25.5	50.4	60.6	108	144	245	
		Output Torque - lb.in	96000	117000	226000	290000	505000	680000	1150500	
100	11.6	Input Power - HP	19.2	23.3	42.5	53.4	96.2	130	228	
		Output Torque - lb.in	97000	118000	226000	290000	505000	680000	1150500	
112	10.4	Input Power - HP	17.2	21.0	37.5	49.5	87.4	115	193	
		Output Torque - lb.in	98000	120000	226000	290000	505000	680000	1150500	
125	9.3	Input Power - HP	15.2	18.9	34.7	41.3	77.2	103	169	
		Output Torque - lb.in	99000	122000	226000	290000	505000	680000	1150500	
140	8.3	Input Power - HP	13.8	16.8	31.6	36.9	70.0	93.3	157	
		Output Torque - lb.in	97000	123000	226000	290000	505000	680000	1150500	
160	7.3	Input Power - HP	12.3	14.9	26.7	34.2	62.5	82.4	139	
		Output Torque - lb.in	97000	123000	226000	290000	505000	680000	1150500	
180	6.4	Input Power - HP	11.0	13.5	23.5	31.0	56.8	74.8	119	
		Output Torque - lb.in	98000	123000	226000	290000	505000	680000	1150500	
200	5.8	Input Power - HP	9.8	12.1	21.9	26.2	50.1	66.7	104	
		Output Torque - lb.in	99000	123000	226000	290000	505000	680000	1150500	
225	5.2	Input Power - HP	-	10.8	-	23.1	-	60.6	96.4	
		Output Torque - lb.in	-	123000	-	290000	-	680000	1150500	
250	4.6	Input Power - HP	-	9.5	-	21.4	-	53.5	-	
		Output Torque - lb.in	-	123000	-	290000	-	680000	-	

SERIES G

Parallel Shaft Unit Mechanical Ratings At 875 RPM Input

0204

NOMINAL RATIO	NOMINAL OUTPUT SPEED REV / MIN	CAPACITY	PARALLEL SHAFT UNITS - SIZE							
			G14	G15	G16	G17	G18	G19	G21	
6.3	139	Input Power - HP	204	-	422	-	1030	-	-	DOUBLE REDUCTION
		Output Torque - lb.in	87000	-	193000	-	458000	-	-	
7.1	123	Input Power - HP	182	-	396	-	969	-	1509	
		Output Torque - lb.in	90000	-	196000	-	480000	-	787650	
8.0	109	Input Power - HP	168	214	369	455	876	1039	1509	
		Output Torque - lb.in	91000	115000	200000	268000	490000	575000	867300	
9.0	97	Input Power - HP	155	189	331	440	805	969	1509	
		Output Torque - lb.in	93000	117000	204000	280000	505000	600000	973500	
10.	88	Input Power - HP	143	174	302	410	737	876	1509	
		Output Torque - lb.in	96000	118000	210000	285000	505000	620000	1079700	
11.	78	Input Power - HP	132	158	278	362	658	814	1435	
		Output Torque - lb.in	97000	119000	215000	290000	505000	640000	1141650	
12.	70	Input Power - HP	118	144	252	321	564	784	1274	
		Output Torque - lb.in	99000	121000	222000	290000	505000	675000	1150500	
14.	63	Input Power - HP	105	130	226	289	513	703	1126	
		Output Torque - lb.in	100000	122000	226000	290000	505000	680000	1150500	
16.	54.7	Input Power - HP	93.0	117	210	253	453	602	979	
		Output Torque - lb.in	100000	123000	226000	290000	505000	680000	1150500	
18.	48.6	Input Power - HP	79.3	104	182	223	416	548	912	
		Output Torque - lb.in	96000	123000	226000	290000	505000	680000	1150500	
20.	43.8	Input Power - HP	72.5	91.9	163	206	381	483	798	
		Output Torque - lb.in	97000	123000	226000	290000	505000	680000	1150500	
22.	39.8	Input Power - HP	65.5	78.7	145	180	340	444	713	
		Output Torque - lb.in	98000	119000	226000	290000	505000	680000	1150500	
25.	35.0	Input Power - HP	58.9	71.6	128	160	291	407	634	
		Output Torque - lb.in	99000	121000	226000	290000	505000	680000	1150500	
28.	31.3	Input Power - HP	52.6	64.8	113	144	265	363	559	
		Output Torque - lb.in	100000	122000	226000	290000	505000	680000	1150500	
32.	27.3	Input Power - HP	46.3	58.2	105	126	234	311	488	
		Output Torque - lb.in	100000	123000	226000	290000	505000	680000	1150500	
36.	24.3	Input Power - HP	40.1	51.8	92.0	111	208	282	455	
		Output Torque - lb.in	96000	123000	226000	290000	505000	680000	1150500	
40.	21.9	Input Power - HP	36.4	45.8	81.8	103	191	249	404	
		Output Torque - lb.in	97000	123000	226000	290000	505000	680000	1150500	
45.	19.4	Input Power - HP	33.0	39.6	73.5	90.5	170	222	361	
		Output Torque - lb.in	98000	119000	226000	290000	505000	680000	1150500	
50.	17.5	Input Power - HP	29.6	35.9	64.4	80.4	146	203	320	
		Output Torque - lb.in	99000	121000	226000	290000	505000	680000	1150500	
56.	15.6	Input Power - HP	26.4	32.5	56.7	72.2	132	181	283	
		Output Torque - lb.in	100000	122000	226000	290000	505000	680000	1150500	
63.	13.9	Input Power - HP	23.3	29.2	52.6	63.3	117	156	247	
		Output Torque - lb.in	100000	123000	226000	290000	505000	680000	1150500	
71.	12.3	Input Power - HP	19.7	26.0	46.4	55.7	101	141	229	
		Output Torque - lb.in	94000	123000	226000	290000	505000	680000	1150500	
80.	10.9	Input Power - HP	17.8	23.0	40.9	51.7	92.1	125	212	
		Output Torque - lb.in	95000	123000	226000	290000	505000	680000	1150500	
90.	9.7	Input Power - HP	16.1	19.2	38.0	45.7	81.3	108	185	
		Output Torque - lb.in	96000	117000	226000	290000	505000	680000	1150500	
100	8.8	Input Power - HP	14.5	17.6	32.1	40.3	72.5	98.3	173	
		Output Torque - lb.in	97000	118000	226000	290000	505000	680000	1150500	
112	7.8	Input Power - HP	13.0	15.9	28.2	37.3	65.9	86.8	146	
		Output Torque - lb.in	98000	120000	226000	290000	505000	680000	1150500	
125	7.0	Input Power - HP	11.4	14.2	26.3	31.5	58.2	77.4	127	
		Output Torque - lb.in	99000	122000	226000	290000	505000	680000	1150500	
140	6.3	Input Power - HP	10.4	12.7	23.8	27.3	52.8	70.4	119	
		Output Torque - lb.in	97000	123000	226000	290000	505000	680000	1150500	
160	5.5	Input Power - HP	9.3	11.2	20.2	25.3	47.1	62.1	106	
		Output Torque - lb.in	97000	123000	226000	290000	505000	680000	1150500	
180	4.9	Input Power - HP	8.3	10.2	17.7	23.4	42.8	56.4	89	
		Output Torque - lb.in	98000	123000	226000	290000	505000	680000	1150500	
200	4.4	Input Power - HP	7.3	9.1	16.5	19.8	37.8	50.3	78	
		Output Torque - lb.in	99000	123000	226000	290000	505000	680000	1150500	
225	3.9	Input Power - HP	-	8.1	-	17.4	-	45.7	73	
		Output Torque - lb.in	-	123000	-	290000	-	680000	1150500	
250	3.5	Input Power - HP	-	7.2	-	16.2	-	40.3	-	
		Output Torque - lb.in	-	123000	-	290000	-	680000	-	

SERIES G

Parallel Shaft Unit Thermal Ratings

0204

Thermal Ratings HP

Parallel Shaft Units - Double Reduction

Type of Cooling	Input Speed (rev/min)	PARALLEL SHAFT UNIT SIZE						
		14	15	16	17	18	19	21
Units with no Additional Cooling	1750	152	152	248	248	389	422	841
	1450	138	138	228	228	355	382	745
	1160	134	134	223	223	346	374	730
	875	129	129	215	215	332	358	698
Units with Fan Cooling	1750	232	232	396	396	624	677	1178
	1450	204	204	349	349	570	617	969
	1160	198	198	322	322	503	543	912
	875	170	170	279	279	442	466	805
Units with Cooling Coil	1750	355	355	583	583	865	898	1297
	1450	335	335	557	557	811	838	1201
	1160	315	315	523	523	764	791	1185
	875	298	298	496	496	720	748	1144
Units with Fan and Cooling Coil	1750	436	436	731	731	865	1153	1633
	1450	401	401	677	677	1026	1073	1424
	1160	380	380	622	622	921	960	1368
	875	334	334	551	551	830	855	1264

SERIES G

Parallel Shaft Unit Thermal Ratings

0204

Thermal Ratings HP

Parallel Shaft Units - Triple Reduction

Type of Cooling	Input Speed (rev/min)	PARALLEL SHAFT UNIT SIZE						
		14	15	16	17	18	19	21
Units with no Additional Cooling	1750	101	101	165	165	259	282	509
	1450	93	93	152	152	237	255	459
	1160	90	90	149	149	231	249	451
	875	85	85	143	143	221	239	429
Units with Fan Cooling	1750	162	162	264	264	414	451	713
	1450	141	141	228	228	355	382	606
	1160	130	130	201	201	311	337	563
	875	112	112	187	187	288	311	497
Units with Cooling Coil	1750	304	304	500	500	738	758	468
	1450	288	288	480	480	691	711	965
	1160	268	268	449	449	650	671	915
	875	252	252	421	421	600	613	829

Parallel Shaft Units - Quadruple Reduction

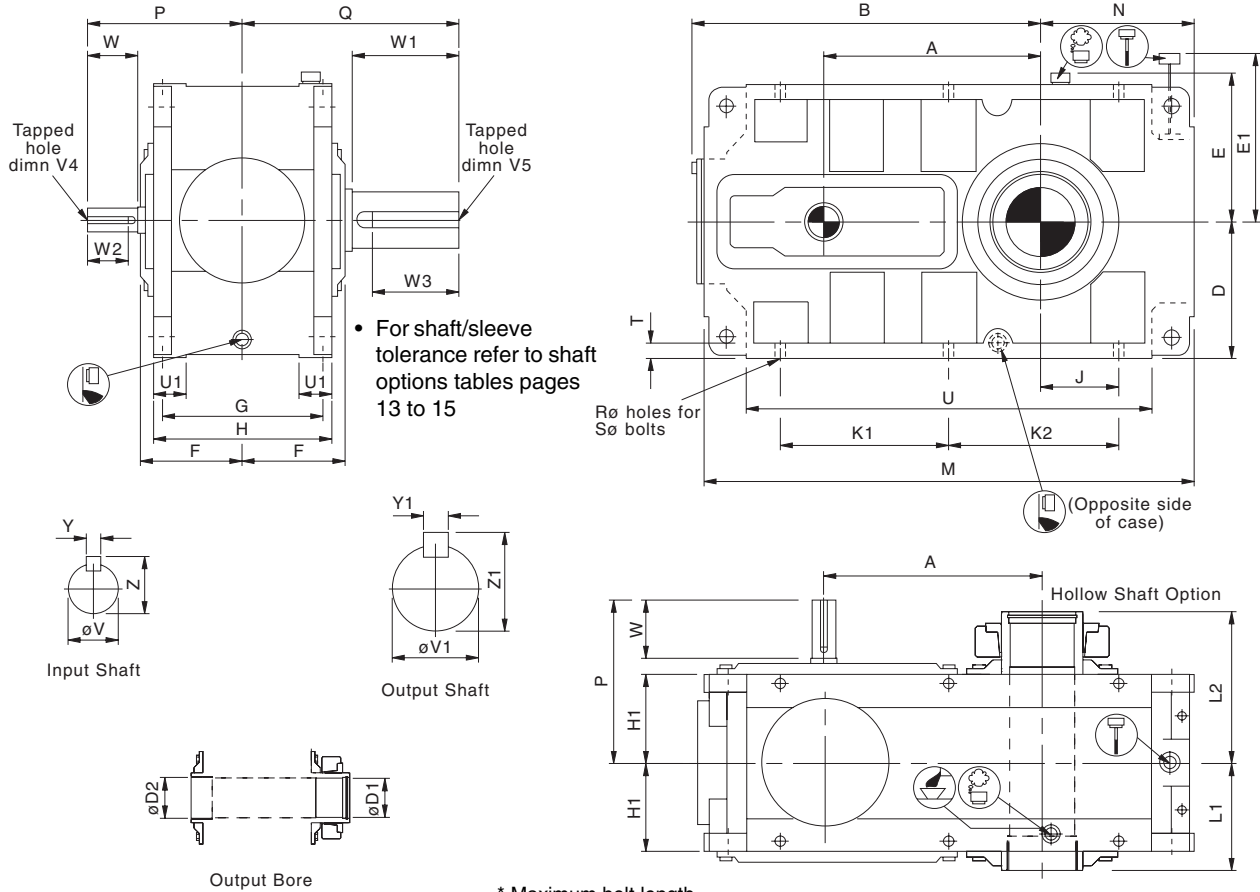
Type of Cooling	Input Speed (rev/min)	PARALLEL SHAFT UNIT SIZE						
		14	15	16	17	18	19	21
Units with no Additional Cooling	1750	79	79	130	130	205	223	375
	1450	72	72	119	119	186	201	341
	1160	71	71	118	118	182	197	335
	875	68	68	113	113	175	188	319

SERIES G

Horizontal Parallel Shaft Dimensions Double Reduction

0205

G 20 H Double Reduction Parallel Shaft Units Horizontal



* Maximum bolt length

Unit Size	A	B	D	E	E1	F	G	H	H1	J	K1	K2	M	N	P	Q	R	S	T	U	U1
G14	12.80	21.81	9.06	9.84	14.57	6.97	10.43	11.81	5.91	6.69	11.22	32.28	11.61	12.40	14.17	0.73	6 x 5/8 x 2 1/4*	0.98	26.93	2.17	
G15	14.37	23.39	9.06	9.84	14.57	6.97	10.43	11.81	5.91	5.12	11.22	32.28	10.04	12.40	14.57	0.73	6 x 5/8 x 2 1/4*	0.98	26.93	2.17	
G16	16.93	28.66	11.81	13.19	20.28	8.86	12.99	14.96	7.48	8.86	15.16	41.73	14.57	14.57	18.11	1.10	6 x 1.0 x 3*	1.18	35.35	2.76	
G17	19.09	30.83	11.81	13.19	20.28	8.86	12.99	14.96	7.48	6.69	15.16	41.73	12.40	14.57	18.90	1.10	6 x 1.0 x 3*	1.18	35.35	2.76	
G18	22.44	37.52	15.16	16.54	27.95	11.42	17.32	19.69	9.84	6.02	20.47	13.78	48.82	13.31	18.90	23.62	1.30	6 x 1 1/4 x 4*	1.46	40.79	3.54
G19	25.00	40.08	15.16	16.54	27.95	11.42	17.32	19.69	9.84	8.66	19.69	54.09	16.02	18.90	25.59	1.30	6 x 1 1/4 x 4*	1.57	46.06	3.54	
G21	30.12	48.82	18.31	19.96	29.53	13.39	20.87	23.62	11.81	8.86	27.36	18.90	65.16	18.31	22.05	27.56	1.54	6 x 1.38 x 4*	1.97	54.33	4.72

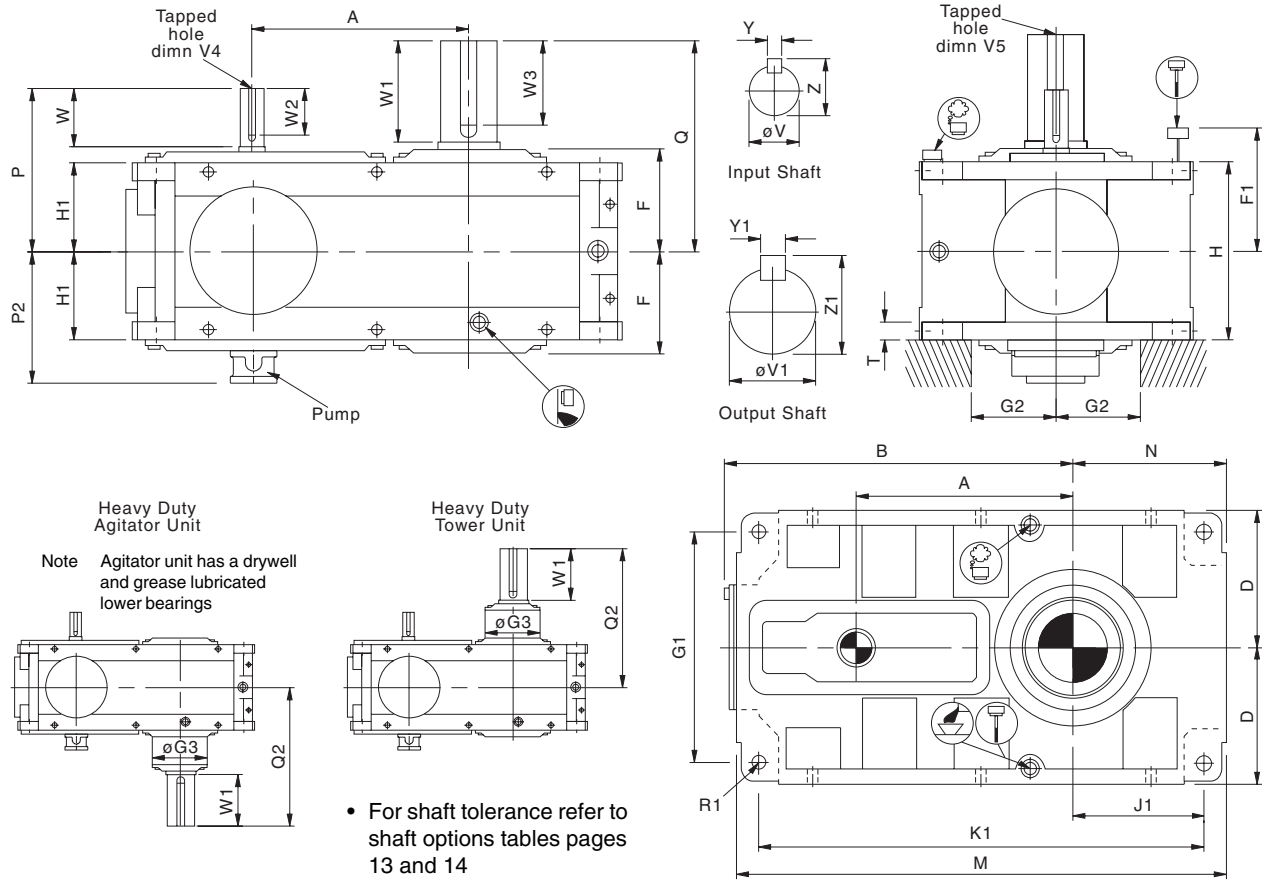
Unit Size	Input Shaft •						Output Shaft •						Output Bore •			
	V	V4	W	W2	Y	Z	V1	V5	W1	W3	Y1	Z1	D1	D2	L1	L2
G14	1.8750	5/8 UNF x 1.25	5.31	4.13	0.500	2.10	4.500	1 UNF x 2	7.09	6.50	1.00	4.94	3.74	3.94	7.09	10.04
G15	1.8750	5/8 UNF x 1.25	5.31	4.13	0.500	2.10	5.000	1 UNF x 2	7.48	7.13	1.25	5.55	4.33	4.53	7.09	10.24
G16	2.2500	3/4 UNF x 1.62	5.71	4.13	0.500	2.47	6.000	1.25 UNF x 2.5	9.06	8.75	1.50	6.66	4.92	5.12	9.06	12.80
G17	2.2500	3/4 UNF x 1.62	5.71	4.13	0.500	2.47	6.750	1.25 UNF x 2.5	9.84	9.38	1.75	7.39	5.71	5.91	9.06	13.39
G18	3.2500	1 UNF x 2	7.48	5.88	0.750	3.58	7.500	1.5 UNF x 3	11.81	11.38	1.75	8.15	6.30	6.69	11.81	16.14
G19	3.2500	1 UNF x 2	7.48	5.88	0.750	3.58	8.250	1.5 UNF x 3	13.78	13.00	2.00	8.88	6.69	7.09	11.81	16.93
G21	4.2500	1 UNF x 2	8.27	7.50	1.00	4.69	8.500	1.5 UNF x 3	13.78	13.00	2.00	9.13	8.268	8.661	13.78	19.69

SERIES G

Vertical Parallel Shaft Dimensions Double Reduction

0204

G 20 V Double Reduction Parallel Shaft Units Vertical



Unit Size	A	B	D	F	F1	G1	G2 (min)	G3	H	H1	J1	K1	M	N	P	P2	Q	Q2	R1	T
G14	12.80	21.81	9.06	6.97	15.35	15.35	5.31	9.06	11.81	5.91	10.24	29.53	32.28	11.61	12.40	9.29	14.17	18.70	4 x ø0.94	1.18
G15	14.37	23.39	9.06	6.97	15.35	15.35	5.31	10.24	11.81	5.91	8.66	29.53	32.28	10.04	12.40	9.29	14.57	19.49	4 x ø0.94	1.18
G16	16.93	28.66	11.81	8.86	20.28	19.92	6.89	11.81	14.96	7.48	12.80	38.19	41.73	14.57	14.57	11.22	18.11	23.43	4 x ø1.30	1.77
G17	19.09	30.83	11.81	8.86	20.28	19.92	6.89	13.39	14.96	7.48	10.63	38.19	41.73	12.40	14.57	11.22	18.90	24.21	4 x ø1.30	1.77
G18	22.44	37.52	15.16	11.42	27.56	25.83	8.07	14.57	19.69	9.84	11.06	44.33	48.82	13.31	18.90	13.58	23.62	29.92	4 x ø1.57	2.17
G19	25.00	40.08	15.16	11.42	27.56	25.83	8.07	15.75	19.69	9.84	13.78	49.61	54.09	16.02	18.90	13.58	25.59	32.09	4 x ø1.57	2.17
G21	30.12	48.82	18.31	13.39	29.53	28.74	10.04	19.69	23.62	11.81	15.55	59.65	65.16	18.31	22.05	15.75	27.56	36.42	4 x ø1.89	2.76

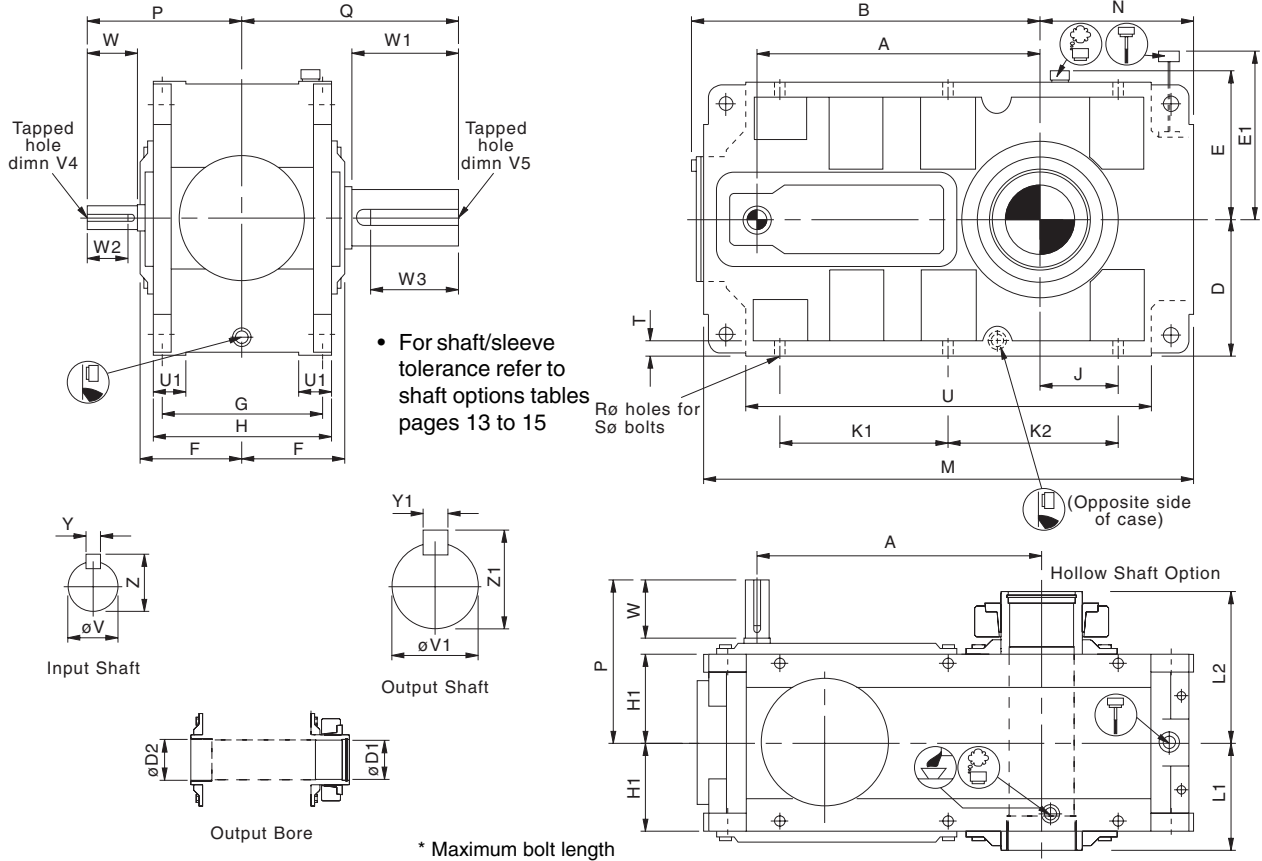
Unit Size	Input Shaft •						Output Shaft •					
	V	V4	W	W2	Y	Z	V1	V5	W1	W3	Y1	Z1
G14	1.8750	5/8 UNF x 1.25	5.31	4.13	0.500	2.10	4.500	1 UNF x 2	7.09	6.50	1.00	4.94
G15	1.8750	5/8 UNF x 1.25	5.31	4.13	0.500	2.10	5.000	1 UNF x 2	7.48	7.13	1.25	5.55
G16	2.2500	3/4 UNF x 1.62	5.71	4.13	0.500	2.47	6.000	1.25 UNF x 2.5	9.06	8.75	1.50	6.66
G17	2.2500	3/4 UNF x 1.62	5.71	4.13	0.500	2.47	6.750	1.25 UNF x 2.5	9.84	9.38	1.75	7.39
G18	3.2500	1 UNF x 2	7.48	5.88	0.750	3.58	7.500	1.5 UNF x 3	11.81	11.38	1.75	8.15
G19	3.2500	1 UNF x 2	7.48	5.88	0.750	3.58	8.250	1.5 UNF x 3	13.78	13.00	2.00	8.88
G21	4.2500	1 UNF x 2	8.268	7.5	1	4.69	8.500	1.5 UNF x 3	13.78	13.00	2.00	9.13

SERIES G

Horizontal Parallel Shaft Dimensions Triple & Quadruple Reduction

0204

G 3 0 H Triple and Quadruple Reduction Parallel Shaft Units Horizontal



Unit Size	A	B	D	E	E1	F	G	H	H1	J	K1	K2	M	N	P	Q	R	S	T	U	U1
G14	17.13	21.81	9.06	9.84	14.57	6.97	10.43	11.81	5.91	6.69	11.22	32.28	11.61	10.83	14.17	0.73	6 x 5/8 x 2 1/4*	0.98	26.93	2.17	
G15	18.70	23.39	9.06	9.84	14.57	6.97	10.43	11.81	5.91	5.12	11.22	32.28	10.04	10.83	14.57	0.73	6 x 5/8 x 2 1/4*	0.98	26.93	2.17	
G16	22.44	28.66	11.81	13.19	20.28	8.86	12.99	14.96	7.48	8.86	15.16	41.73	14.57	13.39	18.11	1.10	6 x 1 x 3*	1.18	35.35	2.76	
G17	24.61	30.83	11.81	13.19	20.28	8.86	12.99	14.96	7.48	6.69	15.16	41.73	12.40	13.39	18.90	1.10	6 x 1 x 3*	1.18	35.35	2.76	
G18	29.72	37.52	15.16	16.54	27.95	11.42	17.32	19.69	9.84	6.02	20.47	13.78	48.82	13.31	17.32	23.62	1.30	6 x 1 1/4 x 4*	1.46	40.79	3.54
G19	32.28	40.08	15.16	16.54	27.95	11.42	17.32	19.69	9.84	8.66	19.69	54.09	16.02	17.32	25.59	1.30	6 x 1 1/4 x 4*	1.57	46.06	3.54	
G21	39.76	48.82	18.31	19.96	29.53	13.39	20.87	23.62	11.81	8.86	27.36	18.90	65.16	18.31	21.26	27.56	1.54	6 x 1.38 x 4*	1.97	54.33	4.72

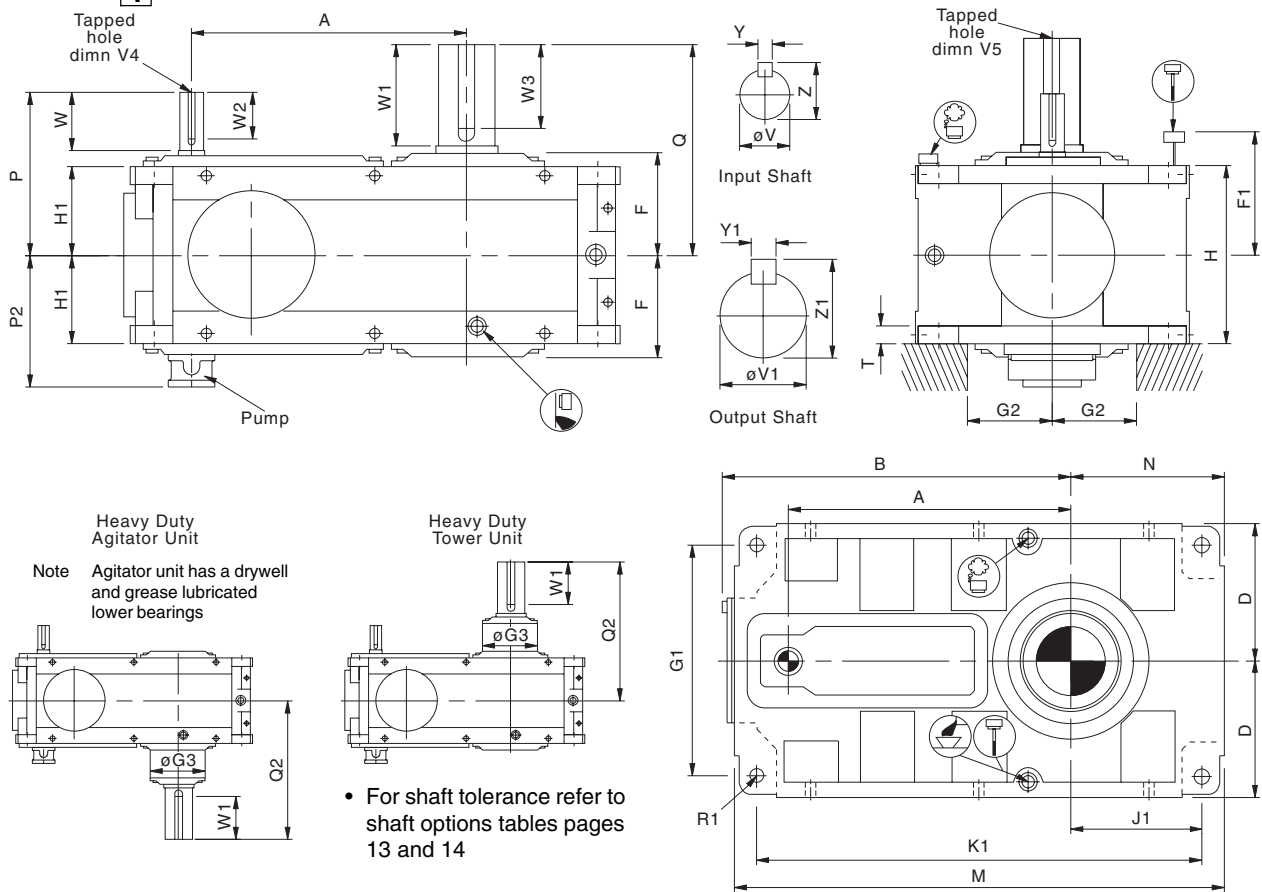
Unit Size	Input Shaft •						Output Shaft •						Output Bore •			
	V	V4	W	W2	Y	Z	V1	V5	W1	W3	Y1	Z1	D1	D2	L1	L2
G14	1.3750	1/2 UNF x 1	3.74	3.00	0.3125	1.51	4.500	1 UNF x 2	7.09	6.50	1.00	4.94	3.74	3.94	7.09	10.04
G15	1.3750	1/2 UNF x 1	3.74	3.00	0.3125	1.51	5.000	1 UNF x 2	7.48	7.13	1.25	5.55	4.33	4.53	7.09	10.24
G16	1.7500	5/8 UNF x 1.25	4.53	4.13	0.375	1.92	6.000	1.25 UNF x 2.5	9.06	8.75	1.50	6.66	4.92	5.12	9.06	12.80
G17	1.7500	5/8 UNF x 1.25	4.53	4.13	0.375	1.92	6.750	1.25 UNF x 2.5	9.84	9.38	1.75	7.39	5.71	5.91	9.06	13.39
G18	2.2500	3/4 UNF x 1.62	5.71	4.13	0.500	2.47	7.500	1.5 UNF x 3	11.81	11.38	1.75	8.15	6.30	6.69	11.81	16.14
G19	2.2500	3/4 UNF x 1.62	5.71	4.13	0.500	2.47	8.250	1.5 UNF x 3	13.78	13.00	2.00	8.88	6.69	7.09	11.81	16.93
G21	3.0000	3/4 UNF x 1.62	7.48	6.50	0.750	3.33	8.500	1.5 UNF x 3	13.78	13.00	2.00	9.13	8.268	8.661	13.78	19.69

SERIES G

Vertical Parallel Shaft Dimensions Triple & Quadruple Reduction

0204

G 3 4 0 V Triple and Quadruple Reduction Parallel Shaft Units Vertical



Unit Size	A	B	D	F	F1	G1	G2 (min)	G3	H	H1	J1	K1	M	N	P	P2	Q	Q2	R1	T
G14	17.13	21.81	9.06	6.97	15.35	15.35	5.31	9.06	11.81	5.91	10.24	29.53	32.28	11.61	10.83	9.29	14.17	18.70	4 x ø0.94	1.18
G15	18.70	23.39	9.06	6.97	15.35	15.35	5.31	10.24	11.81	5.91	8.66	29.53	32.28	10.04	10.83	9.29	14.57	19.49	4 x ø0.94	1.18
G16	22.44	28.66	11.81	8.86	20.28	19.92	6.89	11.81	14.96	7.48	12.80	38.19	41.73	14.57	13.39	11.22	18.11	23.43	4 x ø1.30	1.77
G17	24.61	30.83	11.81	8.86	20.28	19.92	6.89	13.39	14.96	7.48	10.63	38.19	41.73	12.40	13.39	11.22	18.90	24.21	4 x ø1.30	1.77
G18	29.72	37.52	15.16	11.42	27.56	25.83	8.07	14.57	19.69	9.84	11.06	44.33	48.82	13.31	17.32	13.58	23.62	29.92	4 x ø1.57	2.17
G19	32.28	40.08	15.16	11.42	27.56	25.83	8.07	15.75	19.69	9.84	13.78	49.61	54.09	16.02	17.32	13.58	25.59	32.09	4 x ø1.57	2.17
G21	39.76	48.82	18.31	13.39	29.53	28.74	10.04	19.69	23.62	11.81	15.55	59.65	65.16	18.31	21.26	15.75	27.56	36.42	4 x ø1.89	2.76

Unit Size	Input Shaft •						Output Shaft •					
	V	V4	W	W2	Y	Z	V1	V5	W1	W3	Y1	Z1
G14	1.3750	1/2 UNF x 1	3.74	3.00	0.3125	1.51	4.500	1 UNF x 2	7.09	6.50	1.00	4.94
G15	1.3750	1/2 UNF x 1	3.74	3.00	0.3125	1.51	5.000	1 UNF x 2	7.48	7.13	1.25	5.55
G16	1.7500	5/8 UNF x 1.25	4.53	4.13	0.375	1.92	6.000	1.25 UNF x 2.5	9.06	8.75	1.50	6.66
G17	1.7500	5/8 UNF x 1.25	4.53	4.13	0.375	1.92	6.750	1.25 UNF x 2.5	9.84	9.38	1.75	7.39
G18	2.2500	3/4 UNF x 1.62	5.71	4.13	0.500	2.47	7.500	1.5 UNF x 3	11.81	11.38	1.75	8.15
G19	2.2500	3/4 UNF x 1.62	5.71	4.13	0.500	2.47	8.250	1.5 UNF x 3	13.78	13.00	2.00	8.88
G21	3.0000	3/4 UNF x 1.62	7.48	6.5	0.75	3.33	8.661	1.5 UNF x 3	13.78	13.39	1.97	9.09

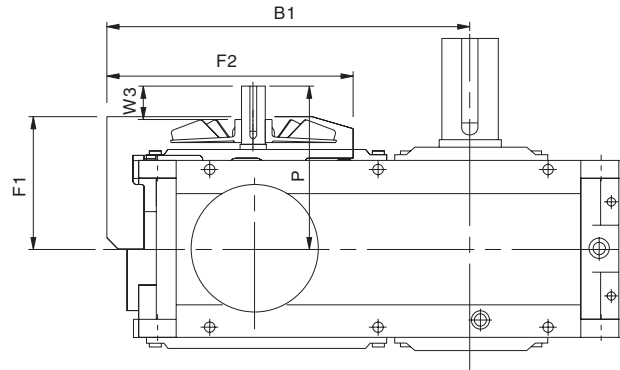
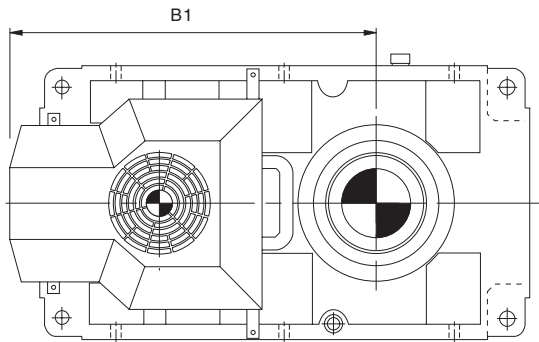
SERIES G

Fan Cooling Dimensions

Parallel Shafts

0204

Parallel Shaft Units with Mechanical Fans



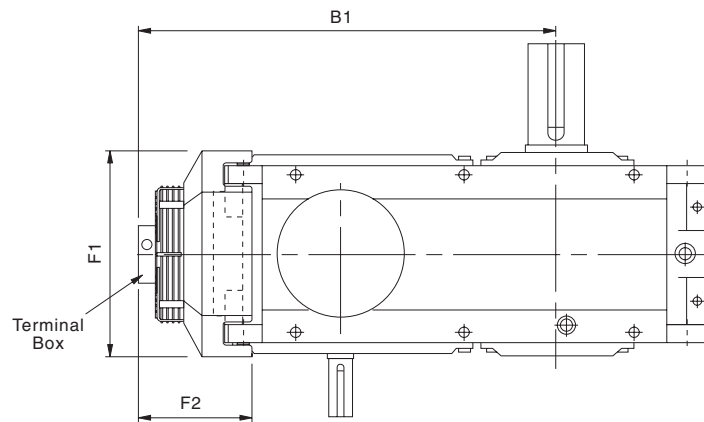
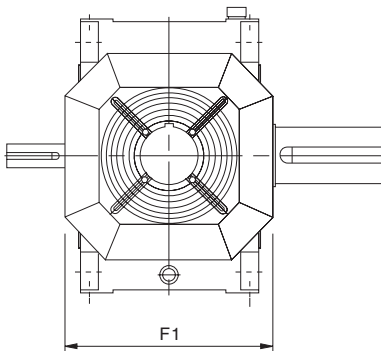
Double Reduction

Unit Size	B1	F1	F2	P	W3 (useable shaft extension)
G14	22.64	8.86	16.73	12.40	3.94
G15	24.21	8.86	16.73	12.40	3.94
G16	29.65	10.83	21.97	14.57	4.33
G17	31.81	10.83	21.97	14.57	4.33
G18	38.90	14.17	28.46	18.90	5.31
G19	41.46	14.17	28.46	18.90	5.31
G21	49.80	16.54	33.07	22.05	5.91

Triple and Quadruple Reduction

Unit Size	B1	F1	F2	P	W3 (useable shaft extension)
G14	22.44	8.27	13.31	10.83	2.76
G15	24.02	8.27	13.31	10.83	2.76
G16	29.65	10.47	17.95	13.39	3.35
G17	31.81	10.47	17.95	13.39	3.35
G18	38.90	13.58	23.54	17.32	4.33
G19	41.46	13.58	23.54	17.32	4.33
G21	49.80	16.54	28.86	21.26	5.31

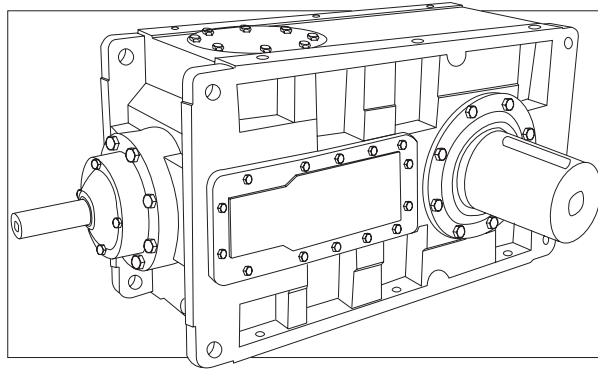
Parallel Shaft Units with Electric Fans



Double, Triple and Quadruple Reduction

Unit Size	B1	F1	F2
G14	26.77	13.78	7.68
G15	28.35	13.78	7.68
G16	34.06	16.93	8.46
G17	36.22	16.93	8.46
G18	43.31	22.64	10.16
G19	45.87	22.64	10.16
G21	Consult our Application Engineers		

Motor power supply:-
three phase 230/400 V, 50 Hz



RIGHT ANGLE UNITS

<u>Contents</u>	<u>Page No</u>
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Exact Ratios _____	51
Mechanical Ratings - Input Power / Output Torque _____	52 - 55
Thermal Ratings _____	56 - 57
Dimension Sheets - Speed Reducers _____	58 - 64

SERIES G

Moments of Inertia Right Angle Shafts

0204

MOMENTS OF INERTIA (lb.in²) Referred to Input Shaft

RIGHT ANGLE UNITS - without fans

NOMINAL RATIO COLUMN ENTRY 6 7 8	RIGHT ANGLE UNITS - SIZE							
	G14	G15	G16	G17	G18	G19	G21	
	8 . 0	208.5	-	717.9	-	3726.5	-	
9 . 0	193.2	-	704.3	-	3538.5	-	22200	
1 0 .	184.6	223.9	663.2	-	3292.3	-	21000	
1 1 .	176.1	205.1	625.6	-	3148.7	-	20000	
1 2 .	169.2	193.2	594.9	721.4	3090.6	3480.3	19900	
1 4 .	162.4	184.6	567.5	670.1	2977.8	3299.1	18500	
1 6 .	157.3	176.1	540.2	629.1	2817.1	3217.1	18400	
1 8 .	152.1	167.5	517.9	594.9	2782.9	3076.9	17200	
2 0 .	148.7	160.7	514.5	560.7	2690.6	2892.3	16700	
2 2 .	39.3	155.6	294.0	533.3	641.0	2844.4	16400	
2 5 .	37.6	150.4	285.5	528.2	627.4	2738.5	4425	
2 8 .	35.9	41.0	278.6	304.3	600.0	676.9	4240	
3 2 .	34.2	39.3	271.8	294.0	562.4	656.4	4060	
3 6 .	32.8	37.6	266.7	285.5	553.8	623.9	3930	
4 0 .	31.8	35.9	265.0	276.9	531.6	579.5	3810	
4 5 .	17.1	34.2	213.7	270.1	266.7	567.5	3750	
5 0 .	15.4	32.5	210.3	268.4	256.4	543.6	1700	
5 6 .	14.7	17.1	208.5	215.4	253.0	283.8	1645	
6 3 .	14.0	15.4	206.8	212.0	244.4	265.0	1600	
7 1 .	-	15.0	148.7	210.3	519.7	259.8	1580	
8 0 .	-	14.4	148.7	208.5	512.8	249.6	4200	
9 0 .	-	-	37.6	150.4	283.8	523.1	4183	
1 0 0	-	-	35.9	148.7	282.7	516.2	900	
1 1 2	-	-	35.9	37.6	280.3	287.2	890	
1 2 5	-	-	32.5	36.6	268.4	285.5	880	
1 4 0	-	-	32.5	36.2	266.7	282.1	820	
1 6 0	-	-	32.5	32.8	265.0	268.4	810	
1 8 0	-	-	15.7	32.5	213.7	266.7	805	
2 0 0	-	-	14.4	32.1	208.5	265.3	405	
2 2 5	-	-	14.4	16.1	207.9	215.4	380	
2 5 0	-	-	14.0	14.4	207.5	208.5	375	
2 8 0	-	-	-	14.4	-	208.5	375	
3 1 5	-	-	-	14.4	-	208.5	-	

RIGHT ANGLE UNITS - with fans

If fan cooling is required the inertia of the fan must be added to the table above.

MOMENTS OF INERTIA of fans (lb.in²)

	G14 / G15	G16 / G17	G18 / G19	G21
TRIPLE REDUCTION	15.7	41.7	135.7	740

GD² (lb.in²) = 4 x Moment of Inertia (lb.in²)

SERIES G

Exact Ratios Right Angle Shafts

0204

EXACT RATIOS - RIGHT ANGLE UNITS

Triple Reduction

Nominal Ratio Column Entry 6 7 8	UNIT SIZE						
	14	15	16	17	18	19	21
8 . 0	7.691	-	8.095	-	7.842	-	-
9 . 0	8.863	-	8.755	-	8.663	-	9.127
1 0 .	9.774	-	9.584	-	9.939	-	10.110
1 1 .	10.816	-	10.937	-	11.080	-	11.434
1 2 .	12.018	12.338	12.312	12.323	12.109	12.464	12.529
1 4 .	13.420	13.653	13.718	14.062	13.586	13.893	14.041
1 6 .	15.077	15.170	15.675	15.830	15.868	15.184	15.828
1 8 .	17.065	16.940	17.807	17.637	17.474	17.037	17.973
2 0 .	19.495	19.031	19.225	20.154	19.817	19.898	20.594
2 2 .	21.775	21.541	21.756	22.894	22.636	21.912	22.136
2 5 .	24.195	24.609	24.492	24.718	24.738	24.850	25.597
2 8 .	27.017	27.487	27.288	27.972	27.757	28.384	28.686
3 2 .	30.353	30.541	31.182	31.490	32.419	31.021	32.337
3 6 .	34.356	34.104	35.422	35.084	35.700	34.806	36.718
4 0 .	39.249	38.315	38.243	40.091	40.487	40.652	42.073
4 5 .	41.605	43.368	43.244	45.543	42.830	44.767	45.223
5 0 .	46.743	49.544	49.417	49.170	50.024	50.769	52.335
5 6 .	52.907	52.518	56.136	55.600	55.087	53.708	59.426
6 3 .	60.442	59.003	60.606	63.536	62.474	62.729	68.092
7 1 .	-	66.784	-	72.174	-	69.078	73.190
8 0 .	-	76.295	-	77.922	-	78.340	-

Quadruple Reduction

Nominal Ratio Column Entry 6 7 8	UNIT SIZE						
	14	15	16	17	18	19	21
7 1 .	-	-	73.432	-	68.805	-	-
8 0 .	-	-	79.280	-	78.030	-	83.586
9 0 .	-	-	89.584	94.412	88.634	86.279	89.844
1 0 0	-	-	101.765	101.931	97.661	97.847	102.173
1 1 2	-	-	109.869	115.180	110.755	111.207	117.073
1 2 5	-	-	130.142	130.840	124.290	122.463	125.838
1 4 0	-	-	147.837	141.260	136.870	138.883	149.034
1 6 0	-	-	159.611	167.326	155.221	155.855	170.768
1 8 0	-	-	169.192	190.077	175.521	171.630	183.552
2 0 0	-	-	200.412	205.214	196.970	194.643	194.176
2 2 5	-	-	227.661	217.533	216.906	220.098	229.968
2 5 0	-	-	245.792	257.672	245.990	246.994	263.505
2 8 0	-	-	-	292.708	-	271.994	283.223
3 1 5	-	-	-	316.018	-	308.463	-

SERIES G

Right Angle Shaft Mechanical Ratings At 1750 RPM Input

0204

NOMINAL RATIO	NOMINAL OUTPUT SPEED REV / MIN	CAPACITY	RIGHT ANGLE SHAFT UNITS - SIZE						
			G14	G15	G16	G17	G18	G19	G21
8.0	219	Input Power - HP	254	-	559	-	1310	-	-
		Output Torque - lb.in	68000	-	158000	-	361000	-	-
9.0	194	Input Power - HP	254	-	559	-	1310	-	2447
		Output Torque - lb.in	78000	-	171000	-	400000	-	783225
10.	175	Input Power - HP	254	-	558	-	1310	-	2447
		Output Torque - lb.in	86000	-	186000	-	457000	-	867300
11.	156	Input Power - HP	249	-	501	-	1240	-	2447
		Output Torque - lb.in	94000	-	191000	-	480000	-	982350
12.	140	Input Power - HP	229	254	456	559	1150	1310	2426
		Output Torque - lb.in	96000	109000	195000	240000	490000	574000	1062000
14.	125	Input Power - HP	209	253	418	559	1050	1310	2293
		Output Torque - lb.in	97000	120000	200000	275000	500000	640000	1123950
16.	109	Input Power - HP	189	230	376	521	912	1260	2069
		Output Torque - lb.in	99000	121000	204000	290000	505000	670000	1150500
18.	97	Input Power - HP	168	208	339	468	829	1140	1825
		Output Torque - lb.in	100000	122000	209000	290000	505000	680000	1150500
20.	87.5	Input Power - HP	149	187	319	410	732	973	1596
		Output Torque - lb.in	100000	123000	212560	290000	505610	680000	1150500
22.	79.5	Input Power - HP	112	166	282	361	631	885	1487
		Output Torque - lb.in	84000	123000	213000	290000	505000	680000	1150500
25.	70.0	Input Power - HP	112	147	262	335	587	782	1262
		Output Torque - lb.in	94000	123000	223000	290000	505000	680000	1123950
28.	62.5	Input Power - HP	105	112	240	282	524	631	1149
		Output Torque - lb.in	98000	106000	226000	290000	505000	680000	1150500
32.	54.7	Input Power - HP	94.1	118	210	263	450	612	1021
		Output Torque - lb.in	99000	118000	226000	290000	505000	680000	1150500
36.	48.6	Input Power - HP	83.9	103	185	236	408	560	900
		Output Torque - lb.in	100000	123000	226000	290000	505000	680000	1150500
40.	43.8	Input Power - HP	74.1	92.9	172	207	360	480	787
		Output Torque - lb.in	100000	123000	226000	290000	505000	680000	1150500
45.	38.9	Input Power - HP	67.3	82.8	152	182	341	436	732
		Output Torque - lb.in	97000	123000	226000	290000	505000	680000	1150500
50.	35.0	Input Power - HP	61.2	73.2	133	169	292	385	634
		Output Torque - lb.in	99000	123000	226000	290000	505000	680000	1150500
56.	31.3	Input Power - HP	54.5	67.3	117	149	265	356	561
		Output Torque - lb.in	100000	123000	226000	290000	505000	680000	1150500
63.	27.8	Input Power - HP	48.2	60.4	109	131	234	312	489
		Output Torque - lb.in	100000	123000	226000	290000	505000	680000	1150500
71.	24.6	Input Power - HP	-	53.9	90.6	115	215	283	456
		Output Torque - lb.in	-	123000	226000	290000	505000	680000	1150500
80.	21.9	Input Power - HP	-	47.6	84.0	107	190	250	402
		Output Torque - lb.in	-	123000	226000	290000	505000	680000	1150500
90.	19.4	Input Power - HP	-	-	74.3	89.1	167	222	373
		Output Torque - lb.in	-	-	226000	290000	505000	660000	1150500
100	17.5	Input Power - HP	-	-	65.4	82.6	151	202	327
		Output Torque - lb.in	-	-	226000	290000	505000	680000	1150500
112	15.6	Input Power - HP	-	-	60.6	73.0	134	169	286
		Output Torque - lb.in	-	-	226000	290000	505000	640000	1150500
125	14.0	Input Power - HP	-	-	51.3	64.3	119	162	267
		Output Torque - lb.in	-	-	226000	290000	505000	680000	1150500
140	12.5	Input Power - HP	-	-	45.1	59.6	108	143	225
		Output Torque - lb.in	-	-	226000	290000	505000	680000	1150500
160	10.9	Input Power - HP	-	-	41.8	50.4	95.6	127	197
		Output Torque - lb.in	-	-	226000	290000	505000	680000	1150500
180	9.7	Input Power - HP	-	-	35.8	44.4	84.5	116	184
		Output Torque - lb.in	-	-	206000	290000	505000	680000	1150500
200	8.8	Input Power - HP	-	-	31.7	41.1	75.4	102	173
		Output Torque - lb.in	-	-	216000	290000	505000	680000	1150500
225	7.8	Input Power - HP	-	-	29.4	35.8	68.5	90.3	146
		Output Torque - lb.in	-	-	226000	290000	505000	680000	1150500
250	7.0	Input Power - HP	-	-	27.2	31.7	60.5	80.5	128
		Output Torque - lb.in	-	-	226000	290000	505000	680000	1150500
280	6.3	Input Power - HP	-	-	-	28.8	-	73.5	119
		Output Torque - lb.in	-	-	-	290000	-	680000	1150500
315	5.6	Input Power - HP	-	-	-	26.7	-	64.5	-
		Output Torque - lb.in	-	-	-	290000	-	680000	-

TRIPLE REDUCTION

QUADRUPLE REDUCTION

Shaded Area - Forced lubrication system required

SERIES G

Right Angle Shaft Mechanical Ratings At 1450 RPM Input

0204

NOMINAL RATIO	NOMINAL OUTPUT SPEED REV / MIN	CAPACITY	RIGHT ANGLE SHAFT UNITS - SIZE						
			G14	G15	G16	G17	G18	G19	G21
8.0	181	Input Power - HP	210	-	489	-	1150	-	-
		Output Torque - lb.in	68000	-	167000	-	382000	-	-
9.0	161	Input Power - HP	210	-	489	-	1150	-	2012
		Output Torque - lb.in	78000	-	180000	-	420000	-	778800
10.	145	Input Power - HP	210	-	479	-	1150	-	2012
		Output Torque - lb.in	86000	-	193000	-	480000	-	858450
11.	129	Input Power - HP	210	-	431	-	1070	-	2012
		Output Torque - lb.in	95000	-	198000	-	500000	-	973500
12.	116	Input Power - HP	193	210	392	490	988	1150	2012
		Output Torque - lb.in	97000	112000	202000	254000	505000	606000	1062000
14.	104	Input Power - HP	174	209	359	486	882	1140	1920
		Output Torque - lb.in	97000	119000	206000	290000	505000	670000	1141650
16.	91	Input Power - HP	157	190	323	432	756	1060	1707
		Output Torque - lb.in	99000	121000	212000	290000	505000	680000	1150500
18.	81	Input Power - HP	140	172	291	388	688	941	1506
		Output Torque - lb.in	100000	122000	217000	290000	505000	680000	1150500
20.	72.5	Input Power - HP	123	154	274	340	608	807	1318
		Output Torque - lb.in	100000	123000	220000	290000	505000	680000	1150500
22.	65.9	Input Power - HP	92.8	138	248	299	532	734	1227
		Output Torque - lb.in	84000	123000	225000	290000	505000	680000	1150500
25.	58.0	Input Power - HP	92.8	122	221	278	487	649	1041
		Output Torque - lb.in	94000	123000	226000	290000	505000	680000	1123950
28.	51.8	Input Power - HP	86.8	92.8	198	245	435	546	947
		Output Torque - lb.in	98000	106000	226000	290000	505000	648000	1150500
32.	45.3	Input Power - HP	78.0	92.8	174	218	373	520	841
		Output Torque - lb.in	99000	118000	226000	290000	505000	680000	1150500
36.	40.3	Input Power - HP	69.5	85.7	153	196	388	464	743
		Output Torque - lb.in	100000	123000	226000	290000	505000	680000	1150500
40.	36.3	Input Power - HP	61.4	77.0	142	171	299	398	649
		Output Torque - lb.in	100000	123000	226000	290000	505000	680000	1150500
45.	32.2	Input Power - HP	55.8	68.7	126	151	282	361	605
		Output Torque - lb.in	97000	123000	226000	290000	505000	680000	1150500
50.	29.0	Input Power - HP	50.7	60.6	110	140	242	319	524
		Output Torque - lb.in	99000	123000	226000	290000	505000	680000	1150500
56.	25.9	Input Power - HP	45.2	55.8	97.1	124	220	295	463
		Output Torque - lb.in	100000	123000	226000	290000	505000	663000	1150500
63.	23.0	Input Power - HP	40.0	50.0	90.0	108	194	258	404
		Output Torque - lb.in	100000	123000	226000	290000	505000	680000	1150500
71.	20.4	Input Power - HP	-	44.7	75.1	95.5	178	235	375
		Output Torque - lb.in	-	123000	226000	290000	505000	680000	1150500
80.	18.1	Input Power - HP	-	39.4	69.6	88.5	157	207	333
		Output Torque - lb.in	-	123000	226000	290000	505000	680000	1150500
90.	16.1	Input Power - HP	-	-	61.6	73.8	138	190	310
		Output Torque - lb.in	-	-	226000	290000	505000	680000	1150500
100	14.5	Input Power - HP	-	-	54.2	68.4	125	168	271
		Output Torque - lb.in	-	-	226000	290000	505000	680000	1150500
112	12.9	Input Power - HP	-	-	50.3	60.5	110	145	237
		Output Torque - lb.in	-	-	226000	290000	505000	657000	1150500
125	11.6	Input Power - HP	-	-	42.5	53.3	98.8	134	221
		Output Torque - lb.in	-	-	226000	290000	505000	680000	1150500
140	10.4	Input Power - HP	-	-	37.4	49.4	89.7	118	186
		Output Torque - lb.in	-	-	226000	290000	505000	680000	1150500
160	9.1	Input Power - HP	-	-	34.7	41.7	79.2	105	164
		Output Torque - lb.in	-	-	226000	290000	505000	680000	1150500
180	8.1	Input Power - HP	-	-	29.6	36.8	70.0	95.8	152
		Output Torque - lb.in	-	-	226000	290000	505000	680000	1150500
200	7.3	Input Power - HP	-	-	26.3	34.1	62.5	84.6	143
		Output Torque - lb.in	-	-	226000	290000	505000	680000	1150500
225	6.4	Input Power - HP	-	-	24.3	29.6	56.7	74.8	121
		Output Torque - lb.in	-	-	226000	290000	505000	680000	1150500
250	5.8	Input Power - HP	-	-	22.5	26.3	50.5	66.7	106
		Output Torque - lb.in	-	-	226000	290000	505000	680000	1150500
280	5.2	Input Power - HP	-	-	-	23.9	-	60.6	99
		Output Torque - lb.in	-	-	-	290000	-	680000	1150500
315	4.6	Input Power - HP	-	-	-	22.1	-	53.5	-
		Output Torque - lb.in	-	-	-	290000	-	680000	-

TRIPLE REDUCTION

QUADRUPLE REDUCTION

Shaded Area - Forced lubrication system required

SERIES G

Right Angle Shaft Mechanical Ratings At 1160 RPM Input

0204

NOMINAL RATIO	NOMINAL OUTPUT SPEED REV / MIN	CAPACITY	RIGHT ANGLE SHAFT UNITS - SIZE						
			G14	G15	G16	G17	G18	G19	G21
8.0	145	Input Power - HP	168	-	419	-	984	-	-
		Output Torque - lb.in	68000	-	180000	-	410000	-	-
9.0	129	Input Power - HP	168	-	419	-	984	-	1609
		Output Torque - lb.in	78000	-	190000	-	450000	-	778800
10.	116	Input Power - HP	168	-	400	-	947	-	1609
		Output Torque - lb.in	86000	-	200000	-	500000	-	858450
11.	104	Input Power - HP	168	-	360	-	865	-	1609
		Output Torque - lb.in	95000	-	206000	-	505000	-	973500
12.	93	Input Power - HP	154	168	327	416	792	947	1609
		Output Torque - lb.in	97000	110000	211000	270000	505000	620000	1062000
14.	83	Input Power - HP	139	168	300	389	706	913	1539
		Output Torque - lb.in	97000	119000	215000	290000	505000	670000	1141650
16.	73	Input Power - HP	125	153	269	346	606	845	1368
		Output Torque - lb.in	99000	121000	226000	290000	508000	680000	1150500
18.	64	Input Power - HP	112	138	244	311	551	754	1207
		Output Torque - lb.in	100000	122000	226000	290000	505000	680000	1150500
20.	58.0	Input Power - HP	98.6	124	225	272	486	647	1055
		Output Torque - lb.in	100000	123000	226000	290000	505000	680000	1150500
22.	52.7	Input Power - HP	74.2	110	198	240	426	588	983
		Output Torque - lb.in	84000	123000	226000	290000	505000	680000	1150500
25.	46.4	Input Power - HP	74.2	97.4	177	222	390	520	833
		Output Torque - lb.in	94000	123000	226000	290000	505000	680000	1123950
28.	41.4	Input Power - HP	69.5	74.2	160	196	348	437	759
		Output Torque - lb.in	98000	106000	226000	290000	505000	648000	1150500
32.	36.3	Input Power - HP	62.4	74.2	139	174	298	416	675
		Output Torque - lb.in	99000	118000	226000	290000	505000	680000	1150500
36.	32.2	Input Power - HP	55.7	68.5	123	156	271	371	595
		Output Torque - lb.in	100000	123000	226000	290000	505000	680000	1150500
40.	29.0	Input Power - HP	49.1	61.6	114	137	239	318	520
		Output Torque - lb.in	100000	123000	226000	290000	505000	680000	1150500
45.	25.8	Input Power - HP	44.7	54.8	101	121	226	289	484
		Output Torque - lb.in	97000	123000	226000	290000	505000	680000	1150500
50.	23.2	Input Power - HP	40.5	48.5	88.2	112	194	255	420
		Output Torque - lb.in	99000	123000	226000	290000	505000	680000	1150500
56.	20.7	Input Power - HP	36.2	44.5	77.6	99.0	176	236	370
		Output Torque - lb.in	100000	123000	226000	290000	505000	663000	1150500
63.	18.4	Input Power - HP	31.9	40.1	72.0	86.7	155	207	323
		Output Torque - lb.in	100000	123000	226000	290000	505000	680000	1150500
71.	16.3	Input Power - HP	-	35.7	60.1	76.4	142	188	300
		Output Torque - lb.in	-	123000	226000	290000	505000	680000	1150500
80.	14.5	Input Power - HP	-	31.5	55.7	70.8	126	166	266
		Output Torque - lb.in	-	123000	226000	290000	505000	680000	1150500
90.	12.9	Input Power - HP	-	-	49.2	59.0	110	152	248
		Output Torque - lb.in	-	-	226000	290000	505000	680000	1150500
100	11.6	Input Power - HP	-	-	43.3	54.7	100	134	217
		Output Torque - lb.in	-	-	226000	290000	505000	680000	1150500
112	10.4	Input Power - HP	-	-	40.2	48.4	88.6	118	189
		Output Torque - lb.in	-	-	226000	290000	505000	680000	1150500
125	9.3	Input Power - HP	-	-	33.9	42.6	79.0	107	177
		Output Torque - lb.in	-	-	226000	290000	505000	680000	1150500
140	8.3	Input Power - HP	-	-	29.9	39.5	71.8	94.6	149
		Output Torque - lb.in	-	-	226000	290000	505000	680000	1150500
160	7.3	Input Power - HP	-	-	27.8	33.4	63.4	84.4	130
		Output Torque - lb.in	-	-	226000	290000	505000	680000	1150500
180	6.4	Input Power - HP	-	-	23.7	29.4	56.0	76.6	121
		Output Torque - lb.in	-	-	226000	290000	505000	680000	1150500
200	5.8	Input Power - HP	-	-	21.1	27.2	50.0	67.6	115
		Output Torque - lb.in	-	-	226000	290000	505000	680000	1150500
225	5.2	Input Power - HP	-	-	19.4	23.7	45.4	59.8	97
		Output Torque - lb.in	-	-	226000	265000	505000	680000	1150500
250	4.6	Input Power - HP	-	-	18.0	21.1	40.1	53.3	85
		Output Torque - lb.in	-	-	226000	278000	505000	680000	1150500
280	4.1	Input Power - HP	-	-	-	19.1	-	48.5	79
		Output Torque - lb.in	-	-	-	290000	-	680000	1150500
315	3.7	Input Power - HP	-	-	-	17.7	-	42.8	-
		Output Torque - lb.in	-	-	-	290000	-	680000	-

TRIPLE REDUCTION

QUADRUPLE REDUCTION

SERIES G

Right Angle Shaft Mechanical Ratings At 875 RPM Input

0204

NOMINAL RATIO	NOMINAL OUTPUT SPEED REV / MIN	CAPACITY	RIGHT ANGLE SHAFT UNITS - SIZE						
			G14	G15	G16	G17	G18	G19	G21
8.0	109	Input Power - HP	127	-	331	-	766	-	-
		Output Torque - lb.in	68000	-	189000	-	420000	-	-
9.0	97	Input Power - HP	127	-	319	-	746	-	1216
		Output Torque - lb.in	78000	-	195000	-	451000	-	778800
10.	88	Input Power - HP	127	-	314	-	714	-	1216
		Output Torque - lb.in	86000	-	210000	-	496000	-	858450
11.	78	Input Power - HP	127	-	286	-	653	-	1216
		Output Torque - lb.in	95000	-	217000	-	505000	-	973500
12.	70	Input Power - HP	116	127	261	314	598	714	1216
		Output Torque - lb.in	97000	110000	226000	270000	505000	622000	1062000
14.	63	Input Power - HP	105	126	238	294	534	689	1161
		Output Torque - lb.in	98000	120000	226000	290000	505000	668000	1141650
16.	55	Input Power - HP	94.5	115	209	261	458	638	1033
		Output Torque - lb.in	99000	121000	226000	290000	505000	680000	1150500
18.	49	Input Power - HP	84.2	104	183	234	416	570	912
		Output Torque - lb.in	100000	122000	226000	290000	505000	680000	1150500
20.	43.8	Input Power - HP	74.4	93.3	170	205	367	489	797
		Output Torque - lb.in	100000	123000	226000	290000	505000	680000	1150500
22.	39.8	Input Power - HP	56.0	83.2	149	181	321	444	742
		Output Torque - lb.in	85000	123000	226000	290000	505000	680000	1150500
25.	35.0	Input Power - HP	56.0	73.4	133	168	294	392	628
		Output Torque - lb.in	94000	123000	226000	290000	505000	680000	1115100
28.	31.3	Input Power - HP	52.4	56.0	120	148	262	329	573
		Output Torque - lb.in	98000	107000	226000	290000	505000	650000	1150500
32.	27.3	Input Power - HP	47.1	56.0	105	131	225	314	510
		Output Torque - lb.in	100000	117000	226000	290000	505000	680000	1150500
36.	24.3	Input Power - HP	41.9	51.7	92.6	118	204	280	449
		Output Torque - lb.in	100000	122000	226000	290000	505000	680000	1150500
40.	21.9	Input Power - HP	37.0	46.5	85.8	103	180	240	393
		Output Torque - lb.in	100000	123000	226000	290000	505000	680000	1150500
45.	19.4	Input Power - HP	33.7	41.4	75.9	91.1	170	218	366
		Output Torque - lb.in	97000	123000	226000	290000	508000	680000	1150500
50.	17.5	Input Power - HP	30.6	36.5	66.5	84.4	146	193	316
		Output Torque - lb.in	100000	123000	226000	290000	505000	680000	1150500
56.	15.6	Input Power - HP	27.3	33.6	58.7	74.6	133	178	279
		Output Torque - lb.in	100000	123000	226000	290000	505000	680000	1150500
63.	13.9	Input Power - HP	24.1	30.2	54.3	65.4	117	156	244
		Output Torque - lb.in	100000	123000	226000	290000	505000	680000	1150500
71.	12.3	Input Power - HP	-	26.9	45.3	57.6	107	142	227
		Output Torque - lb.in	-	123000	226000	290000	505000	680000	1150500
80.	10.9	Input Power - HP	-	23.8	42.0	53.4	94.9	125	201
		Output Torque - lb.in	-	123000	226000	290000	505000	680000	1150500
90.	9.7	Input Power - HP	-	-	37.2	44.5	83.3	115	186
		Output Torque - lb.in	-	-	226000	290000	505000	680000	1150500
100	8.8	Input Power - HP	-	-	32.8	41.3	75.7	101	164
		Output Torque - lb.in	-	-	226000	290000	505000	680000	1150500
112	7.8	Input Power - HP	-	-	30.3	36.5	66.8	89.0	143
		Output Torque - lb.in	-	-	226000	290000	505000	680000	1150500
125	7.0	Input Power - HP	-	-	25.7	32.1	59.6	80.8	133
		Output Torque - lb.in	-	-	226000	290000	505000	680000	1150500
140	6.3	Input Power - HP	-	-	22.6	29.8	54.1	71.3	113
		Output Torque - lb.in	-	-	226000	290000	505000	680000	1150500
160	5.5	Input Power - HP	-	-	20.9	25.2	47.8	63.6	98
		Output Torque - lb.in	-	-	226000	290000	505000	680000	1150500
180	4.9	Input Power - HP	-	-	17.8	22.2	42.3	57.8	92
		Output Torque - lb.in	-	-	206000	290000	505000	680000	1150500
200	4.4	Input Power - HP	-	-	15.9	20.5	37.7	51.0	86
		Output Torque - lb.in	-	-	216000	290000	505000	680000	1150500
225	3.9	Input Power - HP	-	-	14.7	17.9	34.2	45.1	73
		Output Torque - lb.in	-	-	226000	290000	505000	680000	1150500
250	3.5	Input Power - HP	-	-	13.6	15.9	30.2	40.2	64
		Output Torque - lb.in	-	-	226000	290000	505000	680000	1150500
280	3.1	Input Power - HP	-	-	-	14.4	-	36.6	59
		Output Torque - lb.in	-	-	-	290000	-	680000	1150500
315	2.8	Input Power - HP	-	-	-	13.4	-	32.3	-
		Output Torque - lb.in	-	-	-	290000	-	680000	-

TRIPLE REDUCTION

QUADRUPLE REDUCTION

SERIES G

Right Angle Shaft Thermal Ratings

0204

Thermal Ratings HP

Right Angle Shaft Units - Triple Reduction

Type of Cooling	Input Speed (rev/min)	RIGHT ANGLE SHAFT UNIT SIZE						
		14	15	16	17	18	19	21
Units with no Additional Cooling	1750	101	101	168	168	259	280	431
	1450	93	93	154	154	239	257	390
	1160	90	90	149	149	232	251	381
	875	85	85	143	143	221	239	363
Units with Fan Cooling	1750	227	227	377	377	583	632	840
	1450	185	185	308	308	477	516	682
	1160	166	166	276	276	429	464	610
	875	135	135	225	225	349	377	507
Units with Cooling Coil	1750	304	304	507	507	735	756	891
	1450	288	288	480	480	696	715	850
	1160	268	268	447	447	648	666	841
	875	252	252	421	421	610	629	818
Units with Fan and Cooling Coil	1750	430	430	716	716	865	1106	1300
	1450	381	381	634	634	933	974	1142
	1160	345	345	574	574	845	880	1070
	875	302	302	503	503	738	766	962

SERIES G

Right Angle Shaft Thermal Ratings

0204

Thermal Ratings HP

Right Angle Shaft Units - Quadruple Reduction

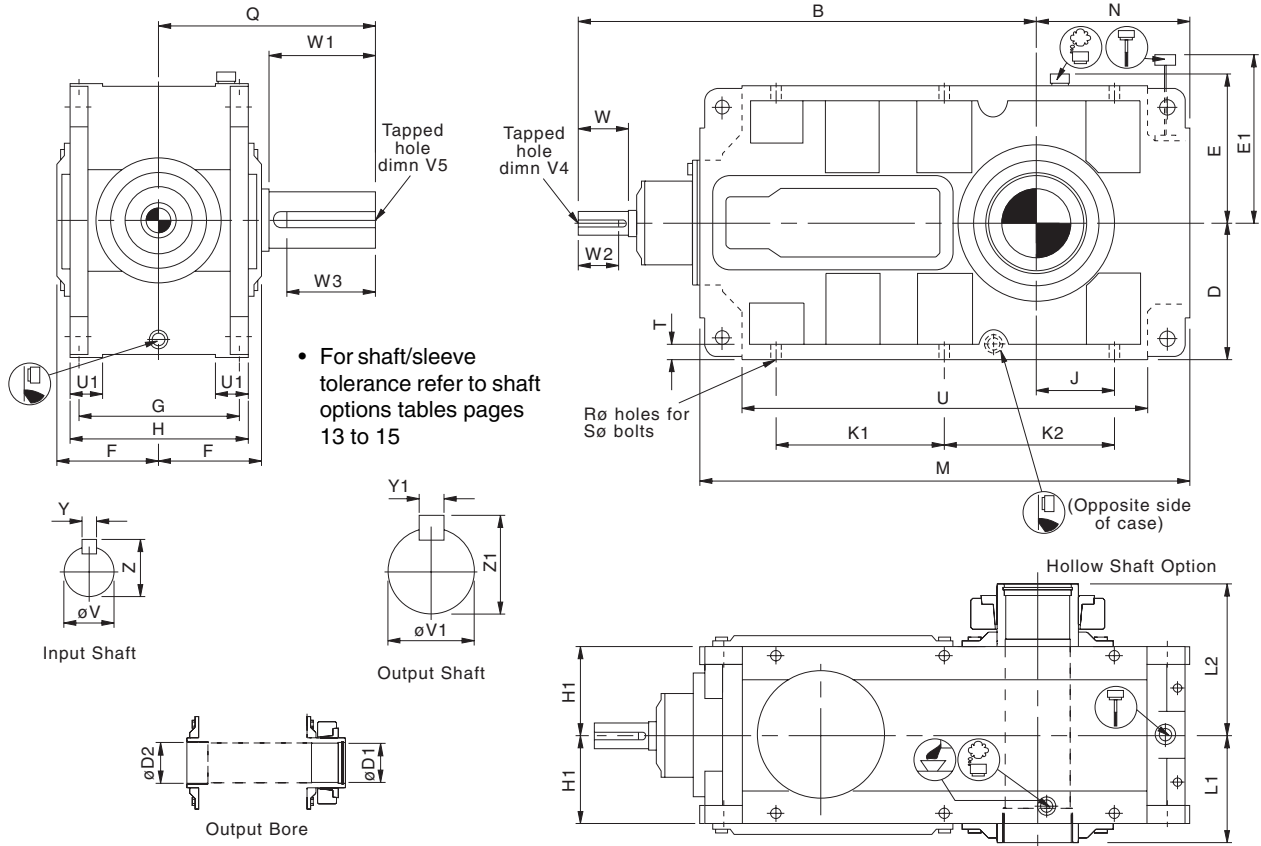
Type of Cooling	Input Speed (rev/min)	RIGHT ANGLE SHAFT UNIT SIZE						
		14	15	16	17	18	19	21
Units with no Additional Cooling	1750	-	-	126	126	196	212	319
	1450	-	-	117	117	180	194	289
	1160	-	-	113	113	174	189	283
	875	-	-	108	108	167	181	269

SERIES G

Horizontal Right Angle Shaft Dimensions Triple Reductions

0204

G 30 B Triple Reduction Right Angle Units Horizontal



Unit Size	B	D	E	E1	F	G	H	H1	J	K1	K2	M	N	Q	R	S	T	U	U1
G14	28.35	9.06	9.84	14.57	6.97	10.43	11.81	5.91	6.69	11.22		32.28	11.61	14.17	0.73	6 x 5/8 x 2 1/4*	0.98	26.93	2.17
G15	29.92	9.06	9.84	14.57	6.97	10.43	11.81	5.91	5.12	11.22		32.28	10.04	14.57	0.73	6 x 5/8 x 2 1/4*	0.98	26.93	2.17
G16	37.01	11.81	13.19	20.28	8.86	12.99	14.96	7.48	8.86	15.16		41.73	14.57	18.11	1.10	6 x 1.0 x 3*	1.18	35.35	2.76
G17	39.17	11.81	13.19	20.28	8.86	12.99	14.96	7.48	6.69	15.16		41.73	12.40	18.90	1.10	6 x 1.0 x 3*	1.18	35.35	2.76
G18	48.03	15.16	16.54	27.95	11.42	17.32	19.69	9.84	6.02	20.47	13.78	48.82	13.31	23.62	1.30	6 x 1 1/4 x 4*	1.46	40.79	3.54
G19	50.59	15.16	16.54	27.95	11.42	17.32	19.69	9.84	8.66	19.69		54.09	16.02	25.59	1.30	6 x 1 1/4 x 4*	1.57	46.06	3.54
G21	64.17	18.31	19.96	29.53	13.39	20.87	23.62	11.81	8.86	27.36	18.90	65.16	18.31	27.56	1.54	6 x 1.38 x 4*	1.97	54.33	4.72

Unit Size	Input Shaft •						Output Shaft •						Output Bore •			
	V	V4	W	W2	Y	Z	V1	V5	W1	W3	Y1	Z1	D1	D2	L1	L2
G14	1.5000	5/8 UNF x 1.25	3.94	3.00	0.3125	1.60	4.500	1 UNF x 2	7.09	6.50	1.00	4.94	3.74	3.94	7.09	10.04
G15	1.5000	5/8 UNF x 1.25	3.94	3.00	0.3125	1.60	5.000	1 UNF x 2	7.48	7.13	1.25	5.55	4.33	4.53	7.09	10.24
G16	1.8750	5/8 UNF x 1.25	5.51	4.13	0.500	2.10	6.000	1.25 UNF x 2.5	9.06	8.75	1.50	6.66	4.92	5.12	9.06	12.80
G17	1.8750	5/8 UNF x 1.25	5.51	4.13	0.500	2.10	6.750	1.25 UNF x 2.5	9.84	9.38	1.75	7.39	5.71	5.91	9.06	13.39
G18	3.0000	3/4 UNF x 1.62	6.30	5.25	0.750	3.33	7.500	1.5 UNF x 3	11.81	11.38	1.75	8.15	6.30	6.69	11.81	16.14
G19	3.0000	3/4 UNF x 1.62	6.30	5.25	0.750	3.33	8.250	1.5 UNF x 3	13.78	13.00	2.00	8.88	6.69	7.09	11.81	16.93
G21	4.0000	1 UNF x 2	8.27	7.50	1.00	4.44	8.50	1.5 UNF x 3	13.78	13.00	2.00	9.13	8.268	8.661	13.78	19.69

* Maximum bolt length

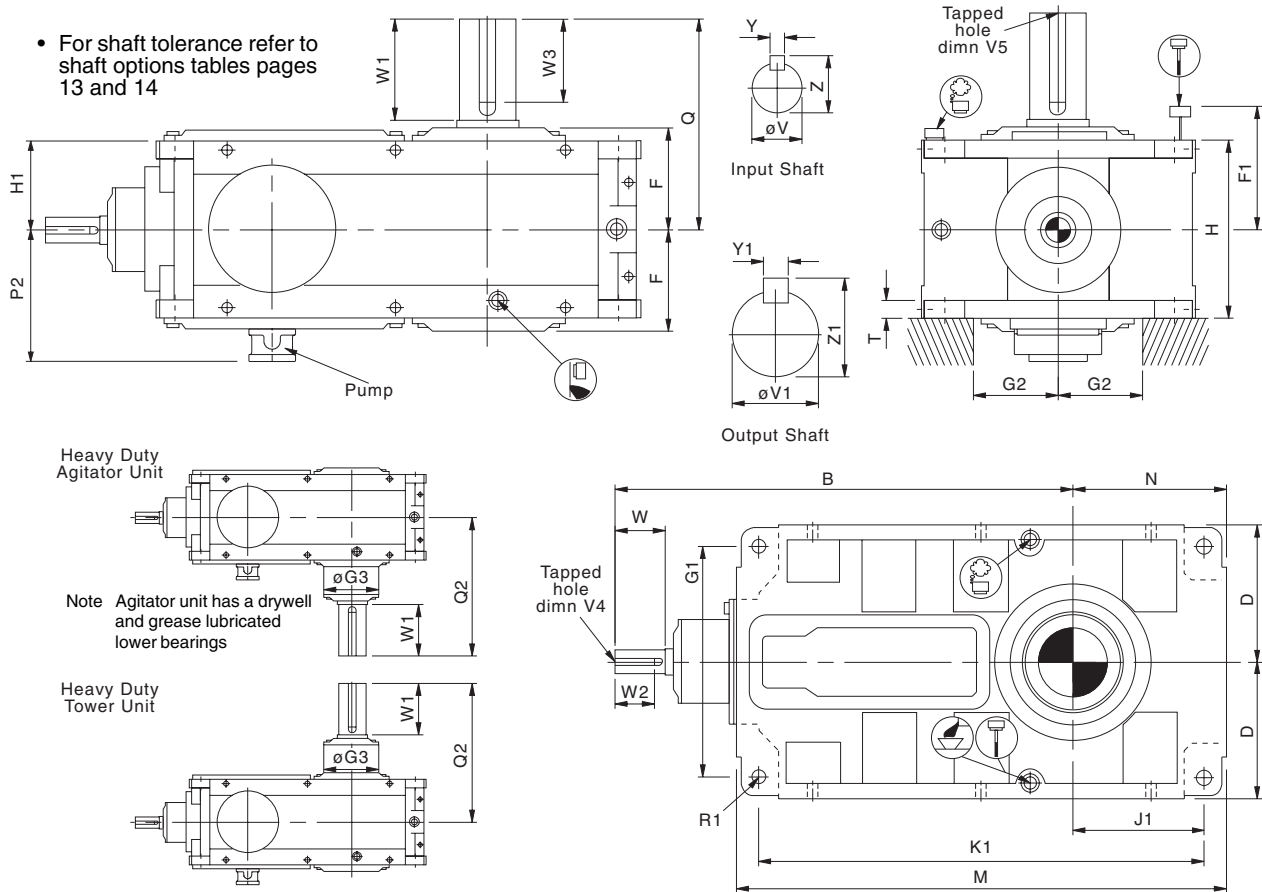
SERIES G

Vertical Right Angle Shaft Dimensions Triple Reduction

0204

G 3 0 R Triple Reduction Right Angle Units Vertical

- For shaft tolerance refer to shaft options tables pages 13 and 14



Unit Size	B	D	F	F1	G1	G2 (min)		G3	H	H1	J1	K1	M	N	P2	Q	Q2	R1	T
						No Fan	With Fan												
G14	28.35	9.06	6.97	15.35	15.35	5.31	6.10	9.06	11.81	5.91	10.24	29.53	32.28	11.61	9.29	14.17	18.70	4 x ø0.94	1.18
G15	29.92	9.06	6.97	15.35	15.35	5.31	6.10	10.24	11.81	5.91	8.66	29.53	32.28	10.04	9.29	14.57	19.49	4 x ø0.94	1.18
G16	37.01	11.81	8.86	20.28	19.92	6.89	8.07	11.81	14.96	7.48	12.80	38.19	41.73	14.57	11.22	18.11	23.43	4 x ø1.30	1.77
G17	39.17	11.81	8.86	20.28	19.92	6.89	8.07	13.39	14.96	7.48	10.63	38.19	41.73	12.40	11.22	18.90	24.21	4 x ø1.30	1.77
G18	48.03	15.16	11.42	27.56	25.83	8.07	9.65	14.57	19.69	9.84	11.06	44.33	48.82	13.31	13.58	23.62	29.92	4 x ø1.57	2.17
G19	50.59	15.16	11.42	27.56	25.83	8.07	9.65	15.75	19.69	9.84	13.78	49.61	54.09	16.02	13.58	25.59	32.09	4 x ø1.57	2.17
G21	64.17	18.31	13.39	29.53	28.74	10.04	12.40	19.69	23.62	11.81	15.55	59.65	65.16	18.31	15.75	27.56	36.42	4 x ø1.89	2.76

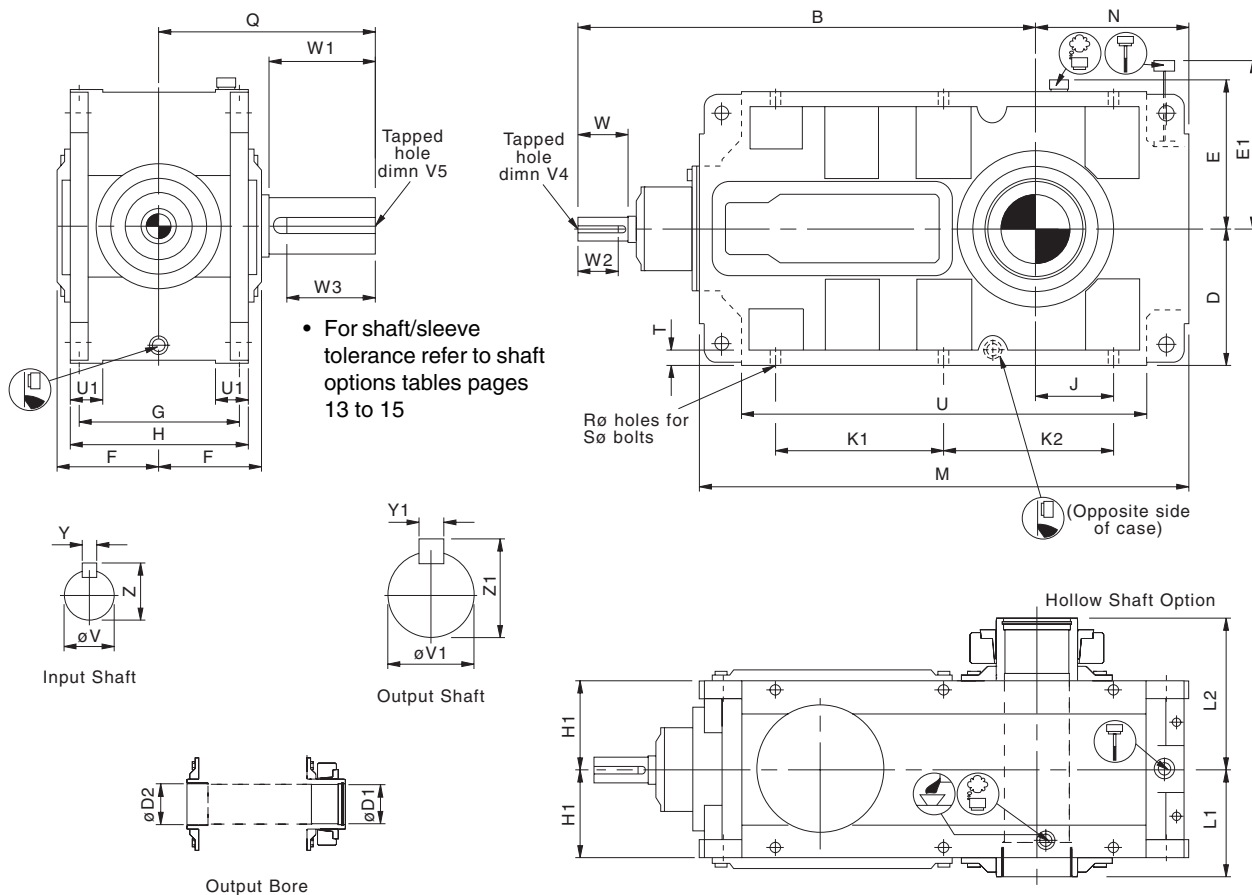
Unit Size	Input Shaft •						Output Shaft •					
	V	V4	W	W2	Y	Z	V1	V5	W1	W3	Y1	Z1
G14	1.5000	5/8 UNF x 1.25	3.94	3.00	0.3125	1.60	4.500	1 UNF x 2	7.09	6.50	1.00	4.94
G15	1.5000	5/8 UNF x 1.25	3.94	3.00	0.3125	1.60	5.000	1 UNF x 2	7.48	7.13	1.25	5.55
G16	1.8750	5/8 UNF x 1.25	5.51	4.13	0.500	2.10	6.000	1.25 UNF x 2.5	9.06	8.75	1.50	6.66
G17	1.8750	5/8 UNF x 1.25	5.51	4.13	0.500	2.10	6.750	1.25 UNF x 2.5	9.84	9.38	1.75	7.39
G18	3.0000	3/4 UNF x 1.62	6.30	5.25	0.750	3.33	7.500	1.5 UNF x 3	11.81	11.38	1.75	8.15
G19	3.0000	3/4 UNF x 1.62	6.30	5.25	0.750	3.33	8.250	1.5 UNF x 3	13.78	13.00	2.00	8.88
G21	4.0000	1 UNF x 2	8.27	7.50	1.00	4.44	8.50	1.5 UNF x 3	13.78	13.00	2.00	9.13

SERIES G

Horizontal Right Angle Shaft Dimensions Quadruple Reduction

0204

G 40 B Quadruple Reduction Right Angle Units Horizontal



Unit Size	B	D	E	E1	F	G	H	H1	J	K1	K2	M	N	Q	R	S	T	U	U1
G16	37.99	11.81	13.19	20.28	8.86	12.99	14.96	7.48	8.86	15.16	41.73	14.57	18.11	1.10	6 x 1.0 x 3*	1.18	35.35	2.76	
G17	40.16	11.81	13.19	20.28	8.86	12.99	14.96	7.48	6.69	15.16	41.73	12.40	18.90	1.10	6 x 1.0 x 3*	1.18	35.35	2.76	
G18	49.80	15.16	16.54	27.95	11.42	17.32	19.69	9.84	6.02	20.47	13.78	48.82	13.31	23.62	1.30	6 x 1 1/4 x 4*	1.46	40.79	3.54
G19	52.36	15.16	16.54	27.95	11.42	17.32	19.69	9.84	8.66	19.69	54.09	16.02	25.59	1.30	6 x 1 1/4 x 4*	1.57	46.06	3.54	
G21	65.35	18.31	19.96	29.53	13.39	20.87	23.62	11.81	8.86	27.36	18.90	65.16	18.31	27.56	1.54	6 x 1.38 x 4*	1.97	54.33	4.72

Unit Size	Input Shaft •						Output Shaft •						Output Bore •			
	V	V4	W	W2	Y	Z	V1	V5	W1	W3	Y1	Z1	D1	D2	L1	L2
G16	1.5000	5/8 UNF x 1.25	3.94	3.00	0.3125	1.60	6.000	1.25 UNF x 2.5	9.06	8.75	1.50	6.66	4.92	5.12	9.06	12.80
G17	1.5000	5/8 UNF x 1.25	3.94	3.00	0.3125	1.60	6.750	1.25 UNF x 2.5	9.84	9.38	1.75	7.39	5.71	5.91	9.06	13.39
G18	1.8750	5/8 UNF x 1.25	5.51	4.13	0.500	2.10	7.500	1.5 UNF x 3	11.81	11.38	1.75	8.15	6.30	6.69	11.81	16.14
G19	1.8750	5/8 UNF x 1.25	5.51	4.13	0.500	2.10	8.250	1.5 UNF x 3	13.78	13.00	2.00	8.88	6.69	7.09	11.81	16.93
G21	3.0000	3/4 UNF x 1.6	6.30	5.25	0.75	3.33	8.50	1.5 UNF x 3	13.78	13.00	2.00	9.13	8.268	8.661	13.78	19.69

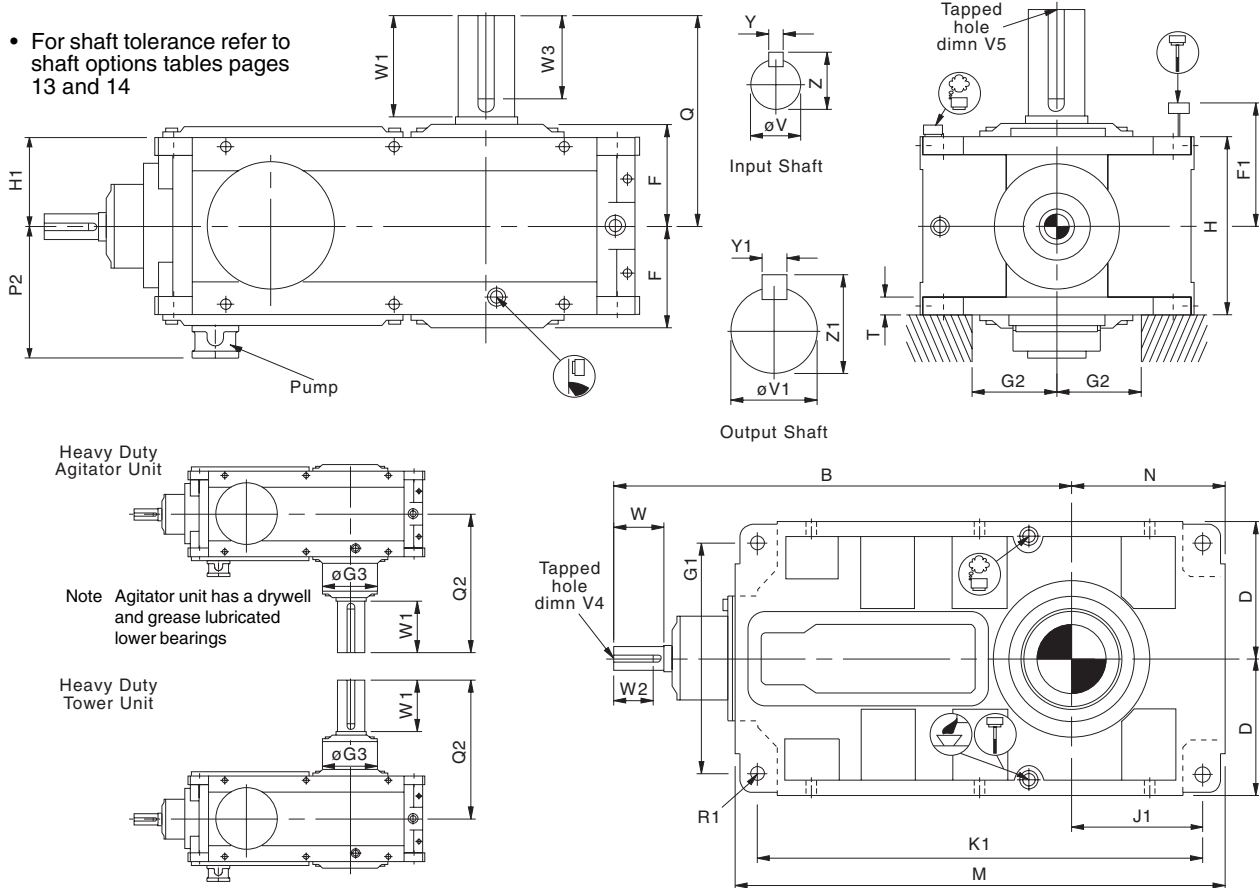
* Maximum bolt length

SERIES G

Vertical Right Angle Shaft Dimensions Quadruple Reduction

0204

G 40 R Quadruple Reduction Right Angle Units Vertical



Unit Size	B	D	F	F1	G1	G2 (min)	G3	H	H1	J1	K1	M	N	P2	Q	Q2	R1	T
G16	37.99	11.81	8.86	20.28	19.92	6.89	11.81	14.96	7.48	12.80	38.19	41.73	14.57	11.22	18.11	23.43	4 x $\phi 1.30$	1.77
G17	40.16	11.81	8.86	20.28	19.92	6.89	13.39	14.96	7.48	10.63	38.19	41.73	12.40	11.22	18.90	24.21	4 x $\phi 1.30$	1.77
G18	49.80	15.16	11.42	27.56	25.83	8.07	14.57	19.69	9.84	11.06	44.33	48.82	13.31	13.58	23.62	29.92	4 x $\phi 1.57$	2.17
G19	52.36	15.16	11.42	27.56	25.83	8.07	15.75	19.69	9.84	13.78	49.61	54.09	16.02	13.58	25.59	32.09	4 x $\phi 1.57$	2.17
G21	65.35	18.31	13.39	29.53	28.74	10.04	19.69	23.62	11.81	15.55	59.65	65.16	18.31	15.75	27.56	36.42	4 x 1.89	2.76

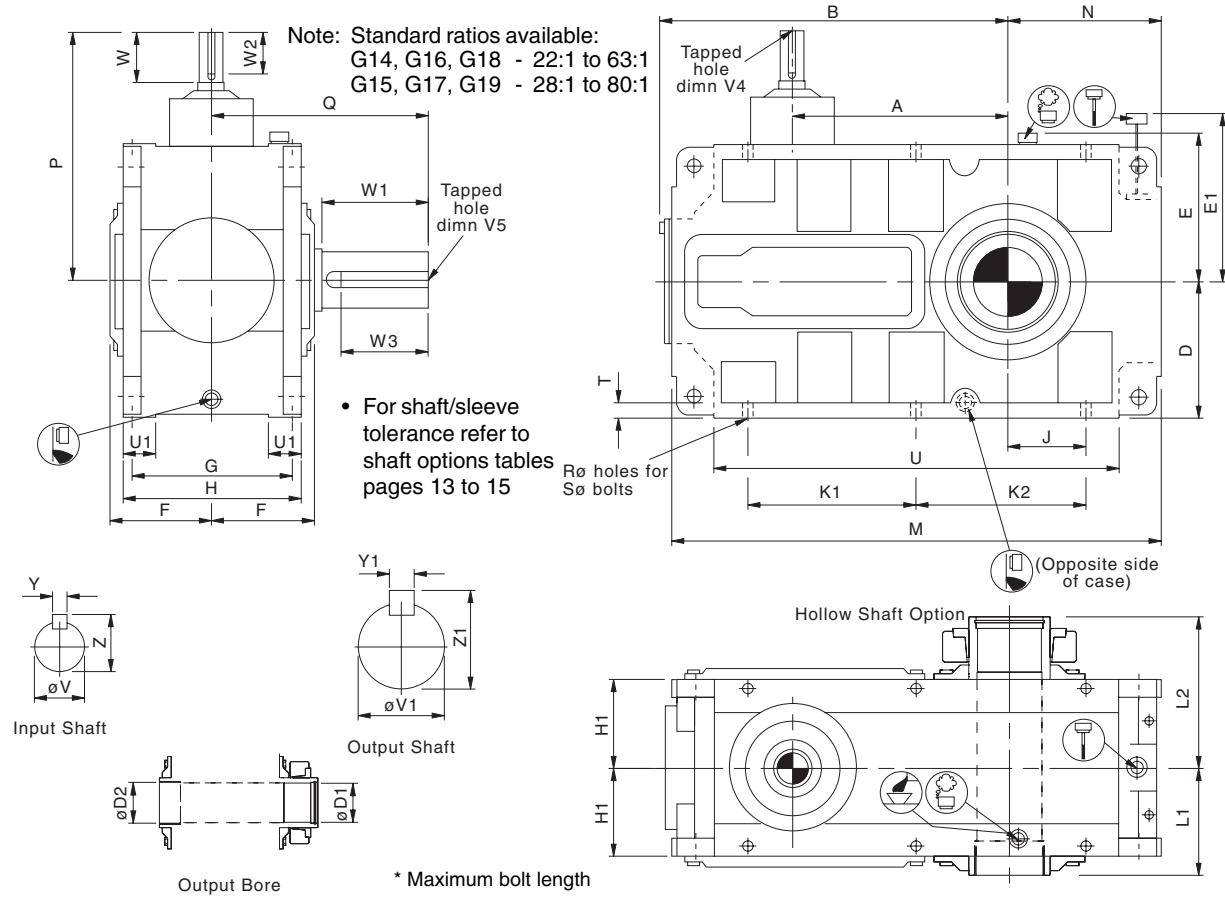
Unit Size	Input Shaft •						Output Shaft •						
	V	V4	W	W2	Y	Z	V1	V5	W1	W3	Y1	Z1	
G16	1.5000	5/8 UNF x 1.25	3.94	3.00	0.3125	1.60	6.000	1.25 UNF x 2.5	9.06	8.75	1.50	6.66	
G17	1.5000	5/8 UNF x 1.25	3.94	3.00	0.3125	1.60	6.750	1.25 UNF x 2.5	9.84	9.38	1.75	7.39	
G18	1.8750	5/8 UNF x 1.25	5.51	4.13	0.500	2.10	7.500	1.5 UNF x 3	11.81	11.38	1.75	8.15	
G19	1.8750	5/8 UNF x 1.25	5.51	4.13	0.500	2.10	8.250	1.5 UNF x 3	13.78	13.00	2.00	8.88	
G21	3.0000	3/4 UNF x 1.6	6.30	5.25	0.75	3.33	8.50	1.5 UNF x 3	13.78	13.00	2.00	9.13	

SERIES G

'J' Type Right Angle Shaft Dimensions Triple Reduction, Horizontal

0204

G 30 B Triple Reduction 'J' Type Right Angle Units Horizontal



Unit Size	A	B	D	E	E1	F	G	H	H1	J	K1	K2	M	N	P	Q	R	S	T	U	U1
G14	12.80	21.81	9.06	9.84	14.57	6.97	10.43	11.81	5.91	6.69	11.22	32.28	11.61	15.55	14.17	0.73	6 x 5/8 x 2 1/4*	0.98	26.93	2.17	
G15	14.37	23.39	9.06	9.84	14.57	6.97	10.43	11.81	5.91	5.12	11.22	32.28	10.04	15.55	14.57	0.73	6 x 5/8 x 2 1/4*	0.98	26.93	2.17	
G16	16.93	28.66	11.81	13.19	20.28	8.86	12.99	14.96	7.48	8.86	15.16	41.73	14.57	20.08	18.11	1.10	6 x 1.0 x 3*	1.18	35.35	2.76	
G17	19.09	30.83	11.81	13.19	20.28	8.86	12.99	14.96	7.48	6.69	15.16	41.73	12.40	20.08	18.90	1.10	6 x 1.0 x 3*	1.18	35.35	2.76	
G18	22.44	37.52	15.16	16.54	27.95	11.42	17.32	19.69	9.84	6.02	20.47	13.78	48.82	13.31	25.59	23.62	1.30	6 x 1 1/4 x 4*	1.46	40.79	3.54
G19	25.00	40.08	15.16	16.54	27.95	11.42	17.32	19.69	9.84	8.66	19.69	54.09	16.02	25.59	25.59	1.30	6 x 1 1/4 x 4*	1.57	46.06	3.54	
G21	30.12	48.82	18.31	19.96	29.53	13.39	20.87	23.62	11.81	8.86	27.36	18.90	65.16	18.31	34.06	27.56	1.54	6 x 1.38 x 4*	1.97	54.33	4.72

Unit Size	Input Shaft •						Output Shaft •						Output Bore •			
	V	V4	W	W2	Y	Z	V1	V5	W1	W3	Y1	Z1	D1	D2	L1	L2
G14	1.5000	5/8 UNF x 1.25	3.94	3.00	0.3125	1.60	4.500	1 UNF x 2	7.09	6.50	1.00	4.94	3.74	3.94	7.09	10.04
G15	1.5000	5/8 UNF x 1.25	3.94	3.00	0.3125	1.60	5.000	1 UNF x 2	7.48	7.13	1.25	5.55	4.33	4.53	7.09	10.24
G16	1.8750	5/8 UNF x 1.25	5.51	4.13	0.500	2.10	6.000	1.25 UNF x 2.5	9.06	8.75	1.50	6.66	4.92	5.12	9.06	12.80
G17	1.8750	5/8 UNF x 1.25	5.51	4.13	0.500	2.10	6.750	1.25 UNF x 2.5	9.84	9.38	1.75	7.39	5.71	5.91	9.06	13.39
G18	3.0000	3/4 UNF x 1.62	6.30	5.25	0.750	3.33	7.500	1.5 UNF x 3	11.81	11.38	1.75	8.15	6.30	6.69	11.81	16.14
G19	3.0000	3/4 UNF x 1.62	6.30	5.25	0.750	3.33	8.250	1.5 UNF x 3	13.78	13.00	2.00	8.88	6.69	7.09	11.81	16.93
G21	4.0000	1 UNF x 2	8.27	7.50	1.00	4.44	8.50	1.5 UNF x 3	13.78	13.00	2.00	9.13	8.268	8.661	13.78	19.69

SERIES G

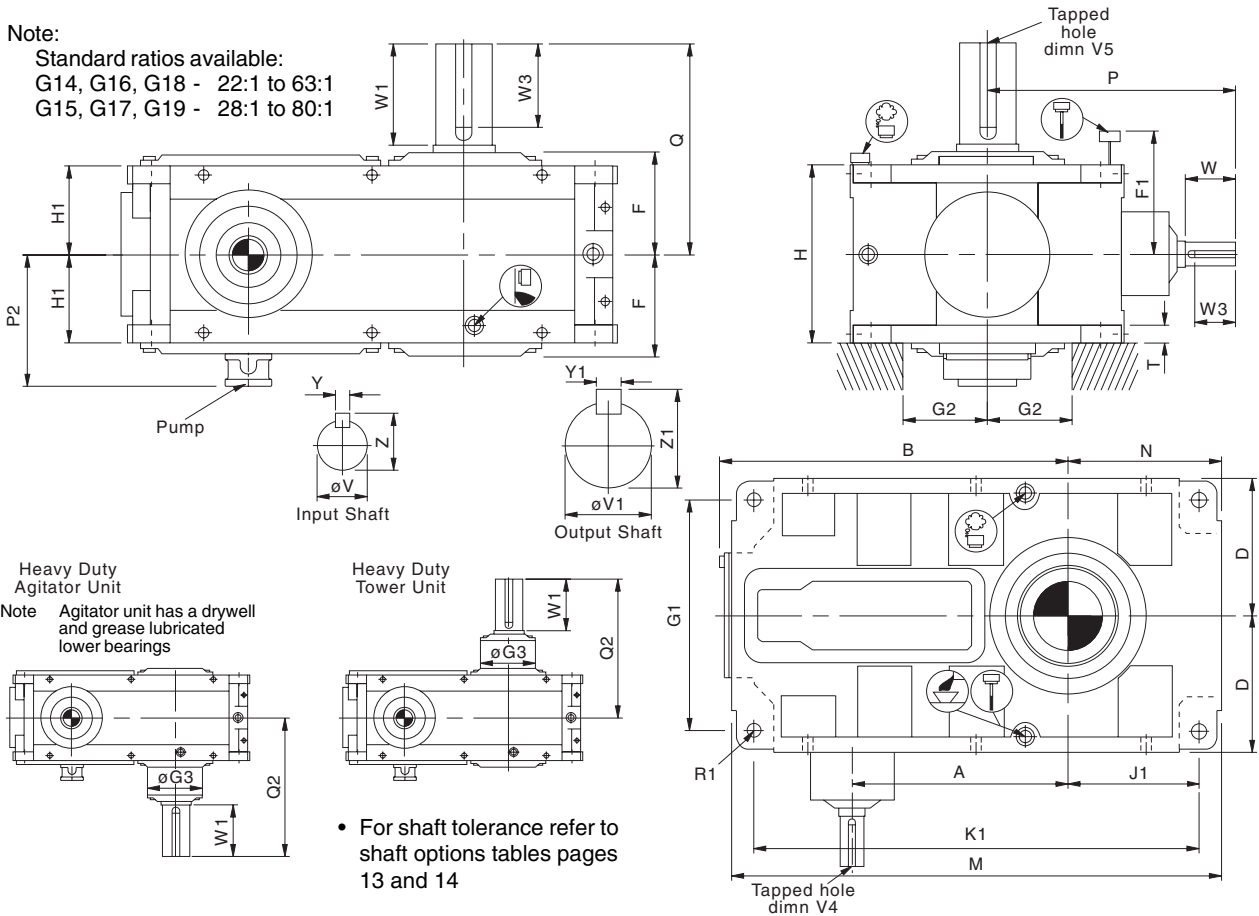
'J' Type Right Angle Shaft Dimensions Triple Reduction, Vertical

0204

G 3 0 R Triple Reduction 'J' Type Right Angle Units Vertical

Note:

Standard ratios available:
G14, G16, G18 - 22:1 to 63:1
G15, G17, G19 - 28:1 to 80:1



Unit Size	A	B	D	F	F1	G1	G2 (min)	G3	H	H1	J1	K1	M	N	P	P2	Q	Q2	R1	T
G14	12.80	21.81	9.06	6.97	15.35	15.35	5.31	9.06	11.81	5.91	10.24	29.53	32.28	11.61	15.55	9.29	14.17	18.70	4 x ø0.94	1.18
G15	14.37	23.39	9.06	6.97	15.35	15.35	5.31	10.24	11.81	5.91	8.66	29.53	32.28	10.04	15.55	9.29	14.57	19.49	4 x ø0.94	1.18
G16	16.93	28.66	11.81	8.86	20.28	19.92	6.89	11.81	14.96	7.48	12.80	38.19	41.73	14.57	20.08	11.22	18.11	23.43	4 x ø1.30	1.77
G17	19.09	30.83	11.81	8.86	20.28	19.92	6.89	13.39	14.96	7.48	10.63	38.19	41.73	12.40	20.08	11.22	18.90	24.21	4 x ø1.30	1.77
G18	22.44	37.52	15.16	11.42	27.56	25.83	8.07	14.57	19.69	9.84	11.06	44.33	48.82	13.31	25.59	13.58	23.62	29.92	4 x ø1.57	2.17
G19	25.00	40.08	15.16	11.42	27.56	25.83	8.07	15.75	19.69	9.84	13.78	49.61	54.09	16.02	25.59	13.58	25.59	32.09	4 x ø1.57	2.17
G21	30.12	64.17	18.31	13.39	29.53	28.74	10.04	19.69	23.62	11.81	15.55	59.65	65.16	18.31	34.06	15.75	27.56	36.42	4 x ø1.89	2.76

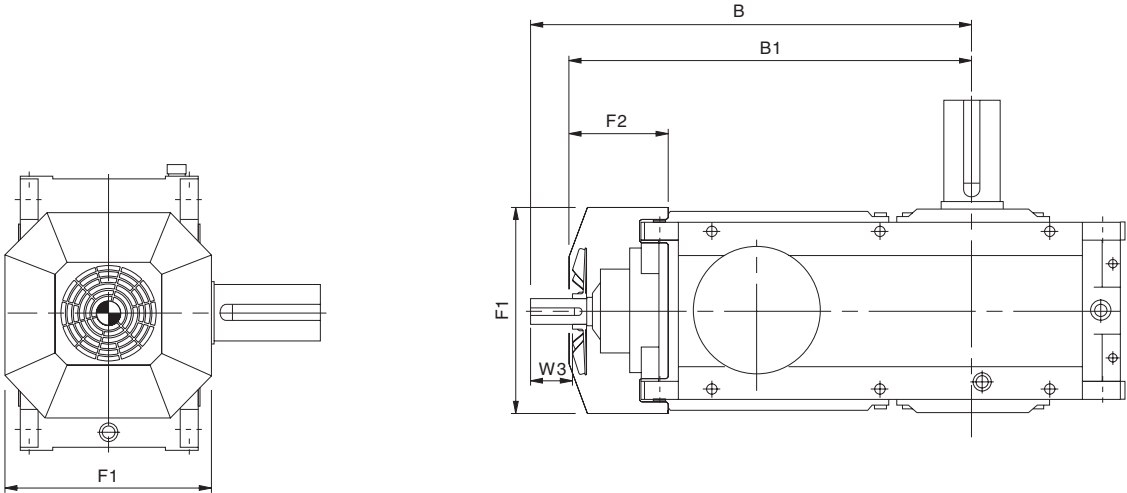
Unit Size	Input Shaft •						Output Shaft •					
	V	V4	W	W2	Y	Z	V1	V5	W1	W3	Y1	Z1
G14	1.5000	5/8 UNF x 1.25	3.94	3.00	0.3125	1.60	4.500	1 UNF x 2	7.09	6.50	1.00	4.94
G15	1.5000	5/8 UNF x 1.25	3.94	3.00	0.3125	1.60	5.000	1 UNF x 2	7.48	7.13	1.25	5.55
G16	1.8750	5/8 UNF x 1.25	5.51	4.13	0.500	2.10	6.000	1.25 UNF x 2.5	9.06	8.75	1.50	6.66
G17	1.8750	5/8 UNF x 1.25	5.51	4.13	0.500	2.10	6.750	1.25 UNF x 2.5	9.84	9.38	1.75	7.39
G18	3.0000	3/4 UNF x 1.62	6.30	5.25	0.750	3.33	7.500	1.5 UNF x 3	11.81	11.38	1.75	8.15
G19	3.0000	3/4 UNF x 1.62	6.30	5.25	0.750	3.33	8.250	1.5 UNF x 3	13.78	13.00	2.00	8.88
G21	4.0000	1 UNF x 2	8.27	7.50	1.00	4.44	8.500	1.5 UNF x 3	13.78	13.00	2.00	9.13

SERIES G

Fan Cooling Dimensions Right Angle Shaft

0204

Right Angle Shaft Units with Mechanical Fans



Triple Reduction Only

Unit Size	B	B1	F1	F2	W3 (useable shaft extension)
G14	28.35	25.59	13.78	6.50	2.95
G15	29.92	27.17	13.78	6.50	2.95
G16	37.01	33.27	16.93	7.68	4.13
G17	39.17	35.43	16.93	7.68	4.13
G18	48.03	44.17	22.64	11.02	4.13
G19	50.59	46.73	22.64	11.02	4.13
G21	64.17	58.66	27.17	13.58	6.10

SERIES G

Hollow Output Shaft with Shrink Disc

0204

The gear unit is fitted with a 'shrink disc' device located on the hollow output shaft to provide a positive outer locking connection between gear unit and driven shaft. The 'shrink disc' is a friction device, without keys, which exerts an external clamping force on the hollow output shaft, thus establishing a mechanical shrink fit between the gear unit hollow shaft and driven shaft. 'Shrink disc' capacities have ample margins in dealing with transmitted torques and external loading imposed on gear units.

WORKING PRINCIPLE

The 'shrink disc' consists of a locking collar, a tapered inner ring and locking screws. By tightening the locking screws, the locking collar and tapered inner ring are pulled together, exerting radial forces on the inner ring, thus creating a positive friction connection between hollow shaft and driven shaft.

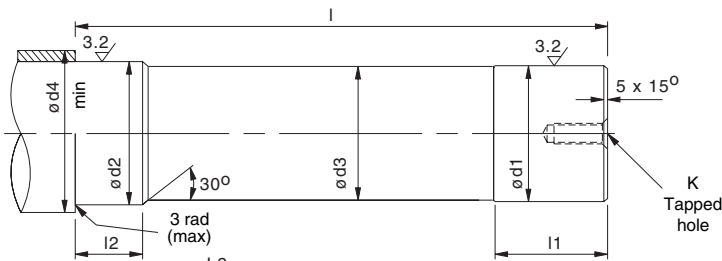
As the tapered surfaces of locking collar and inner ring are lubricated with Molykote 321R or similar and the taper angle is not self locking, locking collar will not seize on the inner ring and can be released easily when removal is necessary.

When the shrink disc is clamped in position the high contact pressures between tapered surfaces and screw heads and their seatings ensure hermetic sealing and eliminate the possibility of fretting corrosion.

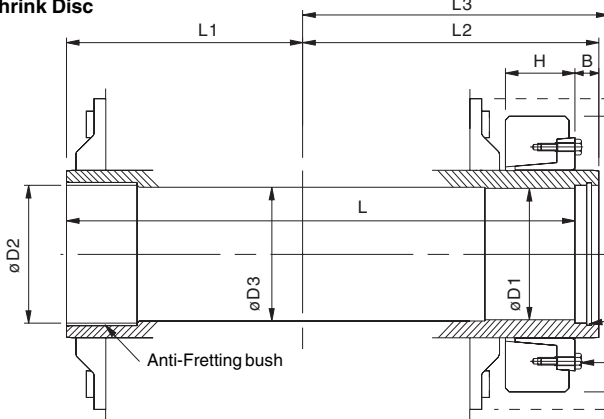
UNIT SIZE	CUSTOMERS SHAFT								SHRINK DISC						
	ød1	ød2	ød3	ød4	I	I1	I2	K	Type	B	øD	øG	H	M	Torque Ta (lb.in)
14	3.7402 3.7393	3.9370 3.9361	3.72	4.5	16.25	2.16	2.00	1 UNF x2	HSD 120-81-95	0.87	4.72	7.76	2.09	M12	1071
15	4.3307 4.3087	4.5276 4.5267	4.31	5.13	16.457	2.36	2.38	1 UNF x2	HSD 140-81-110	0.87	5.51	9.06	2.28	M14	1708
16	4.9213 4.9203	5.1181 5.1171	4.90	5.75	20.87	2.75	2.75	1 UNF x2	HSD 160-81-125	1.10	6.30	11.92	2.68	M16	2611
17	5.7087 5.7077	5.9055 5.9045	5.69	6.62	21.457	3.50	3.50	1.25 UNF x2.5	HSD 180-81-145	1.10	7.09	12.60	3.35	M16	2611
18	6.2992 6.2983	6.6929 6.6914	6.28	7.25	27.00	3.50	3.50	1.25 UNF x2.5	HSD 200-81-160	1.18	7.87	13.39	3.35	M16	2611
19	6.6923 6.6914	7.0861 7.0851	6.67	7.62	27.75	4.13	4.13	1.25 UNF x2.5	HSD 220-81-170	1.18	8.66	14.57	4.06	M20	5045
21	8.2677	8.6614	8.25	8.86	32.28	5.12	4.13	1.25 UNF x2.5	HSD 260-81-210	1.18	10.24	16.93	4.69	M20	5045

UNIT SIZE	HOLLOW SHAFT								END PLATE						
	øD1	øD2	øD3	L	L1	L2	L3	C	C1	ød5	ød6	øK1	M crs	P	Circlip
14	3.7415 3.7402	3.940 3.937	3.78	16.34	7.09	10.04	10.87	0.79	0.394 0.386	3.927 3.917	3.07	1.03	2.165	M12	D1300-1000
15	4.3321 4.3307	4.531 4.528	4.37	16.54	7.09	10.24	10.87	0.79	0.394 0.386	4.518 4.508	3.54	1.03	2.559	M12	D1300-1150
16	4.9228 4.9213	5.122 5.118	4.96	20.98	9.06	12.80	13.31	0.98	0.472 0.465	5.108 5.098	4.06	1.03	2.756	M16	D1300-1300
17	5.7102 5.7087	5.909 5.906	5.79	21.57	9.06	13.39	13.70	0.98	0.472 0.465	5.896 5.886	4.72	1.30	3.346	M16	D1300-1500
18	6.3008 6.2992	6.697 6.693	6.38	27.09	11.81	16.14	17.40	0.98	0.472 0.465	6.683 6.673	5.31	1.30	3.937	M16	D1300-1700
19	6.6945 6.6929	7.091 7.087	6.77	27.87	11.81	16.93	17.40	0.98	0.472 0.465	7.274 7.264	5.91	1.30	4.331	M16	D1300-1850
21	8.2695 8.2677	8.6614	8.35	32.44	13.78	19.69	20.08	1.10	0.551 0.543	8.652 8.642	6.69	1.30	5.118	M20	D1300-2200

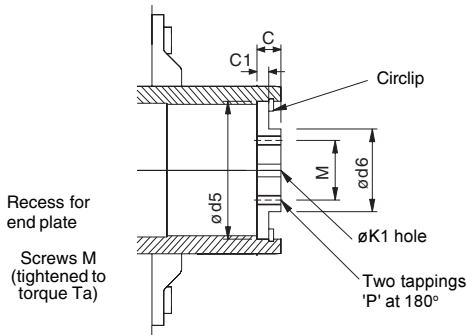
Customers Shaft



Hollow Shaft and Shrink Disc



End Plate (If required)



0203

Advantages with Kibo taper bushes

- Simple design
- Easy to mount
- Easy to dismount, built in puller
- Tapered bushes assure a safe mounting
- Reduces risk for shearing of key
- Bushings for different bore dimensions are available

The Kibo bush kit comprises of: bushes, locking nuts, end plate, fastening bolt, shaft key and protective cover.

Mounting

For correct mounting of speed reducer it is important that both bushings get the same squeezing force.

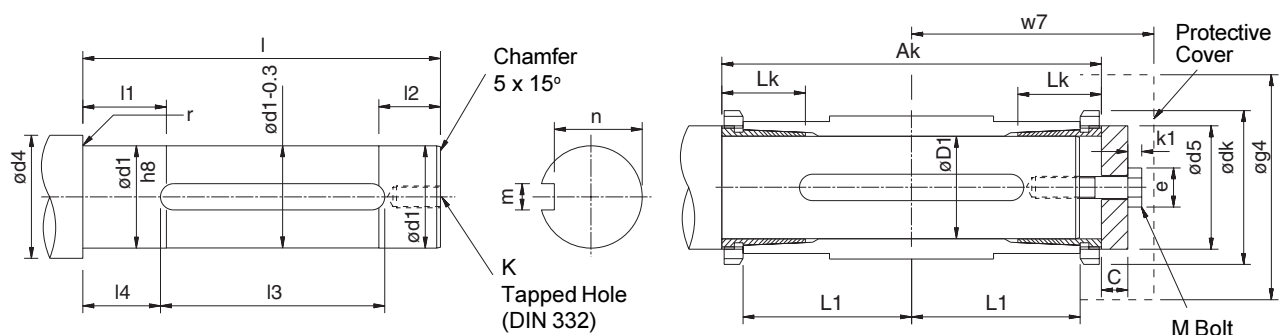
1. Mount the inner bushing with the nut in its outer position. The bushing should be mounted against the shoulder or circlip. The shoulder should not exceed inside diameter of nut.
2. Fit the key in the keyway.
3. Mount the reducer on the machine-shaft and press it against the inner bushing
4. Mount the outer bushing with the nut in it's inner position. Check that the bushing is not squeezed but the nut is in contact with the shaft sleeve.
5. Mount the end plate with its fixing bolt. Tighten the bolt with correct torque. The inner bushing is now locked.
6. Loosen the bolt, so the outer bushing is loose. Turn the nut on the bushing, in it's outer position.
7. Tighten the bolt once again with correct torque. The outer bushing is now locked.
The thicker end plate may be changed to the thinner one in order to gain more space at the hollow shaft end. The thinner end plate should be tightened with a torque of 25% of the value given in the table below.
8. Screw the nuts against the hollow shaft by hand, mounting is completed.
9. Fit protective cover.

Dismounting

- Loosen the bolt and take away the end plate.
- Pull out the outer bushing with the nut, by turning the nut with an adequate tool. Take out the bushing.
- Press the reducer from the inner bushing with the nut, dismounting is completed.

NOTE:

If reducer is mounted in a corrosive environment, ensure machine shaft bushings and nuts are oiled or greased.
Do NOT use grease based on molybdendisulfide.



SERIES G

KIBO Bushes

0203

Unit Size	Customers Shaft											
	ød1	ød4		l	l1	l2	l3	l4	m	n	K	r (max)
		min	max									
14	3.688	4.01	4.17	15.08	2.56	1.85	7.13	4.41	3.197	0.875	1"UNC x 2	0.08
	3.500	3.82							3.000	0.875	1"UNC x 2	
	3.313	3.63							2.816	0.875	3/4"UNCx1.25	
	3.250	3.57							2.704	0.750	3/4"UNCx1.25	
15	4.250	4.57	4.96	15.16	2.95	2.13	6.69	4.69	3.690	1.000	1"UNC x 2	0.08
	3.938	4.26							3.373	1.000	1"UNC x 2	
	3.750	4.07							3.261	0.875	1"UNC x 2	
	3.563	3.88							3.070	0.875	1"UNC x 2	
16	4.875	5.28	5.35	19.02	3.07	2.01	9.45	5.35	4.169	1.250	1"UNC x 2	0.10
	4.750	5.15							4.041	1.250	1"UNC x 2	
	4.500	4.90							3.944	1.000	1"UNC x 2	
	4.375	4.78							3.817	1.000	1"UNC x 2	
17	5.500	5.98	6.30	19.21	4.49	3.39	10.63	4.84	4.803	1.250	1-1/4UNC x 2.5	0.12
	5.313	5.79							4.486	1.250	1"UNC x 2	
	4.938	5.42							4.232	1.250	1"UNC x 2	
	4.750	5.23							4.041	1.250	1"UNC x 2	
18	6.250	6.73	6.89	24.69	3.35	2.17	12.99	6.50	5.409	1.500	1-1/4UNC x 2.5	0.12
	5.939	6.42							5.091	1.500	1-1/4UNC x 2.5	
	5.250	5.73							4.803	1.500	1-1/4UNC x 2.5	
19	Consult our Application Engineers											
21	Consult our Application Engineers											

Unit Size	Hollow Shaft							End Plate					Cover			
	øD1	Kit Number	Column 10 Entry	ødk	L1	Ak	Lk	ød5	C	Fixing Bolt			Tightening Torque lb.in	øg4	w7	
										M	e	k1				
14	3.688	C38794-S5	5	5.71	7.09	15.91	2.52	4.33	0.94	1" UNC	1.73	0.61	2650	11.02	10.87	
	3.500	C38794-S6	6							3/4"UNC	1.52	0.56				2300
	3.313	C38794-S7	7													
	3.250	C38794-S8	8													
15	4.250	C38874-S6	6	6.50	7.09	15.98	2.95	5.12	0.39	1" UNC	1.73	0.61	2875	11.02	10.87	
	3.938	C38874-S7	7													
	3.750	C38874-S8	8													
	3.563	C38874-S9	9													
16	4.875	C38914-S5	5	7.09	9.06	20.16	3.07	5.51	0.39	1" UNC	1.73	0.61	4710	13.78	13.11	
	4.750	C38914-S6	6													
	4.500	C38914-S7	7													
	4.375	C38914-S8	8													
17	5.500	C38954-S5	5	8.27	9.06	20.39	4.49	6.50	0.39	1-1/4UNC	2.17	0.78	6370	13.78	13.70	
	5.313	C38954-S6	6							1" UNC	1.73	0.61				4710
	4.938	C38954-S7	7													
	4.750	C38954-S8	8													
18	6.250	C38994-S4	4	9.06	11.81	25.98	3.35	7.09	0.55	1-1/4UNC	2.17	0.78	5550	18.50	17.40	
	5.939	C38994-S5	5													
	5.250	C38994-S6	6													
19	Consult our Application Engineers															
21	Consult our Application Engineers															

SERIES G

Cooling Coil Connections

0204

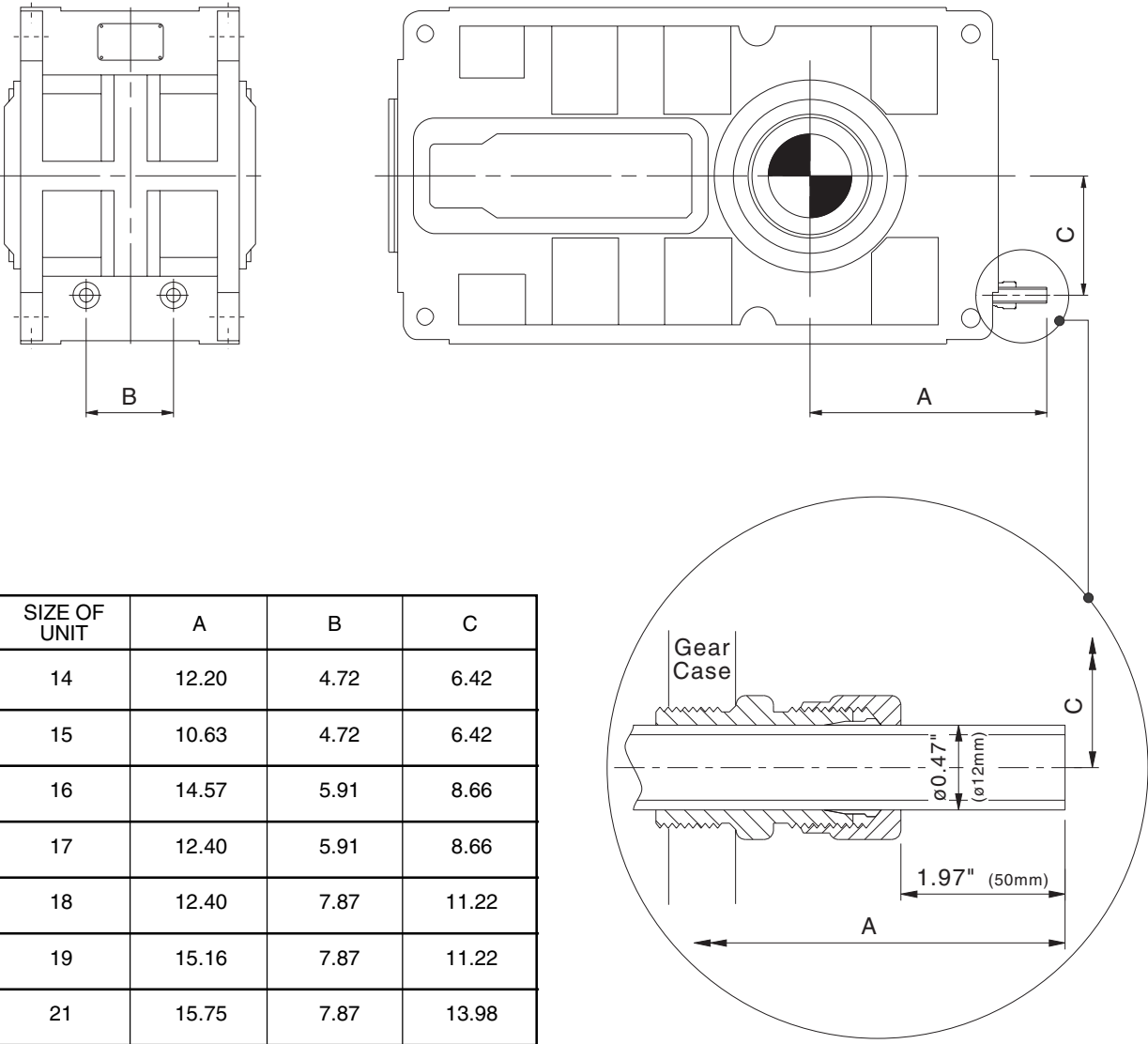
Cooling coils can be fitted to all unit types and handings.

Cooling coil connections for water inlet and outlet pipes are $\varnothing 0.47$ inches (12 mm) on all sizes.

The protruding cooling coil pipe can be connected to customers pipe work via a suitable straight coupling.

Water supply: Cooling coils are suitable for fresh, brackish or sea water with flow in either direction. Connections are therefore interchangeable.

For best performance, the water supply should be at 50°F / 54°F (10°C / 12°C) temperature and at a flow rate of 1.3 gallons / minute (5 liters / minute).



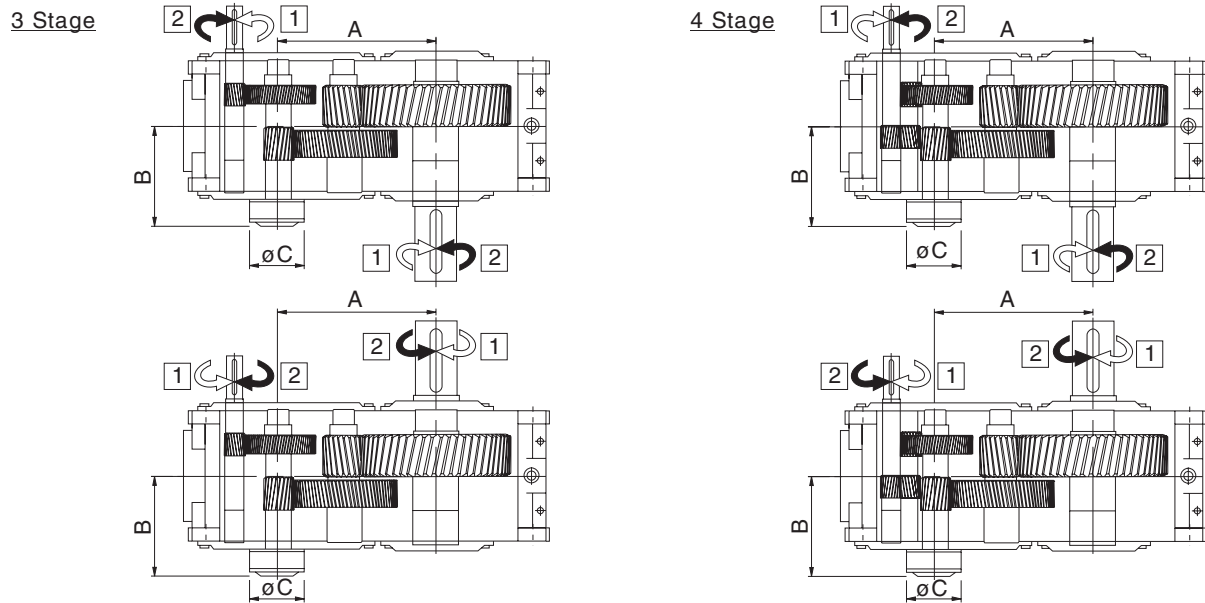
SERIES G

Backstops

0204

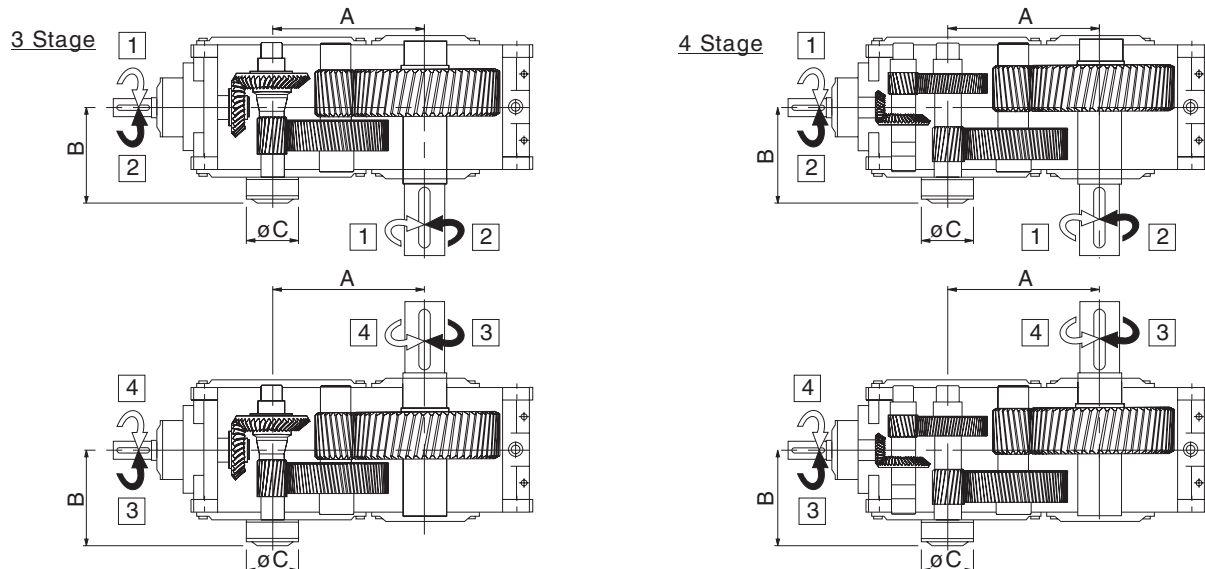
Externally mounted Backstops can be fitted to all Series G gear units, when required to operate in non-reversing drives. They are located on the helical pinion shaft and have adequate capacities to deal with full rated torques. All backstops are centrifugal lift off type. Changing the direction of locking rotation is a simple operation.

Parallel Shaft Units - Column 16 entry, shaft rotation shown



Right Angle Shaft Units - Column 16 entry, shaft rotation shown

For right angle units, if backstop position is required at opposite side of unit to outputshaft, column 16 entry must be 3 or 4 (see page 17)



Unit Size	A	B	ϕC	Backstop
G14	12.80	10.83	6.89	85-40
G15	14.37			
G16	16.93	13.39	8.27	120-50
G17	19.09			
G18	22.44	16.85	11.42	170-63
G19	25.00			
G21	30.12	19.69	12.20	200-63

Note: Torque limiting backstops with controllable tension release can be fitted to all Series G units (for details consult our Application Engineers).

SERIES G

Torque Arm

0204

Torque arms are available for all shaft mounted units with parallel or right angle shafts. They are supplied as optional extras and are secured to gear cases as shown below.

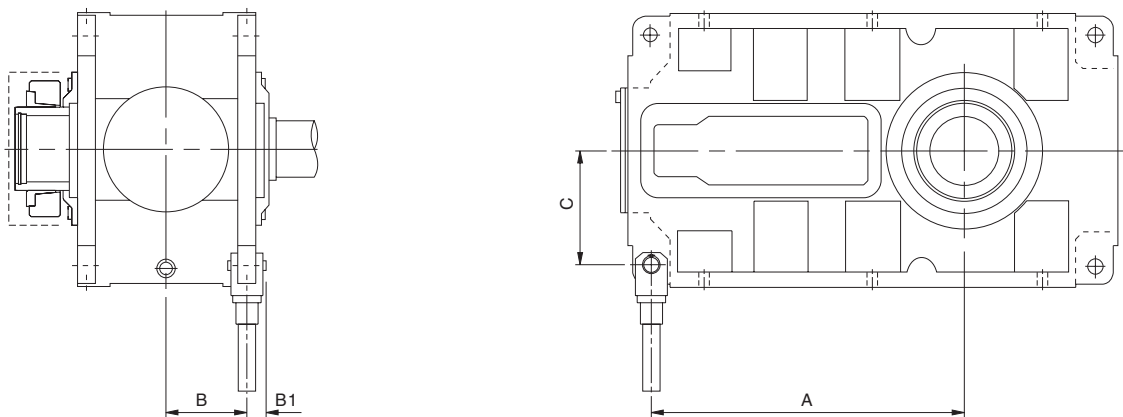
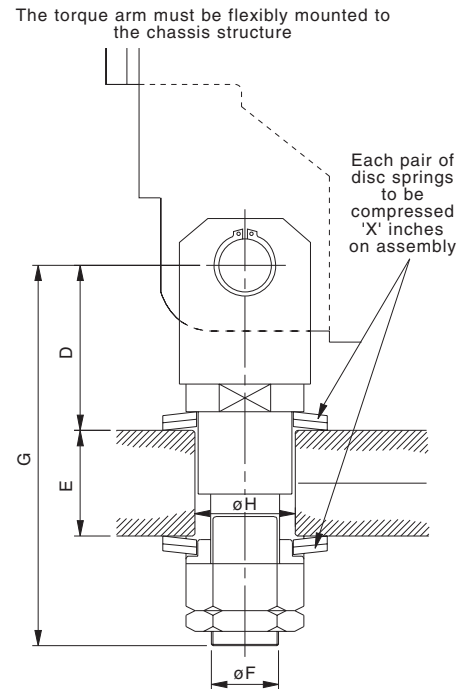
Torque arms must be secured to the chassis structure in a flexible mounting as indicated.

Shaft mounted units are designed to operate in the horizontal position. Reference must be made to our Application Engineers, with details, where units are required to operate in an inclined position.

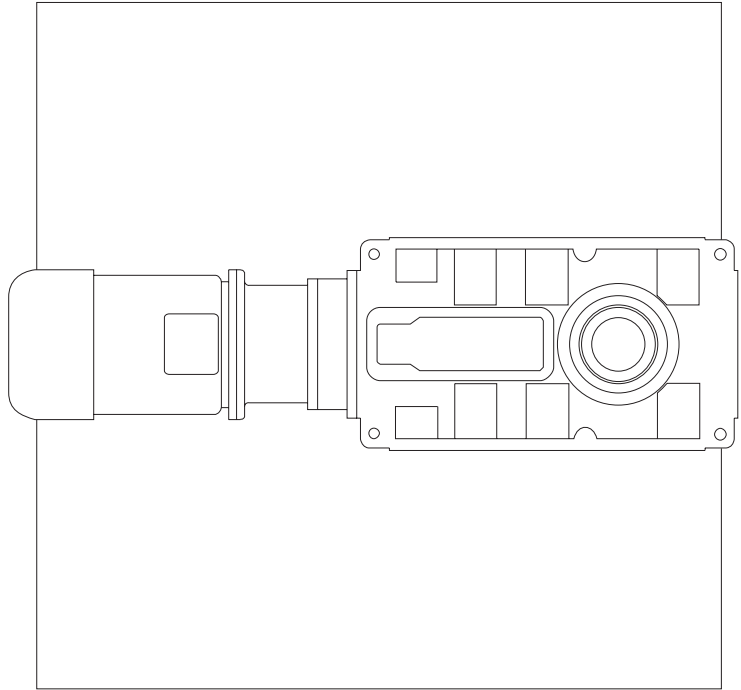
SHAFT MOUNTED UNITS FOR HIGH INERTIA DRIVE

When used on traverse drives with high inertia driven loads, eg crane drives (slewing, long travel and cross travel) bogie drives and selected high inertia load roller table drives, it is recommended that shaft mounted units should be fitted with shock absorbing Torque Arms. Consult our Application Engineers with specific application details.

It is recommended that the torque arm is fitted on the side of the unit adjacent to the driven machine.



SIZE OF UNIT	A	B	B1	C	D	E		F	G	Disc Spring Ref	X	H
						MIN	MAX					
14	19.29	5.31	2.17	7.68	3.74	1.57	2.36	M30	8.15	80 x 41 x 4	0.043	1.61
15	20.87											
16	25.39	6.57	2.56	9.96	4.92	1.97	2.95	M36	10.31	100 x 51 x 6	0.043	2.05
17	27.56											
18	33.27	8.74	3.15	12.91	5.91	2.76	4.13	M48	13.23	125 x 71 x 6	0.067	2.83
19	35.83											
21	Contact our Application Engineers											



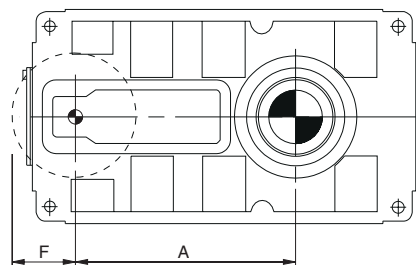
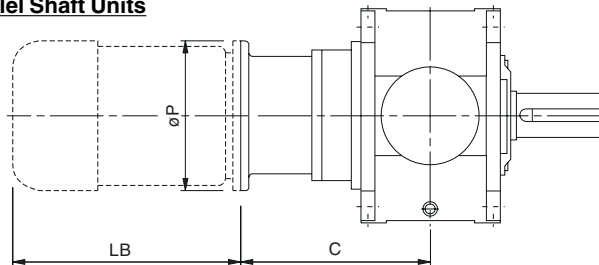
MOTORIZED SERIES G

SERIES G

Motorized Dimensions

9901

Parallel Shaft Units



Double Reduction

NEMA Motors							
Unit Size	Motor Size	Column 13 Entry	A	C	F	LB (max)	øP
G1420	324TC/326TC	R	12.80	17.52	9.02	25.87	13.37
	364TC/365TC	S	12.80	18.15	9.02	30.91	13.37
	404TC/405TC	T	12.80	19.52	9.02	33.03	13.87
G1520	324TC/326TC	R	14.37	17.52	9.02	25.87	13.37
	364TC/365TC	S	14.37	18.15	9.02	30.91	13.37
	404TC/405TC	T	14.37	19.52	9.02	33.03	13.87
G1620	364TC/365TC	S	16.93	20.31	15.08	30.91	13.37
	404TC/405TC	T	16.93	21.69	15.08	33.03	13.87
	444TC/445TC	U	16.93	22.94	15.08	37.44	13.87
G1720	364TC/365TC	S	19.09	20.31	15.08	30.91	13.37
	404TC/405TC	T	19.09	21.69	15.08	33.03	13.87
	444TC/445TC	U	19.09	22.94	15.08	37.44	13.87

IEC Motors					
Motor Size	Column 13 Entry	C	F	LB (max)	øP
200	D	16.85	9.02	25.63	15.75
225	E	18.03	9.02	30.94	17.72
250	F	18.03	10.83	33.03	21.65
280	G	18.03	10.83	37.44	21.65
200	D	16.85	9.02	25.63	15.75
225	E	18.03	9.02	30.94	17.72
250	F	18.03	10.83	33.03	21.65
280	G	18.03	10.83	37.44	21.65
250	F	20.20	11.73	33.03	21.65
280	G	20.20	11.73	37.44	21.65
315	H	21.38	12.99	40.47	25.98

Triple and Quadruple Reduction

NEMA Motors							
Unit Size	Motor Size	Column 13 Entry	A	C	F	LB (max)	øP
G1430 / G1440	254TC/256TC	P	17.13	14.69	6.69	21.50	10.00
	284TC/286TC	Q	17.13	15.32	6.69	23.82	11.25
	324TC/326TC	R	17.13	15.94	6.69	25.87	13.37
	364TC/365TC	S	17.13	16.57	6.69	30.91	13.37
	404TC/405TC	T	17.13	17.94	6.97	33.03	13.87
G1530 / G1540	254TC/256TC	P	18.70	14.69	6.69	21.50	10.00
	284TC/286TC	Q	18.70	15.32	6.69	23.82	11.25
	324TC/326TC	R	18.70	15.94	6.69	25.87	13.37
	364TC/365TC	S	18.70	16.57	6.69	30.91	13.37
	404TC/405TC	T	18.70	17.94	6.97	33.03	13.87
G1630 / G1640	254TC/256TC	P	22.44	17.25	6.69	21.50	10.00
	284TC/286TC	Q	22.44	17.88	6.69	23.82	11.25
	324TC/326TC	R	22.44	18.50	6.69	25.87	13.37
	364TC/365TC	S	22.44	19.13	6.69	30.91	13.37
	404TC/405TC	T	22.44	20.50	6.97	33.03	13.87
	444TC/445TC	U	22.44	21.76	8.39	37.44	16.75
G1730 / G1740	254TC/256TC	P	24.61	17.25	6.69	21.50	10.00
	284TC/286TC	Q	24.61	17.88	6.69	23.82	11.25
	324TC/326TC	R	24.61	18.50	6.69	25.87	13.37
	364TC/365TC	S	24.61	19.13	6.69	30.91	13.37
	404TC/405TC	T	24.61	20.50	6.97	33.03	13.87
	444TC/445TC	U	24.61	21.76	8.39	37.44	16.75
G1830 / G1840	254TC/256TC	P	29.72	21.19	7.80	21.50	10.00
	284TC/286TC	Q	29.72	21.81	7.80	23.82	11.25
	324TC/326TC	R	29.72	22.44	7.80	25.87	13.37
	364TC/365TC	S	29.72	23.07	7.80	30.91	13.37
	404TC/405TC	T	29.72	24.44	7.80	33.03	13.87
	444TC/445TC	U	29.72	25.69	8.39	37.44	16.75
G1930 / G1940	254TC/256TC	P	32.28	21.19	7.80	21.50	10.00
	284TC/286TC	Q	32.28	21.81	7.80	23.82	11.25
	324TC/326TC	R	32.28	22.44	7.80	25.87	13.37
	364TC/365TC	S	32.28	23.07	7.80	30.91	13.37
	404TC/405TC	T	32.28	24.44	7.80	33.03	13.87
	444TC/445TC	U	32.28	25.69	8.39	37.44	16.75

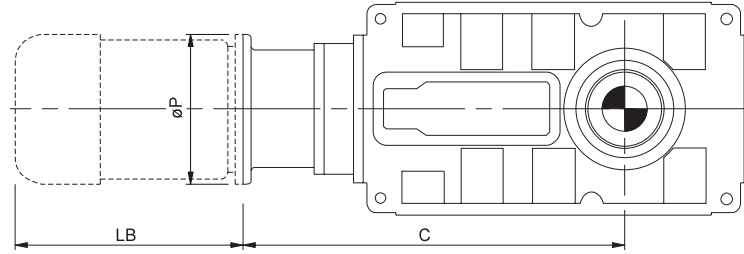
IEC Motors					
Motor Size	Column 13 Entry	C	F	LB (max)	øP
132	A	14.09	6.69	16.54	11.81
160	B	15.28	6.89	21.26	13.78
180	C	15.28	6.89	23.54	13.78
200	D	15.28	7.87	25.63	15.75
225	E	16.46	8.86	30.94	17.72
250	F	16.46	10.83	33.03	21.65
132	A	14.09	6.69	16.54	11.81
160	B	15.28	6.89	21.26	13.78
180	C	15.28	6.89	23.54	13.78
200	D	15.28	7.87	25.63	15.75
225	E	16.46	8.86	30.94	17.72
250	F	16.46	10.83	33.03	21.65
132	A	16.65	6.69	16.54	11.81
160	B	17.83	6.89	21.26	13.78
180	C	17.83	6.89	23.54	13.78
200	D	17.83	7.87	25.63	15.75
225	E	19.02	8.86	30.94	17.72
250	F	19.02	10.83	33.03	21.65
280	G	19.02	10.83	37.44	21.65
315	H	20.20	12.99	40.47	25.98
132	A	16.65	6.69	16.54	11.81
160	B	17.83	6.89	21.26	13.78
180	C	17.83	6.89	23.54	13.78
200	D	17.83	7.87	25.63	15.75
225	E	19.02	8.86	30.94	17.72
250	F	19.02	10.83	33.03	21.65
280	G	19.02	10.83	37.44	21.65
315	H	20.20	12.99	40.47	25.98
180	C	21.77	7.80	23.54	13.78
200	D	21.77	7.87	25.63	15.75
225	E	22.95	8.86	30.94	17.72
250	F	22.95	10.83	33.03	21.65
280	G	22.95	10.83	37.44	21.65
315	H	24.13	12.99	40.47	25.98
180	C	21.77	7.80	23.54	13.78
200	D	21.77	7.87	25.63	15.75
225	E	22.95	8.86	30.94	17.72
250	F	22.95	10.83	33.03	21.65
280	G	22.95	10.83	37.44	21.65
315	H	24.13	12.99	40.47	25.98

SERIES G

Motorized Dimensions

9901

Right Angle Shaft Units



Triple Reduction

NEMA Motors					
Unit Size	Motor Size	Column 13 Entry	C	LB (max)	øP
G1430	254TC/256TC	P	32.22	21.50	10.00
	284TC/286TC	Q	32.84	23.82	11.25
	324TC/326TC	R	33.46	25.87	13.37
	364TC/365TC	S	34.09	30.91	13.37
	404TC/405TC	T	35.46	33.03	13.87
G1530	254TC/256TC	P	33.79	21.50	10.00
	284TC/286TC	Q	34.41	23.82	11.25
	324TC/326TC	R	35.04	25.87	13.37
	364TC/365TC	S	35.67	30.91	13.37
	404TC/405TC	T	37.04	33.03	13.87
G1630	324TC/326TC	R	42.13	25.87	13.37
	364TC/365TC	S	42.75	30.91	13.37
	404TC/405TC	T	44.13	33.03	13.87
	444TC/445TC	U	45.38	37.44	16.75
G1730	324TC/326TC	R	44.33	25.87	13.37
	364TC/365TC	S	44.92	30.91	13.37
	404TC/405TC	T	46.29	33.03	13.87
	444TC/445TC	U	47.54	37.44	16.75
G1830	364TC/365TC	S	53.78	30.91	13.37
	404TC/405TC	T	55.15	33.03	13.87
	444TC/445TC	U	56.40	37.44	16.75
G1930	364TC/365TC	S	56.33	30.91	13.37
	404TC/405TC	T	57.71	33.03	13.87
	444TC/445TC	U	58.96	37.44	16.75

IEC Motors				
Motor Size	Column 13 Entry	C	LB (max)	øP
132	A	31.61	16.54	11.81
160	B	32.80	21.26	13.78
180	C	32.80	23.54	13.78
200	D	32.80	25.63	15.75
225	E	33.98	30.94	17.72
250	F	33.98	33.03	21.65
280	G	33.98	37.44	21.65
132	A	33.19	16.54	11.81
160	B	34.37	21.26	13.78
180	C	34.37	23.54	13.78
200	D	34.37	25.63	15.75
225	E	35.55	30.94	17.72
250	F	35.55	33.03	21.65
280	G	35.55	37.44	21.65
200	D	41.46	25.63	15.75
225	E	42.64	30.94	17.72
250	F	42.64	33.03	21.65
280	G	42.64	37.44	21.65
315	H	43.82	40.47	25.98
200	D	43.62	25.63	15.75
225	E	44.80	30.94	17.72
250	F	44.80	33.03	21.65
280	G	44.80	37.44	21.65
315	H	45.98	40.47	25.98
225	E	53.66	30.94	17.72
250	F	53.66	33.03	21.65
280	G	53.66	37.44	21.65
315	H	54.84	40.47	25.98
225	E	56.22	30.94	17.72
250	F	56.22	33.03	21.65
280	G	56.22	37.44	21.65
315	H	57.40	40.47	25.98

Quadruple Reduction

NEMA Motors					
Unit Size	Motor Size	Column 13 Entry	C	LB (max)	øP
G1640	254TC/256TC	P	41.86	21.50	10.00
	284TC/286TC	Q	42.48	23.82	11.25
	324TC/326TC	R	43.11	25.87	13.37
	364TC/365TC	S	43.74	30.91	13.37
	404TC/405TC	T	45.11	33.03	13.87
G1740	254TC/256TC	P	44.03	21.50	10.00
	284TC/286TC	Q	44.65	23.82	11.25
	324TC/326TC	R	45.28	25.87	13.37
	364TC/365TC	S	45.90	30.91	13.37
	404TC/405TC	T	47.28	33.03	13.87
G1840	254TC/256TC	P	53.67	21.50	10.00
	284TC/286TC	Q	54.30	23.82	11.25
	324TC/326TC	R	54.96	25.87	13.37
	364TC/365TC	S	55.55	30.91	13.37
	404TC/405TC	T	56.92	33.03	13.87
G1940	254TC/256TC	P	56.25	21.50	10.00
	284TC/286TC	Q	56.85	23.82	11.25
	324TC/326TC	R	57.52	25.87	13.37
	364TC/365TC	S	58.11	30.91	13.37
	404TC/405TC	T	59.48	33.03	13.87
G1940	444TC/445TC	U	60.73	37.44	16.75

IEC Motors				
Motor Size	Column 13 Entry	C	LB (max)	øP
132	A	41.26	16.54	11.81
160	B	42.44	21.26	13.78
180	C	42.44	23.54	13.78
200	D	42.44	25.63	15.75
225	E	43.62	30.94	17.72
250	F	43.62	33.03	21.65
132	A	43.82	16.54	11.81
160	B	44.61	21.26	13.78
180	C	44.61	23.54	13.78
200	D	44.61	25.63	15.75
225	E	45.79	30.94	17.72
250	F	45.79	33.03	21.65
160	B	54.25	21.26	13.78
180	C	54.25	23.54	13.78
200	D	54.25	25.63	15.75
225	E	55.43	30.94	17.72
250	F	55.43	33.03	21.65
280	G	55.43	37.44	21.65
315	H	56.61	40.47	25.98
160	B	56.81	21.26	13.78
180	C	56.81	23.54	13.78
200	D	56.81	25.63	15.75
225	E	57.99	30.94	17.72
250	F	57.99	33.03	21.65
280	G	57.99	37.44	21.65
315	H	59.17	40.47	25.98

SERIES G

Shipping Specification

0204

UNIT WEIGHT (LBS)

Gear Unit	No of Reductions	Output Shaft	Unit Size						
			14	15	16	17	18	19	21
Parallel Shaft	2 Stage	Standard	794	915	1742	1995	3373	4134	6950
		Shaft Mount	750	849	1664	1885	3164	3869	6500
		Agitator	882	1003	1852	2160	3593	4398	7390
	3 Stage	Standard	827	948	1775	2028	3417	4178	7060
		Shaft Mount	783	882	1698	1918	3208	3913	6620
		Agitator	915	1036	1885	2194	3638	4442	7500
	4 Stage	Standard	849	970	1808	2061	3483	4244	7170
		Shaft Mount	805	893	1731	1951	3274	3979	6730
		Agitator	937	1058	1918	2227	3704	4508	7610
Right Angle Shaft	3 Stage	Standard	871	992	1852	2072	3616	4376	7390
		Shaft Mount	827	926	1554	1962	3406	4112	6950
		Agitator	959	1080	1962	2238	3836	4641	7830
	4 Stage	Standard	-	-	1852	2072	3571	4332	7280
		Shaft Mount	-	-	1554	1554	3362	4067	6840
		Agitator	-	-	1962	1962	3792	4597	7720

Mass excludes: lubricant, cooling fans or coil.

UNIT VOLUME (ft³)

Gear Unit	No of Reductions	Output Shaft	Unit Size						
			14	15	16	17	18	19	21
Parallel Shaft	2 Stage	Standard	9.7	9.9	20.4	20.9	39.6	45.8	73.7
		Shaft Mount	7.1	7.1	14.8	14.8	28.6	31.6	62.0
		Agitator	10.9	11.2	22.5	22.9	43.5	50.2	83.1
	3 Stage	Standard	9.1	9.3	19.7	20.2	38.2	44.1	72.6
		Shaft Mount	6.5	6.5	14.0	14.0	27.2	30.0	60.9
		Agitator	10.3	10.6	21.8	22.2	42.1	48.6	82.0
	4 Stage	Standard	9.1	9.3	19.7	20.2	38.2	44.1	72.6
		Shaft Mount	6.5	6.5	14.0	14.0	27.2	30.0	60.9
		Agitator	10.3	10.6	21.8	22.2	42.1	48.6	82.0
Right Angle Shaft	3 Stage	Standard	9.3	9.4	20.1	20.7	39.4	45.2	74.8
		Shaft Mount	7.5	7.6	16.3	16.7	31.4	35.1	61.1
		Agitator	10.7	11.1	22.8	23.3	44.5	50.8	87.0
	4 Stage	Standard	-	-	20.5	21.1	40.5	46.4	75.9
		Shaft Mount	-	-	16.6	17.1	32.3	36.1	62.0
		Agitator	-	-	23.2	23.8	45.8	52.2	88.3

SERIES G

Notes

SERIES G

Notes

SERIES G

Notes

IMPORTANT

General - The following information is important in ensuring safety. It **must** be brought to the attention of personnel involved in the selection of power transmission equipment, those responsible for the design of the machinery in which it is to be incorporated and those involved in its installation, use and maintenance.

Our power transmission equipment will operate safely provided it is selected, installed, used and maintained properly. As with any power transmission equipment **proper precautions must** be taken as indicated in the following paragraphs, to ensure safety.

Potential Hazards - these are **not** necessarily listed in any order of severity as the degree of danger varies in individual circumstances. It is important therefore that the list is studied in its entirety:

- 1) Fire/Explosion
 - (a) Oil mists and vapor are generated within gear units. It is therefore dangerous to use naked lights in the proximity of gearbox openings, due to the risk of fire or explosion.
 - (b) In the event of fire or serious overheating (over 570 °F (300°C)), certain materials (rubber, plastics, etc.) may decompose and produce fumes. Care should be taken to avoid exposure to the fumes, and the remains of burned or overheated plastic/rubber materials should be handled with rubber gloves.
 - 2) Guards - Rotating shafts and couplings must be guarded to eliminate the possibility of physical contact or entanglement of clothing. It should be of rigid construction and firmly secured.
 - 3) Noise - High speed gearboxes and gearbox driven machinery may produce noise levels which are damaging to the hearing with prolonged exposure. Ear plugs should be provided for personnel in these circumstances. Reference should be made to state and federal regulations for reducing exposure of employed persons to noise.
 - 4) Lifting - Where provided (on larger units) only the lifting points or eyebolts must be used for lifting operations (see maintenance manual or general arrangement drawing for lifting point positions). Failure to use the lifting points provided may result in personal injury and/or damage to the product or surrounding equipment. Keep clear of raised equipment.
 - 5) Lubricants and Lubrication
 - (a) Prolonged contact with lubricants can be detrimental to the skin. The manufacturer's instruction must be followed when handling lubricants.
 - (b) The lubrication status of the equipment must be checked before commissioning. Read and carry out all instructions on the lubricant plate and in the installation and maintenance literature. Heed all warning tags. Failure to do so could result in mechanical damage and in extreme cases risk of injury to personnel.
 - 6) Electrical Equipment - Observe hazard warnings on electrical equipment and isolate power before working on the gearbox or associated equipment, in order to prevent the machinery being started.
 - 7) Installation, Maintenance and Storage
 - (a) In the event that equipment is to be held in storage, for a period exceeding 6 months, prior to installation or commissioning, our Application Engineers must be consulted regarding special preservation requirements. Unless otherwise agreed, equipment must be stored in a building protected from extremes of temperature and humidity to prevent deterioration.
 - 8) Hot Surfaces and Lubricants
 - (a) During operation, gear units may become sufficiently hot to cause skin burns. Care must be taken to avoid accidental contact.
 - (b) After extended running the lubricant in gear units and lubrication systems may reach temperatures sufficient to cause burns. Allow equipment to cool before servicing or performing adjustments.
 - 9) Selection and Design
 - (a) Where gear units provide a backstop facility, ensure that back-up systems are provided if failure of the backstop device would endanger personnel or result in damage.
 - (b) The driving and driven equipment must be correctly selected to ensure that the complete machinery installation will perform satisfactorily, avoiding system critical speeds, system torsional vibration, etc.
 - (c) The equipment must not be operated in an environment or at speeds, powers, torques or with external loads beyond those for which it was designed.
 - (d) As improvements in design are being made continually the contents of this catalog are not to be regarded as binding in detail, and drawings and capacities are subject to alterations without notice.
- The above guidance is based on the current state of knowledge and our best assessment of the potential hazards in the operation of the gear units.
- (b) External gearbox components may be supplied with preservative materials applied, in the form of a "waxed" tape overwrap or wax film preservative. Gloves should be worn when removing these materials. The former can be removed manually, the latter using white spirit as a solvent.

Preservatives applied to the internal parts of the gear units do not require removal prior to operation.
- The rotating components (gears and shafts) must be turned a few revolutions once a month (to prevent bearings brinelling).

SERIES G

Contact Details

AUSTRALIA

David Brown Gear Industries Ltd
13-19 Franklin Avenue
Bulli, NSW 2516
Australia
Tel: +61 2 4283 0300
Fax: +61 2 4283 0333

AUSTRIA

Benzler Antriebstechnik Ges mbH
Urnenhainweg 7
AT-4050 Traun
Austria
Tel: +43 7 229 618 91
Fax: +43 7 229 618 84

BELGIUM

Benzlers Belgium
Contact the Northern European Service Centre (Netherlands)
Tel: +32 25 82 59 22
Fax: +32 25 82 68 47

CANADA

David Brown Radicon Inc
975 Dillingham Road
Pickering, Ontario
L1W 3B2
Canada
Tel: +01 905 420 4141
Fax: +01 905 420 9513

DENMARK

Benzler Transmission A/S
Hammerholmen 39
DK-2650 Hvidovre
Denmark
Tel: +45 36 34 03 00
Fax: +45 36 77 02 42

FINLAND

Oy Benzler AB
PB 3
FI 02211 Espoo
Finland
Tel: +358 9 8870 630
Fax: +358 9 8870 631

FRANCE

Benzler France
Contact the Northern European Service Centre (Netherlands)
Tel: +33 130 32 79 00
Fax: +33 130 32 80 40

David Brown Transmissions France SA

42 Avenue du Progrès, BP 149
69686 Chassieu Cedex
France
Tel: +33 4 72 47 61 50
Fax: +33 4 72 47 61 69

DSN

9 rue de la Verrerie, BP 135
ZI Le Fontanil Cedex
38521 El Fontanil
France
Tel: +33 4 76 75 66 83
Fax: +33 4 76 75 57 99

WECO

33 Rue Henri-Lebert, BP 48
68801 Thann Cedex
France
Tel: +33 3 89 37 01 13
Fax: +33 3 89 37 39 36

GERMANY

Benzler Germany
Contact the Northern European Service Centre (Netherlands)
Tel: 0800 350 40 00
Fax: 0800 350 40 01

HUNGARY

Benzler Antriebstechnik Ges mbH
Urnenhainweg 7
AT-4050 Traun
Austria
Tel: +43 7 229 618 91
Fax: +43 7 229 618 84

ITALY

Benzler Ferri SpA
Via F.lli Rosselli 16
IT 42019 Scandiano (RE)
Italy
Tel: +39 05 22 763314
Fax: +39 05 22 981758

MALAYSIA

Benzler (M) Sdn Bhd
No 24 Jalan TPJ 3
Taman Perindustrian
Jaya Subang
MY 47200 Selangor
Malaysia
Tel: +60 3 745 0668
Fax: +60 3 746 1436

NETHERLANDS

Northern European Service Centre & HQ Benzlers Netherland
Postbox 3303
NL 5902 Venlo RH
Netherlands
Tel: +31 773 245 900
Fax: +31 773 245 901

NORWAY

Textron Power Transmission (Norge)
Incorporating Benzler A/S & David Brown Hydraulics Norway A/S
PO Box 73 Leirdal
Stromsveien 372
NO- 1008 Oslo
Norway
Tel: +47 22 90 94 30
Fax: +47 22 90 94 11

PHILIPPINES

David Brown John Welsh Custom Build (Pty) Ltd
Unit 1207 One Magnificent Mile
San Miguel Ave, Ortigas Centre
Pasig City, Philippines
Tel: +63 6 32 910 0316
Fax: +63 6 32 910 0317

SINGAPORE

Benzler (FE) Pte Ltd
1 Clementi Loop
#03-08
Singapore 129808
Tel: +65 469 0777
Fax: +65 469 2083

SOUTH AFRICA

David Brown Gear Industries Ltd
PO Box 540, Benoni 1500
South Africa
Tel: +27 11 748 0000
Fax: +27 11 421 2963

David Brown Gear Industries Ltd
PO Box 36882
Chempet 7442
Cape Town
South Africa
Tel: +27 21 551 2163
Fax: +27 21 551 2164

David Brown Gear Industries Ltd
Natal Sales Office
39 Richmond Road
Pinetown 3600
Natal, South Africa
Tel: +27 31 700 3302
Fax: +27 31 700 1872

SWEDEN

AB Benzlers
PO Box 922
SE-251 09 Helsingborg
Sweden
Tel: +46 42 18 6800
Fax: +46 42 21 8803

THAILAND

David Brown Powauto (Thailand) Ltd
Level 5 Sermsrap Building
169/98 Ratchadapisek Road
Din Daeng, Bangkok 10320
Thailand
Tel: +66 2 276 9504/5/6
Fax: +66 2 276 9503

UNITED KINGDOM

Textron Power Transmission Corporate HQ
Park Road
Lockwood, Huddersfield
West Yorkshire. HD4 5DD
Tel: +44 (0) 1484 465500
Fax: +44 (0) 1484 465501

David Brown Engineering Ltd
Park Road
Lockwood, Huddersfield
West Yorkshire. HD4 5DD
Sales
Tel: 0800 970 4001
Fax: 0800 970 4002
Service & Spare Parts
Tel: 0800 970 4003
Fax: 0800 970 4004

USA

Cone Drive Textron
240 East 12th Street
Traverse City
MI 49684
USA
Tel: +01 231 946 8410
Fax: +01 231 933 8600

AGRICULTURE

ENERGY

PULP & PAPER

AUTOMOTIVE

FOOD & BEVERAGE

QUARRYING

CEMENT

FORESTRY

RUBBER & PLASTICS

CHEMICAL

MARINE

TEXTILES

CONSTRUCTION

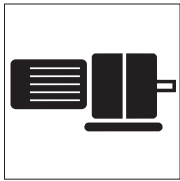
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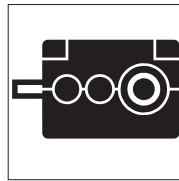
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MINING

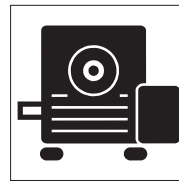
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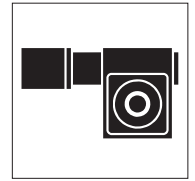
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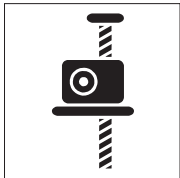
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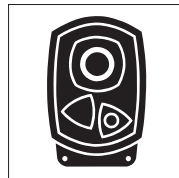
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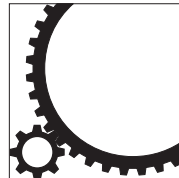
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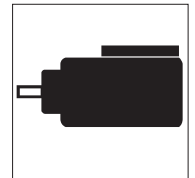
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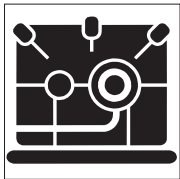
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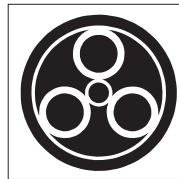
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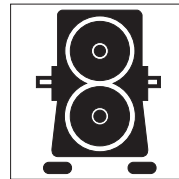
Vertical mill drives



High speed



Planetary units



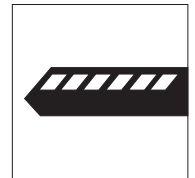
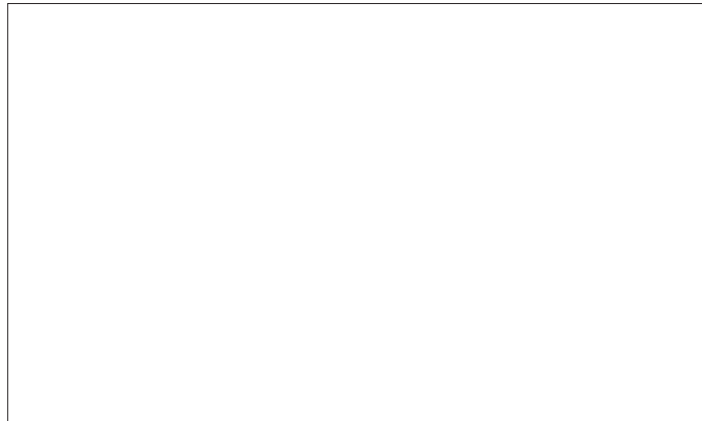
Specialist drives



Couplings



Defence Systems



Rail