



Product Catalogue





www.rotalink.com

Infinite possibilities

Welcome to the Rotalink catalogue. Its purpose is to present the widest range of products in a way that makes it easy for you to satisfy your requirement. In the following pages there are sections that deal with the selection process for each of the following broad catalogue headings:

- DC motors with optional gearboxes
- Control of DC Motors
- AC motors with optional gearboxes
- Stepping motors with optional gearboxes
- Customised design and build


Each section includes a brief guide to its use and is followed by detailed information. Component data sheets can be accessed from the enclosed CD or from www.rotalink.com. It may be possible for you to specify your product by referring to the appropriate pages, if not don't be concerned. The real strength of this catalogue lies in the support that stands behind it.

The sales group at Rotalink are available to give both technical and commercial support. Your area sales engineer will be pleased to offer telephone help or visit you. The sales group are supported by a design team of specialist engineers who may be needed to deal with complex application issues.

The team is here to help you select the optimum product for your application.

Once your product is selected there may be a need for samples or prototypes. Our highly skilled and well equipped manufacturing support group is here to help. In conjunction with your sales engineer they will provide the product that will allow you to complete your evaluation with the confidence that you are meeting your technical and commercial objectives.

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Introduction

Modularity

Our design philosophy has modularity at its core. Our aim is to meet the specification set by the widest range of applications with a unique power transmission package built from standard components. The resulting catalogue enables us to deliver three key demands arising in a highly competitive global marketplace: performance, cost and time.

Our motors are sourced from both internal and external suppliers. We ensure that the resulting component meets the most challenging specification.

Our gearboxes are designed and manufactured in house exploiting today's materials by innovative design.



The standard components within this catalogue will enable us to meet most specifications, if not our applications team will work with you to meet your special need.

The sales team will be pleased to help with the selection of the most effective product. Please contact us.

	Ovoid Spur/Planetary Gearbox	Planetary Gearbox	Incremental Encoder	Absolute Encoder	Compound Encoder	Drives	Chip Option
DC Brushed 	√	√	√	√	√	√	√
DC Brushless 	√	√	√	√	√	-	-
AC Synchronous 	√	-	-	√	-	-	-
PM Stepper 	√	√	√	√	√	-	-
Hybrid Stepper 	√	√	√	√	√	-	-

Introduction

Customisation

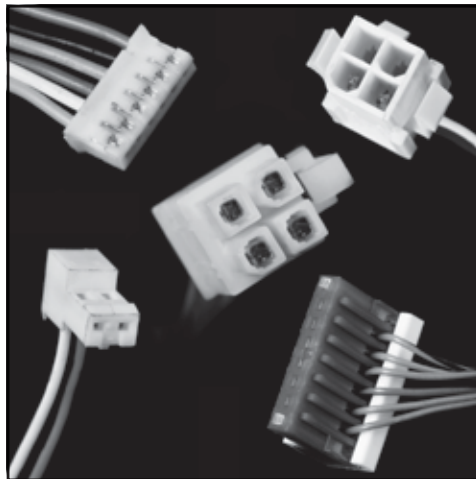
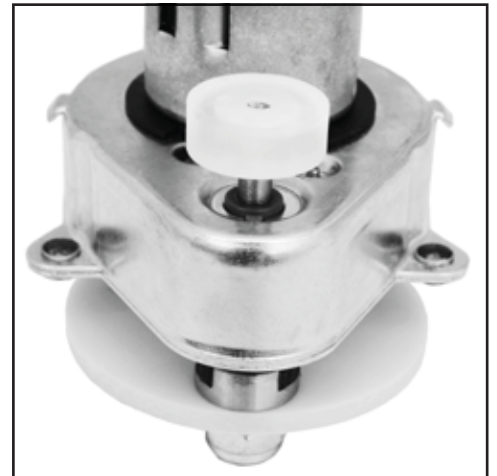
This catalogue is presented in prime component form enabling the user to satisfy their application needs with a drive system produced from standard components customised to their application.

We understand that systems may need unique features at the point at which they interface with your machine. Typical areas that may be customised are:

- Output shafts
- Flying leads and looms that may include strain relief, crimps, heatshrink and connectors
- Special gears, pinions or pulleys fitted to output shafts

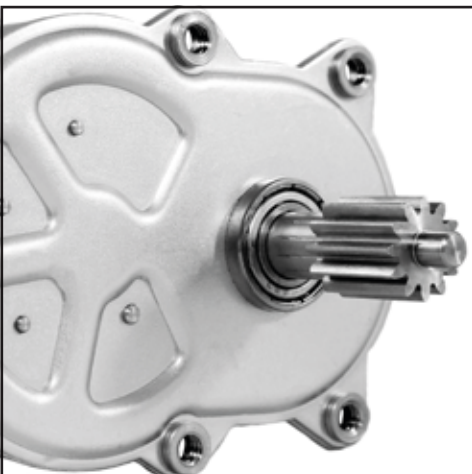
Rotalink offers optional friction clutches that may be built into the gearbox output stage across the spur ovoid gearbox range.

These devices provide protection to the gearbox and/or driven load where shock loads or intermittent overloads could otherwise cause damage to the system. The clutches are set at manufacture to operate at the required torque level.



Our sales team are always available to assist customers at the specification stage, samples and pre-production quantities can be supplied.

We offer a design and supply service for applications that demand a totally unique power transmission or control system.



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DC Motors and Optional Gearboxes

Introduction

The widest
range is key
to infinite
flexibility

Flexibility is the key characteristic of this section of the catalogue. The permanent magnet brushed and brushless dc motors offered here have been designed and wound to satisfy applications calling for a power range of 1-150W. 1.5V-30V range is available where appropriate.

Windings have been chosen to offer speed variations where noise, life or current may be critical. If you can't find your exact requirement here, motors can be wound to your precise specification.



Our innovative gearbox design expertise together with today's materials have been combined to maximise the full output power generated by this widest range of motors in the most price sensitive way. Each gearbox type is offered with many ratios, torque of 5mNm to 10Nm is achievable through the range with speeds peaking at 1000rpm.

Low noise and extended life are characteristics that are high on our agenda.

Motors, gearboxes and encoders can be combined in a manner that is infinitely variable, providing our customer with a precise and complete solution for each and every application.






You can get help from
Rotalink at any stage:

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The use of standard components is often the best way of containing cost and will, in most instances, provide a unique transmission system. Customisation that includes modified output shafts, gearbox bearings and dedicated motor windings are available where appropriate. All motor gearbox packages can be supplied with flying leads, connectors and output drives.

A unique feature of this product range is the option of feedback from incremental and absolute encoders. Completing this modular range of motor gearboxes is our user friendly and low cost programmable dc controller . This product can be used to deliver a cost-effective servo system.

This introduction provides just a brief insight into the infinitely variable options available to you from this catalogue. The following pages, backed up by component data sheets, will help you to select the most appropriate combination for your application. If you need help please call your local sales engineer or our sales desk.

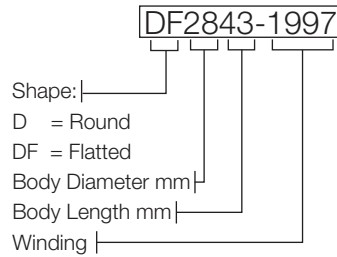


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DC Motors and Optional Gearboxes

Motor Schedule: Permanent Magnet Brushed



The simple permanent magnet brushed dc motor is an impressive component. Continuous improvement has delivered powerful and flexible performance at the very lowest cost.

Advantages of a brushed dc motor include low initial cost, high reliability, and simple control of motor speed.

Model Number	Voltage Range	Nominal Voltage	NO LOAD		PERFORMANCE - MAXIMUM EFFICIENCY				STALL		
			Speed rpm	Current A	Speed rpm	Current A	Torque mNm	Output W	Torque mNm	Current A	Max Power W
D2431-15370	3-12	6	2750	0.03	2318	0.13	1.3	0.3	8.1	0.7	0.6
D3218-12560	3-12	6	2800	0.03	2200	0.10	1.2	0.3	5.7	0.4	0.4
DF2843-1997	6-30	6	2275	0.10	1807	0.40	4.8	0.9	23.3	1.4	1.4
D2833-1993	4.5-18	6	5900	0.21	4545	0.54	3.6	1.7	15.7	3.0	2.4
D3857-3250	6-24	6	2750	0.29	2167	1.00	14.7	3.3	69.2	3.5	5.0
D4566-4050	6-24	6	1900	0.40	1499	1.30	31.2	4.9	147.8	4.8	7.4
D2431-071200	12-30	12	1900	0.01	1392	0.03	1.1	0.2	4.1	0.2	0.3
D2431-09451	9-30	12	4125	0.06	3246	0.18	2.1	0.7	9.8	0.7	1.1
D3218-11650C	9-26	12	5000	0.06	3961	0.20	1.7	0.7	8.1	0.7	1.1
D2838-12360	9-30	12	3300	0.06	2654	0.24	3.4	0.9	17.4	1.0	1.5
D3218-12560	3-12	12	5600	0.04	4603	0.14	2.0	1.0	11.3	0.8	1.7
D2431-15370	3-12	12	5500	0.03	4695	0.15	2.4	1.2	16.2	1.4	2.3
D3650-15185	12-32	12	2000	0.10	1516	0.30	9.5	1.5	39.3	0.8	2.1
D2431-13260	6-15	12	7600	0.08	6234	0.27	3.0	2.0	16.7	2.1	3.3
D2838-16120	12-30	12	5600	0.09	4502	0.33	4.6	2.2	23.5	1.3	3.4
D3857-20125	12-32	12	1950	0.10	1556	0.30	14.3	2.3	70.8	1.3	3.6
D3650-19135	12-30	12	2700	0.14	2101	0.40	12.8	2.8	57.8	1.4	4.1
DF2843-1997	6-30	12	4550	0.12	3786	0.60	7.8	3.1	46.6	2.7	5.6
D3857-2490	12-30	12	3050	0.14	2493	0.60	16.5	4.3	90.6	2.5	7.2
D3650-22100V	9-30	12	4500	0.22	3645	0.70	12.5	4.8	65.7	4.1	7.7
D2938-2085	9-30	12	7600	0.15	6140	0.63	7.5	4.8	39.2	2.7	7.8
D2833-1993	4.5-18	12	11800	0.24	9894	1.17	5.1	5.3	31.4	6.0	9.7
D4566-26100	12-32	12	2000	0.28	1547	0.80	32.7	5.3	144.3	2.7	7.6
D3650-2868	8-18	12	5700	0.35	4769	0.89	14.2	7.1	106.5	5.5	15.9
D3857-30125	8-16	12	3800	0.24	3208	0.90	22.4	7.5	184.8	6.5	18.4
D3650-2578	12-28	12	5150	0.36	4008	1.10	18.0	7.6	81.3	3.7	11.0
D2938-2655	8-16	12	10800	0.20	9337	1.10	9.7	9.5	71.0	6.9	20.1
D4566-3268	12-30	12	2950	0.40	2347	1.40	40.4	9.9	197.7	5.3	15.3
D3857-3250	6-24	12	5500	0.34	4544	1.50	24.1	11.4	138.4	6.9	19.9
D3857-3790	8-16	12	5700	0.30	5149	1.25	21.8	11.8	234.4	12.0	35.0
D4566-3559	12-30	12	3350	0.56	2634	1.80	43.9	12.1	205.5	6.5	18.0



Full technical details
are available from the
component data sheets
at www.rotalink.com

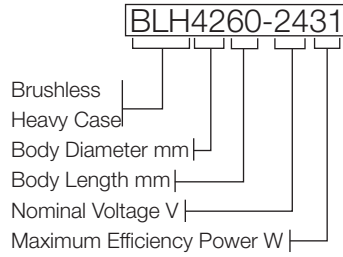
Model Number	Voltage Range	Nominal Voltage	NO LOAD		PERFORMANCE - MAXIMUM EFFICIENCY				STALL		
			Speed rpm	Current A	Speed rpm	Current A	Torque mNm	Output W	Torque mNm	Current A	Max Power W
D4566-4050	6-24	12	3800	0.46	3143	2.10	51.1	16.8	295.6	9.7	29.4
D4566-4540	12-24	12	4950	0.72	4042	2.90	52.6	22.3	286.9	12.8	37.2
D3650-3540	8-16	12	10550	0.78	8921	2.83	25.8	24.1	152.3	13.9	42.1
D5269-5030	12-24	12	4400	1.12	3554	4.30	81.5	30.3	423.9	17.5	48.8
D3857-4525	8-16	12	10500	0.70	9311	3.39	31.3	30.5	293.4	28.2	80.7
D4566-5524F	8-24	12	7750	1.28	6318	5.20	59.7	39.5	322.9	22.3	65.5
D2431-071200	12-30	24	3900	0.02	3009	0.05	1.9	0.6	8.5	0.3	0.9
D2631-12520	18-24	24	8700	0.06	6000	0.35	5.4	2.3	17.3	1.2	3.9
D3218-11650C	9-26	24	10000	0.07	8029	0.20	3.2	2.7	16.2	1.4	4.2
D2431-09451	9-30	24	8250	0.07	6600	0.20	3.9	2.7	19.6	1.3	4.2
D3650-15185	12-32	24	4000	0.12	3501	0.22	9.6	3.5	78.5	1.5	8.2
D2838-12360	9-30	24	6600	0.08	5373	0.26	6.5	3.6	34.8	1.9	6.0
D3857-20125	12-32	24	3900	0.12	3320	0.44	20.4	7.1	141.5	2.6	14.4
D2838-16120	12-30	24	11200	0.11	9900	0.54	7.8	7.8	47.0	2.6	13.8
D3650-19135	12-30	24	5400	0.17	4690	0.47	16.1	7.9	115.5	2.8	16.3
DF2843-1997	6-30	24	9100	0.15	7757	0.69	13.8	11.2	93.2	5.4	22.2
D2938-2085	9-30	24	15200	0.17	12870	0.94	11.7	15.8	76.5	5.2	30.4
D3650-22100V	9-30	24	9000	0.28	7643	1.50	19.8	15.9	131.4	8.2	31.0
D4566-26100	12-32	24	4000	0.35	3130	1.26	54.9	18.0	288.6	5.4	30.2
D3650-2578	12-28	24	10300	0.45	8795	1.27	23.4	21.6	162.5	7.4	43.8
D3857-2490	12-30	24	6100	0.17	5241	0.75	23.5	28.5	181.1	4.9	28.9
D4566-3268	12-30	24	5900	0.50	5025	1.74	56.1	29.5	395.3	10.5	61.1
D3857-3250	6-24	24	11000	0.42	9506	1.91	33.6	33.4	276.8	13.8	79.7
D4566-3559	12-30	24	6700	0.70	5700	2.30	61.4	36.1	411.0	12.9	72.1
D4566-4050	6-24	24	7600	0.58	6601	2.69	71.4	49.4	591.2	19.3	117.6
D4566-4540	12-24	24	9900	0.90	8780	3.80	73.5	67.5	573.8	25.6	148.7
D4566-4535	12-24	24	12000	1.10	9300	4.46	75.9	73.9	447.4	22.0	140.6
D5269-5524	12-24	24	11000	1.30	9588	4.88	83.9	84.3	719.4	35.1	207.2
D5269-5030	12-24	24	8800	1.40	7849	4.85	103.6	85.1	847.8	34.9	195.3
D4566-5524F	8-24	24	15500	1.60	13089	7.85	96.9	132.8	645.8	44.6	262.1

Data is for indication purposes only, please refer to the online data sheets for full information.

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DC Motors and Optional Gearboxes

Motor Schedule: Brushless Heavy Case



Heavy case brushless motors are built for the most demanding applications. Their solid construction gives unparalleled efficiency and lifespan and low levels of electrical and audible noise. They are too powerful to use built-in commutation, and so feature cables to connect them to Rotalink's BLC4A board or to a customer's own electronics.

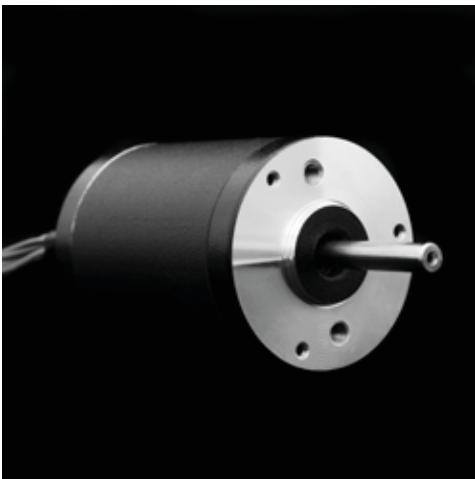
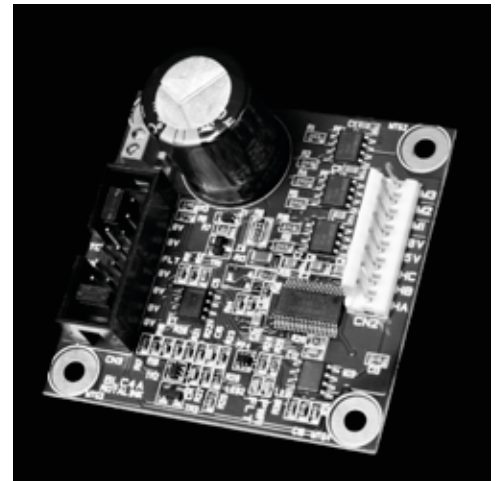
Model Number	Nominal Voltage	NO LOAD		PERFORMANCE - MAXIMUM EFFICIENCY				STALL		
		Speed rpm	Current A	Speed rpm	Current A	Torque mNm	Output W	Torque mNm	Current A	Max Power W
BLH2848-125	12	6398	0.12	5321	0.61	9.2	5.1	66.3	3.9	10.1
BLH4260-1226	12	7300	0.48	5952	2.89	41.4	25.8	500.0	57.2	62.2
BLH4285-1235	12	5441	0.76	4448	3.95	74.7	34.8	720.0	63.0	73.6
BLH2848-246	24	6490	0.08	5309	0.38	11.0	6.1	75.1	2.2	11.5
BLH4260-2432	24	7361	0.34	5887	1.75	51.5	31.7	540.0	28.6	72.1
BLH4285-2443	24	5562	0.36	4507	2.33	91.4	43.1	870.0	33.0	97.3

BLC4A

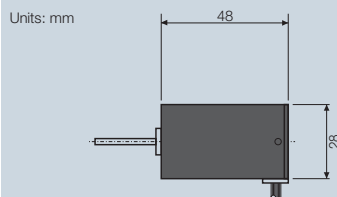
The Rotalink BLC4A board is a simple brushless motor commutator capable of driving brushless motors with hall effect sensors up to 96W. The board provides both analogue and PWM speed control, Break, Direction and Reset inputs as well as a tacho speed output. These I/O have been fitted to a standard 0.1" header for easy connection to customer electronics or standalone use with pin jumpers (available on request). The board also features both a power and fault LED.

General Specification

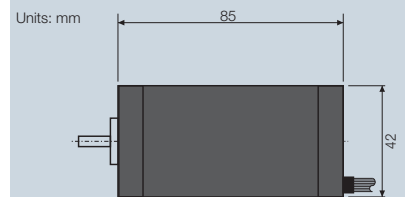
Min Input 10Vdc
 Max Input 30Vdc
 Load 4A
 Max Power 96W
 Weight approx. 50g
 Connectors Screw terminals for power connection
 8 way molex MTA-100 for motor
 14way 0.1" header for I/O



DC Motor type BLH2848



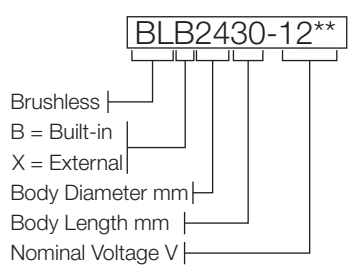
DC Motor type BLH4285



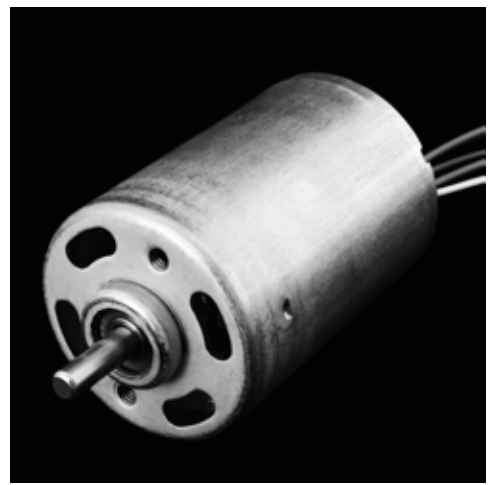
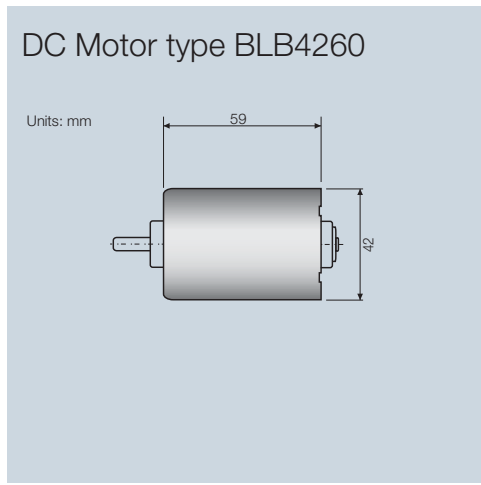
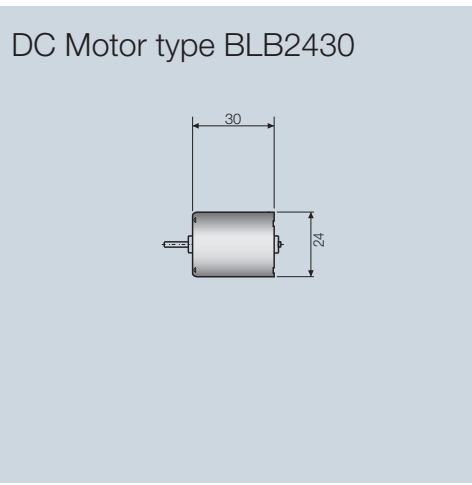
DC Motors and Optional Gearboxes

Motor Schedule:
Brushless Pressed Case

Pressed case brushless motors bring brushless technology to applications traditionally limited by cost of brushed motors, greatly increasing lifespan. Built-in commutation makes them a drop-in replacement for brushed motors, whilst at the same time providing speed feedback and control.



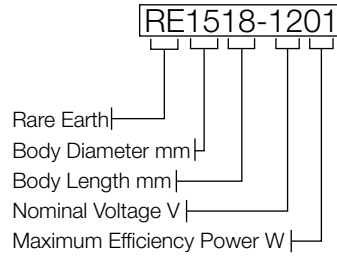
Model Number	Nominal Voltage	NO LOAD		PERFORMANCE - MAX CONT. POWER AT 23°C				STALL		Max Power W
		Speed rpm	Current A	Speed rpm	Current A	Torque mNm	Output W	Torque mNm	Current A	
Built-in Controller										
BLB2430-1204	12	6000	0.33	3750	0.83	12.5	4.9	15.0	0.9	5.1
BLB2838-1207	12	10000	0.50	7750	1.44	11.7	9.4	15.8	1.4	9.8
BLB3640-1208	12	6000	0.18	3250	1.70	29.0	9.9	54.8	3.1	9.9
BLB2430-2404	24	6000	0.14	3800	0.50	15.0	6.0	26.9	0.9	6.9
BLB3640-2408	24	6000	0.13	3750	0.80	25.0	9.9	59.7	1.7	11.1
BLB2838-2407	24	10000	0.28	7800	1.08	20.7	17.0	36.0	1.8	20.5
BLB4260-2413	24	5000	0.23	3000	1.85	72.0	22.2	170.0	4.0	25.0
BLB3640-2416	24	10000	0.37	6900	1.70	35.0	25.2	117.0	5.8	34.5
External Controller										
BLX4260-1213	12	5000	0.60	3500	3.00	60.0	22.0	150.0	4.0	26.0
BLX4260-2413	24	5000	0.30	3550	1.50	61.0	23.0	170.0	4.0	27.0



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DC Motors and Optional Gearboxes

Motor Schedule:
Rare Earth

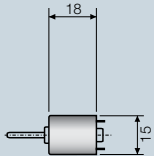


Rare earth magnet motors can be a cost effective option when high speed, high power density, long life or small size are important. This low cogging motor range offers greater power compared with other brushed motors of the same volume. This is achieved using very thin Neodymium magnets and high density windings.

Model Number	Voltage Range	Nominal Voltage	NO LOAD		PERFORMANCE - MAXIMUM EFFICIENCY				STALL		Max Power W
			Speed rpm	Current A	Speed rpm	Current A	Torque mNm	Output W	Torque mNm	Current A	
RE1518-1201	8-13	12	8554	0.08	6636	0.25	2.5	1.7	10.8	0.8	2.5
RE1820-1202	8-13	12	5450	0.06	4312	0.27	4.2	1.9	20.6	1.0	2.9
RE1825-1204	8-13	12	6901	0.10	5822	0.51	7.5	4.6	47.4	2.8	8.6
RE2430-1205	8-13	12	6740	0.16	5341	0.64	8.6	4.8	45.2	2.7	8.0
RE3060-1319	8-13.5	13.5	3652	0.30	3062	1.96	58.2	18.7	375.0	11.1	36.7
RE2440-2405	20-26	24	3379	0.06	2766	0.29	15.1	4.4	84.0	1.4	7.5

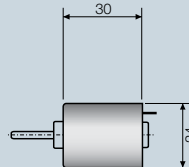
DC Motor type RE1518

Units: mm



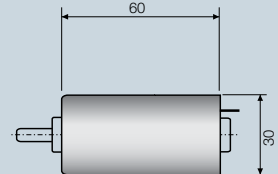
DC Motor type RE2430

Units: mm



DC Motor type RE3060

Units: mm



You can get help from Rotalink at any stage:

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info@rotalink.com

T: +44 (0)1460 72000



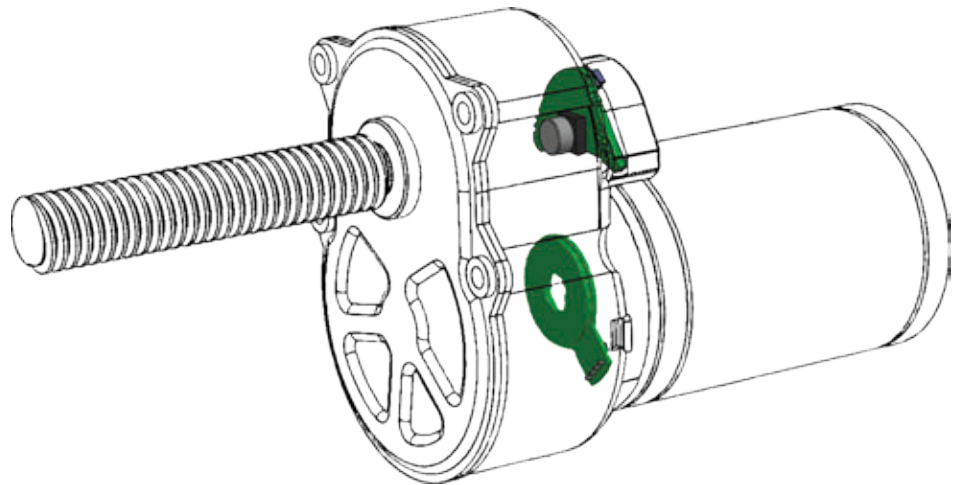
DC Motors and Optional Gearboxes


Linear Motion



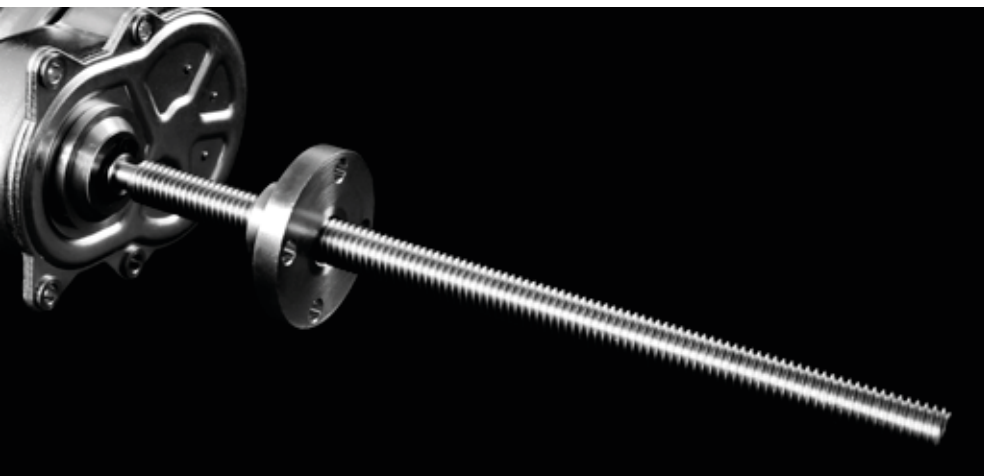
Motors, gearboxes and controllers to drive your leadscrew or pulley system. There are a number of options:

- Where a lead screw is driven as an indirect drive, through a coupling, our complete range of dc motors and gearboxes is available.
- For linear drives when stroke length is below 100mm and thrust does not exceed 50N, we can offer any of our ovoid gearboxes with a lead screw substituted for the output shaft. V-thread and trapezoidal thread are both available, in a range of pitches.
- Belt and Pulley applications may be met with gearbox bearings designed to take side load together with a wide range of pulley options.



For all three options we offer feedback through incremental or absolute encoders with the added opportunity of controlling the linear motion with  programmable controller. This product enables you to use your system to the full capability of the motor gearbox: multiple speeds, stop/starts and programmes.

The complex design issues associated with the conversion of rotary to linear motion is an area of special expertise; if you need support please give our technical sales desk a call.

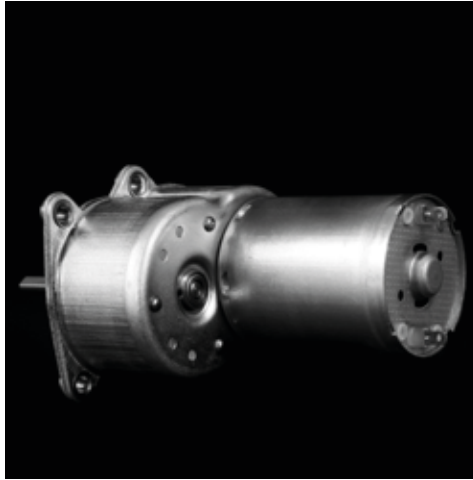


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DC Motors and Optional Gearboxes

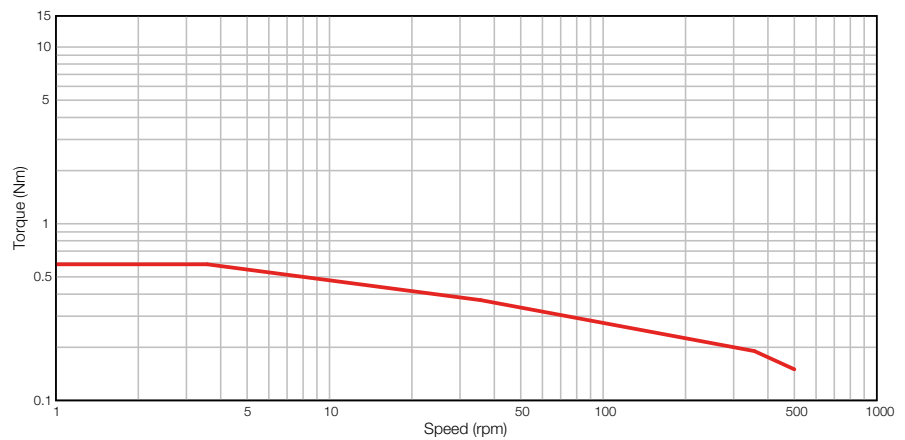
Gearbox Information



TYPE 222 Spur Ovoid

Zinc plated pressed steel gearbox case and front cover with 4 point fixing. Spur gears running on fixed steel spindles. Engineering polymer gears, stainless steel shaft, sintered bronze front and nylon back bearing. Maximum temperature 80°C at the gearcase.

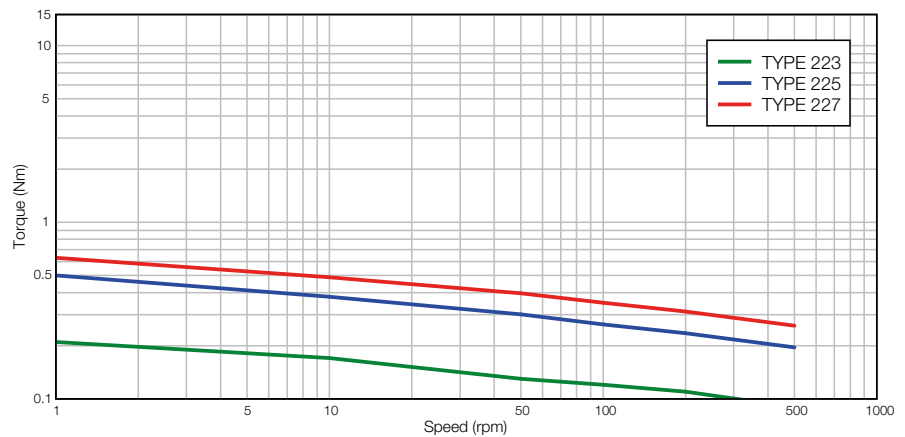
TYPE 222



TYPE 223/225/227 Spur Ovoid

Zinc plated pressed steel gearbox case and front cover. Acetal spur gears running on fixed steel spindles. Stainless steel shaft, sintered bronze front and nylon back bearing. Maximum temperature 80°C at the gearcase.

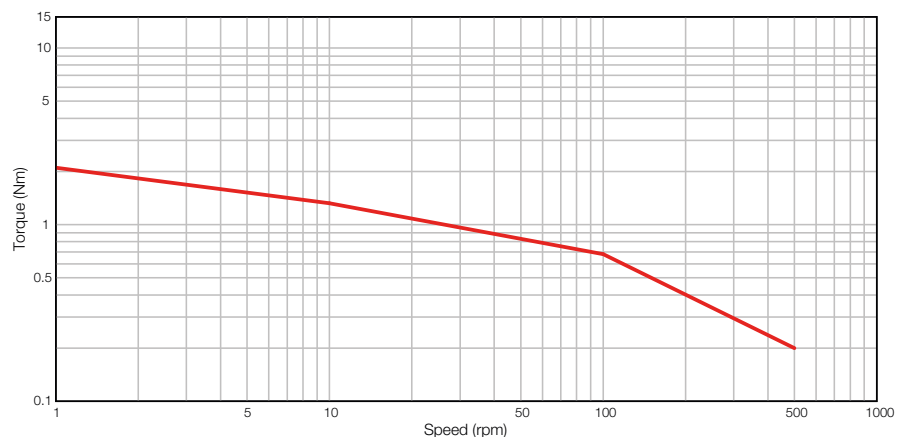
TYPE 223/225/227



TYPE 210 Hybrid

Zinc plated pressed steel gearbox case and front cover with 4 point fixing. Spur gears running on fixed steel spindles leading to a planetary output stage. Engineering polymer gears, stainless steel shaft, ball race front and back bearing. Maximum temperature 80°C at the gearcase.

TYPE 210





Feedback across the range:

Incremental Encoders P27
Absolute Encoders P29

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Units: mm

TYPE 222



Ratio

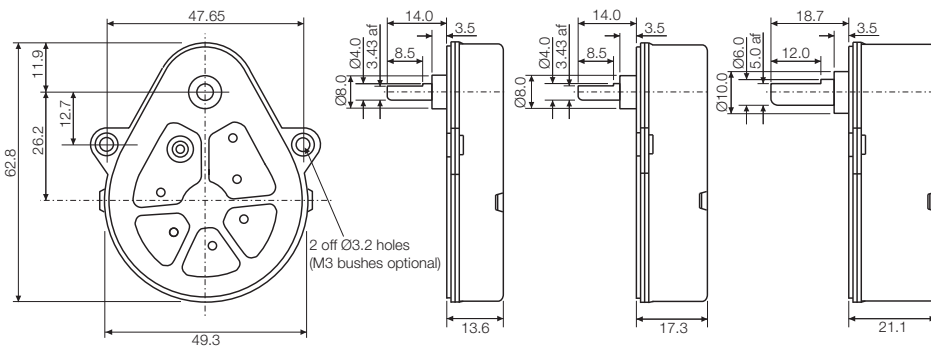
~7:1	~98:1
~9:1	~122:1
~11:1	~196:1
~14:1	~244:1
~17:1	~274:1
~21:1	~342:1
~24:1	~548:1
~31:1	~684:1
~49:1	~1337:1
~61:1	

Units: mm

TYPE 223

TYPE 225

TYPE 227

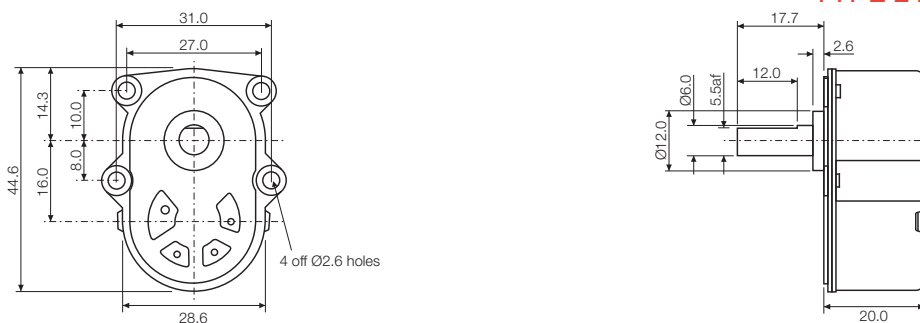


Ratio

25:4	80:1	750:1	10000:1
20:3	100:1	900:1	15000:1
25:3	125:1	1000:1	30000:1
10:1	150:1	1500:1	60000:1
15:1	200:1	2000:1	90000:1
20:1	250:1	3000:1	120000:1
30:1	300:1	4000:1	180000:1
40:1	400:1	5000:1	360000:1
50:1	500:1	6000:1	720000:1
60:1	600:1	7500:1	

Units: mm

TYPE 210



Ratio

~26:1	~349:1
~31:1	~437:1
~38:1	~698:1
~51:1	~873:1
~62:1	~978:1
~76:1	~1222:1
~87:1	~1956:1
~109:1	~2444:1
~175:1	~4774:1
~218:1	

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DC Motors and Optional Gearboxes

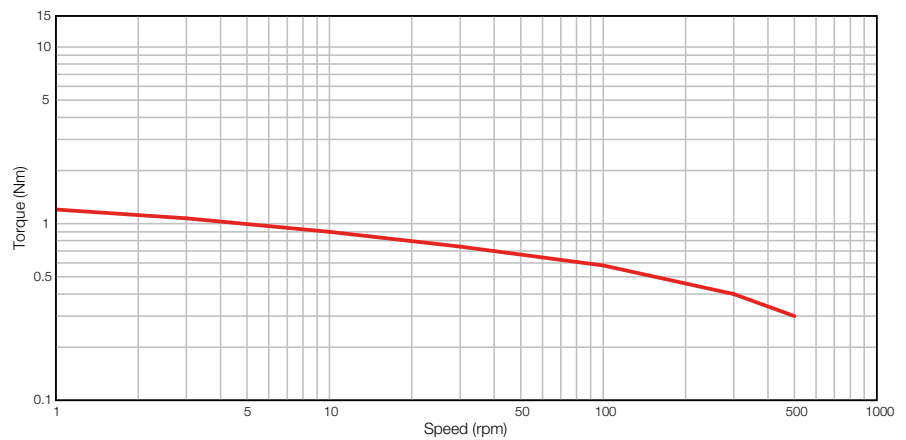
Gearbox Information



TYPE 226 Spur Ovoid

Type 225 gearbox with zinc alloy secondary gearbox. Acetal spur gears running on fixed steel spindles, centrally placed stainless steel shaft. Nylon front bearing and sintered bronze rear bearing. Maximum temperature 80°C at the gearcase.

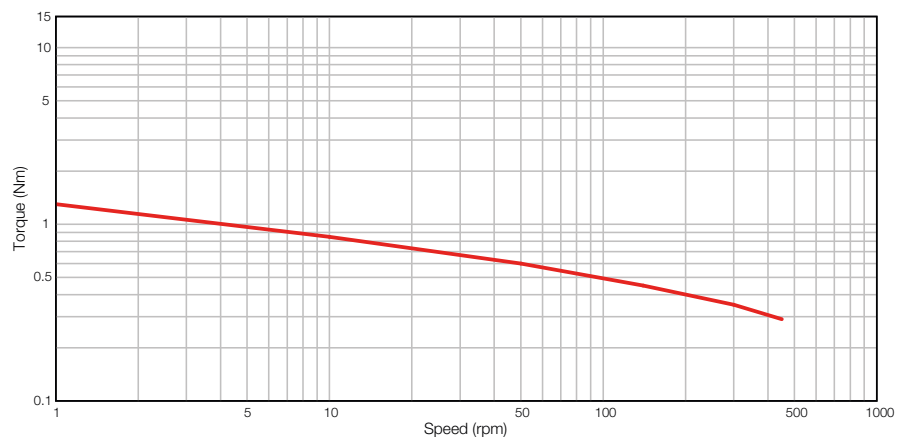
TYPE 226



TYPE 225H Spur Ovoid

Zinc plated pressed steel gearbox case and front cover. Engineering polymer, large module spur gears running on fixed steel spindles. Stainless steel shaft, sintered bronze front and nylon back bearing. Maximum temperature 80°C at the gearcase.

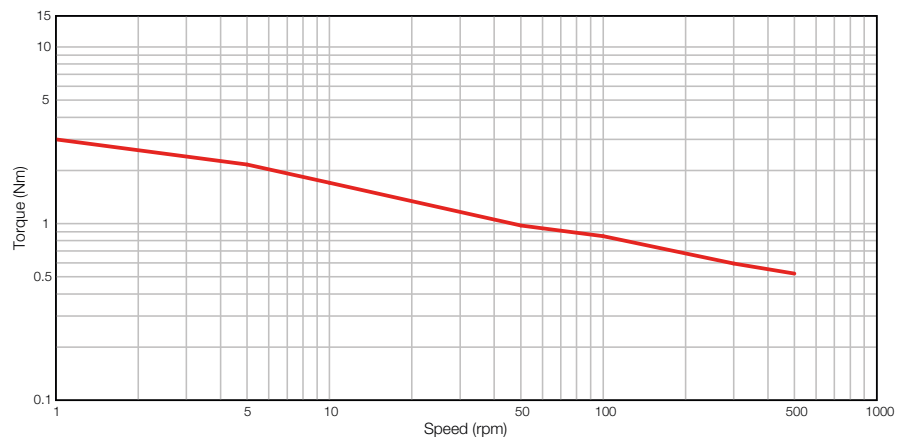
TYPE 225H

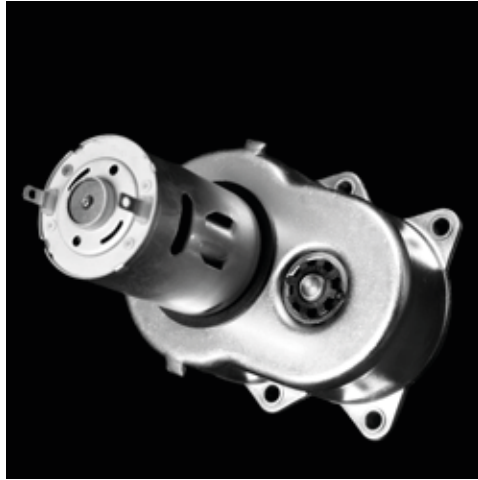


TYPE 229 Spur Ovoid

Zinc plated pressed steel gearbox case and front cover. Spur gears running on fixed steel spindles. Engineering polymer gears, stainless steel shaft, sintered bronze front and nylon back bearing. Maximum temperature 80°C at the gearcase.

TYPE 229

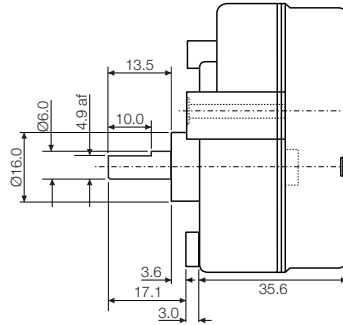
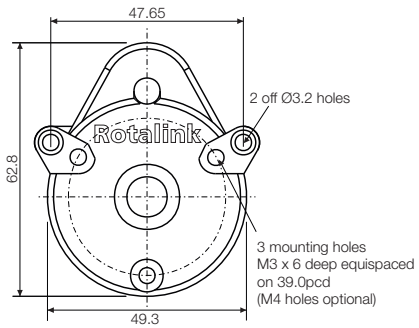




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Units: mm

TYPE 226

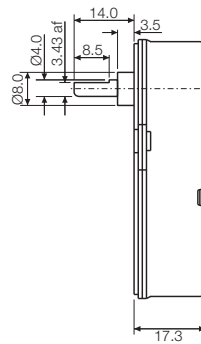
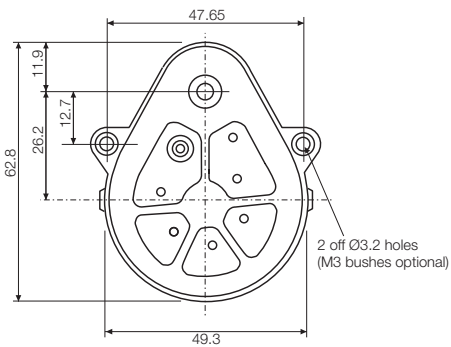


Ratio

25:1	120:1	1000:1
80:3	200:1	1200:1
100:3	240:1	1600:1
40:1	250:1	1800:1
50:1	400:1	2500:1
60:1	500:1	6000:1
200:3	600:1	30000:1
80:1	2000:3	
100:1	800:1	

Units: mm

TYPE 225H

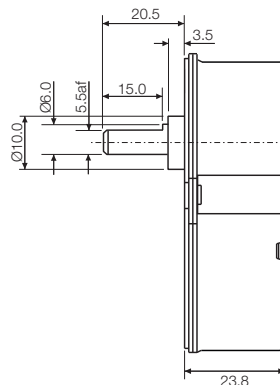
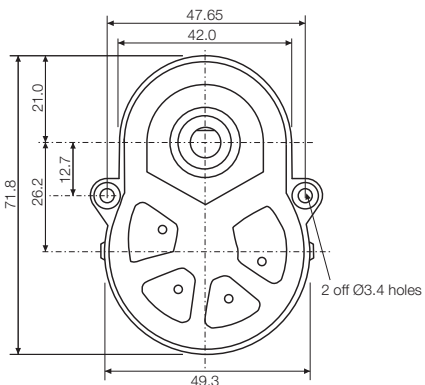


Ratio

~16:1	~88:1
~19:1	~101:1
~33:1	~125:1
~37:1	~143:1
~49:1	~162:1
~68:1	~186:1

Units: mm

TYPE 229



Ratio

15:1	108:1	800:1
20:1	120:1	1080:1
25:1	160:1	1600:1
30:1	200:1	2560:1
125:3	240:1	3200:1
50:1	300:1	4320:1
60:1	400:1	
80:1	640:1	

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DC Motors and Optional Gearboxes

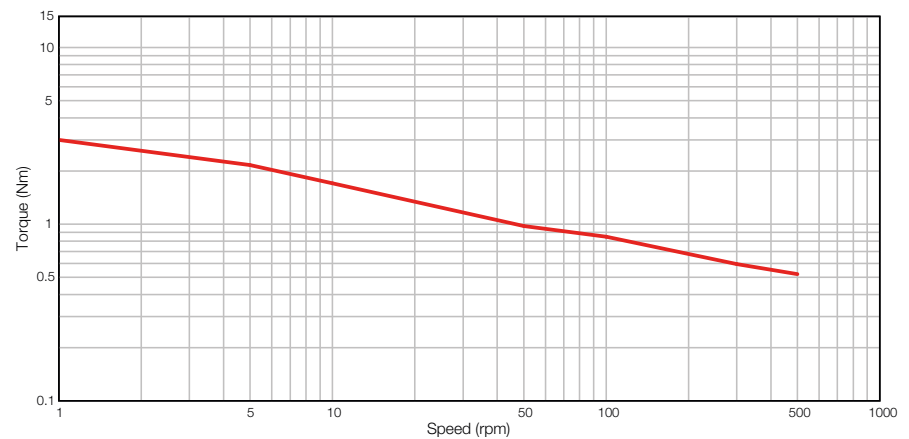
Gearbox Information



TYPE 220 Spur Ovoid

Zinc plated pressed steel gearbox case and front cover with 4 point fixing. Spur gears running on fixed steel spindles. Engineering polymer gears, stainless steel shaft, sintered bronze front and nylon back bearing. Maximum temperature 80°C at the gearcase.

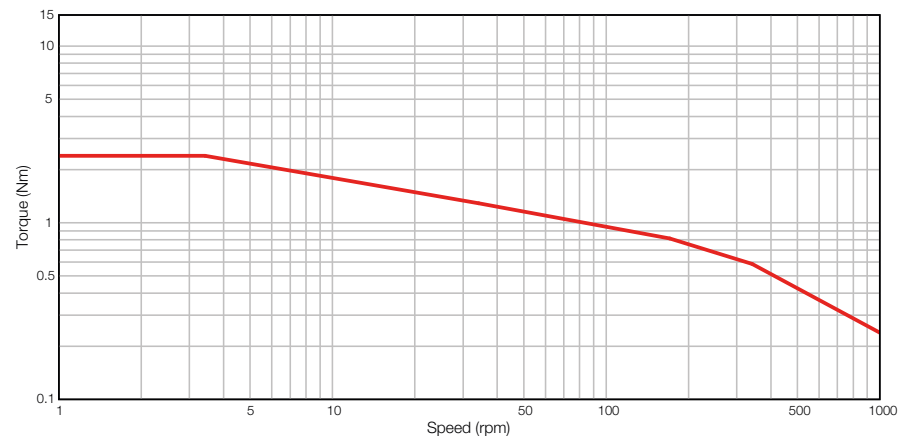
TYPE 220



TYPE 332 Spur Ovoid

Zinc plated pressed steel gearbox case and front cover with 4 point fixing. Spur gears running on fixed steel spindles. High performance polymer gears, stainless steel shaft, ball race front and back bearing. Maximum temperature 80°C at the gearcase.

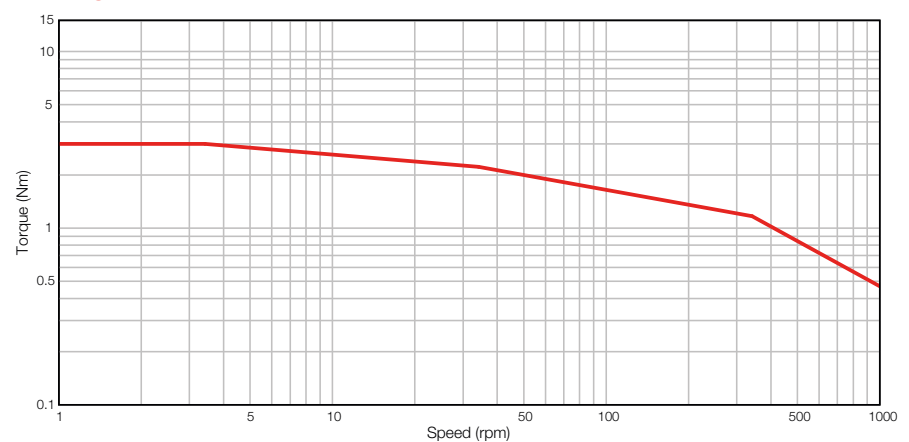
TYPE 332

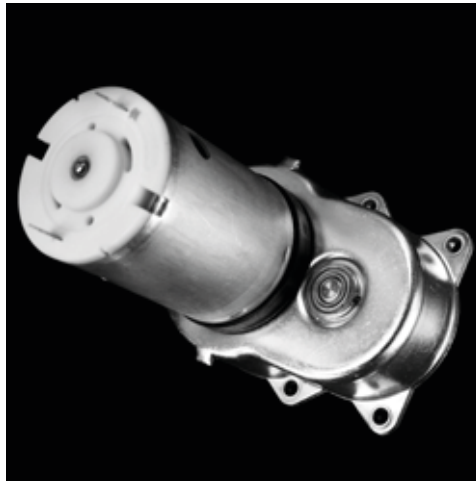


TYPE 372 Spur Ovoid

Zinc plated pressed steel gearbox case and front cover with 4 point fixing. Spur gears running on fixed steel spindles. High performance polymer gears, stainless steel shaft, ball race front and back bearing. Maximum temperature 80°C at the gearcase.

TYPE 372



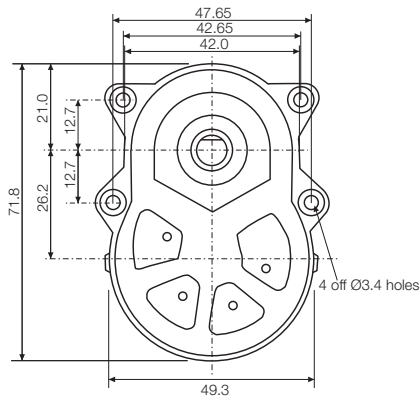


Feedback across the range:

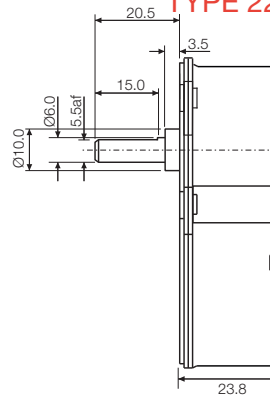
Incremental Encoders P27
Absolute Encoders P29

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Units: mm



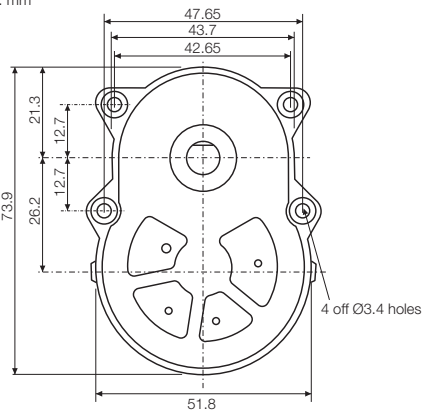
TYPE 220



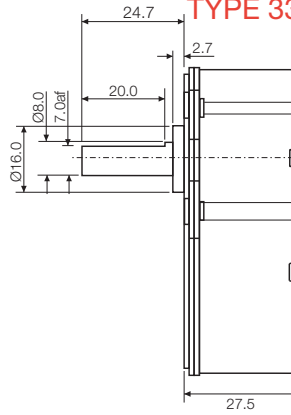
Ratio

15:1	108:1	800:1
20:1	120:1	1080:1
25:1	160:1	1600:1
30:1	200:1	2560:1
125:3	240:1	3200:1
50:1	300:1	4320:1
60:1	400:1	
80:1	640:1	

Units: mm



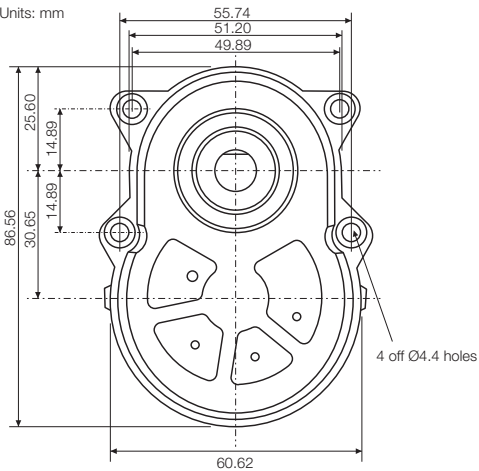
TYPE 332



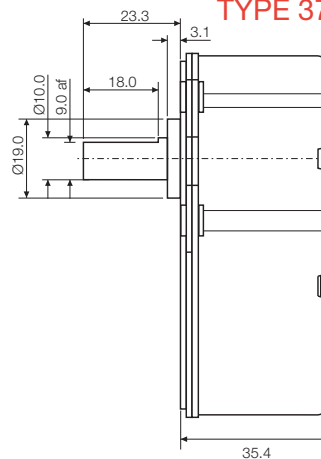
Ratio

~5:1	~60:1
~7:1	~75:1
~8:1	~93:1
~9:1	~117:1
~13:1	~187:1
~14:1	~224:1
~17:1	~299:1
~23:1	~598:1
~37:1	~1196:1
~48:1	

Units: mm



TYPE 372



Ratio

~5:1	~75:1
~7:1	~93:1
~8:1	~117:1
~13:1	~187:1
~17:1	~224:1
~23:1	~299:1
~37:1	~1196:1
~60:1	

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DC Motors and Optional Gearboxes

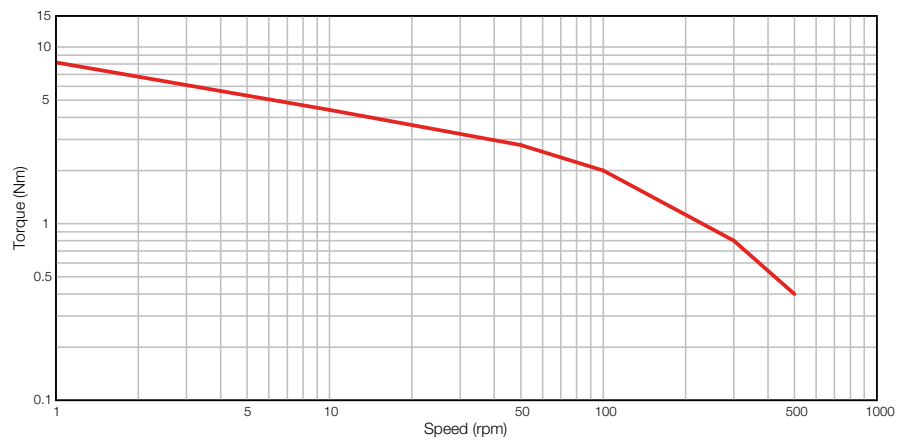
Gearbox Information



TYPE 330 Hybrid

Zinc plated pressed steel gearbox case and front cover with 4 point fixing. Spur gears running on fixed steel spindles leading to a planetary output stage. High performance polymer gears, stainless steel shaft, ball race front and back bearing. Maximum temperature 80°C at the gearcase.

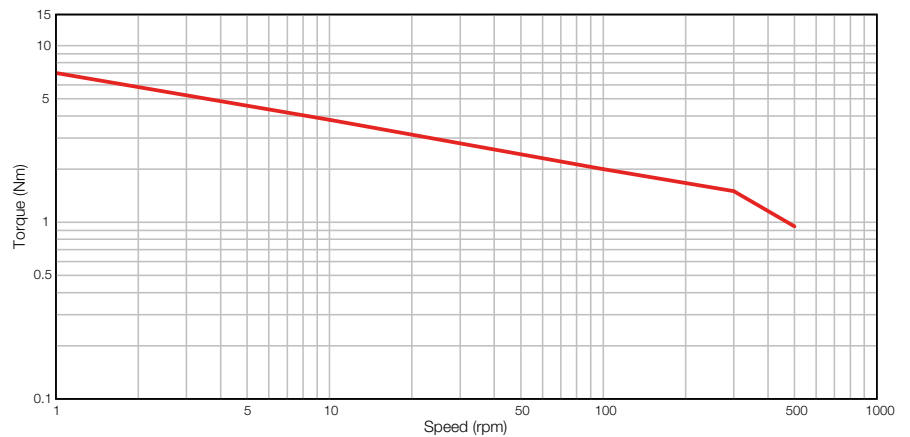
TYPE 330



TYPE 360 Hybrid

Zinc plated pressed steel gearbox case and front cover with 4 point fixing. Spur gears running on fixed steel spindles leading to a planetary output stage. High performance polymer gears, stainless steel shaft, ball race front and back bearing. Maximum temperature 80°C at the gearcase.

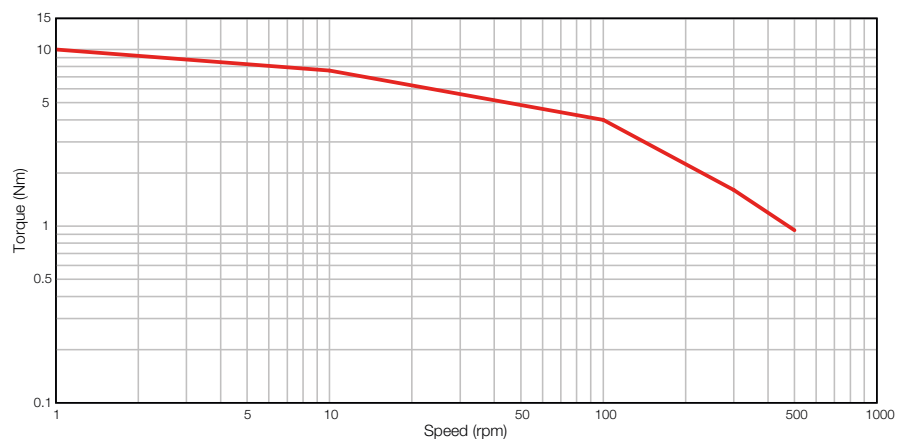
TYPE 360



TYPE 370 Hybrid

Zinc plated pressed steel gearbox case and front cover with 4 point fixing. Spur gears running on fixed steel spindles leading to a planetary output stage. High performance polymer gears, stainless steel shaft, ball race front and back bearing. Maximum temperature 80°C at the gearcase.

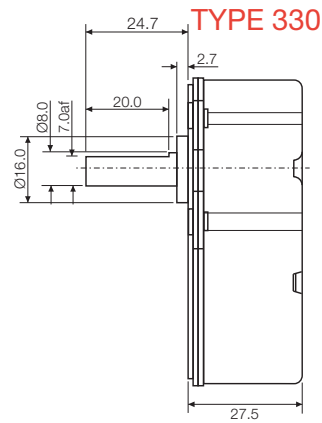
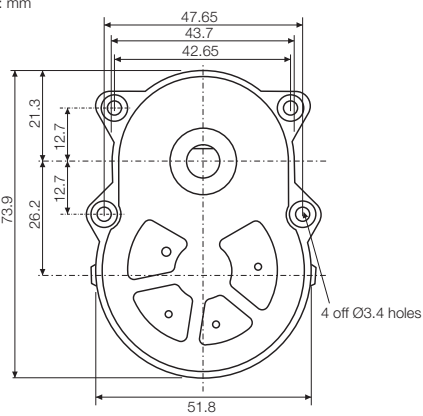
TYPE 370





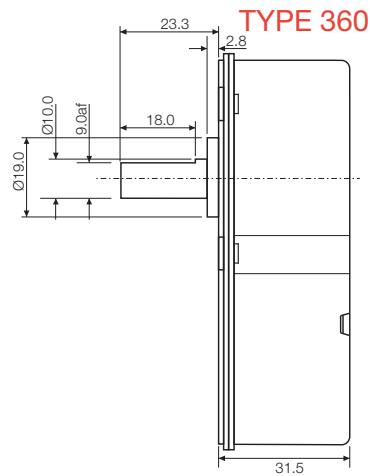
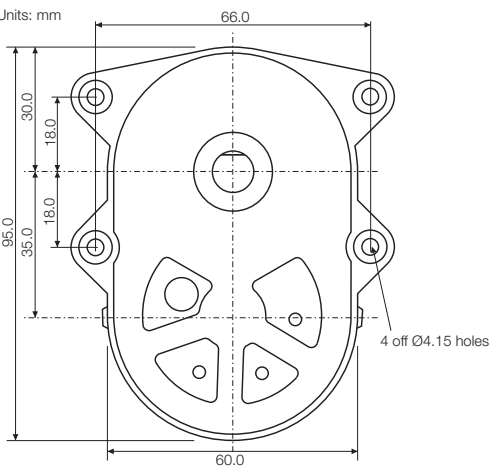
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Units: mm



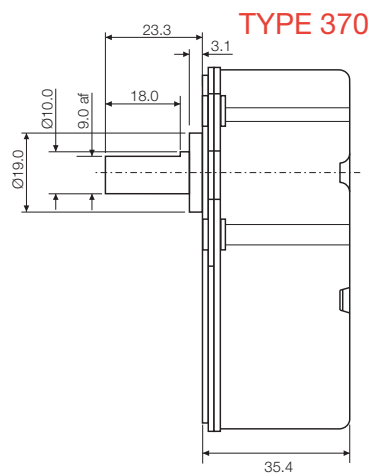
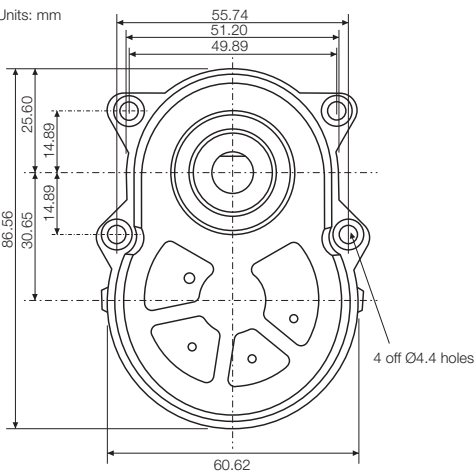
Ratio	
~16:1	~205:1
~22:1	~256:1
~29:1	~320:1
~32:1	~400:1
~43:1	~639:1
~48:1	~767:1
~58:1	~1023:1
~80:1	~2046:1
~128:1	~4092:1
~164:1	

Units: mm



Ratio	
~34:1	~152:1
~43:1	~244:1
~57:1	~457:1
~82:1	~610:1
~109:1	~1220:1

Units: mm



Ratio	
~16:1	~256:1
~22:1	~320:1
~29:1	~400:1
~43:1	~639:1
~58:1	~767:1
80:1	~1023:1
~128:1	~4092:1
~205:1	

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DC Motors and Optional Gearboxes

Gearbox Information



TYPE PG24 Planetary Polymer
Steel rolled cover enclosing polymer end plates with high performance polymer annulus and gears. 3 point equispaced fixings. Stainless steel shaft with ball race bearing. Maximum temperature 80°C at the gearcase.

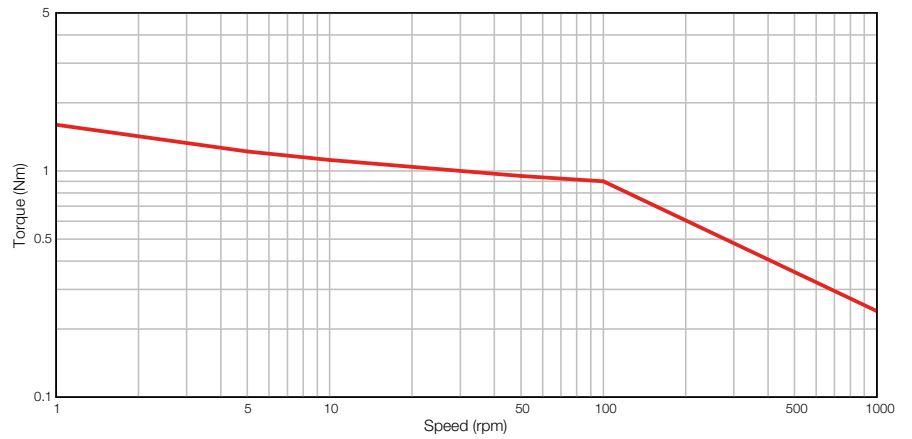
1 Stage

Ratio
~4:1 (13:3)

2 Stage

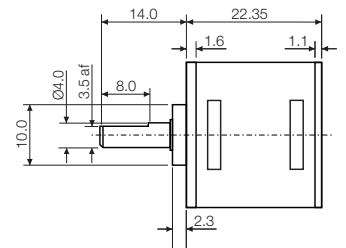
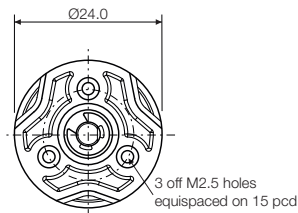
Ratio
13:1
~17:1 (351:21)

TYPE PG24



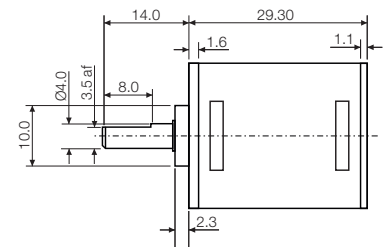
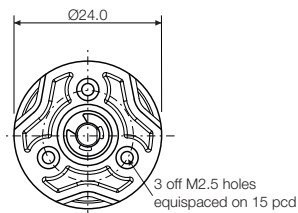
Units: mm

1 Stage



Units: mm

2 Stage



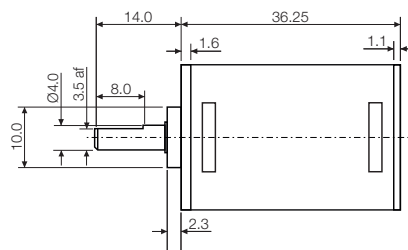
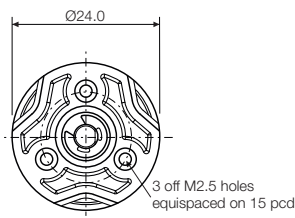


Feedback across the range:
Incremental Encoders P27

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Units: mm

3 Stage

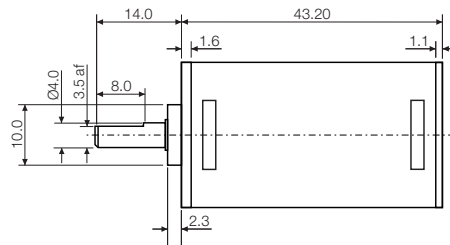
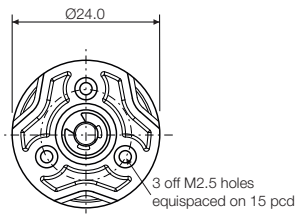


3 Stage

Ratio
39:1
~50:1 (351:7)
~64:1 (3159:49)
78:1
~100:1 (702:7)

Units: mm

4 Stage

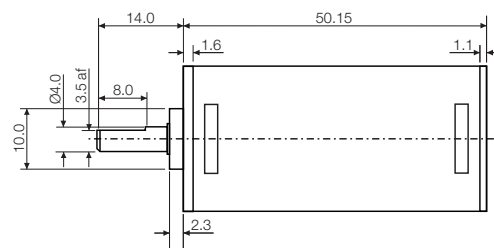
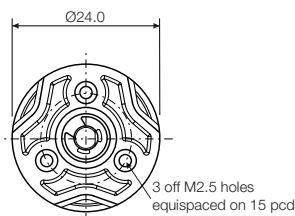


4 Stage

Ratio
117:1
~150:1 (1053:7)
~193:1 (9477:49)
~249:1 (85293:343)
~301:1 (2106:7)
~387:1 (18954:49)
468:1
~602:1 (4212:7)

Units: mm

5 Stage



5 Stage

Ratio
702:1
~903:1 (6318:7)
~1160:1 (56862:49)
~1492:1 (511758:343)
~1805:1 (12636:7)
~2321:1 (113724:49)
2808:1
~3610:1 (25272:7)

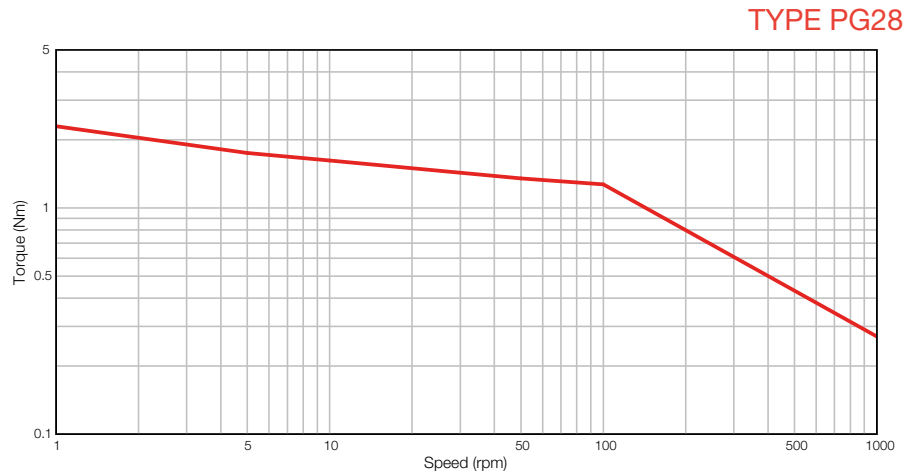
21

DC Motors and Optional Gearboxes

Gearbox Information



TYPE PG28 Planetary Polymer
Steel rolled cover enclosing polymer end plates with high performance polymer annulus and gears. 4 point equispaced fixings. Stainless steel shaft with ball race bearing. Maximum temperature 80°C at the gearcase.

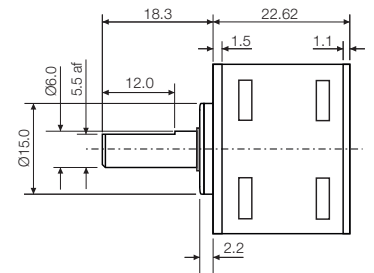
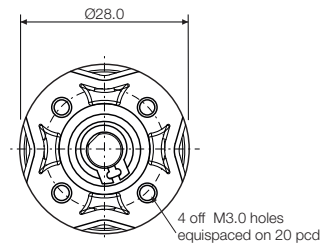


1 Stage

Ratio

~4:1 (30:7)

Units: mm



1 Stage

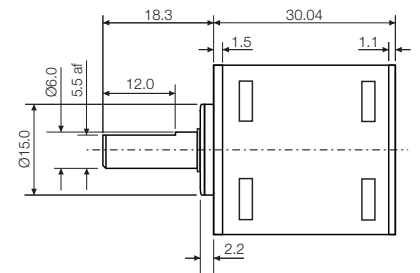
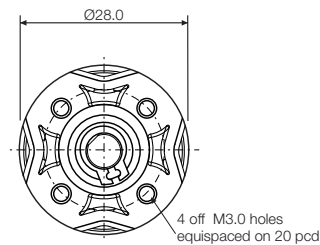
2 Stage

Ratio

~13:1 (624:49)

~20:1 (2640:133)

Units: mm



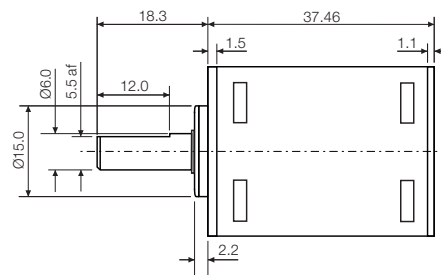
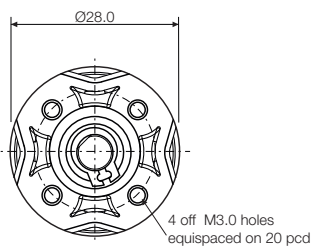
2 Stage



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Units: mm

3 Stage



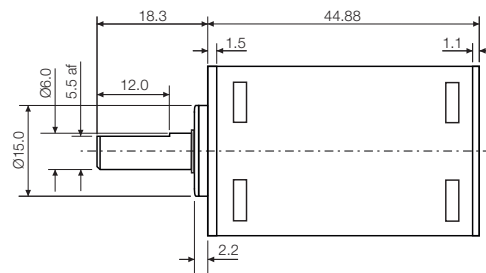
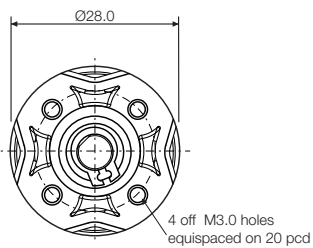
3 Stage

Ratio

~38:1	(64896:1715)
~45:1	(6656:147)
~55:1	(18720:343)
~79:1	(27000:343)
~103:1	(720:7)

Units: mm

4 Stage



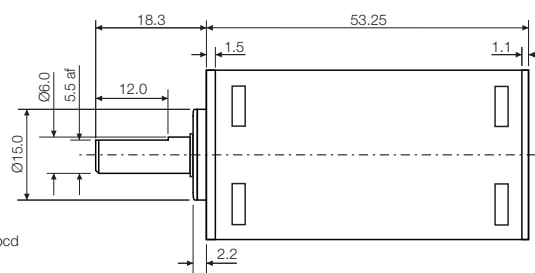
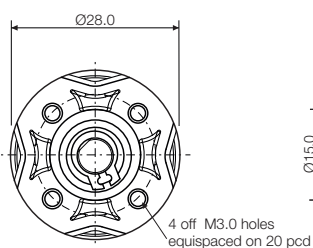
4 Stage

Ratio

~135:1	(692224:5145)
~162:1	(389376:2401)
~175:1	(5710848:32585)
~212:1	(259584:1225)
~254:1	(26624:105)
~306:1	(14976:49)
~399:1	(9984:25)
~476:1	(63360:133)
~515:1	(185856:361)
~622:1	(59136:95)

Units: mm

5 Stage



5 Stage

Ratio

~751:1	(34265088:45619)
~899:1	(5857280:6517)
~1083:1	(49420800:45619)
~1171:1	(144967680:123823)
~1265:1	(425238528:336091)
~1972:1	(1799086080:912247)

23

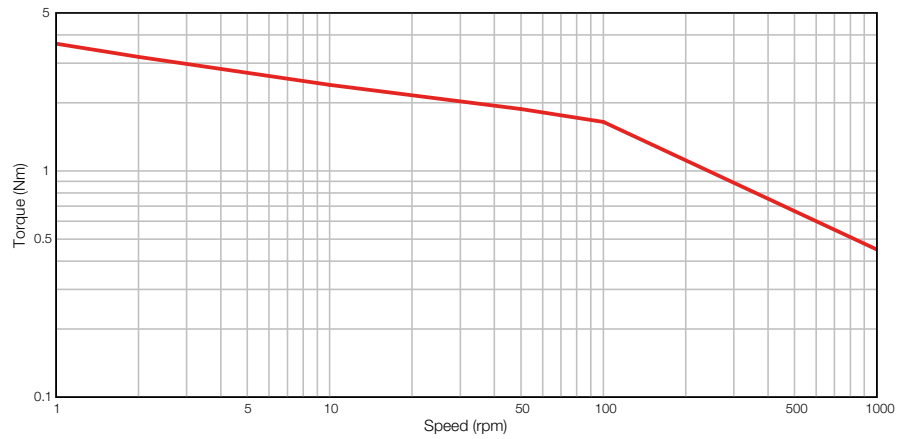
DC Motors and Optional Gearboxes

Gearbox Information



TYPE PG38 Planetary Polymer
 Steel rolled cover enclosing polymer end plates with high performance polymer annulus and gears. 4 point equispaced fixings. Stainless steel shaft with ball race bearing. Maximum temperature 80°C at the gearcase.

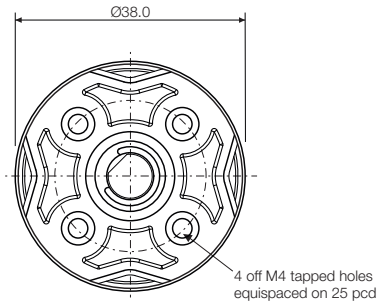
TYPE PG38



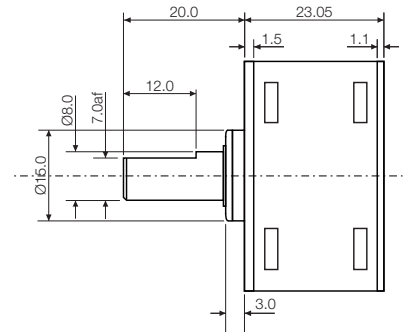
1 Stage

Ratio
 ~4:1 (95:23)

Units: mm



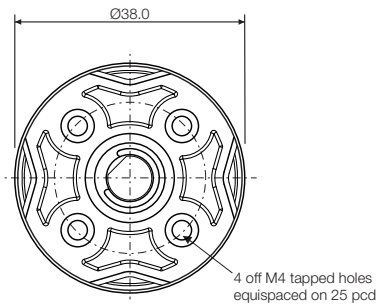
1 Stage



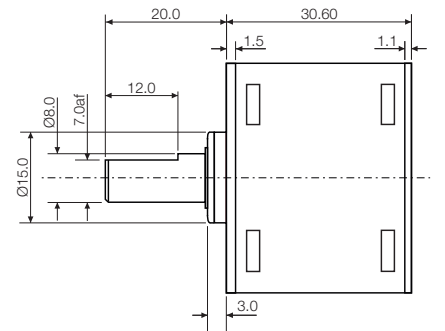
2 Stage

Ratio
 ~12:1 (285:23)
 ~15:1 (2375:161)
 19:1

Units: mm



2 Stage



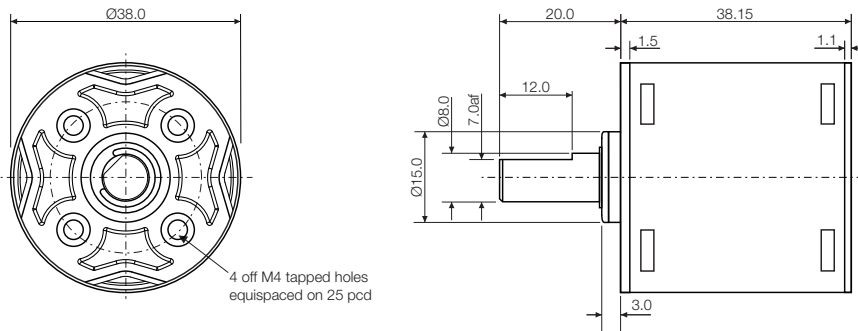


Feedback across the range:
Incremental Encoders P27

www.rotalink.com

Units: mm

3 Stage

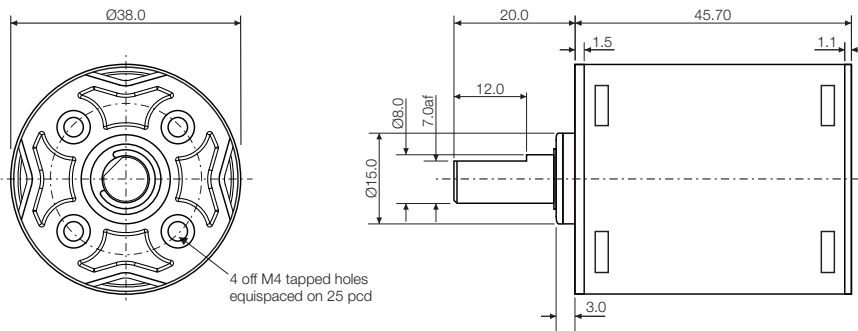


3 Stage

Ratio
~37:1 (855:23)
~42:1 (969:23)
~51:1 (27075:529)
~70:1 (857375:12167)
~87:1 (437:5)
~105:1 (209:2)

Units: mm

4 Stage

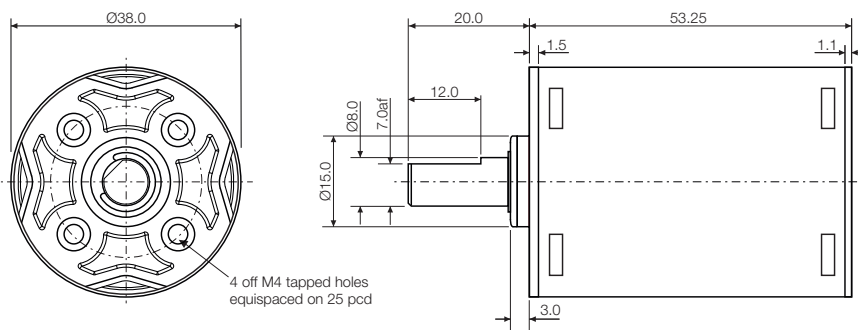


4 Stage

Ratio
~154:1 (81225:529)
~183:1 (676875:3703)
~204:1 (9405:46)
~252:1 (21434375:85169)
~335:1 (2481875:7406)
~446:1 (287375:644)
~516:1 (1092025:2116)

Units: mm

5 Stage



5 Stage

Ratio
~613:1 (28215:46)
~755:1 (64303125:85169)
~844:1 (893475:1058)
~1005:1 (7445625:7406)
~1197:1 (62046875:51842)
~1548:1 (3276075:2116)
~2374:1 (218405:92)

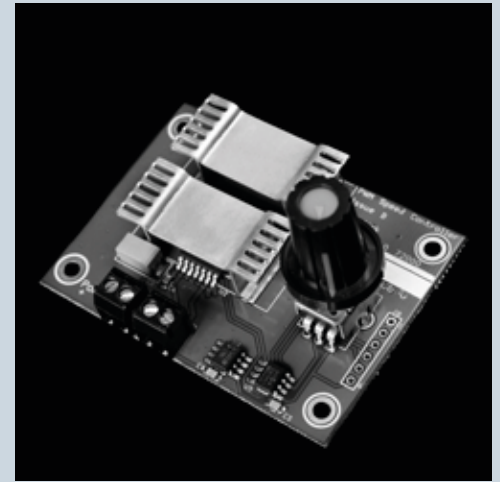
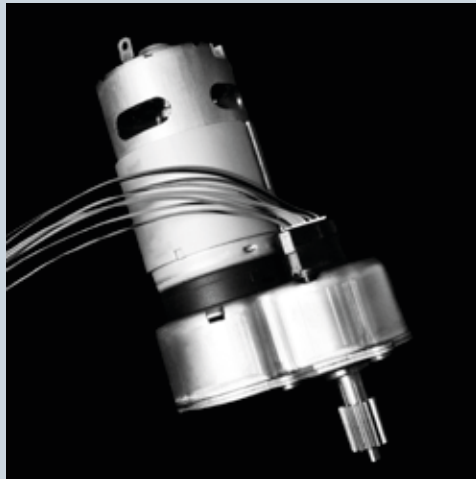
25

Control of DC Motors

Introduction

A new and unique approach to motion control

You will find here a new and unique approach to motion control. The design philosophy has been to innovate, keeping a keen eye upon the application of well understood technology. The resulting product is user-friendly and lowers the cost barrier by a mile, making serious motion management systems available to all.



Central to our product offering is the basic brushed or brushless dc motor interfaced with an appropriate gearbox. Add an incremental encoder, sandwiched between motor and gearbox, or an absolute encoder mounted on the back of the gearbox and all of the hardware necessity for a servo is in place.

The Red Drive controller using feedback through the encoder can now be used to maximise the full capability of the motor. The flow chart PC app will allow you to deliver the sequence of events demanded by your design.

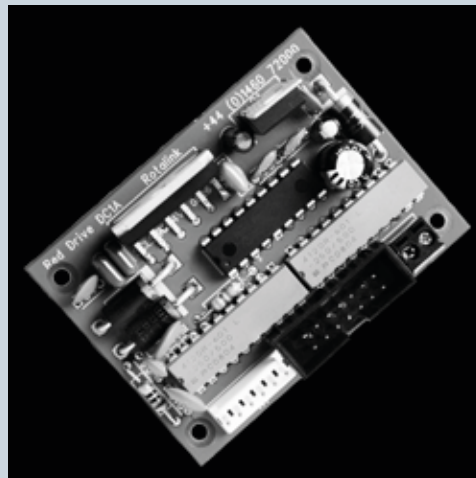
Change during the development process is simple and when the design is in place you can use the chip on your own board.



You can get help from Rotalink at any stage:

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info@rotalink.com

T: +44 (0)1460 72000




The flexibility

Access the vast range of standard brushed or brushless dc motors. Interface with gearboxes which are designed to meet the exacting standards of the twenty first century. Use encoders which allow the use of standard components. The result, a unique servo built to meet your specification.

The cost

Easy to use software keeps the design process in the control of those close to the project. The novel use of standard components and a huge awareness of material development has enabled our design team to lower the cost of gearboxes. Releasing the unused potential in today's low cost motors is the final ingredient allowing the total servo package cost to be slashed.

Time to market

The options available in component selection and the ease with which change is made, the powerful flexibility and user friendly software allows you to minimize the time invested in the design process. Remember you can use  as a design tool, incorporate it in your final product or take the chip and use it on your own board.

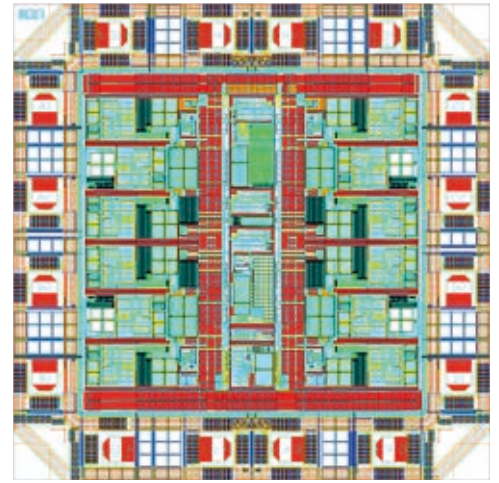


**RED
DRIVE**

Incremental Encoder

Innovative
encoder
options that
save space


In order to support OEMs in their determination to maintain a competitive edge we have developed an ASIC based dual channel encoder. It uses capacitive sensing, which delivers cost effective feedback whilst minimizing size.

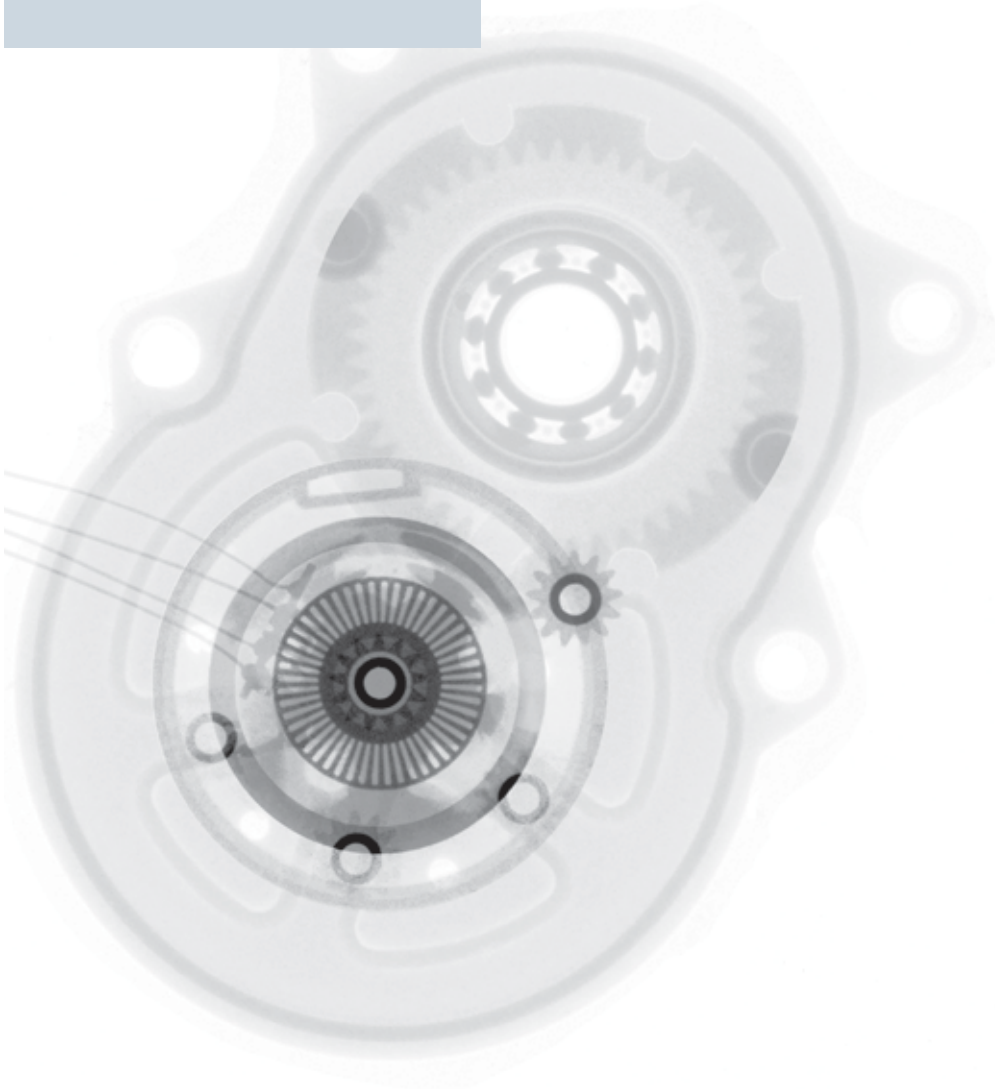


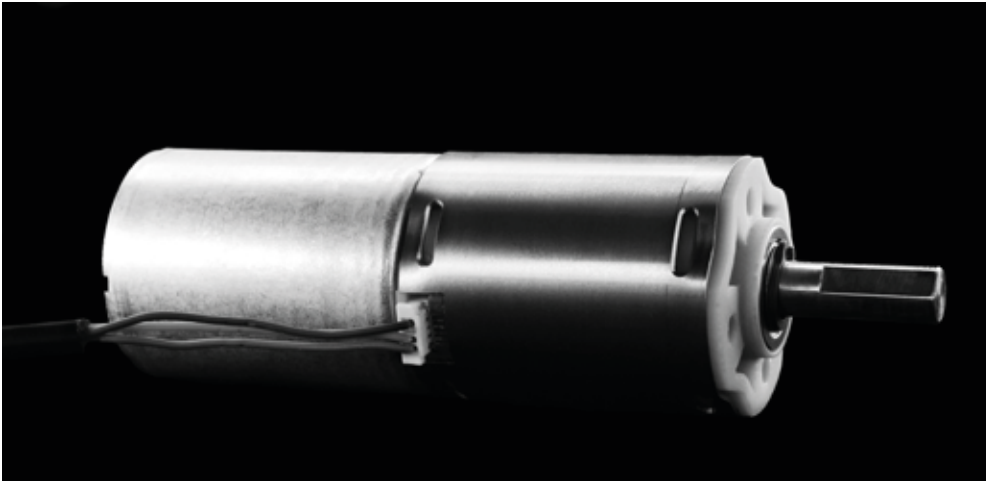
The capacitive design and custom ASIC, means the encoder can successfully operate over a wide range of temperatures and is unaffected by external magnetic forces. The ASIC has internal amplification and can directly drive TTL logic.

Various options of the encoder are available from 8ppr single channel to 24ppr dual channel (giving 48 positions per rev with signal processing).

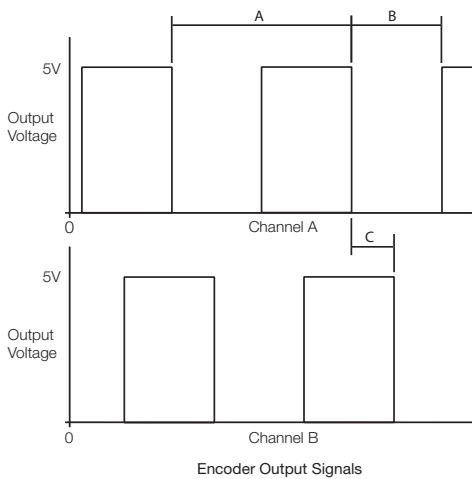
A 300mm loom is available to link the encoder to a standard 2.54mm pitch 4-way PCB header. In full production the encoder connector allows customers to easily use a loom tailored to their requirements.

Customers should be aware of the opportunity of using the single or dual channel encoder with our programmable controller Red Drive  which offers the real opportunity of low cost servo systems.





View our latest products
at www.rotalink.com



General Specification

Number of Channels	1 or 2
Pulses per Channel per Motor rev.	8, 12
Output	TTL
Supply Voltage	5 Vdc \pm 10%
Frequency Range	up to 20Khz
Operating Temperature	-40 to +80°C

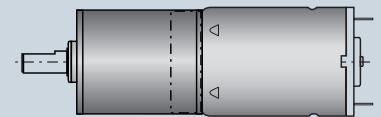
Connector Pin Sequence

+5V	Pin 1
Channel A	Pin 2
Channel B (where applicable)	Pin 3
Ground	Pin 4

For our PG28 and PG38 planetary gearboxes the encoder fits neatly in place of a planetary stage, minimising length.

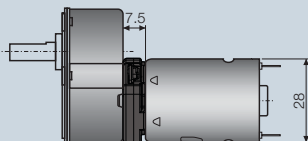
For use with our ovoid gearbox range there are three different size variants, providing a sandwich mount between our standard single shaft dc motors and gearboxes.

Incremental encoder PG**



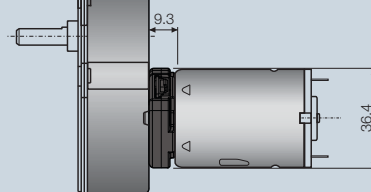
Incremental encoder 28mm

Units: mm



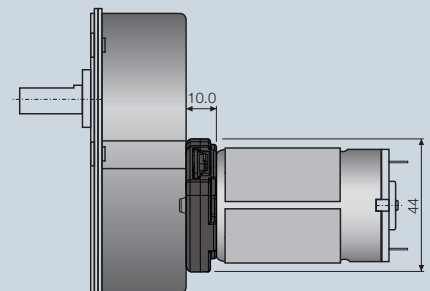
Incremental encoder 36mm

Units: mm



Incremental encoder 44mm

Units: mm



Absolute Encoders

**Magnetic Specification**

Supply Voltage	5Vdc
Output	Differential SSI or 5V Analogue
Max. Rev. Count	1 rev. single-turn 32000rev. multi-turn
Position retention	no limit single-turn upto 100 hours multi-turn
Angle Resolution	0.35° (10 bit)
Accuracy	±1.5°
Maximum SSI frequency	1Mhz
Connector	10 way molex

Mechanical Specification

Supply Voltage	5-30Vdc
Output	5-30V Analogue
Max. Rev. Count	1 rev. single-turn 10rev. multi-turn
Position retention	no limit single-turn no limit multi-turn
Angle Resolution	only limited by EMI
Accuracy	±1.5°
Connector	Soldered leads

In some applications the movement of the output shaft must be monitored even when electronics are powered down. In others, it is impractical to include the limit switch required to use an incremental encoder for positioning. In these situations, an absolute encoder is required.

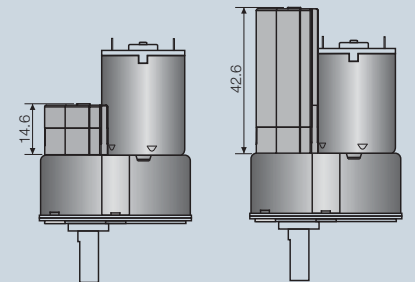
Rotalink's magnetic absolute encoder uses hall effect based electronics to produce the same analogue output from a smaller package. It also gives the option to report position via SSI (synchronous serial interface), which is immune to the noise that can disrupt an analogue output.

A mechanical absolute encoder – commonly known as a potentiometer – is the simplest way track shaft movement over one or ten turns. Its resistance rises as the gearbox turns, providing an analogue signal. The single-turn version drops back to its minimum resistance (~30Ω) when a full rotation is completed. The multi-turn version increases to maximum resistance over 10 turns, then hits an end stop.



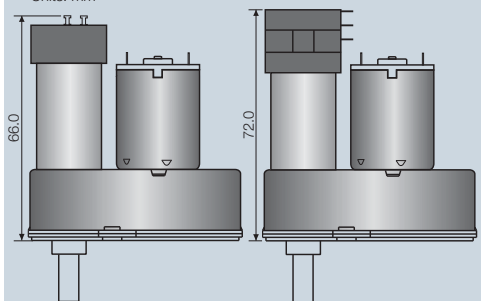
Magnetic Absolute Encoder

Units: mm

Single turn magnetic encoder
D2431 motor, 210 gearboxMulti turn magnetic encoder
D2431 motor, 210 gearbox

Mechanical Absolute Encoder

Units: mm

Single turn mechanical encoder
D2431 motor, 227 gearboxMulti turn mechanical encoder
D2431 motor, 227 gearbox

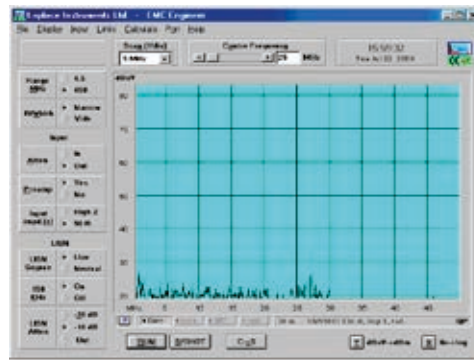
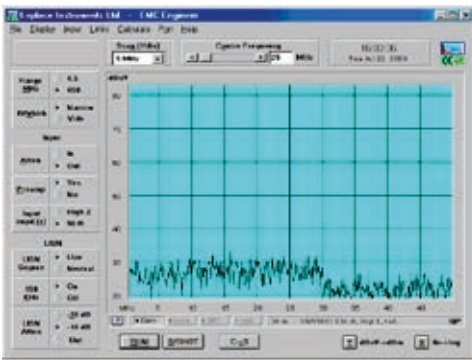
Control of DC Motors

Electromagnetic Interference



Unsuppressed motor

Motor after suppression has been fitted



The increasing trend towards miniature multi functional devices brings with it the problem of electromagnetic interference (EMI).

There are many ways in which we can help you achieve electromagnetic compatibility (EMC).

Varistors

To reduce the effects of radiated noise we can offer dc motors with an internal varistor ring. This device is fitted across the motor coils and offers low cost suppression.

Filters

The effects of electromagnetic noise can be reduced by fitting capacitors and chokes close to the dc motor. We offer a range of populated pcb's that can be fitted directly across the motor terminals.

Wiring looms

We can design and manufacture wiring looms which incorporate twisted power leads, electromagnetic shielding and ferrite beads, all of which offer significant reductions in EMI.



DC Programmable
Controller

The  board was designed with cost at the forefront of the specification and manufactured in volumes that deliver this promise.

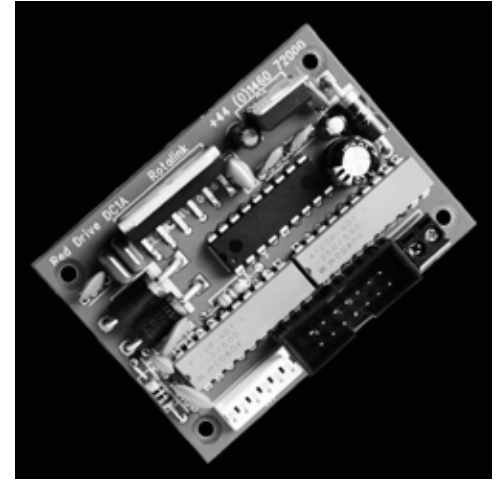
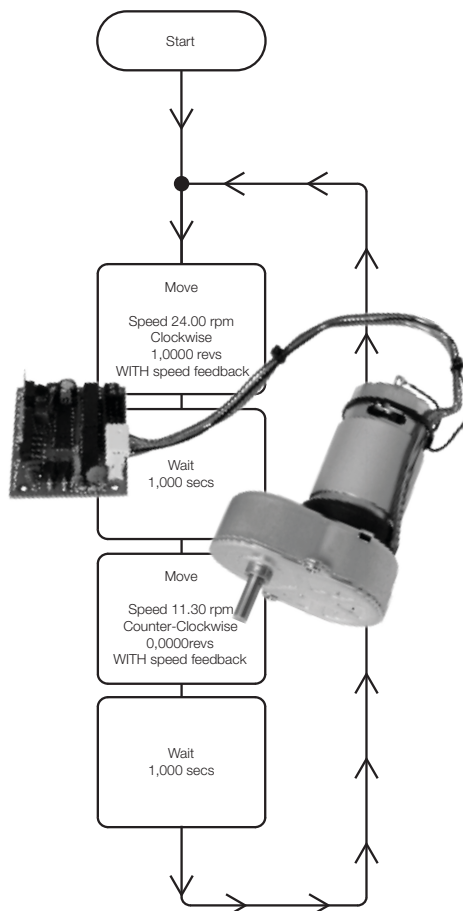
Use Red Drive throughout the product development process.

- Write your own programs and modify them, at any stage, quickly and easily.
- Prototype test and modification.
- Compatible through pre-production and production stages.
- Design with Red Drive PCB with the option of a Red Drive chip on your own board.



**RED
DRIVE**

Red Drive is a compact yet powerful motor driver and controller designed for use with our wide range of dc motors, gearboxes and encoders. Our unique flowchart graphical software allows the user to easily program both simple and complex sequences of motion and quickly refine such programs as development continues.



The Red Drive chip can be incorporated into a customer's own PCB, providing advanced PID control and complex programmed behaviour without the need for further design time. When volumes are moderate or timeframes tight, Rotalink also offers Red Drive on a fully-integrated PCB.

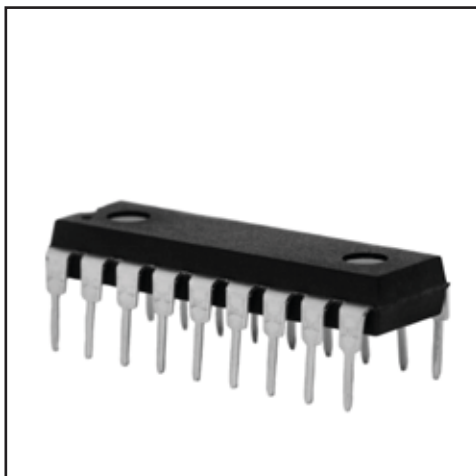
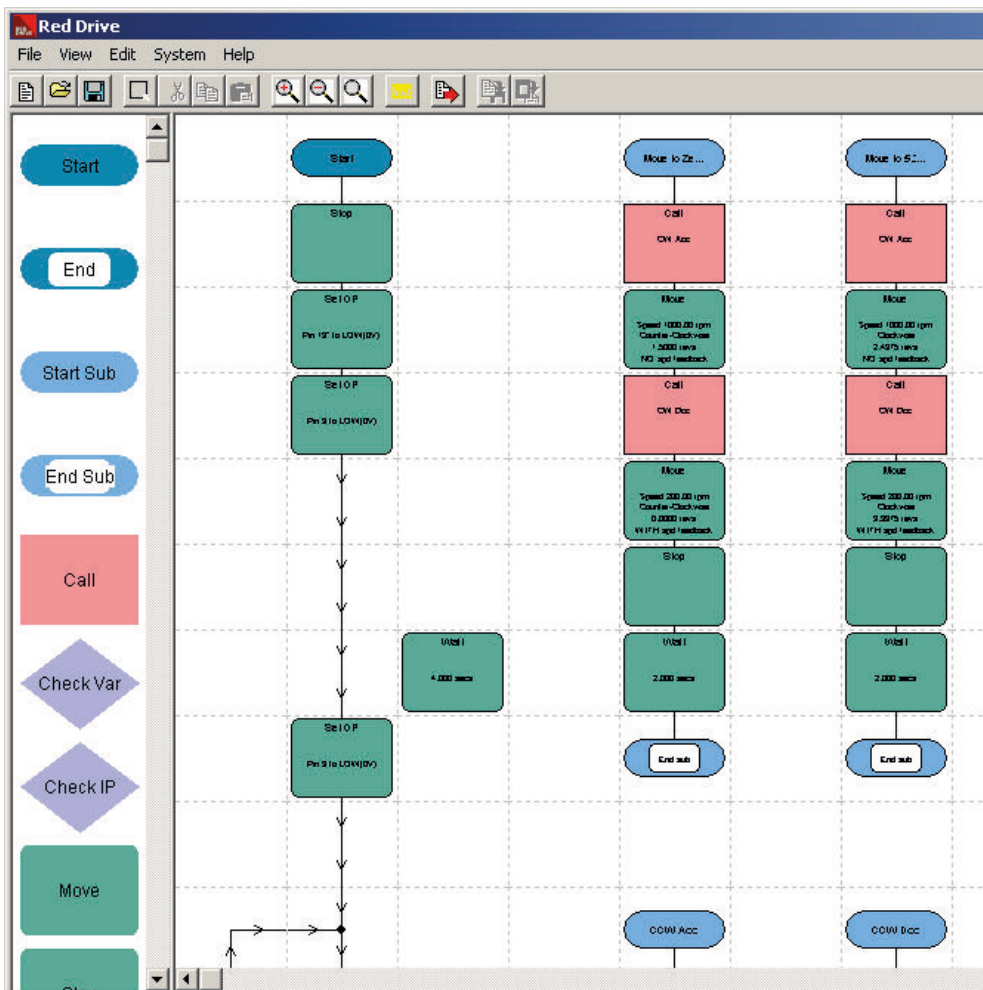
This will turn a brushed dc motor, when equipped with a well-designed gearbox and feedback device, into a servo system able to produce more power using less space and for a lower price than an equivalent stepper or brushless motor.

Red Drive is engineered to make closed-loop speed, acceleration and positional control possible in the most price-sensitive applications. It can respond to both analogue and digital inputs and give outputs to control LEDs, buzzers and similar devices.

Software is available to download from www.rotalink.com.



View our latest products
at www.rotalink.com



Functions

Speed control: output speed will remain stable running against a variable load.

Position control: move set distances. Maximum movement from start position is 44,000,000 motor revs.

Home: define one input as a 'home', this provides a reference point for all other movements.

Acceleration: unit features a 'straight line' profile, available from 'as fast as motor' to a maximum acceleration time of 1967 seconds.

Wait: unit can wait (either motor running or stationary) for up to 549500 seconds.

Global fail safe: external input can trigger Red Drive shutdown.

Variable calculations: Various calculations can be made on variables, +, -, *, <, >. Useful for counting in sequences.

You can get help from
Rotalink at any stage:

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info@rotalink.com

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Control of DC Motors

Speed Controller

Low cost speed and direction controller

DC10A General Specification

PWM10AS

Supply Voltage 12-24Vdc
Supply Current 10A Max continuous

PWM1.5xx

Supply Voltage 7-24Vdc
Supply Current 1.5A Max continuous



Bi-directional unit:

Using the onboard potentiometer it is easy to adjust direction and speed; with the potentiometer set full CW the motor turns clockwise at full speed, simply rotating the potentiometer to full AC will rotate the motor anticlockwise at full speed. Positioning the potentiometer at 50% will stop the motor.

Uni-directional unit:

More simple than the bi-directional controller. This PCB simply provides speed control in one direction. The potentiometer changes speed linearly from full speed to stop. The motor connection must be reversed to change direction.

A range of open loop Pulse Width Modulated speed and direction controllers for use with brushed dc motors up to 10A.

All our controllers use PWM adjustment running at 20Khz to provide high quality speed control. The motor will see an average voltage proportional to the duty cycle it is receiving.

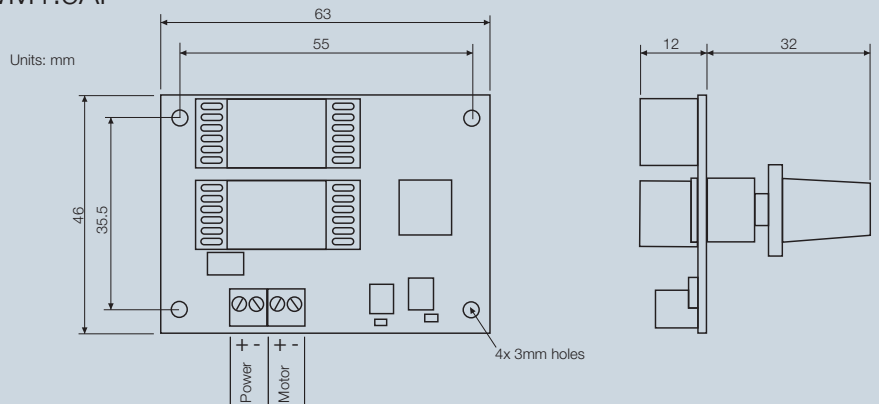
There are 3 variants of controller, a 10A uni-directional (varies speed only) unit, a 1.5A bi-directional controller (varies speed and direction) and a 1.5A uni-directional (varies speed only) unit.

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PWM1.5AP



Control of DC Motors

Servo Systems

Modularity is at the core of our servo system design philosophy providing huge scope to create a package that is unique to your application.

An extensive range of brushed and brushless dc motors fitted to flat or in-line gearboxes, feedback via potentiometers, incremental or absolute encoders and programmable drives to manage the system.



Build a servo system dedicated to your application:

	Page
Brushed dc motors	5
Brushless dc motors	8
Brushed rare earth motors	9
Stepper motors	49
Flat gearboxes	11
Planetary gearboxes	19

	Page
Incremental encoders	27
Absolute encoders	29

	Page
Programmable drives: Red Drive	31

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AC Motors and Optional Gearboxes

Introduction

Ideally suited
to a wide
range of
applications



This group of products is unique in the scope of its range. It contains both uni and bi-directional synchronous motors and electrically controlled reversible motors interfacing with both spur and hybrid gearboxes.

Product is offered across a wide voltage range and gearbox ratio options are extensive. UL approval is available where appropriate.

For applications where constant speed is essential the stand alone synchronous motor or a motor interfacing with a gearbox is an invaluable tool. Typical uses include cam timers, lubrication systems, diaphragm and peristaltic pumps and clock mechanisms but many products that demand constant torque or speed will benefit. Where torque is important the guarantee of constant motor speed coupled with the mechanical advantage generated from your gearbox delivers a low cost and consistent torque speed performance at the output shaft.





You can get help from
Rotalink at any stage:

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Synchronous motors also offer real advantages where motor life is critical, the lack of brushes and low torque levels will deliver many tens of thousands of trouble free hours. Low noise is often critical in both domestic and commercial applications and its management is a key part of our design philosophy and manufacturing expertise. Please speak to your sales engineer or call our sales desk if you need help with the selection of a product.

Special lead lengths and dedicated output drives can be fitted to your specification and delivered to your line as you need them. Our aim is to deliver to our customer a “fit and forget” service.

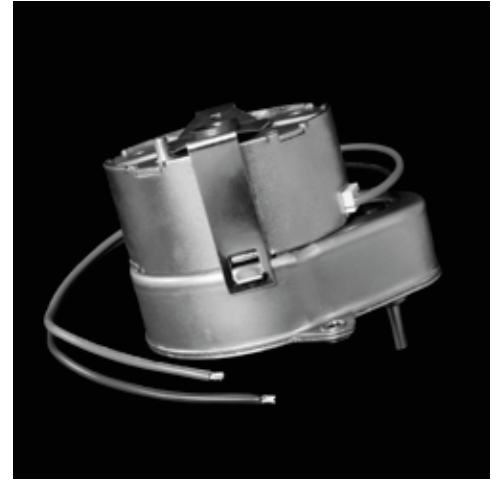
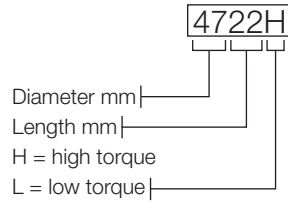


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AC Motors and Optional Gearboxes

Motor Schedule:
Unidirectional



Model Number	Voltage V	Frequency Hz	Speed rpm	Output Power W	Running Torque mNm	Direction of Rotation
4116	12/24/115/230/115-230	50/60	500/600	0.06	1.2	CW/CCW/BI
4722L	12/24/115/230/115-230	50/60	600/720	0.38	6.0	CW/CCW
4722	12/24/115/230/115-230	50/60	600/720	1.00	16.0	CW/CCW
4722H	12/24/115/230/115-230	50/60	600/720	1.38	22.0	CW/CCW

If you plan to market your product globally we have UL listed motors available.

For details please see product data sheets on the enclosed CD or at www.rotalink.com.



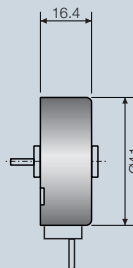
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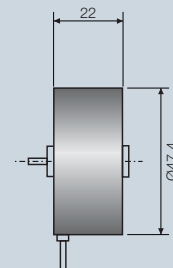
AC Motor type 4116

Units: mm



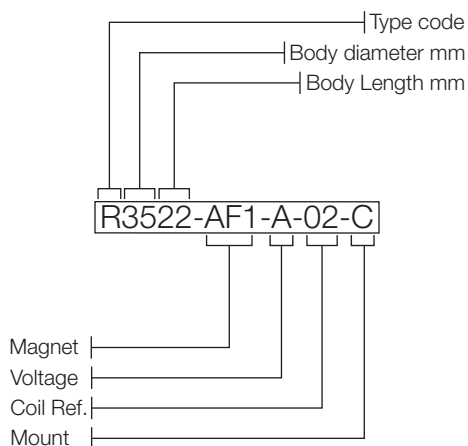
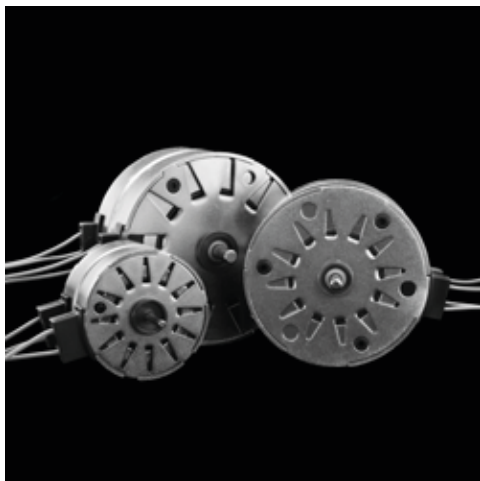
AC Motor type 4722

Units: mm



AC Motors and Optional Gearboxes

Motor Schedule:
Reversible



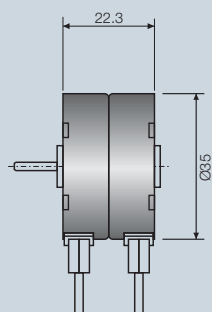
Model Number	Voltage V	Speed rpm @50Hz	Output Power W	Running Torque mNm	Phasing Capacitor uF
R3522-AF1-A-02-C	230	250	0.20	8	0.33 (330VAC)
R3522-AF1-B-04-C	115	250	0.20	8	1.20 (250VAC)
R5125-AF1-A-01-C	230	250	0.95	37	0.15 (330VAC)
R5125-AF1-B-03-C	115	250	0.90	35	0.56 (250VAC)
R5936-AF1-A-01-C	230	250	2.35	90	0.22 (330VAC)
R5936-AF1-B-03-C	115	250	2.25	85	0.82 (250VAC)

Reversible synchronous motors are the tried-and-tested way to position a machine using AC power.

Please contact us if you require other voltages.

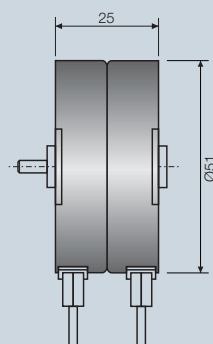
AC Motor type R3522

Units: mm



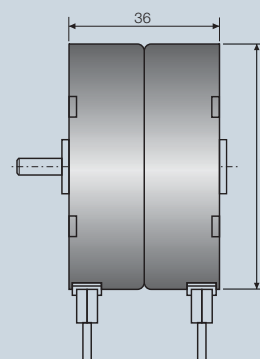
AC Motor type R5125

Units: mm



AC Motor type R5936

Units: mm



AC Motors and Optional Gearboxes

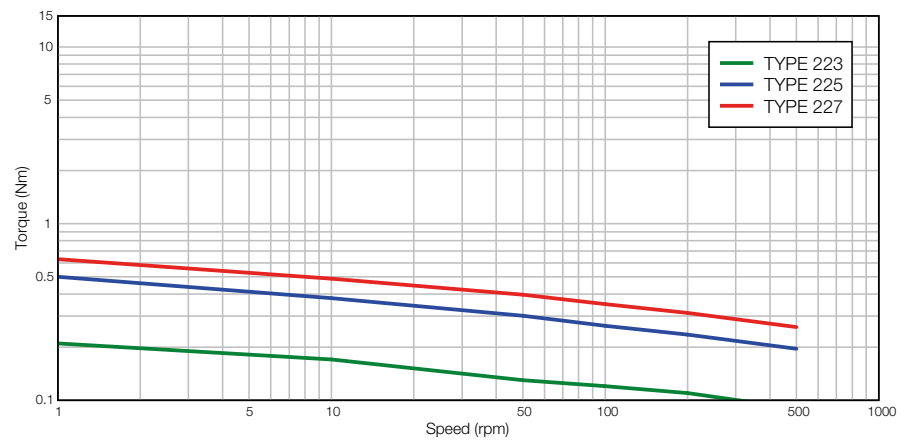
Gearbox Information



TYPE 223/225/227 Spur Ovoid

Zinc plated pressed steel gearbox case and front cover. Acetal spur gears running on fixed steel spindles. Stainless steel shaft, sintered bronze front and nylon back bearing. Maximum temperature 80°C at the gearcase.

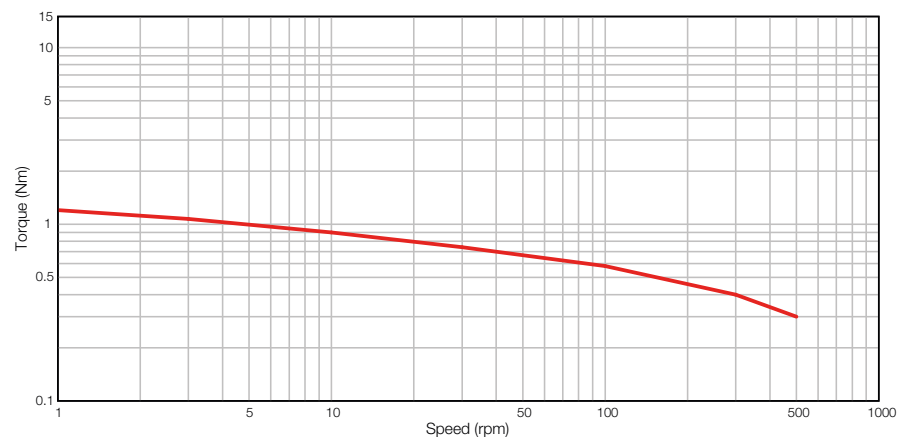
TYPE 223/225/227



TYPE 226 Spur Ovoid

Type 225 gearbox with zinc alloy secondary gearbox. Acetal spur gears running on fixed steel spindles, centrally placed stainless steel shaft. Nylon front bearing and sintered bronze rear bearing. Maximum temperature 80°C at the gearcase.

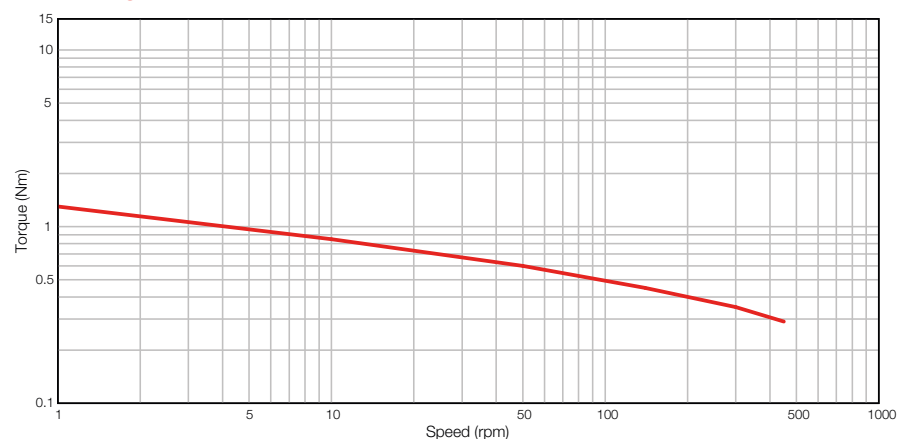
TYPE 226



TYPE 225H Spur Ovoid

Zinc plated pressed steel gearbox case and front cover. Engineering polymer, large module spur gears running on fixed steel spindles. Stainless steel shaft, sintered bronze front and nylon back bearing. Maximum temperature 80°C at the gearcase.

TYPE 225H

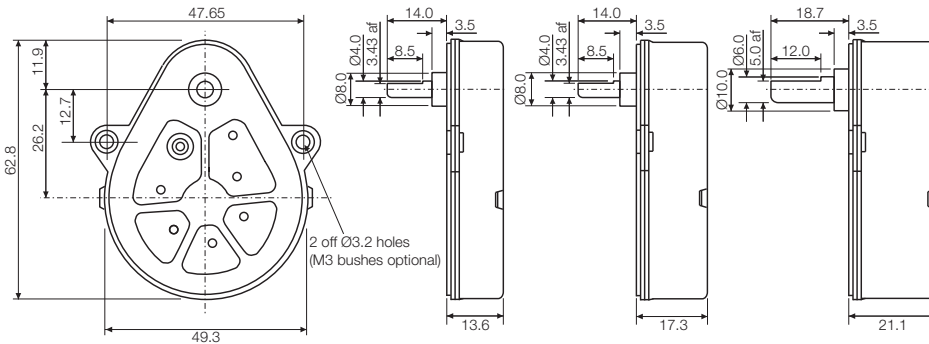




Full technical details are available from the component data sheets at www.rotalink.com

Units: mm

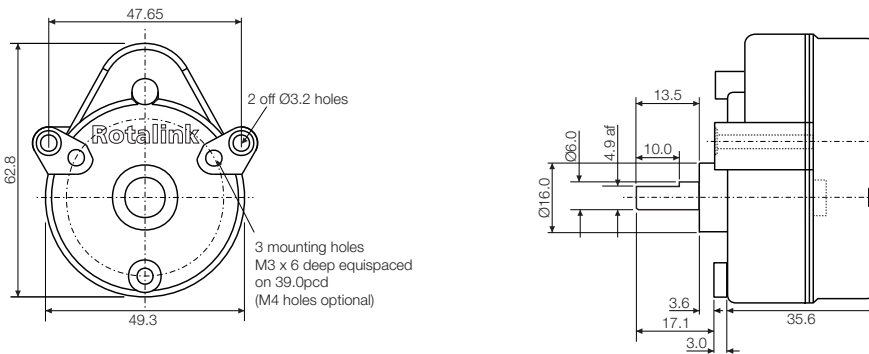
TYPE 223 TYPE 225 TYPE 227



Ratio			
25:4	80:1	750:1	10000:1
20:3	100:1	900:1	15000:1
25:3	125:1	1000:1	30000:1
10:1	150:1	1500:1	60000:1
15:1	200:1	2000:1	90000:1
20:1	250:1	3000:1	120000:1
30:1	300:1	4000:1	180000:1
40:1	400:1	5000:1	360000:1
50:1	500:1	6000:1	720000:1
60:1	600:1	7500:1	

Units: mm

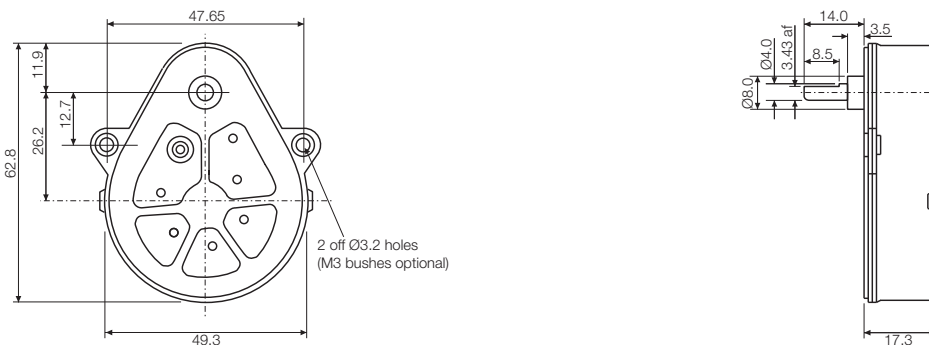
TYPE 226



Ratio		
25:1	120:1	1000:1
80:3	200:1	1200:1
100:3	240:1	1600:1
40:1	250:1	1800:1
50:1	400:1	2500:1
60:1	500:1	6000:1
200:3	600:1	30000:1
80:1	2000:3	
100:1	800:1	

Units: mm

TYPE 225H



Ratio	
~16:1	~88:1
~19:1	~101:1
~33:1	~125:1
~37:1	~143:1
~49:1	~162:1
~68:1	~186:1

AC Motors and Optional Gearboxes

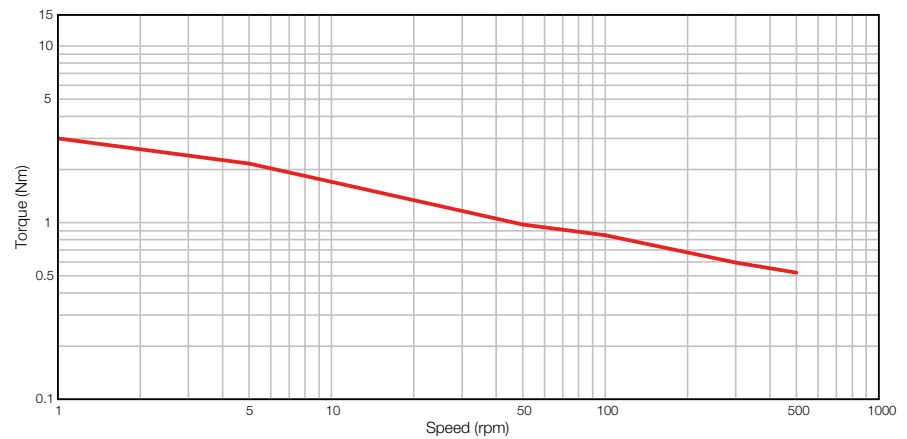
Gearbox Information



TYPE 229 Spur Ovoid

Zinc plated pressed steel gearbox case and front cover. Spur gears running on fixed steel spindles. Engineering polymer gears, stainless steel shaft, sintered bronze front and nylon back bearing. Maximum temperature 80°C at the gearcase.

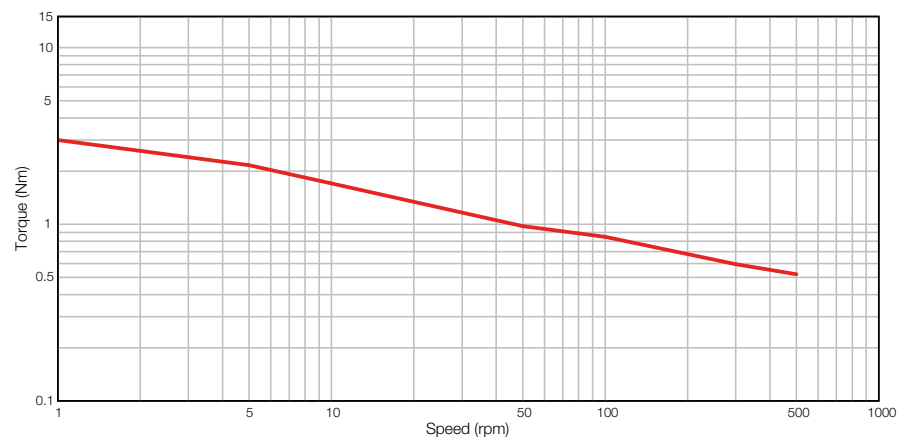
TYPE 229



TYPE 220 Spur Ovoid

Zinc plated pressed steel gearbox case and front cover with 4 point fixing. Spur gears running on fixed steel spindles. Engineering polymer gears, stainless steel shaft, sintered bronze front and nylon back bearing. Maximum temperature 80°C at the gearcase.

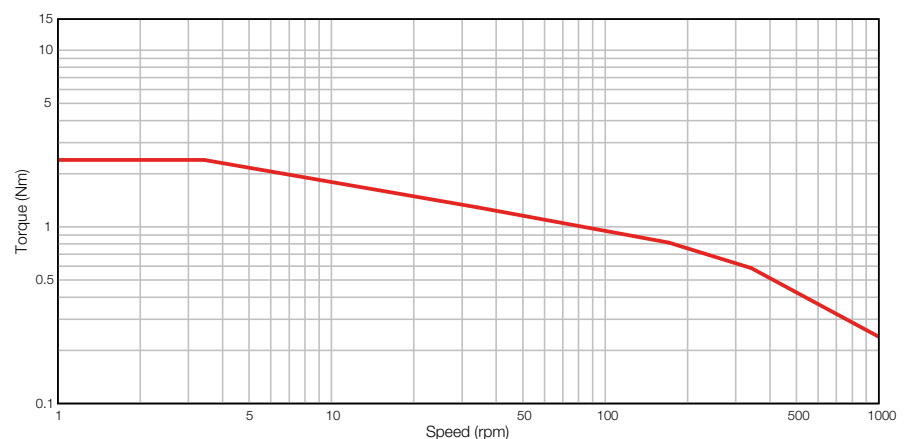
TYPE 220



TYPE 332 Spur Ovoid

Zinc plated pressed steel gearbox case and front cover with 4 point fixing. Spur gears running on fixed steel spindles. High performance polymer gears, stainless steel shaft, ball race front and back bearing. Maximum temperature 80°C at the gearcase.

TYPE 332

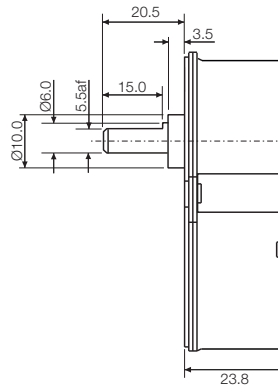
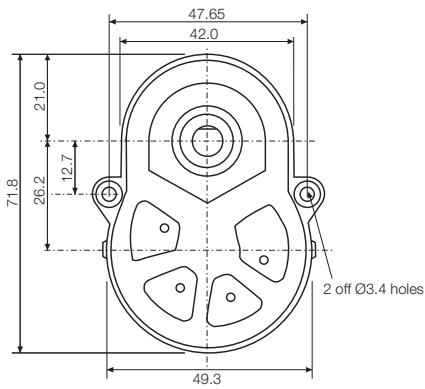




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Units: mm

TYPE 229

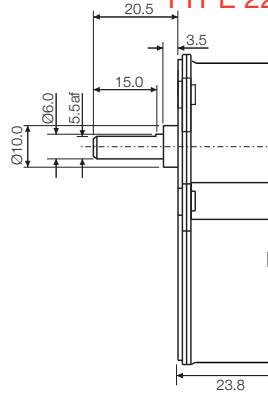
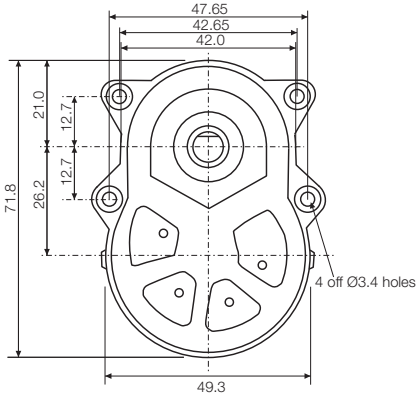


Ratio

15:1	108:1	800:1
20:1	120:1	1080:1
25:1	160:1	1600:1
30:1	200:1	2560:1
125:3	240:1	3200:1
50:1	300:1	4320:1
60:1	400:1	
80:1	640:1	

Units: mm

TYPE 220

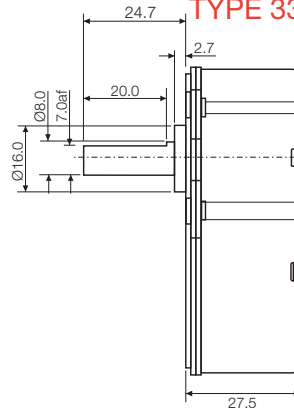
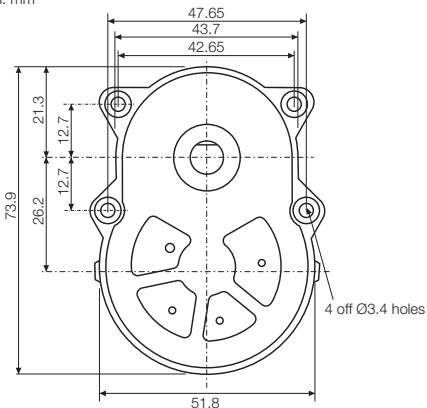


Ratio

15:1	108:1	800:1
20:1	120:1	1080:1
25:1	160:1	1600:1
30:1	200:1	2560:1
125:3	240:1	3200:1
50:1	300:1	4320:1
60:1	400:1	
80:1	640:1	

Units: mm

TYPE 332

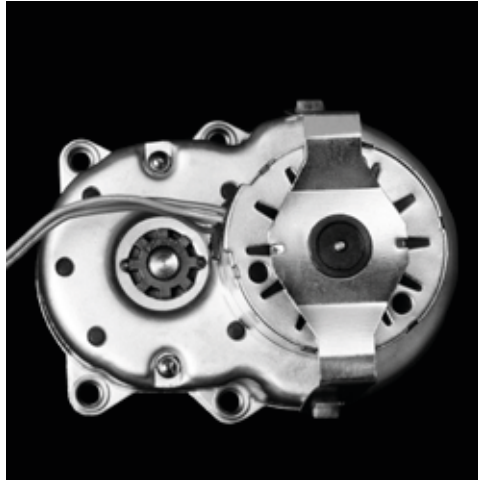


Ratio

~5:1	~60:1
~7:1	~75:1
~8:1	~93:1
~9:1	~117:1
~13:1	~187:1
~14:1	~224:1
~17:1	~299:1
~23:1	~598:1
~37:1	~1196:1
~48:1	

AC Motors and Optional Gearboxes

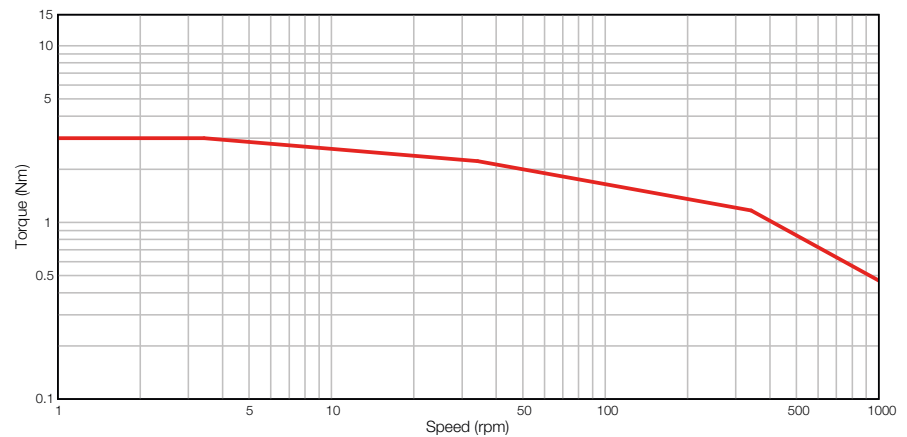
Gearbox Information



TYPE 372 Spur Ovoid

Zinc plated pressed steel gearbox case and front cover with 4 point fixing. Spur gears running on fixed steel spindles. High performance polymer gears, stainless steel shaft, ball race front and back bearing. Maximum temperature 80°C at the gearcase.

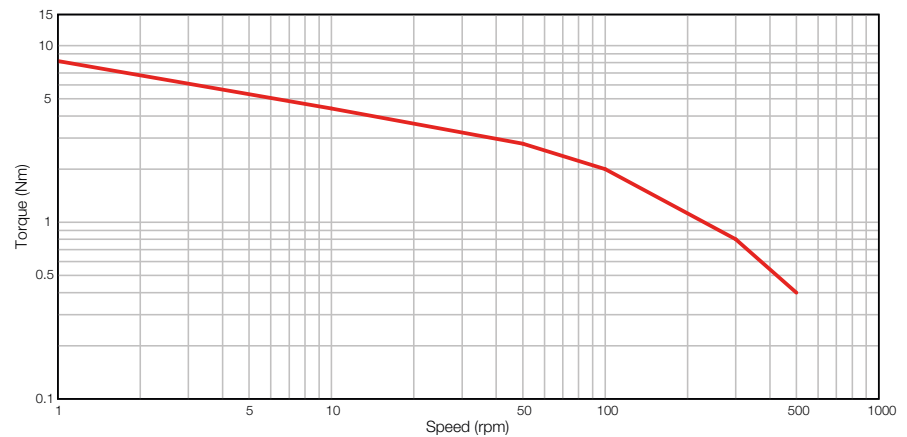
TYPE 372



TYPE 330 Hybrid

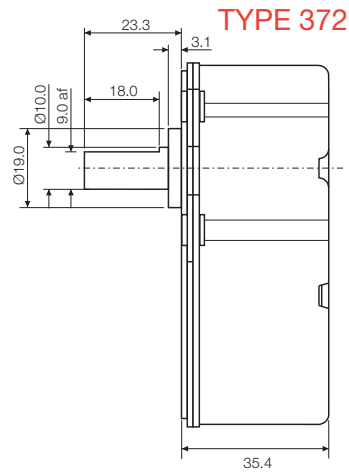
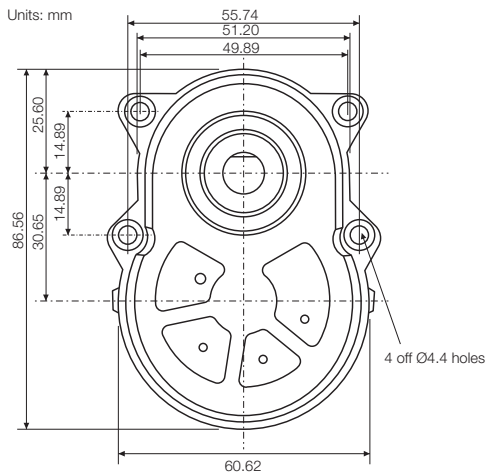
Zinc plated pressed steel gearbox case and front cover with 4 point fixing. Spur gears running on fixed steel spindles leading to a planetary output stage. High performance polymer gears, stainless steel shaft, ball race front and back bearing. Maximum temperature 80°C at the gearcase.

TYPE 330

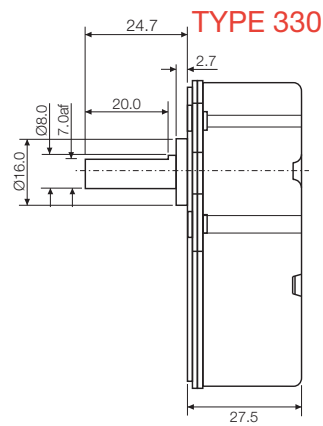
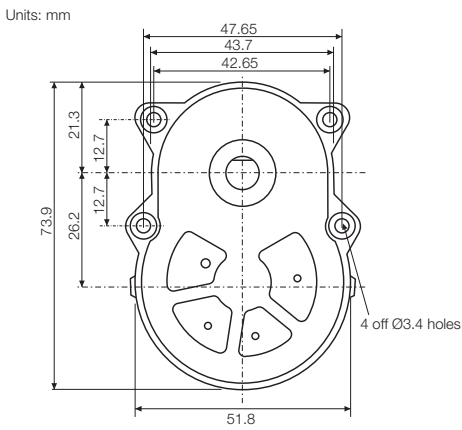




Full technical details are available from the component data sheets at www.rotalink.com



Ratio	
~5:1	~75:1
~7:1	~93:1
~8:1	~117:1
~13:1	~187:1
~17:1	~224:1
~23:1	~299:1
~37:1	~1196:1
~60:1	



Ratio	
~16:1	~205:1
~22:1	~256:1
~29:1	~320:1
~32:1	~400:1
~43:1	~639:1
~48:1	~767:1
~58:1	~1023:1
~80:1	~2046:1
~128:1	~4092:1
~164:1	

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AC Motors and Optional Gearboxes

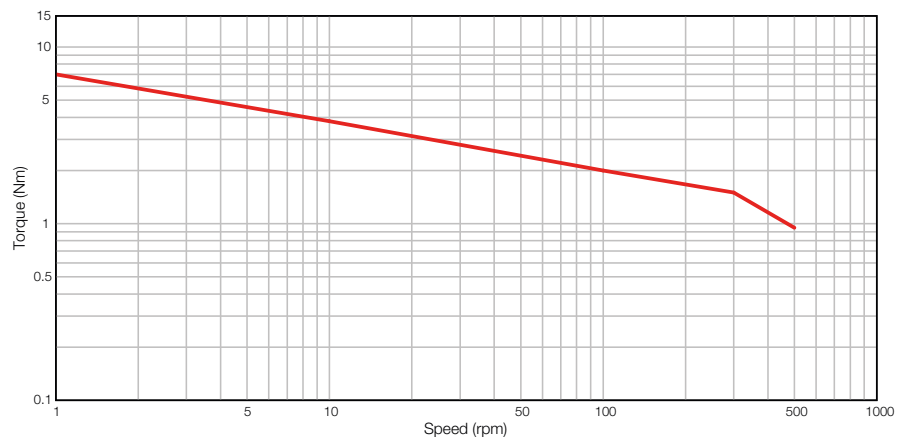
Gearbox Information



TYPE 360 Hybrid

Zinc plated pressed steel gearbox case and front cover with 4 point fixing. Spur gears running on fixed steel spindles leading to a planetary output stage. High performance polymer gears, stainless steel shaft, ball race front and back bearing. Maximum temperature 80°C at the gearcase.

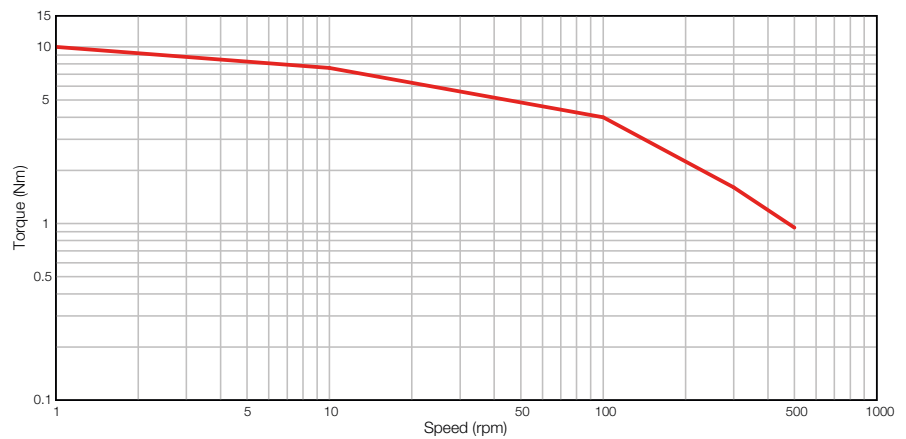
TYPE 360



TYPE 370 Hybrid

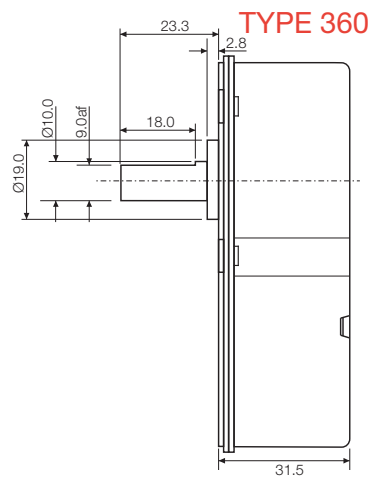
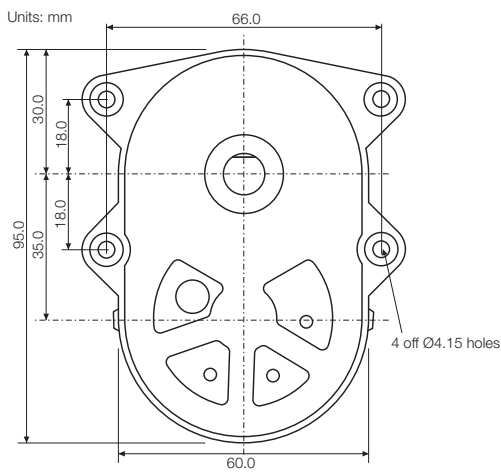
Zinc plated pressed steel gearbox case and front cover with 4 point fixing. Spur gears running on fixed steel spindles leading to a planetary output stage. High performance polymer gears, stainless steel shaft, ball race front and back bearing. Maximum temperature 80°C at the gearcase.

TYPE 370

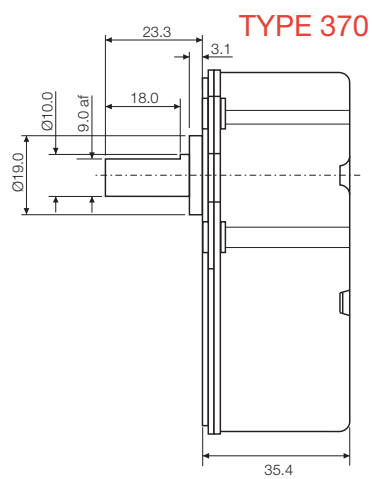
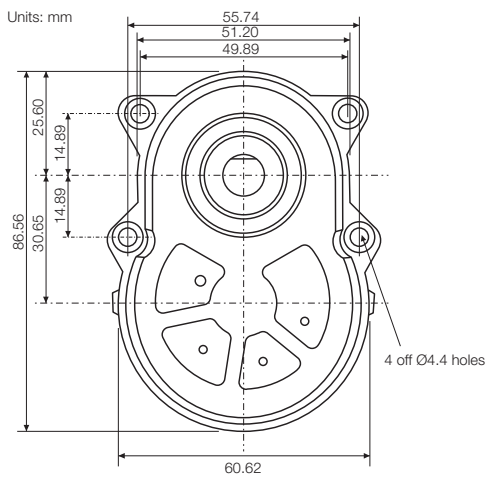




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Ratio	
~34:1	~152:1
~43:1	~244:1
~57:1	~457:1
~82:1	~610:1
~109:1	~1220:1



Ratio	
~16:1	~256:1
~22:1	~320:1
~29:1	~400:1
~43:1	~639:1
~58:1	~767:1
80:1	~1023:1
~128:1	~4092:1
~205:1	

47

Permanent Magnet and Hybrid Stepping Motors

Introduction

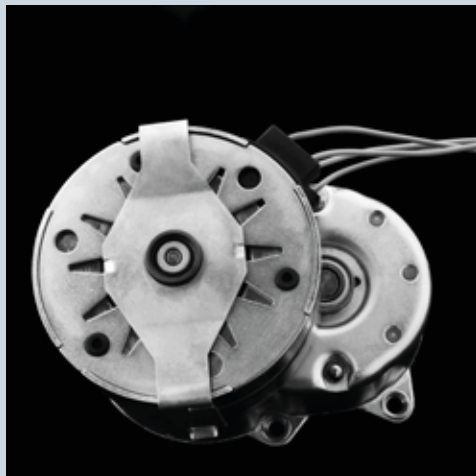
The widest range

The selection of the correct stepping motor requires specialised knowledge, the options are considerable. Stepping Motors feature accurate digital motion control, precise shaft position control, wide torque range and step angle accuracy.

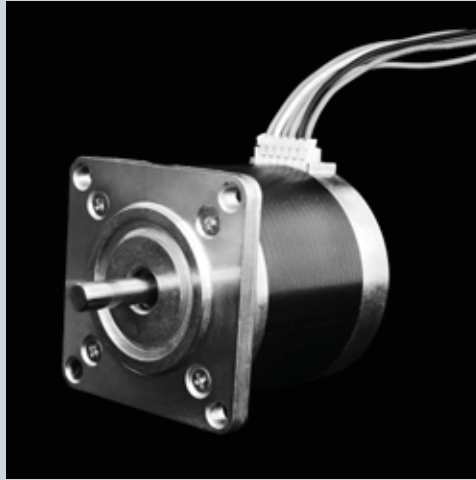
The motor requires drive electronics to control the electrical pulses which switch the motor windings. This range offers open loop control systems which are widely used in digitally controlled motion applications.



Within Rotalink the widest range of permanent magnet and hybrid stepping motors are supported by a team with extensive experience in both design and manufacture. Our engineers are well qualified to give you support in the selection and application of motors.



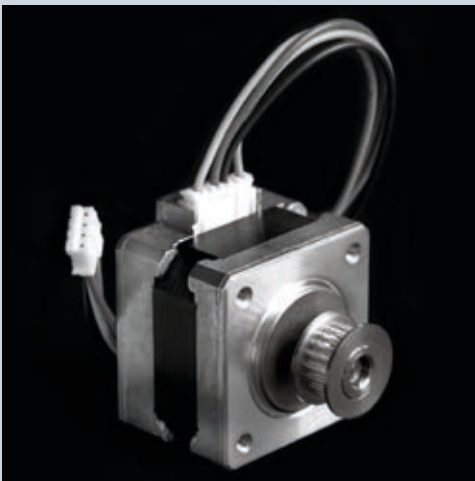
Motors can be supplied with special shafts including lead screws and interfaced with dedicated gearboxes and a standard dual line encoder. Connectors and pulleys can be fitted to your specification. The majority of our wide range of product is available from stock; special windings will be on a short lead time.



You can get help from Rotalink at any stage:

www.rotalink.com
info@rotalink.com

T: +44 (0)1460 72000



When selecting your motor there are many parameters to consider including voltage and current available from your drive, speed, resolution, space and cost. The following notes may assist you in your selection of a suitable package:

For an application requiring a speed of less than 5rpm and torque of greater than 1Nm we suggest you consider a permanent magnet stepping motor fitted to a gearbox. Where a speed of less than 5rpm and torque of less than 1Nm is required you can consider either a permanent magnet or hybrid stepping motor without a gearbox.

For an application requiring a speed greater than 5rpm we suggest you consider a hybrid stepping motor. If precision is of secondary importance to power, a geared brushless motor may be worth considering (see pages 7 & 8).

A hybrid stepping motor will offer high resolution which can be further enhanced by use of microstepping drives.

We understand that the selection of a stepping motor can be complex. If you need any support please give our technical sales desk a call.

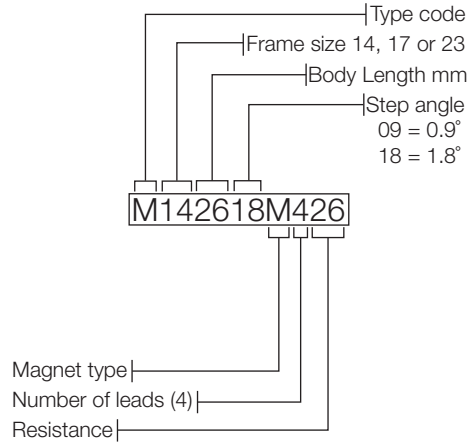


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Permanent Magnet and Hybrid Stepping Motors

Motor Schedule: Bipolar Hybrid Stepping



Model Number	Step Angle	Phase Voltage V	Phase Current A	Phase Resistance Ω	Phase Inductance mH	Holding Torque mNm	Rotor Inertia kgm ² x10 ⁻⁶	Detent Torque mNm	Weight g
M142618M426	1.8°	7.4	0.3	26	19	65	1.1	5	150
M173118K45.0	1.8°	4.3	0.9	5	11	255	3.4	8	200
M173118K430	1.8°	10.0	0.3	30	36	208	3.4	8	200
M173118K488	1.8°	17.0	0.2	88	120	188	3.4	5	200
M234118C464	1.8°	17.0	0.3	64	160	500	5.5	30	360
M237618K48.4	1.8°	8.9	1.1	8	32	1650	44.0	59	1050

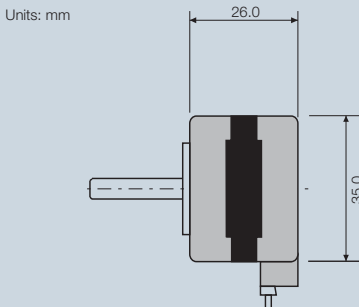
A stepper motor uses a permanently magnetised rotor and an stator formed from two electromagnetic coils. The coils can be energized in four configurations. Switching from one configuration to another causes the rotor to “step” and align its magnets with the energized coil. Cycling through the four configurations in a certain order will cause the rotor to steadily move in one direction.

“Hybrid” stepper motor construction combines the two methods of rotor manufacture: variable reluctance and permanent magnet. This combined approach gives a great density of poles than either predecessor, increasing both resolution and torque.

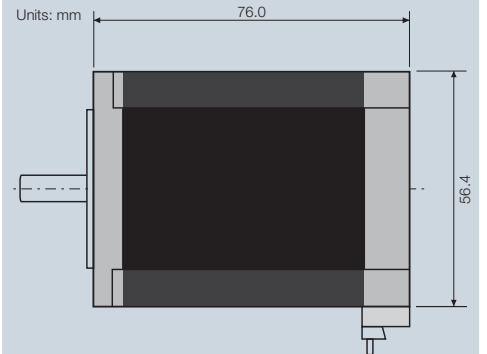
The resolution of a stepper motor can be increased via micro-stepping. Instead of switching from one position to the next, the voltage applied to the destination coil is gradually increased. This gives smooth motion at the expense of torque. Conversely, a chopper drive will apply a spike of voltage at the start of each step, this reduces the time needed for current to start flowing in the destination coil, allowing the rotor to align in time for the next step even at a high speed under heavy load.

Pull-in torque is the maximum load under which a motor will accelerate from rest to a given speed. Pull-out is the maximum torque that the stepper motor can apply at a given speed. If torque or speed exceeds this curve the motor will lose synchronism and begin to “miss steps”.

Hybrid stepping type
M142618M426



Hybrid stepping type
M234118K48.4





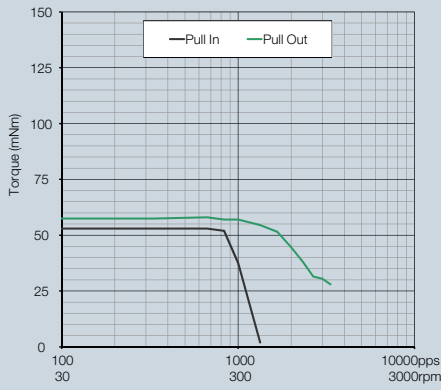
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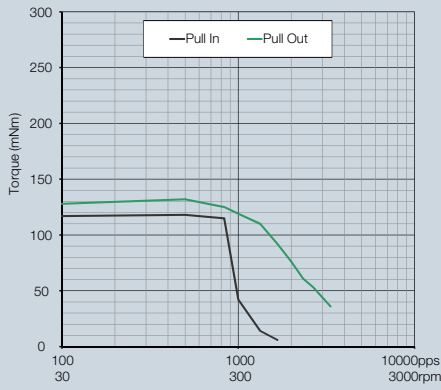
M142618M426

TMCM-1110 full step bipolar drive @ 24V & nominal phase current. Load Inertia: 4.61×10^{-6} kgm²



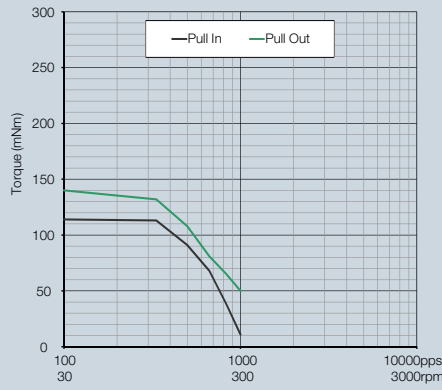
M173118K45.0

TMCM-1110 full step bipolar drive @ 24V & nominal phase current. Load Inertia: 21×10^{-6} kgm²



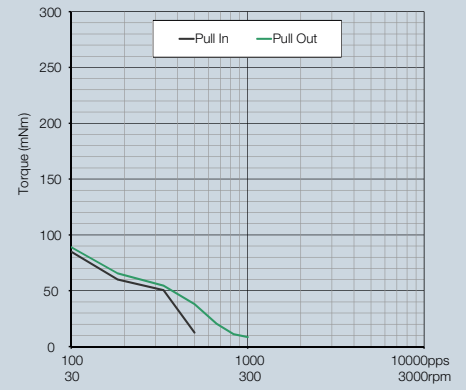
M173118K430

TMCM-1110 full step bipolar drive @ 24V & nominal phase current. Load Inertia: 21×10^{-6} kgm²



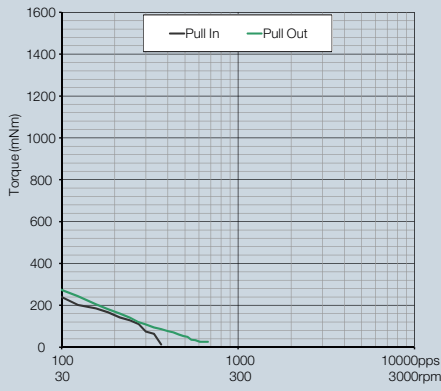
M173118K488

TMCM-1110 full step bipolar drive @ 24V & nominal phase current. Load Inertia: 21×10^{-6} kgm²



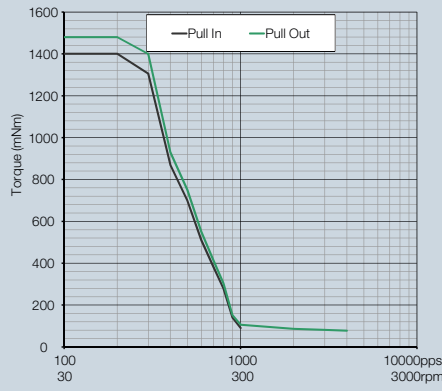
M234118C464

TMCM-1110 full step bipolar drive @ 24V & nominal phase current. Load Inertia: 109×10^{-6} kgm²



M237618K48.4

TMCM-1110 full step bipolar drive @ 24V & nominal phase current. Load Inertia: 14×10^{-6} kgm²

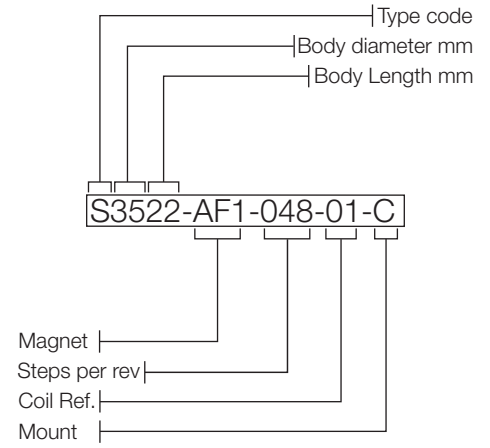
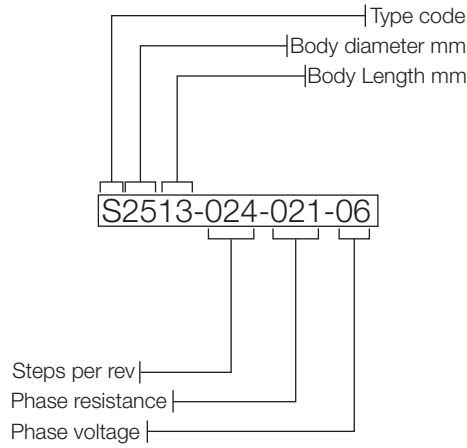


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Permanent Magnet and Hybrid Stepping Motors

Motor Schedule: Bipolar PM Stepping



Model Number	Step Angle	Phase Voltage V	Phase Current A	Phase Resistance Ω	Phase Inductance mH	Holding Torque mNm	Rotor Inertia kgm ² x10 ⁻⁶	Weight g
SB2513-024-021-06	15°	6	0.28	21	11	10	0.1	28
SB2513-024-085-12	15°	12	0.15	85	44	12	0.1	28
SB2513-048-200-24	7.5°	24	0.12	200	112	15	0.1	28
S3522-AF1-048-01-C	7.5°	10	0.12	7	95	21	0.5	80
S5125-AF1-048-01-C	7.5°	5	0.35	15	28	62	1.9	190
S5936-AF1-048-01-C	7.5°	4	0.60	6.5	15	170	11.0	350

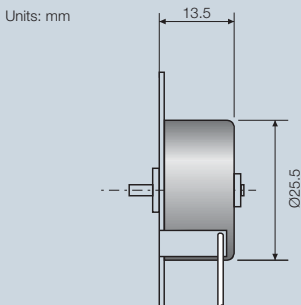
Permanent magnet stepper motors differ from hybrid stepper motors in the way magnetic poles are applied to their rotors. Hybrid stepper motors have physical teeth cut onto their rotors that are then magnetized. Permanent magnet stepper motors have poles applied to a featureless cylinder of magnetic material.

This is a simpler method of construction, which reduces the cost of a permanent magnet stepper motor. It also reduces the number of poles on the rotor and hence reduces torque and resolution.

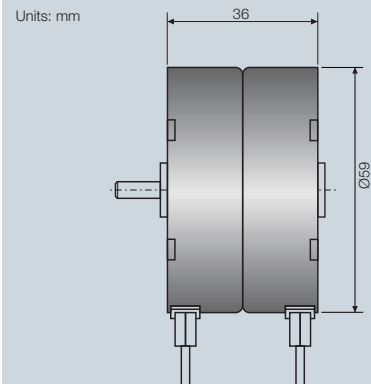
Permanent magnet stepper motors are suited to applications where cost needs to be minimized and the torque of a hybrid stepper motor isn't required. A permanent magnet stepper motor fitted to a gearbox can produce more torque than a hybrid stepper motor of equal cost – albeit only at low speeds. This set-up has the added benefit of magnifying the stepper motor's detent torque, allowing it to hold position without being constantly powered.

The ratio of the gearbox will give very high resolution however it's backlash will reduce accuracy. These factors remove any benefits of micro-stepping. A chopper drive is more advantageous in permanent magnet stepper motors than in hybrid stepper motors since it makes the most of their limited power.

PM stepping type SB2513



PM stepping type S5936

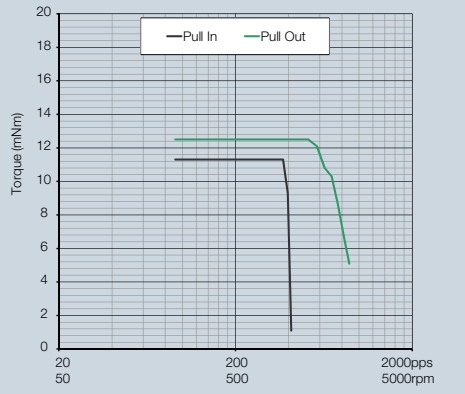




Full technical details are available from the component data sheets at www.rotalink.com

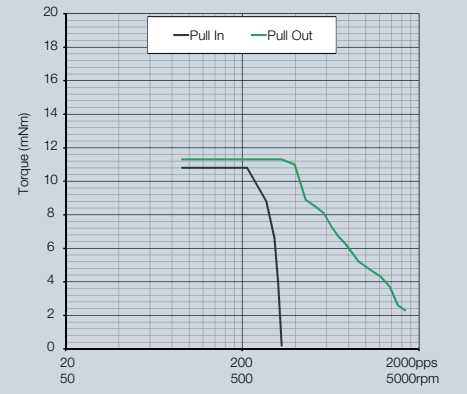
SB2513-024-021-06

TMCM-1110 half step bipolar drive @ 24V & nominal phase current. Load Inertia: $9.54 \times 10^{-7} \text{ kgm}^2$



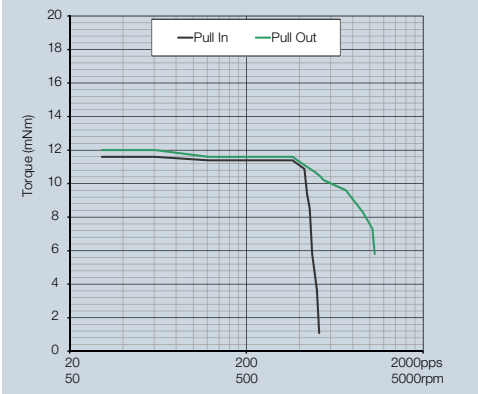
SB2513-024-085-12

TMCM-1110 half step bipolar drive @ 24V & phase current. Load Inertia: $9.54 \times 10^{-7} \text{ kgm}^2$



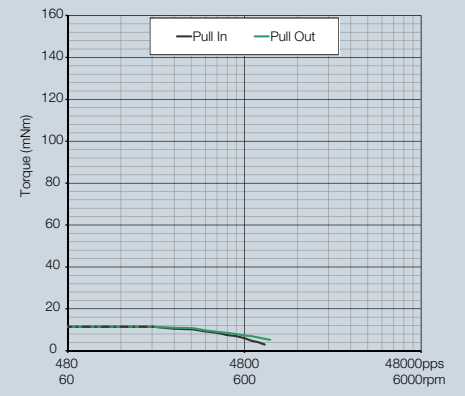
SB2513-048-200-24

TMCM-1110 half step bipolar drive @ 24V & phase current. Load Inertia: $4.29 \times 10^{-7} \text{ kgm}^2$



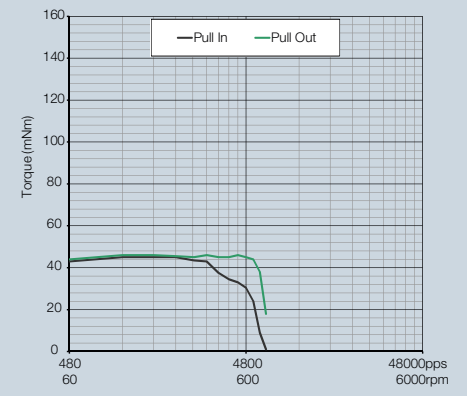
S3522-AF1-048-01-C

Microstep/full step morphing chopper drive @ 30V & phase current. Load Inertia: $9.54 \times 10^{-7} \text{ kgm}^2$



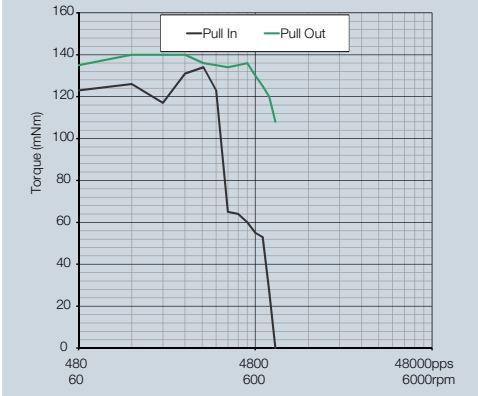
S5125-AF1-048-01-C

Microstep/full step morphing chopper drive @ 30V & phase current. Load Inertia: $4.61 \times 10^{-6} \text{ kgm}^2$



S5936-AF1-048-01-C

Microstep/full step morphing chopper drive @ 30V & phase current. Load Inertia: $2.10 \times 10^{-5} \text{ kgm}^2$



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Permanent Magnet and Hybrid Stepping Motors

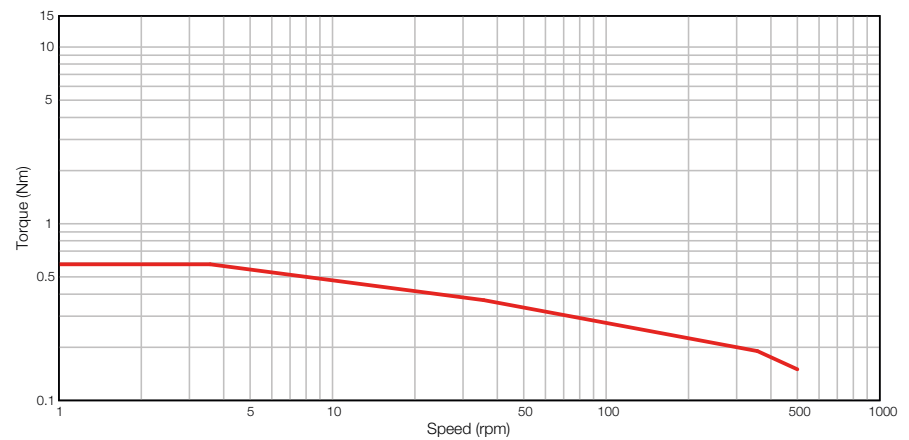
Gearbox Information



TYPE 222 Spur Ovoid

Zinc plated pressed steel gearbox case and front cover with 4 point fixing. Spur gears running on fixed steel spindles. Engineering polymer gears, stainless steel shaft, sintered bronze front and nylon back bearing. Maximum temperature 80°C at the gearcase.

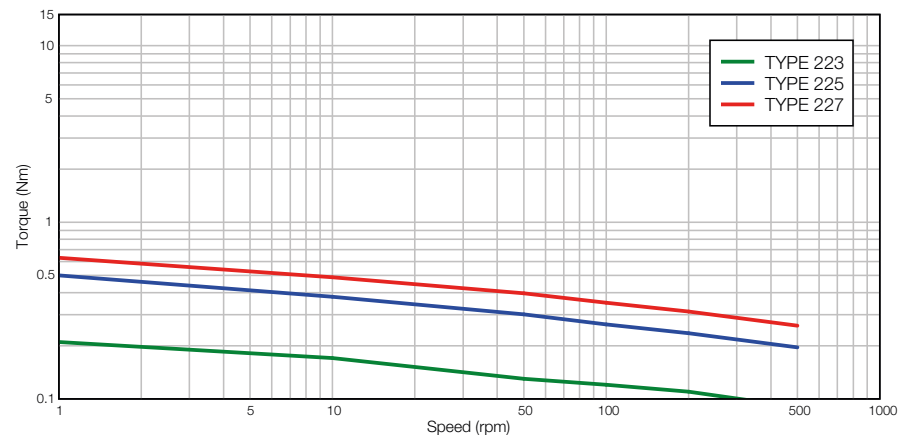
TYPE 222



TYPE 223/225/227 Spur Ovoid

Zinc plated pressed steel gearbox case and front cover. Acetal spur gears running on fixed steel spindles. Stainless steel shaft, sintered bronze front and nylon back bearing. Maximum temperature 80°C at the gearcase.

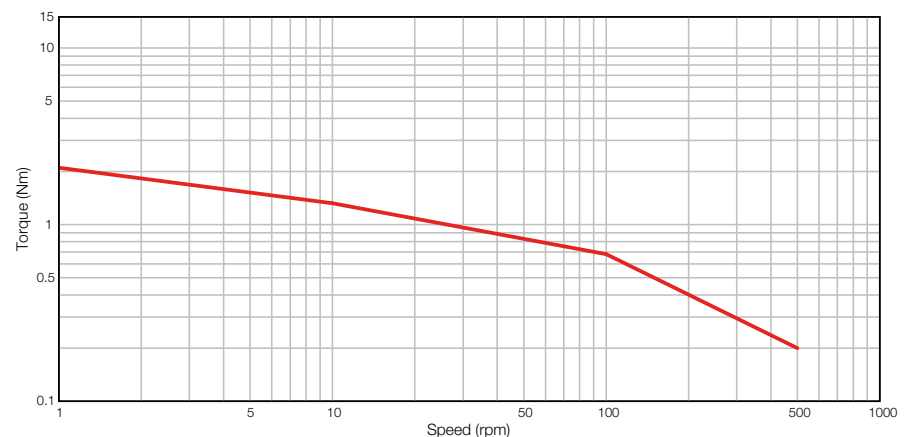
TYPE 223/225/227

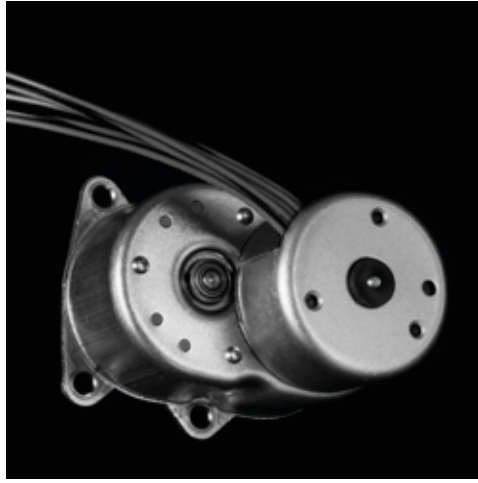


TYPE 210 Hybrid

Zinc plated pressed steel gearbox case and front cover with 4 point fixing. Spur gears running on fixed steel spindles leading to a planetary output stage. Engineering polymer gears, stainless steel shaft, ball race front and back bearing. Maximum temperature 80°C at the gearcase.

TYPE 210

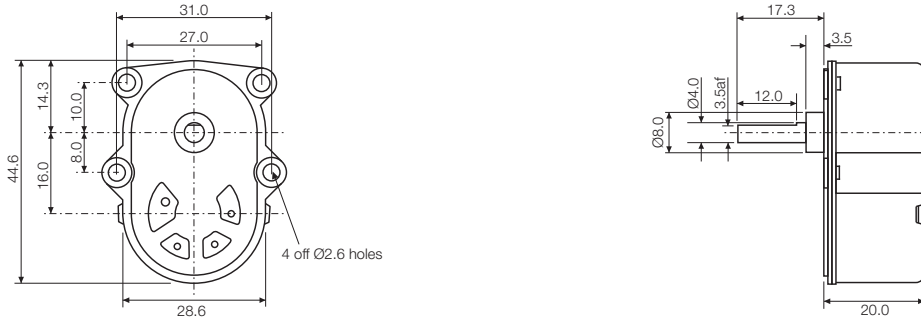




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Units: mm

TYPE 222



Ratio

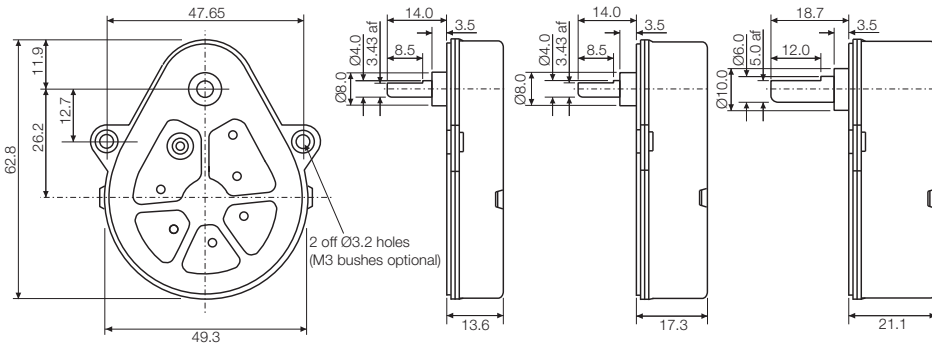
~7:1	~98:1
~9:1	~122:1
~11:1	~196:1
~14:1	~244:1
~17:1	~274:1
~21:1	~342:1
~24:1	~548:1
~31:1	~684:1
~49:1	~1337:1
~61:1	

Units: mm

TYPE 223

TYPE 225

TYPE 227



Ratio

25:4	80:1	750:1	10000:1
20:3	100:1	900:1	15000:1
25:3	125:1	1000:1	30000:1
10:1	150:1	1500:1	60000:1
15:1	200:1	2000:1	90000:1
20:1	250:1	3000:1	120000:1
30:1	300:1	4000:1	180000:1
40:1	400:1	5000:1	360000:1
50:1	500:1	6000:1	720000:1
60:1	600:1	7500:1	

Units: mm

TYPE 210



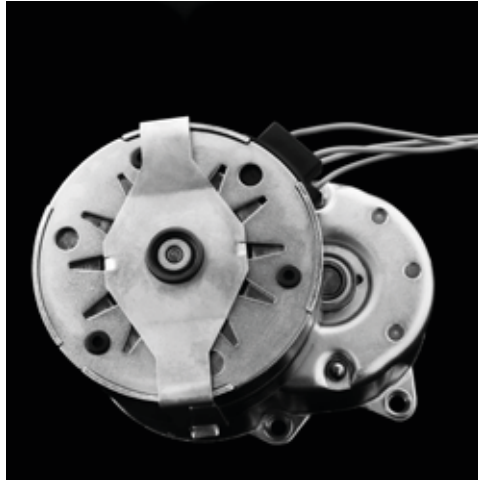
Ratio

~26:1	~349:1
~31:1	~437:1
~38:1	~698:1
~51:1	~873:1
~62:1	~978:1
~76:1	~1222:1
~87:1	~1956:1
~109:1	~2444:1
~175:1	~4774:1
~218:1	

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Permanent Magnet and Hybrid Stepping Motors

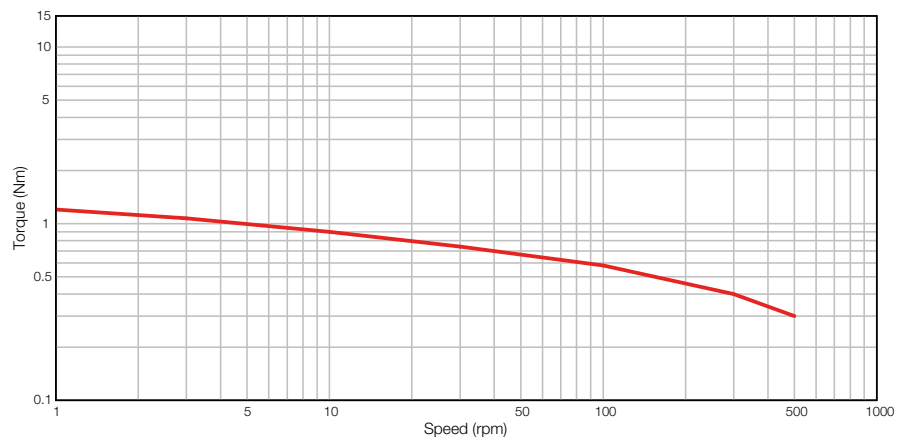
Gearbox Information



TYPE 226 Spur Ovoid

Type 225 gearbox with zinc alloy secondary gearbox. Acetal spur gears running on fixed steel spindles, centrally placed stainless steel shaft. Nylon front bearing and sintered bronze rear bearing. Maximum temperature 80°C at the gearcase.

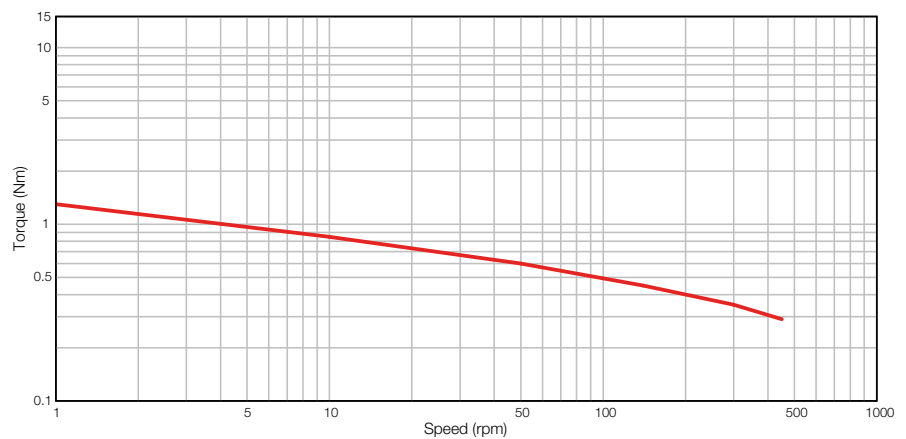
TYPE 226



TYPE 225H Spur Ovoid

Zinc plated pressed steel gearbox case and front cover. Engineering polymer, large module spur gears running on fixed steel spindles. Stainless steel shaft, sintered bronze front and nylon back bearing. Maximum temperature 80°C at the gearcase.

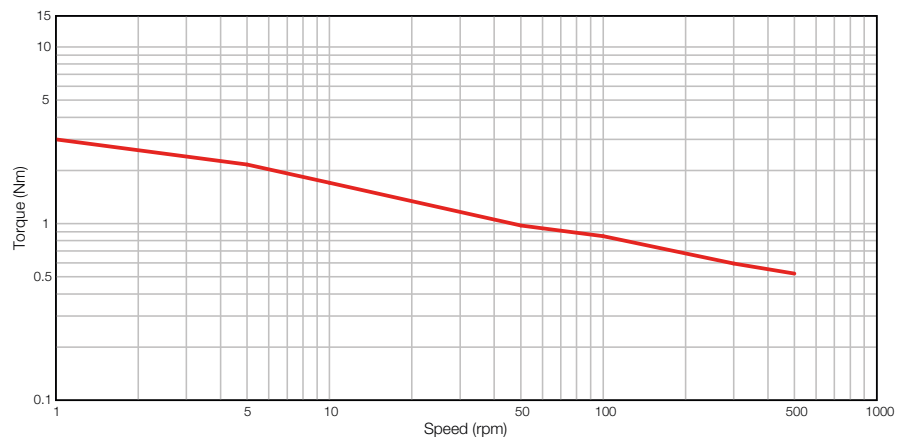
TYPE 225H

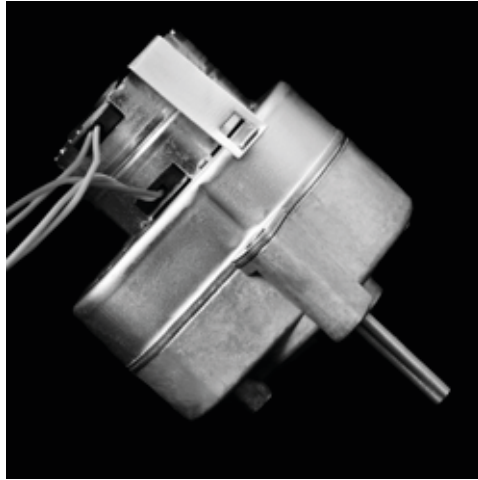


TYPE 229 Spur Ovoid

Zinc plated pressed steel gearbox case and front cover. Spur gears running on fixed steel spindles. Engineering polymer gears, stainless steel shaft, sintered bronze front and nylon back bearing. Maximum temperature 80°C at the gearcase.

TYPE 229

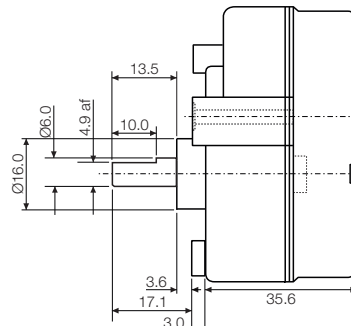
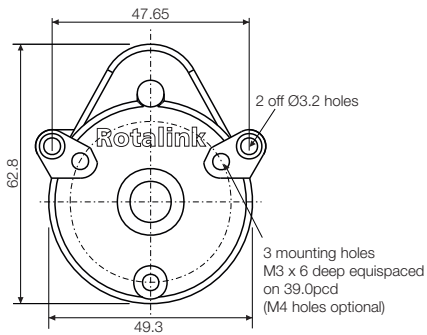




Full technical details are available from the component data sheets at www.rotalink.com

Units: mm

TYPE 226

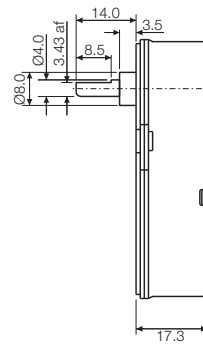
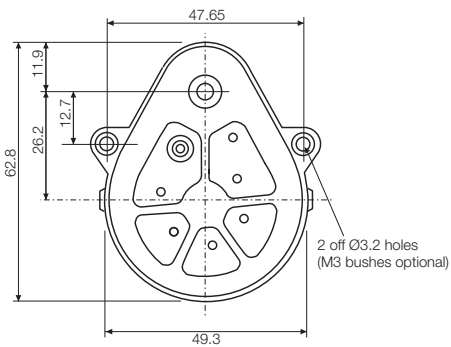


Ratio

25:1	120:1	1000:1
80:3	200:1	1200:1
100:3	240:1	1600:1
40:1	250:1	1800:1
50:1	400:1	2500:1
60:1	500:1	6000:1
200:3	600:1	30000:1
80:1	2000:3	
100:1	800:1	

Units: mm

TYPE 225H

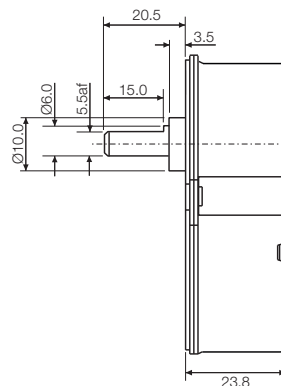
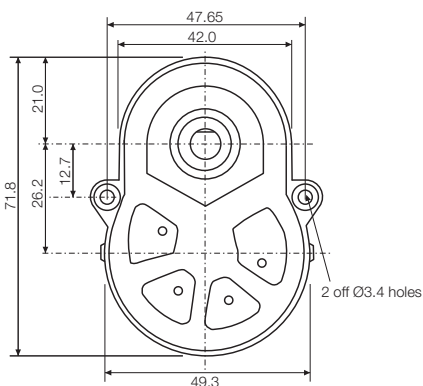


Ratio

~16:1	~88:1
~19:1	~101:1
~33:1	~125:1
~37:1	~143:1
~49:1	~162:1
~68:1	~186:1

Units: mm

TYPE 229



Ratio

15:1	108:1	800:1
20:1	120:1	1080:1
25:1	160:1	1600:1
30:1	200:1	2560:1
125:3	240:1	3200:1
50:1	300:1	4320:1
60:1	400:1	
80:1	640:1	

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Permanent Magnet and Hybrid Stepping Motors

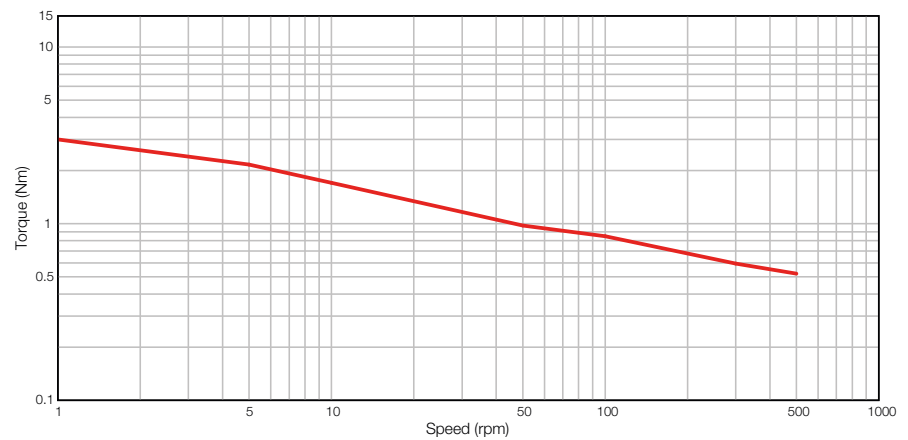
Gearbox Information



TYPE 220 Spur Ovoid

Zinc plated pressed steel gearbox case and front cover with 4 point fixing. Spur gears running on fixed steel spindles. Engineering polymer gears, stainless steel shaft, sintered bronze front and nylon back bearing. Maximum temperature 80°C at the gearcase.

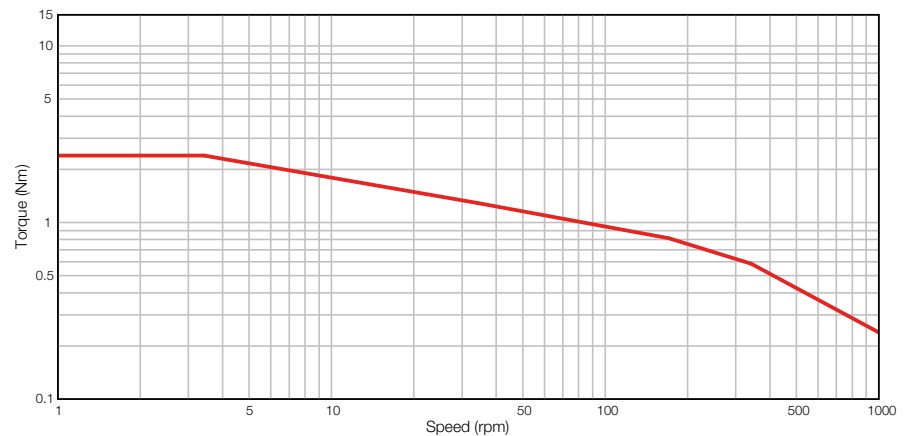
TYPE 220



TYPE 332 Spur Ovoid

Zinc plated pressed steel gearbox case and front cover with 4 point fixing. Spur gears running on fixed steel spindles. High performance polymer gears, stainless steel shaft, ball race front and back bearing. Maximum temperature 80°C at the gearcase.

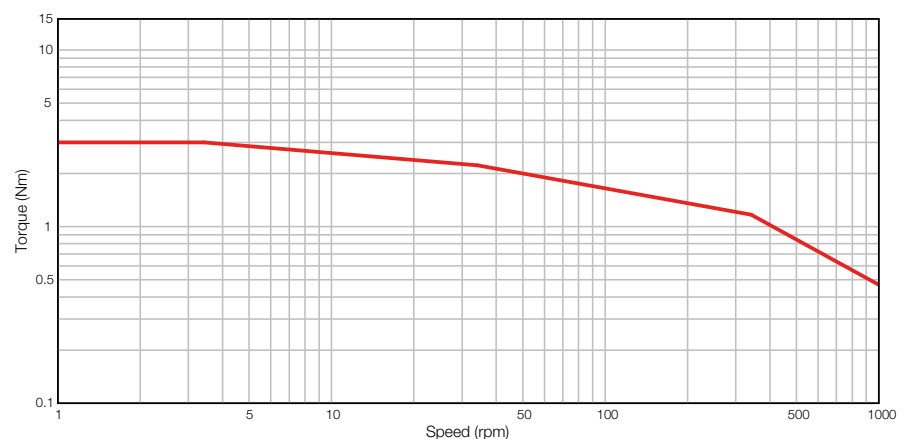
TYPE 332



TYPE 372 Spur Ovoid

Zinc plated pressed steel gearbox case and front cover with 4 point fixing. Spur gears running on fixed steel spindles. High performance polymer gears, stainless steel shaft, ball race front and back bearing. Maximum temperature 80°C at the gearcase.

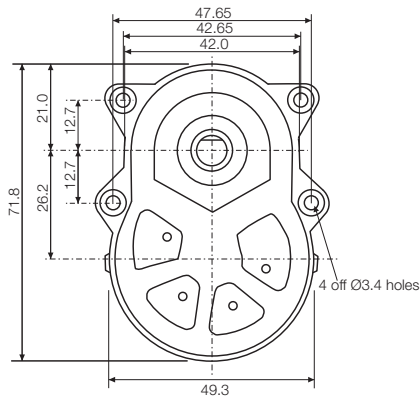
TYPE 372



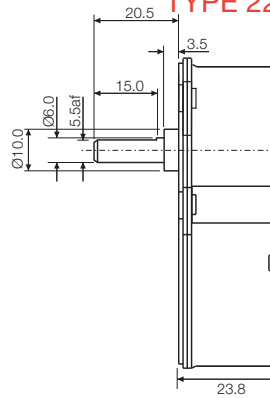


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Units: mm

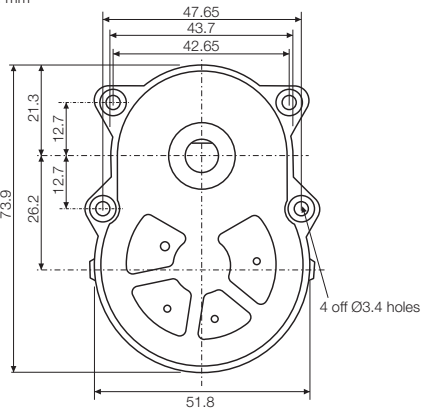


TYPE 220

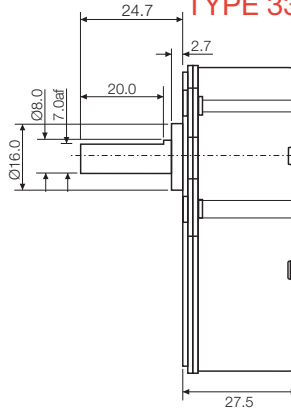


Ratio		
15:1	108:1	800:1
20:1	120:1	1080:1
25:1	160:1	1600:1
30:1	200:1	2560:1
125:3	240:1	3200:1
50:1	300:1	4320:1
60:1	400:1	
80:1	640:1	

Units: mm

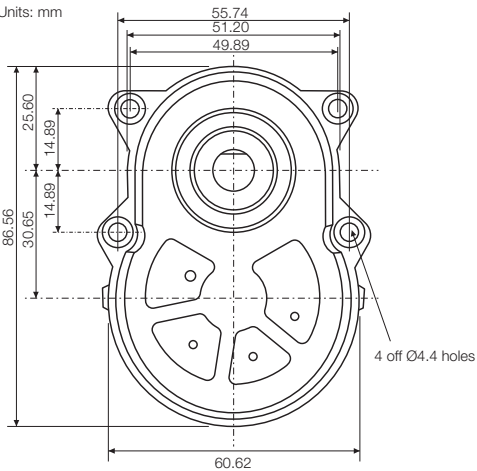


TYPE 332

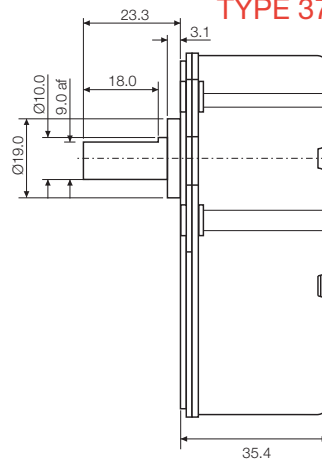


Ratio	
~5:1	~60:1
~7:1	~75:1
~8:1	~93:1
~9:1	~117:1
~13:1	~187:1
~14:1	~224:1
~17:1	~299:1
~23:1	~598:1
~37:1	~1196:1
~48:1	

Units: mm



TYPE 372



Ratio	
~5:1	~75:1
~7:1	~93:1
~8:1	~117:1
~13:1	~187:1
~17:1	~224:1
~23:1	~299:1
~37:1	~1196:1
~60:1	

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Permanent Magnet and Hybrid Stepping Motors

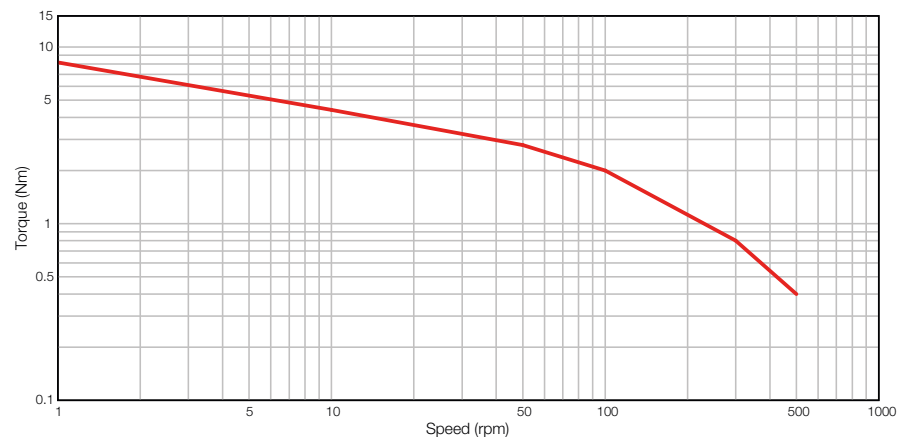
Gearbox Information



TYPE 330 Hybrid

Zinc plated pressed steel gearbox case and front cover with 4 point fixing. Spur gears running on fixed steel spindles leading to a planetary output stage. High performance polymer gears, stainless steel shaft, ball race front and back bearing. Maximum temperature 80°C at the gearcase.

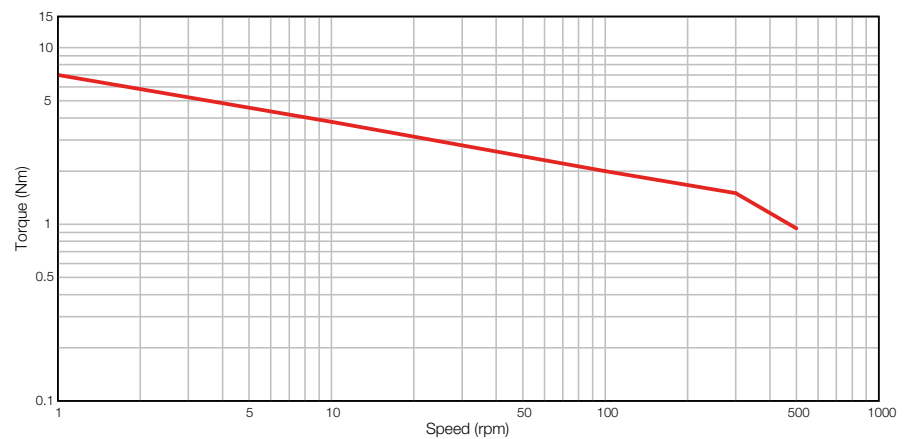
TYPE 330



TYPE 360 Hybrid

Zinc plated pressed steel gearbox case and front cover with 4 point fixing. Spur gears running on fixed steel spindles leading to a planetary output stage. High performance polymer gears, stainless steel shaft, ball race front and back bearing. Maximum temperature 80°C at the gearcase.

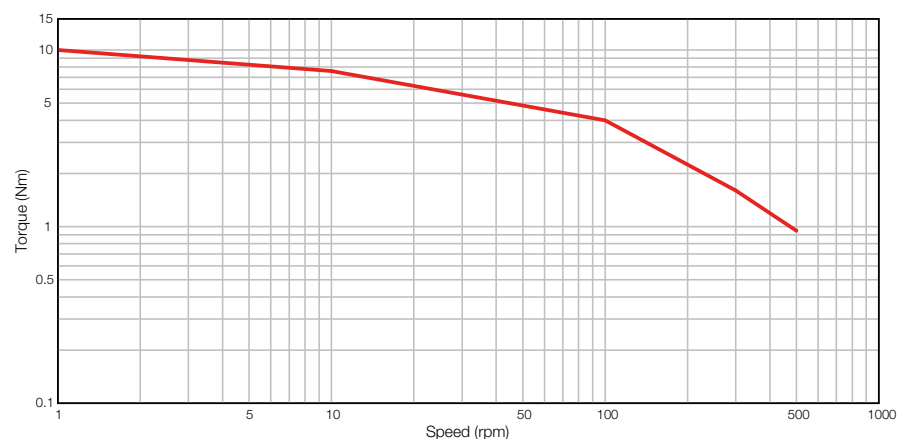
TYPE 360

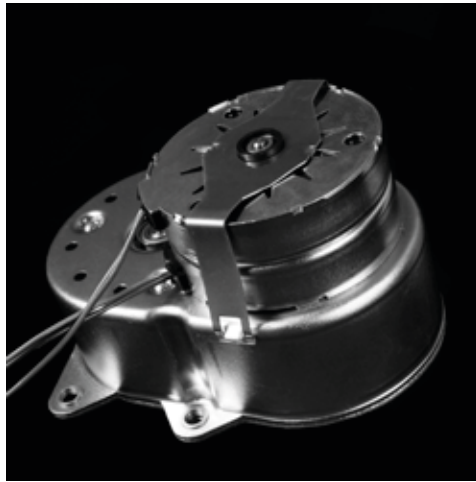


TYPE 370 Hybrid

Zinc plated pressed steel gearbox case and front cover with 4 point fixing. Spur gears running on fixed steel spindles leading to a planetary output stage. High performance polymer gears, stainless steel shaft, ball race front and back bearing. Maximum temperature 80°C at the gearcase.

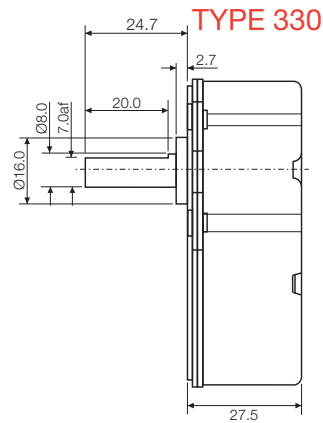
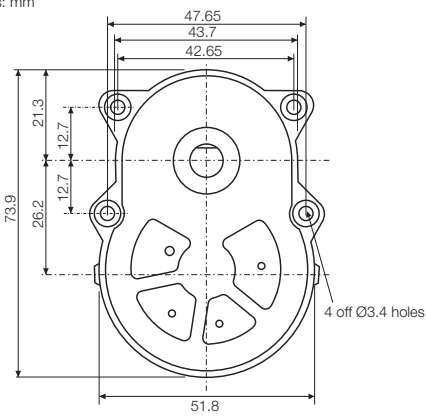
TYPE 370





Full technical details are available from the component data sheets at www.rotalink.com

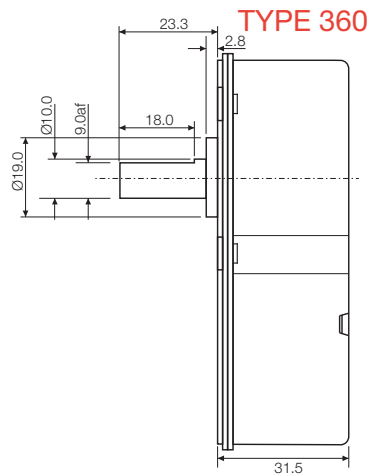
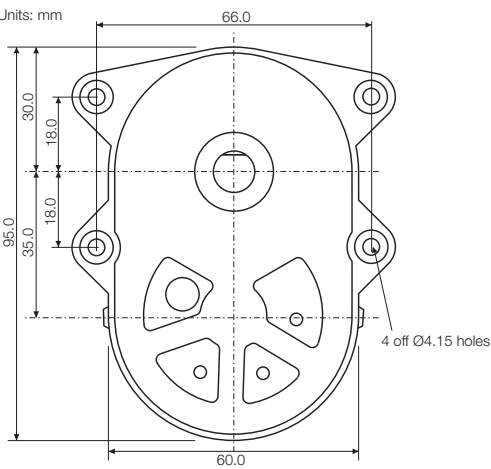
Units: mm



Ratio

~16:1	~205:1
~22:1	~256:1
~29:1	~320:1
~32:1	~400:1
~43:1	~639:1
~48:1	~767:1
~58:1	~1023:1
~80:1	~2046:1
~128:1	~4092:1
~164:1	

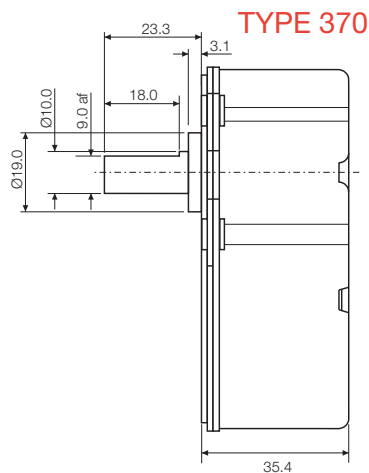
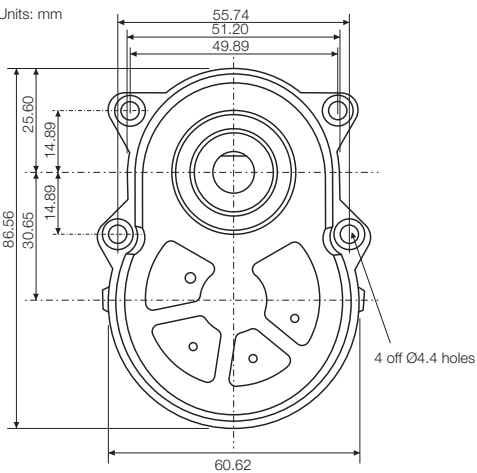
Units: mm



Ratio

~34:1	~152:1
~43:1	~244:1
~57:1	~457:1
~82:1	~610:1
~109:1	~1220:1

Units: mm



Ratio

~16:1	~256:1
~22:1	~320:1
~29:1	~400:1
~43:1	~639:1
~58:1	~767:1
80:1	~1023:1
~128:1	~4092:1
~205:1	

61 Cam Timers

Pneumatic and Electrical

For the customer that needs a simple timing/control device we offer this widest range of Cam Timers. Up to eight stations with the choice of either synchronous or intrinsically safe pneumatic motors, both drives have extensive gearbox ratio options. This rugged system gives huge flexibility to the OEM designer.



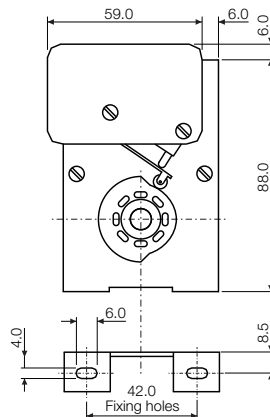
TYPE OEM

Compact electric motor driven interval timer with adjustable cams operating microswitches.

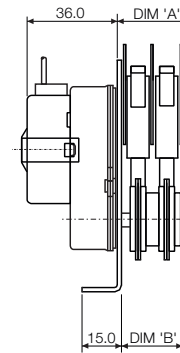
Electrical supply 110/240V, 50/60Hz
 Switch rating 16A 240V change over
 Number switches 1,2
 Switch connections .25" spade terminals
 Motor connections .25" spade terminals
 Cycle times Minutes: 1,2,12*,72*,120

*not available with 60Hz electrical supply.

Units: mm



DIM 'A' and 'B' dependent upon number of switches. See data sheet for dimension.



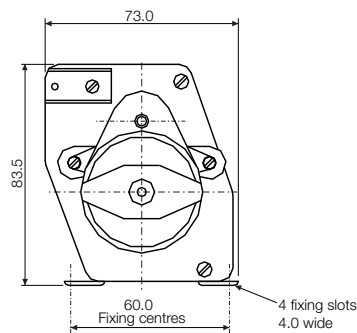
TYPE OEM

TYPE D63

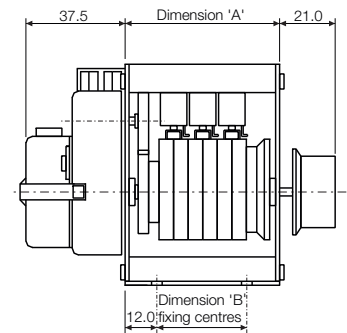
Electric motor driven sequential timer. Alloy frame, 0.5" hexagon camshaft with adjustable ratchet lock cams operating replaceable microswitches.

Electrical supply 110/240V, 50/60Hz
 Switch rating 16A 240V change over
 Number switches 2,3,4,5,6,8
 Switch connections .25" spade terminals
 Motor connections .25" spade terminals
 Cycle times Seconds: 6,10,15,20
 Minutes: 1,2,4,6,10, 18,20,30
 Hours: 2,4,8,12,16,24

Units: mm



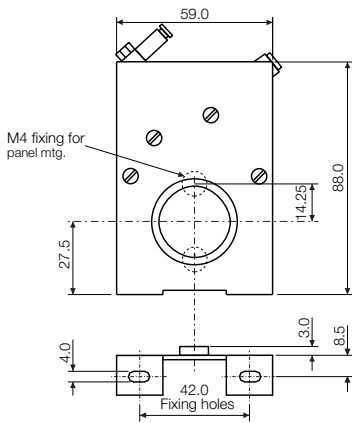
DIM 'A' and 'B' dependent upon number of switches. See data sheet for dimension.



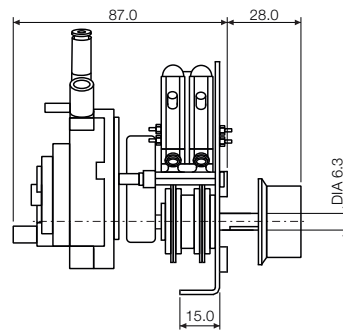
TYPE D63



Units: mm



TYPE HSMP2

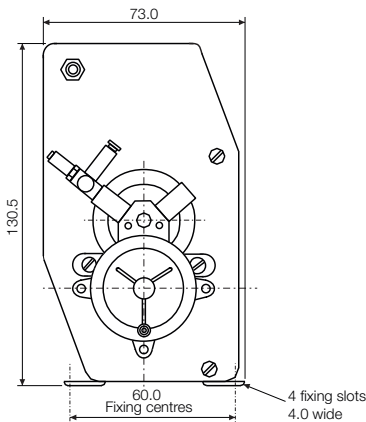


TYPE HSMP2

Pneumatic motor driven handset timer with adjustable cams operating poppet valves.

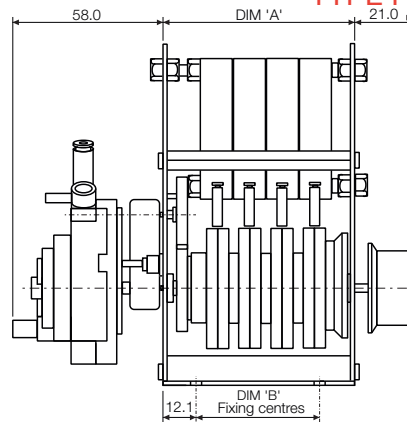
Supply pressure	25 - 100 psi
Valves	Two x 3 Port Poppet valve
Motor connections	4mm OD push-on
Valve connections	4mm OD push-on
Cycle times	Minutes: 1,4,10

Units: mm



DIM 'A' and 'B' dependent upon number of valves. See data sheet for dimension.

TYPE PN63

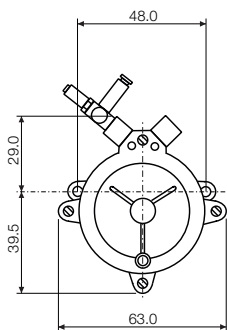


TYPE PN63

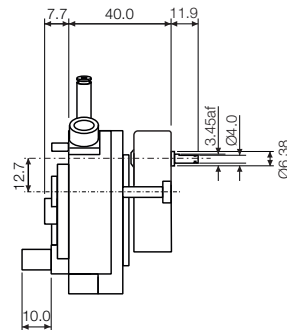
Pneumatic motor driven continuously cycling camshaft timer. Alloy frame, 0.5" hexagon camshaft with adjustable ratchet lock cams operating lever activated 3/2 spool valves.

Supply pressure	25 - 100 psi
Valves	KV1643
Number valves	2,4,5
Motor connections	4mm push-on
Valve connections	4mm push in fitting
Cycle times	Minutes: 4,8,10,20

Units: mm



TYPE GMG



TYPE GMG

Pneumatic driven motor fitted to diecast gearbox. Moulded enclosure with turbine rotor and centrifugal governor. Ideal for hazardous environments.

Supply pressure	25 - 100 psi
Motor connections	4mm push-on
Rotor speed	1200rpm nominal
Cycle times	Minutes: 4,6,10,20 Hours: 1,16



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Services to OEMs

A centre of excellence for the design and supply of miniature power transmission products.

There are times when you will have a specification that can only be met by a unique solution. We have considerable experience of working on such projects offering specialised design expertise supported by a first class prototyping capability.

Our flexible approach involves understanding your needs in terms of specification, cost, timing and finance at the outset. This enables us to deliver you a design and supply service that is uncompromising.

Our design philosophy carries a triple message:

- Take known technologies and repackage them in fresh and novel ways
- Awareness of the opportunity presented by today's materials
- Cost and quality established at the design stage

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Cutting time to market

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Design and development cost

We are always prepared to consider creative ways of moving a project forward, and we are committed to joining you in realising your market advantage.

Tooling, a positive stance

If you prefer to delegate the responsibility and cost of your tooling to a key supplier you can rely upon our support.

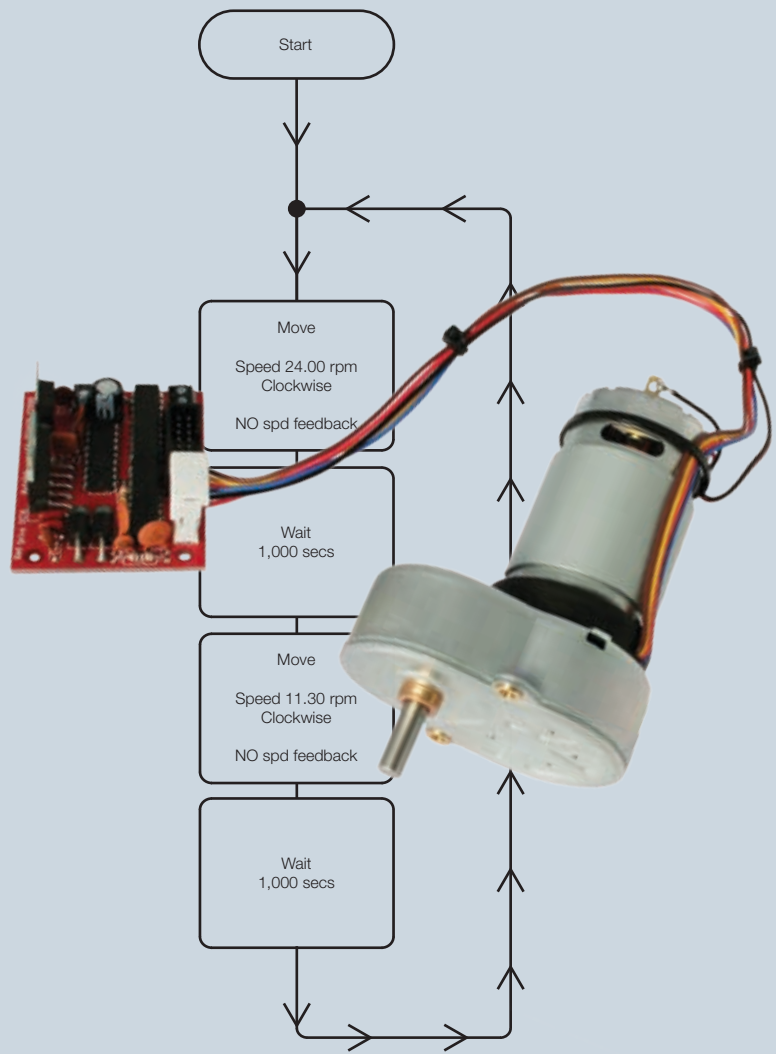
Volumes

Market projections are volatile. We recognise this and join with you as you develop your market.

From prototypes to full scale supply

A first class multi-disciplined manufacturing capability enables us to deliver prototypes, pre-production, and where possible, full supply programmes.





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