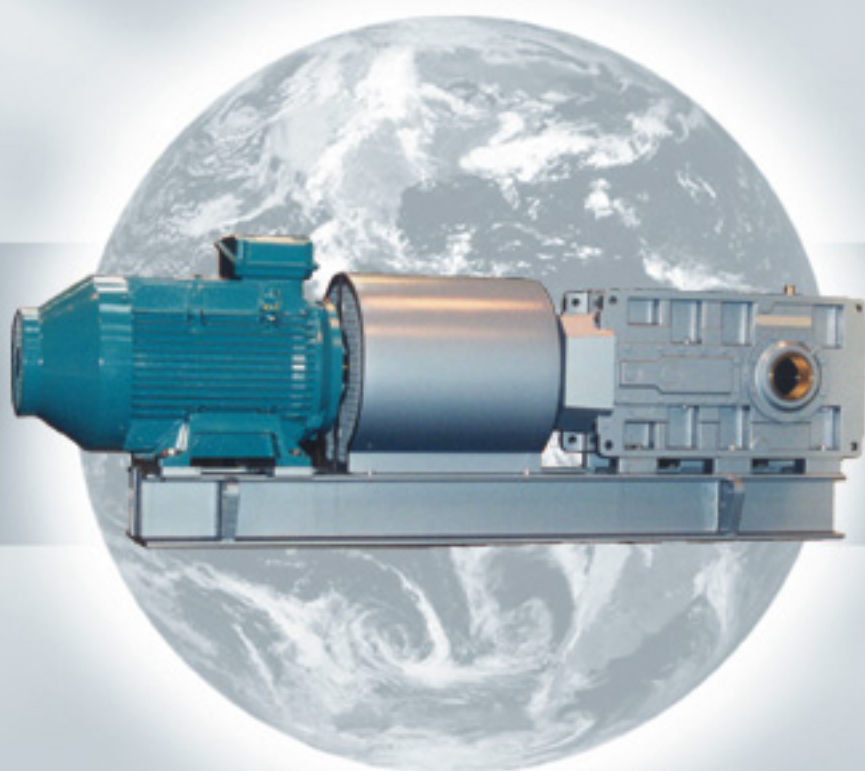


Series G Conveyor Drives

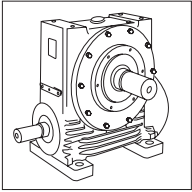
 **DAVID BROWN**



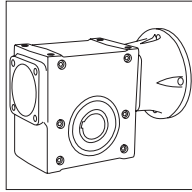
TEXTRON POWER TRANSMISSION

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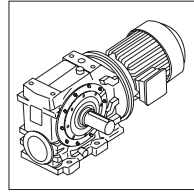
Serving an entire spectrum of mechanical drive applications from food, energy, mining and metal; to automotive, aerospace and marine propulsion, Textron Power Transmission is here to make a positive difference to the supply of drive solutions.



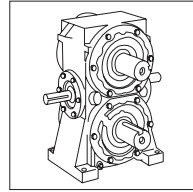
Series A
Worm gear units and geared motors in single & double reduction types



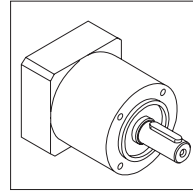
Series B
Conax helicoidal gear geometry right angle gearmotors and reducers



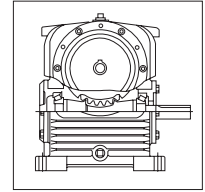
Series C
Right angle drive helical worm geared motors & reducers



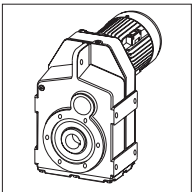
Series D
Dual gears on parallel output shafts



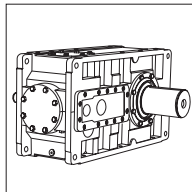
Series E
Economical planetary servo gearboxes



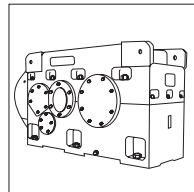
Extruder Drive
Rugged duty reducer takes high screw pressure



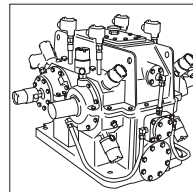
Series F
Parallel helical shaft mounted geared motors & reducers



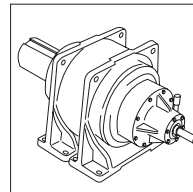
Series G
Helical parallel shaft & bevel helical right angle drive gear units



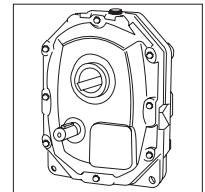
Series H
Large helical parallel shaft & bevel helical right angle drive units



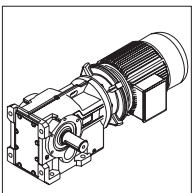
Highspeed
Helical parallel shaft high speed units



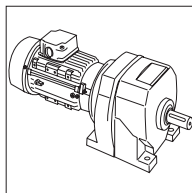
HTP
High torque planetary gear units



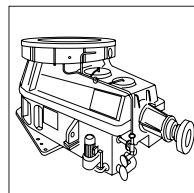
Series J
Shaft mounted helical speed reducers



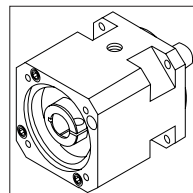
Series K
Right angle helical bevel helical geared motors & reducers



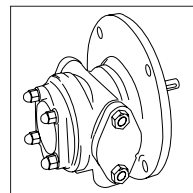
Series M
In-line helical geared motors & reducers



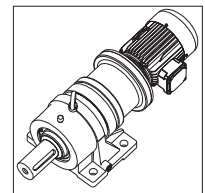
Mill Drives
Bevel planetary vertical mill drives



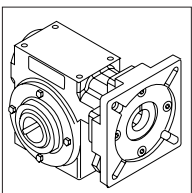
Series P
Precision planetary servo gearboxes



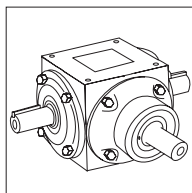
Pumps
Double helical gear pumps



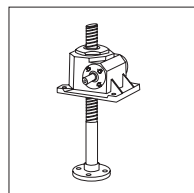
Series Q
In-line planetary geared motors & reducers



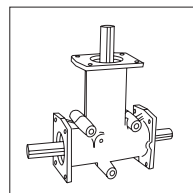
Model RG
Right angle gearhead in two precision levels



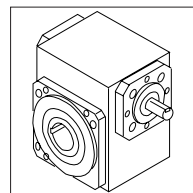
Series R
Right angle spiral bevel gear unit



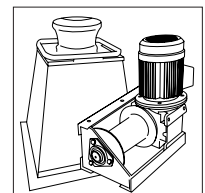
Series S
Screwjack worm gear units



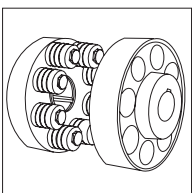
Series T
Right angle straight bevel gear unit



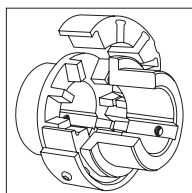
Series W
Precision right angle servo gearboxes



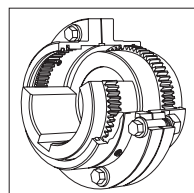
Winches & Capstans
Custom engineered solutions



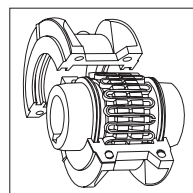
Series X Cone Ring
Pin and bush elastomer coupling



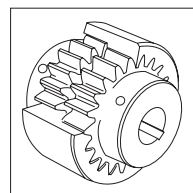
Series X Flexiwrap
Double flexing elastomer coupling



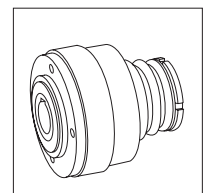
Series X Gear
Torsionally rigid, high torque coupling



Series X Grid
Double flexing steel grid coupling



Series X Nylicon
Gear coupling with nylon sleeve



Series X Torque Limiter
Overload protection device

Textron Power Transmission can create custom engineered transmission solutions of any size and configuration.

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Series G Conveyor Drives

Series G conveyor drives are available in right angle shaft bevel/helical units in triple and quadruple reduction gear stages having a maximum output torque of up to 80,000 Nm.

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 whilst maintaining the highest standard of component integrity.

Adding to the new range of Textron Power Transmission 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.

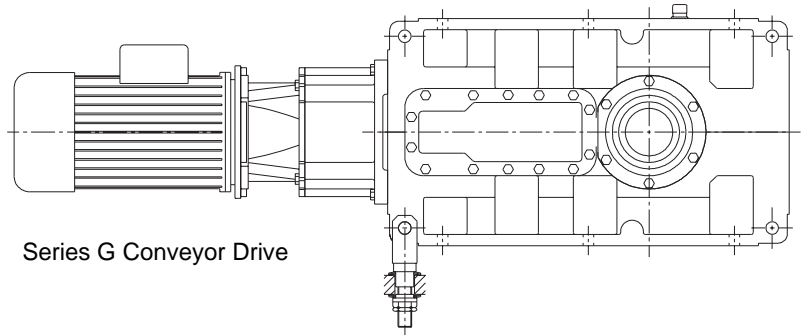
The Range Includes

- 6 sizes of units with a ratio coverage of 8.0:1 to 315:1.
- Right angle bevel/helical units.

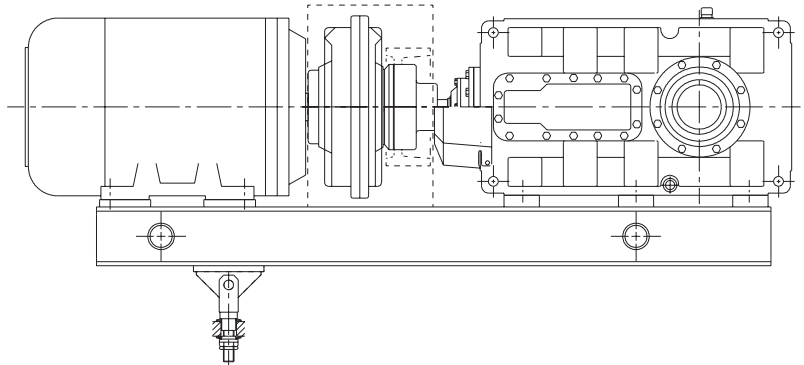
Design Features Include

- 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 or tower applications.
- All units are also available with a hollow bore for output shaft mounting. Output bores are connected by a shrink disc.
- Backstops can be fitted to all Series G units when required to operate in non-reversing drives.

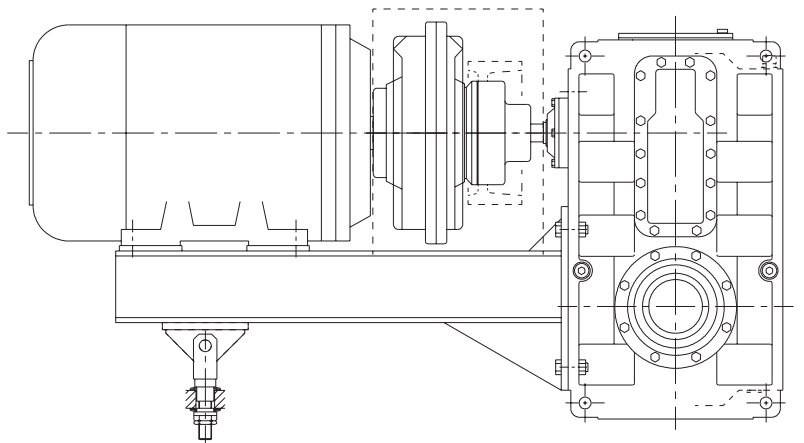
As improvements in design are being made continually this specification is not to be regarded as binding in detail and drawings and capacities are subject to alteration without notice. Certified drawings will be sent on request.



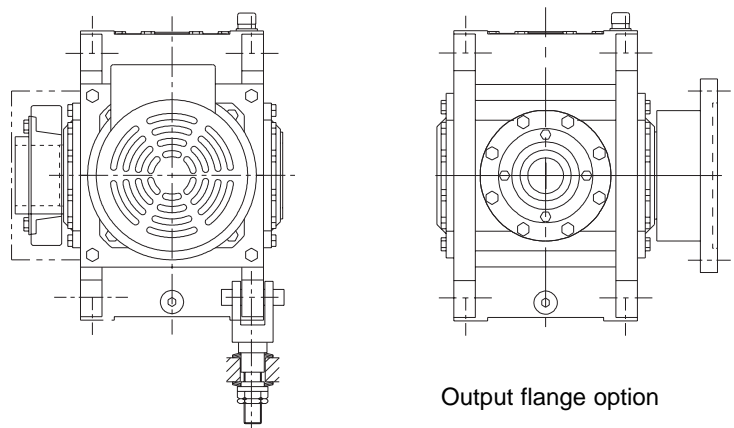
Series G Conveyor Drive



Series G Conveyor Drive with motor swing base



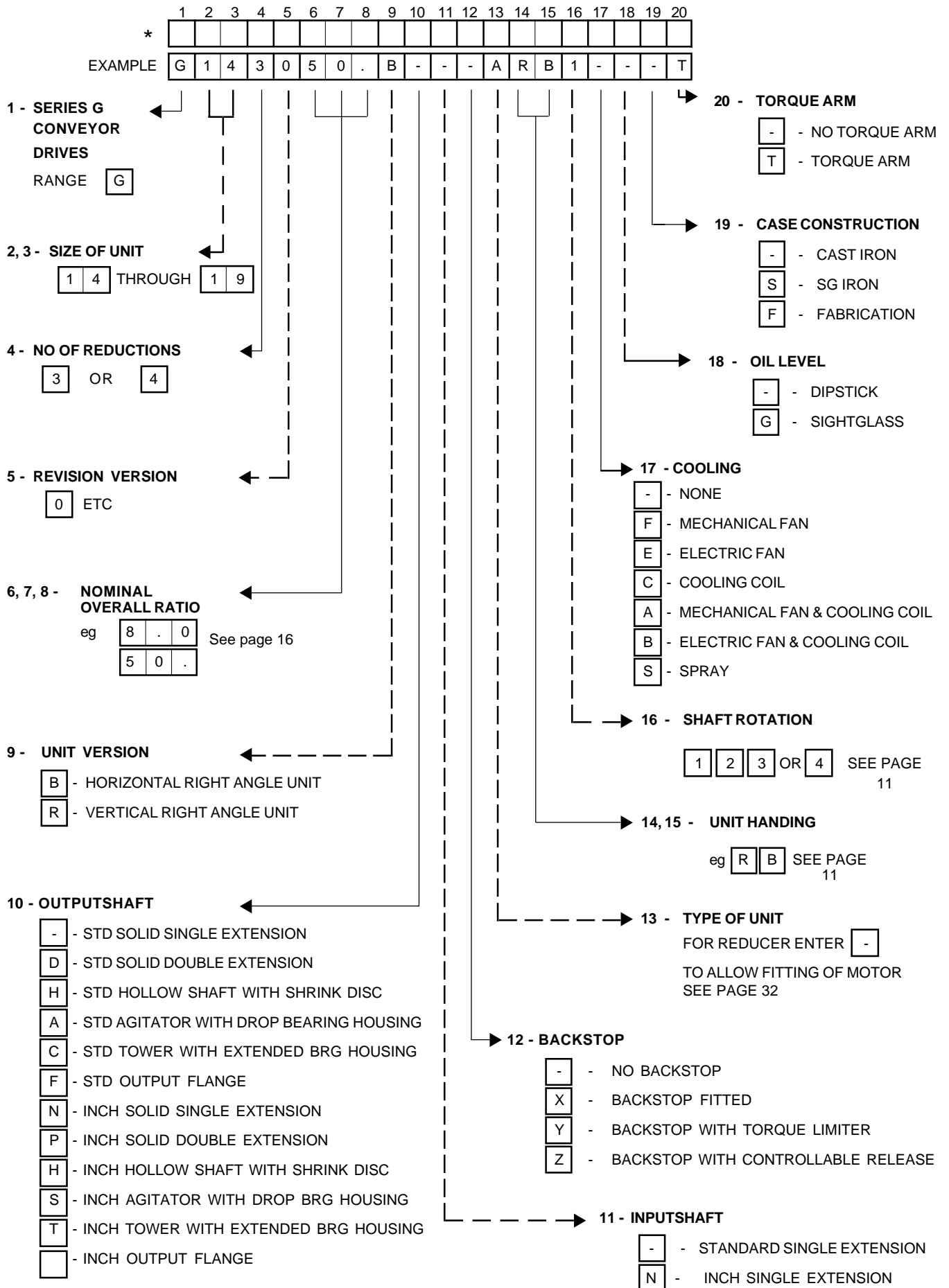
Series G long travel drive



Hollow shaft with shrink disc

Output flange option

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SEE PAGES 12 - 14

* THIS PAGE MAY BE PHOTOCOPIED ALLOWING THE CUSTOMER TO ENTER THEIR ORDER

EXPLANATION AND USE OF RATINGS AND ASSOCIATED RATING FACTORS

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Gear unit selection is made by comparing actual loads with catalogue ratings. Catalogue 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 catalogue ratings. i.e. Equivalent Load = Actual Load x Service Factor

Mechanical and Thermal Service Factor must be considered:- Mechanical Service Factors Fm and Fs
Thermal Service Factors Ft, Fd, Fh and Fv

Mechanical ratings and service factors Fm and Fs

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

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

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

Mechanical Service Factor Fm (Table 1) is used to modify the actual load according to daily operating time, and type of loading. Required mechanical power rating P(mech) = absorbed power x Fm

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

If loading can be calculated, or accurately assessed, actual loads should be used instead modifying using Fm.

For units subject to torque reversal or frequent stop/start overloads in excess of 10 times per day, the following check should be made

$$\text{gear unit input power capacity (kW)} \geq \frac{T_m \times F_s \times n}{2 \times 9550}$$

- Where Tm = motor starting torque (Nm) or rating of torque limiting device, fluid coupling etc
- n = input speed (rev/min)
- Fs = number of starts factor (See table 2)

For applications where high inertia loads are involved e.g. crane travel drives, slewing motion etc., unit selection should be referred to Textron Power Transmission engineers.

Table 1. Mechanical Service Factor (Fm)

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 (Fs)

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 AND ASSOCIATED RATING FACTORS

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Table 3. Load Classification by Applications

U = Uniform load

M = Moderate shock load

H = Heavy shock load

† = Refer to Textron Power Transmission

		Driven Machine	type of load	Driven Machine	type of load	Driven Machine	type of load
Agitators		Cranes		log haul-incline	H	log haul	H
pure liquids		main hoists	U	log haul-well type	H	presses	M
liquids and solids		bridge travel	†	log turning device	H	pulp machine reel	M
liquids-variable density		trolley travel	†	main log conveyor	H	stock chest	M
Blowers				off bearing rolls	M	suction roll	M
centrifugal		Crusher		planer feed chains	M	washers and thickeners	M
lobe		ore	H	planer floor chains	M	winders	M
vane		stone	H	planer tilting hoist	M		
Brewing and distilling		sugar	H	re-saw merry-go-round	M	Printing presses	†
bottling machinery				conveyor	M		
brew kettles-continuous		Dredges		roll cases	H	Pullers	
duty		cable reels	M	slab conveyor	H	barge haul	H
cookers-continuous duty		conveyors	M	small waste			
mash tubs-continuous		cutter head drives	H	conveyor-belt	U	Pumps	
scale hopper-frequent		jig drives	H	small waste		centrifugal	U
starts		manoeuvring winches	M	conveyor-chain	M	proportioning	M
Can filling machines		pumps	M	sorting table	M	reciprocating	
cane knives		screen drive	H	tipple hoist conveyor	M	single acting; 3 or	
Car dumpers		stackers	M	tipple hoist drive	M	more cylinders	M
car pullers		utility winches	M	transfer conveyors	M	double acting; 2 or	
Clarifiers				transfer rolls	M	more cylinders	M
classifiers		Dry dock cranes		tray drive	M	single acting; 1 or 2	
Clay working machinery		main hoist	†	trimmer feed	M	cylinders	
brick press		auxiliary hoist	†	waste conveyor	M	double acting; single	
briquette machine		boom, luffing	†			cylinder	†
clay working machinery		rotating, swing or slew	†	Machine tools		rotary	
pug mill		tracking, drive wheels	†	bending roll	M	gear type	U
Compressors				punch press-gear driven	H	lobe, vane	U
centrifugal		Elevators		notching press- belt			
lobe		bucket-uniform load	U	driven	†	Rubber and plastics industries	
reciprocating		bucket-heavy load	M	plate planers	H	crackers	H
multi-cylinder		bucket-continuous	U	tapping machine	H	laboratory equipment	M
single cylinder		centrifugal discharge	U	other machine tools		mixed mills	H
Conveyors-uniformly loaded or fed		escalators	U	main drives	M	refiners	M
apron		freight	M	auxiliary drives	U	rubber calenders	M
assembly		gravity discharge	U			rubber mill-2 on line	M
belt		man lifts	†	Metal mills		rubber mill-3 on line	M
bucket		passenger	†	draw bench carriage		sheeter	M
chain		Fans		and main drive	M	tire building machines	†
flight		centrifugal	U	pinch, dryer and		tire and tube press	
oven		cooling towers		scrubber rolls-reversing	†	openers	†
screw		cooling towers		slitters	M	tubers and strainers	M
Conveyors-heavy duty not uniformly fed		induced draft	†	table conveyors		warming mills	M
apron		forced draft	†	non-reversing			
assembly		induced draft	M	group drives	M	Sand muller	M
belt		large, mine, etc	M	individual drives	H		
bucket		large, industrial	M	reversing		Sewage disposal equipment	
chain		light, small diameter	U	wire drawing and		bar screens	U
flight		Feeders		flattening machine	M	chemical feeders	U
live roll		apron	M	wire winding machine	M	collectors	U
oven		belt	M			dewatering screws	M
reciprocating		disc	U	Mill-rotary type ball		scum breakers	M
screw		reciprocating	H	cement kilns	H	slow or rapid mixers	M
shaker		screw	M	dryers and coolers	H	thickeners	M
				kilns, other than cement	H	vacuum filters	M
		Food industry		pebble	H		
		beef slicer	M	rod		Screens	
		cereal cooker	U	plain	H	air washing	U
		dough mixer	M	wedge bar	H	rotary-stone or gravel	M
		meat grinders	M	tumbling barrels	H	travelling water intake	U
		Generators-not welding				Slab pushers	M
			U	Mixers			
		Hammer mills		concrete mixers		Steering gear	
			H	-continuous	M		†
		Hoists		concrete mixers		Stokers	
		heavy duty	H	-intermittent	M		U
		medium duty	M	constant density	U	Sugar industry	
		skip hoist	M	variable density	M	cane knives	M
		Laundry washers		Oil industry		crushers	M
		reversing	M	chillers	M	mills	M
		Laundry tumblers		oil well pumping	†		
			M	paraffin filter press	M	Textile industry	
		Line shafts		rotary kilns	M	batchers	M
		driving processing				calenders	M
		equipment		Paper mills		cards	M
		light	M	agitators, (mixers)	M	dry cans	M
		other line shafts	U	barker-auxiliaries-		dryers	M
				hydraulic	M	dyeing machinery	M
		Lumber industry		barker-mechanical	H	knitting machines	†
		barkers-hydraulic-		barking drum	H	looms	M
		mechanical	M	beater and pulper	M	mangles	M
		burner conveyor	M	bleacher	U	nappers	M
		chain saw and drag saw	H	calenders	M	pads	M
		chain transfer	H	calenders-super	H	range drives	†
		craneway transfer	H	converting machine,		slashers	M
		de-barking drum	H	except cutters, platens		soapers	M
		edger feed	M	conveyors	U	spinners	M
		gang feed	M	couch	M	tenter frames	M
		green chain	M	cutters-plates	H	washers	M
		live rolls	H	cylinders	M	winders	M
		log deck	H	dryers	M		
				felt stretcher	M	Windlass	†
				felt whipper	H		
				jordans	M		

EXPLANATION AND USE OF RATINGS AND ASSOCIATED RATING FACTORS

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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 page 22. 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

Catalogue thermal limitations are based on the unit operating continuously in an environment with an ambient temperature equal to 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 °C							
	-20	-10	0	10	20	30	40	50
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	0.97
1000	0.93
1500	0.90
2000	0.87
3000	0.81
4000	0.75
5000	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	$F_v = 0.1 V_v + 0.86$
Large indoor space	1.0	> 1.4 - < 6	$F_v = 0.2 V_v + 0.72$
Sheltered outdoor space	1.3	> 2 - < 6	$F_v = 0.17 V_v + 0.9$
Outdoor space	1.5	>2	$F_v = 0.17 V_v + 0.9$ (max $F_v = 1.92$)

General

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

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EXAMPLE APPLICATION DETAILS

Absorbed power of driven machine = 70 kW
 Output speed of gearbox or Input speed of machine = 65 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, 1450 rev/min
 Mounting position = Horizontal, Right Angle Shaft
 Ambient temperature = 30°C
 Running time (%) = 100%
 Altitude = Sea Level

1 DETERMINE RATIO OF GEARBOX REQUIRED

$$\frac{\text{Motor speed}}{\text{Gearbox output speed}} = \frac{1450}{65} = 22.31$$

Refer to exact ratios (page 16) for nearest standard ratio = 22:1

3 DETERMINE REQUIRED MECHANICAL OUTPUT TORQUE CAPACITY OF GEARBOX

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

$$P_{mech} = 70 \times 1.25 = 87.5 \text{ kW}$$

2 DETERMINE MECHANICAL SERVICE FACTOR (F_m)

Refer to Load Classification by Application, table 3, page 4

Application = Uniformly loaded belt conveyor

Conveyors-uniformly loaded or fed	
apron	U
assembly	U
belt	U
bucket	U
chain	U

U = Uniform load

Refer to mechanical service factor (F_m), table 1, page 3

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 = 1450rev/min, therefore refer to page 18.

NOMINAL RATIO	NOMINAL OUTPUT SPEED REV / MIN	CAPACITY	RIGHT ANGLE UNIT - SIZE			
			G14	G15	G16	G17
22.	65.9	Input Power - kW	69.2	103	185	243
		Output Torque - Nm	9550	14000	23700	35300

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 = 87.5 kW. At a 22:1 ratio, nominal output speed 65.9 a G15 unit has a mechanical input power capacity of 103 kW. 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 3.

5 DETERMINE EXACT RATIO OF GEARBOX

Refer to exact ratios table, page 16

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 7

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6 DETERMINE THERMAL SERVICE FACTOR (Ft)

Refer to table 4, page 5
Ambient temperature = 30°C

Ambient temperature °C	-20	-10	0	10	20	30
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 5
Unit running time per hour = 100%
Nominal output speed (rev/min) = 65.9

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 5

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}

$$P_{therm} = \frac{\text{Absorbed Power (kW)}}{Ft \times Fd \times Fh \times Fv}$$

$$P_{therm} = \frac{70}{0.86 \times 1.0 \times 1.0 \times 1.0}$$

P_{therm} = 81.4 kW

11 CHECK THERMAL CAPACITY Thermal Rating ≥ P_{therm}

Thermal Ratings kW 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	75	75	125	125
	1450	69	69	115	115
	1160	67	67	111	111
	960	65	65	108	108
	725	63	63	105	105
Units with Fan Cooling	1750	169	169	281	281
	1450	138	138	230	230
	1160	124	124	206	206
	960	107	107	178	178
	725	95	95	157	157

P_{therm} = 82 kW therefore unit requires cooling.
Thermal rating for a fan cooled G15 unit = 138 kW.
Thermal capacity is therefore acceptable.

12 CHECK OVERHUNG LOADS
If sprocket, gear, etc is mounted on the input or output shaft then consult Textron Power Transmission

13 CHECK COUPLING HUB CAPACITIES

NOTE: It is advisable that all selections are verified by a Textron Power Transmission Engineer.

If any of the following conditions occur then Textron Power Transmission Engineers **must** be consulted:-

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

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All Series G units are despatched without oil (a warning label is attached), and therefore filled by the client. The Textron Power Transmission 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 6 months for mineral oil based lubricants and 18 months for synthetic based lubricants. These figures assume a sump temperature of 110°C. Oil change periods can be extended for lower sump temperatures see installation and maintenance.

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. 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 up to the correct mark on the dipstick.

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

TABLE 1 LUBRICANT QUANTITY (Litres)

Unit Type		UNIT SIZE					
		14	15	16	17	18	19
Right Angle 3 Stage	Horizontal	21	19	47	42	92	95
	Vertical	20	20	43	39	87	92
Right Angle 4 Stage	Horizontal	-	-	48	43	94	96
	Vertical	-	-	45	39	89	89

TABLE 2 APPROVED BEARING GREASES

SUPPLIER	DESIGNATION	ALLOWABLE OPERATING TEMPERATURE RANGE °C	
		ABOVE	TO
BP Oil International Limited	Energrease LS-EP	-30	130
Caltex	Multifak EP	0	120
Castrol International	LMX Grease	-40	150
	Spheerol AP	-30	110
	Spheerol EPL	-10	120
Fuchs Lubricants	Renolit EP	-25	100
Klüber Lubrication	Klüberlub BE 41-542	-20	140
Mobil Oil Company Limited	Mobilgrease XHP	-15	150
	Mobilith SHC	-20	180
Omega Manufacturing Division	Omega 85	-40	230
Optimol Ölwerke GmbH	Longtime PD	-45	140
Shell Oils	Albida RL	-20	150
	Alvania EP B	-20	120
	Nerita HV	-30	130
Texaco Limited	Multifak All Purpose EP	-30	140

- Notes: 1) All the above greases are NLGI grade 2.
 2) Refer to Textron Power Transmission Application Engineers if the unit is operating in an ambient temperature outside the range of -30°C to 50°C.

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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 10	TEXTRON POWER TRANSMISSION GRADE NUMBERS		
			5E	6E	7E
			AMBIENT TEMPERATURE RANGE °C		
			-5 to 25	0 to 40	10 to 50
Batoyle Freedom Group	Remus		220 (-2)	320 (-2)	460 (-2)
Boxer Services / Millers Oils	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 Abee	Eko 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)
Fuchs Lubricants	Powergear			P/Gear (-16)	M460 (-4)
	Renogear V		220EP (-13)	320EP (-4)	460EP (-4)
	Renogear WE		220 (-7)	320 (-4)	400 (-4)
	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)
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)
Saudi Arabian Lubr. Oil Co.	Gear Lube EP	e	EP220 (-1)	EP320 (0)	EP460 (0)
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)
	Carter VP/CS		220 (-16)	320 (-13)	460 (-7)
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.

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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 page 10	TEXTRON POWER TRANSMISSION GRADE NUMBERS		
			5H	6H	7H
			AMBIENT TEMPERATURE RANGE °C		
			-10 to 30	0 to 45	10 to 50
Batoyle Freedom Group	Titan		220 (-31)	320 (-28)	
Boxer Services / Millers Oils	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	Berusynth 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)
Fuchs Lubricants	Renogear SG		220 (-32)	320 (-30)	
	Renolin Unisyn CLP		220 (-37)	320 (-34)	460 (-28)
Klüber Lubrication	Klübersynth EG 4	e	220 (-30)	320 (-25)	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 SP		220 (-34)	320 (-31)	460 (-28)
Tribol GmbH	Tribol 1510		220 (-36)	320 (-33)	460 (-28)

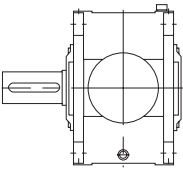
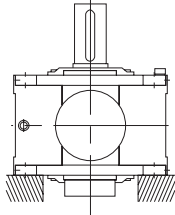
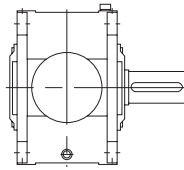
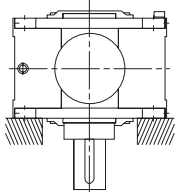
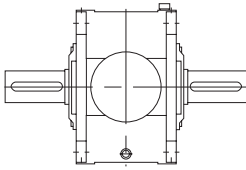
- NOTES:**
- c) These lubricants have been tested for micro-pitting (FZG Type C), test results are available.
 - e) These lubricants contain additives which may adversely affect silvered or white metal components; consult oil supplier.
 - h) Minimum operating temperatures of these lubricants are based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

DANGER

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

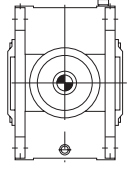
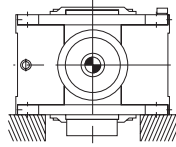
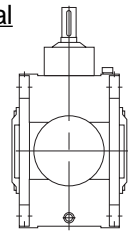
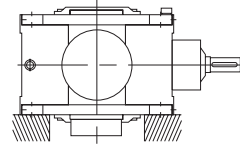
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Column 14 Entry - Output Shaft Positions

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

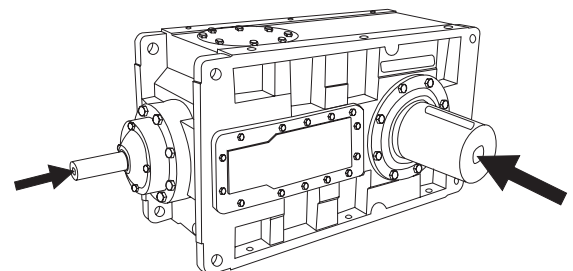
Note: for shaft mounted units driven machine side (opposite to shrink disc) is assumed as extension side.

Column 15 Entry - Input Shaft Positions

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

Column 16 Entry - Shaft Rotations

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



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

** driven machine side for shaft mounted units

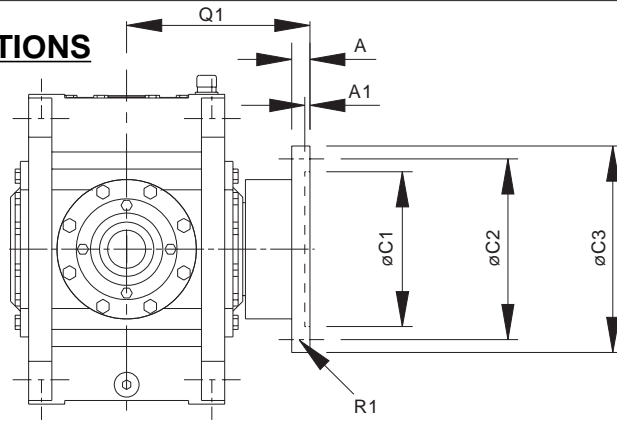
Notes: All units are rotation reversible, except when fitted with a backstop (anti-runback device).

* Handings for bevel units shown shaded are not preferred and are subject to a reduction in output shaft external overhung load capacities.

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

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OUTPUTFLANGE OPTIONS



Column 10 Entry

Standard

With Flange



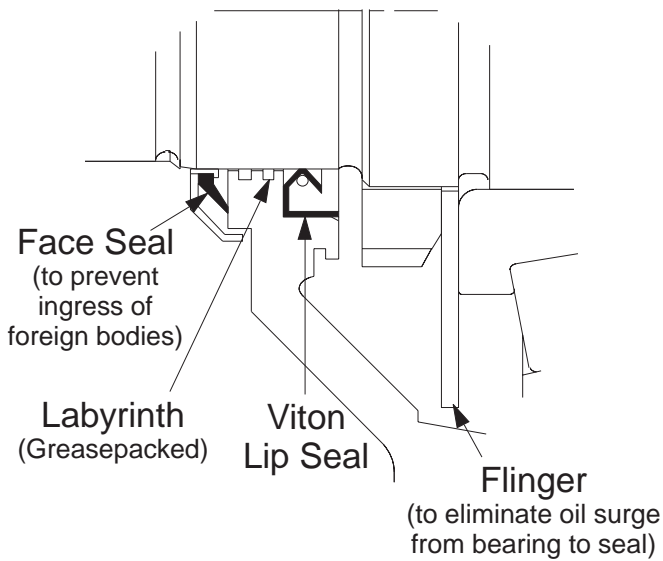
Inch

With Flange

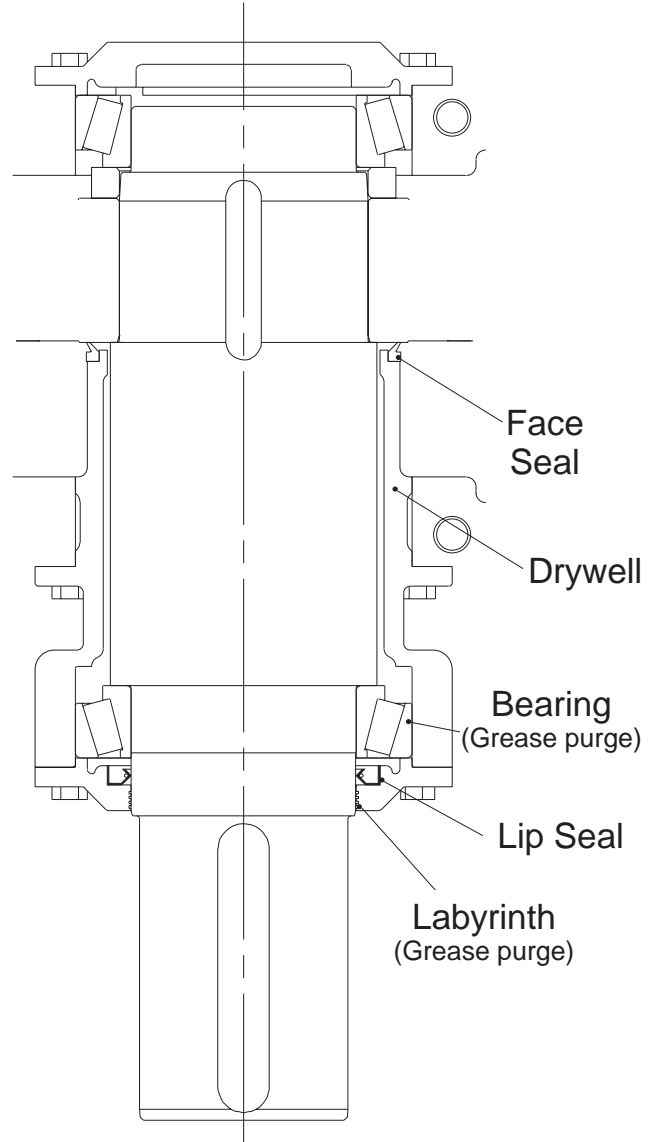


UNIT SIZE	C1	C2	C3	Q1	A	A1	R1
G14 & G15	180.083 180.043	280	320	290	30	7	8 x ø18
G16 & G17	300.108 300.056	350	400	355	35	10	8 x ø25
G18 & G19	280.108 280.056	480	560	455	41	12	18 x ø32

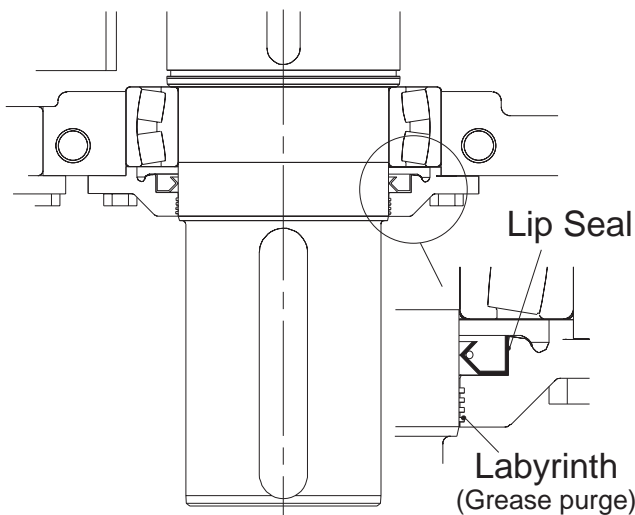
Right Angle Unit Input Shaft



Heavy Duty Agitator Unit Output Shaft

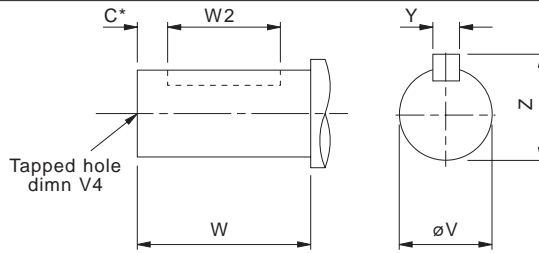


Standard Unit Output Shaft



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INPUTSHAFT OPTIONS



Column 11 Entry

Standard

Single -

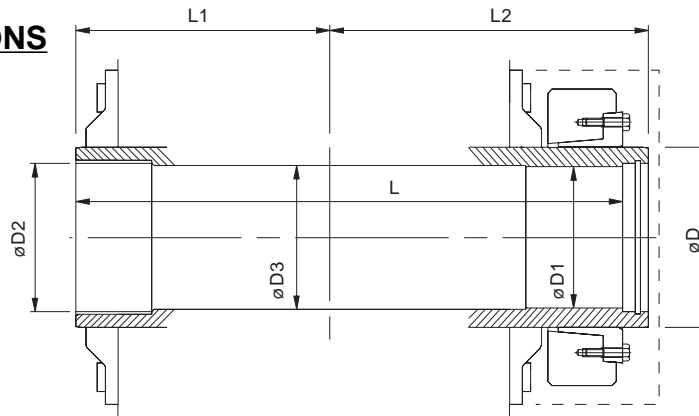
Inch

Single N

SIZE OF UNIT	TYPE OF INPUTSHAFT	NO OF REDUCTIONS	DIMENSIONS IN MM (Inch Shaft in Inches)						
			C*	øV	V4	W	W2	Y	Z
14 and 15	Standard Metric	3 Stage	3	38.018 38.002	M12 x 32	100	90	10	41
16 and 17	Standard 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	Standard 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
14 and 15	Inch	3 Stage	-	1.5000" 1.4995"	5/8" UNF x 1.25 deep	3.94"	3.00"	0.3125"	1.60"
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"	3.00"	0.3125"	1.60"
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"

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

OUTPUTBORE OPTIONS



Column 10 Entry

Standard

With Shrink Disc H

Inch

With Shrink Disc H

SIZE OF UNIT	TYPE OF OUTPUTBORE	DIMENSIONS IN MM						
		øD	øD1	øD2	øD3	L	L1	L2
14	Standard	120	95.035 95.000	100.087 100.000	96	415	180	255
15	Standard	140	110.035 110.000	115.087 115.000	111	420	180	260
16	Standard	160	125.040 125.000	130.100 130.000	126	533	230	325
17	Standard	180	145.040 145.000	150.100 150.000	147	548	230	340
18	Standard	200	160.040 160.000	170.100 170.000	162	688	300	410
19	Standard	220	170.040 170.000	180.100 180.000	172	708	300	430

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OUTPUTSHAFT OPTIONS

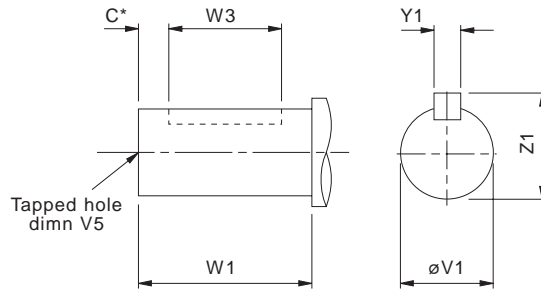
Column 10 Entry

Standard

- Single -
- Double D
- Agitator A Tower C

Inch

- Single N
- Double P
- Agitator S Tower T



SIZE OF UNIT	TYPE OF OUTPUTSHAFT	DIMENSIONS IN MM (Inch Shaft in Inches)						
		C*	øV1	V5	W1	W3	Y1	Z1
14	Standard Single	5	110.035	M30 x 3.5 63 deep	180	170	28	116
	Standard Double							
	Standard Agitator / Tower							
15	Standard Single	5	130.040	M30 x 3.5 63 deep	190	180	32	137
	Standard Double							
	Standard Agitator / Tower							
16	Standard Single	5	145.040	M42 x 4.5 81 deep	230	220	36	153
	Standard Double							
	Standard Agitator / Tower							
17	Standard Single	5	170.040	M42 x 4.5 81 deep	250	240	40	179
	Standard Double							
	Standard Agitator / Tower							
18	Standard Single	5	190.046	M42 x 4.5 81 deep	300	290	45	200
	Standard Double							
	Standard Agitator / Tower							
19	Standard Single	5	210.046	M42 x 4.5 81 deep	350	340	50	221
	Standard Double							
	Standard Agitator / Tower							

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							

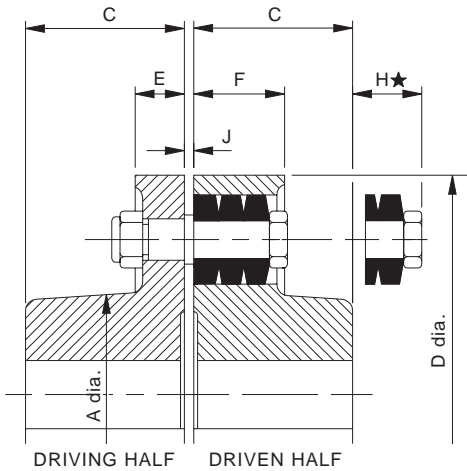
* Inch shaft has an open ended keyway, therefore no 'C' dimension is required.

CONE RING FLEXIBLE COUPLINGS

0004

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.

Two types are available, MEDIUM DUTY and HEAVY DUTY. Medium duty couplings (types 612 and 614) are identical to heavy duty couplings (types 611 and 613) except that they are supplied with only half the standard number of pin and ring assemblies. This enables a useful cost saving to be made when the size of coupling is determined by the shaft diameter rather than the coupling's torque capacity.



Parallel Keyway to BS 4235 : Part 1 1972 (1986) with P9 width tolerance

Bore tolerance to ISO 286-2-1988(E) is M7 upto and incl. 50 mm
K7 over 50 mm

Coupling Size	A	D	E	F	H	H★	J
01	64	134	12	26	20	28	3
02	70	147	12	26	12	23	3
03	83	171	19	35	26	37	3
04	97	193	19	35	19	37	3
05	117	215	19	35	11	37	3
06	127	254	31	56	46	59	3
07	147	279	31	56	34	52	3
08	180	330	30	61	22	41	3
09	206	371	46	81	45	53	6
10	230	419	46	81	30	41	6
11	256	457	46	81	12	-	6
12	296	533	46	81	0	-	6

Reference number	Bore diameter
- - -	Pilot
018	18
019	19
020	20
022	22
024	24
025	25
028	28
030	30
032	32
035	35
038	38
040	40
042	42
045	45
048	48
050	50
055	55
056	56
060	60

Reference number	Bore diameter
063	63
065	65
070	70
071	71
075	75
080	80
085	85
090	90
095	95
100	100
110	110
115	115
120	120
125	125
130	130
140	140
150	150
160	160
170	170

★ The coupling pin withdrawal distance is dimension H for straight bored couplings or dimension H★ for taper bushed couplings.

Coupling size	Types 611 & 612 Straight bored			Types 613 & 614 Taper bushed				Types 612 & 614 Medium Duty			Types 611 & 613 Heavy Duty				
	Max. bore	Min. bore		Hub length C	Max. bore	Min. bore	Hub length C	Taper bush length	Torque kNm	kW 100 rev/min	kW 960 rev/min	kW 1450 rev/min	Torque kNm	kW 100 rev/min	Max rev/min
Driving half	Driven half														
01	38	*	19	48	25	9	40	22.3	0.090	0.95	9.1	13.7	0.181	1.89	4780
02	42	*	22	56	32	11	45	38.1	0.140	1.46	14.0	21.2	0.279	2.92	4335
03	48	*	25	61	40	14	50	38.1	0.232	2.43	23.4	35.3	0.465	4.87	3745
04	60	*	28	68	48	18	50	44.5	0.359	3.75	36.0	54.4	0.717	7.51	3320
05	70	*	32	76	60	16	50	44.5	0.509	5.33	51.2	77.3	1.018	10.7	3000
06	80	25	42	88	60	19	75	63.5	1.219	12.76	123	185	2.438	25.5	2520
07	90	30	55	100	75	35	82	76.2	1.681	17.60	169	255	3.362	35.2	2295
08	100	40	60	117	90	35	98	88.9	2.524	26.42	254	383	5.047	52.8	1940
09	120	50	65	132	110	55	124	114.3	4.217	44.15	424	640	8.433	88.3	1725
10	140	80	80	147	125	70	136	127	5.765	60.37	580	875	11.53	120.7	1530
11	150	90	90	165	-	-	-	-	7.530	78.85	757	-	15.06	157.7	1400
12	170	100	100	188	-	-	-	-	11.750	123.00	1181	-	23.50	246.1	1200

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

All dimensions in mm

For applications in ambient temperatures above 80°C (176°F) or below -30°C (-22°F) refer to Textron Power Transmission.

The depths of rectangular Imperial keyways to BS46 are generally greater than the equivalent metric keyways, hence the maximum bores given must be marginally reduced when using an Imperial inch system. Consult Textron Power Transmission for details.

9902

MOMENTS OF INERTIA (Kg cm²) Referred to Input Shaft

RIGHT ANGLE UNITS - without fans

NOMINAL RATIO COLUMN ENTRY 6 7 8	RIGHT ANGLE UNITS - SIZE						TRIPLE REDUCTION
	G14	G15	G16	G17	G18	G19	
8 . 0	610	-	2100	-	10900	-	
9 . 0	565	-	2060	-	10350	-	
1 0 .	540	-	1940	-	9630	-	
1 1 .	515	-	1830	-	9210	-	
1 2 .	495	565	1740	2110	9040	10180	
1 4 .	475	540	1660	1960	8710	9650	
1 6 .	460	515	1580	1840	8240	9410	
1 8 .	445	490	1515	1740	8140	9000	
2 0 .	435	470	1505	1640	7870	8460	
2 2 .	115	455	860	1560	1875	8320	
2 5 .	110	440	835	1545	1835	8010	
2 8 .	105	120	815	890	1755	1980	
3 2 .	100	115	795	860	1645	1920	
3 6 .	96	110	780	835	1620	1825	
4 0 .	93	105	775	810	1555	1695	
4 5 .	50	100	625	790	780	1660	
5 0 .	45	95	615	785	750	1590	
5 6 .	43	50	610	630	740	830	
6 3 .	41	45	605	620	715	775	
7 1 .	-	44	-	615	-	760	
8 0 .	-	42	-	610	-	730	

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 (Kg cm²)

	G14 / G15	G16 / G17	G18 / G19
TRIPLE REDUCTION	46	122	397

GD² (Kg cm²) = 4 x Moment of Inertia (Kg cm²)

EXACT RATIOS - RIGHT ANGLE UNITS

NOMINAL RATIO COLUMN ENTRY 6 7 8	RIGHT ANGLE UNITS - SIZE						TRIPLE REDUCTION
	G14	G15	G16	G17	G18	G19	
8 . 0	7.691	-	8.095	-	7.842	-	
9 . 0	8.863	-	8.755	-	8.663	-	
1 0 .	9.774	-	9.584	-	9.939	-	
1 1 .	10.816	-	10.937	-	11.080	-	
1 2 .	12.018	12.338	12.312	12.323	12.109	12.464	
1 4 .	13.420	13.653	13.718	14.062	13.586	13.893	
1 6 .	15.077	15.170	15.675	15.830	15.868	15.184	
1 8 .	17.065	16.940	17.807	17.637	17.474	17.037	
2 0 .	19.495	19.031	19.225	20.154	19.817	19.898	
2 2 .	21.775	21.541	21.756	22.894	22.636	21.912	
2 5 .	24.195	24.609	24.492	24.718	24.738	24.850	
2 8 .	27.017	27.487	27.288	27.972	27.757	28.384	
3 2 .	30.353	30.541	31.182	31.490	32.419	31.021	
3 6 .	34.356	34.104	35.422	35.084	35.700	34.806	
4 0 .	39.249	38.315	38.243	40.091	40.487	40.652	
4 5 .	41.605	43.368	43.244	45.543	42.830	44.767	
5 0 .	46.743	49.544	49.417	49.170	50.024	50.769	
5 6 .	52.907	52.518	56.136	55.600	55.087	53.708	
6 3 .	60.442	59.003	60.606	63.536	62.474	62.729	
7 1 .	-	66.784	-	72.174	-	69.078	
8 0 .	-	76.295	-	77.922	-	78.340	

**RIGHT ANGLE SHAFT
MECHANICAL RATINGS AT 1750 RPM INPUT**

9906

NOMINAL RATIO	NOMINAL OUTPUT SPEED REV / MIN	CAPACITY	RIGHT ANGLE SHAFT UNITS - SIZE					
			G14	G15	G16	G17	G18	G19
8.0	219	Input Power - kW	196	-	417	-	925	-
		Output Torque - Nm	7920	-	17800	-	38600	-
9.0	194	Input Power - kW	196	-	417	-	925	-
		Output Torque - Nm	9130	-	19300	-	42600	-
10.	175	Input Power - kW	196	-	417	-	925	-
		Output Torque - Nm	10100	-	21100	-	48900	-
11.	156	Input Power - kW	190	-	417	-	925	-
		Output Torque - Nm	10800	-	24000	-	54400	-
12.	140	Input Power - kW	173	196	393	417	913	925
		Output Torque - Nm	11000	12700	25500	27100	58600	61300
14.	125	Input Power - kW	157	189	354	417	815	925
		Output Torque - Nm	11000	13600	25500	30900	58600	68200
16.	109	Input Power - kW	141	171	310	404	699	925
		Output Torque - Nm	11000	13700	25500	33700	58600	74500
18.	97	Input Power - kW	126	155	273	375	635	863
		Output Torque - Nm	11000	13800	25600	34800	58600	77800
20.	87.5	Input Power - kW	111	139	253	325	561	750
		Output Torque - Nm	11000	14000	25600	34400	58600	79000
22.	79.5	Input Power - kW	83.5	124	210	293	471	682
		Output Torque - Nm	9550	14000	24000	35300	56100	79000
25.	70.0	Input Power - kW	83.5	110	199	273	450	603
		Output Torque - Nm	10600	14000	25600	35400	58600	79000
28.	62.5	Input Power - kW	78.1	83.5	179	210	402	471
		Output Torque - Nm	11000	13000	25600	31000	58600	70500
32.	54.7	Input Power - kW	70.2	82.5	157	210	344	457
		Output Torque - Nm	11000	13400	25600	34700	58600	74600
36.	48.6	Input Power - kW	62.6	77.1	138	189	313	432
		Output Torque - Nm	11000	13800	25600	35000	58600	79000
40.	43.8	Input Power - kW	55.2	69.3	128	167	276	371
		Output Torque - Nm	11000	14000	25600	35200	58600	79200
45.	38.9	Input Power - kW	50.2	61.8	113	148	261	337
		Output Torque - Nm	11000	14000	25600	35300	58600	79200
50.	35.0	Input Power - kW	45.6	54.5	99.2	138	224	297
		Output Torque - Nm	11000	14000	25600	35400	58600	79200
56.	31.3	Input Power - kW	40.7	50.2	87.4	118	203	265
		Output Torque - Nm	11000	14000	25600	34500	58600	74600
63.	27.8	Input Power - kW	35.9	45.1	81.0	106	180	241
		Output Torque - Nm	11000	14000	25600	35200	58600	79200
71.	24.6	Input Power - kW	-	40.2	-	93.5	-	219
		Output Torque - Nm	-	14000	-	35300	-	79200
80.	21.9	Input Power - kW	-	35.5	-	87.0	-	194
		Output Torque - Nm	-	14000	-	35400	-	79200

TRIPLE REDUCTION

Shaded Area - Forced lubrication system required

**RIGHT ANGLE SHAFT
MECHANICAL RATINGS AT 1450 RPM INPUT**

9906

NOMINAL RATIO	NOMINAL OUTPUT SPEED REV / MIN	CAPACITY	RIGHT ANGLE SHAFT UNITS - SIZE					
			G14	G15	G16	G17	G18	G19
8.0	181	Input Power - kW	172	-	365	-	767	-
		Output Torque - Nm	8400	-	18900	-	38600	-
9.0	161	Input Power - kW	166	-	365	-	767	-
		Output Torque - Nm	9400	-	20400	-	42600	-
10.	145	Input Power - kW	162	-	365	-	767	-
		Output Torque - Nm	10100	-	22300	-	48800	-
11.	129	Input Power - kW	157	-	365	-	767	-
		Output Torque - Nm	10800	-	25400	-	54300	-
12.	116	Input Power - kW	144	162	327	373	757	767
		Output Torque - Nm	11000	12700	25500	29300	58600	61200
14.	104	Input Power - kW	130	156	293	365	676	767
		Output Torque - Nm	11000	13500	25600	32700	58600	68100
16.	91	Input Power - kW	117	142	257	345	580	767
		Output Torque - Nm	11000	13700	25600	34700	58600	74400
18.	81	Input Power - kW	104	128	227	311	527	726
		Output Torque - Nm	11000	13800	25600	34900	58600	79000
20.	72.5	Input Power - kW	91.9	115	210	275	466	623
		Output Torque - Nm	11000	14000	25600	35200	58600	79000
22.	65.9	Input Power - kW	69.2	103	185	243	407	567
		Output Torque - Nm	9550	14000	23700	35300	58500	79000
25.	58.0	Input Power - kW	69.2	82.5	165	226	373	501
		Output Torque - Nm	10700	14000	25600	35400	58600	79100
28.	51.8	Input Power - kW	64.7	69.2	148	185	333	407
		Output Torque - Nm	11000	12000	25600	32700	58600	73300
32.	45.3	Input Power - kW	58.1	69.2	130	174	286	392
		Output Torque - Nm	11000	13400	25600	34700	58600	77100
36.	40.3	Input Power - kW	51.8	63.9	114	157	259	359
		Output Torque - Nm	11000	14000	25600	34900	58600	79100
40.	36.3	Input Power - kW	45.8	57.4	106	139	229	308
		Output Torque - Nm	11000	14000	25600	35200	58600	79200
45.	32.2	Input Power - kW	41.6	51.2	93.8	123	216	279
		Output Torque - Nm	11000	14000	25600	35300	58600	78200
50.	29.0	Input Power - kW	37.8	45.2	82.2	114	185	247
		Output Torque - Nm	11000	14000	25600	35400	58600	79200
56.	25.9	Input Power - kW	33.7	41.6	72.4	99.2	169	220
		Output Torque - Nm	11000	14000	25600	35000	58600	75000
63.	23.0	Input Power - kW	29.8	37.3	67.1	87.7	149	200
		Output Torque - Nm	11000	14000	25600	35200	58600	79200
71.	20.4	Input Power - kW	-	33.3	-	77.5	-	182
		Output Torque - Nm	-	14000	-	35200	-	79200
80.	18.1	Input Power - kW	-	29.4	-	72.1	-	160
		Output Torque - Nm	-	14000	-	35300	-	79300

TRIPLE REDUCTION

**RIGHT ANGLE SHAFT
MECHANICAL RATINGS AT 1160 RPM INPUT**

9902

NOMINAL RATIO	NOMINAL OUTPUT SPEED REV / MIN	CAPACITY	RIGHT ANGLE SHAFT UNITS - SIZE					
			G14	G15	G16	G17	G18	G19
8.0	145	Input Power - kW	138	-	299	-	613	-
		Output Torque - Nm	8450	-	19300	-	38500	-
9.0	129	Input Power - kW	133	-	299	-	613	-
		Output Torque - Nm	9380	-	20800	-	42500	-
10.	116	Input Power - kW	130	-	299	-	613	-
		Output Torque - Nm	10100	-	22700	-	48700	-
11.	104	Input Power - kW	126	-	294	-	613	-
		Output Torque - Nm	10800	-	25600	-	54200	-
12.	93	Input Power - kW	115	130	262	299	607	613
		Output Torque - Nm	11000	12700	25600	29300	58600	61100
14.	83	Input Power - kW	104	125	235	297	541	613
		Output Torque - Nm	11000	13500	25600	33200	58600	68000
16.	73	Input Power - kW	93.4	114	206	276	464	613
		Output Torque - Nm	11000	13700	25600	34700	58400	74300
18.	64	Input Power - kW	83.3	103	182	249	422	583
		Output Torque - Nm	11000	13800	25600	35000	58600	79000
20.	58.0	Input Power - kW	73.5	90.2	168	220	373	500
		Output Torque - Nm	11000	14000	25600	35200	58600	79100
22.	52.7	Input Power - kW	55.3	82.2	148	195	326	454
		Output Torque - Nm	9550	14000	25300	35300	58600	79100
25.	46.4	Input Power - kW	55.3	72.6	132	181	299	401
		Output Torque - Nm	10600	14000	25600	35400	58600	79100
28.	41.4	Input Power - kW	51.8	55.3	119	148	267	326
		Output Torque - Nm	11000	12000	25600	33000	58600	73300
32.	36.3	Input Power - kW	46.5	55.3	104	139	228	314
		Output Torque - Nm	11000	13400	25600	34700	58600	77100
36.	32.2	Input Power - kW	41.5	51.1	91.6	126	208	287
		Output Torque - Nm	11000	13800	25600	35000	58600	79200
40.	29.0	Input Power - kW	36.6	45.9	84.9	111	183	246
		Output Torque - Nm	11000	14000	25600	35200	58600	79200
45.	25.8	Input Power - kW	33.3	40.9	75.1	98.0	173	224
		Output Torque - Nm	11000	14000	25600	35300	58600	79200
50.	23.2	Input Power - kW	30.2	36.2	65.8	91.2	148	197
		Output Torque - Nm	11000	14000	25600	35400	58600	79200
56.	20.7	Input Power - kW	27.0	33.2	57.9	79.4	135	176
		Output Torque - Nm	11000	14000	25600	35000	58600	75000
63.	18.4	Input Power - kW	23.8	29.9	53.7	70.2	119	160
		Output Torque - Nm	11000	14000	25600	35200	58600	79200
71.	16.3	Input Power - kW	-	26.6	-	62	-	145
		Output Torque - Nm	-	14000	-	35300	-	79200
80.	14.5	Input Power - kW	-	23.5	-	57.7	-	128
		Output Torque - Nm	-	14000	-	35400	-	79300

TRIPLE REDUCTION

**RIGHT ANGLE SHAFT
MECHANICAL RATINGS AT 960 RPM INPUT**

9902

NOMINAL RATIO	NOMINAL OUTPUT SPEED REV / MIN	CAPACITY	RIGHT ANGLE SHAFT UNITS - SIZE					
			G14	G15	G16	G17	G18	G19
8.0	120	Input Power - kW	114	-	247	-	507	-
		Output Torque - Nm	8450	-	19200	-	38400	-
9.0	107	Input Power - kW	110	-	247	-	507	-
		Output Torque - Nm	9380	-	20800	-	42400	-
10.	96	Input Power - kW	107	-	247	-	507	-
		Output Torque - Nm	10100	-	22700	-	48600	-
11.	86	Input Power - kW	104	-	244	-	507	-
		Output Torque - Nm	10800	-	25600	-	54200	-
12.	77	Input Power - kW	95.1	107	217	247	503	507
		Output Torque - Nm	11000	12700	25600	29200	58600	61000
14.	69	Input Power - kW	86.0	103	195	246	448	507
		Output Torque - Nm	11000	13500	25600	33200	58600	68000
16.	60	Input Power - kW	77.3	94.0	171	229	385	507
		Output Torque - Nm	11000	13700	25600	34700	58600	74200
18.	53	Input Power - kW	68.9	85.0	150	206	350	482
		Output Torque - Nm	11000	13800	25600	34900	58600	79100
20.	48.0	Input Power - kW	60.8	76.3	139	182	309	414
		Output Torque - Nm	11000	14000	25600	35200	58600	79100
22.	43.6	Input Power - kW	45.8	68.0	122	161	269	376
		Output Torque - Nm	9550	14000	25600	35300	58600	79100
25.	38.4	Input Power - kW	45.8	60.1	109	150	247	332
		Output Torque - Nm	10700	14000	25600	35400	58600	79200
28.	34.3	Input Power - kW	42.8	45.8	98.2	122	221	269
		Output Torque - Nm	11000	12000	25600	33000	58600	73500
32.	30.0	Input Power - kW	38.5	45.8	86.0	115	189	260
		Output Torque - Nm	11000	13400	25600	34700	58600	77100
36.	26.7	Input Power - kW	34.3	42.3	75.8	104	172	238
		Output Torque - Nm	11000	14000	25600	34900	58600	79200
40.	24.0	Input Power - kW	30.3	38.0	70.2	91.8	152	204
		Output Torque - Nm	11000	14000	25600	35200	58600	79200
45.	21.3	Input Power - kW	27.5	33.9	62.1	81.1	143	185
		Output Torque - Nm	10800	14000	25600	35300	58600	79200
50.	19.2	Input Power - kW	25.0	29.9	54.4	75.5	123	163
		Output Torque - Nm	10900	14000	25600	35400	58600	79300
56.	17.1	Input Power - kW	22.3	27.5	48.0	65.7	112	145
		Output Torque - Nm	11000	14000	25600	35000	58600	75000
63.	15.2	Input Power - kW	19.7	24.7	44.4	58.1	98.5	132
		Output Torque - Nm	11000	14000	25600	35200	58600	79200
71.	13.5	Input Power - kW	-	22.0	-	51.3	-	120
		Output Torque - Nm	-	14000	-	35300	-	79300
80.	12.0	Input Power - kW	-	19.5	-	47.7	-	106
		Output Torque - Nm	-	14000	-	35400	-	79300

TRIPLE REDUCTION

**RIGHT ANGLE SHAFT
MECHANICAL RATINGS AT 725 RPM INPUT**

9902

NOMINAL RATIO	NOMINAL OUTPUT SPEED REV / MIN	CAPACITY	RIGHT ANGLE SHAFT UNITS - SIZE					
			G14	G15	G16	G17	G18	G19
8.0	91	Input Power - kW	86.4	-	187	-	383	-
		Output Torque - Nm	8450	-	19200	-	38400	-
9.0	81	Input Power - kW	83.2	-	187	-	383	-
		Output Torque - Nm	9380	-	20800	-	42400	-
10.	73	Input Power - kW	81.0	-	187	-	383	-
		Output Torque - Nm	10100	-	22700	-	48600	-
11.	65	Input Power - kW	78.5	-	184	-	383	-
		Output Torque - Nm	10800	-	25600	-	54100	-
12.	58	Input Power - kW	71.8	81.0	164	187	380	383
		Output Torque - Nm	11000	12700	25600	29200	58600	61000
14.	52	Input Power - kW	65.0	78.1	147	186	339	383
		Output Torque - Nm	11000	13500	25600	33200	58600	68000
16.	45	Input Power - kW	58.4	71.0	129	173	291	383
		Output Torque - Nm	11000	13700	25600	34700	58600	74100
18.	40	Input Power - kW	52.0	64.2	114	156	264	365
		Output Torque - Nm	11000	13800	25600	34900	58600	79100
20.	36.3	Input Power - kW	45.9	57.6	105	138	233	313
		Output Torque - Nm	11000	14000	25600	35200	58600	79200
22.	33.0	Input Power - kW	34.6	51.4	92.4	122	204	285
		Output Torque - Nm	9550	14000	25600	35300	58600	79200
25.	29.0	Input Power - kW	34.6	45.4	82.6	113	187	251
		Output Torque - Nm	10700	14000	25600	35400	58600	79200
28.	25.9	Input Power - kW	32.4	34.6	74.2	92.4	167	204
		Output Torque - Nm	11000	12000	25600	33000	58600	73500
32.	22.7	Input Power - kW	29.1	34.6	65.0	87.0	143	196
		Output Torque - Nm	11000	13400	25600	34700	58600	77100
36.	20.1	Input Power - kW	25.9	32.0	57.3	78.4	130	180
		Output Torque - Nm	11000	14000	25600	34900	58600	79200
40.	18.1	Input Power - kW	22.9	28.7	53.1	69.4	114	154
		Output Torque - Nm	11000	14000	25600	35200	58600	79300
45.	16.1	Input Power - kW	20.8	25.6	46.9	61.3	108	140
		Output Torque - Nm	10800	14000	25600	35300	58600	79300
50.	14.5	Input Power - kW	18.9	22.6	41.1	57.0	92.7	123
		Output Torque - Nm	11000	14000	25600	35400	58600	79300
56.	12.9	Input Power - kW	16.8	20.8	36.2	49.6	84.2	110
		Output Torque - Nm	11000	14000	25600	35000	58600	75000
63.	11.5	Input Power - kW	14.9	18.7	33.6	43.9	74.4	100
		Output Torque - Nm	11000	14000	25600	35200	58600	79300
71.	10.2	Input Power - kW	-	16.6	-	38.7	-	90
		Output Torque - Nm	-	14000	-	35300	-	79300
80.	9.1	Input Power - kW	-	14.7	-	36.0	-	80.2
		Output Torque - Nm	-	14000	-	35400	-	79300

TRIPLE REDUCTION

9905

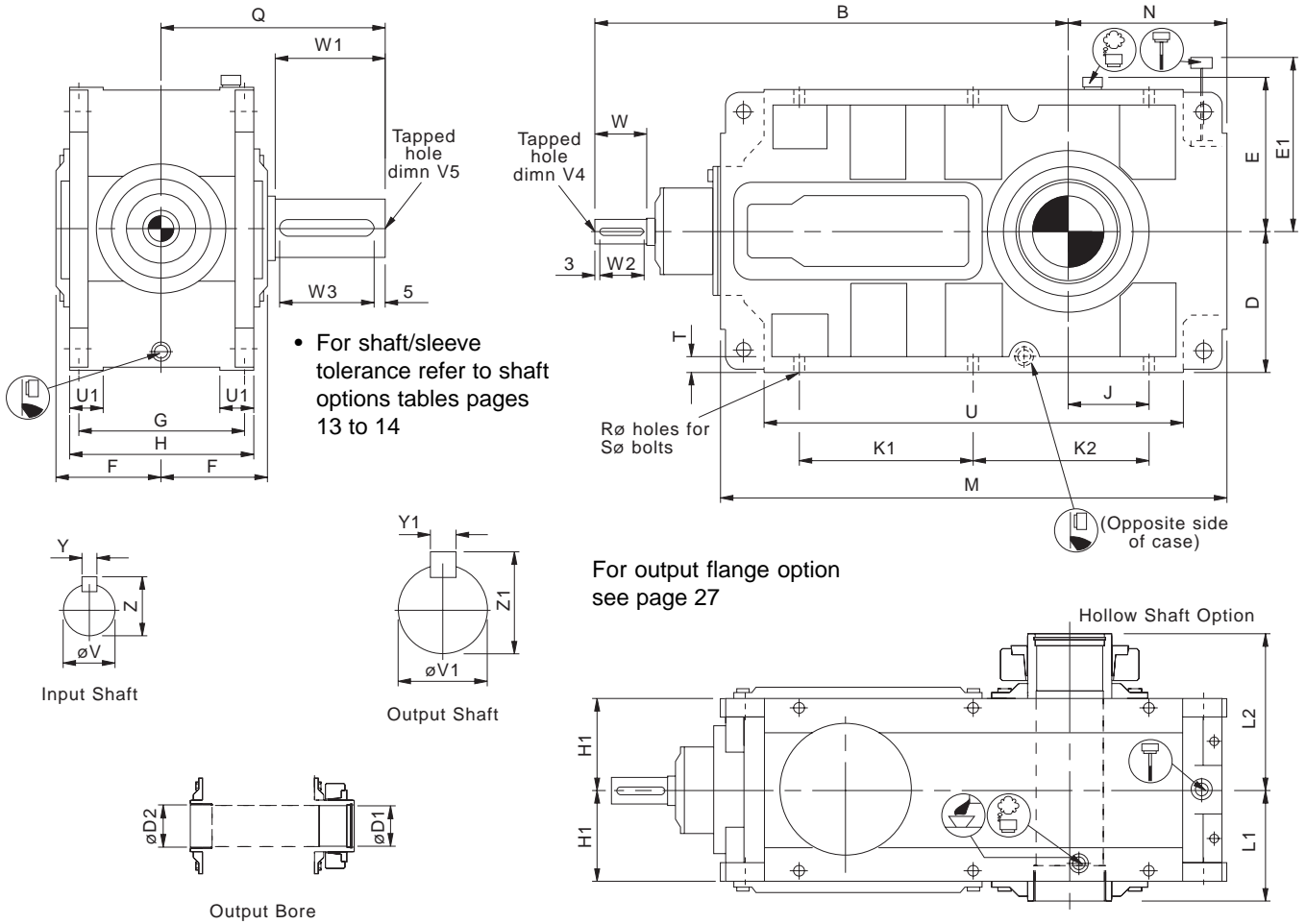
Thermal Ratings kW

Right Angle Shaft Units - Triple Reduction

Type of Cooling	Input Speed (rev/min)	RIGHT ANGLE SHAFT UNIT SIZE					
		14	15	16	17	18	19
Units with no Additional Cooling	1750	75	75	125	125	193	209
	1450	69	69	115	115	178	192
	1160	67	67	111	111	173	187
	960	65	65	108	108	168	181
	725	63	63	105	105	162	176
Units with Fan Cooling	1750	169	169	281	281	435	471
	1450	138	138	230	230	356	385
	1160	124	124	206	206	320	346
	960	107	107	178	178	277	299
	725	95	95	157	157	244	264
Units with Cooling Coil	1750	227	227	378	378	548	564
	1450	215	215	358	358	519	533
	1160	200	200	333	333	483	497
	960	192	192	320	320	464	478
	725	185	185	308	308	447	460
Units with Fan and Cooling Coil	1750	321	321	534	534	790	825
	1450	284	284	473	473	696	726
	1160	257	257	428	428	630	656
	960	234	234	390	390	573	595
	725	217	217	361	361	528	548

9902

G 3 0 B Triple Reduction Right Angle Units Horizontal



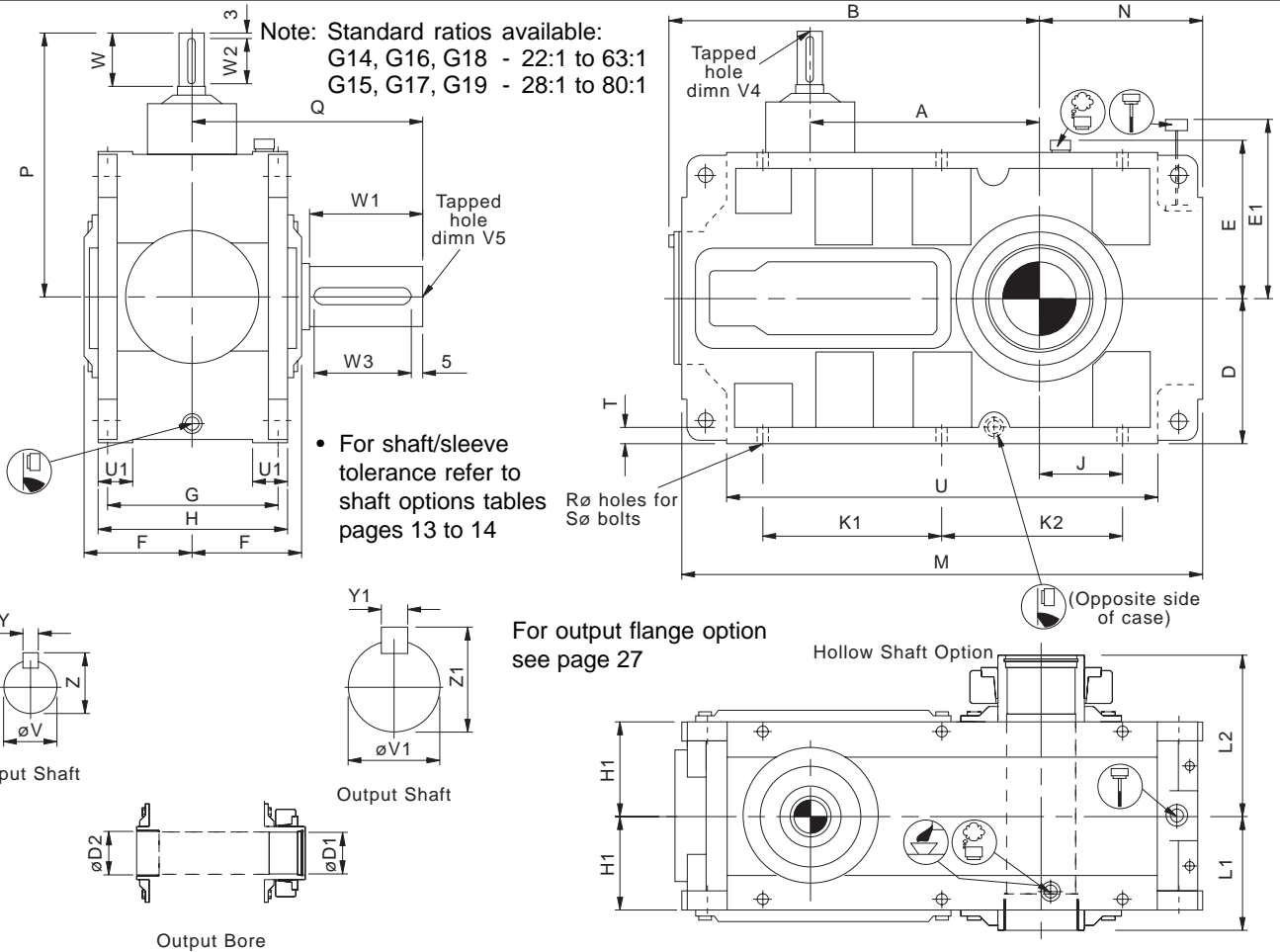
Unit Size	B	D	E	E1	F	G	H	H1	J	K1	K2	M	N	Q	R	S	T	U	U1
G14	720	230	250	370	177	265	300	150	170	285		820	295	360	18.5	6 x M16 x 60*	25	684	55
G15	760	230	250	370	177	265	300	150	130	285		820	255	370	18.5	6 x M16 x 60*	25	684	55
G16	940	300	335	515	225	330	380	190	225	385		1060	370	460	28	6 x M24 x 80*	30	898	70
G17	995	300	335	515	225	330	380	190	170	385		1060	315	480	28	6 x M24 x 80*	30	898	70
G18	1220	385	420	710	290	440	500	250	153	520	350	1240	338	600	33	6 x M30 x 100*	37	1036	90
G19	1285	385	420	710	290	440	500	250	220	500		1374	407	650	33	6 x M30 x 100*	40	1170	90

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	38 k6	M12 x 32	100	90	10	41	110 m6	M30 x 63	180	170	28	116	95	100	180	255
G15	38 k6	M12 x 32	100	90	10	41	130 m6	M30 x 63	190	180	32	137	110	115	180	260
G16	50 k6	M16 x 36	140	130	14	53.5	145 m6	M42 x 81	230	220	36	153	125	130	230	325
G17	50 k6	M16 x 36	140	130	14	53.5	170 m6	M42 x 81	250	240	40	179	145	150	230	340
G18	75 m6	M20 x 43	160	150	20	79.5	190 m6	M42 x 81	300	290	45	200	160	170	300	410
G19	75 m6	M20 x 43	160	150	20	79.5	210 m6	M42 x 81	350	340	50	221	170	180	300	430

* Maximum bolt length

9902 **HORIZONTAL 'J' TYPE RIGHT ANGLE SHAFTS TRIPLE REDUCTION**

G 3 0 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	325	554	230	250	370	177	265	300	150	170	285	820	295	395	360	18.5	6 x M16 x 60*	25	684	55	
G15	365	594	230	250	370	177	265	300	150	130	285	820	255	395	370	18.5	6 x M16 x 60*	25	684	55	
G16	430	728	300	335	515	225	330	380	190	225	385	1060	370	510	460	28	6 x M24 x 80*	30	898	70	
G17	485	783	300	335	515	225	330	380	190	170	385	1060	315	510	480	28	6 x M24 x 80*	30	898	70	
G18	570	953	385	420	710	290	440	500	250	153	520	350	1240	338	650	600	33	6 x M30 x 100*	37	1036	90
G19	635	1018	385	420	710	290	440	500	250	220	500	1374	407	650	650	33	6 x M30 x 100*	40	1170	90	

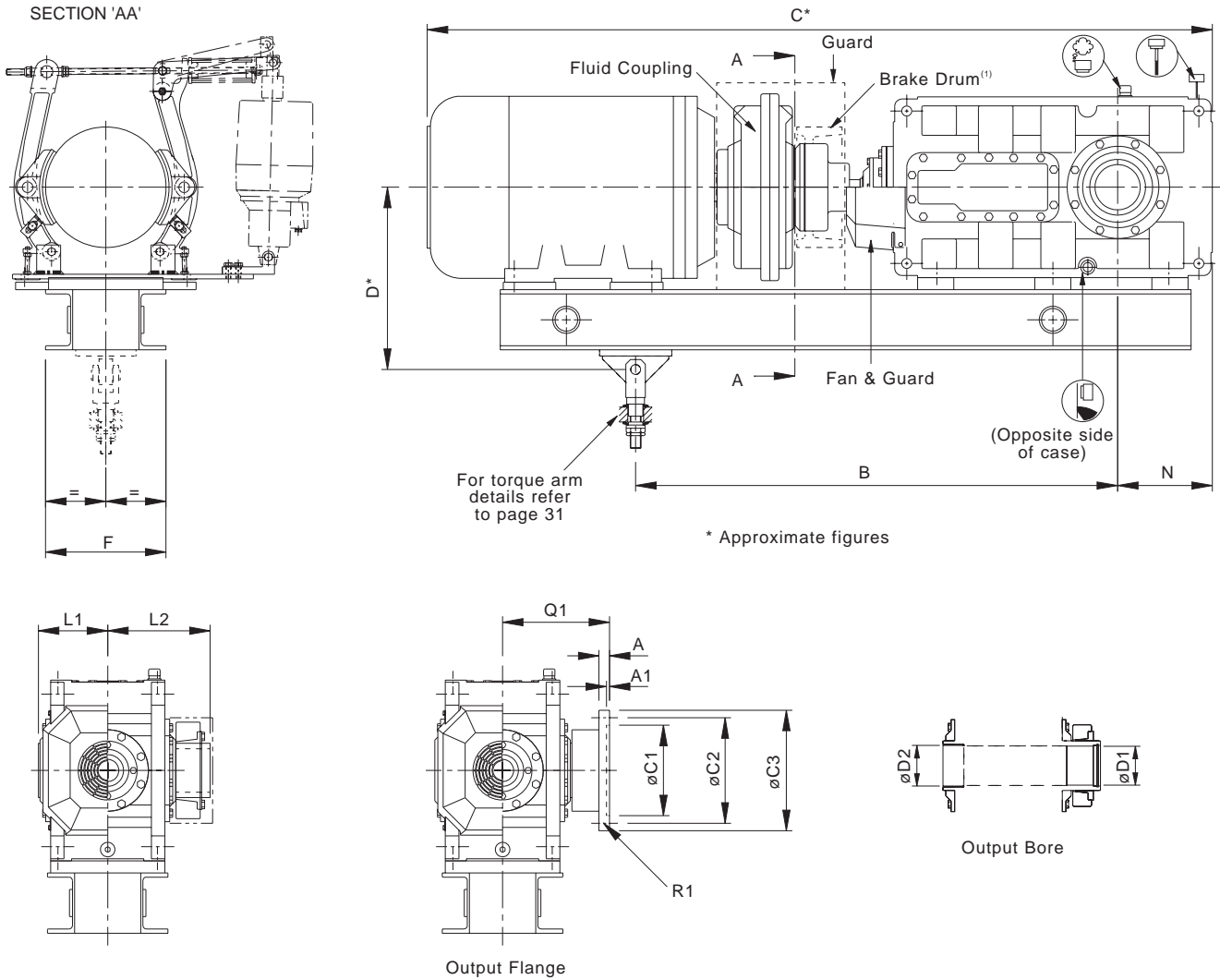
Unit Size	Input Shaft •						Output Shaft •						Output Bore •			
	V	V4	W	W2	Y	Z	V1	V5	W1	W3	Y1	Z1	D1	D2	L1	L2
G14	38 k6	M12 x 32	100	90	10	41	110 m6	M30 x 63	180	170	28	116	95	100	180	255
G15	38 k6	M12 x 32	100	90	10	41	130 m6	M30 x 63	190	180	32	137	110	115	180	260
G16	50 k6	M16 x 36	140	130	14	53.5	145 m6	M42 x 81	230	220	36	153	125	130	230	325
G17	50 k6	M16 x 36	140	130	14	53.5	170 m6	M42 x 81	250	240	40	179	145	150	230	340
G18	75 m6	M20 x 43	160	150	20	79.5	190 m6	M42 x 81	300	290	45	200	160	170	300	410
G19	75 m6	M20 x 43	160	150	20	79.5	210 m6	M42 x 81	350	340	50	221	170	180	300	430

* Maximum bolt length

**DIMENSIONS - HORIZONTAL RIGHT ANGLE SHAFTS
TRIPLE REDUCTION WITH MOTOR SWING BASE**

0005

G 30 B Triple Reduction Right Angle Units Horizontal



(1) For brake disc option consult Textron Power Transmission for details

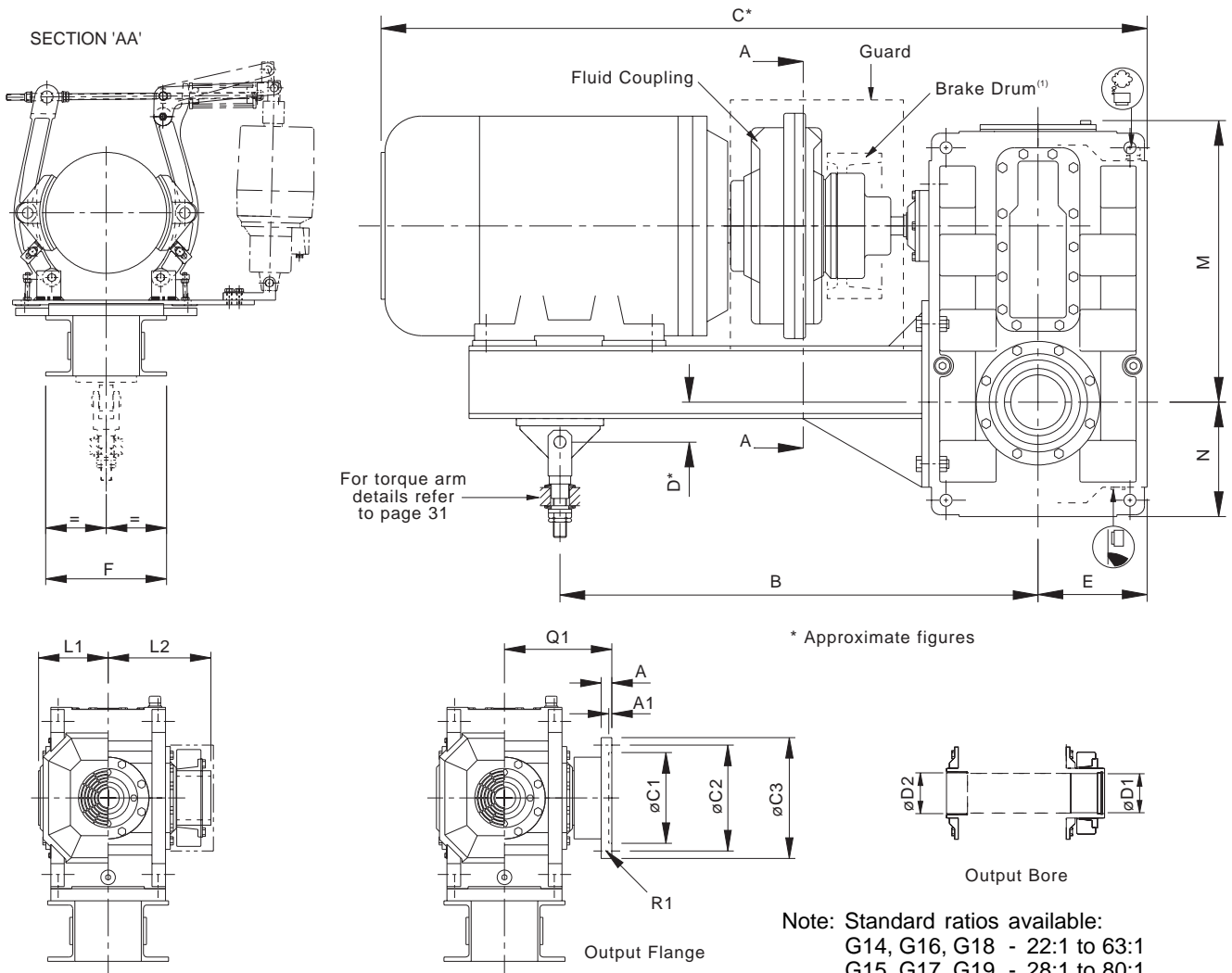
Unit Size	Motor Size	B	C*	D	F	N	Output Flange					Output Bore •					
							C1	C2	C3	A	A1	R1	Q1	D1	D2	L1	L2
G14	225	1300		490	320	295	180	280	320	30	7	8xø18	290	95	100	180	255
	250		515														
	280		550														
G15	225	1300		490	320	225	180	280	320	30	7	8xø18	290	110	115	180	260
	250		515														
	280		550														
G16	280	1600		580	400	370	300	350	400	35	10	8xø25	355	125	130	230	325
	315		610														
G17	280	1600		580	400	315	300	350	400	35	10	8xø32	355	145	150	230	340
	315		610														
G18	315	1800		715	520	338	280	480	560	41	12	8xø32	455	160	170	300	410
	355		715														
G19	355	1800		715	520	407	280	480	560	41	12	8xø32	455	170	180	300	430

Note: As dimensions vary according to motor / coupling manufacturer, it is recommended a certified drawing is requested to confirm sizes

**DIMENSIONS - HORIZONTAL LONG TRAVEL DRIVE
'J' TYPE RIGHT ANGLE SHAFTS TRIPLE REDUCTION**

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G 3 0 B Triple Reduction 'J' Type Right Angle Units Horizontal



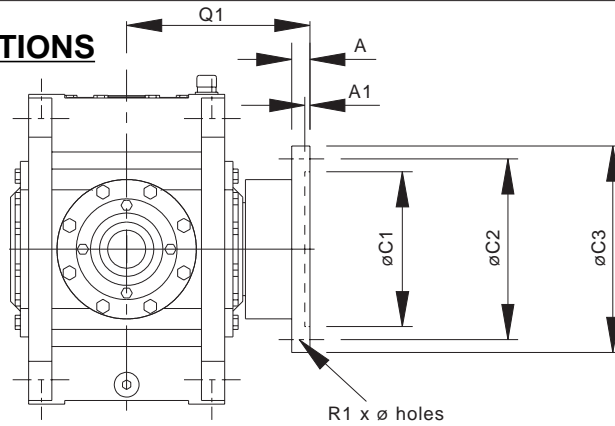
(1) For brake disc option consult Textron Power Transmission for details

Unit Size	Motor Size	B	C*	D	E	F	M	N	Output Flange						Output Bore •				
									C1	C2	C3	A	A1	R1	Q1	D1	D2	L1	L2
G14	200	890	1443	135	230	320	554	295	180	280	320	30	7	8xø18	290	95	100	180	255
	225		1558	160															
	250		1558	185															
G15	200	890	1443	95	230	320	594	255	180	280	320	30	7	8xø18	290	110	115	180	260
	225		1558	120															
	250		1558	145															
G16	250	1080	1733	100	300	400	728	370	300	350	400	35	10	8xø25	355	125	130	230	325
	280		1882	130															
	315		1882	170															
G17	250	1080	1733	45	300	400	783	315	300	350	400	35	10	8xø32	355	145	150	230	340
	280		1882	75															
	315		1882	115															
G18	280	1320	2107	45	385	520	953	338	280	480	560	41	12	8xø32	455	160	170	300	410
	315		2290	80															
G19	280	1320	2107	20**	385	520	1018	407	280	480	560	41	12	8xø32	455	170	180	300	430
	315		2290	15															

** this dimension above outputshaft centre line

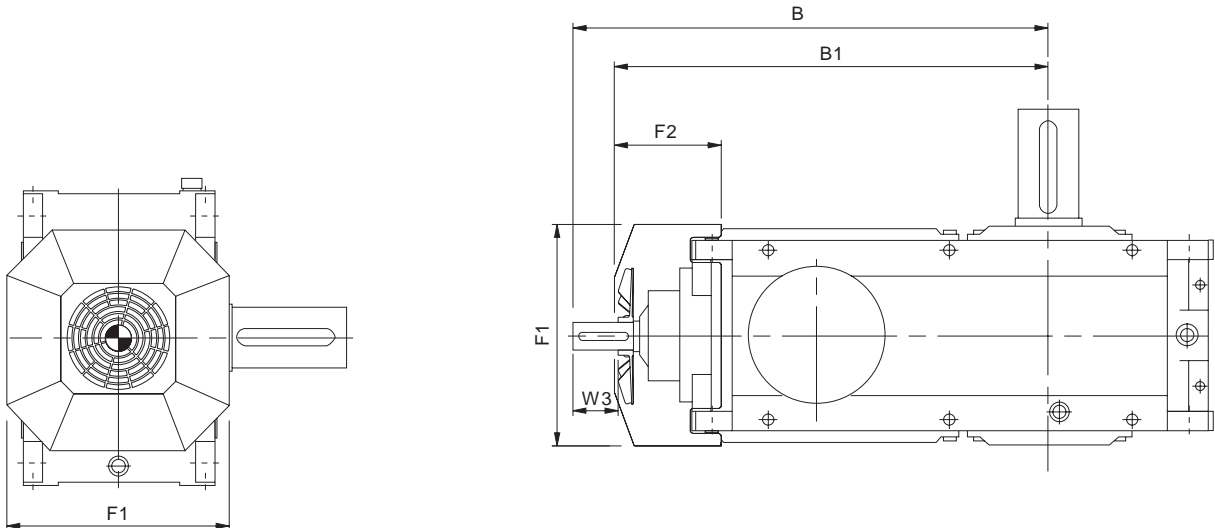
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OUTPUTFLANGE OPTIONS



UNIT SIZE	C1	C2	C3	Q1	A	A1	R1
G14 & G15	180.083 180.043	280	320	290	30	7	8 x ø18
G16 & G17	300.108 300.056	350	400	355	35	10	8 x ø25
G18 & G19	280.108 280.056	480	560	455	41	12	18 x ø32

Right Angle Shaft Units with Mechanical Fans



Triple Reduction Only

Unit Size	B	B1	F1	F2	W3 (useable shaft extension)
G14	720	650	350	165	75
G15	760	690	350	165	75
G16	940	845	430	195	105
G17	995	900	430	195	105
G18	1220	1122	575	280	105
G19	1285	1187	575	280	105

HOLLOW OUTPUT SHAFT WITH SHRINK DISC

9904

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.

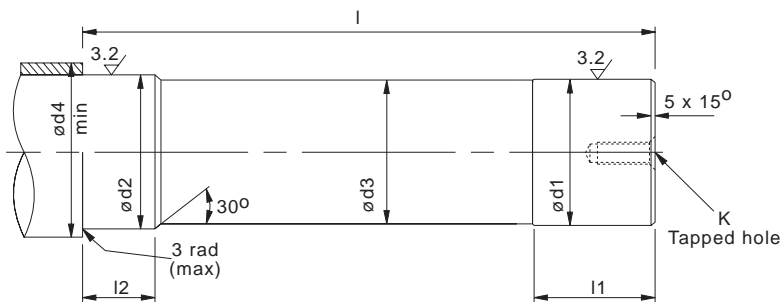
As the tapered surfaces of locking collar and inner ring are lubricated with Molykote 321R or similar and the taper angle is not self locking, locking collar will not seize on the inner ring and can be released easily when removal is necessary.

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.

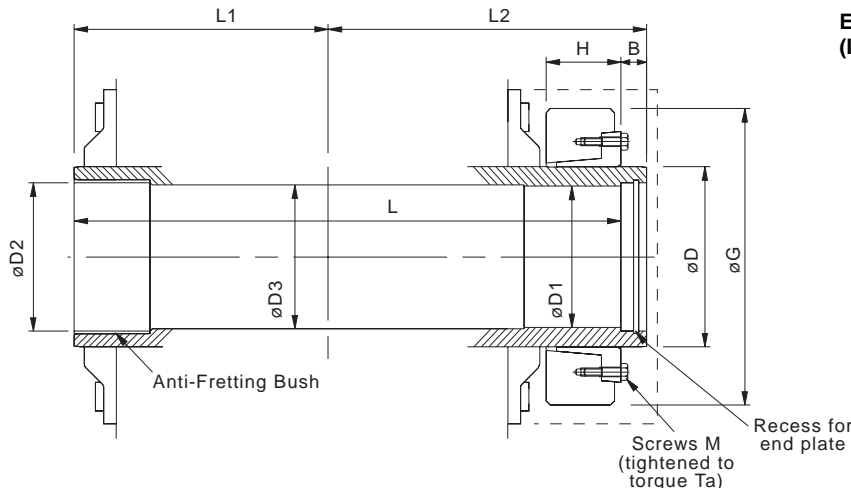
UNIT SIZE	CUSTOMERS SHAFT								SHRINK DISC						
	ød1	ød2	ød3	ød4	I	I1	I2	K	Type	B	øD	øG	H	M	Torque Ta(Nm)
14	95 h6	100 h6	94.5	115	413	55	50	M24 x50	HSD 120-81-95	22	120	197	53	M12	121
15	110 h6	115 h6	109.5	130	418	60	60	M24 x50	HSD 140-81-110	22	140	230	58	M14	193
16	125 h6	130 h6	124.5	147	530	70	70	M24 x50	HSD 160-81-125	28	160	290	68	M16	295
17	145 h6	150 h6	144.5	167	545	90	90	M30 x60	HSD 180-81-145	28	180	320	85	M16	295
18	160 h6	170 g6	159.5	185	685	90	90	M30 x60	HSD 200-81-160	30	200	340	85	M16	295
19	170 g6	180 g6	169.5	195	705	105	105	M30 x60	HSD 220-81-170	30	220	370	103	M20	570

UNIT SIZE	HOLLOW SHAFT						END PLATE							
	øD1	øD2	øD3	L	L1	L2	C	C1	ød5	ød6	øK1	M crs	P	Circlip
14	95	100	96	415	180	255	20	10.0 9.8	99.75 99.50	78	26	55	M12	D1300-1000
15	110	115	111	420	180	260	20	10.0 9.8	114.75 114.50	90	26	65	M12	D1300-1150
16	125	130	126	533	230	325	25	12.0 11.8	129.75 129.50	103	26	70	M16	D1300-1300
17	145	150	147	548	230	340	25	12.0 11.8	149.75 149.50	120	33	85	M16	D1300-1500
18	160	170	162	688	300	410	25	12.0 11.8	169.75 169.50	135	33	100	M16	D1300-1700
19	170	180	172	708	300	430	25	12.0 11.8	184.75 184.50	150	33	110	M16	D1300-1850

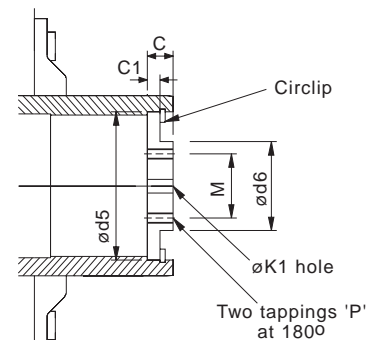
Customers Shaft



Hollow Shaft and Shrink Disc



End Plate (if required)



0005

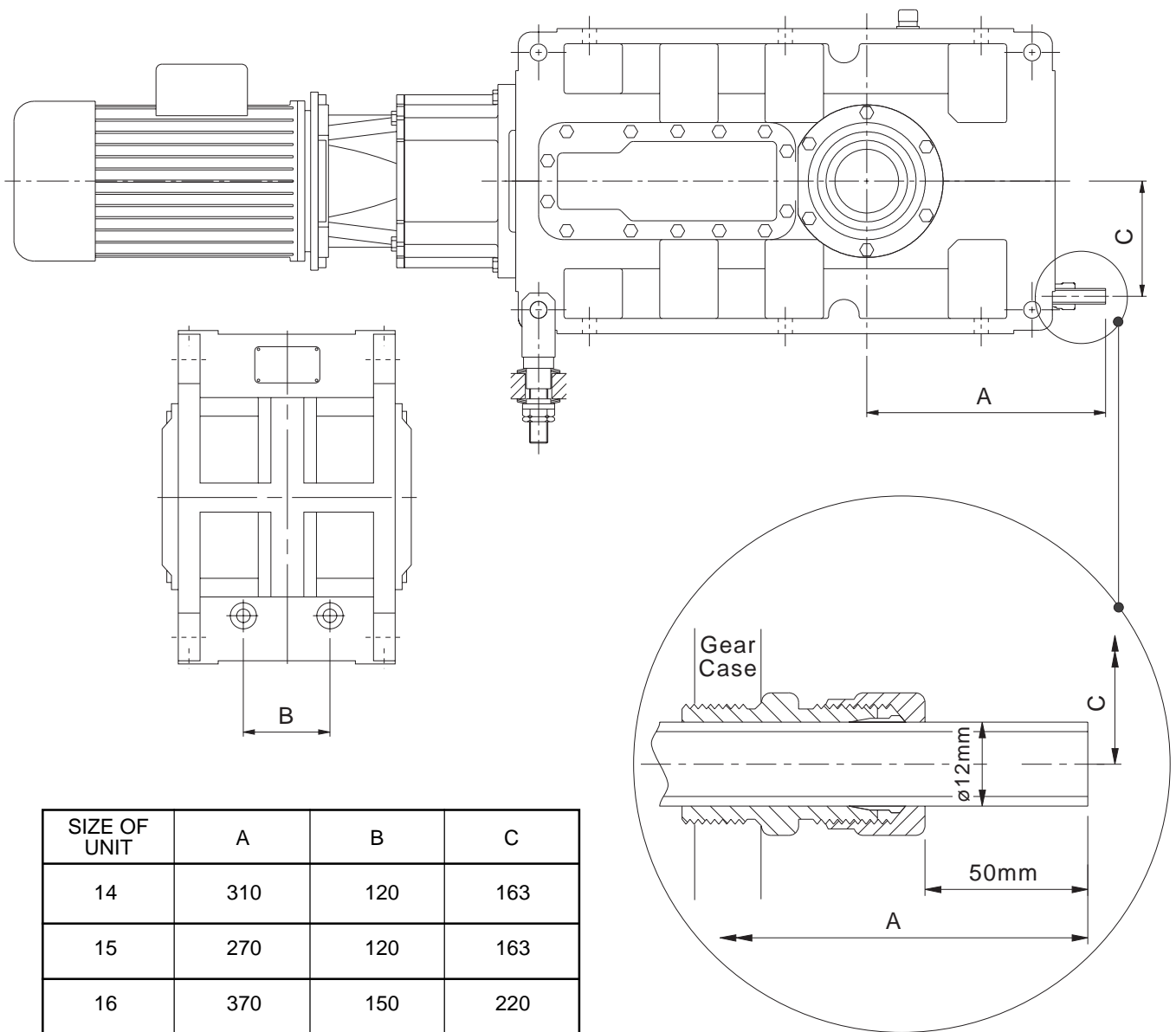
Cooling coils can be fitted to all unit types and handings.

Cooling coil connections for water inlet and outlet pipes are $\varnothing 12\text{mm}$ 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 10°C / 12°C temperature and at a flow rate of 5 litres / minute.

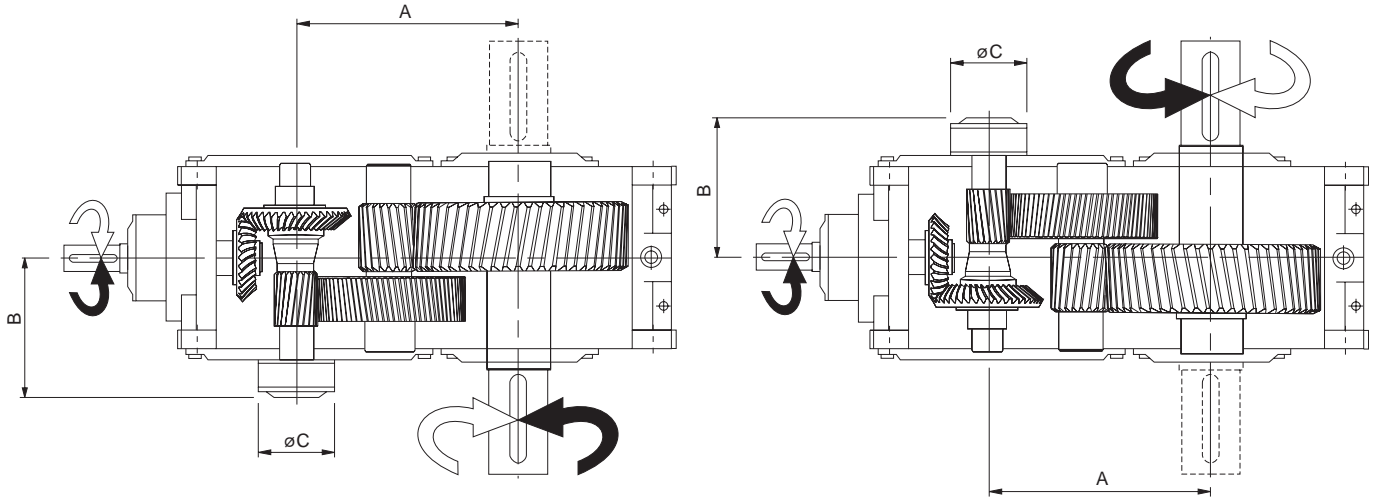


SIZE OF UNIT	A	B	C
14	310	120	163
15	270	120	163
16	370	150	220
17	315	150	220
18	315	200	285
19	385	200	285

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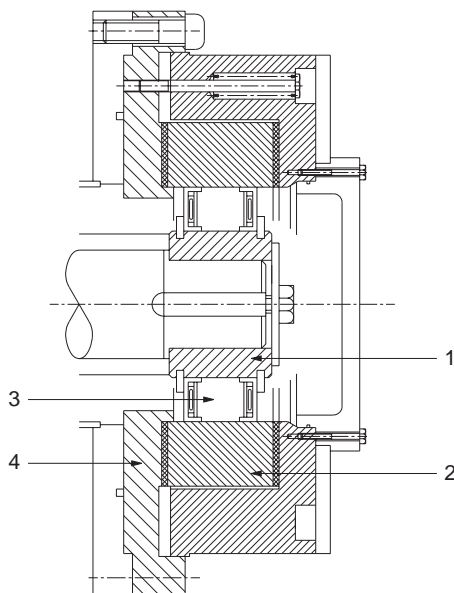
Externally mounted Backstops can be fitted to all Series G gear units, when required to operate in non-reversing drives. They are located on the helical pinion shaft and have adequate capacities to deal with full rated torques. All backstops are centrifugal lift off type. Changing the direction of locking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

Right Angle Shaft Unit



Unit Size	A	B		øC		Backstop
		Standard Backstop	Torque Limiting Backstop *	Standard Backstop	Torque Limiting Backstop *	
G14	325	275	319	175	330	85-40
G15	365					
G16	430	340	378	210	400	120-50
G17	485					
G18	570	433	474	290	500	170-63
G19	635					

* Torque limiting backstops with controllable tension release can be fitted as an alternative, these dimensions shall apply.



Torque Limiting Backstop

- 1 Inner ring
- 2 Outer ring
- 3 Lift off sprags
- 4 Friction lining

0005

Torque arms are available for all shaft mounted units. 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.

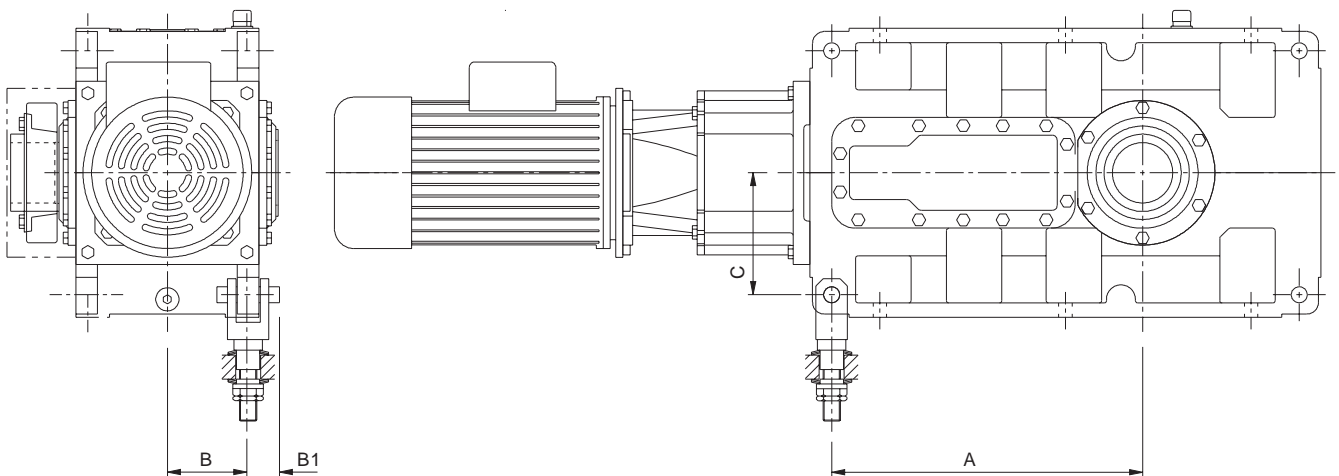
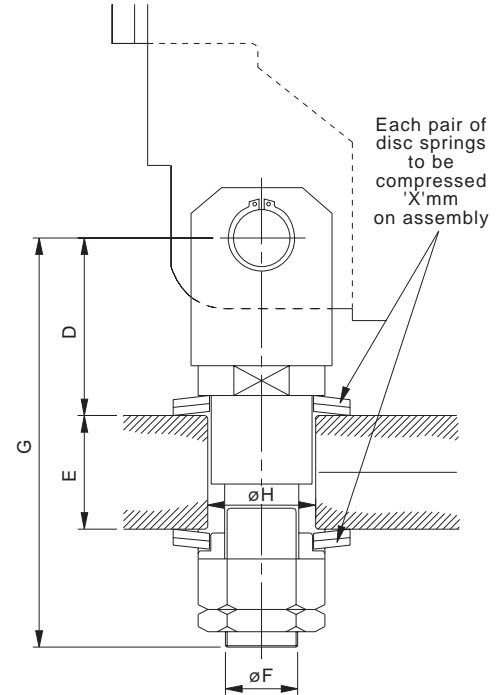
Shaft mounted units are designed to operate in the horizontal position. Reference must be made to Textron Power Transmission, with details, where units are required to operate in an inclined position.

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 Textron Power Transmission with specific application details.

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

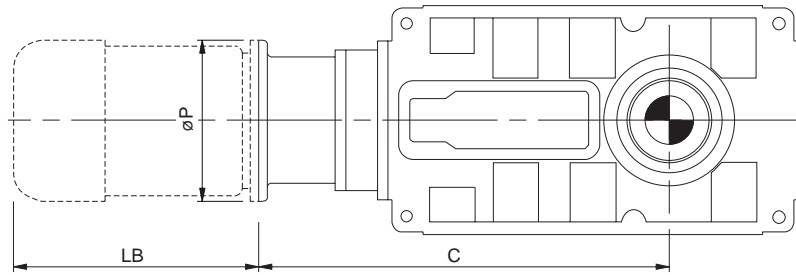
The torque arm must be flexibly mounted to the chassis structure



SIZE OF UNIT	A	B	B1	C	D	E		F	G	Disc Spring Ref	X	H
						MIN	MAX					
14	490	135	55	195	95	40	60	M30	207	80 x 41 x 4	1.1	41
15	530											
16	645	167	65	253	125	50	75	M36	262	100 x 51 x 6	1.1	52
17	700											
18	845	222	80	328	150	70	105	M48	336	125 x 71 x 6	1.7	72
19	910											

0005

Right Angle Shaft Units



Triple Reduction

IEC Motors					
Unit Size	Motor Size	Column 13 Entry	C	LB (max)	øP
G1430	132	A	803	420	300
	160	B	833	540	350
	180	C	833	598	350
	200	D	833	651	400
	225	E	863	786	450
	250	F	863	839	550
	280	G	863	951	550
G1530	132	A	843	420	300
	160	B	873	540	350
	180	C	873	598	350
	200	D	873	651	400
	225	E	903	786	450
	250	F	903	839	550
	280	G	903	951	550
G1630	200	D	1053	651	400
	225	E	1083	786	450
	250	F	1083	839	550
	280	G	1083	951	550
	315	H	1113	1028	660
G1730	200	D	1108	651	400
	225	E	1138	786	450
	250	F	1138	839	550
	280	G	1138	951	550
	315	H	1168	1028	660
G1830	225	E	1363	786	450
	250	F	1363	839	550
	280	G	1363	951	550
	315	H	1393	1028	660
G1930	225	E	1428	786	450
	250	F	1428	839	550
	280	G	1428	951	550
	315	H	1458	1028	660

NEMA Motors				
Motor Size	Column 13 Entry	C	LB (max)	øP
254TC/256TC	P	818.3	546	254.0
284TC/286TC	Q	834.1	605	285.8
324TC/326TC	R	850.0	657	339.7
364TC/365TC	S	865.9	785	339.7
404TC/405TC	T	900.8	839	352.4
254TC/256TC	P	858.3	546	254.0
284TC/286TC	Q	874.1	605	285.8
324TC/326TC	R	890.0	657	339.7
364TC/365TC	S	905.9	785	339.7
404TC/405TC	T	940.8	839	352.4
324TC/326TC	R	1070.0	657	339.7
364TC/365TC	S	1085.9	785	339.7
404TC/405TC	T	1120.8	839	352.4
444TC/445TC	U	1152.6	951	425.5
324TC/326TC	R	1125.9	657	339.7
364TC/365TC	S	1140.9	785	339.7
404TC/405TC	T	1175.8	839	352.4
444TC/445TC	U	1207.6	951	425.5
364TC/365TC	S	1365.9	785	339.7
404TC/405TC	T	1400.8	839	352.4
444TC/445TC	U	1432.6	951	425.5
364TC/365TC	S	1430.9	785	339.7
404TC/405TC	T	1465.8	839	352.4
444TC/445TC	U	1497.6	951	425.5

9901

UNIT MASS (KG)

Gear Unit	No of Reductions	Output Shaft	Unit Size					
			14	15	16	17	18	19
Right Angle Shaft	3 Stage	Standard	395	450	840	940	1640	1985
		Shaft Mount	375	420	705	890	1545	1865
		Agitator	435	490	890	1015	1740	2105
	4 Stage	Standard	-	-	840	940	1620	1965
		Shaft Mount	-	-	705	705	1525	1845
		Agitator	-	-	890	890	1720	2085

Mass excludes: bedplates, lubricant, cooling fans or coil.

UNIT VOLUME (m³)

Gear Unit	No of Reductions	Output Shaft	Unit Size					
			14	15	16	17	18	19
Right Angle Shaft	3 Stage	Standard	0.262	0.266	0.570	0.586	1.116	1.280
		Shaft Mount	0.212	0.214	0.462	0.474	0.890	0.994
		Agitator	0.304	0.314	0.645	0.660	1.260	1.440
	4 Stage	Standard	-	-	0.581	0.598	1.148	1.314
		Shaft Mount	-	-	0.470	0.483	0.916	1.021
		Agitator	-	-	0.657	0.673	1.296	1.478

IMPORTANT

Product Safety Information

General - The following information is important in ensuring safety. It **must** be brought to the attention of personnel involved in the selection of Textron 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.

Textron 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 vapour 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 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 defenders should be provided for personnel in these circumstances. Reference should be made to the Department of Employment Code of Practice 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, Textron Power Transmission 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.
The rotating components (gears and shafts) must be turned a few revolutions once a month (to prevent bearings brinelling).
 - (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.
 - (c) Installation must be performed in accordance with the manufacturer's instructions and be undertaken by suitably qualified personnel.
 - (d) Before working on a gearbox or associated equipment, ensure that the load has been removed from the system to eliminate the possibility of any movement of the machinery and isolate power supply. Where necessary, provide mechanical means to ensure the machinery cannot move or rotate. Ensure removal of such devices after work is complete.
 - (e) Ensure the proper maintenance of gearboxes in operation. Use only the correct tools and Textron Power Transmission approved spare parts for repair and maintenance. Consult the Maintenance Manual before dismantling or performing maintenance work.
- 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 catalogue 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.

Any further information or clarification required may be obtained by contacting Textron Power Transmission.

Contact Textron Power Transmission

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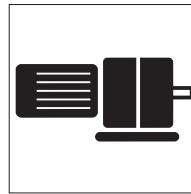
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Fax: 0800 970 4004

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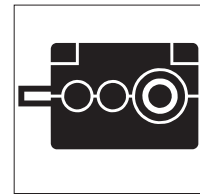
Cone Drive Textron
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AGRICULTURE



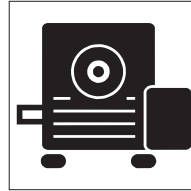
Geared motors

AUTOMOTIVE



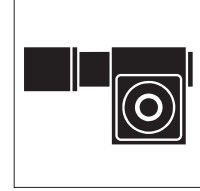
Industrial reducers

CEMENT



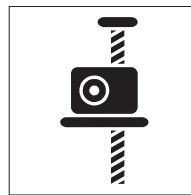
Worm

CHEMICAL



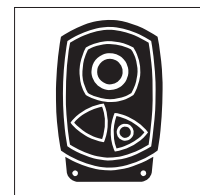
Precision products

CONSTRUCTION



Screwjacks

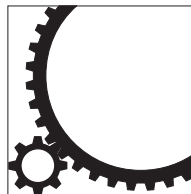
DEFENCE



Shaftmount

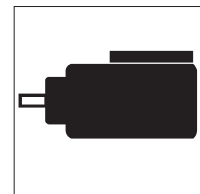
ENERGY

FOOD & BEVERAGE



Horizontal mill drives

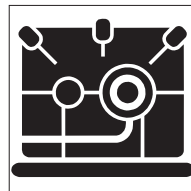
FORESTRY



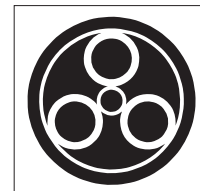
Vertical mill drives

MARINE

METALS



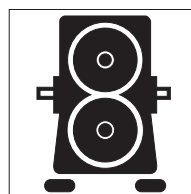
High speed



Planetary units

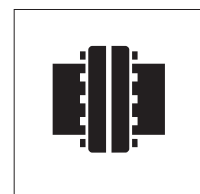
MINING

PULP & PAPER



Specialist drives

QUARRYING



Couplings

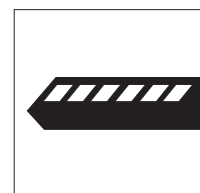
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