SERIES X CONE RING

SERIES X

DAVID BROWN
RADICON

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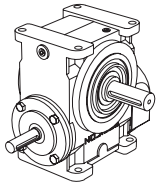
ALL PRODUCTS IN THE RADICON RANGE

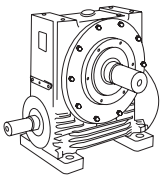
9712

SERIES A - JUNIOR



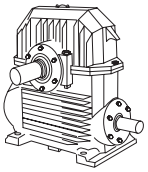
Power capacity to 11 kW
Output torque capacity to 1,000 Nm
Sizes 280, 410, 510, 610, 730 and 860
Foot, flange and shaft mounting

SERIES A - MID RANGE



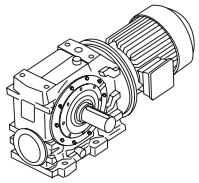
Power capacity to 140 kW
Output torque capacity to 10,000 Nm
Sizes 1002, 1252, 1602 and 2002
Foot, flange and shaft mounting

SERIES A - HEAVY DUTY



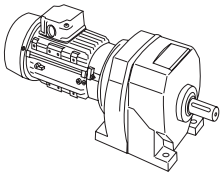
Power capacity to 835 kW
Output torque capacity to 100,000 Nm
Sizes 10, 12, 14, 17, 20 and 24
Foot, flange and shaft mounting

SERIES C



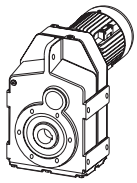
Power capacity to 45 kW
Output torque capacity to 10,000 Nm
Sizes 03, 04, 05, 06, 07, 08, 09 and 10
Foot, flange and shaft mounting

SERIES M



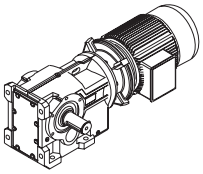
Power capacity to 90 kW
Output torque capacity to 11,000 Nm
Sizes 03, 04, 06, 07, 08, 09, 10, 13 and 14
Foot and flange mounting

SERIES F



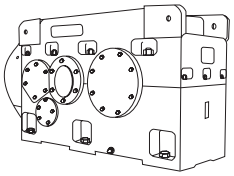
Power capacity to 45 kW
Output torque capacity to 7,200 Nm
Sizes 04, 06, 07, 08, 09 and 10
Foot, flange and shaft mounting

SERIES K



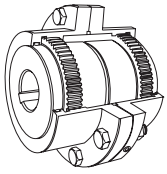
Power capacity to 90 kW
Output torque capacity to 12,300 Nm
Sizes 08, 09, 10 and 12
Foot, flange and shaft mounting

SERIES H



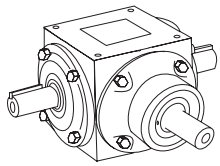
Power capacity to 8300 kW
Output torque capacity to 128,000 Nm
Sizes 140, 160, 180, 200, 225, 250, 280, 315, 355, 400 and 450
Single, double and triple parallel and right angle shaft
Foot and shaft mounting

SERIES X



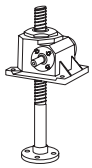
Nylicon low cost couplings to 55 mm dia. bore
610 Series Cone-Ring type to 355 mm dia. bore
620 Series Gear type to 540 mm dia. bore
Sadiguard Torque limiters for overload protection, to 115 mm dia. bore

SERIES R



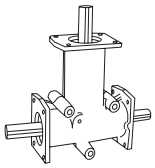
Power capacity to 265 kW
Output torque capacity to 1,265 Nm
Sizes 120, 160, 200, 260 and 350
Output shaft and shaft mounting

SERIES S



Load capacity to 100 tonnes
Sizes 0.5, 1, 2.5, 5, 10, 25, 50 and 100

SERIES T



Power capacity to 15 kW
Output torque capacity to 132 Nm
Sizes 1, 2, 3, 4 and 5

CONTENTS

SERIES X RADICON

GENERAL DESCRIPTION & UNIT DESIGNATIONS

9711

GENERAL DESCRIPTION

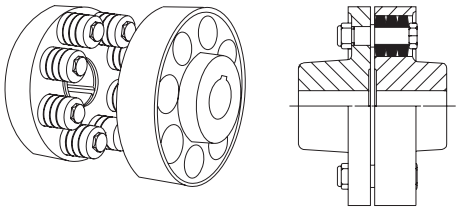
Flexible Cone Ring couplings, types 611, 612, 613, 614 are available with bore sizes up to 355mm diameter and a basic rated torque up to 188700 Nm.

They accommodate all types of shaft misalignment met in normal operation, being a development of the old pin and bush design which it resembles in simplicity and ease of assembly and dismantling. It differs fundamentally in the way in which the resilient material behaves by substituting the parallel bush with a series of rubber rings of conical section. This provides greatly improved torsional flexibility together with a limited freedom of axial movement of one connected shaft relative to the other.

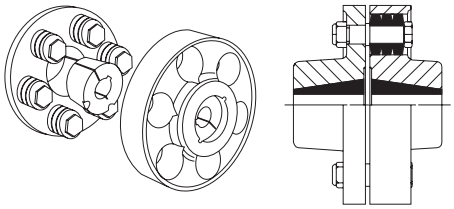
Two options are available, MEDIUM DUTY and HEAVY DUTY. Medium duty couplings (types 612 and 614) are identical to heavy duty couplings (types 611 and 613) except that they are supplied with only half the standard number of pin and ring assemblies. This enables a useful cost saving to be made when the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

Flexible Cone Ring couplings are also available with taper bushes (types 613 and 614) with bore sizes up to 125mm diameter, providing ease of assembly and dismantling together with flexibility to change shaft sizes by changing only the taper bushes.

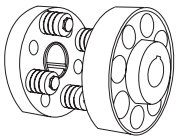
611 Heavy Duty Straight Bored



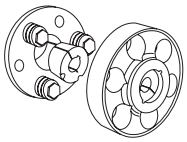
613 Heavy Duty Taper Bushed



612 Medium Duty Straight Bored



614 Medium Duty Taper Bushed



UNIT DESIGNATIONS

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
*															
EXAMPLE	X	6	1	2	0	2	M	0	2	5	M	0	2	8	-

1 - SERIES X

RANGE [X]

2, 3, 4 - TYPE OF COUPLING

- [6 1 1] - CONE RING FLEXIBLE COUPLING STRAIGHT BORED, HEAVY DUTY
- [6 1 2] - CONE RING FLEXIBLE COUPLING STRAIGHT BORED, MEDIUM DUTY
- [6 1 3] - CONE RING FLEXIBLE COUPLING TAPER BUSHED, HEAVY DUTY
- [6 1 4] - CONE RING FLEXIBLE COUPLING TAPER BUSHED, MEDIUM DUTY

5, 6 - SIZE OF COUPLING

eg [0 5] / [1 1] See Page 17

7 - DRIVING HUB BORE AND KEYWAY

- [M] - METRIC BORE PARALLEL KEYWAY
- [T] - METRIC BORE TAPER KEYWAY
- [I] - IMPERIAL BORE PARALLEL KEYWAY
- [B] - IMPERIAL BORE TAPER KEYWAY
- [P] - PILOT BORE

8, 9, 10 - DRIVING HUB BORE DIAMETER REFERENCE

eg [- - -] / [0 2 5] See Pages 12 to 16

11 - DRIVEN HUB BORE AND KEYWAY

- [M] - METRIC BORE PARALLEL KEYWAY
- [T] - METRIC BORE TAPER KEYWAY
- [I] - IMPERIAL BORE PARALLEL KEYWAY
- [B] - IMPERIAL BORE TAPER KEYWAY
- [P] - PILOT BORE

12, 13, 14 - DRIVEN HUB BORE DIAMETER REFERENCE

eg [- - -] / [0 2 8] See Pages 12 to 16

15 - ADDITIONAL REQUIREMENTS

- [-] - NON REQUIRED
- [F] - FLAME PROOF
- [V] - VERTICAL MOUNTING

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

The size of coupling required is determined by using the selection procedure in which the actual loads are compared with the catalogue rating.

Fm **Mechanical Service Factor** (table 2, page 7)

Catalogue ratings are based on a standard set of loading conditions, whereas in an actual application in order to provide for the dynamic torque which must be transmitted, it may be necessary to increase the power to be transmitted by a load classification/service factor. The factor (Fm) allows for momentary increases in torque due to the loading characteristics of the drive.

Fs **Start/stop Factor** (table 6, page 11)

The coupling basic rating allows for up to one start, braking cycle or momentarily overload per hour. If the application requires more, the factor (Fs) is applied.

Fr **Rating Factor** (table 7, page 11)

To allow the adjustment of the coupling basic rating for speed of rotation and misalignment the factor (Fr) is applied. To obtain this factor the following is required:

(i) Maximum angular misalignment, or the equivalent angle due to the parallel offset (this can be obtained by reference to the summary table (table 4, page 9) where for the allowable parallel offset quoted, an equivalent angular misalignment is given)

(ii) The size of the coupling

(iii) The coupling operating speed (rev/min) expressed as a percentage of the maximum operating speed for the size of coupling.

Coupling Basic Ratings (table 5, page 10)

The coupling basic rating (kW per 100 rev/min) and those at coupling speeds of 960 rev/min and 1450 rev/min are given based on:

(i) The coupling operating up to 10 hours per day

(ii) Up to one start or stop cycle per hour

(iii) Total misalignment equivalent to an angular misalignment of 1^{o}

(iv) 100% momentary overload during the start or stop cycle.

Ambient Temperature

A X610 cone ring coupling is capable of operating in the ambient range of $-30^{o}C$ to $70^{o}C$.

EXAMPLE APPLICATION DETAILS

Connection = motor driven worm gear unit to a conveyor with a 65mm dia. headshaft, the absorbed power is 25kW at a speed of 200 rev/min
Gear unit = A1602 with a 75mm dia. output shaft
Angular misalignment of shafts = 1.0° with a parallel offset of 0.2mm
Application = Assembly conveyor not uniformly fed
Duration of service (hours per day) = 20
Starts/stops per hour = 5
Does the application reverse ? = Yes

1. DETERMINE MACHINE LOAD CLASSIFICATION

Refer to Load Classification by Application *Page 8 Table 3*
Application details state that:
Application = Assembly conveyor not uniformly fed

Conveyors-heavy duty not uniformly fed	
apron	M
assembly	M
belt	M
bucket	M
chain	M
flight	M
live roll	†

M = Moderate shock load

Therefore:
Machine load classification = **Moderate shock load**

2. DETERMINE MECHANICAL SERVICE FACTOR (Fm)

Refer to Mechanical Service Factors *Page 7 Table 2*
Application details state that:
Prime mover = Electric motor
Duration of service (hours/day) = 20

Prime mover	Duration of service-hrs per day	Load classification-driven machine	
		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 (Fm) = **1.5**

3. DETERMINE START/STOP FACTOR (Fs)

Refer to Start/stop Factors *Page 11 Table 6*
Application details state that:
Start/stops per hour = 5
Reversing

START /STOPS PER HOUR	UP TO 1	3	5	10
UNIDIRECTIONAL	1.0	0.89	0.86	0.83
REVERSING	0.87	0.72	0.68	0.64

Therefore: Start/stop factor (Fs) = **0.68**

4. DETERMINE POWER REQUIRED (Pr)

$$\frac{\text{Absorbed power (kW)} \times 100 \times \text{Fm}}{\text{Coupling speed (rev/min)} \times \text{Fs}} = \text{Pr}$$

$$\frac{25 \times 100 \times 1.5}{200 \times 0.68} = 27.6$$

Therefore:
Power Required (Pr) = **27.6** kW per 100 rev/min

5. DETERMINE COUPLING SIZE

Refer to Summary Table *Page 9 Table 4*
Largest shaft diameter required = 75mm

ITEM		**COUPLING SIZE**			
		05	06*	07	08
MAX BORE (mm)	PARALLEL	70	80	90	100
	TAPER BUSH	60	*	75	90
BASIC RATED POWER kW Per 100 Rev/Min	TYPES 611 AND 613	10.66	25.53	35.20	52.85
	TYPES 612 AND 614	5.33	12.76	17.60	26.43

Therefore:
Coupling Size = **61107** (Heavy duty)
The size 07 coupling has adequate bore capacity for the application and the Max Rated Power is in excess of the required 27.6 kW per 100 rev/min required for the application, so coupling is acceptable

Go to point 6
page 4

6. DETERMINE EQUIVALENT ANGULAR MISALIGNMENT OF THE PARALLEL OFFSET (θ_E)

Refer to Summary Table *Page 9 Table 4*
Application details state that:
Parallel offset = 0.2mm

ITEM		COUPLING SIZE			
		05	06*	07	08
ALLOWABLE MISALIGNMENT	ANGULAR (DEGREES)	1^0	1^0	1^0	1^0
	PARALLEL OFFSET(mm)	± 0.15	± 0.2	± 0.2	± 0.2
	θ (EQUIVALENT ANGULAR MISALIGN-MENT (DEGREES) FOR THE GIVEN PARALLEL OFFSET)	0.42^0	0.3^0	0.3^0	0.3^0

$$\frac{\text{Parallel offset of application}}{\text{Parallel offset of Summary Table}} \times \text{Equivalent angular misalignment for the given parallel offset} = \theta_E$$

$$\frac{0.2}{0.2} \times 0.3 = 0.3$$

Therefore: Equivalent angular misalignment of the parallel offset (θ_E) = **0.3**

7. DETERMINE TOTAL ANGULAR MISALIGNMENT

θ_E + Angular Misalignment of Shafts

0.3 + 1.0 = 1.3

Therefore:
Total Angular Misalignment = **1.3**

8. DETERMINE RATING FACTOR (Fr)

Determine % Coupling Speed
Refer to Coupling Maximum Speeds *Page 11Table 8*

COUPLING SIZE	MAXIMUM SPEED (REV/MIN) Nmax
06	2520
07	2295
08	1940

$$\frac{\text{Coupling Speed (rev/min)}}{\text{Coupling Max Speed(rev/min)}} \times 100$$

$$\frac{200}{2295} \times 100 = 8.7\ \%$$

Therefore: % Coupling Speed = **8.7**%

Refer to Rating Factors *Page 11 Table 7*
Total Angular Misalignment = 1.3

% COUPLING SPEED	COUPLING ANGULAR MISALIGNMENT (DEGREES)		
	1^0	1.25^0	1.5^0
0 TO 30	1.12	1.0	1.0

Therefore:
Rating Factor (Fr) = **1.0** (obtained from table by linear interpolation)

9. DETERMINE EFFECTIVE COUPLING RATING (Pe)

Basic rated power (kW per 100 rev/min) x Fr = Pe

35.2 x 1.0 = 35.2

Therefore:
Effective Coupling Rating (Pe) = **35.2** kW per 100 rev/min
The Effective Coupling Rating is in excess of the required 27.6 kW per 100 rev/min required for the application, so coupling is acceptable

10. DETERMINE SPACE REQUIRED

Refer to Dimensions *Page 17 Table 15*
Check space limitations

EXAMPLE APPLICATION DETAILS

Connection = motor driven gear unit to a bucket elevator with a 75mm dia. shaft with a 150 mm free length the absorbed power is 5.0kW at a speed of 24 rev/min
Gear unit = 65mm dia. output shaft with a 150mm free length
Angular misalignment of shafts = 0.75°
Application = Heavily loaded bucket elevator
Duration of service (hours per day) = 20
Starts/stops per hour = 3
Does the application reverse ? = No

1. DETERMINE COUPLING SIZE

Refer to Bore Availability *Page 13 Table 11*
Application details state that:
Connection = 65mm dia. shaft to 75mm dia. shaft

Column Entry 7,8,9,10 (dg) or 11,12,13,14 (dn)	Nominal Bore Diameter	X611, X612 Cone Ring Straight Bored											
		01		02		03		04		05		06	
		dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn
M 065	65												
M 070	70												
M 071	71												
M 075	75												
M 080	80												

Therefore:
Smallest coupling size available = **06**

2. DETERMINE MACHINE LOAD CLASSIFICATION

Refer to Load Classification by Application *Page 8 Table 3*
Application details state that:
Application = Heavily loaded bucket elevator

Elevators	
bucket-uniform load	U
bucket-heavy load	M
bucket-continuous	U
centrifugal discharge	U
escalators	U
freight	M
gravity discharge	U
man lifts	†
passenger	†

M = Moderate shock load

Therefore:
Machine load classification = **Moderate shock load**

3. DETERMINE MECHANICAL SERVICE FACTOR (Fm)

Refer to Mechanical Service Factors *Page 7 Table 2*
Application details state that:
Prime mover = Electric motor
Duration of service (hours/day) = 20

Prime mover	Duration of service-hrs per day	Load classification-driven	
		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 (Fm) = **1.5**

4. DETERMINE START/STOP FACTOR (Fs)

Refer to Start/stop Factors *Page 11 Table 6*
Application details state that:
Start/stops per hour = 3
Unidirectional

START /STOPS PER HOUR	UP TO 1	3	5	10
UNIDIRECTIONAL	1.0	0.89	0.86	0.83
REVERSING	0.87	0.72	0.68	0.64

Therefore: Start/stop factor (Fs) = **0.89**

Go to point 5
page 6

5. DETERMINE POWER REQUIRED (Pr)

$$\frac{\text{Absorbed power (kW)} \times 100 \times Fm}{\text{Coupling speed (rev/min)} \times Fs} = Pr$$

$$\frac{5.0 \times 100 \times 1.5}{24 \times 0.89} = 35.1$$

Therefore:
Power Required (Pr) = **35.1** kW per 100 rev/min

Refer to Summary Table *Page 9 Table 4*

ITEM		COUPLING SIZE			
		05	06*	07	08
BASIC RATED POWER kW Per 100 Rev/Min	TYPES 611 AND 613	10.66	25.53	35.20	52.85
	TYPES 612 AND 614	5.33	12.76	17.60	26.43

Therefore:
Neither the X61106 or X61206 have the Basic Power Rating required, therefore the example will be continued using a X61107 which has a Basic Power Rating of 35.2 kW, which is in excess of the 35.1 kW per 100 rev/min required for the application

6. DETERMINE RATING FACTOR (Fr)

Determine % Coupling Speed
Refer to Coupling Maximum Speeds *Page 11 Table 8*

COUPLING SIZE	MAXIMUM SPEED (REV/MIN) Nmax
06	2520
07	2295
08	1940

$$\frac{\text{Coupling Speed (rev/min)}}{\text{Coupling Max Speed(rev/min)}} \times 100$$

$$\frac{24}{2295} \times 100 = 1\ \%$$

Therefore: % Coupling Speed = **1**%

Application details state that:
Angular Misalignment of Shafts = 0.75°
Refer to Rating Factors *Page 11 Table 7*

% COUPLING SPEED	COUPLING ANGULAR MISALIGNMENT (DEGREES)		
	0.25°	0.5°	0.75°
0 TO 30	1.15	1.15	1.15

Therefore:
Rating Factor (Fr) = **1.15**

7. DETERMINE EFFECTIVE COUPLING RATING (Pe)

Basic rated power (kW per 100 rev/min) x Fr = Pe

35.2 x 1.15 = 40.5

Therefore:
Effective Coupling Rating (Pe) = **40.5** kW per 100 rev/min
The Effective Coupling Rating is in excess of the required 35.1 kW per 100 rev/min required for the application, so coupling is acceptable

8. DETERMINE SPACE REQUIRED

Refer to Dimensions *Page 17 Table 15*
Check space limitations

MOTOR DETAILS

Table 1 - Motor Details for David Brown Motors

kW	NUMBER OF MOTOR POLES	MOTOR FRAME SIZE	FULL LOAD SPEED	SHAFT DIAMETER
0.12	4	63	1360	11
	6	63	835	11
	8	71	600	14
0.18	2	63	2680	11
	4	63	1360	11
	6	71	840	14
	8	80	650	19
0.25	2	63	2730	11
	4	71	1370	14
	6	71	845	14
	8	80	650	19
0.37	2	71	2730	14
	4	71	1380	14
	6	80	925	19
	8	90	680	24
0.55	2	71	2720	14
	4	80	1370	19
	6	80	925	19
	8	90	690	24
0.75	2	80	2800	19
	4	80	1385	19
	6	90	910	24
	8	100	700	28
1.1	2	80	2840	19
	4	90	1380	24
	6	90	920	24
	8	100	700	28
1.5	2	90	2820	24
	4	90	1390	24
	6	100	950	28
	8	112	700	28
2.2	2	90	2850	24
	4	100	1410	28
	6	112	945	28
	8	132	705	38
3	2	100	2900	28
	4	100	1420	28
	6	132	950	38
	8	132	710	38
4	2	112	2900	28
	4	112	1425	28
	6	132	955	38
	8	160	720	42
5.5	2	132	2900	38
	4	132	1450	38
	6	132	960	38
	8	160	720	42
7.5	2	132	2900	38
	4	132	1450	38
	6	160	965	42
	8	160	720	42
9.2	2	132	2910	38
	4	132	1460	38
11	2	132	2920	38
	4	160	1460	42
	6	160	970	42
	8	180	720	48
15	2	160	2930	42
	4	160	1460	42
	6	180	970	48
	8	200	725	55
18.5	2	160	2940	42
	4	180	1460	48
	6	200	970	55
	8	225	725	60
22	2	180	2940	48
	4	180	1465	48
	6	200	970	55
	8	225	725	60
30	2	200	2940	55
	4	200	1465	55
	6	225	975	60
	8	250	730	65
37	2	200	2950	55
	4	225	1470	60
	6	250	975	65
	8	280	730	75
45	2	225	2960	60
	4	225	1470	60
	6	280	980	75
	8	280	735	75
55	2	250	2960	65
	4	250	1475	65
	6	280	980	75
75	2	280	2965	75
	4	280	1480	75
90	2	280	2965	75
	4	280	1480	75

EXPLANATION OF THE RATINGS

The load classification/service factor given in *Tables 2 & 3* provide a basis for estimating the allowance for specific combinations of connected equipment and are sufficiently accurate for normal applications. For equipment not listed in *Table 3* or for drives where high inertia loads are to be absorbed the determination of a suitable service factor should be calculated in consultation with David Brown Radicon application engineers.

Where a motor is fitted with a brake whose rating exceeds that of the motor the coupling selected is decided by the rating of the brake.

Catalogue ratings allow 100% overload on starting, braking or momentarily occurring once per hour, the effect of more frequent occurrences on the coupling rating is given together with the ratings for that type of coupling. The coupling selected must therefore have a catalogue rating at least equal to half the maximum overload.

If overloads can be calculated, or accurately assessed, actual loads should be used instead of Fm.

Table 2 - Mechanical Service Factor (Fm)

Prime mover	Duration of service-hrs 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 3
Load Classification by Application

U = Uniform load

M = Moderate shock load

H = Heavy shock load

† = Refer to David Brown

Driven Machine	type of load
Agitators	
pure liquids	U
liquids and solids	M
liquids-variable density	M
Blowers	
centrifugal	U
lobe	M
vane	U
Brewing and distilling	
bottling machinery	U
brew kettles-continuous duty	U
cookers-continuous duty	U
mash tubs-continuous duty	U
scale hopper-frequent starts	M
Can filling machines	U
Cane knifes	M
Car dumpers	H
Car pullers	M
Clarifiers	U
Classifiers	M
Clay working machinery	
brick press	H
briquette machine	H
clay working machinery	M
pug mill	M
Compressors	
centrifugal	U
lobe	M
reciprocating	
multi-cylinder	M
single cylinder	H
Conveyors-uniformly loaded or fed	
apron	U
assembly	U
belt	U
bucket	U
chain	U
flight	U
oven	U
screw	U
Conveyors-heavy duty not uniformly fed	
apron	M
assembly	M
belt	M
bucket	M
chain	M
flight	M
live roll	†
oven	M
reciprocating	H
screw	M
shaker	H

Driven Machine	type of load
Cranes	
main hoists	U
bridge travel	†
trolley travel	†
Crusher	
ore	H
stone	H
sugar	H
Dredges	
cable reels	M
conveyors	M
cutter head drives	H
jig drives	H
manoeuvring winches	M
pumps	M
screen drive	H
stackers	M
utility winches	M
Dry dock cranes	
main hoist	†
auxiliary hoist	†
boom, luffing	†
rotating, swing or slew	†
tracking, drive wheels	†
Elevators	
bucket-uniform load	U
bucket-heavy load	M
bucket-continuous	U
centrifugal discharge	U
escalators	U
freight	M
gravity discharge	U
man lifts	†
passenger	†
Fans	
centrifugal	U
cooling towers	
induced draft	†
forced draft	†
induced draft	M
large, mine, etc	M
large, industrial	M
light, small diameter	U
Feeders	
apron	M
belt	M
disc	U
reciprocating	H
screw	M
Food industry	
beef slicer	M
cereal cooker	U
dough mixer	M
meat grinders	M
Generators-not welding	U
Hammer mills	H
Hoists	
heavy duty	H
medium duty	M
skip hoist	M
Laundry washers	
reversing	M
Laundry tumblers	M
Line shafts	
driving processing equipment	M
light	U
other line shafts	U
Lumber industry	
barkers-hydraulic-mechanical	M
burner conveyor	M
chain saw and drag saw	H
chain transfer	H
craneway transfer	H
de-barking drum	H
edger feed	M
gang feed	M
green chain	M
live rolls	H
log deck	H

Driven Machine	type of load
log haul-incline	H
log haul-well type	H
log turning device	H
main log conveyor	H
off bearing rolls	M
planer feed chains	M
planer floor chains	M
planer tilting hoist	M
re-saw merry-go-round conveyor	M
roll cases	H
slab conveyor	H
small waste conveyor-belt	U
small waste conveyor-chain	M
sorting table	M
tipple hoist conveyor	M
tipple hoist drive	M
transfer conveyors	M
transfer rolls	M
tray drive	M
trimmer feed	M
waste conveyor	M
Machine tools	
bending roll	M
punch press-gear driven	H
notching press- belt driven	†
plate planers	H
tapping machine	H
other machine tools	
main drives	M
auxiliary drives	U
Metal mills	
draw bench carriage and main drive	M
pinch, dryer and scrubber rolls-reversing	†
slitters	M
table conveyors	
non-reversing	
group drives	M
individual drives	H
reversing	
wire drawing and flattening machine	M
wire winding machine	M
Mill-rotary type	
ball	H
cement kilns	H
dryers and coolers	H
kilns, other than cement	H
pebble	H
rod	
plain	H
wedge bar	H
tumbling barrels	H
Mixers	
concrete mixers -continuous	M
concrete mixers -intermittent	M
constant density	U
variable density	M
Oil industry	
chillers	M
oil well pumping	†
paraffin filter press	M
rotary kilns	M
Paper mills	
agitators, (mixers)	M
barker-auxiliaries-hydraulic	M
barker-mechanical	H
barking drum	H
beater and pulper	M
bleacher	U
calenders	M
calenders-super	H
converting machine, except cutters, platers	M
conveyors	U
couch	M
cutters-plates	H
cylinders	M
dryers	M
felt stretcher	M
felt whipper	H
jordans	M

Driven Machine	type of load
log haul	H
presses	M
pulp machine reel	M
stock chest	M
suction roll	M
washers and thickeners	M
winders	M
Printing presses	†
Pullers	
barge haul	H
Pumps	
centrifugal	U
proportioning	M
reciprocating	
single acting; 3 or more cylinders	M
double acting; 2 or more cylinders	M
single acting; 1 or 2 cylinders	†
double acting; single cylinder	†
rotary	
gear type	U
lobe, vane	U
Rubber and plastics industries	
crackers	H
laboratory equipment	M
mixed mills	H
refiners	M
rubber calenders	M
rubber mill-2 on line	M
rubber mill-3 on line	M
sheeter	M
tire building machines	†
tire and tube press openers	†
tubers and strainers	M
warming mills	M
Sand muller	M
Sewage disposal equipment	
bar screens	U
chemical feeders	U
collectors	U
dewatering screws	M
scum breakers	M
slow or rapid mixers	M
thickeners	M
vacuum filters	M
Screens	
air washing	U
rotary-stone or gravel	M
travelling water intake	U
Slab pushers	M
Steering gear	†
Stokers	U
Sugar industry	
cane knives	M
crushers	M
mills	M
Textile industry	
batchers	M
calenders	M
cards	M
dry cans	M
dryers	M
dyeing machinery	M
knitting machines	†
looms	M
mangles	M
nappers	M
pads	M
range drives	†
slashers	M
soapers	M
spinners	M
tenter frames	M
washers	M
winders	M
Windlass	†

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Table 4 - Summary

ITEM				COUPLING SIZE											
				01	02*	03	04*	05	06*	07	08	09	10	11*	12*
MAX BORE (mm)	PARALLEL			38	42	48	60	70	80	90	100	120	140	150	170
	TAPER BUSH			25	*	38	*	60	*	75	90	110	125	*	*
HUB LENGTH (mm)	PARALLEL			48	56	61	68	76	88	100	117	132	147	165	188
	TAPER BUSH	HUB LENGTH		40	*	50	*	50	*	82	98	124	136	*	*
		BUSH LENGTH		22.3	*	38.1	*	44.5	*	76.2	88.9	114.3	127	*	*
INERTIA WR^2 ($kg\ m^2$) (1)	TYPES 611 AND 613			.009	.013	.031	.051	.084	.247	.373	.786	1.980	2.804	4.095	7.751
	TYPES 612 AND 614			.008	.012	.024	.047	.077	.223	.337	.718	1.854	2.607	3.807	7.209
WEIGHT (kg) (1)	TYPES 611 AND 613			4.9	6.3	10.4	14.2	19.8	36.9	48.5	76.4	121	163	209	305
	TYPES 612 AND 614			4.7	5.9	9.8	13.5	18.9	34.1	45.1	72.2	115	155	200	293
RATED TORQUE (KNm)	TYPES 611 AND 613			0.181	0.279	0.465	0.717	1.018	2.438	3.362	5.047	8.433	11.530	15.060	23.500
	TYPES 612 AND 614			0.090	0.140	0.232	0.359	0.509	1.219	1.681	2.524	4.217	5.765	7.530	11.750
BASIC RATED POWER kW Per 100 Rev/Min	TYPES 611 AND 613			1.90	2.92	4.87	7.51	10.66	25.53	35.20	52.85	88.30	120.7	157.7	246.1
	TYPES 612 AND 614			0.94	1.47	2.43	3.76	5.33	12.76	17.60	26.43	44.15	60.37	78.85	123.0
MAX SPEED (Rev/Min.)				4780	4355	3745	3320	3000	2520	2295	1940	1725	1530	1400	1200
ALLOWABLE MISALIGNMENT	ANGULAR (DEGREES)			1^0	1^0	1^0	1^0	1^0	1^0	1^0	1^0	1^0	1^0	1^0	1^0
	PARALLEL OFFSET (mm)			± 0.1	± 0.1	± 0.15	± 0.15	± 0.15	± 0.2	± 0.2	± 0.2	± 0.25	± 0.25	± 0.25	± 0.25
	θ (EQUIVALENT ANGULAR MISALIGNMENT (DEGREES) FOR THE GIVEN PARALLEL OFFSET)			0.38^0	0.38^0	0.42^0	0.42^0	0.42^0	0.3^0	0.3^0	0.3^0	0.27^0	0.27^0	0.27^0	0.27^0
NUMBER OF PINS	TYPES 611 AND 613			6	8	6	8	10	8	10	12	10	12	14	18
	TYPES 612 AND 614			3	4	3	4	5	4	5	6	5	6	7	9
NUMBER OF RINGS PER PIN ALL TYPES				3	3	3	3	3	4	4	4	4	4	4	4
TORSIONAL STIFFNESS (KNm/RADIAN) (BASED ON TYPE 611 AND 613 COUPLINGS. VALUES SHOULD BE HALVED FOR TYPE 612 AND 614 COUPLINGS).	% MAX TORQUE	25%	FROM	4.41	7.59	10.5	18.7	30.2	62.5	95.1	179	235	366	536	1015
			TO	5.58	9.63	13.4	24.0	38.7	80.0	121	228	299	466	682	1290
		50%	FROM	4.90	8.46	11.7	20.9	33.7	69.2	105	198	262	408	597	1130
			TO	6.29	10.8	15.0	26.8	43.1	88.9	135.2	254	333	519	759	1435
		75%	FROM	5.32	9.17	12.9	23.1	37.2	78.3	119	224	304	473	692	1310
			TO	6.71	11.6	16.2	28.9	46.5	98.0	149	280	379	591	864	1635
		100%	FROM	6.07	10.5	15.1	26.9	43.4	94.2	143	269	358	558	816	1545
			TO	7.58	13.1	18.8	33.6	54.2	116	177	333	458	713	1045	1975

NOTES:

* SIZES 02, 04, 06, 11 AND 12 ARE NOT AVAILABLE IN TYPES X613 AND X614 (TAPER BUSH TYPE)

1) WEIGHT AND WR^2 ARE GIVEN FOR COUPLINGS WITH SOLID HUBS IE. FITTED ON STEEL SHAFTS

Table 5 - Basic Ratings

COUPLING SIZE	MEDIUM DUTY TYPES X612 AND X614				HEAVY DUTY TYPES X611 AND X613			
	TORQUE CAPACITY (KNm)	BASIC RATING AT 100 (REV/MIN)	RATING AT 960 (REV/MIN)	RATING AT 1450 (REV/MIN)	TORQUE CAPACITY (KNm)	BASIC RATING AT 100 (REV/MIN)	RATING AT 960 (REV/MIN)	RATING AT 1450 (REV/MIN)
01	0.0904	0.95	9.1	13.7	0.181	1.89	18.2	27.5
02	0.1397	1.46	14.0	21.2	0.279	2.92	28.0	42.4
03	0.2324	2.43	23.4	35.3	0.465	4.87	46.7	70.6
04	0.3585	3.75	36.0	54.4	0.717	7.51	72.1	109
05	0.5090	5.33	51.2	77.3	1.018	10.7	102	155
06	1.219	12.76	123	185	2.438	25.5	245	370
07	1.681	17.60	169	255	3.362	35.2	338	510
08	2.524	26.42	254	383	5.047	52.8	507	766
09	4.217	44.15	424	640	8.433	88.3	848	1280
10	5.765	60.37	580	875	11.53	120.7	1159	1750
11	7.530	78.85	757	-	15.06	157.7	1514	-
12	11.750	123.0	1181	-	23.50	246.1	2362	-

Sizes 13 to 20 Straight Bored Only

COUPLING SIZE	MEDIUM DUTY TYPE X612				HEAVY DUTY TYPE X611		
	TORQUE CAPACITY (KNm)	BASIC RATING AT 100 (REV/MIN)	RATING AT 960 (REV/MIN)	RATING AT 1450 (REV/MIN)	TORQUE CAPACITY (KNm)	BASIC RATING AT 100 (REV/MIN)	MAXIMUM REV/MIN UNBALANCED
13	13.10	137	1317	-	26.20	274	975
14	17.02	178	-	-	33.97	356	880
15	28.70	300	-	-	57.32	600	790
16	37.95	397	-	-	75.84	794	705
17	50.56	529	-	-	101.1	1059	630
18	61.95	649	-	-	123.9	1298	590
19	74.77	783	-	-	149.5	1566	550
20	94.35	988	-	-	188.7	1976	500

Notes (for sizes 13 to 20):

i) Ratings maybe increased by 20% for coupling speeds below 10 rev/min

ii) The above ratings are for guidance only

ii) Consult David Brown Radicon Ltd when the application is in an ambient temperature below -30°C (-22°F) or above 70°C (158°F)

Table 6 - Start / Stop Factor (Fs)

START /STOPS PER HOUR	UP TO 1	3	5	10	20	40	60	100
UNIDIRECTIONAL	1.0	0.89	0.86	0.83	0.79	0.75	0.73	0.70
REVERSING	0.87	0.72	0.68	0.64	0.59	0.55	0.52	0.50

Table 7 - Rating Factor (Fr)

% COUPLING SPEED	COUPLING ANGULAR MISALIGNMENT (DEGREES)						
	0^0	0.25^0	0.5^0	0.75^0	1^0	1.25^0	1.5^0
0 TO 30	1.15	1.15	1.15	1.15	1.12	1.0	1.0
40	1.15	1.15	1.15	1.15	1.11	1.0	0.97
50	1.15	1.15	1.15	1.14	1.10	0.98	0.9
60	1.15	1.15	1.15	1.13	1.09	0.96	0.87
70	1.15	1.15	1.15	1.11	1.07	0.92	0.79
80	1.15	1.15	1.13	1.09	1.05	0.87	0.6
90	1.15	1.15	1.11	1.06	1.03	0.81	0.56
100	1.15	1.13	1.08	1.03	1.00	0.75	0.41

NB INTERMEDIATE VALUES ARE OBTAINED BY LINEAR INTERPOLATION

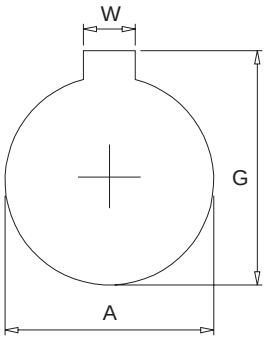
$$\%\ \text{COUPLING SPEED} = \frac{N \times 100}{N_{max}}$$

WHERE N = COUPLING SPEED (REV/MIN)
AND Nmax = THE MAXIMUM SPEED FOR THE SAME SIZE COUPLING.

Table 8 - Coupling Maximum Speed (Rev/min)

COUPLING SIZE	MAXIMUM SPEED (REV/MIN) Nmax
01	4780
02	4355
03	3745
04	3320
05	3000
06	2520
07	2295
08	1940
09	1725
10	1530
11	1400
12	1200

Table 9 - Metric Bore with Taper Bush Availability and Bore Dimensions (mm)



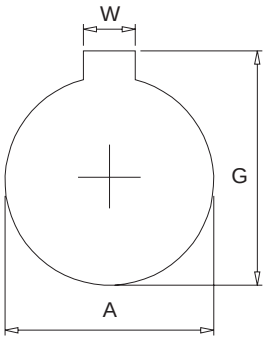
Column Entry 7,8,9,10 (dg) or 11,12,13,14 (dn)	Nominal Bore Diameter	X613, X614 Cone Ring Taper Bushed							Bore A	Parallel Square Keyway	
		01	03	05	07	08	09	10		Keyway Width W	Keyway Depth G
M 009	9								9.000/8.985	3.0125/2.9825	10.5/10.4
M 010	10								10.000/9.985	3.0125/2.9875	11.5/11.4
M 011	11								11.000/10.982	4.015/3.985	12.9/12.8
M 012	12								12.000/11.982	4.015/3.985	13.9/13.8
M 014	14								14.000/13.982	5.015/4.985	16.4/16.3
M 016	16								16.000/15.982	5.015/4.985	18.4/18.3
M 018	18								18.000/17.979	6.015/5.985	20.9/20.8
M 019	19								19.000/18.979	6.015/5.985	21.9/21.8
M 020	20								20.000/19.979	6.015/5.985	22.9/22.8
M 022	22								22.000/21.979	6.015/5.985	24.9/24.8

Column Entry 7,8,9,10 (dg) or 11,12,13,14 (dn)	Nominal Bore Diameter	X613, X614 Cone Ring Taper Bushed							Bore A	Parallel Rectangular Keyway	
		01	03	05	07	08	09	10		Keyway Width W	Keyway Depth G
M 024	24								24.000/23.979	8.018/7.982	27.5/27.3
M 025	25								25.000/24.979	8.018/7.982	28.5/28.3
M 028	28								28.000/27.979	8.018/7.982	31.5/31.3
M 030	30								30.000/29.979	8.018/7.982	33.5/33.3
M 032	32								32.000/31.975	10.018/9.982	35.5/35.3
M 035	35								35.000/34.975	10.018/9.982	38.5/38.3
M 038	38								38.000/37.975	10.018/9.982	41.5/41.3
M 040	40								40.000/39.975	12.021/11.979	43.5/43.3
M 042	42								42.000/41.975	12.021/11.979	45.5/45.3
M 045	45								45.000/44.975	14.021/13.979	49.0/48.8
M 048	48								48.000/47.975	14.021/13.979	52.0/51.8
M 050	50								50.000/49.975	14.021/13.979	54.0/53.8
M 055	55								55.009/54.979	16.021/15.979	59.5/59.3
M 060	60								60.009/59.979	18.021/17.979	64.6/64.4
M 065	65								65.009/64.979	18.021/17.979	69.5/69.4
M 070	70								70.009/69.979	20.026/19.974	75.1/74.9
M 075	75								75.009/74.979	20.026/19.974	80.1/79.9
M 080	80								80.009/79.979	22.026/21.974	85.6/85.4
M 085	85								85.010/84.975	22.026/21.974	90.6/90.4
M 090	90								90.010/89.975	25.026/24.974	95.6/95.4
M 095	95								95.010/94.975	25.026/24.974	100.6/100.4
M 100	100								100.010/99.975	28.026/27.974	106.6/106.4
M 105	105								105.010/104.975	28.026/27.974	111.6/111.4
M 110	110								110.010/109.975	28.026/27.974	116.6/116.4
M 115	115								115.010/114.975	32.031/31.969	122.6/122.4
M 120	120								120.010/119.975	32.031/31.969	127.6/127.4
M 125	125								125.012/124.972	32.031/31.969	132.6/132.4

Metric Standard Bores are to
ISO 286 - 2 - 1988 (E)
M7 up to and including 50 mm
K7 over 50 mm
Metric Standard keyways are to
BS 4235 : Part 1 : 1972
and DIN 6885

- Non Preferred

Table 10 - Inch Bore with Taper Bush Availability and Bore Dimensions



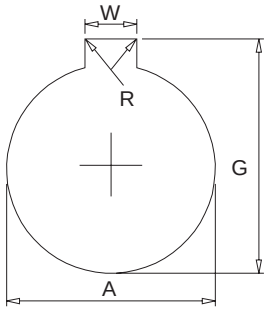
Column Entry 7,8,9,10 (dg) or 11,12,13,14 (dn)	Nominal Bore Diameter	X613, X614 Cone Ring Taper Bushed							Bore A	Parallel Square Keyway	
		01	03	05	07	08	09	10		Keyway Width W	Keyway Depth G
I 010	0.375								.3749/.3745	.126/.125	.441/.435
I 013	0.5								.4998/.4994	.189/.188	.566/.560
I 016	0.625								.6248/.6244	.189/.188	.719/.713
I 019	0.75								.7498/.7493	.189/188	.844/.838
I 022	0.875								.8748/.8743	.251/.250	.996/.990
I 025	1.0								.9998/.9993	.251/.250	1.121/1.115

Column Entry 7,8,9,10 (dg) or 11,12,13,14 (dn)	Nominal Bore Diameter	X613, X614 Cone Ring Taper Bushed							Bore A	Parallel Rectangular Keyway	
		01	03	05	07	08	09	10		Keyway Width W	Keyway Depth G
I 029	1.125								1.1248/1.1243	.313/.312	1.243/1.237
I 032	1.25								1.2498/1.2492	.313/.312	1.368/1.362
I 035	1.375								1.3748/1.3742	.376/.375	1.489/1.483
I 038	1.5								1.4998/1.4992	.376/.375	1.614/1.608
I 041	1.625								1.6248/1.6242	.439/.438	1.766/1.760
I 044	1.75								1.7498/1.7492	.439/.438	1.891/1.885
I 048	1.875								1.8748/1.8742	.501/.500	2.012/2.006
I 051	2.0								2.0001/1.9994	.501/.500	2.137/2.131
I 054	2.125								2.1251/2.1244	.626/.625	2.316/2.310
I 057	2.25								2.2501/2.2494	.626/.625	2.441/2.435
I 060	2.375								2.3751/2.3744	.626/.625	2.566/2.560
I 064	2.5								2.5001/2.4994	.626/.625	2.691/2.685
I 067	2.625								2.6251/2.6244	.751/.750	2.840/2.834
I 070	2.75								2.7501/2.7494	.751/.750	2.965/2.959
I 073	2.875								2.8751/2.8744	.751/.750	3.090/3.084
I 076	3.0								3.0001/2.9994	.751/.750	3.215/3.209
I 079	3.125								3.1251/3.1244	.876/.875	3.395/3.389
I 083	3.25								3.2502/3.2493	.876/.875	3.520/3.489
I 086	3.375								3.3752/3.3743	.876/.875	3.645/3.639
I 089	3.5								3.5002/3.4993	.876/.875	3.770/3.764
I 095	3.75								3.7502/3.7493	1.001/1.000	4.074/4.068
I 102	4.0								4.0002/3.9993	1.001/1.000	4.324/4.318
I 108	4.25								4.2502/4.2493	1.252/1.250	4.622/4.616
I 114	4.5								4.5002/4.4993	1.252/1.250	4.972/4.866
I 121	4.75								4.7502/4.7492	1.252/1.250	5.122/5.116
I 127	5.0								5.0002/4.9992	1.252/1.250	5.372/5.366

Imperial Standard Bores are to
BS 1916
M6 up to and including 1.97 inches
K6 over 1.97 inches
Imperial Standard keyways are to
BS 46 : Part 1 : 1958

- Non Preferred

Table 11 - Metric Bore with Parallel Keyway Availability and Bore Dimensions (mm)



Column Entry 7,8,9,10 (dg) or 11,12,13,14 (dn)	Nominal Bore Diameter	X611, X612 Cone Ring Straight Bored with Parallel Square Keyway																								Bore A	Parallel Square Keyway		
		01		02		03		04		05		06		07		08		09		10		11		12			Keyway Width W	Keyway Depth G	Keyway Corner Radius R
		dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn				
P - - -	Pilot	*	16	*	19	*	22	*	25	*	29	25	38	30	51	30	50	40	55	70	70	80	80	90	90	-	-	-	-
M 018	18																									18.000/17.979	6.015/5.985	20.9/20.8	.25/.16
M 019	19																									19.000/18.979	6.015/5.985	21.9/21.8	.25/.16
M 020	20																									20.000/19.979	6.015/5.985	22.9/22.8	.25/.16
M 022	22																									22.000/21.979	6.015/5.985	24.9/24.8	.25/.16

Column Entry 7,8,9,10 (dg) or 11,12,13,14 (dn)	Nominal Bore Diameter	X611, X612 Cone Ring Straight Bored with Parallel Rectangular Keyway																								Bore A	Parallel Rectangular Keyway		
		01		02		03		04		05		06		07		08		09		10		11		12			Keyway Width W	Keyway Depth G	Keyway Corner Radius R
		dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn				
M 024	24																									24.000/23.979	8.018/7.982	27.5/27.3	.25/.16
M 025	25																									25.000/24.979	8.018/7.982	28.5/28.3	.25/.16
M 028	28																									28.000/27.979	8.018/7.982	31.5/31.3	.25/.16
M 030	30																									30.000/29.979	8.018/7.982	33.5/33.3	.25/.16
M 032	32																									32.000/31.975	10.018/9.982	35.5/35.3	.40/.25
M 035	35																									35.000/34.975	10.018/9.982	38.5/38.3	.40/.25
M 038	38																									38.000/37.975	10.018/9.982	41.5/41.3	.40/.25
M 040	40																									40.000/39.975	12.021/11.979	43.5/43.3	.40/.25
M 042	42																									42.000/41.975	12.021/11.979	45.5/45.3	.40/.25
M 045	45																									45.000/44.975	14.021/13.979	49.0/48.8	.40/.25
M 048	48																									48.000/47.975	14.021/13.979	52.0/51.8	.40/.25
M 050	50																									50.000/49.975	14.021/13.979	54.0/53.8	.40/.25
M 055	55																									55.009/54.979	16.021/15.979	59.5/59.3	.40/.25
M 056	56																									56.009/55.979	16.021/15.979	60.5/60.3	.40/.25
M 060	60																									60.009/59.979	18.021/17.979	64.6/64.4	.40/.25
M 063	63																									63.009/62.979	18.021/17.979	67.5/67.4	.40/.25
M 065	65																									65.009/64.979	18.021/17.979	69.5/69.4	.40/.25
M 070	70																									70.009/69.979	20.026/19.974	75.1/74.9	.60/.40
M 071	71																									71.009/70.979	20.026/19.974	76.1/75.9	.60/.40
M 075	75																									75.009/74.979	20.026/19.974	80.1/79.9	.60/.40
M 080	80																									80.009/79.979	22.026/21.974	85.6/85.4	.60/.40
M 085	85																									85.010/84.975	22.026/21.974	90.6/90.4	.60/.40
M 090	90																									90.010/89.975	25.026/24.974	95.6/95.4	.60/.40
M 095	95																									95.010/94.975	25.026/24.974	100.6/100.4	.60/.40
M 100	100																									100.010/99.975	28.026/27.974	106.6/106.4	.60/.40
M 105	105																									105.010/104.975	28.026/27.974	111.6/111.4	.60/.40
M 110	110																									110.010/109.975	28.026/27.974	116.6/116.4	.60/.40
M 115	115																									115.010/114.975	32.031/31.969	122.6/122.4	.60/.40
M 120	120																									120.010/119.975	32.031/31.969	127.6/127.4	.60/.40
M 125	125																									125.012/124.972	32.031/31.969	132.6/132.4	.60/.40
M 130	130																									130.012/129.972	32.031/31.969	137.6/137.4	.60/.40
M 135	135																									135.012/134.972	36.031/35.969	143.7/143.4	1.00/.70
M 140	140																									140.012/139.972	36.031/35.969	148.7/148.4	1.00/.70
M 145	145																									145.012/144.972	36.031/35.969	153.7/153.4	1.00/.70
M 150	150																									150.012/149.972	36.031/35.969	158.7/158.4	1.00/.70
M 155	155																									155.012/154.972	40.031/39.969	164.7/164.4	1.00/.70
M 160	160																									160.012/159.972	40.031/39.969	169.7/169.4	1.00/.70
M 165	165																									165.012/164.972	40.031/39.969	174.7/174.4	1.00/.70
M 170	170																									170.012/169.972	40.031/39.969	179.7/179.4	1.00/.70

* Up to size 05 driving half hubs are solid

dg - Driving half

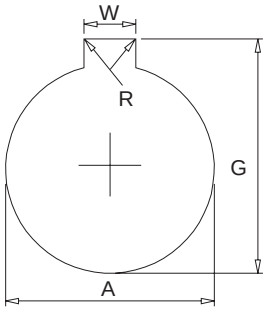
dn - Driven half

- Available Ex Stock

- Non Preferred

Metric Standard Bores are to ISO 286 - 2 - 1988 (E)
M7 up to and including 50 mm
K7 over 50 mm
Metric Standard keyways are to BS 4235 : Part 1 : 1972 and DIN 6885

Table 12 - Inch Bore with Parallel Keyway Availability and Bore Dimensions



Column Entry 7,8,9,10 (dg) or 11,12,13,14 (dn)	Nominal Bore Diameter	X611, X612 Cone Ring Straight Bored with Parallel Square Keyway																								Bore A	Parallel Square Keyway		
		01		02		03		04		05		06		07		08		09		10		11		12			Keyway Width W	Keyway Depth G	Keyway Corner Radius R
		dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn				
P - - -	Pilot (mm)	*	16	*	19	*	22	*	25	*	29	25	38	30	51	30	50	40	55	70	70	80	80	90	90	-	-	-	-
I 019	0.75																									.7498/.7493	.189/188	.844/.838	.010/.006
I 021	0.8125																									.8123/.8118	.251/.250	.934/.928	.010/.006
I 022	0.875																									.8748/.8743	.251/.250	.996/.990	.010/.006
I 024	0.9375																									.9373/.9368	.251/.250	1.059/1.053	.010/.006
I 025	1.0																									.9998/.9993	.251/.250	1.121/1.115	.010/.006
I 027	1.0625																									1.0623/1.0618	.313/.312	1.181/1.175	.010/.006

Column Entry 7,8,9,10 (dg) or 11,12,13,14 (dn)	Nominal Bore Diameter	X611, X612 Cone Ring Straight Bored with Parallel Rectangular Keyway																								Bore A	Parallel Rectangular Keyway		
		01		02		03		04		05		06		07		08		09		10		11		12			Keyway Width W	Keyway Depth G	Keyway Corner Radius R
		dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn				
I 029	1.125																									1.1248/1.1243	.313/.312	1.243/1.237	.010/.006
I 030	1.1875																									1.1873/1.1868	.313/.312	1.306/1.300	.010/.006
I 032	1.25																									1.2498/1.2492	.313/.312	1.368/1.362	.010/.006
I 033	1.3125																									1.3123/1.3117	.376/.375	1.427/1.421	.010/.006
I 035	1.375																									1.3748/1.3742	.376/.375	1.489/1.483	.010/.006
I 037	1.4375																									1.4373/1.4367	.376/.375	1.552/1.546	.010/.006
I 038	1.5																									1.4998/1.4992	.376/.375	1.614/1.608	.010/.006
I 041	1.625																									1.6248/1.6242	.439/.438	1.766/1.760	.020/.014
I 044	1.75																									1.7498/1.7492	.439/.438	1.891/1.885	.020/.014
I 048	1.875																									1.8748/1.8742	.501/.500	2.012/2.006	.020/.014
I 051	2.0																									2.0001/1.9994	.501/.500	2.137/2.131	.020/.014
I 054	2.125																									2.1251/2.1244	.626/.625	2.316/2.310	.020/.014
I 057	2.25																									2.2501/2.2494	.626/.625	2.441/2.435	.020/.014
I 060	2.375																									2.3751/2.3744	.626/.625	2.566/2.560	.020/.014
I 064	2.5																									2.5001/2.4994	.626/.625	2.691/2.685	.020/.014
I 067	2.625																									2.6251/2.6244	.751/.750	2.840/2.834	.020/.014
I 070	2.75																									2.7501/2.7494	.751/.750	2.965/2.959	.020/.014
I 073	2.875																									2.8751/2.8744	.751/.750	3.090/3.084	.020/.014
I 076	3.0																									3.0001/2.9994	.751/.750	3.215/3.209	.020/.014
I 079	3.125																									3.1251/3.1244	.876/.875	3.395/3.389	.062/.052
I 083	3.25																									3.2502/3.2493	.876/.875	3.520/3.489	.062/.052
I 086	3.375																									3.3752/3.3743	.876/.875	3.645/3.639	.062/.052
I 089	3.5																									3.5002/3.4993	.876/.875	3.770/3.764	.062/.052
I 092	3.625																									3.6252/3.6243	1.001/1.000	3.949/3.943	.062/.052
I 095	3.75																									3.7502/3.7493	1.001/1.000	4.074/4.068	.062/.052
I 098	3.875																									3.8752/3.8743	1.001/1.000	4.199/4.193	.062/.052
I 102	4.0																									4.0002/3.9993	1.001/1.000	4.324/4.318	.062/.052
I 105	4.125																									4.1252/4.1243	1.252/1.250	4.497/4.491	.062/.052
I 108	4.25																									4.2502/4.2493	1.252/1.250	4.622/4.616	.062/.052
I 111	4.375																									4.3752/4.3743	1.252/1.250	4.747/4.741	.062/.052
I 114	4.5																									4.5002/4.4993	1.252/1.250	4.972/4.866	.062/.052
I 117	4.625																									4.6252/4.6243	1.252/1.250	4.997/4.991	.062/.052
I 121	4.75																									4.7502/4.7492	1.252/1.250	5.122/5.116	.062/.052
I 124	4.875																									4.8752/4.8742	1.252/1.250	5.247/5.241	.062/.052
I 127	5.0																									5.0002/4.9992	1.252/1.250	5.372/5.366	.062/.052
I 130	5.125																									5.1252/5.1242	1.502/1.500	5.543/5.537	.062/.052
I 133	5.25																									5.2502/5.2492	1.502/1.500	5.668/5.662	.062/.052
I 137	5.375																									5.3752/5.3742	1.502/1.500	5.793/5.787	.062/.052
I 140	5.5																									5.5002/5.4992	1.502/1.500	5.918/5.912	.062/.052
I 143	5.625																									5.6252/5.6242	1.502/1.500	6.043/6.037	.062/.052
I 146	5.75																									5.7502/5.7492	1.502/1.500	6.168/6.162	.062/.052
I 149	5.875																									5.8752/5.8742	1.502/1.500	6.293/6.287	.062/.052
I 152	6.0																									6.0002/5.9992	1.502/1.500	6.418/6.412	.062/.052
I 156	6.125																									6.1252/6.1242	1.752/1.750	6.657/6.651	.125/.115
I 159	6.25																									6.2502/6.2492	1.752/1.750	6.782/6.776	.125/.115
I 162	6.375																									6.3752/6.3742	1.752/1.750	6.907/6.901	.125/.115
I 165	6.5																									6.5002/6.4992	1.752/1.750	7.032/7.026	.125/.115

* Up to size 05 driving half hubs are solid

dg - Driving half

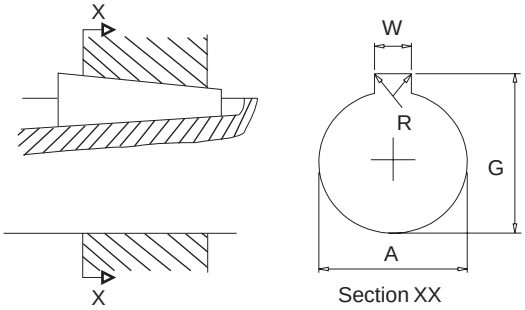
dn - Driven half

- Available Ex Stock

- Non Preferred

Imperial Standard Bores are to BS 1916
M6 up to and including 1.97 inches
K6 over 1.97 inches
Imperial Standard keyways are to BS 46 : Part 1 : 1958

Table 13 - Metric Bore with Taper Keyway Availability and Bore Dimensions (mm)



Column Entry 7,8,9,10 (dg) or 11,12,13,14 (dn)	Nominal Bore Diameter	X611, X612 Cone Ring Straight Bored with Taper Square Keyway																								Bore A	Taper Square Keyway		
		01		02		03		04		05		06		07		08		09		10		11		12			Keyway Width W	Keyway Depth G	Keyway Corner Radius R
		dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn				
P - - -	Pilot	*	16	*	19	*	22	*	25	*	29	25	38	30	51	30	50	40	55	70	70	80	80	90	90	-	-	-	-
T 018	18																									18.000/17.979	6.015/5.985	20.4/20.2	.25/.16
T 019	19																									19.000/18.979	6.015/5.985	21.4/21.2	.25/.16
T 020	20																									20.000/19.979	6.015/5.985	22.4/22.2	.25/.16
T 022	22																									22.000/21.979	6.015/5.985	24.4/24.2	.25/.16

Column Entry 7,8,9,10 (dg) or 11,12,13,14 (dn)	Nominal Bore Diameter	X611, X612 Cone Ring Straight Bored with Taper Rectangular Keyway																								Bore A	Taper Rectangular Keyway		
		01		02		03		04		05		06		07		08		09		10		11		12			Keyway Width W	Keyway Depth G	Keyway Corner Radius R
		dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn				
T 024	24																									24.000/23.979	8.018/7.982	26.6/26.4	.25/.16
T 025	25																									25.000/24.979	8.018/7.982	27.6/27.4	.25/.16
T 028	28																									28.000/27.979	8.018/7.982	30.6/30.4	.25/.16
T 030	30																									30.000/29.979	8.018/7.982	32.6/32.4	.25/.16
T 032	32																									32.000/31.975	10.018/9.982	34.6/34.4	.40/.25
T 035	35																									35.000/34.975	10.018/9.982	37.6/37.4	.40/.25
T 038	38																									38.000/37.975	10.018/9.982	40.6/40.4	.40/.25
T 040	40																									40.000/39.975	12.021/11.979	42.6/42.4	.40/.25
T 042	42																									42.000/41.975	12.021/11.979	44.6/44.4	.40/.25
T 045	45																									45.000/44.975	14.021/13.979	48.1/47.9	.40/.25
T 048	48																									48.000/47.975	14.021/13.979	51.1/50.9	.40/.25
T 050	50																									50.000/49.975	14.021/13.979	53.1/52.9	.40/.25
T 055	55																									55.009/54.979	16.021/15.979	58.6/58.4	.40/.25
T 056	56																									56.009/55.979	16.021/15.979	59.6/59.4	.40/.25
T 060	60																									60.009/59.979	18.021/17.979	63.6/63.4	.40/.25
T 063	63																									63.009/62.979	18.021/17.979	66.6/66.4	.40/.25
T 065	65																									65.009/64.979	18.021/17.979	68.6/68.4	.40/.25
T 070	70																									70.009/69.979	20.026/19.974	74.1/73.9	.60/.40
T 071	71																									71.009/70.979	20.026/19.974	75.1/74.9	.60/.40
T 075	75																									75.009/74.979	20.026/19.974	79.1/78.9	.60/.40
T 080	80																									80.009/79.979	22.026/21.974	84.6/84.4	.60/.40
T 085	85																									85.010/84.975	22.026/21.974	89.6/89.4	.60/.40
T 090	90																									90.010/89.975	25.026/24.974	94.6/94.4	.60/.40
T 095	95																									95.010/94.975	25.026/24.974	96.6/94.4	.60/.40
T 100	100																									100.010/99.975	28.026/27.974	106.6/106.4	.60/.40
T 105	105																									105.010/104.975	28.026/27.974	110.6/110.4	.60/.40
T 110	110																									110.010/109.975	28.026/27.974	115.6/115.4	.60/.40
T 115	115																									115.010/114.975	32.031/31.969	121.7/121.4	.60/.40
T 120	120																									120.010/119.975	32.031/31.969	126.7/126.4	.60/.40
T 125	125																									125.012/124.972	32.031/31.969	131.7/131.4	.60/.40
T 130	130																									130.012/129.972	32.031/31.969	136.7/136.4	.60/.40
T 135	135																									135.012/134.972	36.031/35.969	142.4/142.1	1.00/.70
T 140	140																									140.012/139.972	36.031/35.969	147.4/147.1	1.00/.70
T 145	145																									145.012/144.972	36.031/35.969	152.4/152.1	1.00/.70
T 150	150																									150.012/149.972	36.031/35.969	157.4/157.1	1.00/.70
T 155	155																									155.012/154.972	40.031/39.969	163.4/164.4	1.00/.70
T 160	160																									160.012/159.972	40.031/39.969	168.4/168.1	1.00/.70
T 165	165																									165.012/164.972	40.031/39.969	173.4/173.1	1.00/.70
T 170	170																									170.012/169.972	40.031/39.969	178.4/178.1	1.00/.70

* Up to size 05 driving half hubs are solid

dg - Driving half

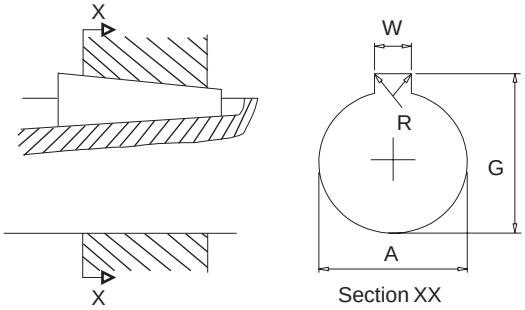
dn - Driven half

- Available Ex Stock

- Non Preferred

Metric Standard Bores are to ISO 286 - 2 - 1988 (E)
M7 up to and including 50 mm
K7 over 50 mm
Metric Standard keyways are to BS 4235 : Part 1 : 1972 and DIN 6885

Table 14 - Inch Bore with Taper Keyway Availability and Bore Dimensions



Column Entry 7,8,9,10 (dg) or 11,12,13,14 (dn)	Nominal Bore Diameter	X611, X612 Cone Ring Straight Bored with Taper Square Keyway																								Bore A	Taper Square Keyway		
		01		02		03		04		05		06		07		08		09		10		11		12			Keyway Width W	Keyway Depth G	Keyway Corner Radius R
		dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn				
P - - -	Pilot (mm)	*	16	*	19	*	22	*	25	*	29	25	38	30	51	30	50	40	55	70	70	80	80	90	90	-	-	-	-
B 019	0.75	■	■	▒		▒		▒		▒																.7498/.7493	.189/188	.823/.817	.010/.006
B 021	0.8125	▒	▒	▒		▒		▒		▒																.8123/.8118	.251/.250	.913/.907	.010/.006
B 022	0.875	■	■	■	■	■		▒		▒																.8748/.8743	.251/.250	.975/.969	.010/.006
B 024	0.9375	▒	▒	▒	▒	▒		▒		▒																.9373/.9368	.251/.250	1.038/1.032	.010/.006
B 025	1.0	■	■	■	■	■	■	▒		▒																.9998/.9993	.251/.250	1.100/1.094	.010/.006
B 027	1.0625	▒	▒	▒	▒	▒	▒	▒		▒																1.0623/1.0618	.313/.312	1.159/1.153	.010/.006

Column Entry 7,8,9,10 (dg) or 11,12,13,14 (dn)	Nominal Bore Diameter	X611, X612 Cone Ring Straight Bored with Taper Rectangular Keyway																								Bore A	Taper Rectangular Keyway		
		01		02		03		04		05		06		07		08		09		10		11		12			Keyway Width W	Keyway Depth G	Keyway Corner Radius R
		dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn	dg	dn				
B 029	1.125	■	■	■	■	■	■	■	■	▒		■														1.1248/1.1243	.313/.312	1.221/1.215	.010/.006
B 030	1.1875	▒	▒	▒	▒	▒	▒	▒	▒	▒		▒														1.1873/1.1868	.313/.312	1.284/1.278	.010/.006
B 032	1.25	■	■	■	■	■	■	■	■	■	■	■														1.2498/1.2492	.313/.312	1.346/1.340	.010/.006
B 033	1.3125	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒														1.3123/1.3117	.376/.375	1.405/1.399	.010/.006
B 035	1.375	■	■	■	■	■	■	■	■	■	■	■		■												1.3748/1.3742	.376/.375	1.467/1.461	.010/.006
B 037	1.4375	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒		▒												1.4373/1.4367	.376/.375	1.530/1.524	.010/.006
B 038	1.5	■	■	■	■	■	■	■	■	■	■	■		■		■										1.4998/1.4992	.376/.375	1.592/1.586	.010/.006
B 041	1.625			■	■	■	■	■	■	■	■	■		■		■										1.6248/1.6242	.439/.438	1.743/1.737	.020/.014
B 044	1.75					■	■	■	■	■	■	■	■	■		■										1.7498/1.7492	.439/.438	1.868/1.862	.020/.014
B 048	1.875					■	■	■	■	■	■	■	■	■		■										1.8748/1.8742	.501/.500	1.989/1.983	.020/.014
B 051	2.0							■	■	■	■	■	■	■		■		■								2.0001/1.9994	.501/.500	2.114/2.108	.020/.014
B 054	2.125							■	■	■	■	■	■	■		■		■								2.1251/2.1244	.626/.625	2.293/2.287	.020/.014
B 057	2.25							■	■	■	■	■	■	■	■	■		■								2.2501/2.2494	.626/.625	2.418/2.412	.020/.014
B 060	2.375									■	■	■	■	■	■	■	■	■								2.3751/2.3744	.626/.625	2.543/2.537	.020/.014
B 064	2.5									■	■	■	■	■	■	■	■	■								2.5001/2.4994	.626/.625	2.668/2.662	.020/.014
B 067	2.625									■	■	■	■	■	■	■	■	■								2.6251/2.6244	.751/.750	2.816/2.810	.020/.014
B 070	2.75									■	■	■	■	■	■	■	■	■								2.7501/2.7494	.751/.750	2.941/2.935	.020/.014
B 073	2.875											■	■	■	■	■	■	■								2.8751/2.8744	.751/.750	3.066/3.060	.020/.014
B 076	3.0											■	■	■	■	■	■	■								3.0001/2.9994	.751/.750	3.191/3.185	.020/.014
B 079	3.125													■	■	■	■	■	■	■						3.1251/3.1244	.876/.875	3.370/3.364	.062/.052
B 083	3.25													■	■	■	■	■	■	■						3.2502/3.2493	.876/.875	3.495/3.489	.062/.052
B 086	3.375													■	■	■	■	■	■	■						3.3752/3.3743	.876/.875	3.620/3.614	.062/.052
B 089	3.5													■	■	■	■	■	■	■						3.5002/3.4993	.876/.875	3.745/3.739	.062/.052
B 092	3.625															■	■	■	■	■	■	■				3.6252/3.6243	1.001/1.000	3.924/3.918	.062/.052
B 095	3.75															■	■	■	■	■	■	■				3.7502/3.7493	1.001/1.000	4.049/4.043	.062/.052
B 098	3.875															■	■	■	■	■	■	■				3.8752/3.8743	1.001/1.000	4.174/4.168	.062/.052
B 102	4.0																	■	■	■	■	■	■	■	■	4.0002/3.9993	1.001/1.000	4.299/4.293	.062/.052
B 105	4.125																	■	■	■	■	■	■	■	■	4.1252/4.1243	1.252/1.250	4.471/4.465	.062/.052
B 108	4.25																	■	■	■	■	■	■	■	■	4.2502/4.2493	1.252/1.250	4.596/4.590	.062/.052
B 111	4.375																	■	■	■	■	■	■	■	■	4.3752/4.3743	1.252/1.250	4.721/4.715	.062/.052
B 114	4.5																	■	■	■	■	■	■	■	■	4.5002/4.4993	1.252/1.250	4.846/4.840	.062/.052
B 117	4.625																	▒	▒	▒	▒	▒	▒	▒	▒	4.6252/4.6243	1.252/1.250	4.971/4.965	.062/.052
B 121	4.75																			■	■	■	■	■	■	4.7502/4.7492	1.252/1.250	5.096/5.090	.062/.052
B 124	4.875																			▒	▒	▒	▒	▒	▒	4.8752/4.8742	1.252/1.250	5.221/5.215	.062/.052
B 127	5.0																			■	■	■	■	■	■	5.0002/4.9992	1.252/1.250	5.346/5.340	.062/.052
B 130	5.125																			▒	▒	▒	▒	▒	▒	5.1252/5.1242	1.502/1.500	5.524/5.518	.062/.052
B 133	5.25																			■	■	■	■	■	■	5.2502/5.2492	1.502/1.500	5.640/5.634	.062/.052
B 137	5.375																			▒	▒	▒	▒	▒	▒	5.3752/5.3742	1.502/1.500	5.774/5.768	.062/.052
B 140	5.5																			■	■	■	■	■	■	5.5002/5.4992	1.502/1.500	5.890/5.884	.062/.052
B 143	5.625																					▒	▒	▒	▒	5.6252/5.6242	1.502/1.500	6.024/6.018	.062/.052
B 146	5.75																					■	■	■	■	5.7502/5.7492	1.502/1.500	6.140/6.134	.062/.052
B 149	5.875																					▒	▒	▒	▒	5.8752/5.8742	1.502/1.500	6.274/6.268	.062/.052
B 152	6.0																							■	■	6.0002/5.9992	1.502/1.500	6.390/6.384	.062/.052
B 156	6.125																							▒	▒	6.1252/6.1242	1.752/1.750	6.624/6.618	.125/.115
B 169	6.25																							■	■	6.2502/6.2492	1.752/1.750	6.749/6.743	.125/.115
B 162	6.375																							▒	▒	6.3752/6.3742	1.752/1.750	6.874/6.868	.125/.115
B 165	6.5																							■	■	6.5002/6.4992	1.752/1.750	6.999/6.993	.125/.115

* Up to size 05 driving half hubs are solid

dg - Driving half

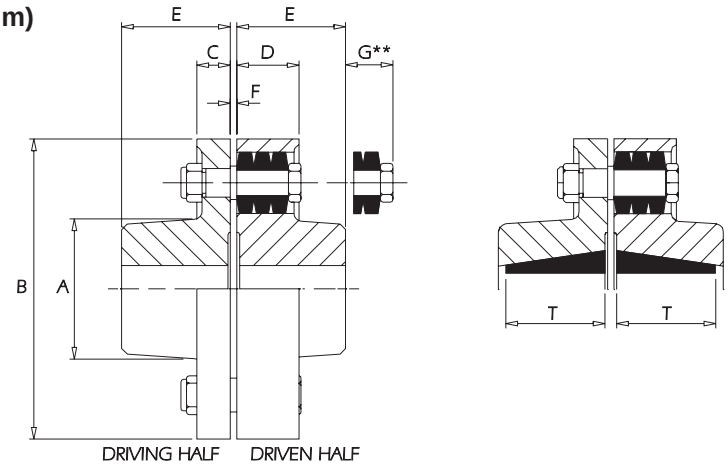
dn - Driven half

■ - Available Ex Stock

▒ - Non Preferred

Imperial Standard Bores are to BS 1916
M6 up to and including 1.97 inches
K6 over 1.97 inches
Imperial Standard keyways are to BS 46 : Part 1 : 1958

Table 15 - Coupling Dimensions (mm)



Coupling size Column Entry 5 & 6	Types 611 & 612 Straight bored					Types 613 & 614 Taper bushed					A	B	C	D	F	No of pins	
	Max. bore	Min. bore * Driving half	Min. bore * Driven half	Hub length E	G **	Max. bore	Min. bore	Hub length E	Bush length T	G **						Medium Duty	Heavy Duty
01	38	*	19	48	20	25	9	40	22.3	28	64	134	12	26	3	3	6
02	42	*	22	56	12	Not available as taper bushed					70	147	12	26	3	4	8
03	48	*	25	61	26	40	14	50	38.1	37	83	171	19	35	3	3	6
04	60	*	28	68	19	Not available as taper bushed					97	193	19	35	3	4	8
05	70	*	32	76	11	60	16	50	44.5	37	117	215	19	35	3	5	10
06	80	28	42	88	46	Not available as taper bushed					127	254	31	56	3	4	8
07	90	35	55	100	34	75	35	82	76.2	52	147	279	31	56	3	5	10
08	100	40	60	117	22	90	35	98	88.9	41	180	330	30	61	3	6	12
09	120	50	65	132	45	110	55	124	114.3	53	206	371	46	81	6	5	10
10	140	80		147	30	125	70	136	127	41	230	419	46	81	6	6	12
11	150	90		165	12	Not available as taper bushed					256	457	46	81	6	7	14
12	170	100		188	0						296	533	46	81	6	9	18
13	180	As required		211	28						330	597	104	109	6	6	12
14	200			236	10						368	660	104	109	6	7	14
15	230			264	43						406	737	140	140	6	6	12
16	255			292	15						457	826	140	140	6	7	14
17	280			311	0						508	927	140	140	6	8	16
18	305			324	0						533	991	140	140	6	9	18
19	330			330	0						572	1067	140	140	6	10	20
20	355			356	0						610	1156	140	140	6	11	22

Notes:

* Up to size 05 the driving half hubs are solid

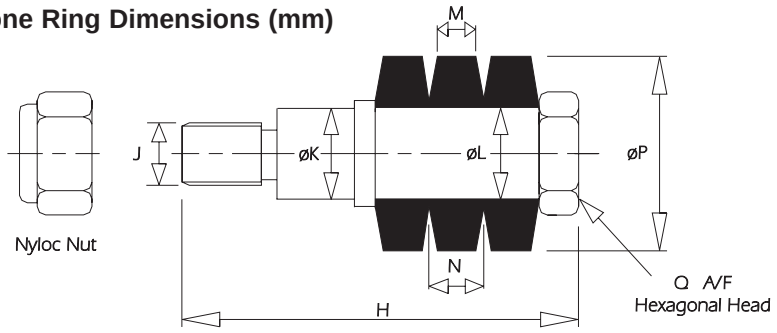
** The coupling pin withdrawal distance

Notes (for sizes 13 to 20 only):

The above dimensions are for guidance only

Consult David Brown when an imperial bore and keyway to BS 46 is required in a coupling with near maximum bore. Generally the depth of the keyway is greater than that of the metric keyways, hence the maximum bores given must be marginally reduced

Table 16 - Pin and Cone Ring Dimensions (mm)



Coupling size	Pin Assembly Number	Cone Ring Number	H	J	K	L	M	N	P	Q	Max Bolt Tightening Torque (Nm)	No of Rubber Rings Per Pin
01 - 02	41111-2-024	32213-9-102	58	M10	12.7	12.7	5.1	7.6	28.2	17	15	3
03 - 05	41111-2-025	32213-9-103	75	M12	15.9	17.8	6.4	10.2	38.1	24	25	3
06 - 08	41111-2-026	32213-9-104	118	M20	25.4	25.4	8.9	12.7	50.8	36	115	4
09 - 12	41111-2-027	32213-9-105	161	M24	28.6	30.5	12.7	17.8	63.5	36	200	4
13 - 14	41111-2-028	32213-9-106	208	M36	41.3	43.2	15.2	22.9	85.3	51	140	4
15 - 20	41111-2-029	32213-9-107	259	M48	57.2	58.4	20.3	30.5	113.7	70	334	4

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 David Brown Radicon Limited 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.

David Brown 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 manufactures 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, David Brown Radicon Limited 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 David Brown Radicon Limited 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 holdback facility, ensure that back-up systems are provided if failure of the holdback 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 telephoning or writing to: