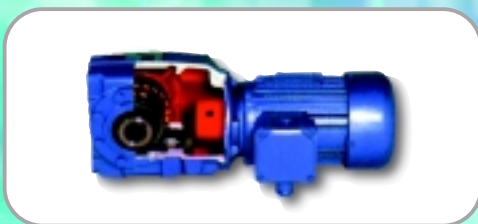


Section 5.1. - Reduction Gearbox Range



Helical Worm Gearboxes up to 45 kW
In-Line Helical Gearboxes up to 90 kW
Parallel Helical Gearboxes up to 18.5 kW
Worm Gearboxes up to 140 kW

Section 5.2. - Helical Worm Reduction Gearboxes



Power capacity up to 45 kW
Output torque capacity up to 10000 Nm
Solid shaft (single and double) and hollow shaft
Motorised or gear heads.
Foot and flange and shaft mount available
Standard double reduction gear ratios up to 250:1
Up to quintuplet reduction available

5. reduction gearboxes

Section 5.3. - In-line Helical Reduction Gearboxes



Power capacity up to 90 kW
Output torque capacity up to 11000 Nm
Solid shaft
Motorised or gear heads
Foot and flange mount available.
Standard double reduction gear ratios up to 70:1
Up to quintuplet reduction available

Power Jacks Group

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tel: +44 (0) 1346 513131 fax: +44 (0) 1346 516827
email: sales@powerjacks.com web: www.powerjacks.com

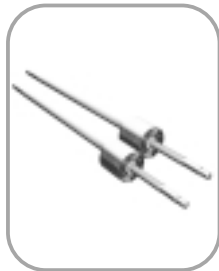


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1. Screw Jacks (Mechanical Actuators)

Cubic Metric Machine Screw Actuators
Metric and Imperial Machine Screw Actuators
Stainless Steel Actuators - Metric and Imperial
Micro-Miniature Actuators
Ball Screw Actuators - Metric and Imperial
Roller Screw and Special Actuators



3. Screw Drives

Spiracon Roller Screw



5. Reduction Gearboxes

Helical Worm Gearboxes
In-Line Helical Gearboxes



7. Electric Motors

Standard 3-Phase Motors
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Motors with Encoders and Forced Ventilation



9. Engineers Reference

Formulae and Factors
Standard Metric Component Data
Properties
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EMA - Actuator Series
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4. Bevel Gearboxes - Neeter Drive

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6. Couplings and Drive Shafts

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Drive Shafts
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8. Motion Control

Rotary Limit Switches
Proximity and Electro-mechanical Limit Switches
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Position Indicators
Control Panels





Picture Index



Cubic Actuators



Metric Actuators



Metric Ball Screw Actuators



Stainless Steel Actuators



EMA Actuators



Ball Screw Rolaram Actuator



Roller Screw Rolaram Actuator



Special Actuators



Imperial Actuators



Imperial Ball Screw Actuators



Roller Screw and Special Actuators



Spiracon Roller Screw



P-Range Bevel Gearboxes



N-Range Bevel Gearboxes



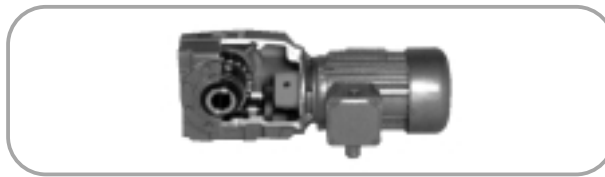
BA-Range Bevel Gearboxes



Electric Motors



Couplings and Drive Shafts



Helical Worm Gearboxes



In-Line Helical Gearboxes



Proximity and Contact Limit Switches



Rotary Limit Switches



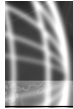
Encoders



Position Indicators



Engineers Reference



Company Profile

Power Jacks is the largest and most experienced manufacturer of actuators and mechanical jacks in the UK. With our range of Power Jacks and Duff-Norton actuators you don't just get the product, you also get the knowledge and experience from a company that has, since 1883, manufactured quality industrial lifting, positioning and materials handling equipment.

On our extensive site in Fraserburgh, Aberdeenshire, we have a wide range of engineering facilities including CAD/CAM/CAE technology to aid engineering design and manufacture, an advanced production control system ensuring the optimum product flow through our comprehensive range of conventional and CNC machining facilities, which maximises efficiency and reduces delivery times. This is achieved with our 100+ highly trained employees, giving Power Jacks the capability to produce mechanical engineering of the highest standards.

Quality is a key part of Power Jacks working philosophy and built into the product from initial design conception, through production, to installation and after sales service.

There are over two million of our actuators successfully in operation world-wide. The Power Jacks Group are a global market leader in Linear Actuation Systems.



Power Jacks Ltd Extensive Site in Fraserburgh, Aberdeenshire



By specifying a Power Jacks product you are assured of quality, reliability, performance and value. In the United Kingdom there are a team of highly experienced sales engineers to assist customers with their actuation applications whether on site or by direct communications with the Fraserburgh factory. For overseas customers there is an extensive distributor network world-wide.





Power Jacks Standard Product Range Covers:-

- Machine Screw Worm Gear Actuators (Screw Jacks)
- Ball Screw Actuators (Screw Jacks)
- Stainless Steel Actuators (Screw Jacks)
- Micro-Miniature Actuators
- TracMaster Electro-Mechanical Linear Actuators
- EMA Electro-Mechanical Linear Actuators
- Rolaram Electro-Mechanical Linear Actuators
- Mechanical Jacks
- Neeter Drive Bevel Gear Boxes
- Reduction Gear Boxes
- Power Transmissions
- Accessories for Complete Actuator Systems
- Actuator Motion Control Systems
- Track (Rail) Jacks
- Hydraulic Jacks
- Hydraulic Cylinders
- Hydraulic Pumps and Tools



Both Metric and Imperial Products are available.

As well as these standard products Power Jacks has a dedicated engineering team for the design of "Special" products to suit all customer requirements.

These products can be provided as individual parts or single or multiple systems with full engineering consultancy available as part of the service.

For more information contact:

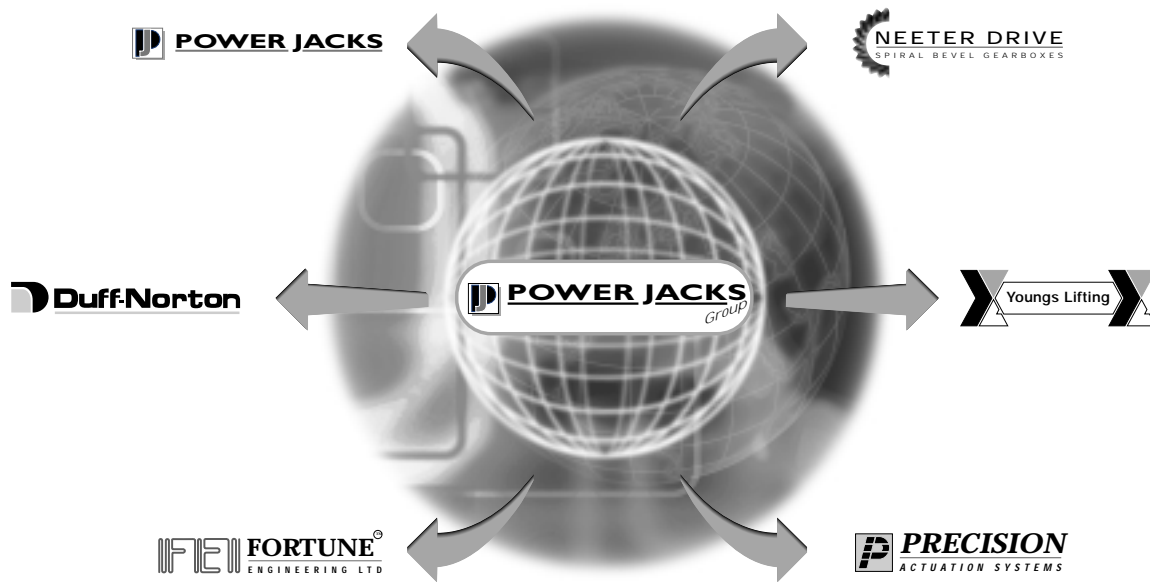
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Tel: +44 (0) 1346 513131
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email: sales@powerjacks.com
Internet: <http://www.powerjacks.com>



Company Profile

The Power Jacks Group is an engineering group focused on providing customers with the best solution for precision linear actuation, power transmission, mechanical jacking, hydraulic jacking and engineering service. The engineering history of the group dates from 1883 and the products and service are supplied to customers world-wide.

The Power Jacks Group Brings Together



Representation

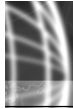




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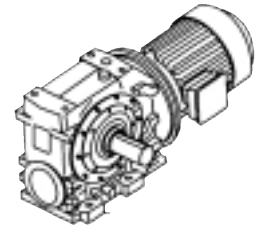
5.1. Reduction Gearboxes - Range

Power Jacks offers a wide range of reduction gearboxes for actuator system building whether it be a single motorised actuator or several actuators mechanically linked. The gearboxes are available as motorised units as standard, however the gearbox unit itself can be supplied. This design guide lists the most popular types of gearboxes for actuator system building with many more available on request from Power Jacks.

5.1.1. Listed Reduction Gearboxes

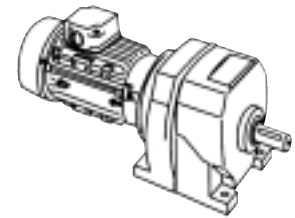
Helical Worm Gearboxes

Power capacity up to 45 kW.
Output torque capacity up to 10000 Nm.
8 Gearbox sizes available.
Double Reduction standard up to 250:1 gear ratio.
Up to Quintuple reduction available on request.
Foot, Flange and Shaft mounting.



In-Line Helical Gearboxes

Power capacity to 90 kW.
Output torque capacity to 11000 Nm.
9 Gearbox sizes available.
Double Reduction standard up to 70:1 gear ratio.
Up to Quintuple reduction available on request.
Foot and flange mounting.



5.1.2. Reduction Gearboxes Also Available

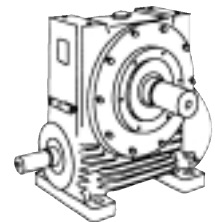
Parallel Helical Gearboxes

Power capacity to 18.5 kW.
Output torque capacity to 2900 Nm.
4 Gearbox sizes available.
Double Reduction standard up to 100:1 gear ratio.
Up to Triple reduction available on request.
Foot, Flange and Shaft mounting.



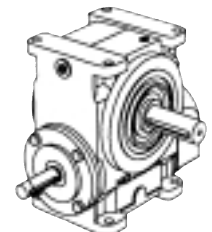
Worm Gearboxes Small Size

Power capacity to 11 kW.
Output torque capacity to 1000 Nm.
6 Gearbox sizes available.
Single Reduction standard up to 70:1 gear ratio.
Double reduction available on request.
Foot, Flange and Shaft mounting.



Worm Gearboxes Medium Size

Power capacity to 140 kW.
Output torque capacity to 10000 Nm.
4 Gearbox sizes available.
Single Reduction standard up to 70:1 gear ratio.
Double reduction available on request.
Foot, Flange and Shaft mounting.



The gearboxes can take either IEC or NEMA standard motors. This allows the fitment of brake motors, flame proof motors, DC motors, AC inverter rated motors and energy efficient motors. All the gearboxes are dimensionally interchangeable with major European gearbox manufacturers. The advanced design, high grade materials and quality manufacture of the gearboxes are maximised by the high internal efficiency to ensure a trouble free operational life with simple maintenance routines kept to an absolute minimum.



5.2. Helical Worm Reduction Gearboxes

5.2.1. Gearbox Selection

Calculate the power capacity required for the gearbox:

$$P \text{ (kW)} = P_d \text{ (kW)} \times F_L$$

Where P_d = Power required to drive the machine.
 F_L = Load factor (refer to table).

Select a gearbox type to the closest above the required power (P_d), refer 4.3.1.2.

Find the closest matching output speed hence gear ratio for that gearbox type for the application (refer 4.3.1.2).

Check that the gearbox power rating is suitable for the actual output speed.

5.2.2. Helical Worm Reduction Gearbox Performance

Power (kW)	C0320	C0420	C0520	C0620	C0720	C0820	C0920	C1020
0.12	M	R	F					
0.18	M	R	F	F				
0.25	M	M	R	F				
0.37	M	M	R	R				
0.55	M	M	M	R	F			
0.75	R	M	M	M	R	F		
1.1	F	M	M	M	M	F	F	
1.5	F	R	M	M	M	R	F	
2.2		F	R	M	M	M	R	F
3.0			R	M	M	M	R	F
4.0			F	R	M	M	R	R
5.5				R	R	M	R	R
7.5				F	R	M	R	R
11.0					F	R	M	M
15.0						F	M	M
18.5							M	M
22.0							R	M
30.0							F	R
37.0							F	R
45.0							F	F

- M - Most/All gear ratios available
- R - Reduced range of gear ratios available
- F - Few gear ratios available

For exact availability of gear ratios in power ranges and full gearbox details consult Power Jacks.

Load Factors (F_L)			
Duration of Service (hours per day)	Uniform Load	Moderate Shock Load	Heavy Shock Load
Under 3	0.8	1	1.5
3 to 10	1	1.25	1.75
Above 10	1.25	1.5	2



5.2.3. Helical Worm Gearbox Output Speeds and Gear Ratios

Based on double reduction motorised units with 4 Pole, 1440 rpm AC electric motors.

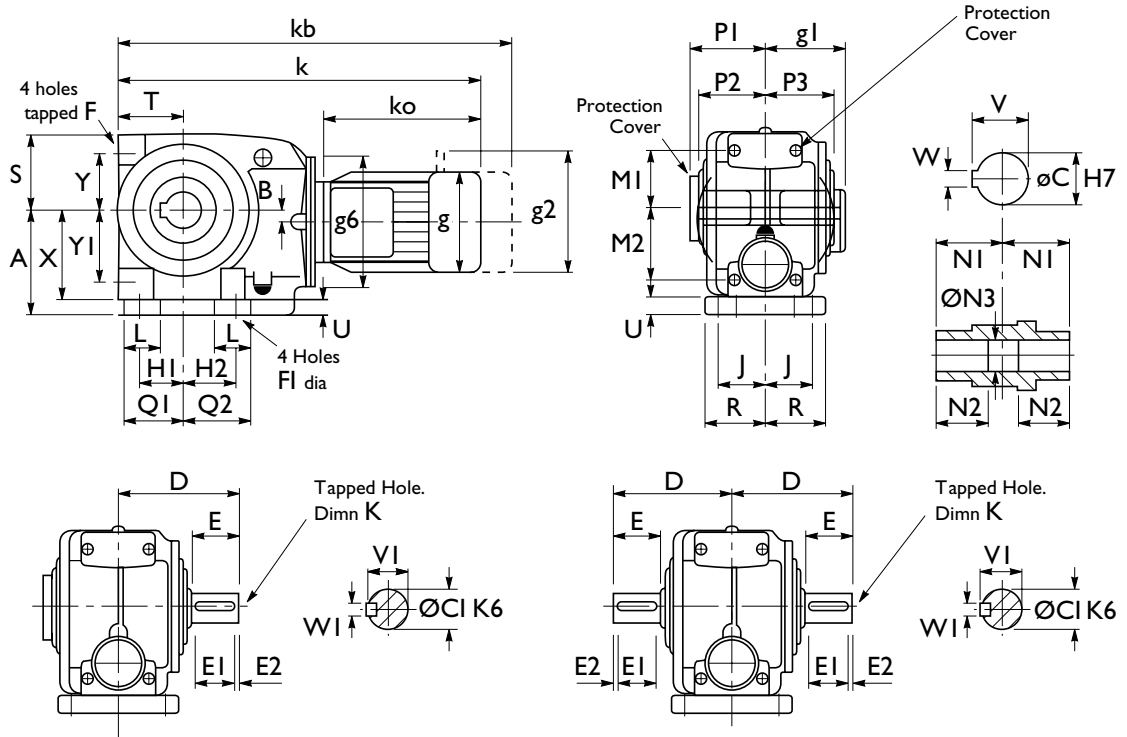
Gear Box Model																
Nominal	C0320		C0420		C0520		C0620		C0720		C0820		C0920		C1020	
Gear Ratio	Exact G/Ratio	Output Speed	Exact G/Ratio	Output Speed	Exact G/Ratio	Output Speed	Exact G/Ratio	Output Speed	Exact G/Ratio	Output Speed	Exact G/Ratio	Output Speed	Exact G/Ratio	Output Speed	Exact G/Ratio	Output Speed
8	8.591	167.6	8.591	167.6	8.31	173.2	8.23	174.9	7.90	182.3	7.77	185.3	7.97	180.6	7.95	181.1
11	11.61	124.0	11.61	124.0	11.66	123.5	11.57	124.5	10.94	131.6	11.01	130.8	10.98	131.1	11.11	129.6
12	13.2	109.1	13.2	109.1	12.85	112.1	12.97	111.0	12.29	117.2	12.24	117.6	12.30	117.1	12.08	119.2
14	14.95	96.3	14.95	96.3	14.59	98.7	14.56	98.9	13.52	106.5	13.61	105.8	13.81	104.3	13.72	105.0
16	16.36	88.0	16.36	88.0	16.09	89.5	15.93	90.4	15.80	91.1	15.54	92.7	16.68	86.3	16.63	86.6
18	19.13	75.3	19.13	75.3	18.53	77.7	18.49	77.9	17.66	81.5	17.60	81.8	17.79	80.9	17.87	80.6
20	20.61	69.9	20.61	69.9	21.05	68.4	20.96	68.7	20.07	71.7	19.76	72.9	19.88	72.4	19.29	74.7
22	22.11	65.1	22.11	65.1	22.56	63.8	22.40	64.3	21.89	65.8	22.03	65.4	22.96	62.7	23.23	62.0
25	25.14	57.3	25.14	57.3	24.86	57.9	25.11	57.3	24.59	58.6	24.47	58.8	25.73	56.0	25.27	57.0
28	28.48	50.6	28.48	50.6	28.24	51.0	28.18	51.1	27.03	53.3	27.22	52.9	28.89	49.8	28.70	50.2
32	33.71	42.7	33.71	42.7	32.55	44.2	33.48	43.0	30.81	46.7	31.78	45.3	31.43	45.8	31.85	45.2
36	36.43	39.5	36.43	39.5	35.86	40.2	35.79	40.2	35.31	40.8	35.20	40.9	37.22	38.7	37.38	38.5
40	39.26	36.7	39.26	36.7	40.74	35.3	40.57	35.5	40.15	35.9	39.51	36.4	41.59	34.6	40.36	35.7
45	45.5	31.6	45.5	31.6	46.84	30.7	47.32	30.4	44.13	32.6	43.64	33.0	44.55	32.3	43.65	33.0
50	53.31	27.0	53.31	27.0	50.93	28.3	50.52	28.5	49.90	28.9	49.26	29.2	49.49	29.1	48.51	29.7
56	56.19	25.6	56.19	25.6	55.45	26.0	55.71	25.8	53.63	26.9	54.60	26.4	57.66	25.0	58.85	24.5
63	64.21	22.4	64.21	22.4	63.00	22.9	64.80	22.2	61.62	23.4	63.56	22.7	65.74	21.9	66.63	21.6
71	74.55	19.3	74.55	19.3	73.37	19.6	73.92	19.5	69.00	20.9	69.64	20.7	69.91	20.6	69.18	20.8
80	82.83	17.4	82.83	17.4	82.67	17.4	80.94	17.8	75.56	19.1	76.50	18.8	77.18	18.7	79.71	18.1
90	86.67	16.6	86.67	16.6	90.67	15.9	91.58	15.7	88.26	16.3	87.29	16.5	93.18	15.5	91.32	15.8
100	101.5	14.2	101.5	14.2	98.57	14.6	97.78	14.7	99.79	14.4	98.53	14.6	103.50	13.9	101.50	14.2
112	114.3	12.6	114.3	12.6	109.10	13.2	110.60	13.0	104.30	13.8	102.40	14.1	106.20	13.6	107.80	13.4
125	129.9	11.1	129.9	11.1	124.00	11.6	124.00	11.6	115.90	12.4	117.90	12.2	119.40	12.1	115.80	12.4
140	142	10.1	142	10.1	142.00	10.1	143.10	10.1	138.00	10.4	139.30	10.3	146.20	9.8	144.70	10.0
160	157.8	9.1	157.8	9.1	160.00	9.0	156.70	9.2	151.10	9.5	153.00	9.4	161.40	8.9	166.70	8.6
212	217.8	6.6	217.8	6.6	211.10	6.8	214.00	6.7	208.60	6.9	204.80	7.0	222.10	6.5	225.50	6.4
250	247.5	5.8	247.5	5.8	240.00	6.0	240.00	6.0	231.80	6.2	235.80	6.1	249.70	5.8	242.30	5.9

Note: 1. Units with 6 Pole, 960 rpm, motors available on request.
 2. Output speed in rpm.



reduction gearboxes

5.2.4. Helical Worm Gearbox Dimensions



Size	A	B	C	CI	D	E	EI	E2	F	FI	HI	H2	J	K	L	M1
C0320	80	5.3	20	20	100	35	31	3	M8 x 1.25, 15 deep	9	35	28	45	M6 x 1.0, 16 deep	25	40
C0420	100	15	30	25	115	46	42	3	M10 x 1.5, 20 deep	11	35	45	50	M10 x 1.5, 22 deep	35	53
C0520	112	13	35	30	134	60	53	3	M10 x 1.5, 18 deep	11	45	55	55	M10 x 1.5, 22 deep	40	65
C0620 Std	140	17	45	35	160	63	55	3	M12 x 1.75, 20 deep	14	60	70	65	M12 x 1.75, 22 deep	50	76
C0620 HD	140	17	45	45	195	98	80	5	M12 x 1.75, 20 deep	14	60	70	65	M16 x 2.0, 36 deep	50	76

Size	M2	NI	N2	N3	PI	P2	P3	Q1	Q2	R	S	T	U	V	VI	W	WI	X	Y	YI
C0320	40	62	52	20.2	70	61	57	47	41	55	68	54	9	22.9	22.5	6	6	71	40	40
C0420	65	65	54	30.2	74.5	65.5	65	53	62	62	75	64	14	33.5	28	8	8	86	53	65
C0520	77	70	56	35.3	79	70	70	65	75	68	88	68	16	38.5	33	10	8	96	65	77
C0620 Std	96	90	70	45.3	101	90	90.5	81	91	80	103	90	20	49	38	14	10	120	76	96
C0620 HD	96	90	70	45.3	101	90	90.5	81	91	80	103	90	20	49	48.5	14	14	120	76	96

Motor Frame Size	Motors	All Sizes					C0320		C0420		C0520		C0620	
		ko	g	g1	g2	g6	k	kb	k	kb	k	kb	k	kb
63		185	122	101	160	140	361	403	381	423	387	429	461	503
71		210	137	107	167	105	390	431	410	451	412	453	486	527
80		230	158	118	190	120	425	475	445	495	432	482	506	556
90S/L		270	177	149	218	140	475	534	495	554	472	531	555	614
100/112*		340	197	159	238	160	553	621	573	641	592	610	669	737
132		402	253	184	288	200	-	-	-	-	-	-	733	804

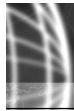
* 112 Motor not available on size C0320.

Other available mounting options:

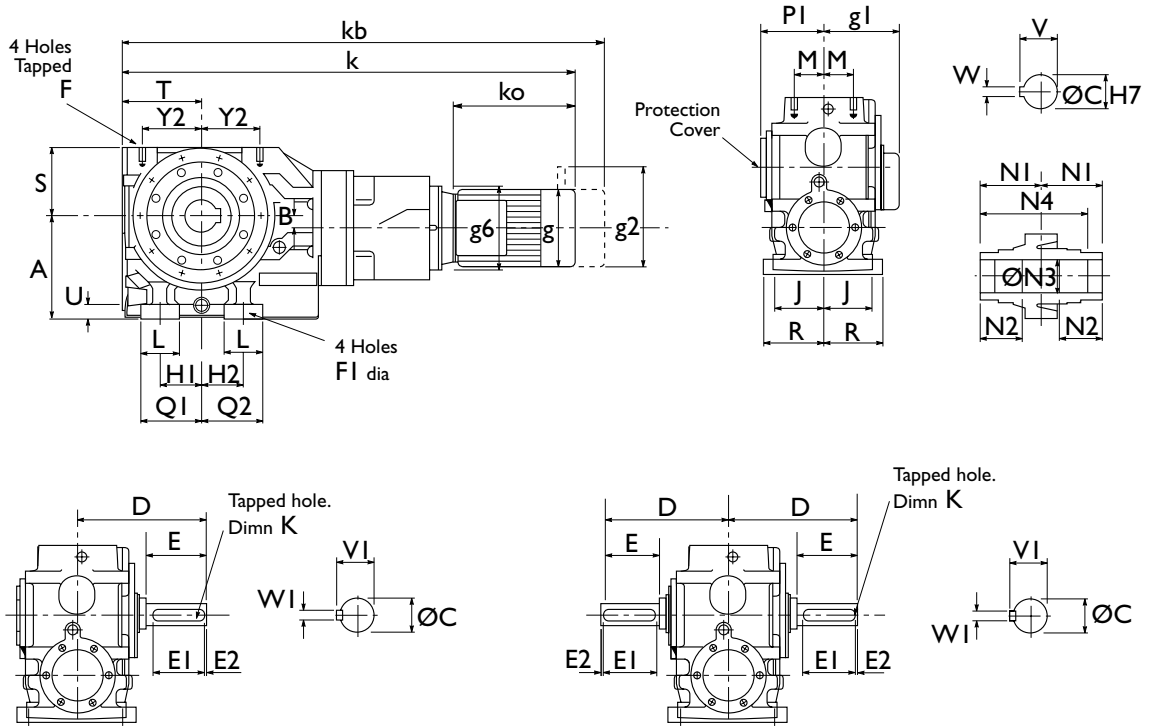
- Output flange mounted
- C - Face mounting
- End mounted with bolting fixtures
- End mounted feet
- Top mounted with bolting fixtures
- Banjo Torque arm

Consult Power jacks for details

Dimensions subject to change without notice.



5.2.4. Helical Worm Gearbox Dimensions



Size	A	B	C	CI	D	E	EI	E2	F	FI	HI	H2	J	K
C0720	180	26	60	45	195	76	70	3	M20 x 2.5, 34 deep	18	75	60	75	M16 x 2, 36 deep
C0820	225	28	70	60	255	120	110	3	M20 x 2.5, 34 deep	22	92	88	100	M20 x 2.5, 42 deep
C0920	280	40	90	70	295	135	125	3	M24 x 3, 45 deep	26	115	120	125	M20 x 2.5, 42 deep
C1020	335	65	100	90	366	170	160	3	M24 x 3, 45 deep	26	170	140	150	M24 x 3, 50 deep

Size	L	M	NI	N2	N3	N4	PI	QI	Q2	R	S	T	U	V	VI	W	WI	Y2
C0720	67	50	109	79	60.5	188	124.5	108.5	93.5	92.5	122	143	28	64.6	48.5	18	14	107.5
C0820	80	60	125	90	70.5	220	143	132	128	125	150	168	35	75.1	64	20	18	125
C0920	85	67.5	150	107.5	90.5	265	169	157.5	162.5	152.5	177	195	40	95.6	74.5	25	20	145
C1020	110	75	175	132.5	100.5	313	198	225	195	180	230	235	45	106.6	95	28	25	172.5

Motor Frame Size	Motors	All Sizes				C0720			C0820			C0920			C1020		
		ko	g	gl	g2	g6	k	kb	g6	k	kb	g6	k	kb	g6	k	kb
80		230	158	118	190	120	617	667	200	700	750	200	783	833	-	-	-
90S/L		270	177	149	218	140	667	726	200	740	799	200	823	882	-	-	-
100/112		340	197	159	238	160	760	828	250	816	884	250	899	967	250	977	1045
132		402	253	184	288	200	824	895	300	878	949	300	961	1032	300	1039	1110
160/180		538	314	230	-	350	990	♦	350	1044	♦	350	1132	♦	350	1210	♦
180L		613	354	257	-	-	-	-	-	-	-	350	1207	♦	350	1285	♦
200		613	354	257	-	-	-	-	-	-	-	400	1207	♦	400	1285	♦
225		690	411	280	-	-	-	-	-	-	-	450	1311	♦	450	1389	♦

ØCI ≤ 50mm k6
> 50mm m6

kb - for brake motor
g2 - hand release if required

♦ Consult Power Jacks Ltd.

Dimensions subject to change without notice.



5.3. In-Line Helical Reduction Gearboxes

5.3.1. Gearbox Selection

Calculate the power capacity required for the gearbox:

$$P(\text{kW}) = P_d (\text{kW}) \times F_L$$

Where P_d = Power required to drive the machine and F_L = Load factor (refer to table in Section 5.2.2.)

Select a gearbox type to the closest above the required power (P_d) and to the nearest output speed (hence gear ratio) for the gearbox type.

5.3.2. In-Line Helical Reduction Gearbox Power Rating Guide by Motor Frame Size

5.3.2.1. In-Line Helical Reduction Gearbox Gear Ratios

Double reduction gear ratios only. For single, triple or other reduction consult Power Jacks.

Unit Size	M0122		M0222		M0322		M0422		M0522		M0622		M0722		M0822		M0921		M1021		M1321			M1421			
	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio
Motor Frame Size	3.6 to 9.0	11 to 56	3.6 to 14	16 to 56	3.6 to 14	16 to 56	3.6 to 11	12 to 56	3.6 to 11	12 to 56	5.0 to 12	14 to 63	3.6 to 9.0	11 to 56	3.6 to 14	16 to 56	1.4 to 14	16 to 71	1.4 to 14	16 to 71	2.8 to 14	16 to 45	50 to 71	2.8 to 14	16 to 45	50 to 71	
63	X	X	-	X	-	X	-	X	-	X	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
71	X	X	-	X	-	X	-	X	-	X	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
80	X	X	X	X	X	X	X	X	X	X	X	X	-	X	-	X	-	X	-	-	-	-	-	-	-	-	-
90	X	X	X	X	X	X	X	X	X	X	X	X	-	X	-	X	-	X	-	-	-	-	-	-	-	-	-
100	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	-	X	-	X	-	X	X	-	X	X	X
112	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	-	X	-	X	-	X	X	-	X	X	X
132	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	-	X	-	X	-	X	X	-	X	X	X
160	-	-	-	-	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
180	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X
200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X
225	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X
250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	-	X	X	-	-
280	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	-	X	X	-	-

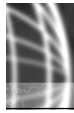
5.3.2.2. Overview of Motor Power Ratings

4 Pole AC Induction Motors - 3 Phase

Frame Size	63	71	80	90	100	112	132	160	180	200	225	250	280
Power (kW)	0.12	0.25	0.55	1.1	2.2	4	5.5	11	18.5	30	37	55	75
	0.18	0.37	0.75	1.5	3		7.5	15	22		45		90

6 Pole AC Induction Motors - 3 Phase

Frame Size	63	71	80	90	100	112	132	160	180	200	225	250	280
Power (kW)	0.07	0.12	0.37	0.75	1.5	2.2	3	7.5	15	18.5	30	37	45
	0.09	0.18	0.55	1.1			4	11		22			55
		0.25					5.5						



5.3.3. In-Line Helical Gearbox Torque Ratings

Gearbox output torque ratings below are applicable when used with 1450 rpm (4 pole), 960 rpm (6 pole) and 725 rpm (8 pole) motors. Double reduction gear ratios only. For single, triple or other reductions consult Power Jacks.

GR	M0122		M0222		M0322		M0422		M0522		M0622		M0722		M0822		M0921		M1021		M1321		M1421	
	i	M2	i	M2	i	M2	i	M2	i	M2	i	M2	i	M2	i	M2	i	M2	i	M2	i	M2	i	M2
	(:l)	(Nm)	(:l)	(Nm)	(:l)	(Nm)	(:l)	(Nm)	(:l)	(Nm)	(:l)	(Nm)	(:l)	(Nm)	(:l)	(Nm)	(:l)	(Nm)	(:l)	(Nm)	(:l)	(Nm)	(:l)	(Nm)
1.4																	1.479	574	1.442	722				
1.5																	2.036	677	2.015	1010				
2.2																	2.282	716	2.191	1100				
2.5																	2.562	756	2.489	1250				
2.8																	2.969	1150	2.992	1490	2.904	1810	2.888	2520
3.2																	3.301	850	3.242	1570	3.189	1990	3.247	2840
3.5	3.75	59	3.589	100	3.589	118	3.585	203	3.585	292			3.678	306	3.678	483	3.688	876	3.5	1570	3.638	2260	3.822	3330
4																	4.088	1360	4.179	2090	4.025	2510	4.029	3530
4.5																	4.582	1440	4.545	2280	4.421	2760	4.537	3970
5	5.066	68	5.034	116	5.034	135	5.04	237	5.04	382	4.438	362	5.094	425	5.214	686	5.073	1680	4.938	2470	5.042	3140	5.333	4660
5.6	5.762	71	5.547	121	5.547	140	5.649	249	5.649	409	6.24	473	5.722	477	5.792	763	5.686	1780	5.37	2690	5.538	3450	6.005	5240
6.3	6.528	75	6.299	127	6.299	147	6.341	262	6.341	413	6.994	510	6.292	525	6.442	849	6.628	1700	6.724	3140	6.21	3880	6.548	5730
7.1																	7.404	1760	7.26	3230	6.879	4300	7.27	6360
8	8.348	79	8	136	8	161	8.053	289	8.053	441	7.851	512	8.218	655	8.33	1100	8.224	2080	7.945	3330	7.779	4840	8.667	7570
9	8.997	80	9.088	140	9.088	168	9.129	299	9.129	450	9.97	594	9.344	689	9.352	1220	9.188	2170	8.578	3420	8.618	5360	9.623	8400
10																	10.27	1970	10.59	3680	9.891	6170	10.07	8800
11	11.36	84	11.15	145	11.15	179	10.89	311	10.89	450	11.3	604	11.35	726	11.47	1310	11.71	2040	11.98	3770	11.2	5940	11.43	9980
12	12.88	87	12.37	148	12.37	186	12.54	320	12.54	426	13.48	613	12.48	740	12.92	1340								
14	14.72	90	14.05	153	14.05	194	14.58	329	14.58	450	15.52	528	14.34	761	15.04	1410								
16	16.37	90	15.97	160	15.97	205	16.31	338	16.31	450	18.05	596	16.26	786	16.69	1420								
18	18.05	90	17.58	160	17.58	208	17.39	338	17.39	450	20.2	626	17.94	794	18.26	1360								
20	19.86	90	20.23	160	20.23	209	20.61	338	20.61	450	21.53	626	20.54	804	20.66	1460								
22	23.27	90	21.99	160	21.99	209	22	338	22	450	25.51	626	23.23	813	23.32	1540								
28	27.92	90	26.4	160	26.4	209	27.3	338	27.3	450	27.24	626	26.93	825	28.27	1580								
32	32.54	90	31.68	160	31.68	209	32.19	338	32.19	450	33.8	626	32.12	840	32.97	1620								
36	36.16	90	35.69	160	35.69	209	35.25	338	35.25	450	39.86	626	35.17	847	36.21	1650								
45	43.54	84	41.49	160	41.49	199	43.2	338	43.2	424	43.64	626	42.21	863	44.38	1690								
50	49.91	72	47.09	160	47.09	203	48.15	338	48.15	379	53.49	526	48.56	700	48.46	1690								
58	56.72	71	53.54	160	53.54	206	54	270	54	270	59.61	470	53.96	596	55.8	1540								
63											66.86	334												

Note: Power Ratings (kW) = $(2 * \pi * M2 * NI) / (i * 60 * 1000)$.

M2 = Maximum output torque rating in Nm.

NI = Motor input power to gearbox in rpm.

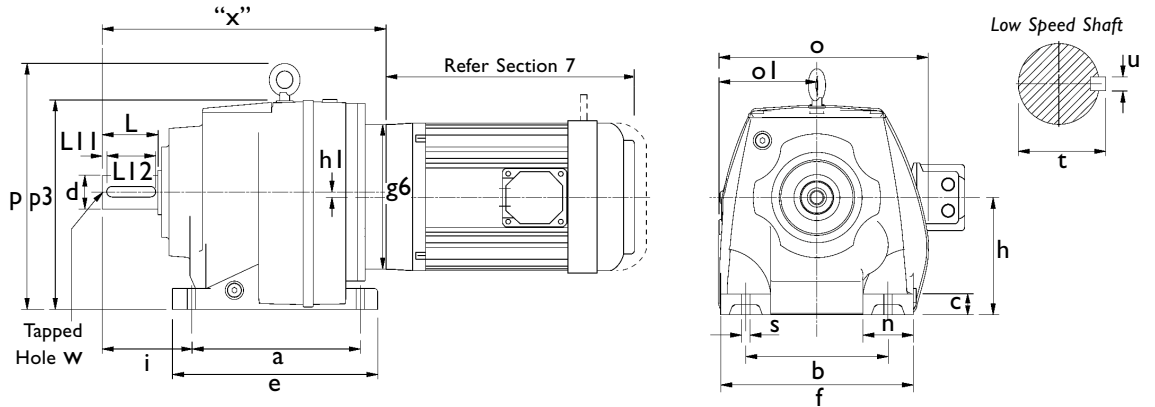
i = Gear Ratio.

GR = Nominal Gear Ratio.



reduction gearboxes

5.3.4. In-Line Helical Gearbox Dimensions - Foot Mounted



Size	a	b	c	e	f	h	h1	i	n	o	ol	p	p3	Øs	Ød	L	L11	L12	t	u	w
M0122	110	110	12	131	135	75	-	58	25	152	76	-	149	10	20 k6	40	4	32	22.5	6	M6 x 1 x 16 deep
M0222	130	110	16	152	145	90	-	75	35	170	84	-	180	10	25 k6	50	4	40	28	8	M10 x 1.5 x 22 deep
M0322	130	110	16	152	145	90	-	75	35	170	84	-	180	10	25 k6	50	4	40	28	8	M10 x 1.5 x 22 deep
M0422	165	135	20	200	190	115	-	90	55	204	97	-	208	15	30 k6	60	4	50	33	8	M10 x 1.5 x 22 deep
M0522	165	135	20	200	190	115	-	100	55	204	97	-	208	15	35 k6	70	7	60	38	10	M12 x 1.75 x 28 deep
M0622	195	150	24	235	210	130	14.5	100	60	220	110	246	214	15	35 k6	70	7	60	38	10	M12 x 1.75 x 28 deep
M0722	205	170	25	245	230	140	-	115	60	252	119	295	250	19	40 k6	80	5	70	43	12	M16 x 2.0 x 36 deep
M0822	260	215	35	310	290	180	-	140	75	320	167	360	310	19	50 k6	100	10	80	53.5	14	M16 x 2.0 x 36 deep
M0921	310	250	40	365	340	225	-	160	90	372	200	433	394	23	60 m6	120	10	100	64	18	M20 x 2.5 x 42 deep
M1021	370	290	45	440	400	250	-	185	110	428	225	505	446	27	70 m6	140	15	110	74.5	20	M20 x 2.5 x 42 deep
M1321	410	340	50	490	450	265	-	220	110	470	242	563	483	34	90 m6	170	15	140	95	25	M24 x 3.0 x 50 deep
M1421	500	380	50	590	530	300	-	260	150	546	278	630	551	41	100 m6	210	15	180	106	28	M24 x 3.0 x 50 deep

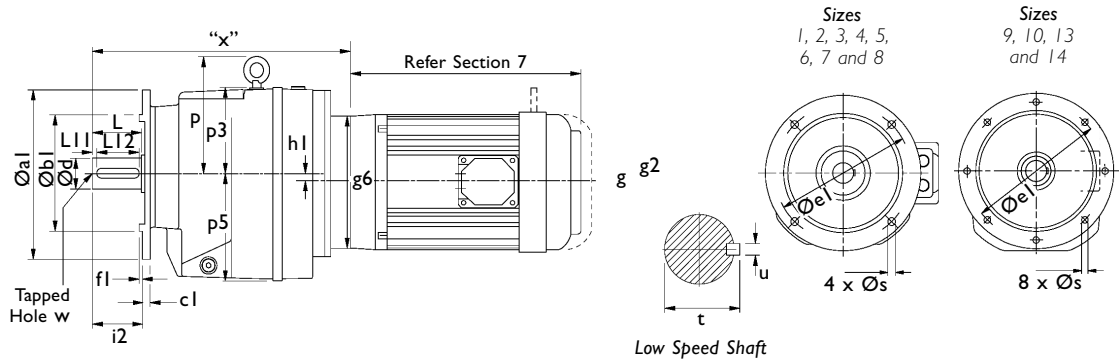
"x"	63	71	80A	80B	90S	90L	90LA	100L	112M	112MA	132SA	132M	132MA	132MB	160M	160L	180M	180L	200L	225S	225M	250M	280S	280M	
M0122	209	213	226	226	236	236	236																		
M0222	240	244	257	257	267	267	267																		
M0322	240	244	257	257	267	267	267																		
M0422			294	294	304	304	304	329	329	329															
M0522			304	304	314	314	314	339	339	339															
M0622			325	325	335	335	335	360	360	360															
M0722			362	362	372	372	372	382	382	382	384	384	384	384											
M0822			442	442	442	442	442	442	442	442	442	442	442	442	448	448									
M0921			524	523	523	523	523	523	523	523	523	523	523	523	564	564	564	564	564	564	591	591			
M1021								596	596	596	596	596	596	596	631	631	631	631	631	631	658	658			
M1321								717	717	717	717	717	717	717	710	710	710	710	710	710	710	710	710	710	710
M1421								832	832	832	832	832	832	832	825	825	825	825	825	825	825	825	825	825	825

Frame	63	71	80A	80B	90S	90L	90LA	100L	112M	112MA	132SA	132M	132MA	132MB	160M	160L	180M	180L	200L	225S	225M	250M	280S	280M
Øg6	140	105	120	120	140	140	140	160	160	160	200	200	200	200	350	350	350	350	400	450	450	550	550	550

Note: All dimensions in millimeters.
 Dimensions subject to change without notice.
 All parallel keys are to DIN 6885.



5.3.5. In-Line Helical Gearbox Dimensions - Flange Mounted



Note: Sizes 01 to 08 are also available as C - Flange (B14) Mounting, please consult Power Jacks for details.

Size	$\varnothing a1$	$\varnothing b1$	$c1$	$\varnothing e1$	$f1$	$h1$	$i2$	p	$p3$	$p5$	$\varnothing s$	$\varnothing d$	L	$L11$	$L12$	t	u	w
M0122	120	80	9	100	3	-	40	-	74	76	9	20 k6	40	4	32	22.5	6	M6 x 1 x 16 deep
	140	95	9	115	3	-	40	-	74	76	9	20 k6	40	4	32	22.5	6	M6 x 1 x 16 deep
	160	110	10	130	3.5	-	40	-	74	76	9	20 k6	40	4	32	22.5	6	M6 x 1 x 16 deep
	200	130	10	165	3.5	-	40	-	74	76	11	20 k6	40	4	32	22.5	6	M6 x 1 x 16 deep
M0222	120	80	10	100	3	-	50	-	90	91	6.6	25 k6	50	4	40	28	8	M10 x 1.5 x 22 deep
	140	95	10	115	3	-	50	-	90	91	9	25 k6	50	4	40	28	8	M10 x 1.5 x 22 deep
	160	110	10	130	3.5	-	50	-	90	91	9	25 k6	50	4	40	28	8	M10 x 1.5 x 22 deep
	200	130	10	165	3.5	-	50	-	90	91	11	25 k6	50	4	40	28	8	M10 x 1.5 x 22 deep
M0322	120	80	10	100	3	-	50	-	90	91	6.6	25 k6	50	4	40	28	8	M10 x 1.5 x 22 deep
	140	95	10	115	3	-	50	-	90	91	9	25 k6	50	4	40	28	8	M10 x 1.5 x 22 deep
	160	110	10	130	3.5	-	50	-	90	91	9	25 k6	50	4	40	28	8	M10 x 1.5 x 22 deep
	200	130	10	165	3.5	-	50	-	90	91	11	25 k6	50	4	40	28	8	M10 x 1.5 x 22 deep
M0422	140	95	11	115	3	-	60	-	93	115	9	30 k6	60	4	50	33	8	M10 x 1.5 x 22 deep
	160	110	11	130	3.5	-	60	-	93	115	9	30 k6	60	4	50	33	8	M10 x 1.5 x 22 deep
	200	130	11	165	3.5	-	60	-	93	115	11	30 k6	60	4	50	33	8	M10 x 1.5 x 22 deep
	250	180	11	215	4	-	60	-	93	115	13.5	30 k6	60	4	50	33	8	M10 x 1.5 x 22 deep
M0522	140	95	11	115	3	-	70	-	93	115	9	35 k6	70	7	60	38	10	M12 x 1.75 x 28 deep
	160	110	11	130	3.5	-	70	-	93	115	9	35 k6	70	7	60	38	10	M12 x 1.75 x 28 deep
	200	130	11	165	3.5	-	70	-	93	115	11	35 k6	70	7	60	38	10	M12 x 1.75 x 28 deep
	250	180	11	215	4	-	70	-	93	115	13.5	35 k6	70	7	60	38	10	M12 x 1.75 x 28 deep
M0622	200	130	11	165	4	14.5	70	116	84	130	11	35 k6	70	7	60	38	10	M12 x 1.75 x 28 deep
	250	180	11	215	4	14.5	70	116	84	130	13.5	35 k6	70	7	60	38	10	M12 x 1.75 x 28 deep
	300	230	11	265	4	14.5	70	116	84	130	13.5	35 k6	70	7	60	38	10	M12 x 1.75 x 28 deep
M0722	200	130	11	165	3.5	-	80	155	110	140	11	40 k6	80	5	70	43	12	M16 x 2.0 x 36 deep
	250	180	11	215	4	-	80	155	110	140	13.5	40 k6	80	5	70	43	12	M16 x 2.0 x 36 deep
	300	230	11	265	4	-	80	155	110	140	13.5	40 k6	80	5	70	43	12	M16 x 2.0 x 36 deep
M0822	300	230	17	265	4	-	100	180	130	182	13.5	50 k6	100	10	80	53.5	14	M16 x 2.0 x 36 deep
	350	250	17	300	5	-	100	180	130	182	17.5	50 k6	100	10	80	53.5	14	M16 x 2.0 x 36 deep
M0921	450	350	18	400	5	-	140	198	-	230	18	60 m6	120	10	100	64	18	M20 x 2.5 42 deep
M1021	450	350	22	400	5	-	140	245	-	260	18	70 m6	140	15	110	74.5	20	M20 x 2.5 42 deep
M1321	550	450	25	500	5	-	170	288	-	278	18	90 m6	170	15	140	95	25	M24 x 3.0 50 deep
M1421	550	450	25	500	5	-	210	320	-	318	18	100 m6	210	15	180	106	28	M24 x 3.0 50 deep

"x"	Motor Frame Size																						
	63	71	80A	80B	90S	90L	90LA	100L	112M	112MA	132M	132MA	132MB	160M	160L	180M	180L	200L	225S	225M	250M	280S	280M
M0122	209	213	226	226	236	236	236																
M0222	240	244	257	257	267	267	267																
M0322	240	244	257	257	267	267	267																
M0422			294	294	304	304	304	329	329	329													
M0522			304	304	314	314	314	339	339	339													
M0622			325	325	335	335	335	360	360	360													
M0722			362	362	372	372	372	382	382	382	384	384											
M0822			442	442	442	442	442	442	442	442	442	442	448	448									
M0921			523	523	523	523	523	523	523	523	523	523	564	564	564	564	564	591	591				
M1021							596	596	596	596	596	596	631	631	631	631	631	658	658				
M1321							717	717	717	717	717	717	710	710	710	710	710	710	710	710	710	710	710
M1421							832	832	832	832	832	832	832	825	825	825	825	825	825	825	825	825	825

Frame	63	71	80A	80B	90S	90L	90LA	100L	112M	112MA	132M	132MA	132MB	160M	160L	180M	180L	200L	225S	225M	250M	280S	280M
$\varnothing g6$	140	105	120	120	140	140	140	160	160	160	200	200	200	350	350	350	350	400	450	450	550	550	550

Note: All dimensions in millimeters.
Dimensions subject to change without notice.
All parallel keys are to DIN 6885.