

# permanent magnet catalogue 2008



Distribución de componentes  
eléctricos y electrónicos

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# PARVALUX®

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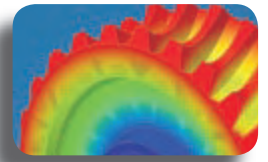
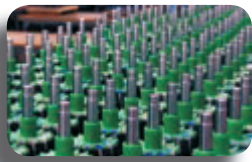
Version: 1.0

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## our technology

Our motor technologies span from AC induction through to DC brushless and our gearbox know-how covers practically all types – from spur/helical through to worm and planetary.

### Motor types:

- » AC induction
- » AC/DC series
- » DC shunt
- » DC permanent magnet
- » DC brushless

### Gearbox types:

- » Worm and wheel
- » Double-reduction
- » Multi-spur
- » In-line multi-spur
- » Planetary

Over the years technological innovations and contemporary manufacturing methodologies, such as lean enterprise and six sigma, have changed the way we produce our products; but at the heart of our business we have preserved a solid ethos to provide high quality, reliable products at globally competitive prices.

Our reliability is founded upon sixty years of success. Today, with an installed base of over five million, customers all over the world rely on Parvalux products to keep their products and their businesses performing.

We have also built an enviable reputation for providing bespoke designed geared motors that meet our customers exacting needs. Our capacity to provide customised units in small or vast quantities, at globally competitive prices is, we believe, unmatched.

We continue to grow by focussing on the values that mean the same today as they did sixty years ago: choice, reliability, customisation.



## our facility

There are an increasing number of Original Equipment Manufacturers (OEM's) who need a bespoke geared motor solution.

It is for this reason that Parvalux have invested heavily in the technology and the people required to design and develop products that meet the demands of the individual customer.

By utilising 3D-modelling and Finite Element Analysis (FEA) we are able to produce prototypes at our UK facility quickly and efficiently.

Our lean manufacturing capability then enables us to rapidly convert the prototype into a cost-effective solution that fulfils budget and performance needs perfectly.

Our aim is to ensure that we serve the widest possible range of applications within the low-powered geared motor market.

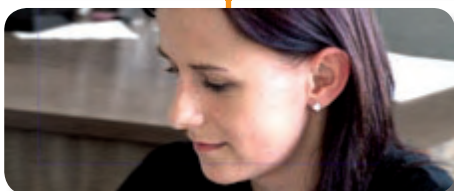
Our extensive range enables customers to choose from an almost infinite number of gear combinations to meet the output speed and torque requirements of their desired application.

Our key strength is our ability to customise our products with a whole host of extras; such as custom built flanges and shafts, tailored windings, mechanical cams and switches – as well as customised wiring and connections.

We provide single, double or hollow shaft as standard. In addition, we can provide custom mounting kits to interface the Parvalux gearbox with your existing mounting.

To ensure the overall cost remains competitive we apply lean manufacturing techniques at our production facilities and manage a quality-driven global supply chain.

## our team

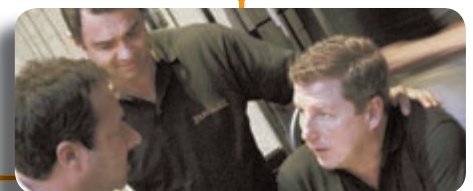
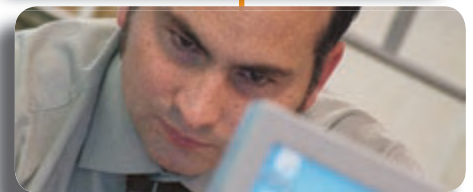


If there is one definable difference in Parvalux, it is our people. Our ability to develop, produce and market innovative geared motor solutions is totally dependant on our team.

Recent months have seen a significant recruitment drive to hire world-class engineers, marketers and designers to help build the future Parvalux.

These newcomers bring not only a wealth of experience from within our industry; they have immediately raised our ability to innovate and improve almost every aspect of business.

This has already delivered a quantum leap in our performance in 2008 and will continue to do so over the next decade.



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# PARVALUX

## contents

### engineering reliability into every product for over sixty years

Founded in 1947, as one of the UK's first manufacturers of small geared motors, Parvalux has built a tremendous reputation for offering one of the worlds most extensive and reliable ranges of customisable AC and DC geared motor units. Today, Parvalux continues to be a successful, privately-owned and run British business with distributors in 22 countries.

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E&OE (errors and omissions excepted); in line with our policy of continuous improvement all data is subject to change.  
All drawings and product representations enclosed herein are not to scale.



geared motors



legendary reliability



totally customisable

# at a glance



worm S  
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# PM motor overview

## Ventilated (IP21)

				
Full load rpm	PM1	PM2	PM6	PM60
	Continuous power (Watts)			
1500	45	60	75	105
2000	60	80	100	140
3000	90	120	150	210
4000	120	160	200	280
5000	150	200	250	350
Page	6	8	10	12

## Totally enclosed (IP54)

					
Full load rpm	PM7	PM8	PM9	PM10	PM11
	Continuous power (Watts)				
1500	7.5	13	19	23	33
2000	10	17	25	30	45
3000	15	25	38	45	65
4000	20	33	50	60	90
5000	25	40	62	75	110
Page	14	16	18	20	22

						
Full load rpm	PM3	PM4	PM5	PM50	PM90	PM95
	Continuous power (Watts)					
1500	33	45	60	80	113	168
2000	45	60	80	105	150	225
3000	68	90	120	155	225	337
4000	90	120	160	205	300	450
5000	112	150	200	255	375	562
Page	24	26	28	30	32	34

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# PM1 motor data

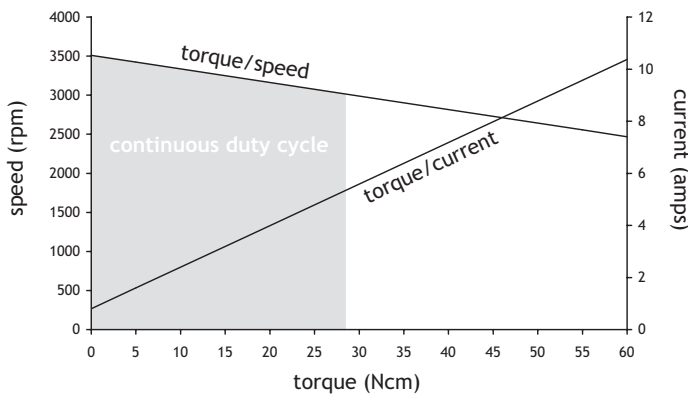
POWER	45 - 250 Watts
TYPE	Permanent magnet DC brushed motor
SPEED*	1500 - 5000 rpm
VOLTAGE*	12V - 220V DC available range
CONNECTION*	Flying leads 30cm flexible
SHAFT*	Single or double ended on request
INERTIA	$2.60 \times 10^{-4} \text{kgm}^2$
WEIGHT	2.11 kg
RADIAL LOAD†	180 N
INSULATION CLASS	F
IP PROTECTION	IP21
OPTIONS	See page 36



PM1 pictured with Parvalux standard flange

SPEED (Rpm)	POWER (WATTS)			TORQUE (NM)			CURRENT (A)**			
	CONT	1 HOUR	15 MIN	CONT	1 HOUR	15 MIN	12V	24V	50V	
1500	45	55	75	0.3	0.4	0.5	0.8	0.5	0.18	No load current (A)
							6.6	2.3	1.38	Full load current (A)
2000	60	75	100	0.3	0.4	0.5	0.9	0.5	0.18	No load current (A)
							7.8	3.8	1.5	Full load current (A)
3000	90	110	150	0.3	0.4	0.5	1.3	0.8	0.4	No load current (A)
							11.9	5.3	2.5	Full load current (A)
4000	120	150	200	0.3	0.4	0.5	1.5	0.6	0.6	No load current (A)
							13	6.8	3	Full load current (A)
5000	150	180	250	0.3	0.3	0.5	**Please contact sales support for load currents			

## PM1 • 3000 rpm • 24V • 90W



\* We produce all our motors in the UK and therefore voltage, speed, connection and shaft configuration can be customised to your exact requirements

† Based 10mm from motor mounting face with plain shaft extension

\*\* Please contact our technical sales team for current ratings for alternative voltages and/or speeds

### Motor construction

The motor frame comprises pressure die castings accurately located together ensuring a concentric air gap with correct bearing alignment. The armature laminations are pressed onto a precision steel shaft and are then statically and dynamically balanced. The armature is wound with first class quality synthetic covered copper wire manufactured to EN60085:2004 class "F" and then impregnated and baked in our automatic plant and accordingly can be considered to be tropically impregnated for all practical purposes.

### Motor Enclosures

To IEC 34-5 and EN 60034: part 5 and IEC 34-6 and B.S. EN 60034-6. Please refer to the individual product pages to identify the corresponding ingress protection level (IP rating).

### Bearings

We fit only first class shielded ball bearings into our motor and gearboxes which are spring loaded for quiet running. Typical operating temperatures range from -30°C to +120°C.

### Brush gear

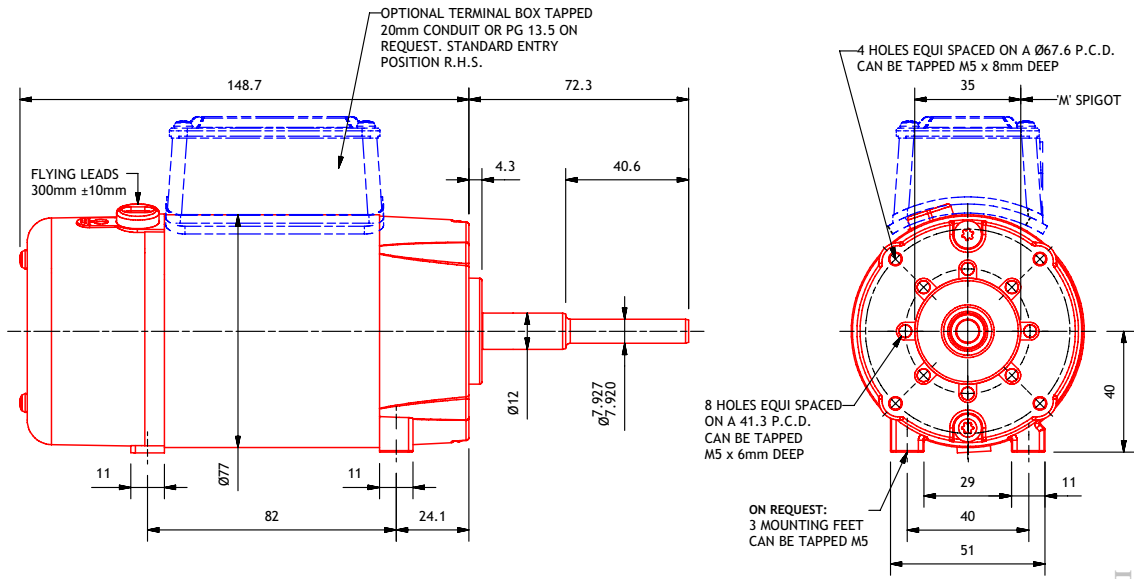
We provide an adjustable rocker type for maximum brush life and good commutation with easily accessible brushes. To achieve maximum brush life a form factor on the supply voltage as near to 1 as possible would be required.

### Temperature

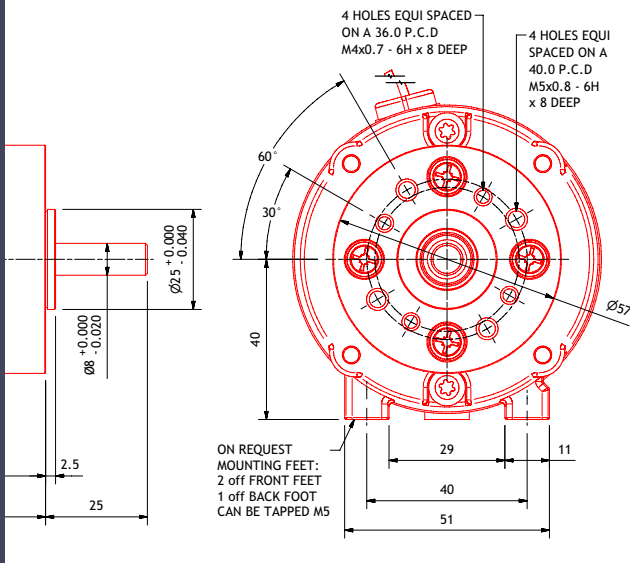
The PM1 is built with Class "F" insulation to EN60085:2004 which allows a temperature rise of 115°C based on an ambient of 40°C. These figures are with the motor running in normal working conditions in free air and not in any form of enclosure. Caution: Under full load the heat of the motor casing will be such that it is NOT possible to physically handle for any length of time.

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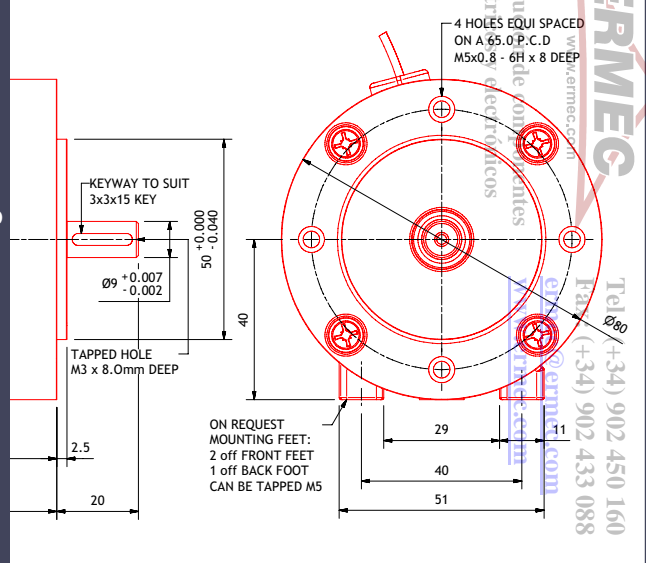
Parvalux standard flange/mount



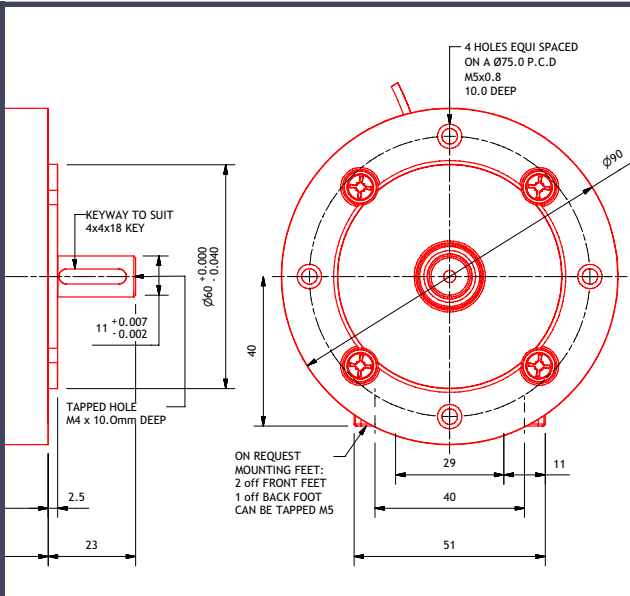
IEC Eurostandard flange/mount



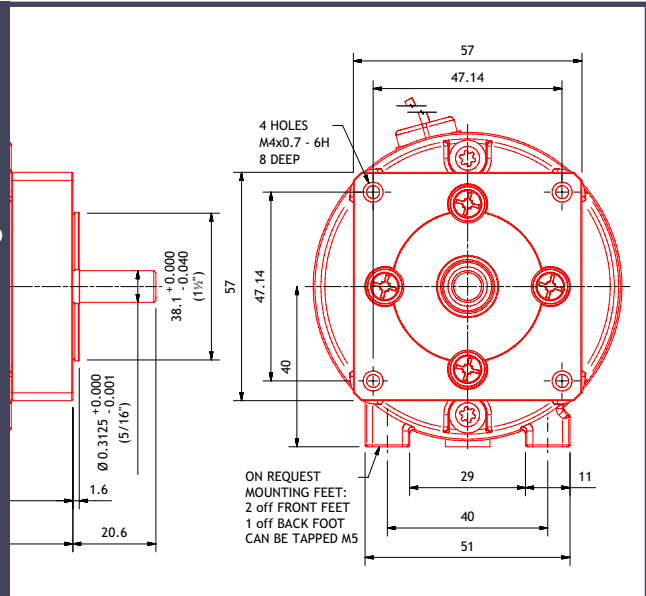
IEC B14 M56 flange/mount



IEC B14 M63 flange/mount



NEMA standard flange/mount



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# PM2 motor data

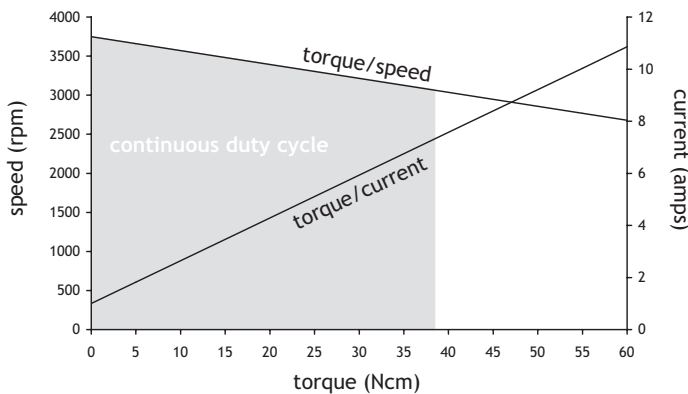
POWER	60 - 330 Watts
TYPE	Permanent magnet DC brushed motor
SPEED*	1500 - 5000 rpm
VOLTAGE*	12V - 220V DC available range
CONNECTION*	Flying leads 30cm flexible
SHAFT*	Single or double ended on request
INERTIA	$2.83 \times 10^{-4} \text{kgm}^2$
WEIGHT	2.46 kg
RADIAL LOAD†	180 N
INSULATION CLASS	F
IP PROTECTION	IP21
OPTIONS	See page 36



PM2 pictured with Parvalux standard flange

SPEED (Rpm)	POWER (WATTS)			TORQUE (NM)			CURRENT (A)**			
	CONT	1 HOUR	15 MIN	CONT	1 HOUR	15 MIN	12V	24V	50V	
1500	60	75	100	0.4	0.5	0.6	0.58	0.42	0.19	No load current (A)
							6.49	3.29	1.76	Full load current (A)
2000	80	100	130	0.4	0.5	0.6	1.1	0.38	0.33	No load current (A)
							9.7	4.5	2.2	Full load current (A)
3000	120	150	200	0.4	0.5	0.6	2.3	1	0.7	No load current (A)
							14.1	7.3	4.1	Full load current (A)
4000	160	200	265	0.4	0.5	0.6	2.3	1.1	0.9	No load current (A)
							21	8.2	4.2	Full load current (A)
5000	200	245	330	0.4	0.5	0.6	**Please contact sales support for load currents			

## PM2 • 3000 rpm • 24V • 120W



\* We produce all our motors in the UK and therefore voltage, speed, connection and shaft configuration can be customised to your exact requirements

† Based 10mm from motor mounting face with plain shaft extension

\*\* Please contact our technical sales team for current ratings for alternative voltages and/or speeds

### Motor construction

The motor frame comprises pressure die castings accurately located together ensuring a concentric air gap with correct bearing alignment. The armature laminations are pressed onto a precision steel shaft and are then statically and dynamically balanced. The armature is wound with first class quality synthetic covered copper wire manufactured to EN60085:2004 class "F" and then impregnated and baked in our automatic plant and accordingly can be considered to be tropically impregnated for all practical purposes.

### Motor Enclosures

To IEC 34-5 and EN 60034: part 5 and IEC 34-6 and B.S. EN 60034-6. Please refer to the individual product pages to identify the corresponding ingress protection level (IP rating).

### Bearings

We fit only first class shielded ball bearings into our motor and gearboxes which are spring loaded for quiet running. Typical operating temperatures range from -30°C to +120°C.

### Brush gear

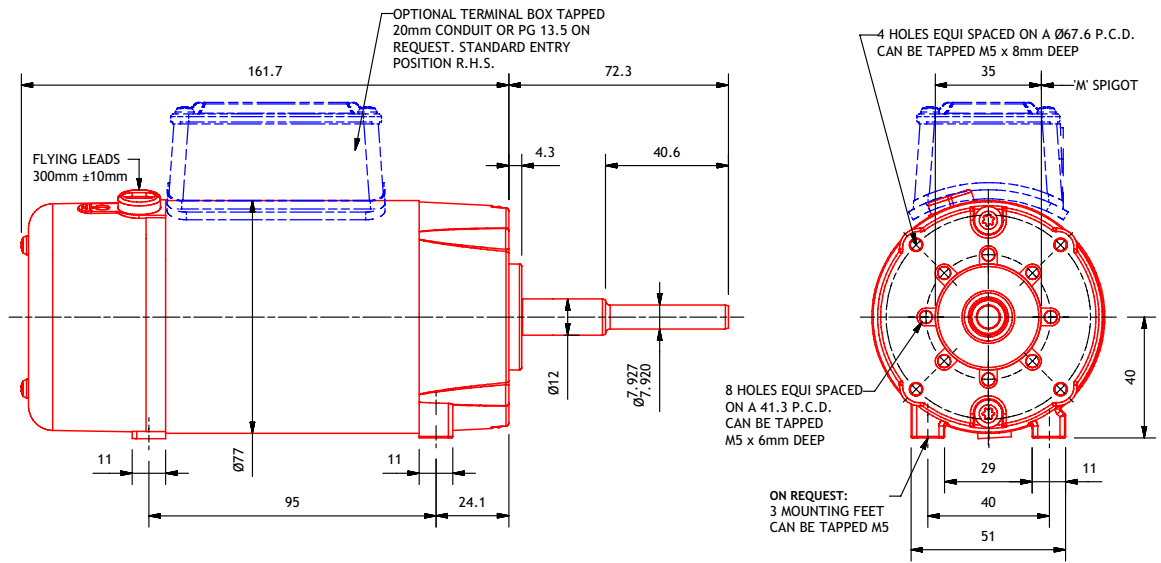
We provide an adjustable rocker type for maximum brush life and good commutation with easily accessible brushes. To achieve maximum brush life a form factor on the supply voltage as near to 1 as possible would be required.

### Temperature

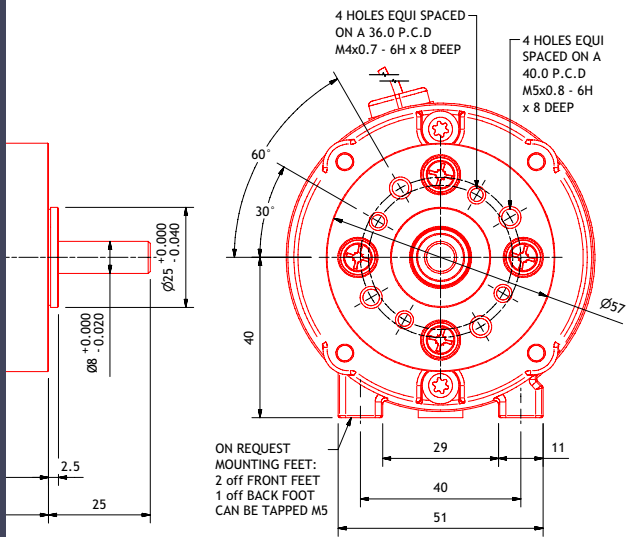
The PM2 is built with Class "F" insulation to EN60085:2004 which allows a temperature rise of 115°C based on an ambient of 40°C. These figures are with the motor running in normal working conditions in free air and not in any form of enclosure. Caution: Under full load the heat of the motor casing will be such that it is NOT possible to physically handle for any length of time.

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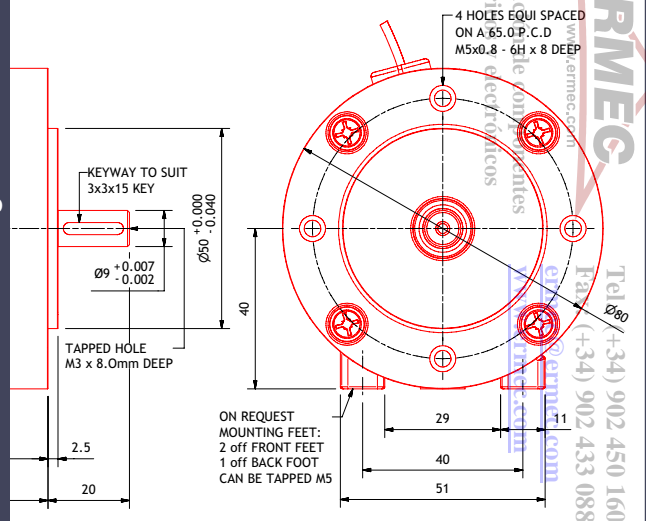
Parvalux standard flange/mount



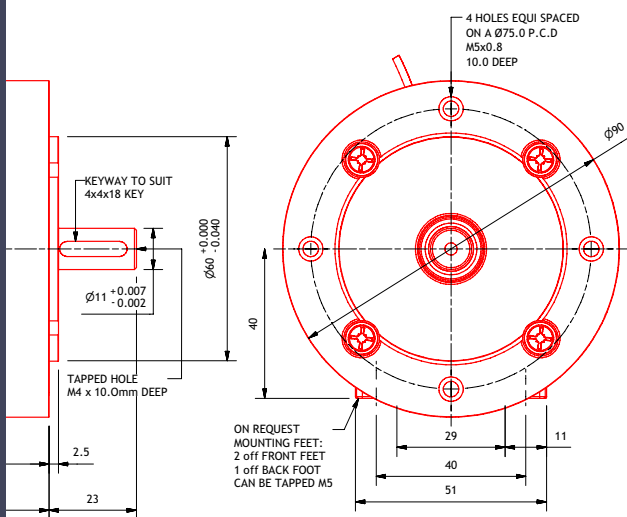
IEC Eurostandard flange/mount



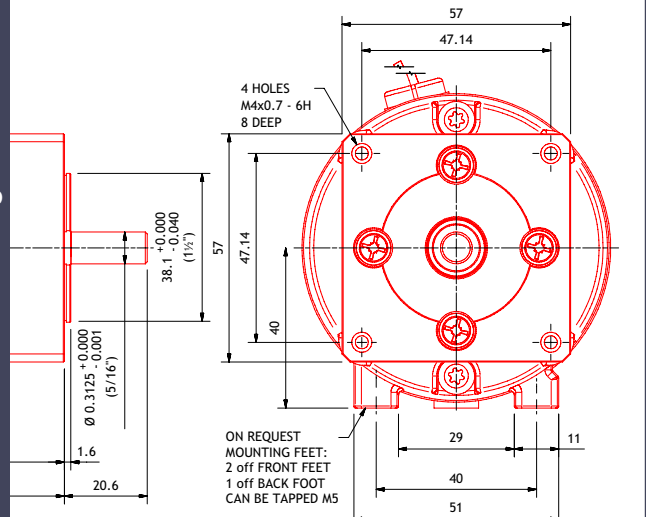
IEC B14 M56 flange/mount



IEC B14 M63 flange/mount



NEMA standard flange/mount



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# PM6 motor data

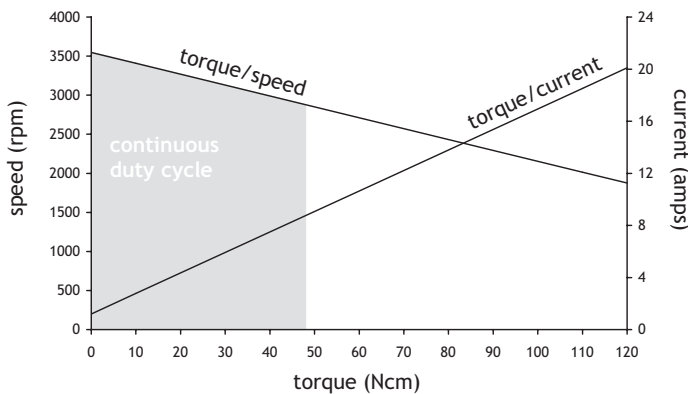
POWER	75 - 410 Watts
TYPE	Permanent magnet DC brushed motor
SPEED*	1500 - 5000 rpm
VOLTAGE*	12V - 220V DC available range
CONNECTION*	Flying leads 30cm flexible
SHAFT*	Single or double ended on request
INERTIA	$3.25 \times 10^{-4} \text{kgm}^2$
WEIGHT	2.65 kg
RADIAL LOAD†	180 N
INSULATION CLASS	F
IP PROTECTION	IP21
OPTIONS	See page 36



PM6 pictured with Parvalux standard flange

SPEED (Rpm)	POWER (WATTS)			TORQUE (NM)			CURRENT (A)**			
	CONT	1 HOUR	15 MIN	CONT	1 HOUR	15 MIN	12V	24V	50V	
1500	75	90	125	0.5	0.6	0.8	0.8	0.3	0.26	No load current (A)
							8.05	3.9	2.18	Full load current (A)
2000	100	120	165	0.5	0.6	0.8	1	0.6	0.16	No load current (A)
							9.3	5.3	2.9	Full load current (A)
3000	150	180	245	0.5	0.6	0.8	1.7	1.2	0.67	No load current (A)
							17.2	8.7	3.9	Full load current (A)
4000	200	240	330	0.5	0.6	0.8	2.1	1.3	0.6	No load current (A)
							20.6	10	5	Full load current (A)
5000	250	300	410	0.5	0.6	0.8	**Please contact sales support for load currents			

## PM6 • 3000 rpm • 24V • 150W



\* We produce all our motors in the UK and therefore voltage, speed, connection and shaft configuration can be customised to your exact requirements

† Based 10mm from motor mounting face with plain shaft extension

\*\* Please contact our technical sales team for current ratings for alternative voltages and/or speeds

### Motor construction

The motor frame comprises pressure die castings accurately located together ensuring a concentric air gap with correct bearing alignment. The armature laminations are pressed onto a precision steel shaft and are then statically and dynamically balanced. The armature is wound with first class quality synthetic covered copper wire manufactured to EN60085:2004 class "F" and then impregnated and baked in our automatic plant and accordingly can be considered to be tropically impregnated for all practical purposes.

### Motor Enclosures

To IEC 34-5 and EN 60034: part 5 and IEC 34-6 and B.S. EN 60034-6. Please refer to the individual product pages to identify the corresponding ingress protection level (IP rating).

### Bearings

We fit only first class shielded ball bearings into our motor and gearboxes which are spring loaded for quiet running. Typical operating temperatures range from -30°C to +120°C.

### Brush gear

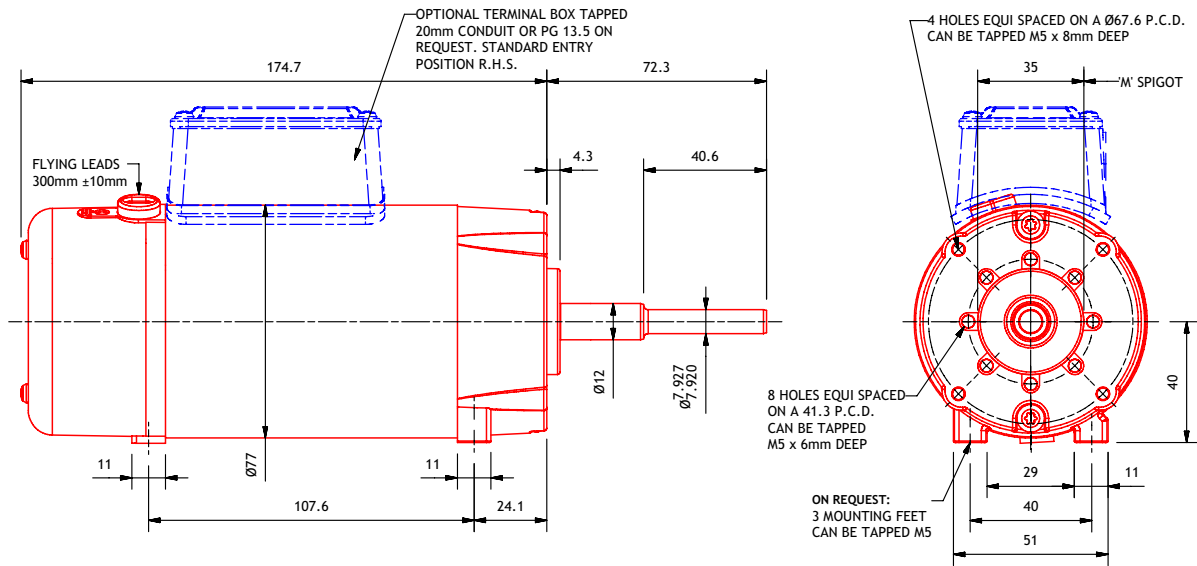
We provide an adjustable rocker type for maximum brush life and good commutation with easily accessible brushes. To achieve maximum brush life a form factor on the supply voltage as near to 1 as possible would be required.

### Temperature

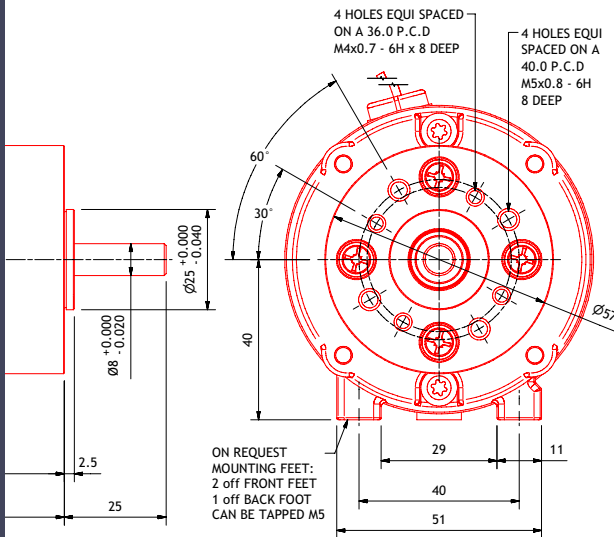
The PM6 is built with Class "F" insulation to EN60085:2004 which allows a temperature rise of 115°C based on an ambient of 40°C. These figures are with the motor running in normal working conditions in free air and not in any form of enclosure. Caution: Under full load the heat of the motor casing will be such that it is NOT possible to physically handle for any length of time.

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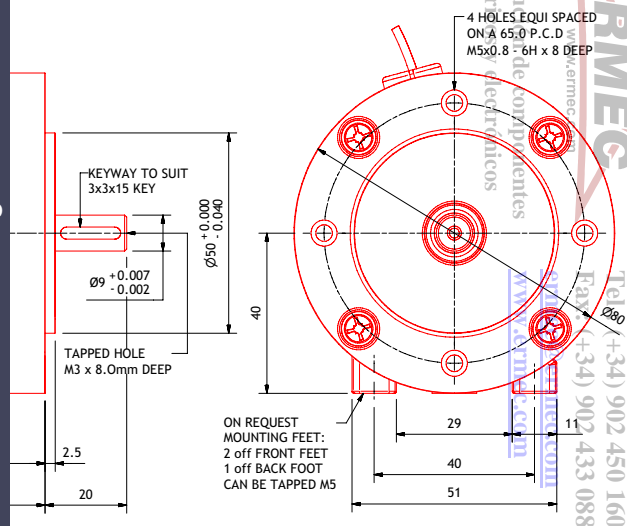
Parvalux standard flange/mount



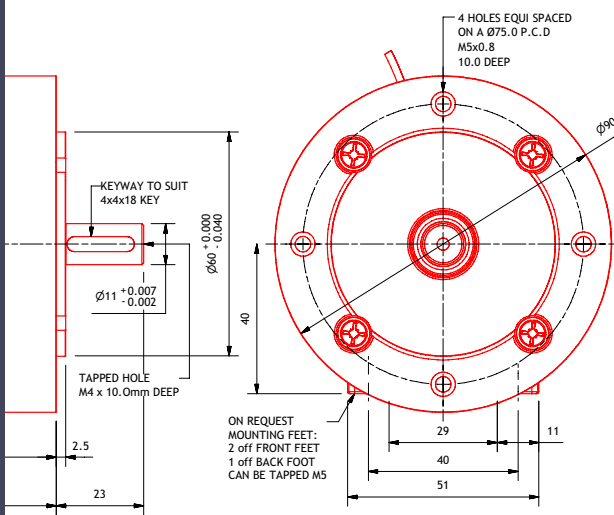
IEC Eurostandard flange/mount



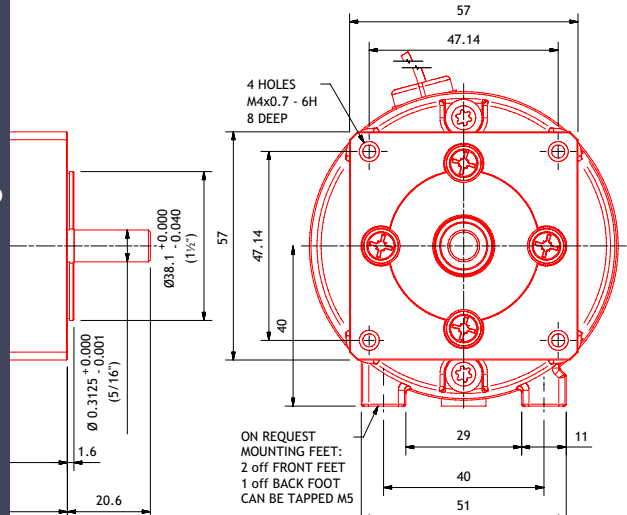
IEC B14 M56 flange/mount



IEC B14 M63 flange/mount



NEMA standard flange/mount



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# PM60 motor data

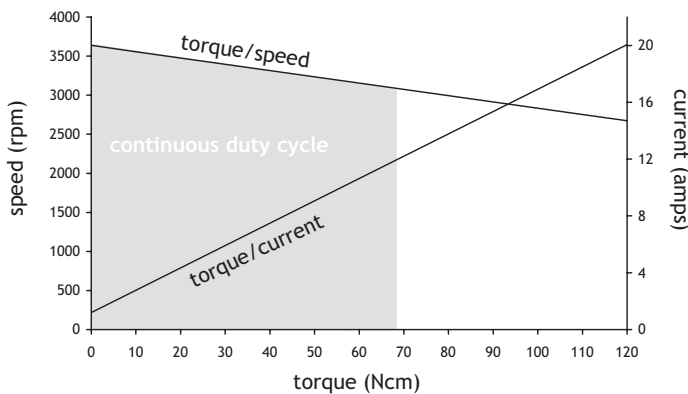
POWER	105 - 575 Watts
TYPE	Permanent magnet DC brushed motor
SPEED*	1500 - 5000 rpm
VOLTAGE*	12V - 220V DC available range
CONNECTION*	Flying leads 30cm flexible
SHAFT*	Single or double ended on request
INERTIA	$0.46 \times 10^{-3} \text{ kgm}^2$
WEIGHT	2.9 kg
RADIAL LOAD†	180 N
INSULATION CLASS	F
IP PROTECTION	IP21
OPTIONS	See page 36



PM60 pictured with Parvalux standard flange

SPEED (Rpm)	POWER (WATTS)			TORQUE (NM)			CURRENT (A)**			
	CONT	1 HOUR	15 MIN	CONT	1 HOUR	15 MIN	12V	24V	50V	
1500	105	128	172	0.7	0.8	1.1	1.3	0.5	0.25	No load current (A)
							11.4	6.18	3.1	Full load current (A)
2000	140	170	230	0.7	0.8	1.1	1.8	0.9	0.45	No load current (A)
							18.7	7.1	3.6	Full load current (A)
3000	210	255	345	0.7	0.8	1.1	2.5	1.2	0.7	No load current (A)
							22.9	11.7	5.5	Full load current (A)
4000	280	340	460	0.7	0.8	1.1	3.3	1.5	0.8	No load current (A)
							27	14.1	7.2	Full load current (A)
5000	350	425	575	0.7	0.8	1.1	**Please contact sales support for load currents			

## PM60 • 3000 rpm • 24V • 210W



\* We produce all our motors in the UK and therefore voltage, speed, connection and shaft configuration can be customised to your exact requirements

† Based 10mm from motor mounting face with plain shaft extension

\*\* Please contact our technical sales team for current ratings for alternative voltages and/or speeds

### Motor construction

The motor frame comprises pressure die castings accurately located together ensuring a concentric air gap with correct bearing alignment. The armature laminations are pressed onto a precision steel shaft and are then statically and dynamically balanced. The armature is wound with first class quality synthetic covered copper wire manufactured to EN60085:2004 class "F" and then impregnated and baked in our automatic plant and accordingly can be considered to be tropically impregnated for all practical purposes.

### Motor Enclosures

To IEC 34-5 and EN 60034: part 5 and IEC 34-6 and B.S. EN 60034-6. Please refer to the individual product pages to identify the corresponding ingress protection level (IP rating).

### Bearings

We fit only first class shielded ball bearings into our motor and gearboxes which are spring loaded for quiet running. Typical operating temperatures range from -30°C to +120°C.

### Brush gear

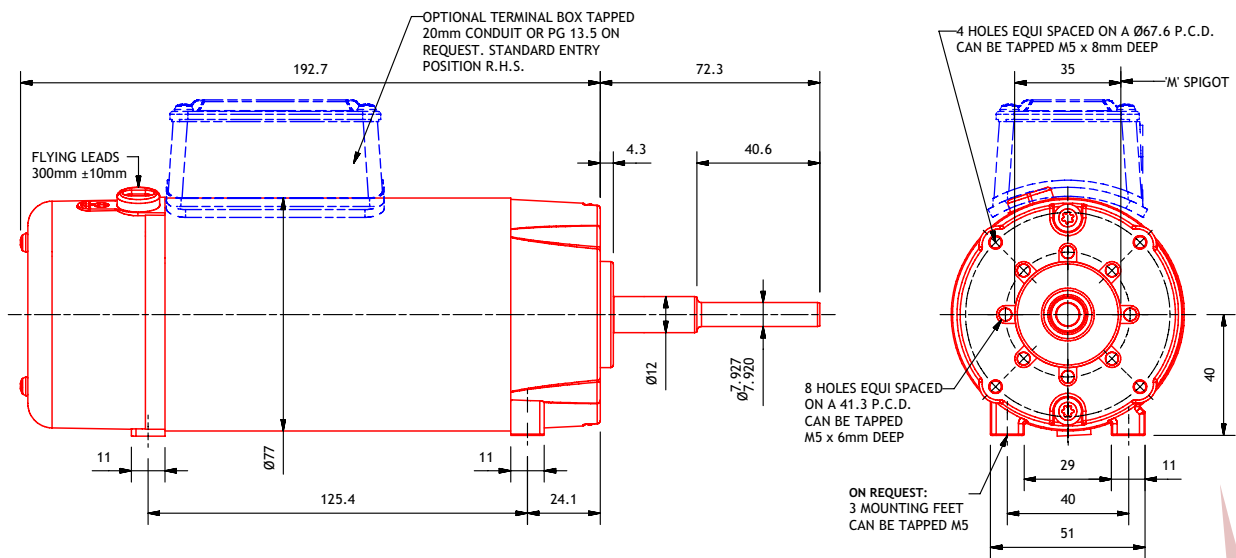
We provide an adjustable rocker type for maximum brush life and good commutation with easily accessible brushes. To achieve maximum brush life a form factor on the supply voltage as near to 1 as possible would be required.

### Temperature

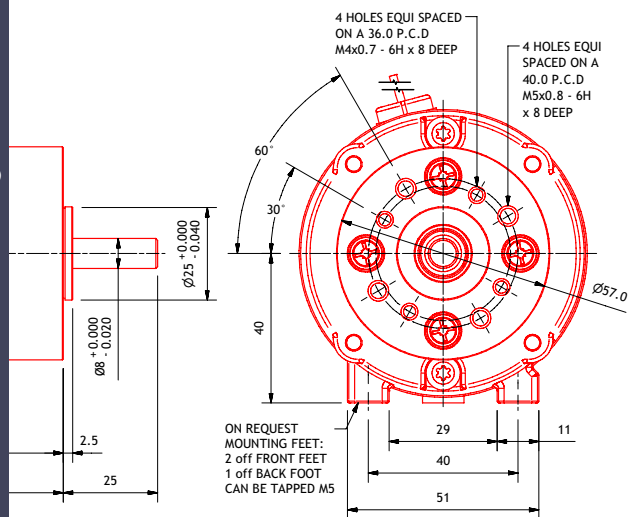
The PM60 is built with Class "F" insulation to EN60085:2004 which allows a temperature rise of 115°C based on an ambient of 40°C. These figures are with the motor running in normal working conditions in free air and not in any form of enclosure. Caution: Under full load the heat of the motor casing will be such that it is NOT possible to physically handle for any length of time.

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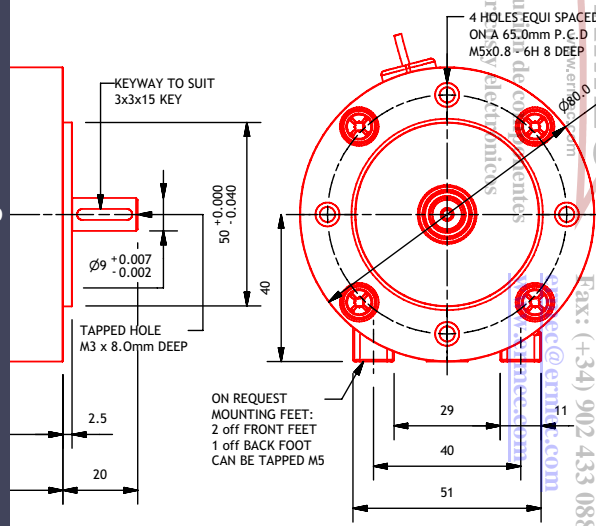
Parvalux standard flange/mount



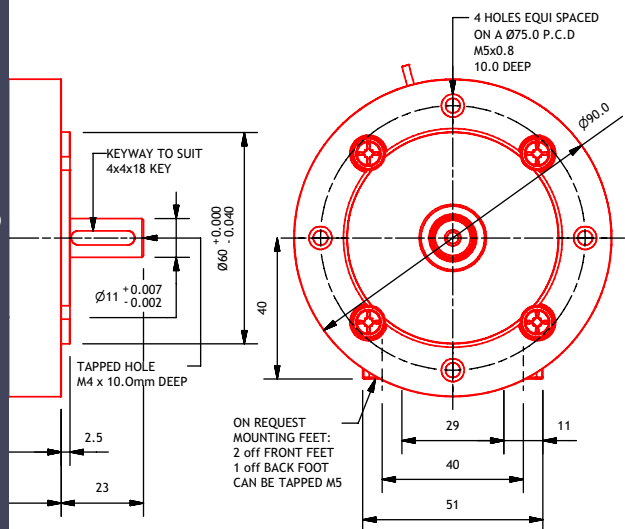
IEC Eurostandard flange/mount



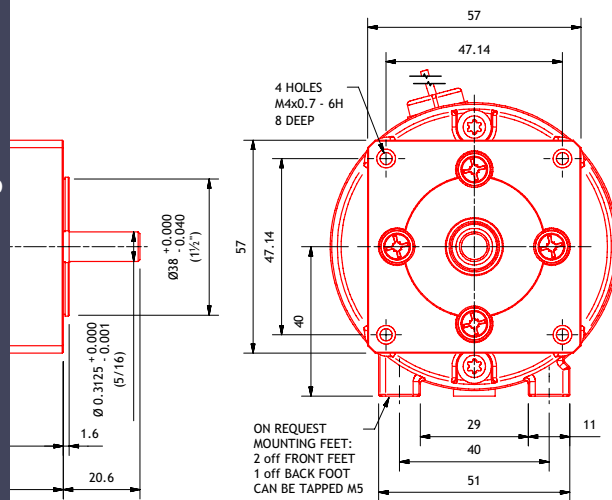
IEC B14 M56 flange/mount



IEC B14 M63 flange/mount



NEMA standard flange/mount



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# PM7 motor data

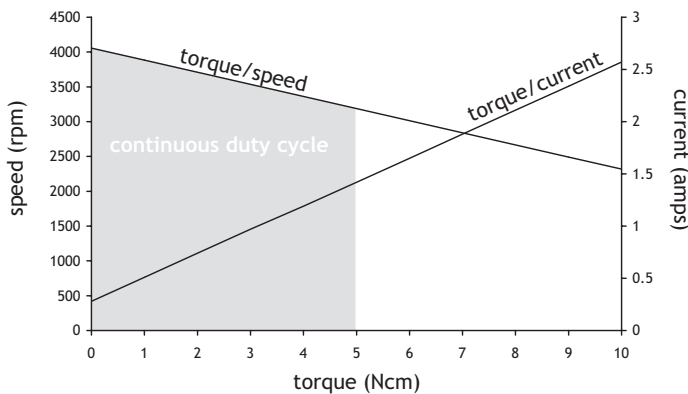
POWER	7.5 - 40 Watts
TYPE	Permanent magnet DC brushed motor
SPEED*	1500 - 5000 rpm
VOLTAGE*	12V - 220V DC available range
CONNECTION*	Flying leads 30cm flexible
SHAFT*	Single or double ended on request
INERTIA	$3.61 \times 10^{-5} \text{ kgm}^2$
WEIGHT	0.5 kg
RADIAL LOAD†	80 N
INSULATION CLASS	F
IP PROTECTION	IP54
OPTIONS	See page 36



PM7 pictured with Parvalux standard flange

SPEED (Rpm)	POWER (WATTS)			TORQUE (NM)			CURRENT (A)**			
	CONT	1 HOUR	15 MIN	CONT	1 HOUR	15 MIN	12V	24V	50V	
1500	7.5	10	13	0.05	0.06	0.08	0.4	0.2	0.1	No load current (A)
							2	0.82	0.5	Full load current (A)
2000	10	13	17	0.05	0.06	0.08	0.3	0.14	0.07	No load current (A)
							1.6	0.8	0.4	Full load current (A)
3000	15	20	25	0.05	0.06	0.08	0.5	0.28	0.1	No load current (A)
							2.6	1.4	0.6	Full load current (A)
4000	20	25	33	0.05	0.06	0.08	0.9	0.37	0.17	No load current (A)
							3.9	1.84	0.69	Full load current (A)
5000	25	30	40	0.05	0.06	0.08	**Please contact sales support for load currents			

## PM7 • 3000 rpm • 24V • 15W



\* We produce all our motors in the UK and therefore voltage, speed, connection and shaft configuration can be customised to your exact requirements

† Based 10mm from motor mounting face with plain shaft extension

\*\* Please contact our technical sales team for current ratings for alternative voltages and or speeds

### Motor construction

The motor frame comprises pressure die castings accurately located together ensuring a concentric air gap with correct bearing alignment. The armature laminations are pressed onto a precision steel shaft and are then statically and dynamically balanced. The armature is wound with first class quality synthetic covered copper wire manufactured to EN60085:2004 class "F" and then impregnated and baked in our automatic plant and accordingly can be considered to be tropically impregnated for all practical purposes.

### Motor Enclosures

To IEC 34-5 and EN 60034: part 5 and IEC 34-6 and B.S. EN 60034-6. Please refer to the individual product pages to identify the corresponding ingress protection level (IP rating).

### Bearings

We fit only first class shielded ball bearings into our motor and gearboxes which are spring loaded for quiet running. Typical operating temperatures range from -30°C to +120°C.

### Brush gear

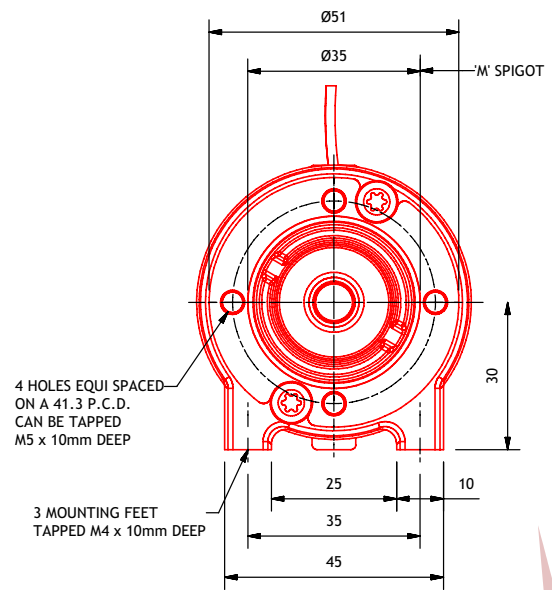
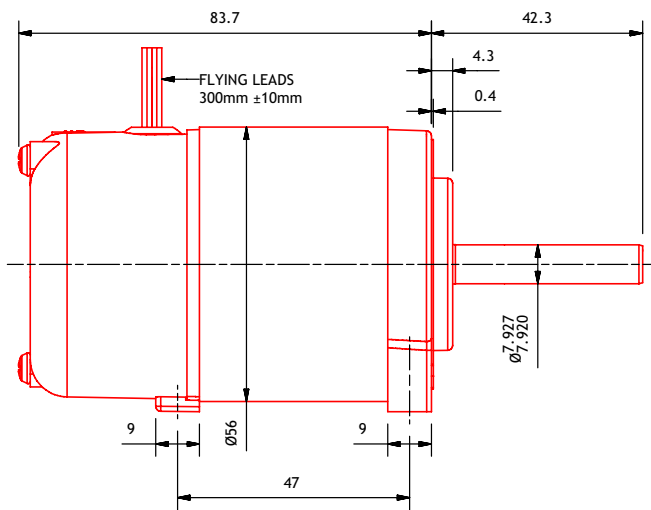
We provide an adjustable rocker type for maximum brush life and good commutation with easily accessible brushes. To achieve maximum brush life a form factor on the supply voltage as near to 1 as possible would be required.

### Temperature

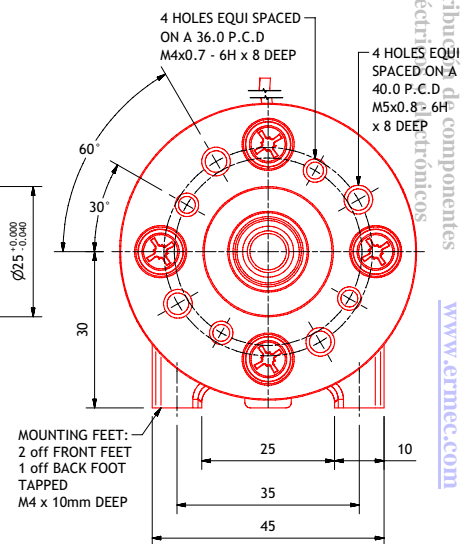
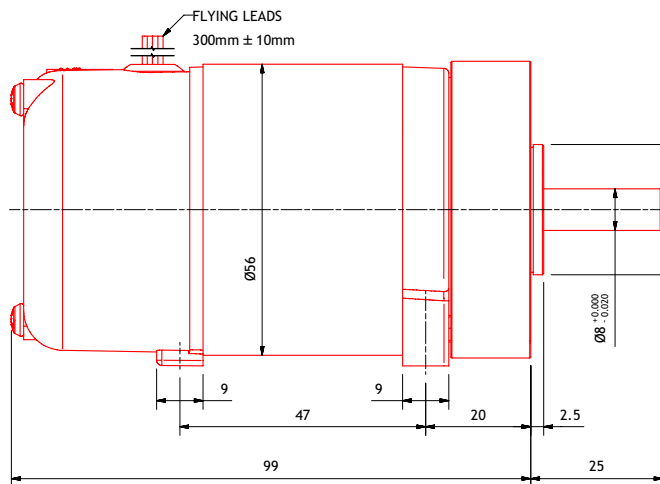
The PM7 is built with Class "F" insulation to EN60085:2004 which allows a temperature rise of 115°C based on an ambient of 40°C. These figures are with the motor running in normal working conditions in free air and not in any form of enclosure. Caution: Under full load the heat of the motor casing will be such that it is NOT possible to physically handle for any length of time.

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 The components of ERMEC are available from  
 Parvalux Electronics

Parvalux standard flange/mount



IEC Eurostandard flange/mount

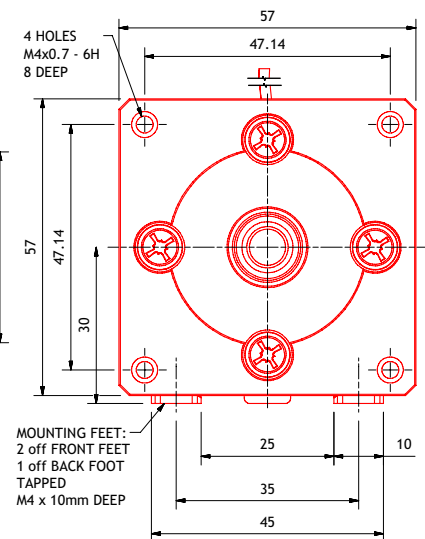
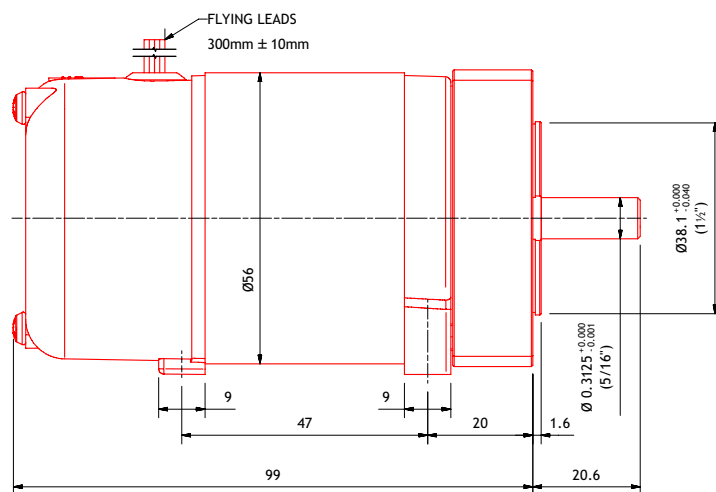


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NEMA standard flange/mount



# PM8 motor data

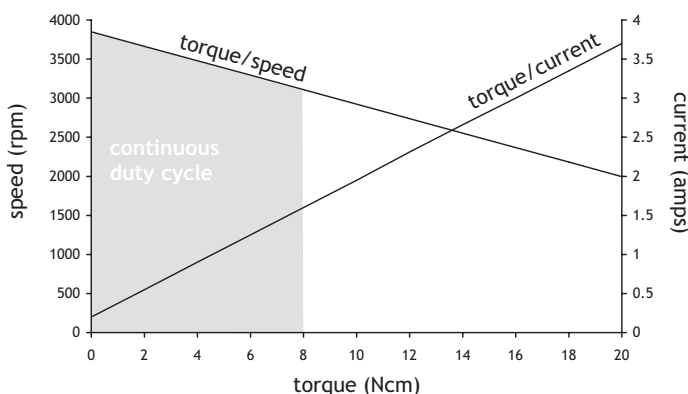
POWER	13 - 55 Watts
TYPE	Permanent magnet DC brushed motor
SPEED*	1500 - 5000 rpm
VOLTAGE*	12V - 220V DC available range
CONNECTION*	Flying leads 30cm flexible
SHAFT*	Single or double ended on request
INERTIA	$5.23 \times 10^{-5} \text{ kgm}^2$
WEIGHT	0.7 kg
RADIAL LOAD†	80 N
INSULATION CLASS	F
IP PROTECTION	IP54
OPTIONS	See page 36



PM8 pictured with Parvalux standard flange

SPEED (Rpm)	POWER (WATTS)			TORQUE (NM)			CURRENT (A)**			
	CONT	1 HOUR	15 MIN	CONT	1 HOUR	15 MIN	12V	24V	50V	
1500	13	15	18	0.08	0.1	0.11	0.3	0.18	0.1	No load current (A)
							2.1	1.1	0.5	Full load current (A)
2000	17	21	24	0.08	0.1	0.11	0.3	0.2	0.1	No load current (A)
							2.2	1.1	0.05	Full load current (A)
3000	25	33	36	0.08	0.1	0.11	0.4	0.2	0.1	No load current (A)
							4.2	1.6	0.7	Full load current (A)
4000	33	40	48	0.08	0.1	0.11	0.58	0.3	0.15	No load current (A)
							4.11	2.3	1.15	Full load current (A)
5000	40	48	55	0.08	0.1	0.11	**Please contact sales support for load currents			

## PM8 • 3000 rpm • 24V • 25W



\* We produce all our motors in the UK and therefore voltage, speed, connection and shaft configuration can be customised to your exact requirements

† Based 10mm from motor mounting face with plain shaft extension

\*\* Please contact our technical sales team for current ratings for alternative voltages and/or speeds

### Motor construction

The motor frame comprises pressure die castings accurately located together ensuring a concentric air gap with correct bearing alignment. The armature laminations are pressed onto a precision steel shaft and are then statically and dynamically balanced. The armature is wound with first class quality synthetic covered copper wire manufactured to EN60085:2004 class "F" and then impregnated and baked in our automatic plant and accordingly can be considered to be tropically impregnated for all practical purposes.

### Motor Enclosures

To IEC 34-5 and EN 60034: part 5 and IEC 34-6 and B.S. EN 60034-6. Please refer to the individual product pages to identify the corresponding ingress protection level (IP rating).

### Bearings

We fit only first class shielded ball bearings into our motor and gearboxes which are spring loaded for quiet running. Typical operating temperatures range from -30°C to +120°C.

### Brush gear

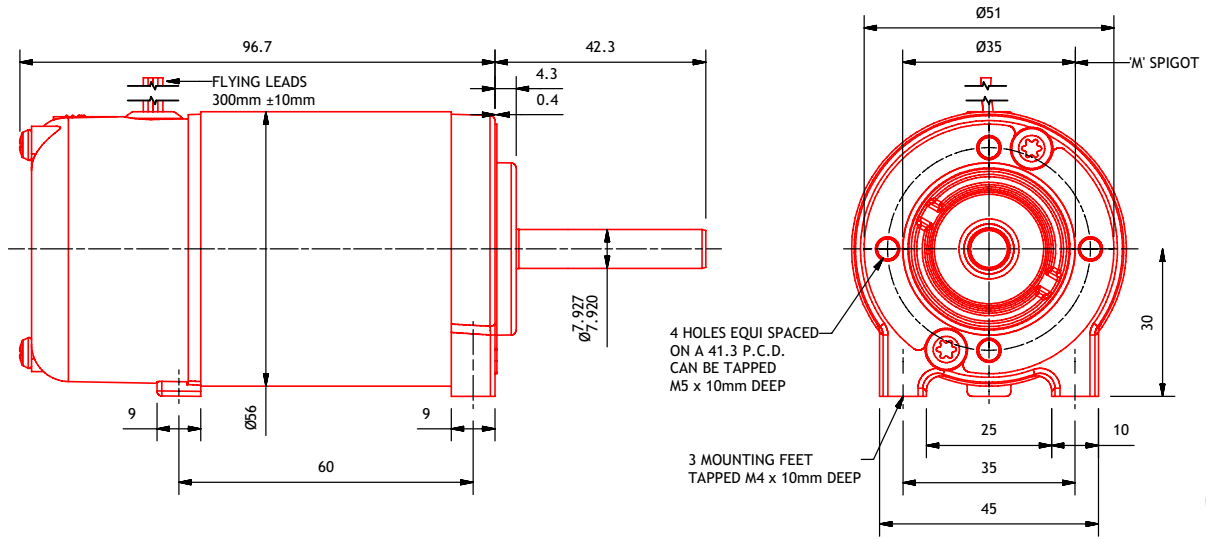
We provide an adjustable rocker type for maximum brush life and good commutation with easily accessible brushes. To achieve maximum brush life a form factor on the supply voltage as near to 1 as possible would be required.

### Temperature

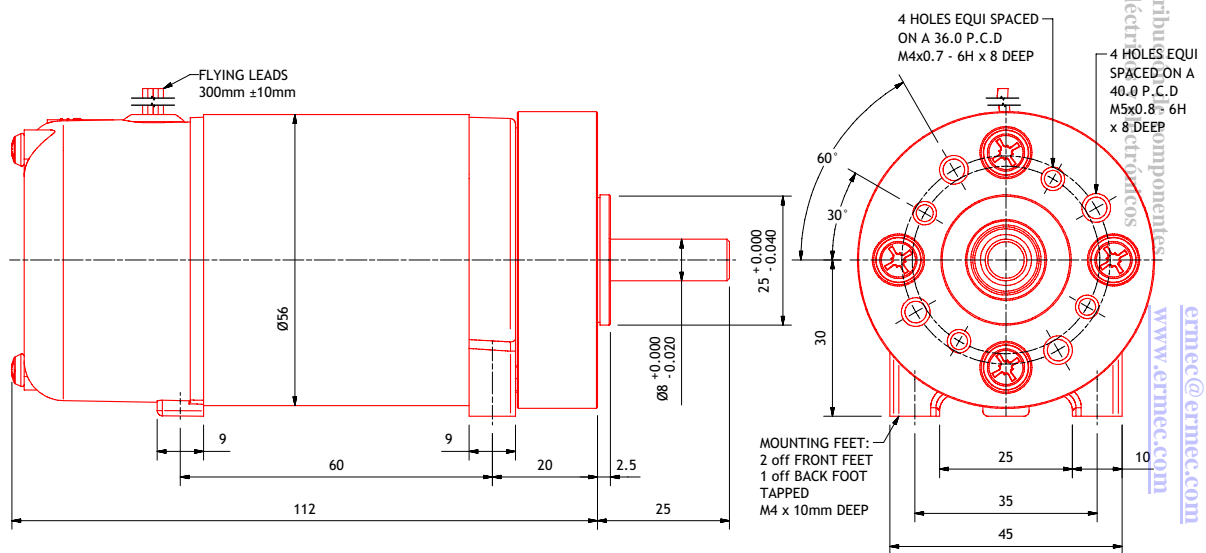
The PM8 is built with Class "F" insulation to EN60085:2004 which allows a temperature rise of 115°C based on an ambient of 40°C. These figures are with the motor running in normal working conditions in free air and not in any form of enclosure. Caution: Under full load the heat of the motor casing will be such that it is NOT possible to physically handle for any length of time.

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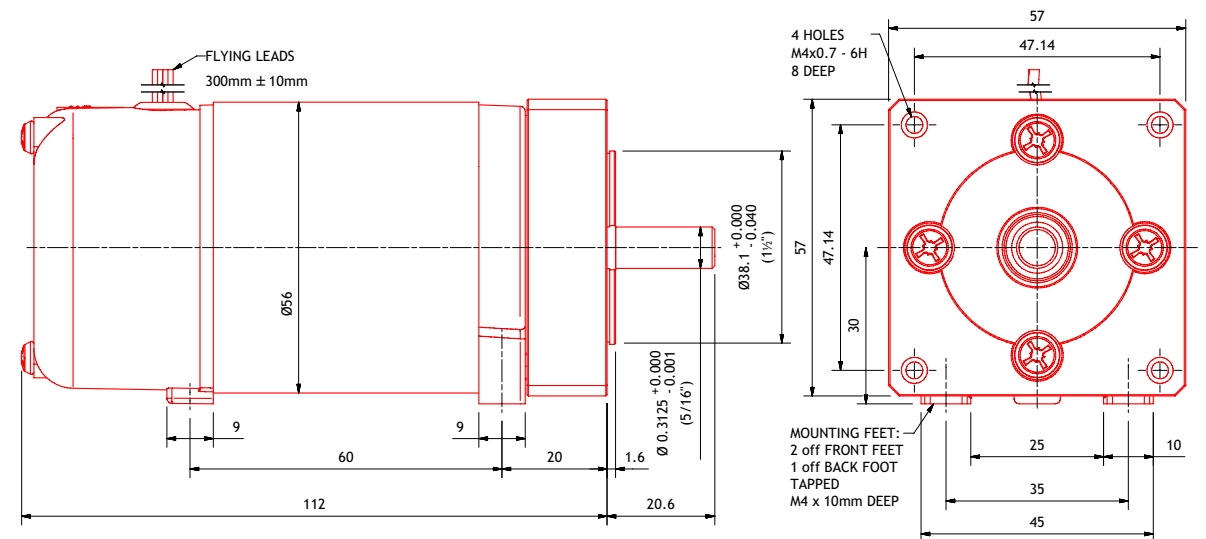
Parvalux standard flange/mount



IEC Eurostandard flange/mount



NEMA standard flange/mount



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# PM9 motor data

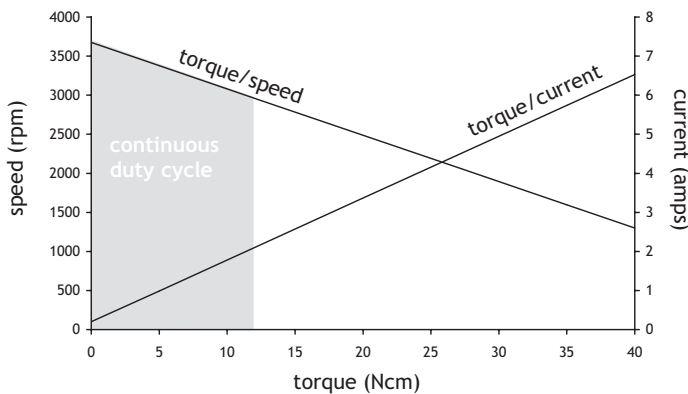
POWER	19 - 90 Watts
TYPE	Permanent magnet DC brushed motor
SPEED*	1500 - 5000 rpm
VOLTAGE*	12V - 220V DC available range
CONNECTION*	Flying leads 30cm flexible
SHAFT*	Single or double ended on request
INERTIA	$5.96 \times 10^{-5} \text{kgm}^2$
WEIGHT	0.9 kg
RADIAL LOAD†	80 N
INSULATION CLASS	F
IP PROTECTION	IP54
OPTIONS	See page 36



PM9 pictured with Parvalux standard flange

SPEED (Rpm)	POWER (WATTS)			TORQUE (NM)			CURRENT (A)**			
	CONT	1 HOUR	15 MIN	CONT	1 HOUR	15 MIN	12V	24V	50V	
1500	19	24	26	0.12	0.15	0.17	0.3	0.1	0.06	No load current (A)
							2.9	1.8	0.9	Full load current (A)
2000	25	33	36	0.12	0.15	0.17	0.3	0.14	0.08	No load current (A)
							3	1.4	1.2	Full load current (A)
3000	38	45	55	0.12	0.15	0.17	0.5	0.2	0.2	No load current (A)
							4.7	2.1	1.2	Full load current (A)
4000	50	60	70	0.12	0.15	0.17	1	0.3	0.3	No load current (A)
							7	2.7	1.6	Full load current (A)
5000	62	70	90	0.12	0.15	0.17	**Please contact sales support for load currents			

## PM9 • 3000 rpm • 24V • 38W



\* We produce all our motors in the UK and therefore voltage, speed, connection and shaft configuration can be customised to your exact requirements

† Based 10mm from motor mounting face with plain shaft extension

\*\* Please contact our technical sales team for current ratings for alternative voltages and/or speeds

### Motor construction

The motor frame comprises pressure die castings accurately located together ensuring a concentric air gap with correct bearing alignment. The armature laminations are pressed onto a precision steel shaft and are then statically and dynamically balanced. The armature is wound with first class quality synthetic covered copper wire manufactured to EN60085:2004 class "F" and then impregnated and baked in our automatic plant and accordingly can be considered to be tropically impregnated for all practical purposes.

### Motor Enclosures

To IEC 34-5 and EN 60034: part 5 and IEC 34-6 and B.S. EN 60034-6. Please refer to the individual product pages to identify the corresponding ingress protection level (IP rating).

### Bearings

We fit only first class shielded ball bearings into our motor and gearboxes which are spring loaded for quiet running. Typical operating temperatures range from -30°C to +120°C.

### Brush gear

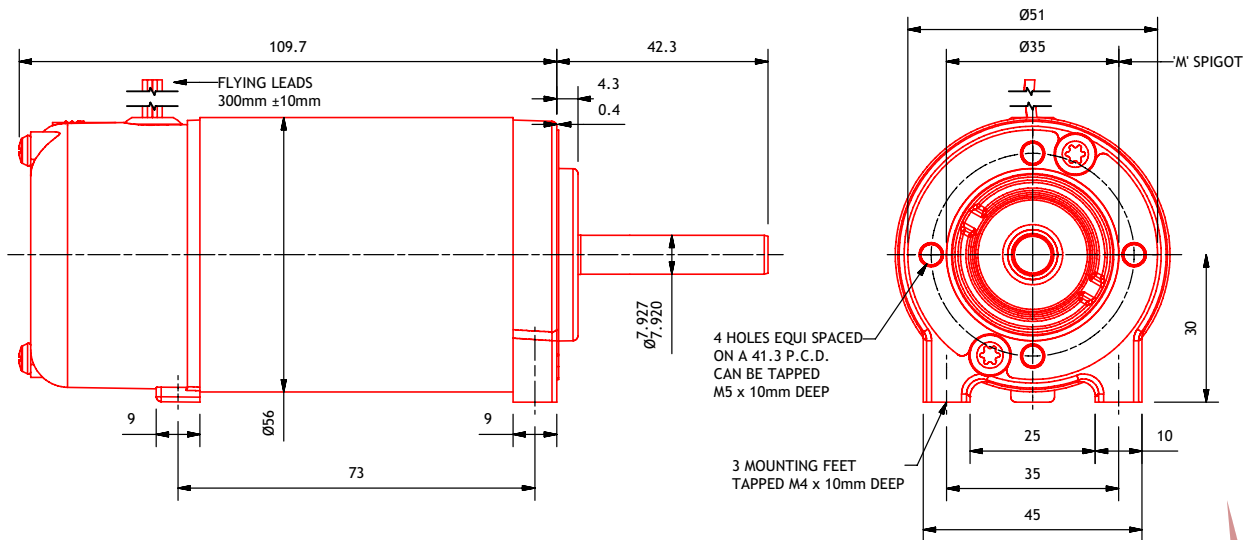
We provide an adjustable rocker type for maximum brush life and good commutation with easily accessible brushes. To achieve maximum brush life a form factor on the supply voltage as near to 1 as possible would be required.

### Temperature

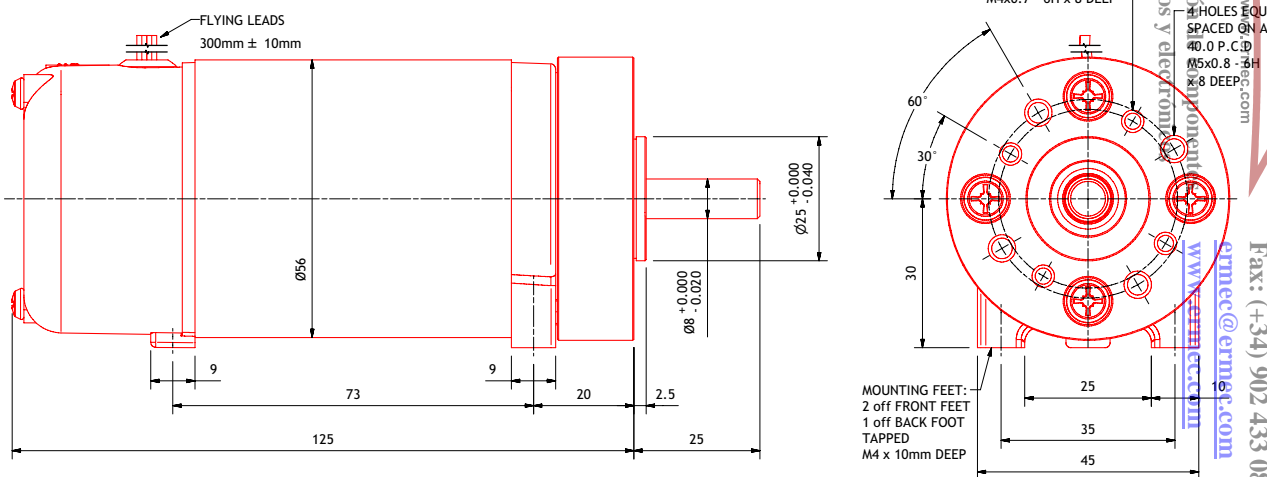
The PM9 is built with Class "F" insulation to EN60085:2004 which allows a temperature rise of 115°C based on an ambient of 40°C. These figures are with the motor running in normal working conditions in free air and not in any form of enclosure. Caution: Under full load the heat of the motor casing will be such that it is NOT possible to physically handle for any length of time.

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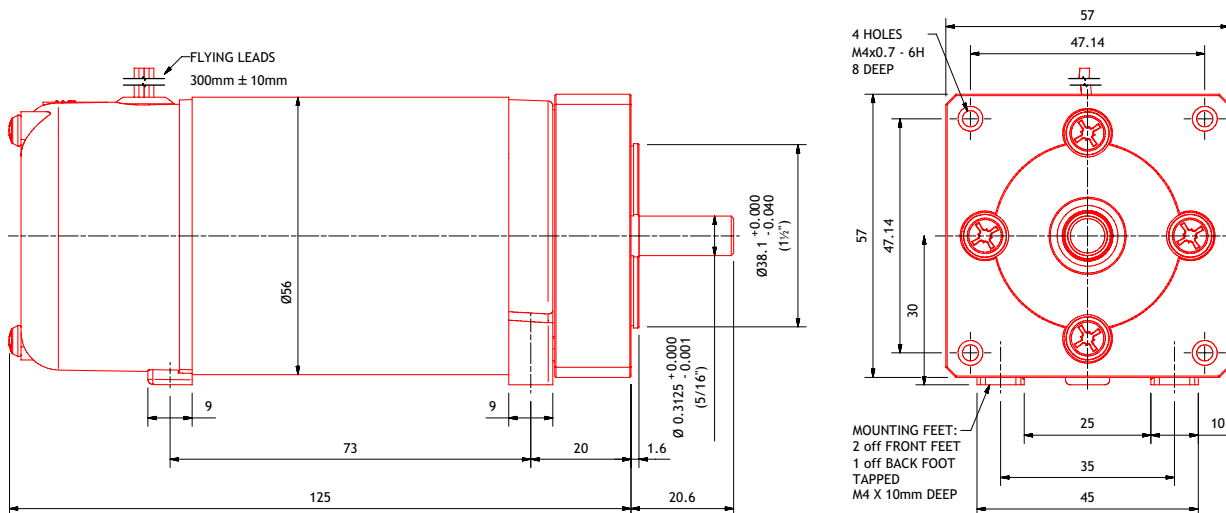
Parvalux standard flange/mount



IEC Eurostandard flange/mount



NEMA standard flange/mount



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# PM10 motor data

POWER	23 - 120 Watts
TYPE	Permanent magnet DC brushed motor
SPEED*	1500 - 5000 rpm
VOLTAGE*	12V - 220V DC available range
CONNECTION*	Flying leads 30cm flexible
SHAFT*	Single or double ended on request
INERTIA	$9.44 \times 10^{-5} \text{kgm}^2$
WEIGHT	1.12 kg
RADIAL LOAD†	80 N
INSULATION CLASS	F
IP PROTECTION	IP54
OPTIONS	See page 36

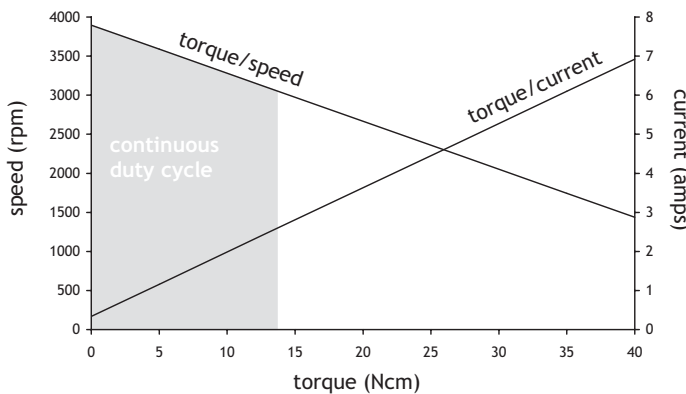


PM10 pictured with Parvalux standard flange

SPEED (Rpm)	POWER (WATTS)			TORQUE (NM)			CURRENT (A)**			
	CONT	1 HOUR	15 MIN	CONT	1 HOUR	15 MIN	12V	24V	50V	
1500	23	28	35	0.14	0.18	0.2	0.21	0.2	0.08	No load current (A)
							2.42	1.5	0.75	Full load current (A)
2000	30	38	50	0.14	0.18	0.2	0.4	0.2	0.12	No load current (A)
							4.9	2	1	Full load current (A)
3000	45	55	70	0.14	0.18	0.2	0.7	0.34	0.21	No load current (A)
							6.1	2.7	1.53	Full load current (A)
4000	60	75	100	0.14	0.18	0.2	0.9	0.4	0.26	No load current (A)
							6.8	3.6	1.05	Full load current (A)
5000	75	92	120	0.14	0.18	0.2	**Please contact sales support for load currents			

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## PM10 • 3000 rpm • 24V • 45W



- \* We produce all our motors in the UK and therefore voltage, speed, connection and shaft configuration can be customised to your exact requirements
- † Based 10mm from motor mounting face with plain shaft extension
- \*\* Please contact our technical sales team for current ratings for alternative voltages and/or speeds

### Motor construction

The motor frame comprises pressure die castings accurately located together ensuring a concentric air gap with correct bearing alignment. The armature laminations are pressed onto a precision steel shaft and are then statically and dynamically balanced. The armature is wound with first class quality synthetic covered copper wire manufactured to EN60085:2004 class "F" and then impregnated and baked in our automatic plant and accordingly can be considered to be tropically impregnated for all practical purposes.

### Motor Enclosures

To IEC 34-5 and EN 60034: part 5 and IEC 34-6 and B.S. EN 60034-6. Please refer to the individual product pages to identify the corresponding ingress protection level (IP rating).

### Bearings

We fit only first class shielded ball bearings into our motor and gearboxes which are spring loaded for quiet running. Typical operating temperatures range from -30°C to +120°C.

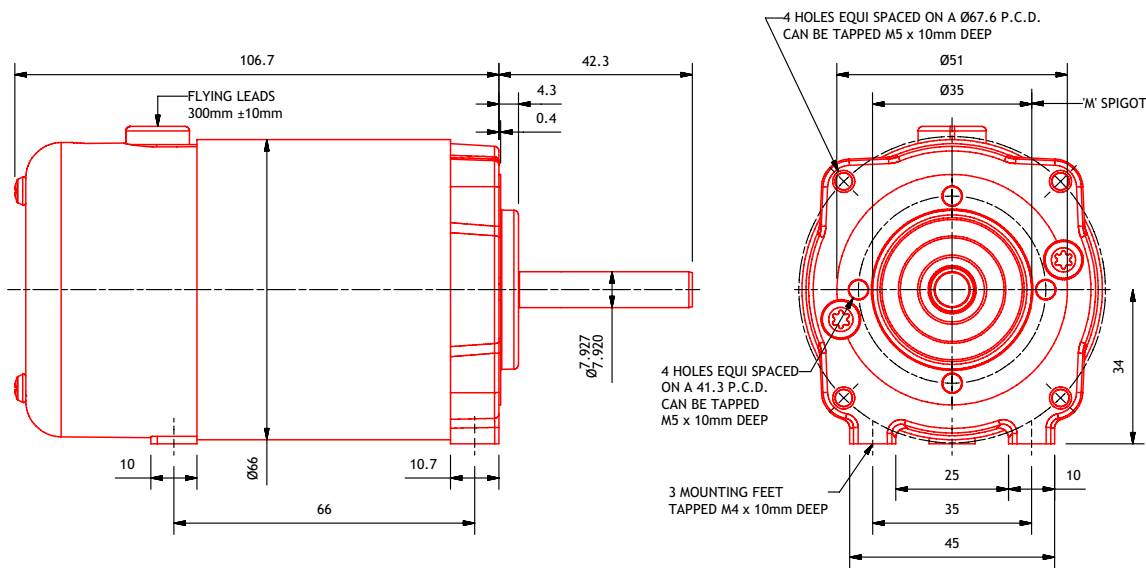
### Brush gear

We provide an adjustable rocker type for maximum brush life and good commutation with easily accessible brushes. To achieve maximum brush life a form factor on the supply voltage as near to 1 as possible would be required.

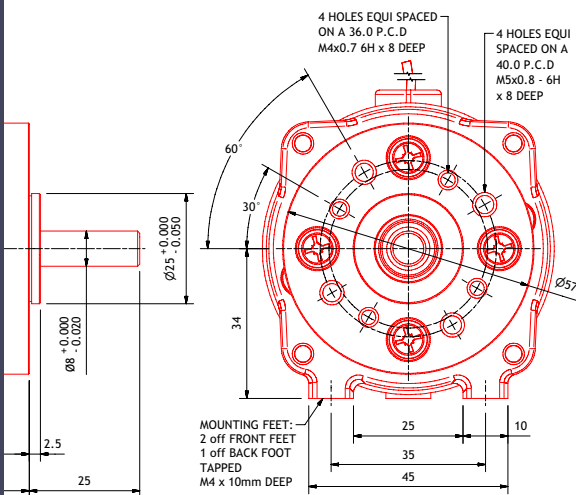
### Temperature

The PM10 is built with Class "F" insulation to EN60085:2004 which allows a temperature rise of 115°C based on an ambient of 40°C. These figures are with the motor running in normal working conditions in free air and not in any form of enclosure. Caution: Under full load the heat of the motor casing will be such that it is NOT possible to physically handle for any length of time.

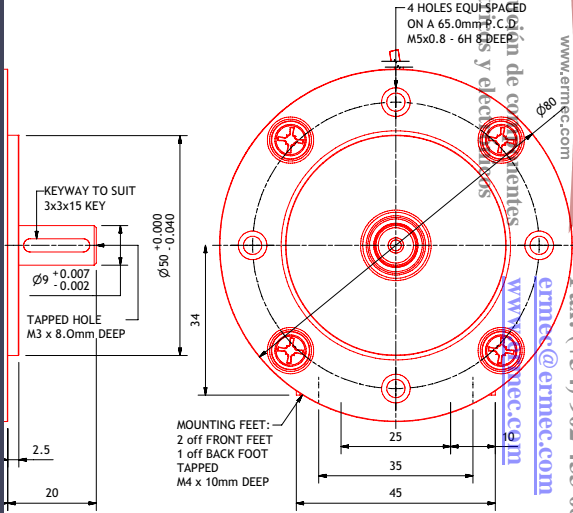
Parvalux standard flange/mount



IEC Eurostandard flange/mount



IEC B14 M56 flange/mount



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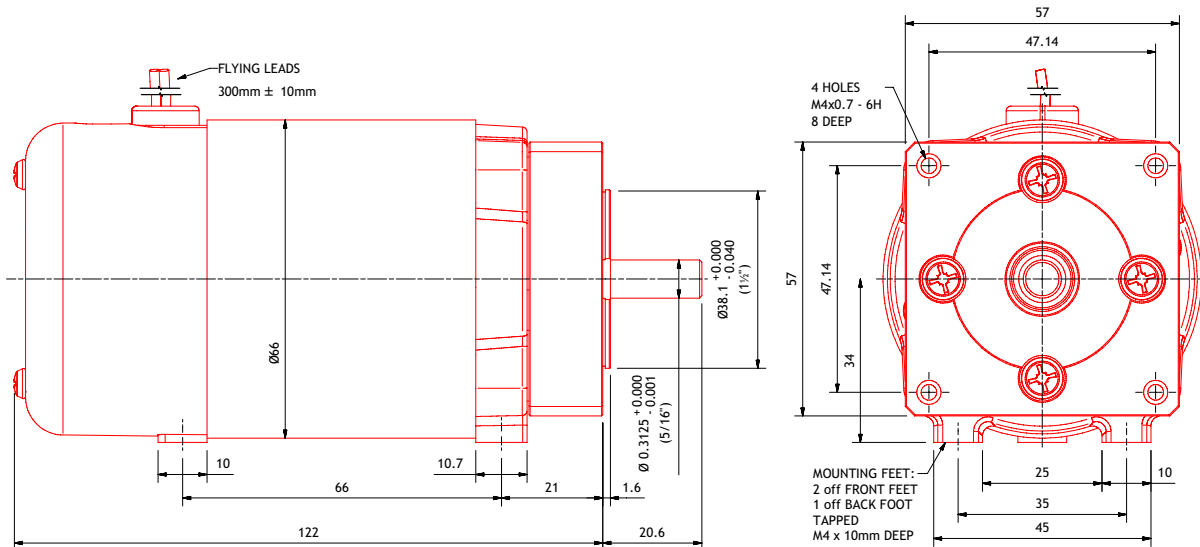
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NEMA standard flange/mount



# PM11 motor data

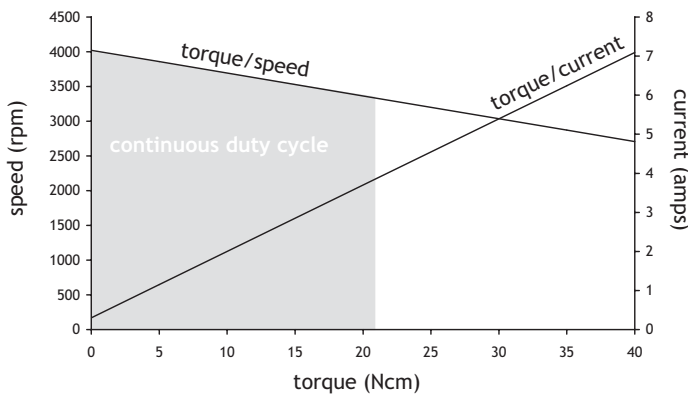
POWER	33 - 160 Watts
TYPE	Permanent magnet DC brushed motor
SPEED*	1500 - 5000 rpm
VOLTAGE*	12V - 220V DC available range
CONNECTION*	Flying leads 30cm flexible
SHAFT*	Single or double ended on request
INERTIA	$1.26 \times 10^{-4} \text{ kgm}^2$
WEIGHT	1.58 kg
RADIAL LOAD†	80 N
INSULATION CLASS	F
IP PROTECTION	IP54
OPTIONS	See page 36



PM11 pictured with Parvalux standard flange

SPEED (Rpm)	POWER (WATTS)			TORQUE (NM)			CURRENT (A)**			
	CONT	1 HOUR	15 MIN	CONT	1 HOUR	15 MIN	12V	24V	50V	
1500	33	40	50	0.2	0.25	0.3	0.27	0.2	0.1	No load current (A)
							4	2.2	1.2	Full load current (A)
2000	45	55	65	0.2	0.25	0.3	0.42	0.2	0.11	No load current (A)
							6.3	2.9	1.4	Full load current (A)
3000	65	80	100	0.2	0.25	0.3	0.6	0.3	0.19	No load current (A)
							8.3	3.9	1.79	Full load current (A)
4000	90	110	130	0.2	0.25	0.3	1.3	0.5	0.2	No load current (A)
							10.8	5.3	2.5	Full load current (A)
5000	110	130	160	0.2	0.25	0.3	**Please contact sales support for load currents			

**PM11 • 3000 rpm • 24V • 65W**



\* We produce all our motors in the UK and therefore voltage, speed, connection and shaft configuration can be customised to your exact requirements

† Based 10mm from motor mounting face with plain shaft extension

\*\* Please contact our technical sales team for current ratings for alternative voltages and/or speeds

### Motor construction

The motor frame comprises pressure die castings accurately located together ensuring a concentric air gap with correct bearing alignment. The armature laminations are pressed onto a precision steel shaft and are then statically and dynamically balanced. The armature is wound with first class quality synthetic covered copper wire manufactured to EN60085:2004 class “F” and then impregnated and baked in our automatic plant and accordingly can be considered to be tropically impregnated for all practical purposes.

### Motor Enclosures

To IEC 34-5 and EN 60034: part 5 and IEC 34-6 and B.S. EN 60034-6. Please refer to the individual product pages to identify the corresponding ingress protection level (IP rating).

### Bearings

We fit only first class shielded ball bearings into our motor and gearboxes which are spring loaded for quiet running. Typical operating temperatures range from -30°C to +120°C.

### Brush gear

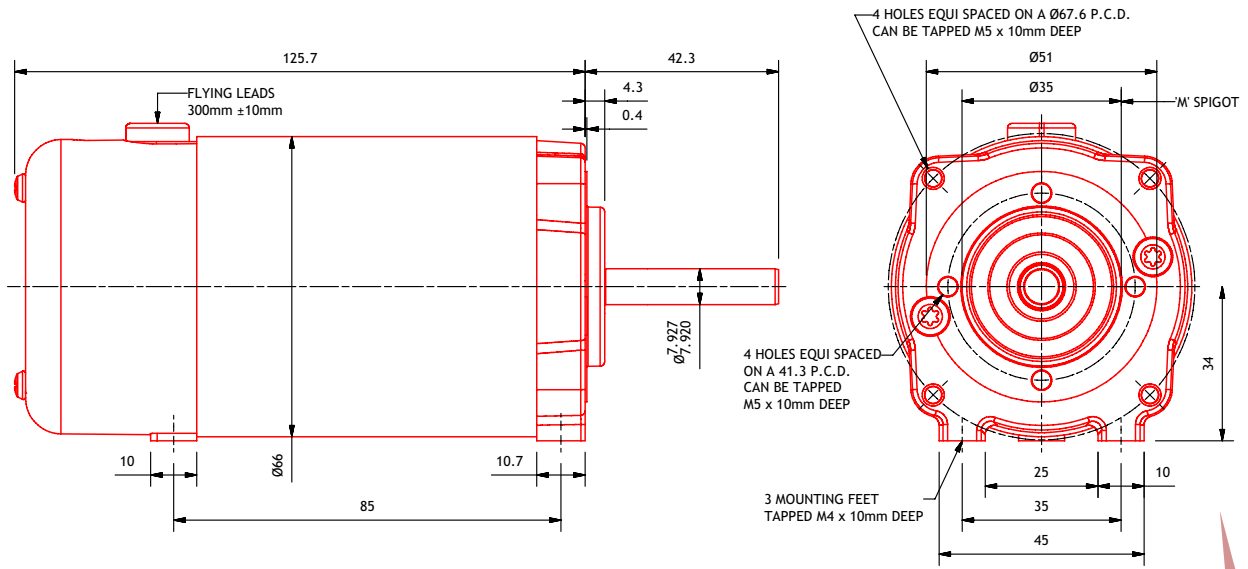
We provide an adjustable rocker type for maximum brush life and good commutation with easily accessible brushes. To achieve maximum brush life a form factor on the supply voltage as near to 1 as possible would be required.

### Temperature

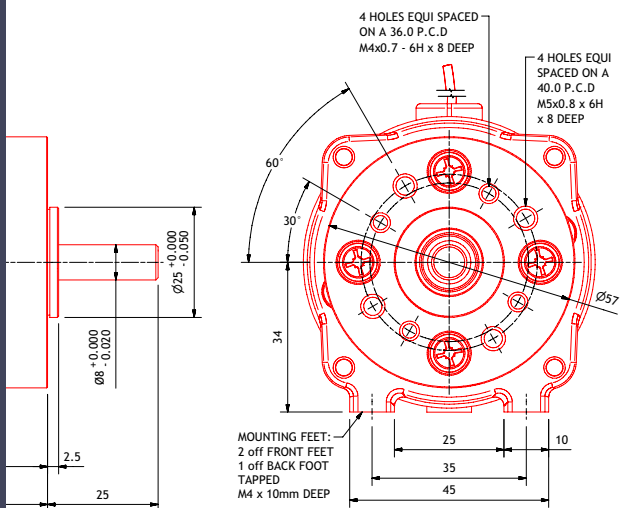
The PM11 is built with Class “F” insulation to EN60085:2004 which allows a temperature rise of 115°C based on an ambient of 40°C. These figures are with the motor running in normal working conditions in free air and not in any form of enclosure. Caution: Under full load the heat of the motor casing will be such that it is NOT possible to physically handle for any length of time.

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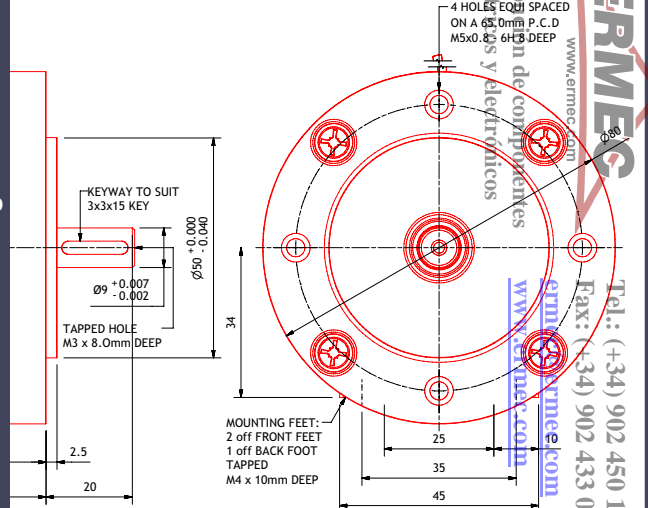
Parvalux standard flange/mount



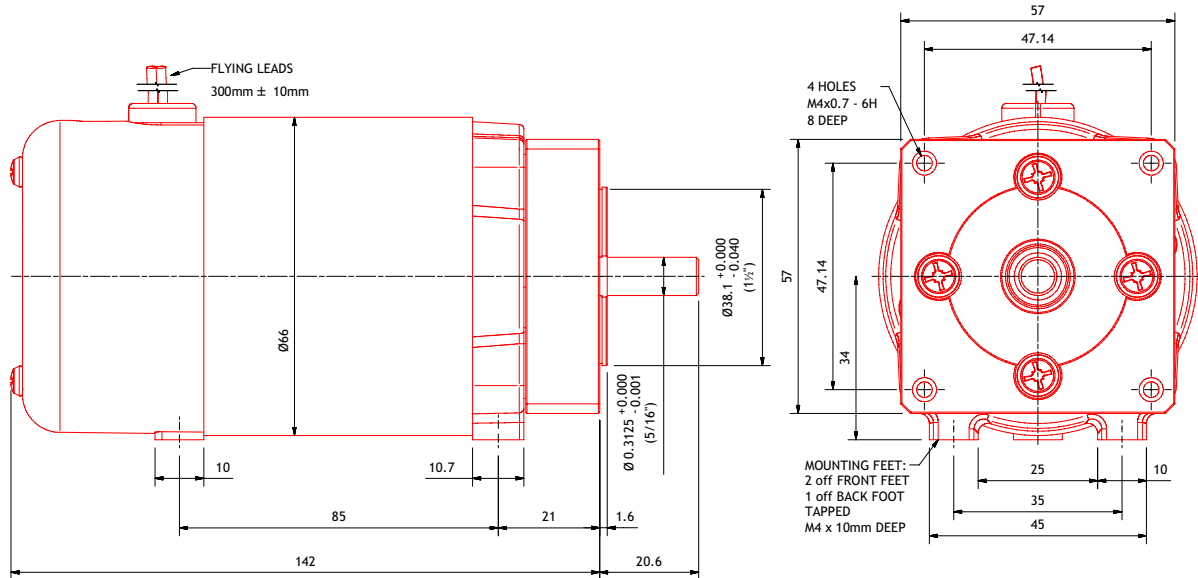
IEC Eurostandard flange/mount



IEC B14 M56 flange/mount



NEMA standard flange/mount



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# PM3 motor data

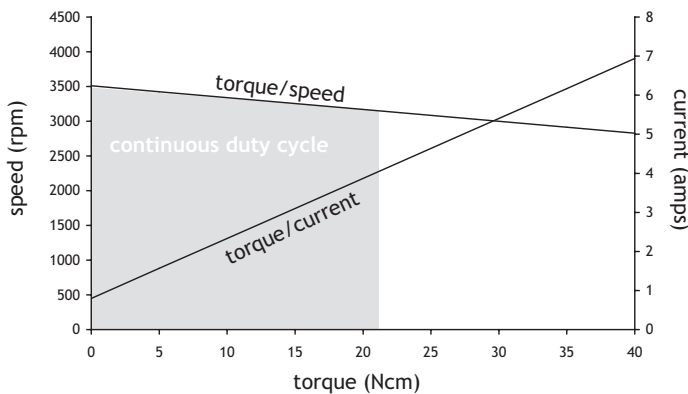
POWER	33 - 200 Watts
TYPE	Permanent magnet DC brushed motor
SPEED*	1500 - 5000 rpm
VOLTAGE*	12V - 220V DC available range
CONNECTION*	Flying leads 30cm flexible
SHAFT*	Single or double ended on request
INERTIA	$2.60 \times 10^{-4} \text{kgm}^2$
WEIGHT	2.11 kg
RADIAL LOAD†	180 N
INSULATION CLASS	F
IP PROTECTION	IP54
OPTIONS	See page 36



PM3 pictured with Parvalux standard flange

SPEED (Rpm)	POWER (WATTS)			TORQUE (NM)			CURRENT (A)**			
	CONT	1 HOUR	15 MIN	CONT	1 HOUR	15 MIN	12V	24V	50V	
1500	33	45	60	0.2	0.3	0.4	0.8	0.5	0.18	No load current (A)
							5.2	2.3	1.1	Full load current (A)
2000	45	60	90	0.2	0.3	0.4	0.9	0.5	0.18	No load current (A)
							6	3	1.2	Full load current (A)
3000	68	90	120	0.2	0.3	0.4	1.3	0.8	0.4	No load current (A)
							9.8	4.1	2.1	Full load current (A)
4000	90	120	150	0.2	0.3	0.4	1.5	0.6	0.6	No load current (A)
							10	5.4	2.4	Full load current (A)
5000	112	150	200	0.2	0.3	0.4	**Please contact sales support for load currents			

## PM3 • 3000 rpm • 24V • 68W



\* We produce all our motors in the UK and therefore voltage, speed, connection and shaft configuration can be customised to your exact requirements

† Based 10mm from motor mounting face with plain shaft extension

\*\* Please contact our technical sales team for current ratings for alternative voltages and/or speeds

### Motor construction

The motor frame comprises pressure die castings accurately located together ensuring a concentric air gap with correct bearing alignment. The armature laminations are pressed onto a precision steel shaft and are then statically and dynamically balanced. The armature is wound with first class quality synthetic covered copper wire manufactured to EN60085:2004 class "F" and then impregnated and baked in our automatic plant and accordingly can be considered to be tropically impregnated for all practical purposes.

### Motor Enclosures

To IEC 34-5 and EN 60034: part 5 and IEC 34-6 and B.S. EN 60034-6. Please refer to the individual product pages to identify the corresponding ingress protection level (IP rating).

### Bearings

We fit only first class shielded ball bearings into our motor and gearboxes which are spring loaded for quiet running. Typical operating temperatures range from -30°C to +120°C.

### Brush gear

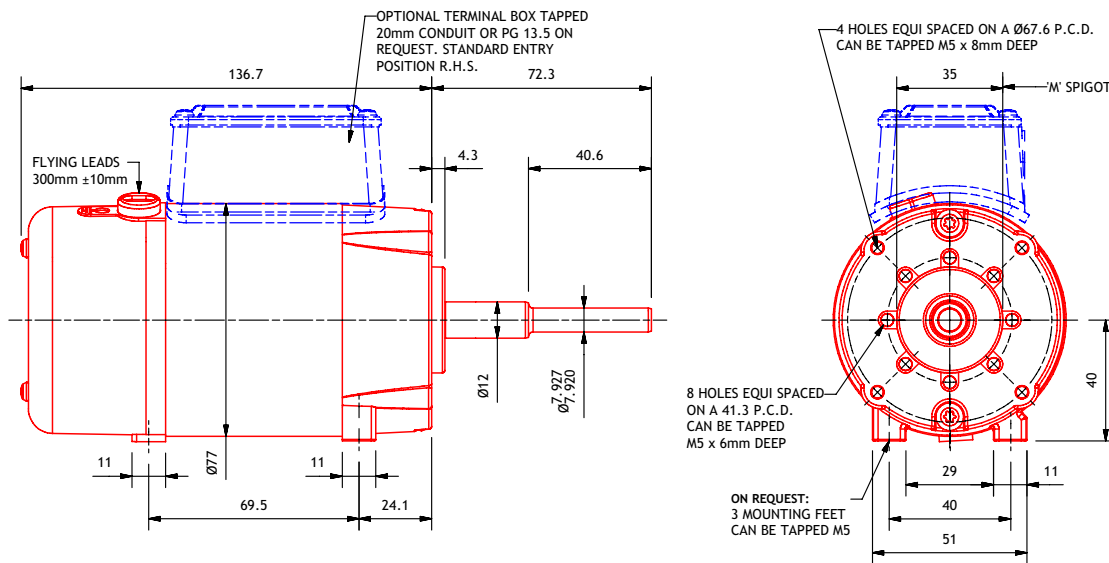
We provide an adjustable rocker type for maximum brush life and good commutation with easily accessible brushes. To achieve maximum brush life a form factor on the supply voltage as near to 1 as possible would be required.

### Temperature

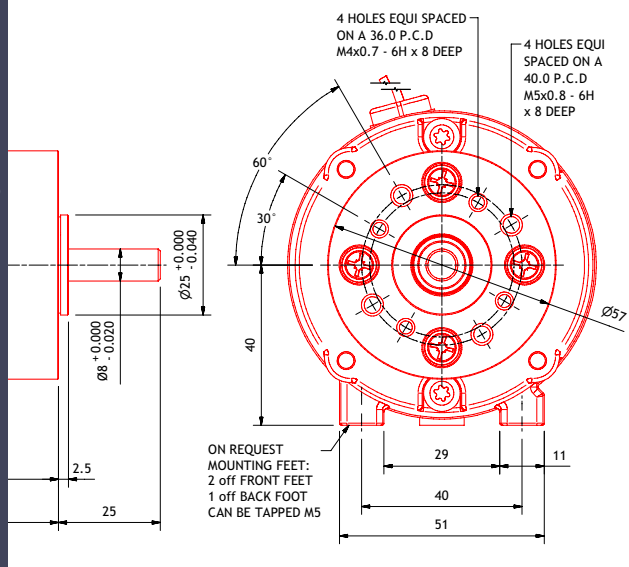
The PM3 is built with Class "F" insulation to EN60085:2004 which allows a temperature rise of 115°C based on an ambient of 40°C. These figures are with the motor running in normal working conditions in free air and not in any form of enclosure. Caution: Under full load the heat of the motor casing will be such that it is NOT possible to physically handle for any length of time.

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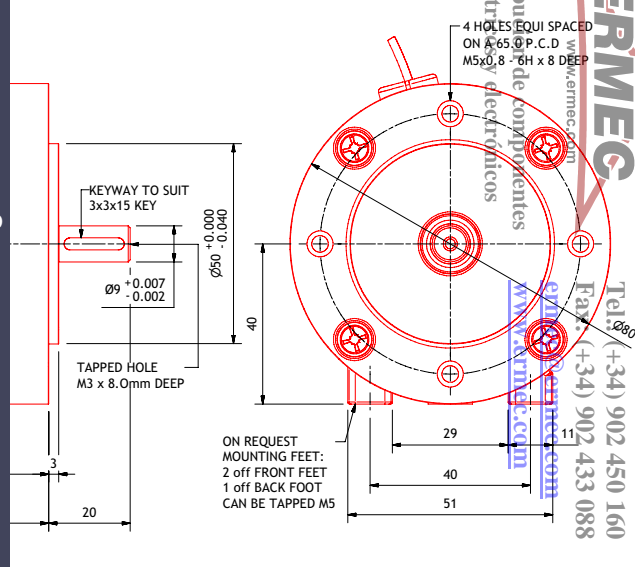
Parvalux standard flange/mount



IEC Eurostandard flange/mount

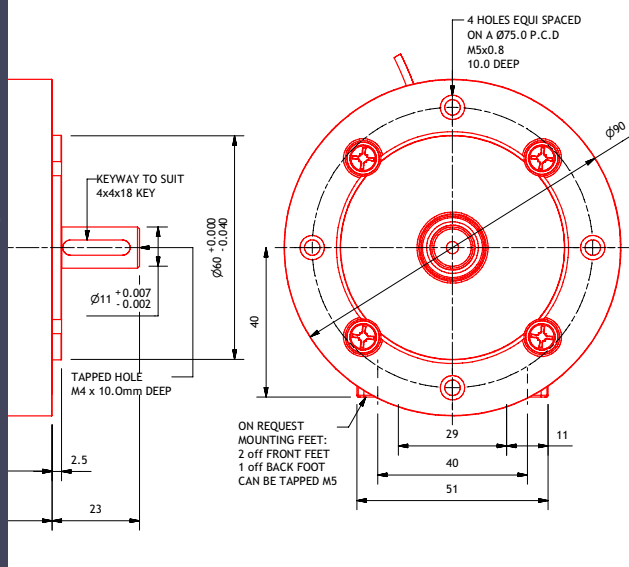


IEC B14 M56 flange/mount

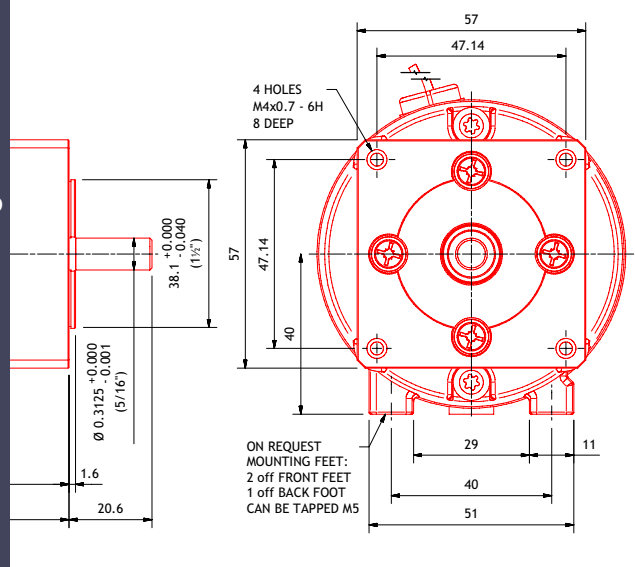


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IEC B14 M63 flange/mount



NEMA standard flange/mount



# PM4 motor data

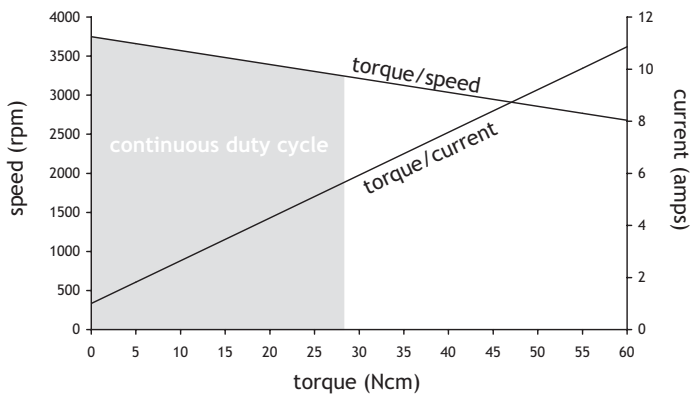
POWER	45 - 260 Watts
TYPE	Permanent magnet DC brushed motor
SPEED*	1500 - 5000 rpm
VOLTAGE*	12V - 220V DC available range
CONNECTION*	Flying leads 30cm flexible
SHAFT*	Single or double ended on request
INERTIA	$2.83 \times 10^{-4} \text{kgm}^2$
WEIGHT	2.46 kg
RADIAL LOAD†	180 N
INSULATION CLASS	F
IP PROTECTION	IP54
OPTIONS	See page 36



PM4 pictured with Parvalux standard flange

SPEED (Rpm)	POWER (WATTS)			TORQUE (NM)			CURRENT (A)**			
	CONT	1 HOUR	15 MIN	CONT	1 HOUR	15 MIN	12V	24V	50V	
1500	45	60	80	0.3	0.4	0.5	0.58	0.42	0.19	No load current (A)
							5.4	2.7	1.4	Full load current (A)
2000	60	80	120	0.3	0.4	0.5	1.1	0.38	0.33	No load current (A)
							7.4	3.5	1.7	Full load current (A)
3000	90	120	160	0.3	0.4	0.5	2.3	1	0.7	No load current (A)
							11.1	5.7	3.2	Full load current (A)
4000	120	160	200	0.3	0.4	0.5	2.3	1.1	0.9	No load current (A)
							16.5	6.5	3.4	Full load current (A)
5000	150	200	260	0.3	0.4	0.5	**Please contact sales support for load currents			

**PM4 • 3000 rpm • 24V • 90W**



\* We produce all our motors in the UK and therefore voltage, speed, connection and shaft configuration can be customised to your exact requirements

† Based 10mm from motor mounting face with plain shaft extension

\*\* Please contact our technical sales team for current ratings for alternative voltages and/or speeds

### Motor construction

The motor frame comprises pressure die castings accurately located together ensuring a concentric air gap with correct bearing alignment. The armature laminations are pressed onto a precision steel shaft and are then statically and dynamically balanced. The armature is wound with first class quality synthetic covered copper wire manufactured to EN60085:2004 class “F” and then impregnated and baked in our automatic plant and accordingly can be considered to be tropically impregnated for all practical purposes.

### Motor Enclosures

To IEC 34-5 and EN 60034: part 5 and IEC 34-6 and B.S. EN 60034-6. Please refer to the individual product pages to identify the corresponding ingress protection level (IP rating).

### Bearings

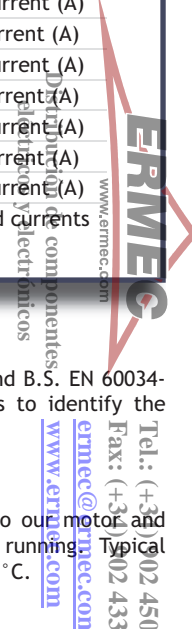
We fit only first class shielded ball bearings into our motor and gearboxes which are spring loaded for quiet running. Typical operating temperatures range from -30°C to +120°C.

### Brush gear

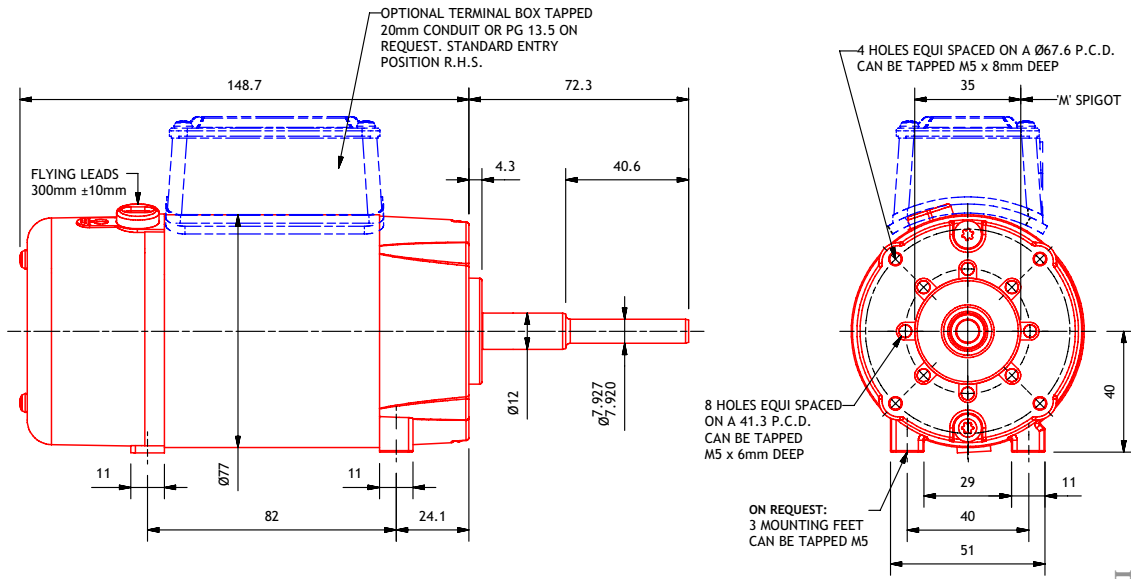
We provide an adjustable rocker type for maximum brush life and good commutation with easily accessible brushes. To achieve maximum brush life a form factor on the supply voltage as near to 1 as possible would be required.

### Temperature

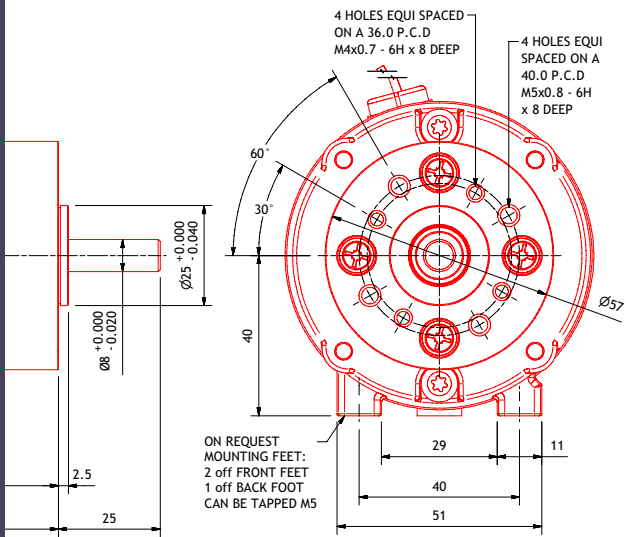
The PM4 is built with Class “F” insulation to EN60085:2004 which allows a temperature rise of 115°C based on an ambient of 40°C. These figures are with the motor running in normal working conditions in free air and not in any form of enclosure. Caution: Under full load the heat of the motor casing will be such that it is NOT possible to physically handle for any length of time.



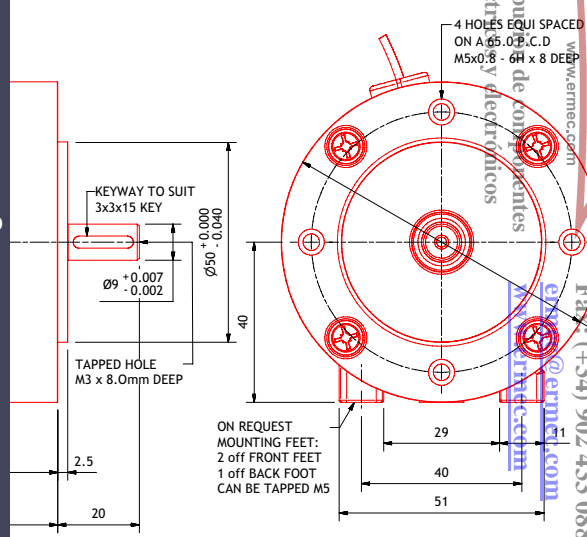
Parvalux standard flange/mount



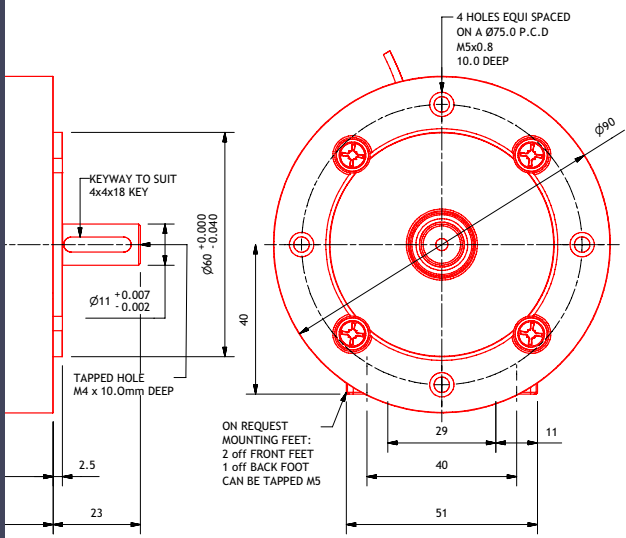
IEC Eurostandard flange/mount



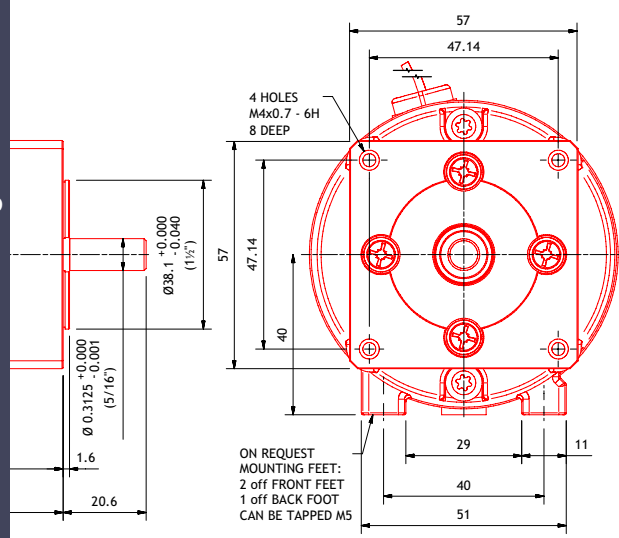
IEC B14 M56 flange/mount



IEC B14 M63 flange/mount



NEMA standard flange/mount



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# PM5 motor data

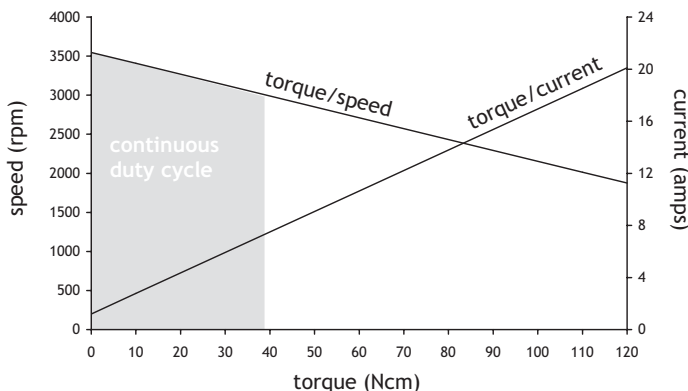
POWER	60 - 300 Watts
TYPE	Permanent magnet DC brushed motor
SPEED*	1500 - 5000 rpm
VOLTAGE*	12V - 220V DC available range
CONNECTION*	Flying leads 30cm flexible
SHAFT*	Single or double ended on request
INERTIA	$3.25 \times 10^{-4} \text{kgm}^2$
WEIGHT	2.65 kg
RADIAL LOAD†	180 N
INSULATION CLASS	F
IP PROTECTION	IP54
OPTIONS	See page 36



PM5 pictured with Parvalux standard flange

SPEED (Rpm)	POWER (WATTS)			TORQUE (NM)			CURRENT (A)**			
	CONT	1 HOUR	15 MIN	CONT	1 HOUR	15 MIN	12V	24V	50V	
1500	60	75	100	0.4	0.5	0.6	0.8	0.3	0.36	No load current (A)
							6.8	3.1	1.8	Full load current (A)
2000	80	100	150	0.4	0.5	0.6	1	0.6	0.16	No load current (A)
							7.7	4.1	2.2	Full load current (A)
3000	120	150	200	0.4	0.5	0.6	1.7	1.2	0.67	No load current (A)
							14.2	7.2	3.2	Full load current (A)
4000	160	200	250	0.4	0.5	0.6	2.1	1.3	0.6	No load current (A)
							16.7	8.3	4.1	Full load current (A)
5000	200	250	300	0.4	0.5	0.6	**Please contact sales support for load currents			

## PM5 • 3000 rpm • 24V • 120W



- \* We produce all our motors in the UK and therefore voltage, speed, connection and shaft configuration can be customised to your exact requirements
- † Based 10mm from motor mounting face with plain shaft extension
- \*\* Please contact our technical sales team for current ratings for alternative voltages and/or speeds

### Motor construction

The motor frame comprises pressure die castings accurately located together ensuring a concentric air gap with correct bearing alignment. The armature laminations are pressed onto a precision steel shaft and are then statically and dynamically balanced. The armature is wound with first class quality synthetic covered copper wire manufactured to EN60085:2004 class "F" and then impregnated and baked in our automatic plant and accordingly can be considered to be tropically impregnated for all practical purposes.

### Motor Enclosures

To IEC 34-5 and EN 60034: part 5 and IEC 34-6 and B.S. EN 60034-6. Please refer to the individual product pages to identify the corresponding ingress protection level (IP rating).

### Bearings

We fit only first class shielded ball bearings into our motor and gearboxes which are spring loaded for quiet running. Typical operating temperatures range from -30°C to +120°C.

### Brush gear

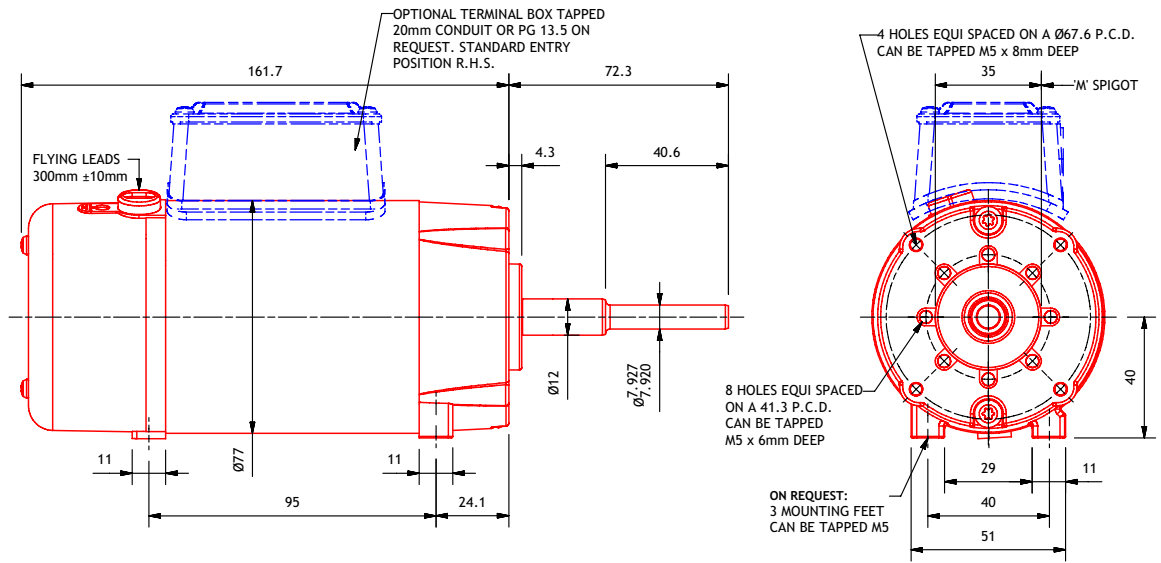
We provide an adjustable rocker type for maximum brush life and good commutation with easily accessible brushes. To achieve maximum brush life a form factor on the supply voltage as near to 1 as possible would be required.

### Temperature

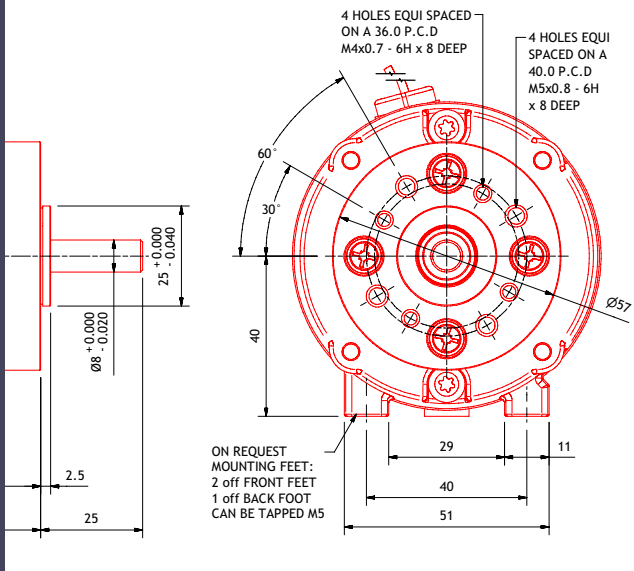
The PM5 is built with Class "F" insulation to EN60085:2004 which allows a temperature rise of 115°C based on an ambient of 40°C. These figures are with the motor running in normal working conditions in free air and not in any form of enclosure. Caution: Under full load the heat of the motor casing will be such that it is NOT possible to physically handle for any length of time.

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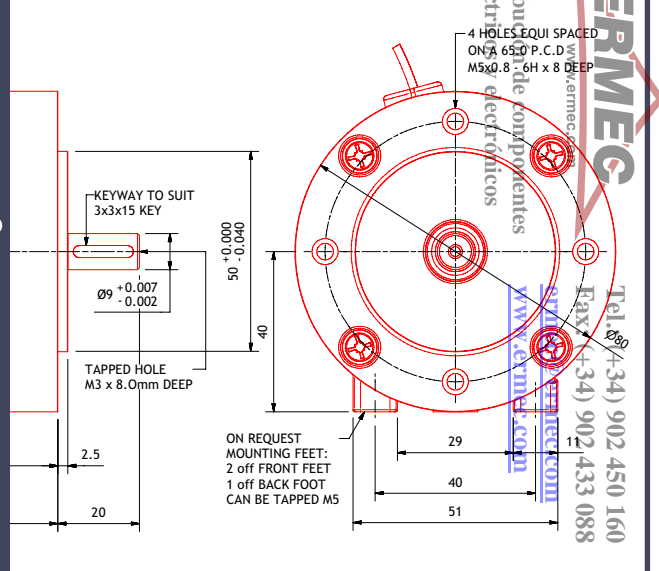
Parvalux standard flange/mount



IEC Eurostandard flange/mount



IEC B14 M56 flange/mount



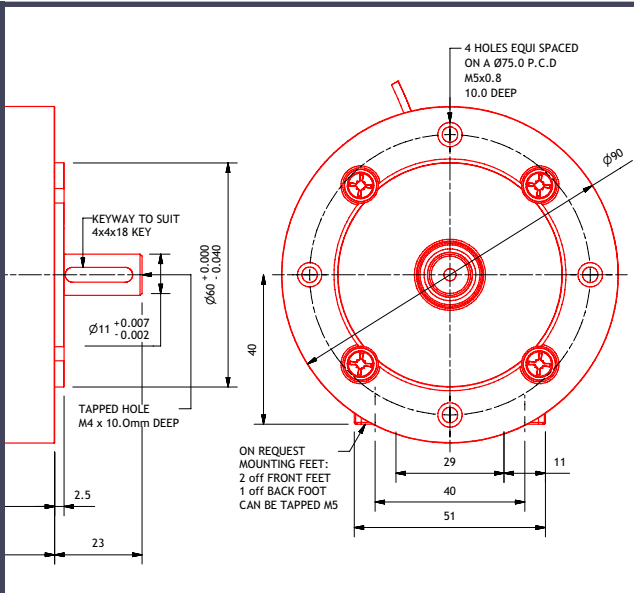
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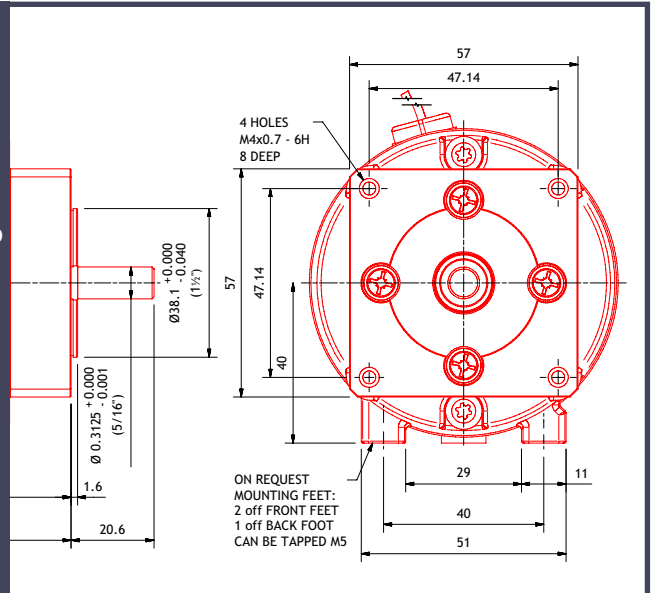
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IEC B14 M63 flange/mount



NEMA standard flange/mount



# PM50 motor data

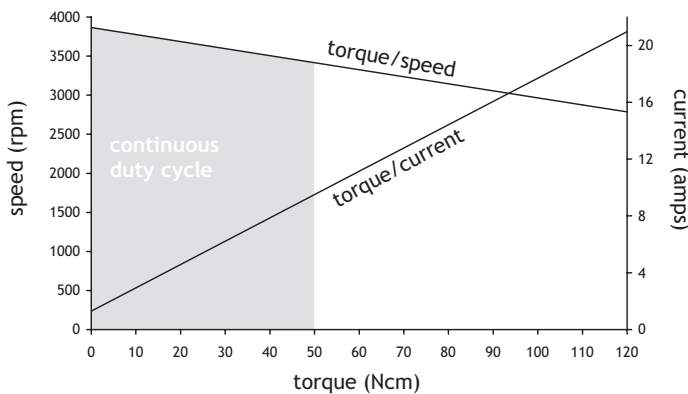
POWER	80 - 465 Watts
TYPE	Permanent magnet DC brushed motor
SPEED*	1500 - 5000 rpm
VOLTAGE*	12V - 220V DC available range
CONNECTION*	Flying leads 30cm flexible
SHAFT*	Single or double ended on request
INERTIA	$0.46 \times 10^{-3} \text{ kgm}^2$
WEIGHT	2.9 kg
RADIAL LOAD†	180 N
INSULATION CLASS	F
IP PROTECTION	IP54
OPTIONS	See page 36



PM50 pictured with Parvalux standard flange

SPEED (Rpm)	POWER (WATTS)			TORQUE (NM)			CURRENT (A)**			
	CONT	1 HOUR	15 MIN	CONT	1 HOUR	15 MIN	12V	24V	50V	
1500	80	100	140	0.5	0.6	0.9	1.1	0.6	0.3	No load current (A)
							10	4.18	2.08	Full load current (A)
2000	105	135	185	0.5	0.6	0.9	1.6	0.8	0.4	No load current (A)
							11.2	6.6	3.3	Full load current (A)
3000	155	200	280	0.5	0.6	0.9	2.6	1.3	0.4	No load current (A)
							18	9.4	3.7	Full load current (A)
4000	205	265	375	0.5	0.6	0.9	3.1	1.5	0.8	No load current (A)
							22	10.4	5.3	Full load current (A)
5000	255	330	465	0.5	0.6	0.9	**Please contact sales support for load currents			

## PM50 • 3000 rpm • 24V • 155W



\* We produce all our motors in the UK and therefore voltage, speed, connection and shaft configuration can be customised to your exact requirements

† Based 10mm from motor mounting face with plain shaft extension

\*\* Please contact our technical sales team for current ratings for alternative voltages and/or speeds

### Motor construction

The motor frame comprises pressure die castings accurately located together ensuring a concentric air gap with correct bearing alignment. The armature laminations are pressed onto a precision steel shaft and are then statically and dynamically balanced. The armature is wound with first class quality synthetic covered copper wire manufactured to EN60085:2004 class "F" and then impregnated and baked in our automatic plant and accordingly can be considered to be tropically impregnated for all practical purposes.

### Motor Enclosures

To IEC 34-5 and EN 60034: part 5 and IEC 34-6 and B.S. EN 60034-6. Please refer to the individual product pages to identify the corresponding ingress protection level (IP rating).

### Bearings

We fit only first class shielded ball bearings into our motor and gearboxes which are spring loaded for quiet running. Typical operating temperatures range from -30°C to +120°C.

### Brush gear

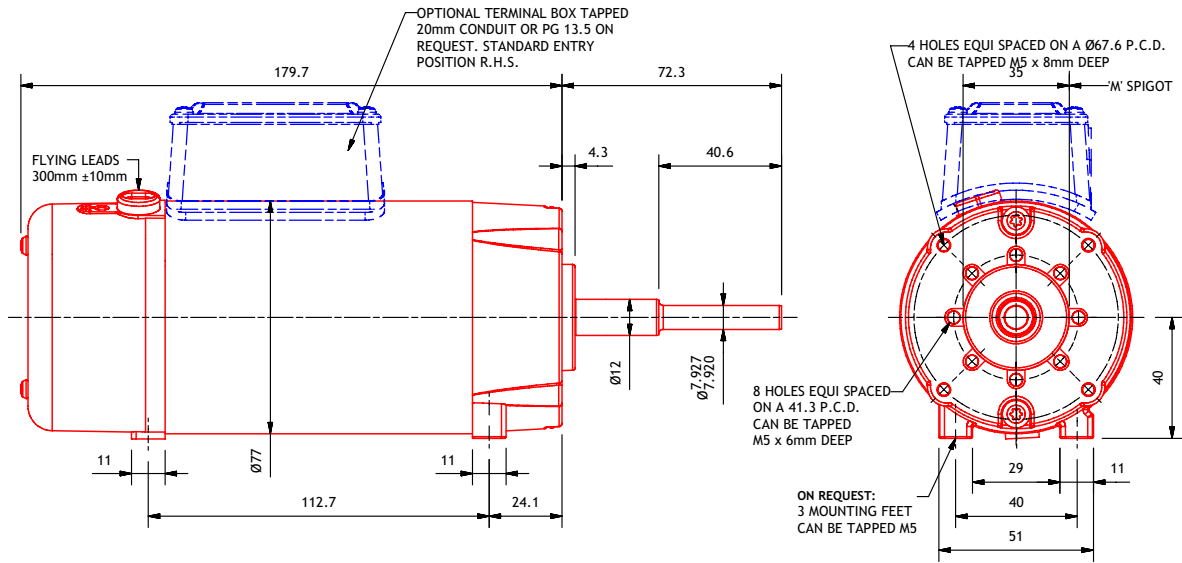
We provide an adjustable rocker type for maximum brush life and good commutation with easily accessible brushes. To achieve maximum brush life a form factor on the supply voltage as near to 1 as possible would be required.

### Temperature

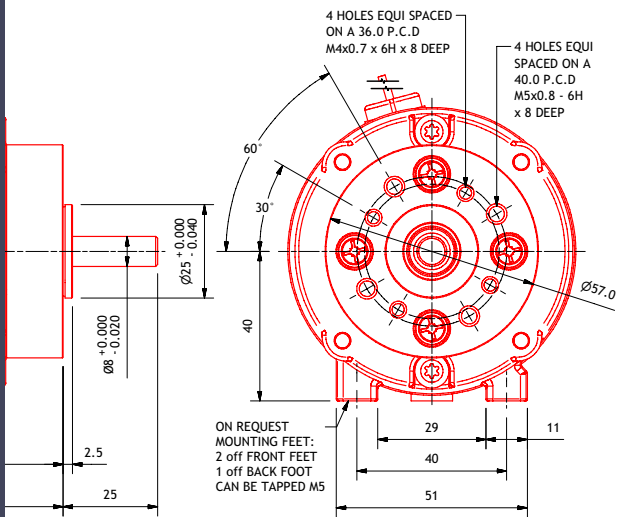
The PM50 is built with Class "F" insulation to EN60085:2004 which allows a temperature rise of 115°C based on an ambient of 40°C. These figures are with the motor running in normal working conditions in free air and not in any form of enclosure. Caution: Under full load the heat of the motor casing will be such that it is NOT possible to physically handle for any length of time.

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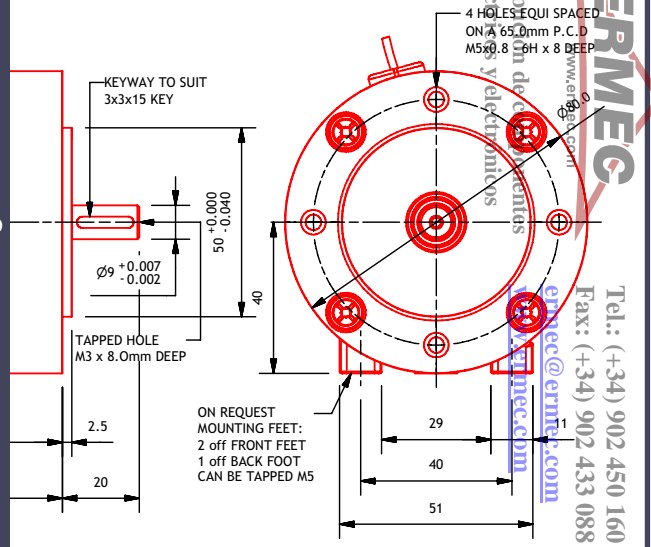
Parvalux standard flange/mount



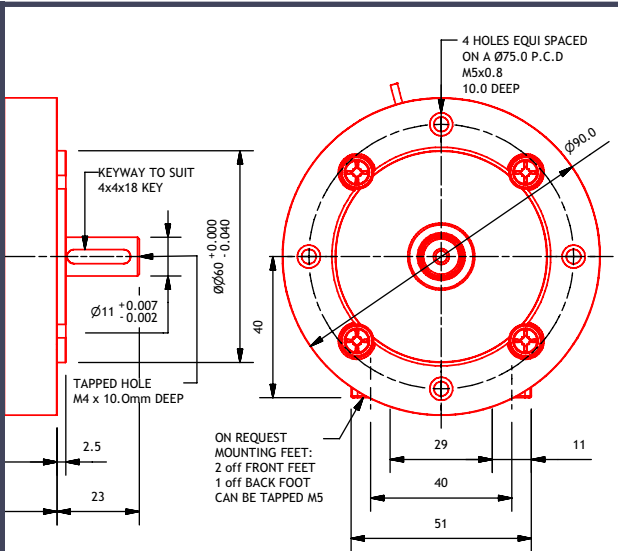
IEC Eurostandard flange/mount



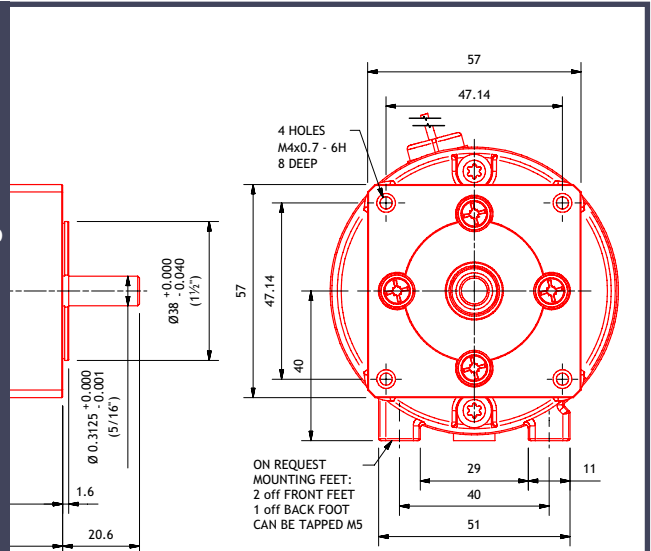
IEC B14 M56 flange/mount



IEC B14 M63 flange/mount



NEMA standard flange/mount



# PM90 motor data

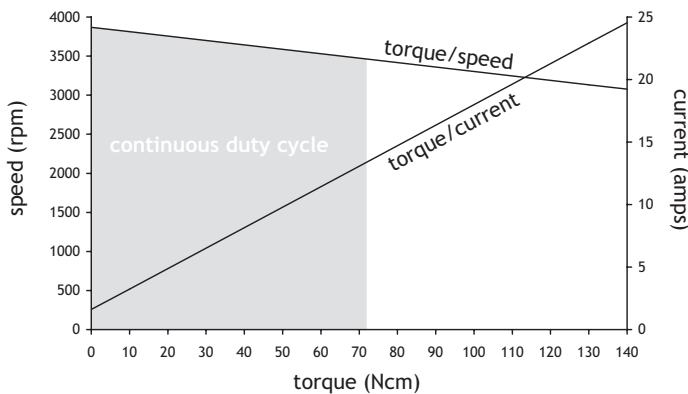
POWER	113 - 656 Watts
TYPE	Permanent magnet DC brushed motor
SPEED*	1500 - 5000 rpm
VOLTAGE*	12V - 48V available range
CONNECTION*	Flying leads 30cm flexible
SHAFT*	Single or double ended on request
INERTIA	$7.08 \times 10^{-4} \text{kgm}^2$
WEIGHT	3.51 kg
RADIAL LOAD†	200 N
INSULATION CLASS	B
IP PROTECTION	IP54
OPTIONS	See page 36



PM90 pictured with Parvalux standard flange

SPEED (Rpm)	POWER (WATTS)			TORQUE (NM)			CURRENT (A)**			
	CONT	1 HOUR	15 MIN	CONT	1 HOUR	15 MIN	12V	24V	50V	
1500	113	141	198	0.7	0.9	1.3	1.6	0.7	0.4	No load current (A)
							12.1	6.7	3.4	Full load current (A)
2000	150	188	263	0.7	0.9	1.3	2.3	0.9	0.5	No load current (A)
							17.8	7.9	4	Full load current (A)
3000	225	281	394	0.7	0.9	1.3	2.9	1.6	1.8	No load current (A)
							26.2	13.4	6.4	Full load current (A)
4000	300	375	525	0.7	0.9	1.3	4.8	1.9	1	No load current (A)
							39.5	17.8	8.5	Full load current (A)
5000	375	469	656	0.7	0.9	1.3	**Please contact sales support for load currents			

## PM90 • 3000 rpm • 24V • 225W



\* Voltage, speed, connection and shaft configuration can be customised to your exact requirements

† Based 10mm from motor mounting face with plain shaft extension

\*\* Please contact our technical sales team for current ratings for alternative voltages and/or speeds

### Motor construction

The motor frame comprises pressure die castings accurately located together ensuring a concentric air gap with correct bearing alignment. The armature laminations are pressed onto a precision steel shaft and are then statically and dynamically balanced. The armature is wound with first class quality synthetic covered copper wire manufactured to EN60085:2004 class "B" and then impregnated and baked in our automatic plant and accordingly can be considered to be tropically impregnated for all practical purposes.

### Motor Enclosures

To IEC 34-5 and EN 60034: part 5 and IEC 34-6 and B.S. EN 60034-6. Please refer to the individual product pages to identify the corresponding ingress protection level (IP rating).

### Bearings

We fit only first class shielded ball bearings into our motor and gearboxes which are spring loaded for quiet running. Typical operating temperatures range from -30°C to +120°C.

### Brush gear

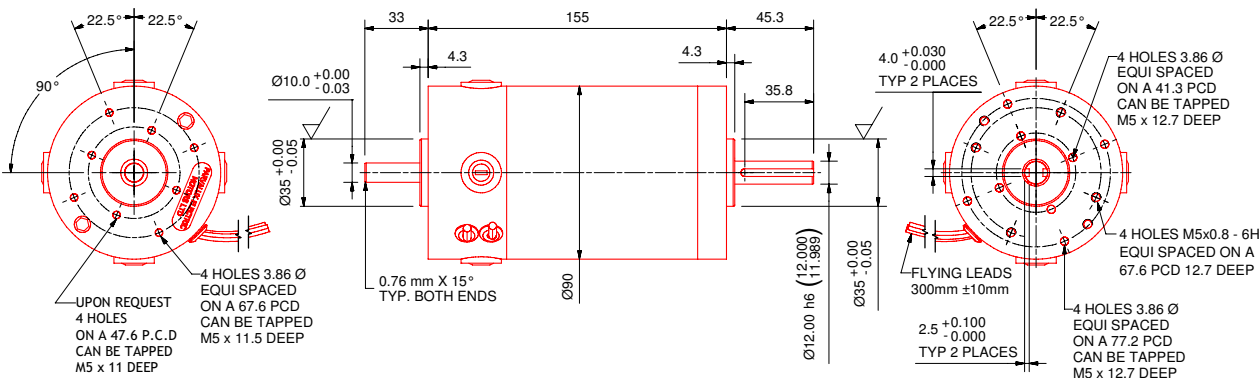
We provide four fixed brushes of two pole pairs accessible from the exterior of the motor that provide good brush life and commutation. To achieve maximum brush life a form factor on the supply voltage as near to 1 as possible would be required.

### Temperature

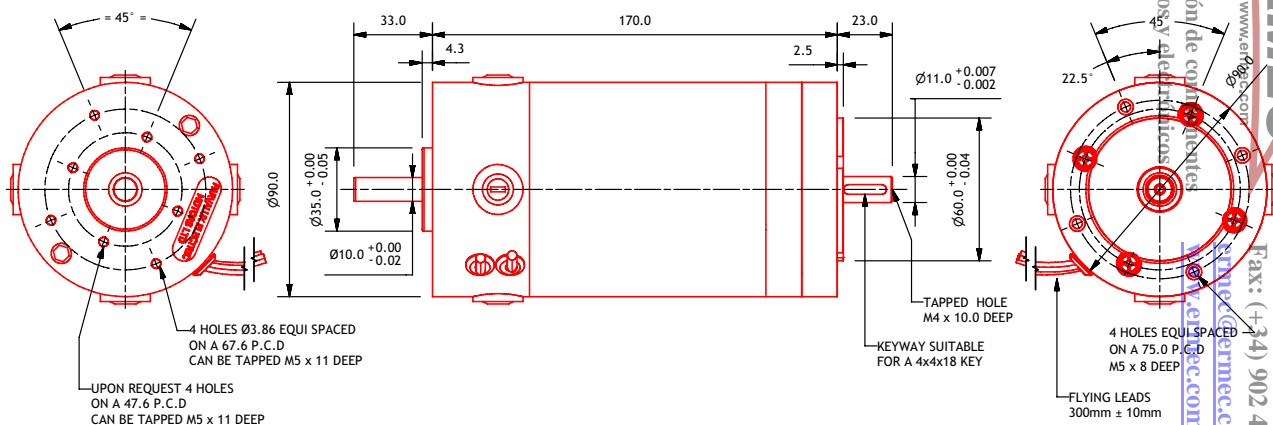
PM90/95 motors are built with class "B" insulation to EN60085:2004 which allows a temperature rise of 90°C based on an ambient of 40°C. These figures are with the motor running in normal working conditions in free air and not in any form of enclosure. Caution: Under full load the heat of the motor casing will be such that it is NOT possible to physically handle for any length of time.

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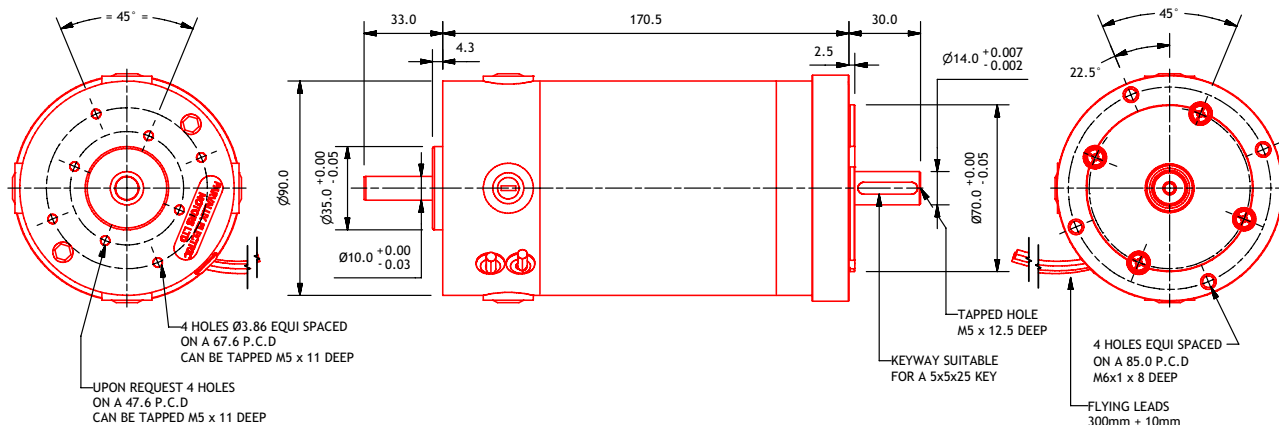
Parvalux standard flange/mount



IEC B14 M63 flange/mount



IEC B14 M71 flange/mount



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# PM95 motor data

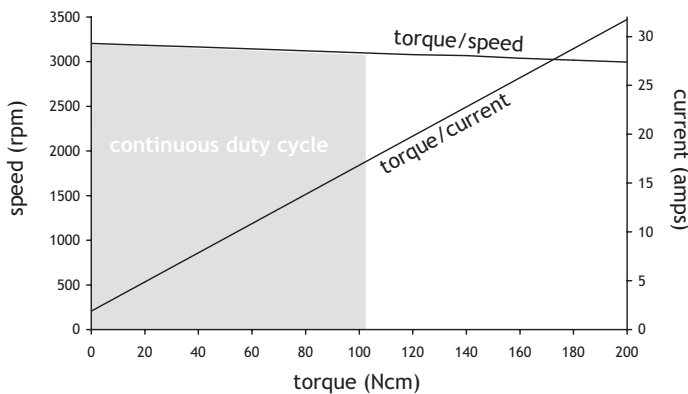
POWER	168 - 984 Watts
TYPE	Permanent magnet DC brushed motor
SPEED*	1500 - 5000 rpm
VOLTAGE*	12V - 48V available range
CONNECTION*	Flying leads 30cm flexible
SHAFT*	Single or double ended on request
INERTIA	$1.07 \times 10^{-3} \text{kgm}^2$
WEIGHT	5.1 kg
RADIAL LOAD†	200 N
INSULATION CLASS	B
IP PROTECTION	IP54
OPTIONS	See page 36



PM95 pictured with Parvalux standard flange

SPEED (Rpm)	POWER (WATTS)			TORQUE (NM)			CURRENT (A)**			
	CONT	1 HOUR	15 MIN	CONT	1 HOUR	15 MIN	12V	24V	50V	
1500	168	210	294	1.1	1.3	1.9	1.9	0.9	0.45	No load current (A)
							18.7	9.5	4.5	Full load current (A)
2000	225	281	394	1.1	1.3	1.9	2.1	1.2	0.6	No load current (A)
							23.9	12.9	6.5	Full load current (A)
3000	337	421	590	1.1	1.3	1.9	4.3	1.9	1	No load current (A)
							44	17.6	8.5	Full load current (A)
4000	450	563	788	1.1	1.3	1.9	5.7	2.2	1.1	No load current (A)
							58	26.8	13.5	Full load current (A)
5000	562	703	984	1.1	1.3	1.9	**Please contact sales support for load currents			

## PM95 • 3000 rpm • 24V • 337W



- \* Voltage, speed, connection and shaft configuration can be customised to your exact requirements
- † Based 10mm from motor mounting face with plain shaft extension
- \*\* Please contact our technical sales team for current ratings for alternative voltages and/or speeds

### Motor construction

The motor frame comprises pressure die castings accurately located together ensuring a concentric air gap with correct bearing alignment. The armature laminations are pressed onto a precision steel shaft and are then statically and dynamically balanced. The armature is wound with first class quality synthetic covered copper wire manufactured to EN60085:2004 class "B" and then impregnated and baked in our automatic plant and accordingly can be considered to be tropically impregnated for all practical purposes.

### Motor Enclosures

To IEC 34-5 and EN 60034: part 5 and IEC 34-6 and B.S. EN 60034-6. Please refer to the individual product pages to identify the corresponding ingress protection level (IP rating).

### Bearings

We fit only first class shielded ball bearings into our motor and gearboxes which are spring loaded for quiet running. Typical operating temperatures range from -30°C to +120°C.

### Brush gear

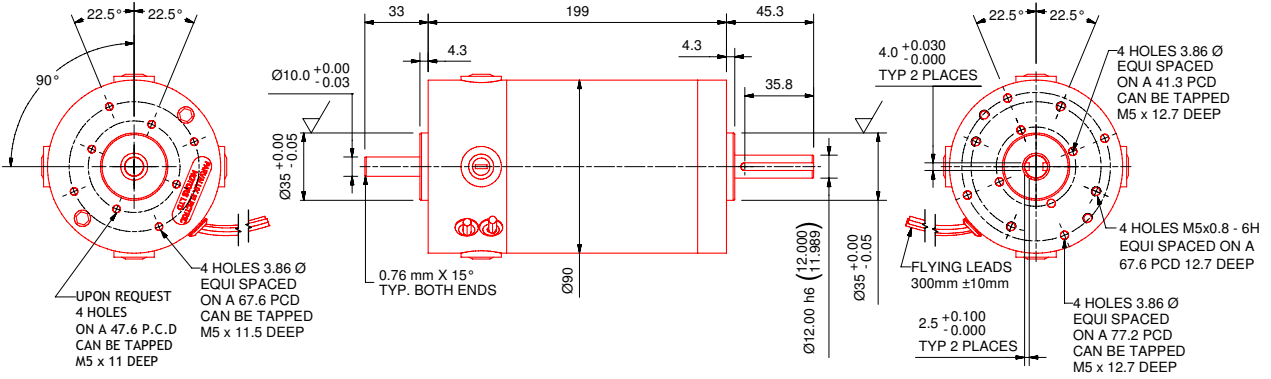
We provide four fixed brushes of two pole pairs accessible from the exterior of the motor that provide good brush life and commutation. To achieve maximum brush life a form factor on the supply voltage as near to 1 as possible would be required.

### Temperature

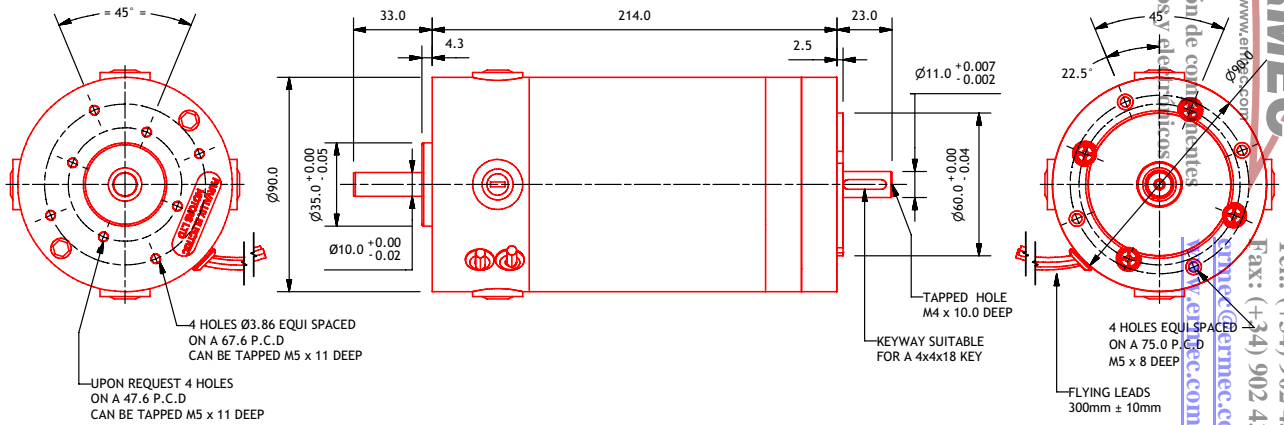
PM90/95 motors are built with class "B" insulation to EN60085:2004 which allows a temperature rise of 90°C based on an ambient of 40°C. These figures are with the motor running in normal working conditions in free air and not in any form of enclosure. Caution: Under full load the heat of the motor casing will be such that it is NOT possible to physically handle for any length of time.

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Parvalux standard flange/mount

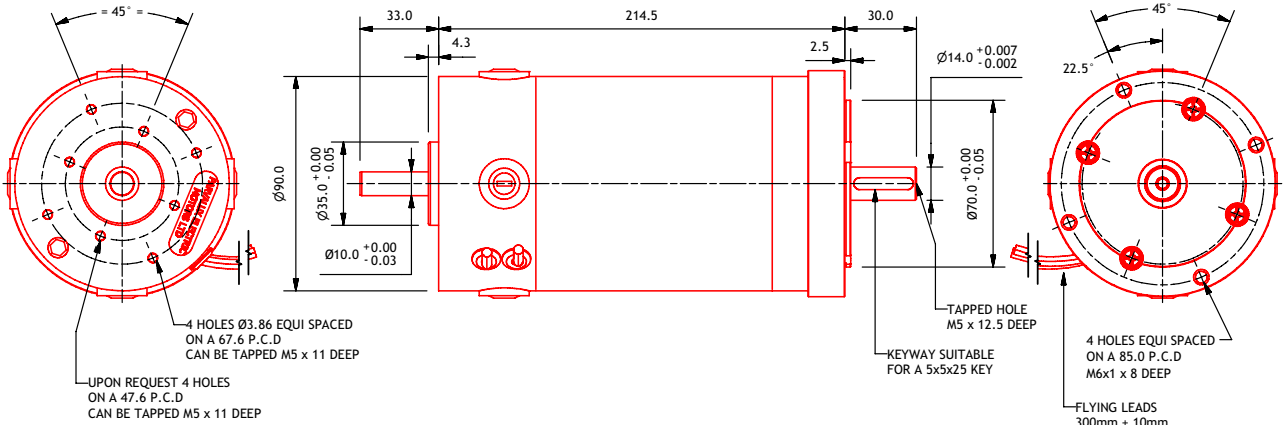


IEC B14 M63 flange/mount



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IEC B14 M71 flange/mount



# customisation options

Parvalux motors and gearboxes can be customised to the exact needs of the application. Increasingly, we are providing geared motor units with extra components specified by customers in order to provide a complete sub-assembly, saving both time and cost. Some of our many options are described below. If the option that you are looking for is not shown, please do not hesitate to contact us to discuss we may well have a solution that meets your needs.

## Output flange

We provide a comprehensive range of motor flanges to meet IEC, NEMA and common "Euro-standard" dimensions as well as Parvalux standard. All motor and gearbox flanges can be customised to include extra blank / tapped holes or have specially machined registers. We are also able to produce custom specific flanges for medium quantity volumes.

## Shaft

We offer a range of single or double ended shafts for our complete motor and gearbox range. In addition to the standard shafts shown in the catalogue, we can produce special keyways, shafts with flats, drilled and/or tapped shafts, cross-drilled shafts and special fittings to specific requirements. Shaft material as standard is a carbon-steel; alternative materials can be requested up to marine grade stainless steel.

## Cable

Apart from our standard length of cable, alternative lengths can be specified according to your needs which can be assembled in a cable loom as required. Alternative 3 core cables can be provided as well as options for cable screening. We can fit a huge range of connectors or crimps to our motor cables according to your specification.

## Brake

We provide a standard range of high-quality spring applied brakes to provide either static-holding or dynamic braking. Our standard ranges from 0.4Nm - 1.0Nm operating on a low voltage DC supply or a single phase AC supply. Alternative brakes are available on request.

## Encoder

We provide a standard range of HEDS compatible dual channel encoders offering 200 - 1250CPR output (500CPR as standard) with index pulse. These high-performance encoders are mounted to the rear of the motor; however, we are also able to provide custom-specific mounting on the gearbox output shaft. If an alternative style of encoder is required, we are happy to source an alternative or provide a custom-specific solution.

## Tachogenerator

Our standard brushless tachogenerator is a single phase AC 24 pole design providing 200Hz/krpm output. Mounted to the rear of the motor, the device offers simple and cost-effective feedback. Alternative tachogenerators are available on request.

## Bespoke solutions

As well as providing a large range of design options based on customising existing designs, we are able to provide bespoke solutions (out-and-out specials) for medium - high volume applications. In such cases our in-house design team are able to model new designs to allow rapid prototyping and test. With a strong design element as well as modern manufacturing and low cost supply chain, we are often able to provide cost-effective solutions quickly.

## Paint finish

Standard paint finish is Parvalux blue applied to induction, series wound and permanent geared motors. Planetary geared motors are powder coated blue and DC brushless motors are painted black. Alternative paint colours are available on request.

### L3P

3 point fixing option  
See page 153



### M3P

3 point fixing option  
See page 153



### S3P

3 point fixing option  
See page 153



### Terminal box

pictured with PM1  
See page 154



### 1 Nm dynamic brake

pictured with PM95  
See page 155



### 0.5 Nm holding brake

pictured with PM3  
See page 155



### Incremental encoder

pictured with PM10  
See page 156



### Tachogenerator

pictured with PM7  
See page 157



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# geared motor overview

	Type Code	Shaft Orientation	Power (Watts)*		Speed (rpm)		Torque (Nm)**		Load (N)		Pages
			Min	Max	Min	Max	Min	Max	Radial***	Axial	
<b>motors only</b> 	PM1 - 95	In-line	7.5	450	1500	5000	0.05	1.1	See pages 5 - 35		5 - 35
<b>worm</b> 	S	90°	7.5	90	21	780	0.2	4.0	69	35	38 - 42
	M	90°	23	280	21	649	0.7	11.7	132	88	43 - 52
	MB / MF	90°	23	280	21	649	0.7	11.7	226	108	43 - 52
	L / LH	90°	45	450	25	780	1.2	18.7	177	132	53 - 62
	LB / LF / LHB	90°	45	450	25	780	1.2	18.7	314	157	53 - 62
	LS / LSH	90°	45	450	25	780	1.2	18.7	314	196	63 - 72
	G / GH	90°	80	450	20	320	4.6	45.1	491	294	73 - 76
<b>double worm</b> 	SS	90° / In-line	7.5	60	0.5	150	0.8	5.9	54	35	77 - 80
	MM	90° / In-line	23	60	0.3	60	5.0	11.8	88	88	81
	MBM	90° / In-line	23	60	0.3	60	5.0	11.8	177	108	81
<b>in-line double worm</b> 	SIW	In-line	7.5	90	1	235	0.6	11.3	78	49	82 - 86
	MIW	In-line	23	120	1	235	1.7	28.0	265	132	87 - 90
	LIW	In-line	33	200	1	108	4.7	45.0	353	196	91 - 96
<b>in-line spur</b> 	SIS	In-line	7.5	90	5	182	0.9	7.9	88	44	97 - 101
	MIS	In-line	33	200	15	623	1.0	37.0	216	137	102 - 107
	LIS	In-line	23	280	4	667	1.0	86.0	265	177	108 - 117
<b>worm spur</b> 	SWS	90°	7.5	60	1	101	1.5	11.0	177	112	118 - 121
	MWS	90°	7.5	90	1	149	1.0	45.0	353	177	122 - 126
	LWS	90°	23	450	0.4	80	4.0	100.0	446	226	127 - 138
	GWS	90°	60	450	0.5	71	16.0	250.0	667	353	139 - 144
<b>planetary</b> 	PG36	In-line	3.8	11	3	647	0.1	0.3	See page 36		147 - 148
	PG45	In-line	11	14	5	863	0.1	10.0	See page 36		149
	PG56	In-line	3.7	59	3	694	0.1	30.0	See page 36		150 - 152

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worm gearboxes  
 double worm  
 in-line worm  
 in-line spur  
 worm spur  
 planetary

\* Continuous rated power  
 \*\* Continuous output torque  
 \*\*\* Based 10mm from motor mounting face with plain shaft extension

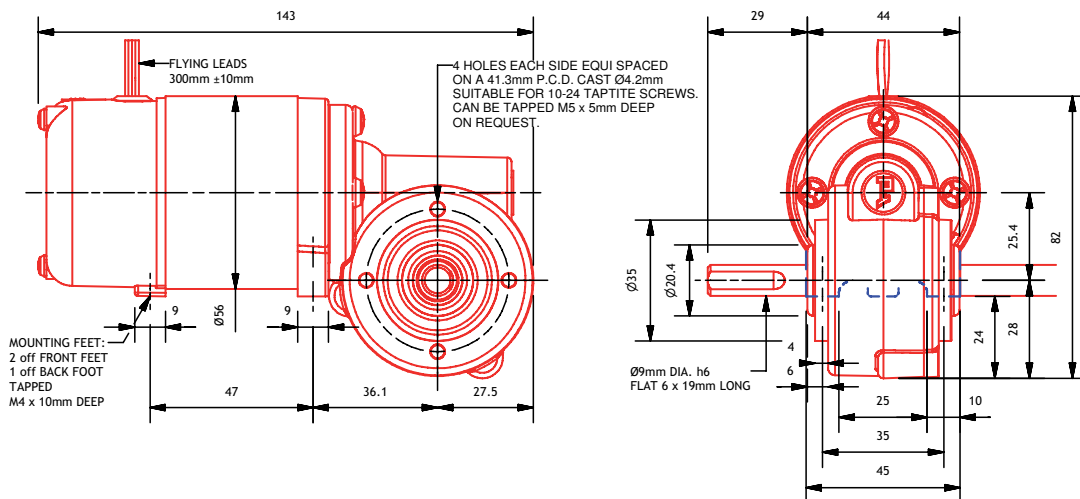
# PM7S

- MOTOR Permanent magnet DC motor
- PROTECTION Totally enclosed (IP54)
- GEARBOX Worm and wheel (S)
- POWER 7.5 - 33 Watts
- SPEED 21 - 780 rpm
- VOLTAGE 12V - 220V DC available range
- WEIGHT 0.9 kg
- RADIAL LOAD 69 N
- AXIAL LOAD 35 N
- SHAFT TYPE Single ended or double ended upon request
- EXTRAS See page 36



RATIO	MOTOR SPEED (rpm)				TORQUE (Nm)					
	1500	2000	3000	4000	CONTINUOUS		1 HOUR		15 MINUTE	
					Composite	Bronze	Composite	Bronze	Composite	Bronze
	OUTPUT SPEED (rpm)									
70	21	29	43	57	1.2	1.2	1.5	1.6	1.5	1.9
60	25	33	50	67	1.0	1.0	1.4	1.4	1.7	1.7
48	31	42	63	83	0.9	0.9	1.2	1.2	1.5	1.5
40	38	50	75	100	0.8	0.8	1.1	1.1	1.4	1.4
36	42	56	83	111	0.8	0.8	1.0	1.0	1.3	1.3
33	45	61	91	121	0.7	0.7	1.0	1.0	1.2	1.2
30	50	67	100	133	0.7	0.7	0.9	0.9	1.2	1.2
27	56	74	111	148	0.7	0.7	0.9	0.9	1.1	1.1
25	60	80	120	160	0.6	0.6	0.8	0.8	1.0	1.0
20 1/2	73	98	146	195	0.5	0.5	0.7	0.7	0.9	0.9
18 1/2	81	108	162	216	0.5	0.5	0.7	0.7	0.8	0.8
16 1/2	91	121	182	242	0.5	0.5	0.6	0.6	0.8	0.8
13 1/2	111	148	222	296	0.4	0.4	0.5	0.5	0.7	0.7
12 1/2	120	160	240	320	0.4	0.4	0.5	0.5	0.6	0.6
11 1/3	132	176	265	353	0.4	0.4	0.5	0.5	0.6	0.6
10 1/3	145	194	290	387	0.3	0.3	0.4	0.4	0.6	0.6
9 1/3	161	214	321	429	0.3	0.3	0.4	0.4	0.5	0.5
8 1/3	180	240	360	480	0.3	0.3	0.4	0.4	0.5	0.5
6 1/6	243	324	486	649	0.2	0.2	0.3	0.3	0.4	0.4
5 1/8	293	390	585	780	0.2	0.2	0.3	0.3	0.3	0.3

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# PM8S

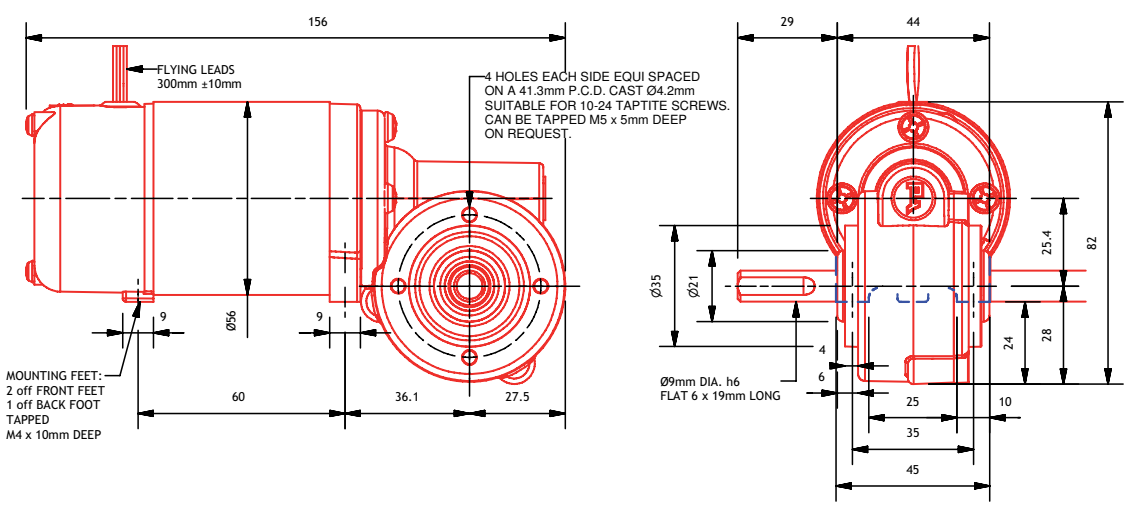
- MOTOR Permanent magnet DC motor
- PROTECTION Totally enclosed (IP54)
- GEARBOX Worm and wheel (S)
- POWER 13 - 48 Watts
- SPEED 21 - 780 rpm
- VOLTAGE 12V - 220V DC available range
- WEIGHT 1.1 kg
- RADIAL LOAD 69 N
- AXIAL LOAD 35 N
- SHAFT TYPE Single ended or double ended upon request
- EXTRAS See page 36



RATIO	MOTOR SPEED (rpm)				TORQUE (Nm)					
	1500	2000	3000	4000	CONTINUOUS		1 HOUR		15 MINUTE	
					Composite	Bronze	Composite	Bronze	Composite	Bronze
	OUTPUT SPEED (rpm)									
70	21	29	43	57	1.5	1.9	1.5	2.5	1.5	2.5
60	25	33	50	67	1.7	1.7	2.3	2.3	2.3	2.5
48	31	42	63	83	1.5	1.5	2.0	2.0	2.2	2.2
40	38	50	75	100	1.4	1.4	1.8	1.8	2.0	2.0
36	42	56	83	111	1.3	1.3	1.7	1.7	1.9	1.9
33	45	61	91	121	1.2	1.2	1.6	1.6	1.8	1.8
30	50	67	100	133	1.2	1.2	1.5	1.5	1.7	1.7
27	56	74	111	148	1.1	1.1	1.4	1.4	1.6	1.6
25	60	80	120	160	1.0	1.0	1.4	1.4	1.5	1.5
20 1/2	73	98	146	195	0.9	0.9	1.2	1.2	1.3	1.3
18 1/2	81	108	162	216	0.8	0.8	1.1	1.1	1.2	1.2
16 1/2	91	121	182	242	0.8	0.8	1.0	1.0	1.1	1.1
13 1/2	111	148	222	296	0.7	0.7	0.9	0.9	1.0	1.0
12 1/2	120	160	240	320	0.6	0.6	0.8	0.8	0.9	0.9
11 1/3	132	176	265	353	0.6	0.6	0.8	0.8	0.9	0.9
10 1/3	145	194	290	387	0.6	0.6	0.7	0.7	0.8	0.8
9 1/3	161	214	321	429	0.5	0.5	0.7	0.7	0.7	0.7
8 1/3	180	240	360	480	0.5	0.5	0.6	0.6	0.7	0.7
6 1/6	243	324	486	649	0.4	0.4	0.5	0.5	0.5	0.5
5 1/8	293	390	585	780	0.3	0.3	0.4	0.4	0.5	0.5

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worm gearboxes



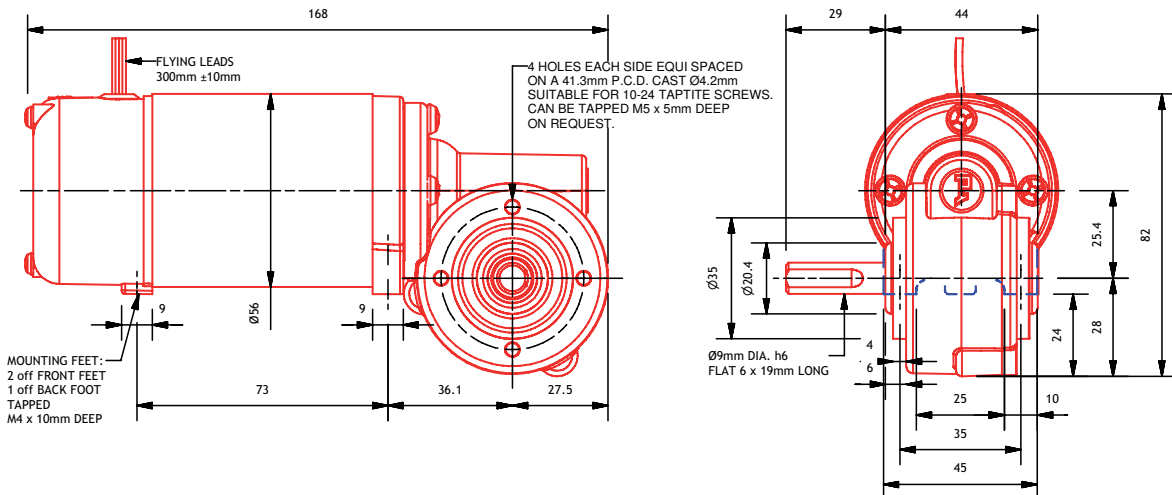
# PM9S

- MOTOR Permanent magnet DC motor
- PROTECTION Totally enclosed (IP54)
- GEARBOX Worm and wheel (S)
- POWER 19 - 70 Watts
- SPEED 21 - 780 rpm
- VOLTAGE 12V - 220V DC available range
- WEIGHT 1.3 kg
- RADIAL LOAD 69 N
- AXIAL LOAD 35 N
- SHAFT TYPE Single ended or double ended upon request
- EXTRAS See page 36



RATIO	MOTOR SPEED (rpm)				TORQUE (Nm)					
	1500	2000	3000	4000	CONTINUOUS		1 HOUR		15 MINUTE	
					Composite	Bronze	Composite	Bronze	Composite	Bronze
	OUTPUT SPEED (rpm)									
70	21	29	43	57	1.5	2.5	1.5	2.5	1.5	2.5
60	25	33	50	67	2.3	2.6	2.3	3.1	2.3	3.8
48	31	42	63	83	2.3	2.3	2.3	2.8	2.3	3.4
40	38	50	75	100	2.1	2.1	2.5	2.5	2.9	3.1
36	42	56	83	111	2.0	2.0	2.3	2.3	2.9	2.9
33	45	61	91	121	1.9	1.9	2.2	2.2	2.7	2.7
30	50	67	100	133	1.8	1.8	2.1	2.1	2.6	2.6
27	56	74	111	148	1.7	1.7	2.0	2.0	2.4	2.4
25	60	80	120	160	1.6	1.6	1.9	1.9	2.3	2.3
20 1/2	73	98	146	195	1.4	1.4	1.6	1.6	2.0	2.0
18 1/2	81	108	162	216	1.3	1.3	1.5	1.5	1.9	1.9
16 1/2	91	121	182	242	1.2	1.2	1.4	1.4	1.7	1.7
13 1/2	111	148	222	296	1.0	1.0	1.2	1.2	1.5	1.5
12 1/2	120	160	240	320	1.0	1.0	1.2	1.2	1.4	1.4
11 1/3	132	176	265	353	0.9	0.9	1.1	1.1	1.3	1.3
10 1/3	145	194	290	387	0.8	0.8	1.0	1.0	1.2	1.2
9 1/3	161	214	321	429	0.8	0.8	0.9	0.9	1.1	1.1
8 1/3	180	240	360	480	0.7	0.7	0.9	0.9	1.0	1.0
6 1/6	243	324	486	649	0.6	0.6	0.7	0.7	0.8	0.8
5 1/8	293	390	585	780	0.5	0.5	0.6	0.6	0.7	0.7

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# PM10S

MOTOR	Permanent magnet DC motor
PROTECTION	Totally enclosed (IP54)
GEARBOX	Worm and wheel (S)
POWER	23 - 100 Watts
SPEED	21 - 780 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	1.50 kg
RADIAL LOAD	69 N
AXIAL LOAD	35 N
SHAFT TYPE	Single ended or double ended upon request
EXTRAS	See page 36

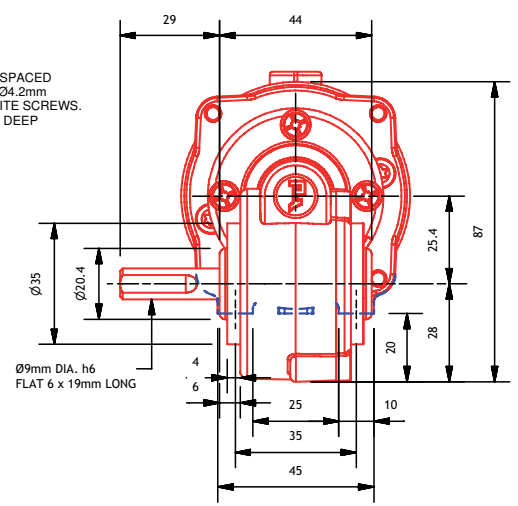
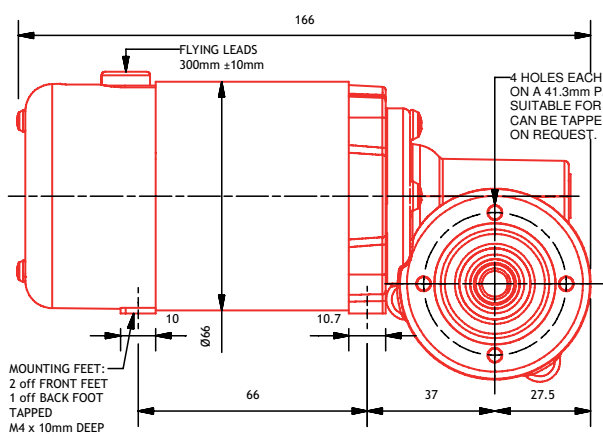


RATIO	MOTOR SPEED (rpm)				TORQUE (Nm)					
	1500	2000	3000	4000	CONTINUOUS		1 HOUR		15 MINUTE	
					Composite	Bronze	Composite	Bronze	Composite	Bronze
	OUTPUT SPEED (rpm)									
70	21	29	43	57	1.5	2.5	1.5	2.5	1.5	2.5
60	25	33	50	67	2.3	3.1	2.3	3.8	2.3	4.0
48	31	42	63	83	2.3	2.8	2.3	3.4	2.3	4.0
40	38	50	75	100	2.5	2.5	2.9	3.1	2.9	3.9
36	42	56	83	111	2.3	2.3	2.9	2.9	2.9	3.7
33	45	61	91	121	2.2	2.2	2.7	2.7	2.9	3.5
30	50	67	100	133	2.1	2.1	2.6	2.6	2.9	3.3
27	56	74	111	148	2.0	2.0	2.4	2.4	2.9	3.1
25	60	80	120	160	1.9	1.9	2.3	2.3	2.9	2.9
20 1/2	73	98	146	195	1.6	1.6	2.0	2.0	2.5	2.5
18 1/2	81	108	162	216	1.5	1.5	1.9	1.9	2.4	2.4
16 1/2	91	121	182	242	1.4	1.4	1.7	1.7	2.2	2.2
13 1/2	111	148	222	296	1.2	1.2	1.5	1.5	1.9	1.9
12 1/2	120	160	240	320	1.2	1.2	1.4	1.4	1.8	1.8
11 1/3	132	176	265	353	1.1	1.1	1.3	1.3	1.7	1.7
10 1/3	145	194	290	387	1.0	1.0	1.2	1.2	1.6	1.6
9 1/3	161	214	321	429	0.9	0.9	1.1	1.1	1.5	1.5
8 1/3	180	240	360	480	0.9	0.9	1.0	1.0	1.3	1.3
6 1/6	243	324	486	649	0.7	0.7	0.8	0.8	1.1	1.1
5 1/8	293	390	585	780	0.6	0.6	0.7	0.7	0.9	0.9

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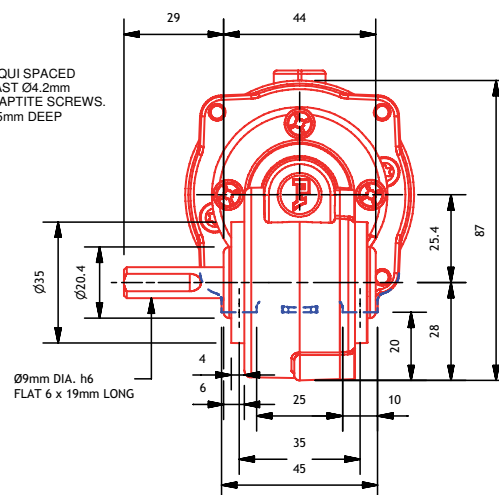
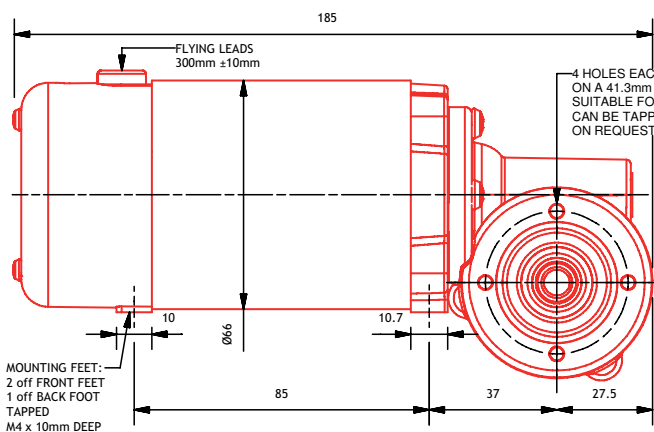
# PM11S

MOTOR	Permanent magnet DC motor
PROTECTION	Totally Enclosed (IP54)
GEARBOX	Worm and wheel (S)
POWER	33 -130 Watts
SPEED	21 - 780 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	1.96 kg
RADIAL LOAD	69 N
AXIAL LOAD	35 N
SHAFT TYPE	Single ended or double ended upon request
EXTRAS	See page 36



RATIO	MOTOR SPEED (rpm)				TORQUE (Nm)					
	1500	2000	3000	4000	CONTINUOUS		1 HOUR		15 MINUTE	
					Composite	Bronze	Composite	Bronze	Composite	Bronze
	OUTPUT SPEED (rpm)									
70	21	29	43	57	1.5	2.5	1.5	2.5	1.5	2.5
60	25	33	50	67	2.3	4.0	2.3	4.0	2.3	4.0
48	31	42	63	83	2.3	4.0	2.3	4.0	2.3	4.0
40	38	50	75	100	2.9	3.6	2.9	4.4	2.9	4.5
36	42	56	83	111	2.9	3.4	2.9	4.2	2.9	4.5
33	45	61	91	121	2.9	3.2	2.9	4.0	2.9	4.5
30	50	67	100	133	2.9	3.0	2.9	3.7	2.9	4.5
27	56	74	111	148	2.8	2.8	2.9	3.5	2.9	4.4
25	60	80	120	160	2.7	2.7	2.9	3.3	2.9	4.1
20 1/2	73	98	146	195	2.4	2.4	2.9	2.9	2.9	3.6
18 1/2	81	108	162	216	2.2	2.2	2.7	2.7	2.9	3.4
16 1/2	91	121	182	242	2.0	2.0	2.5	2.5	2.9	3.1
13 1/2	111	148	222	296	1.8	1.8	2.2	2.2	2.7	2.7
12 1/2	120	160	240	320	1.7	1.7	2.1	2.1	2.6	2.6
11 1/3	132	176	265	353	1.6	1.6	1.9	1.9	2.4	2.4
10 1/3	145	194	290	387	1.5	1.5	1.8	1.8	2.2	2.2
9 1/3	161	214	321	429	1.3	1.3	1.7	1.7	2.1	2.1
8 1/3	180	240	360	480	1.2	1.2	1.5	1.5	1.9	1.9
6 1/6	243	324	486	649	1.0	1.0	1.2	1.2	1.5	1.5
5 1/8	293	390	585	780	0.9	0.9	1.0	1.0	1.3	1.3

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# PM1M/MB

MOTOR	Permanent magnet DC motor
PROTECTION	Ventilated (IP21)
GEARBOX	Worm and wheel (M)
POWER	45 - 200 Watts
SPEED	21 - 649 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	2.82 kg (M); 3.01 kg (MB)
RADIAL LOAD	132 N (M); 226 N (MB)
AXIAL LOAD	88 N (M); 108 N (MB)
SHAFT TYPE	Single ended as standard; hollow or double ended upon request
EXTRAS	See page 36

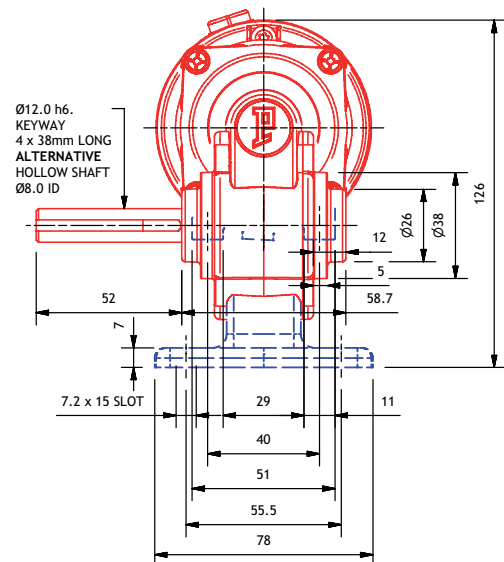
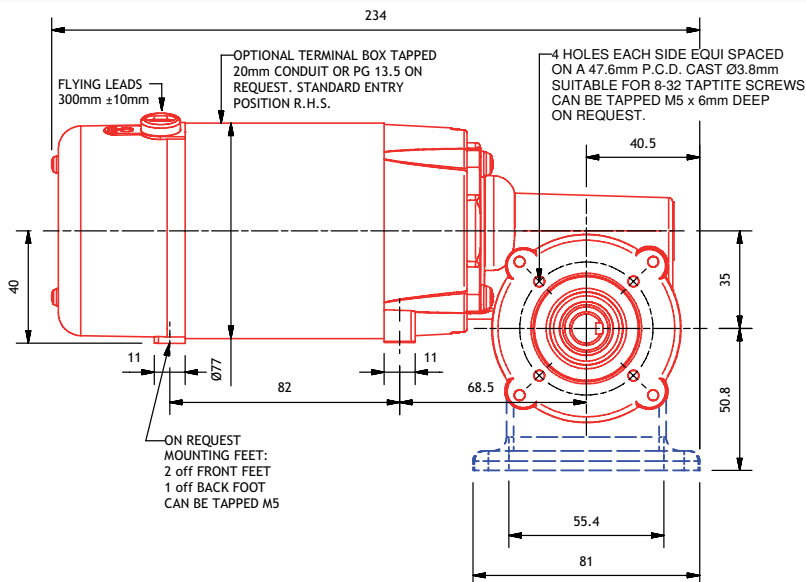


PM1M pictured

RATIO	MOTOR SPEED (rpm)				TORQUE (Nm)					
	OUTPUT SPEED (rpm)				CONTINUOUS		1 HOUR		15 MINUTE	
	1500	2000	3000	4000	Composite	Bronze	Composite	Bronze	Composite	Bronze
72	21	28	42	56	5.1	6.8	5.1	7.3	5.1	7.3
60	25	33	50	67	5.9	6.2	5.9	7.6	5.9	7.9
54	28	37	56	74	5.9	5.9	5.9	7.2	5.9	7.9
48	31	42	63	83	5.5	5.5	5.9	6.8	5.9	7.9
44	34	45	68	91	5.3	5.3	5.9	6.5	5.9	7.9
40	38	50	75	100	5.0	5.0	6.1	6.1	7.9	8.3
33	45	61	91	121	4.5	4.5	5.4	5.4	7.4	7.4
30	50	67	100	133	4.2	4.2	5.1	5.1	7.0	7.0
25	60	80	120	160	3.7	3.7	4.6	4.6	6.2	6.2
22 1/2	67	89	133	178	3.5	3.5	4.3	4.3	5.8	5.8
20 1/2	73	98	146	195	3.3	3.3	4.0	4.0	5.4	5.4
18 1/2	81	108	162	216	3.0	3.0	3.7	3.7	5.1	5.1
16 1/2	91	121	182	242	2.8	2.8	3.4	3.4	4.7	4.7
15 1/2	97	129	194	258	2.7	2.7	3.3	3.3	4.5	4.5
12 1/3	122	162	243	324	2.3	2.3	2.8	2.8	3.8	3.8
10 1/3	145	194	290	387	2.0	2.0	2.5	2.5	3.4	3.4
9 1/3	161	214	321	429	1.9	1.9	2.3	2.3	3.1	3.1
8 1/3	180	240	360	480	1.7	1.7	2.1	2.1	2.9	2.9
7 1/4	207	276	414	552	1.5	1.5	1.9	1.9	2.6	2.6
6 1/6	243	324	486	649	1.4	1.4	1.7	1.7	2.3	2.3

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# PM2M/MB

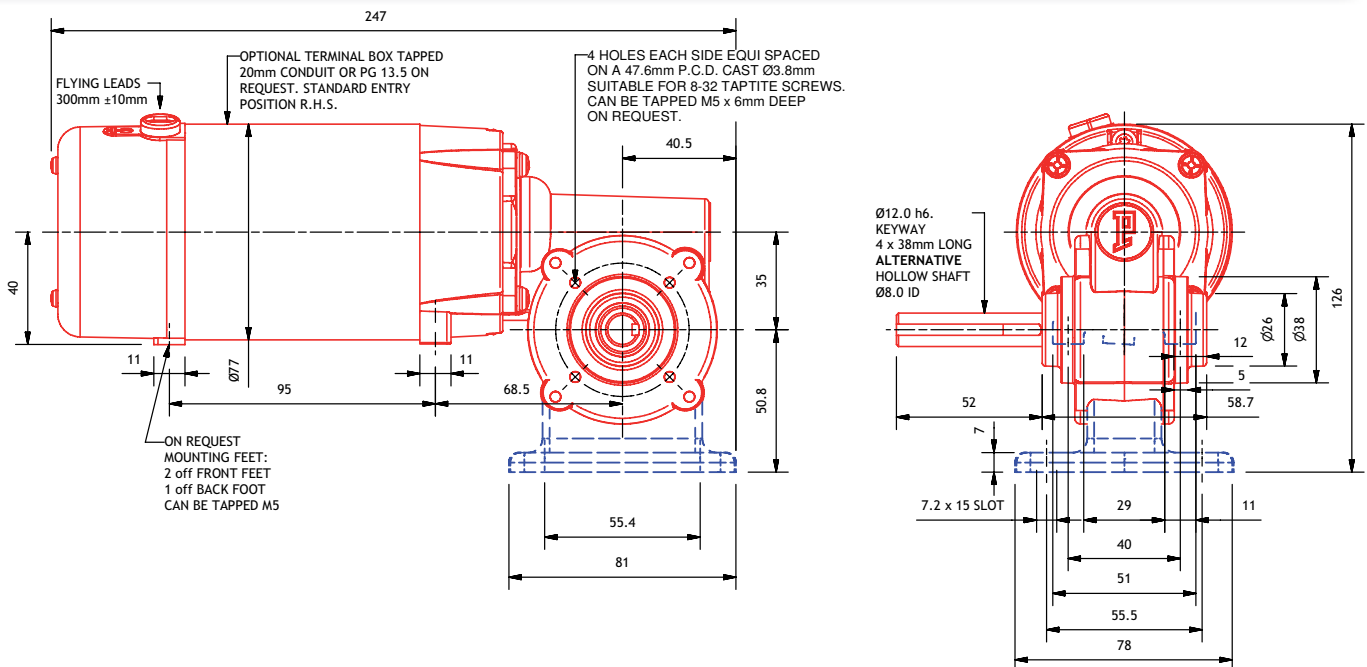
MOTOR	Permanent magnet DC motor
PROTECTION	Ventilated (IP21)
GEARBOX	Worm and wheel (M)
POWER	60 - 265 Watts
SPEED	21 - 649 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	3.17 kg (M); 3.36 kg (MB)
RADIAL LOAD	132 N (M); 226 N (MB)
AXIAL LOAD	88 N (M); 108 N (MB)
SHAFT TYPE	Single ended as standard; hollow or double ended upon request
EXTRAS	See page 36



PM2M pictured

RATIO	MOTOR SPEED (rpm)				TORQUE (Nm)					
	1500	2000	3000	4000	CONTINUOUS		1 HOUR		15 MINUTE	
					Composite	Bronze	Composite	Bronze	Composite	Bronze
	OUTPUT SPEED (rpm)									
72	21	28	42	56	5.1	7.3	5.1	7.3	5.1	7.3
60	25	33	50	67	5.9	7.9	5.9	7.9	5.9	7.9
54	28	37	56	74	5.9	7.9	5.9	7.9	5.9	7.9
48	31	42	63	83	5.9	7.4	5.9	7.9	5.9	7.9
44	34	45	68	91	5.9	7.0	5.9	7.9	5.9	7.9
40	38	50	75	100	6.7	6.7	7.9	8.3	7.9	11.1
33	45	61	91	121	5.9	5.9	7.4	7.4	7.9	9.9
30	50	67	100	133	5.6	5.6	7.0	7.0	7.9	9.3
25	60	80	120	160	5.0	5.0	6.2	6.2	7.9	8.3
22 1/2	67	89	133	178	4.6	4.6	5.8	5.8	7.7	7.7
20 1/2	73	98	146	195	4.4	4.4	5.4	5.4	7.3	7.3
18 1/2	81	108	162	216	4.1	4.1	5.1	5.1	6.8	6.8
16 1/2	91	121	182	242	3.8	3.8	4.7	4.7	6.3	6.3
15 1/2	97	129	194	258	3.6	3.6	4.5	4.5	6.0	6.0
12 1/3	122	162	243	324	3.0	3.0	3.8	3.8	5.1	5.1
10 1/3	145	194	290	387	2.7	2.7	3.4	3.4	4.5	4.5
9 1/3	161	214	321	429	2.5	2.5	3.1	3.1	4.1	4.1
8 1/3	180	240	360	480	2.3	2.3	2.9	2.9	3.8	3.8
7 1/4	207	276	414	552	2.1	2.1	2.6	2.6	3.4	3.4
6 1/6	243	324	486	649	1.8	1.8	2.3	2.3	3.0	3.0

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# PM6M/MB

MOTOR	Permanent magnet DC motor
PROTECTION	Ventilated (IP21)
GEARBOX	Worm and wheel (M)
POWER	75 - 330 Watts
SPEED	21 - 649 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	3.36 kg (M); 3.55 kg (MB)
RADIAL LOAD	132 N (M); 226 N (MB)
AXIAL LOAD	88 N (M); 108 N (MB)
SHAFT TYPE	Single ended as standard; hollow or double ended upon request
EXTRAS	See page 36

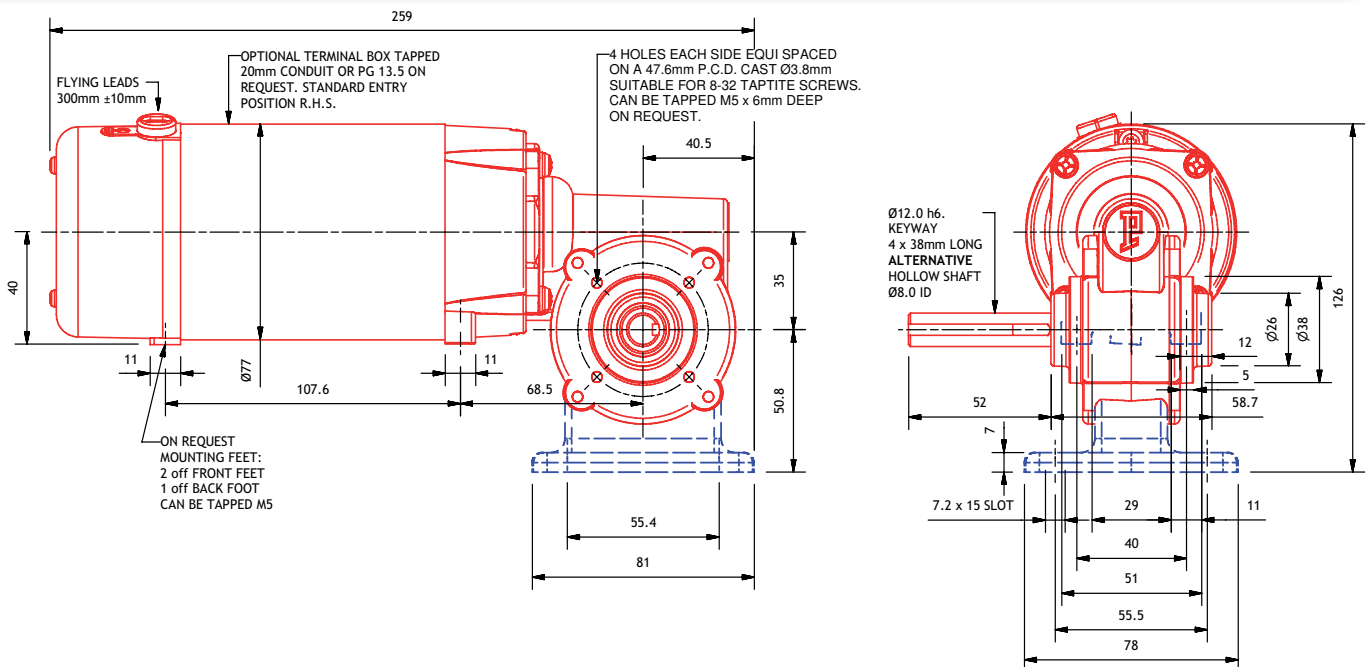


PM6M pictured

RATIO	MOTOR SPEED (rpm)				TORQUE (Nm)					
	1500	2000	3000	4000	CONTINUOUS		1 HOUR		15 MINUTE	
	OUTPUT SPEED (rpm)				Composite	Bronze	Composite	Bronze	Composite	Bronze
	21	28	42	56	5.1	7.3	5.1	7.3	5.1	7.3
60	25	33	50	67	5.9	7.9	5.9	7.9	5.9	7.9
54	28	37	56	74	5.9	7.9	5.9	7.9	5.9	7.9
48	31	42	63	83	5.9	7.9	5.9	7.9	5.9	7.9
44	34	45	68	91	5.9	7.9	5.9	7.9	5.9	7.9
40	38	50	75	100	7.9	8.3	7.9	10.0	7.9	11.8
33	45	61	91	121	7.4	7.4	7.9	8.9	7.9	11.8
30	50	67	100	133	7.0	7.0	7.9	8.4	7.9	11.4
25	60	80	120	160	6.2	6.2	7.5	7.5	7.9	10.2
22 1/2	67	89	133	178	5.8	5.8	7.0	7.0	7.9	9.5
20 1/2	73	98	146	195	5.4	5.4	6.5	6.5	7.9	8.9
18 1/2	81	108	162	216	5.1	5.1	6.1	6.1	7.9	8.3
16 1/2	91	121	182	242	4.7	4.7	5.6	5.6	7.7	7.7
15 1/2	97	129	194	258	4.5	4.5	5.4	5.4	7.3	7.3
12 1/3	122	162	243	324	3.8	3.8	4.6	4.6	6.2	6.2
10 1/3	145	194	290	387	3.4	3.4	4.0	4.0	5.5	5.5
9 1/3	161	214	321	429	3.1	3.1	3.7	3.7	5.1	5.1
8 1/3	180	240	360	480	2.9	2.9	3.4	3.4	4.7	4.7
7 1/4	207	276	414	552	2.6	2.6	3.1	3.1	4.2	4.2
6 1/6	243	324	486	649	2.3	2.3	2.7	2.7	3.7	3.7

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# PM60M/MB

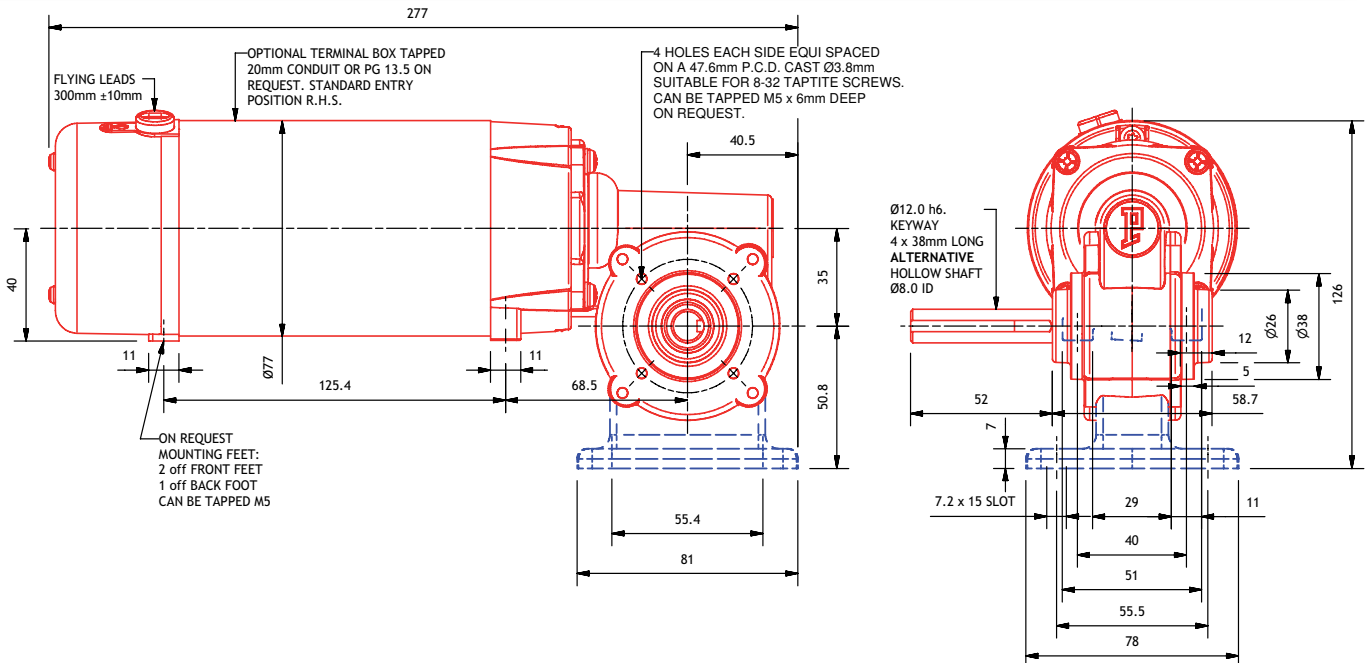
- MOTOR Permanent magnet DC motor
- PROTECTION Ventilated (IP21)
- GEARBOX Worm and wheel (M)
- POWER 105 - 460 Watts
- SPEED 21 - 649 rpm
- VOLTAGE 12V - 220V DC available range
- WEIGHT 3.6 kg (M); 3.8 kg (MB)
- RADIAL LOAD 132 N (M); 226 N (MB)
- AXIAL LOAD 88 N (M); 108 N (MB)
- SHAFT TYPE Single ended as standard; hollow or double ended upon request
- EXTRAS See page 36



PM60M pictured

RATIO	MOTOR SPEED (rpm)				TORQUE (Nm)					
	1500	2000	3000	4000	CONTINUOUS		1 HOUR		15 MINUTE	
					Composite	Bronze	Composite	Bronze	Composite	Bronze
	OUTPUT SPEED (rpm)									
72	21	28	42	56	5.1	7.3	5.1	7.3	5.1	7.3
60	25	33	50	67	5.9	7.9	5.9	7.9	5.9	7.9
54	28	37	56	74	5.9	7.9	5.9	7.9	5.9	7.9
48	31	42	63	83	5.9	7.9	5.9	7.9	5.9	7.9
44	34	45	68	91	5.9	7.9	5.9	7.9	5.9	7.9
40	38	50	75	100	7.9	11.7	7.9	11.8	7.9	11.8
33	45	61	91	121	7.9	10.4	7.9	11.8	7.9	11.8
30	50	67	100	133	7.9	9.8	7.9	11.8	7.9	11.8
25	60	80	120	160	7.9	8.7	7.9	10.6	7.9	11.8
22 1/2	67	89	133	178	7.9	8.1	7.9	9.9	7.9	11.8
20 1/2	73	98	146	195	7.6	7.6	7.9	9.3	7.9	11.8
18 1/2	81	108	162	216	7.1	7.1	7.9	8.6	7.9	11.7
16 1/2	91	121	182	242	6.6	6.6	7.9	8.0	7.9	10.8
15 1/2	97	129	194	258	6.3	6.3	7.6	7.6	7.9	10.3
12 1/3	122	162	243	324	5.3	5.3	6.5	6.5	7.9	8.7
10 1/3	145	194	290	387	4.7	4.7	5.7	5.7	7.7	7.7
9 1/3	161	214	321	429	4.4	4.4	5.3	5.3	7.2	7.2
8 1/3	180	240	360	480	4.0	4.0	4.9	4.9	6.6	6.6
7 1/4	207	276	414	552	3.6	3.6	4.4	4.4	5.9	5.9
6 1/6	243	324	486	649	3.2	3.2	3.9	3.9	5.2	5.2

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# PM10M/MB

MOTOR	Permanent magnet DC motor
PROTECTION	Totally enclosed (IP54)
GEARBOX	Worm and wheel (M)
POWER	23 - 100 Watts
SPEED	21 - 649 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	1.8 kg (M); 2.02 kg (MB)
RADIAL LOAD	132 N (M); 226 N (MB)
AXIAL LOAD	88 N (M); 108 N (MB)
SHAFT TYPE	Single ended as standard; hollow or double ended upon request
EXTRAS	See page 36

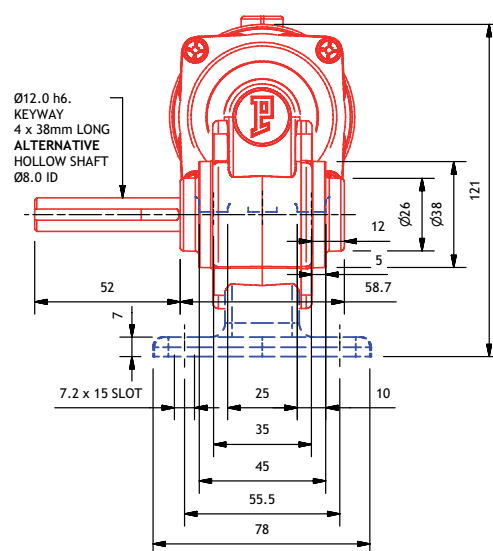
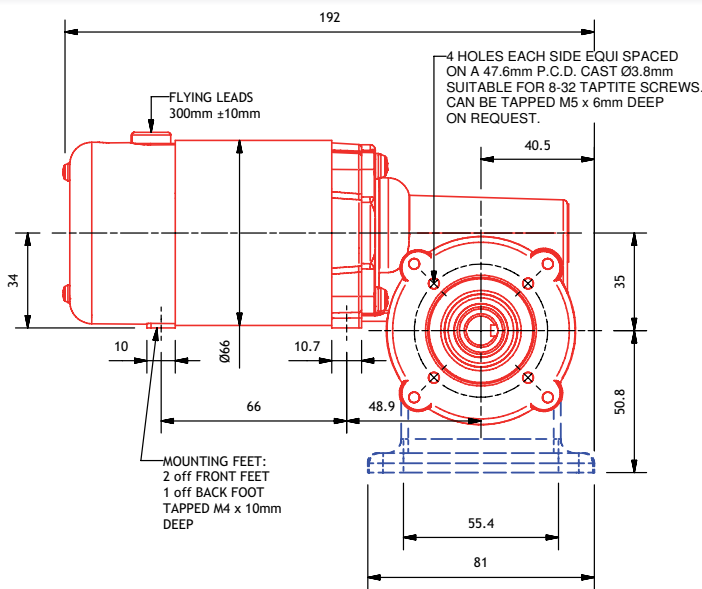


PM10M pictured

RATIO	MOTOR SPEED (rpm)				TORQUE (Nm)					
	1500	2000	3000	4000	CONTINUOUS		1 HOUR		15 MINUTE	
	OUTPUT SPEED (rpm)				Composite	Bronze	Composite	Bronze	Composite	Bronze
72	21	28	42	56	3.4	3.4	4.2	4.2	5.1	5.3
60	25	33	50	67	3.1	3.1	3.8	3.8	4.9	4.9
54	28	37	56	74	3.0	3.0	3.6	3.6	4.6	4.6
48	31	42	63	83	2.8	2.8	3.4	3.4	4.3	4.3
44	34	45	68	91	2.6	2.6	3.2	3.2	4.1	4.1
40	38	50	75	100	2.5	2.5	3.1	3.1	3.9	3.9
33	45	61	91	121	2.2	2.2	2.7	2.7	3.5	3.5
30	50	67	100	133	2.1	2.1	2.6	2.6	3.3	3.3
25	60	80	120	160	1.9	1.9	2.3	2.3	2.9	2.9
22 1/2	67	89	133	178	1.7	1.7	2.1	2.1	2.7	2.7
20 1/2	73	98	146	195	1.6	1.6	2.0	2.0	2.5	2.5
18 1/2	81	108	162	216	1.5	1.5	1.9	1.9	2.4	2.4
16 1/2	91	121	182	242	1.4	1.4	1.7	1.7	2.2	2.2
15 1/2	97	129	194	258	1.3	1.3	1.6	1.6	2.1	2.1
12 1/3	122	162	243	324	1.1	1.1	1.4	1.4	1.8	1.8
10 1/3	145	194	290	387	1.0	1.0	1.2	1.2	1.6	1.6
9 1/3	161	214	321	429	0.9	0.9	1.1	1.1	1.5	1.5
8 1/3	180	240	360	480	0.9	0.9	1.0	1.0	1.3	1.3
7 1/4	207	276	414	552	0.8	0.8	0.9	0.9	1.2	1.2
6 1/6	243	324	486	649	0.7	0.7	0.8	0.8	1.1	1.1

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# PM11M/MB

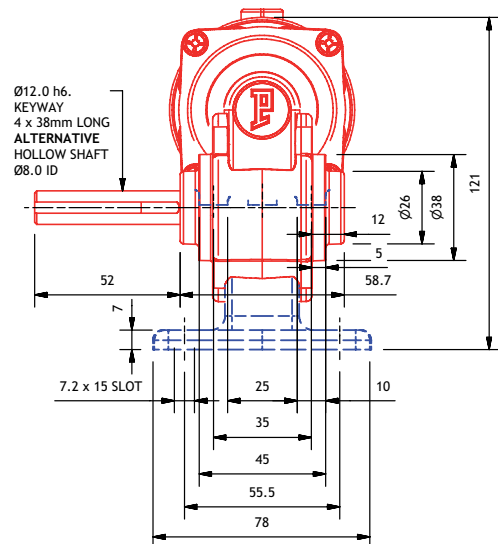
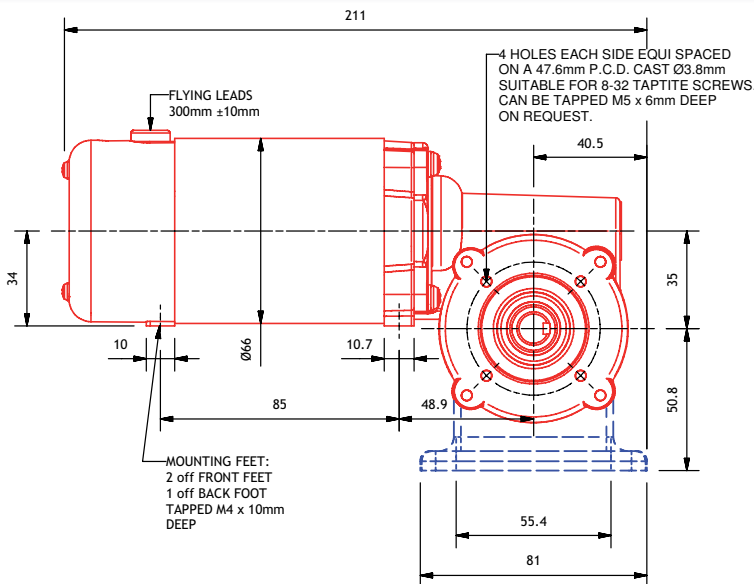
- MOTOR Permanent magnet DC motor
- PROTECTION Totally enclosed (IP54)
- GEARBOX Worm and wheel (M)
- POWER 33 - 130 Watts
- SPEED 21 - 649 rpm
- VOLTAGE 12V - 220V DC available range
- WEIGHT 2.1 kg (M); 2.48 kg (MB)
- RADIAL LOAD 132 N (M); 226 N (MB)
- AXIAL LOAD 88 N (M); 108 N (MB)
- SHAFT TYPE Single ended as standard; hollow or double ended upon request
- EXTRAS See page 36



PM11M pictured

RATIO	MOTOR SPEED (rpm)				TORQUE (Nm)					
	1500	2000	3000	4000	CONTINUOUS		1 HOUR		15 MINUTE	
	OUTPUT SPEED (rpm)				Composite	Bronze	Composite	Bronze	Composite	Bronze
72	21	28	42	56	4.9	4.9	5.1	6.1	5.1	7.3
60	25	33	50	67	4.5	4.5	5.5	5.5	5.9	6.9
54	28	37	56	74	4.3	4.3	5.3	5.3	5.9	6.6
48	31	42	63	83	4.0	4.0	4.9	4.9	5.9	6.2
44	34	45	68	91	3.8	3.8	4.7	4.7	5.9	5.9
40	38	50	75	100	3.6	3.6	4.4	4.4	5.6	5.6
33	45	61	91	121	3.2	3.2	4.0	4.0	4.9	4.9
30	50	67	100	133	3.0	3.0	3.7	3.7	4.7	4.7
25	60	80	120	160	2.7	2.7	3.3	3.3	4.1	4.1
22 1/2	67	89	133	178	2.5	2.5	3.1	3.1	3.9	3.9
20 1/2	73	98	146	195	2.4	2.4	2.9	2.9	3.6	3.6
18 1/2	81	108	162	216	2.2	2.2	2.7	2.7	3.4	3.4
16 1/2	91	121	182	242	2.0	2.0	2.5	2.5	3.1	3.1
15 1/2	97	129	194	258	1.9	1.9	2.4	2.4	3.0	3.0
12 1/3	122	162	243	324	1.6	1.6	2.0	2.0	2.5	2.5
10 1/3	145	194	290	387	1.5	1.5	1.8	1.8	2.2	2.2
9 1/3	161	214	321	429	1.3	1.3	1.7	1.7	2.1	2.1
8 1/3	180	240	360	480	1.2	1.2	1.5	1.5	1.9	1.9
7 1/4	207	276	414	552	1.1	1.1	1.4	1.4	1.7	1.7
6 1/6	243	324	486	649	1.0	1.0	1.2	1.2	1.5	1.5

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# PM3M/MB

- MOTOR Permanent magnet DC motor
- PROTECTION Totally enclosed (IP54)
- GEARBOX Worm and wheel (M)
- POWER 33 - 150 Watts
- SPEED 21 - 649 rpm
- VOLTAGE 12V - 220V DC available range
- WEIGHT 2.82 kg (M); 3.01 kg (MB)
- RADIAL LOAD 132 N (M); 226 N (MB)
- AXIAL LOAD 88 N (M); 108 N (MB)
- SHAFT TYPE Single ended as standard; hollow or double ended upon request
- EXTRAS See page 36

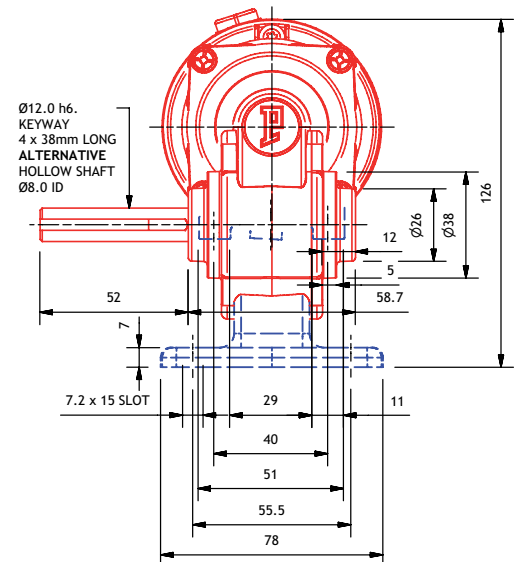
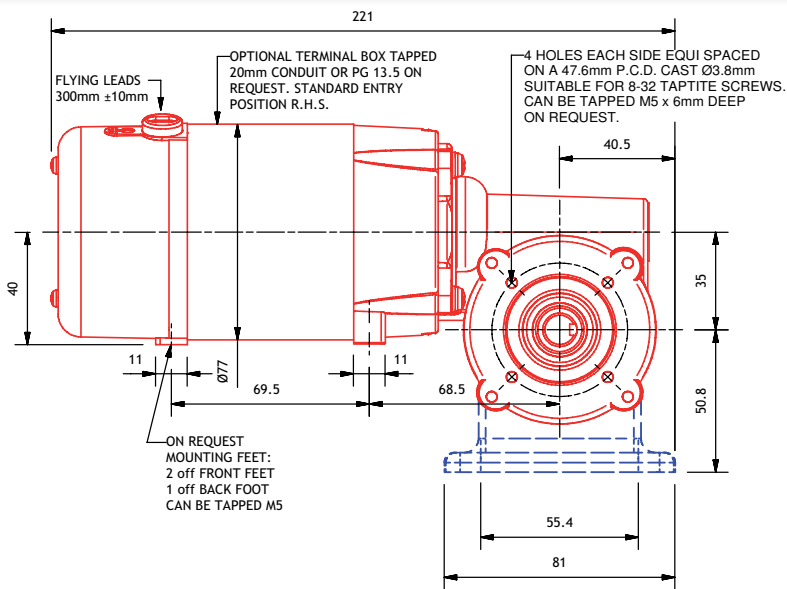


PM3M pictured

RATIO	MOTOR SPEED (rpm)				TORQUE (Nm)					
	1500	2000	3000	4000	CONTINUOUS		1 HOUR		15 MINUTE	
					Composite	Bronze	Composite	Bronze	Composite	Bronze
	OUTPUT SPEED (rpm)									
72	21	28	42	56	5.1	5.1	5.1	6.8	5.1	7.3
60	25	33	50	67	4.7	4.7	5.9	6.2	5.9	7.9
54	28	37	56	74	4.5	4.5	5.9	5.9	5.9	7.9
48	31	42	63	83	4.2	4.2	5.5	5.5	5.9	7.4
44	34	45	68	91	4.0	4.0	5.3	5.3	5.9	7.0
40	38	50	75	100	3.8	3.8	5.0	5.0	6.7	6.7
33	45	61	91	121	3.4	3.4	4.5	4.5	5.9	5.9
30	50	67	100	133	3.2	3.2	4.2	4.2	5.6	5.6
25	60	80	120	160	2.8	2.8	3.7	3.7	5.0	5.0
22 1/2	67	89	133	178	2.6	2.6	3.5	3.5	4.6	4.6
20 1/2	73	98	146	195	2.5	2.5	3.3	3.3	4.4	4.4
18 1/2	81	108	162	216	2.3	2.3	3.0	3.0	4.1	4.1
16 1/2	91	121	182	242	2.1	2.1	2.8	2.8	3.8	3.8
15 1/2	97	129	194	258	2.0	2.0	2.7	2.7	3.6	3.6
12 1/3	122	162	243	324	1.7	1.7	2.3	2.3	3.0	3.0
10 1/3	145	194	290	387	1.5	1.5	2.0	2.0	2.7	2.7
9 1/3	161	214	321	429	1.4	1.4	1.9	1.9	2.5	2.5
8 1/3	180	240	360	480	1.3	1.3	1.7	1.7	2.3	2.3
7 1/4	207	276	414	552	1.2	1.2	1.5	1.5	2.1	2.1
6 1/6	243	324	486	649	1.0	1.0	1.4	1.4	1.8	1.8

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# PM4M/MB

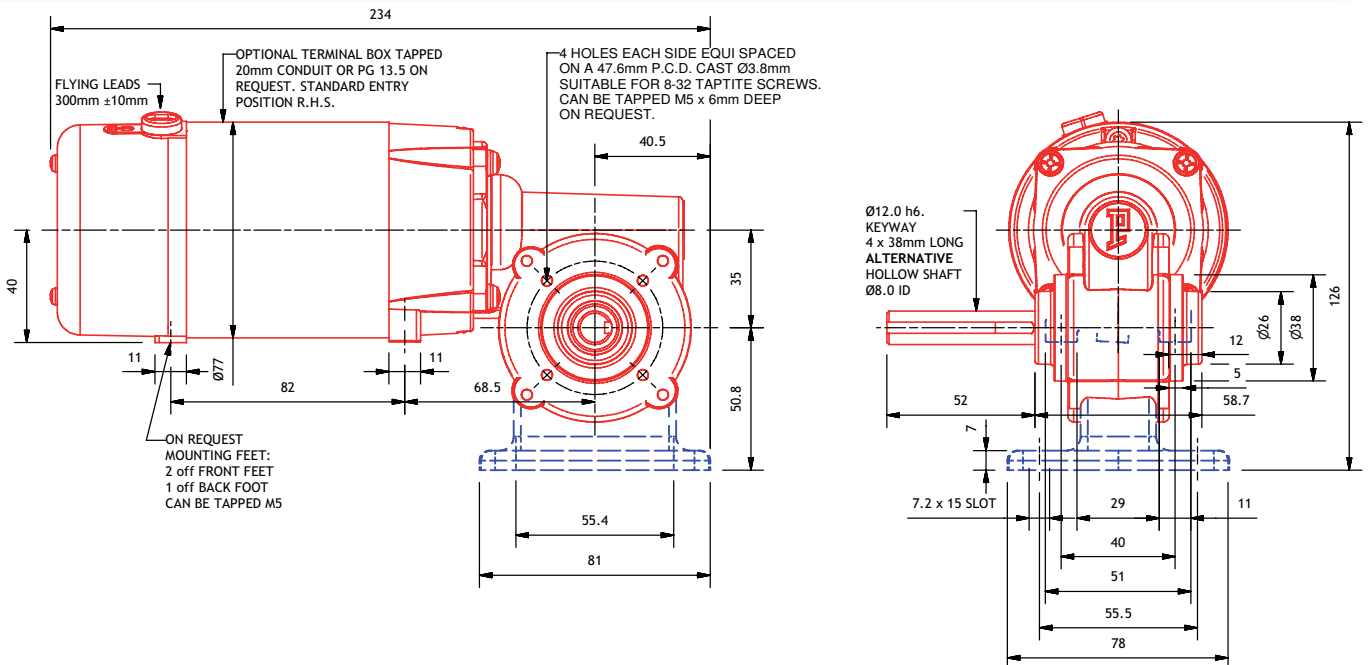
MOTOR	Permanent magnet DC motor
PROTECTION	Totally enclosed (IP54)
GEARBOX	Worm and wheel (M)
POWER	45 -200 Watts
SPEED	21 - 649 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	3.17 kg (M); 3.36 kg (MB)
RADIAL LOAD	132 N (M); 226 N (MB)
AXIAL LOAD	88 N (M); 108 N (MB)
SHAFT TYPE	Single ended as standard; hollow or double ended upon request
EXTRAS	See page 36



PM4M pictured

RATIO	MOTOR SPEED (rpm)				TORQUE (Nm)					
	1500	2000	3000	4000	CONTINUOUS		1 HOUR		15 MINUTE	
					Composite	Bronze	Composite	Bronze	Composite	Bronze
	OUTPUT SPEED (rpm)									
72	21	28	42	56	5.1	6.8	5.1	7.3	5.1	7.3
60	25	33	50	67	5.9	6.2	5.9	7.9	5.9	7.9
54	28	37	56	74	5.9	5.9	5.9	7.9	5.9	7.9
48	31	42	63	83	5.5	5.5	5.9	7.4	5.9	7.9
44	34	45	68	91	5.3	5.3	5.9	7.0	5.9	7.9
40	38	50	75	100	5.0	5.0	6.7	6.7	7.9	8.9
33	45	61	91	121	4.5	4.5	5.9	5.9	7.9	7.9
30	50	67	100	133	4.2	4.2	5.6	5.6	7.5	7.5
25	60	80	120	160	3.7	3.7	5.0	5.0	6.6	6.6
22 1/2	67	89	133	178	3.5	3.5	4.6	4.6	6.2	6.2
20 1/2	73	98	146	195	3.3	3.3	4.4	4.4	5.8	5.8
18 1/2	81	108	162	216	3.0	3.0	4.1	4.1	5.4	5.4
16 1/2	91	121	182	242	2.8	2.8	3.8	3.8	5.0	5.0
15 1/2	97	129	194	258	2.7	2.7	3.6	3.6	4.8	4.8
12 1/3	122	162	243	324	2.3	2.3	3.0	3.0	4.1	4.1
10 1/3	145	194	290	387	2.0	2.0	2.7	2.7	3.6	3.6
9 1/3	161	214	321	429	1.9	1.9	2.5	2.5	3.3	3.3
8 1/3	180	240	360	480	1.7	1.7	2.3	2.3	3.0	3.0
7 1/4	207	276	414	552	1.5	1.5	2.1	2.1	2.7	2.7
6 1/6	243	324	486	649	1.4	1.4	1.8	1.8	2.4	2.4

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# PM5M/MB

MOTOR	Permanent magnet DC motor
PROTECTION	Totally enclosed (IP54)
GEARBOX	Worm and wheel (M)
POWER	60 - 250 Watts
SPEED	21 - 649 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	3.36 kg (M); 3.55 kg (MB)
RADIAL LOAD	132 N (M); 226 N (MB)
AXIAL LOAD	88 N (M); 108 N (MB)
SHAFT TYPE	Hollow, single ended or double ended upon request
EXTRAS	See page 36

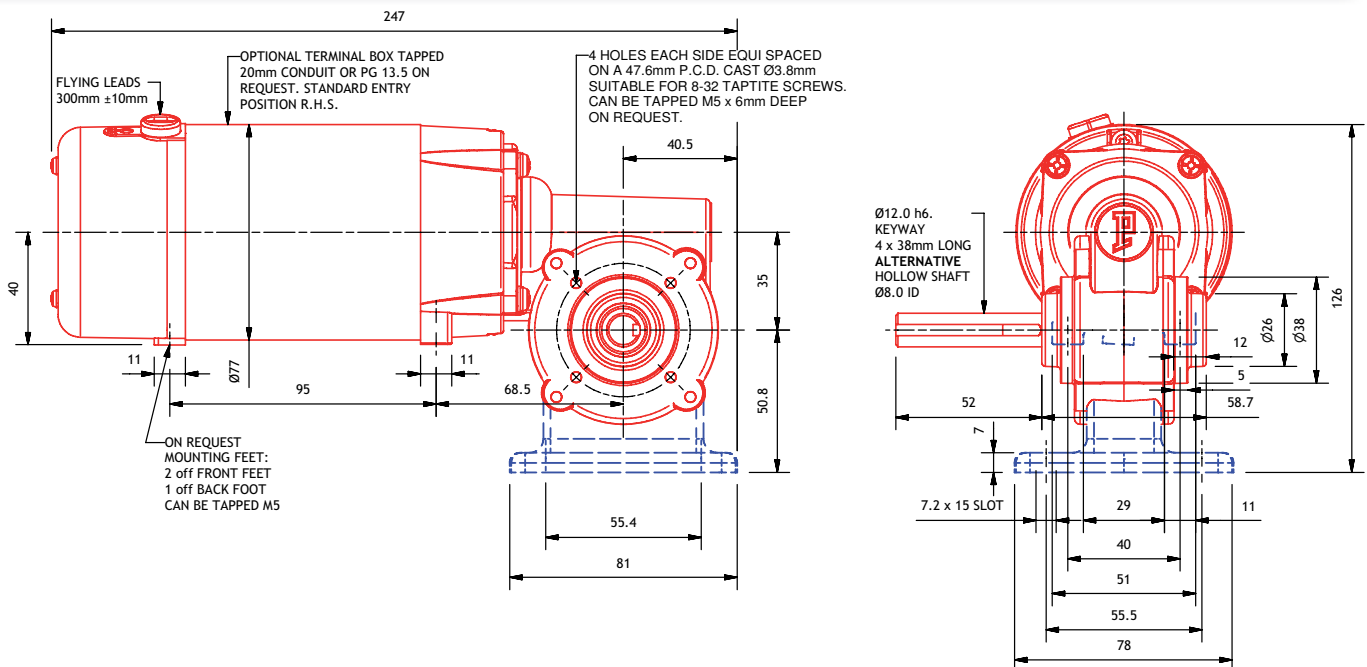


PM5M pictured

RATIO	MOTOR SPEED (rpm)				TORQUE (Nm)					
	1500	2000	3000	4000	CONTINUOUS		1 HOUR		15 MINUTE	
					Composite	Bronze	Composite	Bronze	Composite	Bronze
	OUTPUT SPEED (rpm)									
72	21	28	42	56	5.1	7.3	5.1	7.3	5.1	7.3
60	25	33	50	67	5.9	7.9	5.9	7.9	5.9	7.9
54	28	37	56	74	5.9	7.9	5.9	7.9	5.9	7.9
48	31	42	63	83	5.9	7.4	5.9	7.9	5.9	7.9
44	34	45	68	91	5.9	7.0	5.9	7.9	5.9	7.9
40	38	50	75	100	6.7	6.7	7.9	8.3	7.9	9.1
33	45	61	91	121	5.9	5.9	7.4	7.4	7.9	9.9
30	50	67	100	133	5.6	5.6	7.0	7.0	7.9	9.3
25	60	80	120	160	5.0	5.0	6.2	6.2	7.9	8.3
22 1/2	67	89	133	178	4.6	4.6	5.8	5.8	7.7	7.7
20 1/2	73	98	146	195	4.4	4.4	5.4	5.4	7.3	7.3
18 1/2	81	108	162	216	4.1	4.1	5.1	5.1	6.8	6.8
16 1/2	91	121	182	242	3.8	3.8	4.7	4.7	6.3	6.3
15 1/2	97	129	194	258	3.6	3.6	4.5	4.5	6.0	6.0
12 1/3	122	162	243	324	3.0	3.0	3.8	3.8	5.1	5.1
10 1/3	145	194	290	387	2.7	2.7	3.4	3.4	4.5	4.5
9 1/3	161	214	321	429	2.5	2.5	3.1	3.1	4.1	4.1
8 1/3	180	240	360	480	2.3	2.3	2.9	2.9	3.8	3.8
7 1/4	207	276	414	552	2.1	2.1	2.6	2.6	3.4	3.4
6 1/6	243	324	486	649	1.8	1.8	2.3	2.3	3.0	3.0

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# PM50M/MB

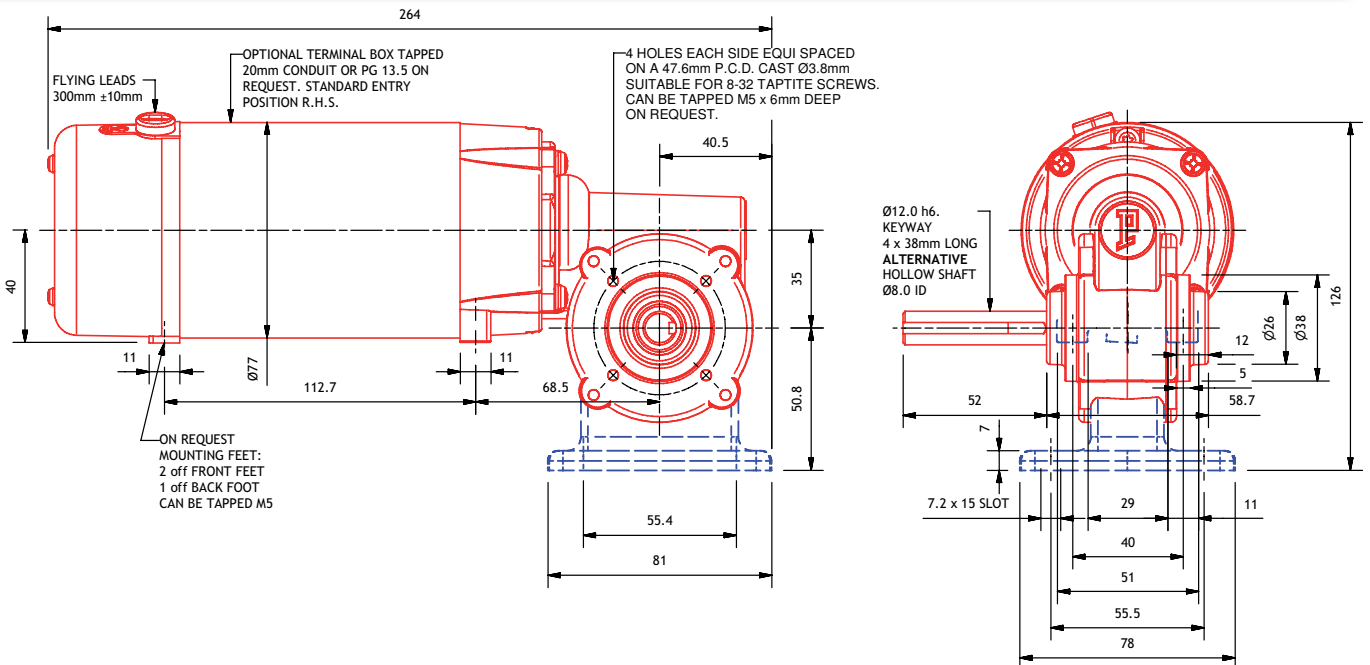
- MOTOR Permanent magnet DC motor
- PROTECTION Totally enclosed (IP54)
- GEARBOX Worm and wheel (M)
- POWER 80 - 375 Watts
- SPEED 21 - 649 rpm
- VOLTAGE 12V - 220V DC available range
- WEIGHT 3.6 kg (M); 3.8 kg (MB)
- RADIAL LOAD 132 N (M); 226 N (MB)
- AXIAL LOAD 88 N (M); 108 N (MB)
- SHAFT TYPE Single ended as standard; hollow or double ended upon request
- EXTRAS See page 36



PM50M pictured

RATIO	MOTOR SPEED (rpm)				TORQUE (Nm)					
	1500	2000	3000	4000	CONTINUOUS		1 HOUR		15 MINUTE	
					Composite	Bronze	Composite	Bronze	Composite	Bronze
	OUTPUT SPEED (rpm)									
72	21	28	42	56	5.1	7.3	5.1	7.3	5.1	7.3
60	25	33	50	67	5.9	7.9	5.9	7.9	5.9	7.9
54	28	37	56	74	5.9	7.9	5.9	7.9	5.9	7.9
48	31	42	63	83	5.9	7.9	5.9	7.9	5.9	7.9
44	34	45	68	91	5.9	7.9	5.9	7.9	5.9	7.9
40	38	50	75	100	7.9	8.6	7.9	11.1	7.9	11.8
33	45	61	91	121	7.7	7.7	7.9	9.9	7.9	11.8
30	50	67	100	133	7.2	7.2	7.9	9.3	7.9	11.8
25	60	80	120	160	6.4	6.4	7.9	8.3	7.9	11.6
22 1/2	67	89	133	178	6.0	6.0	7.7	7.7	7.9	10.8
20 1/2	73	98	146	195	5.6	5.6	7.3	7.3	7.9	10.2
18 1/2	81	108	162	216	5.2	5.2	6.8	6.8	7.9	9.5
16 1/2	91	121	182	242	4.8	4.8	6.3	6.3	7.9	8.8
15 1/2	97	129	194	258	4.6	4.6	6.0	6.0	7.9	8.4
12 1/3	122	162	243	324	3.9	3.9	5.1	5.1	7.1	7.7
10 1/3	145	194	290	387	3.5	3.5	4.5	4.5	6.3	6.8
9 1/3	161	214	321	429	3.2	3.2	4.1	4.1	5.8	6.3
8 1/3	180	240	360	480	3.0	3.0	3.8	3.8	5.3	5.8
7 1/4	207	276	414	552	2.7	2.7	3.4	3.4	4.8	5.3
6 1/6	243	324	486	649	2.3	2.3	3.0	3.0	4.2	4.7

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# PM1L/LB/LH/LHB

MOTOR	Permanent magnet DC motor
PROTECTION	Ventilated (IP21)
GEARBOX	Worm and wheel (L)
POWER	45 - 200 Watts
SPEED	25 - 780 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	3.62 kg (L); 3.81 kg (LB)
RADIAL LOAD	177 N (L); 314 N (LB)
AXIAL LOAD	132 N (M); 157 N (LB)
SHAFT TYPE	Hollow, single ended or double ended upon request
EXTRAS	See page 36



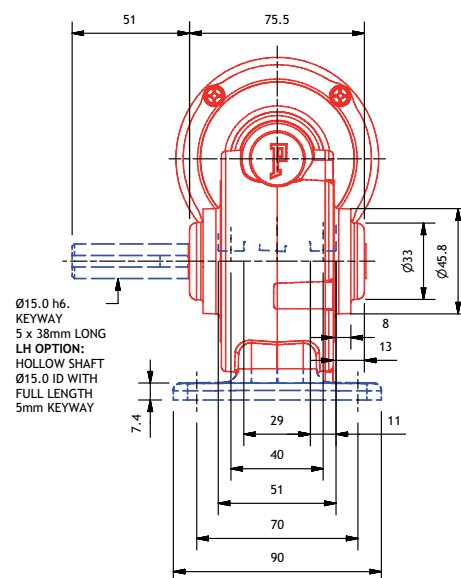
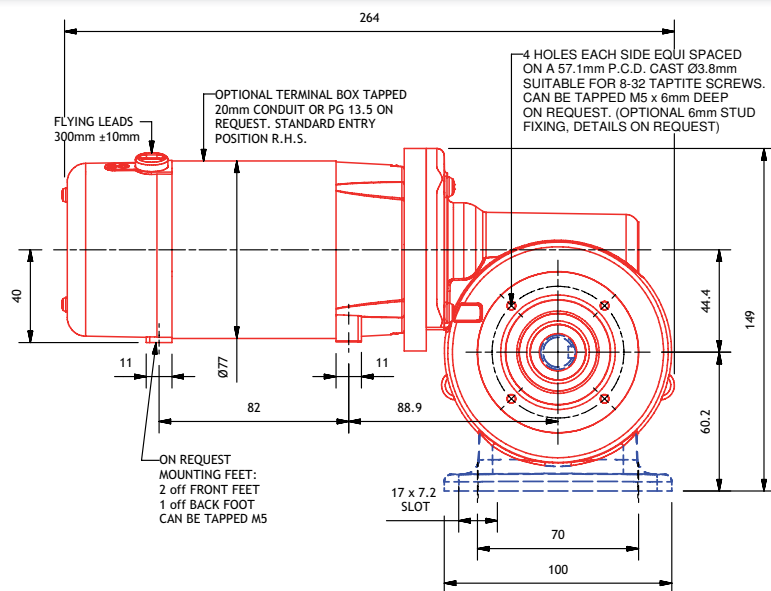
PM1LHB pictured

RATIO	MOTOR SPEED (rpm)				TORQUE (Nm)					
	1500	2000	3000	4000	CONTINUOUS		1 HOUR		15 MINUTE	
					Composite	Bronze	Composite	Bronze	Composite	Bronze
60	25	33	50	67	6.2	6.2	7.6	7.6	10.4	10.4
50	30	40	60	80	5.5	5.5	6.7	6.7	9.2	9.2
40	38	50	75	100	5.0	5.0	6.1	6.1	8.3	8.3
30 1/2	49	66	98	131	4.3	4.3	5.2	5.2	7.1	7.1
25 1/2	59	78	118	157	3.8	3.8	4.7	4.7	6.3	6.3
20 1/2	73	98	146	195	3.3	3.3	4.0	4.0	5.4	5.4
12 1/3	122	162	243	324	2.3	2.3	2.8	2.8	3.8	3.8
9 1/4	162	216	324	432	1.8	1.8	2.3	2.3	3.1	3.1
8 1/4	182	242	364	485	1.7	1.7	2.1	2.1	2.8	2.8
7 1/6	209	279	419	558	1.5	1.5	1.9	1.9	2.5	2.5
5 1/8	293	390	585	780	1.2	1.2	1.4	1.4	2.0	2.0

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# PM2L/LB/LH/LHB

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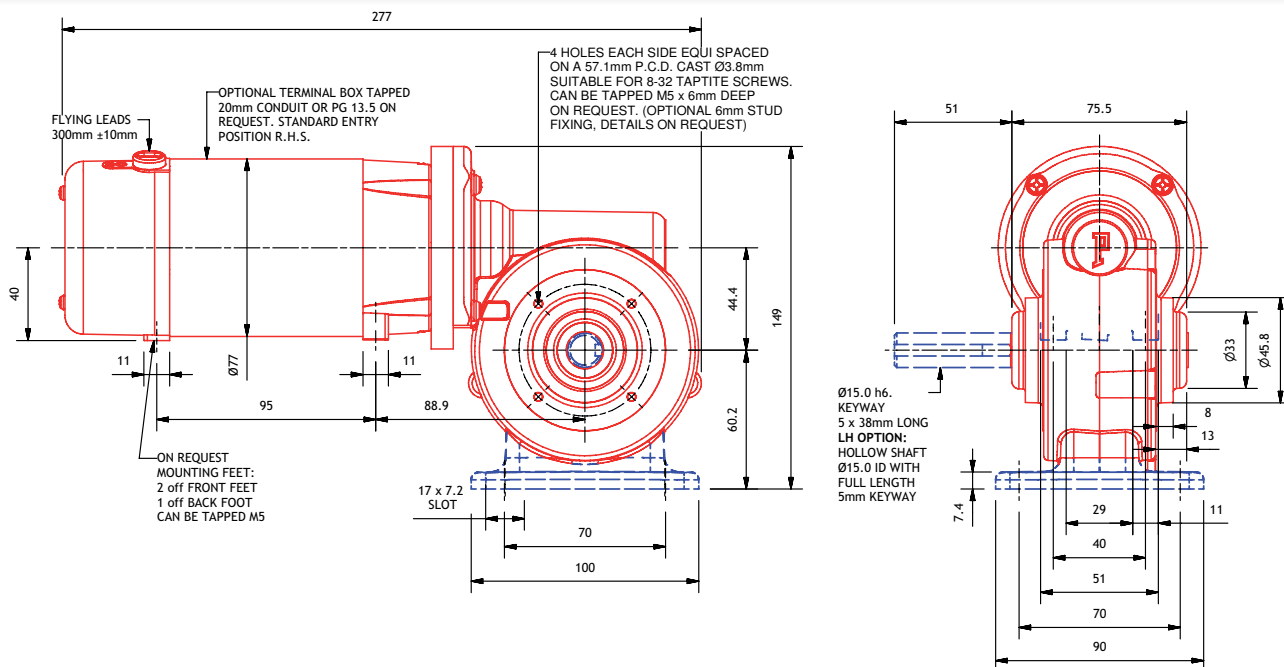
MOTOR	Permanent magnet DC motor
PROTECTION	Ventilated (IP21)
GEARBOX	Worm and wheel (L)
POWER	60 - 265 Watts
SPEED	25 - 780 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	3.97 kg (L); 4.16 kg (LB)
RADIAL LOAD	177 N (L); 314 N (LB)
AXIAL LOAD	132 N (M); 157 N (LB)
SHAFT TYPE	Single ended as standard; hollow or double ended upon request
EXTRAS	See page 36



PM2LHB pictured

Motor Power Cont. (W)	60				80				120				160			
	75				100				150				200			
	100				130				200				265			
RATIO	MOTOR SPEED (rpm)				CONTINUOUS		1 HOUR		15 MINUTE							
	1500	2000	3000	4000	Composite	Bronze	Composite	Bronze	Composite	Bronze						
	OUTPUT SPEED (rpm)															
60	25	33	50	67	8.3	8.3	10.4	10.4	11.3	13.9						
50	30	40	60	80	7.4	7.4	9.2	9.2	11.3	12.3						
40	38	50	75	100	6.7	6.7	8.3	8.3	11.1	11.1						
30 1/2	49	66	98	131	5.7	5.7	7.1	7.1	9.5	9.5						
25 1/2	59	78	118	157	5.1	5.1	6.3	6.3	8.5	8.5						
20 1/2	73	98	146	195	4.4	4.4	5.4	5.4	7.3	7.3						
12 1/3	122	162	243	324	3.0	3.0	3.8	3.8	5.1	5.1						
9 1/4	162	216	324	432	2.5	2.5	3.1	3.1	4.1	4.1						
8 1/4	182	242	364	485	2.3	2.3	2.8	2.8	3.8	3.8						
7 1/6	209	279	419	558	2.0	2.0	2.5	2.5	3.4	3.4						
5 1/8	293	390	585	780	1.6	1.6	2.0	2.0	2.6	2.6						

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# PM6L/LB/LH/LHB

- MOTOR Permanent magnet DC motor
- PROTECTION Ventilated (IP21)
- GEARBOX Worm and wheel (L)
- POWER 75 - 330 Watts
- SPEED 25 - 780 rpm
- VOLTAGE 12V - 220V DC available range
- WEIGHT 4.16 kg (L); 4.35 kg (LB)
- RADIAL LOAD 177 N (L); 314 N (LB)
- AXIAL LOAD 132 N (M); 157 N (LB)
- SHAFT TYPE Single ended as standard; hollow or double ended upon request
- EXTRAS See page 36

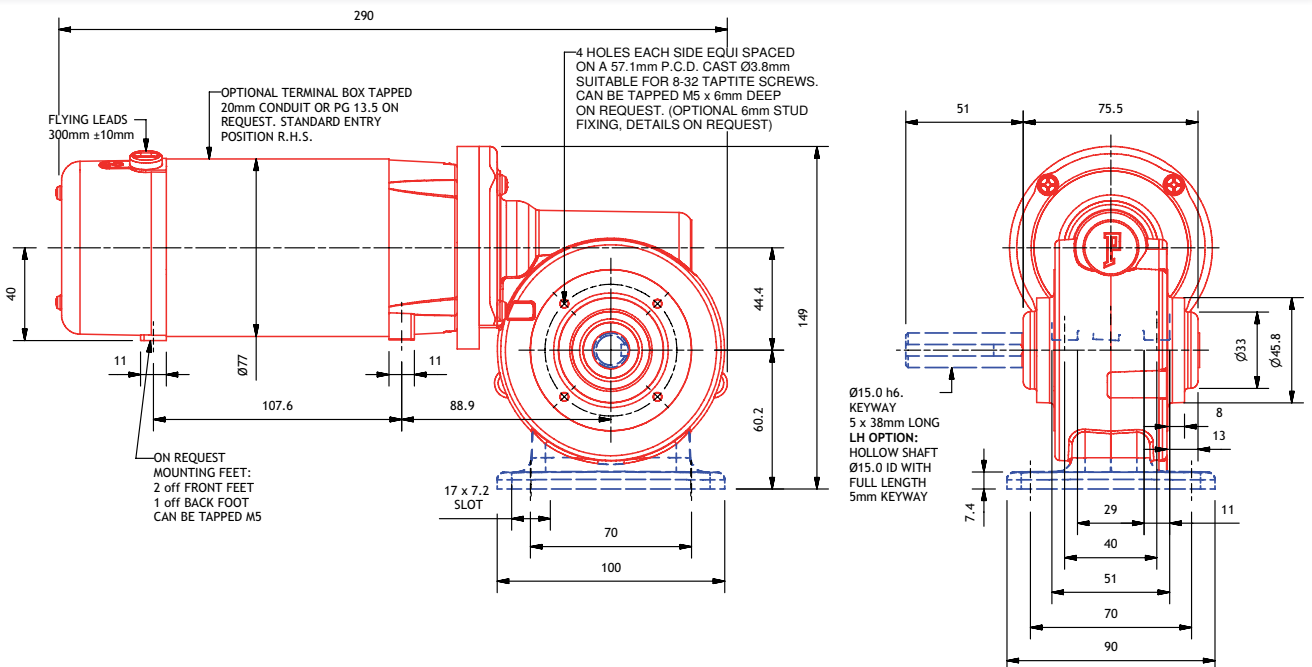


PM6LHB pictured

Motor Power Cont. (W)	75				100				150				200			
	90				120				180				240			
	125				165				245				330			
RATIO	MOTOR SPEED (rpm)				CONTINUOUS		1 HOUR		15 MINUTE		TORQUE (Nm)					
	1500	2000	3000	4000	Composite	Bronze	Composite	Bronze	Composite	Bronze	OUTPUT SPEED (rpm)					
											Composite	Bronze	Composite	Bronze	Composite	Bronze
60	25	33	50	67	10.4	10.4	11.3	12.5	11.3	11.3	13.6	13.6	13.6	13.6		
50	30	40	60	80	9.2	9.2	11.0	11.0	11.3	11.3	13.6	13.6	13.6	13.6		
40	38	50	75	100	8.3	8.3	10.0	10.0	13.6	13.6	13.6	13.6	13.6	13.6		
30 1/2	49	66	98	131	7.1	7.1	8.5	8.5	11.6	11.6	13.6	13.6	13.6	13.6		
25 1/2	59	78	118	157	6.3	6.3	7.6	7.6	10.4	10.4	13.6	13.6	13.6	13.6		
20 1/2	73	98	146	195	5.4	5.4	6.5	6.5	8.9	8.9	13.6	13.6	13.6	13.6		
12 1/3	122	162	243	324	3.8	3.8	4.6	4.6	6.2	6.2	13.6	13.6	13.6	13.6		
9 1/4	162	216	324	432	3.1	3.1	3.7	3.7	5.0	5.0	13.6	13.6	13.6	13.6		
8 1/4	182	242	364	485	2.8	2.8	3.4	3.4	4.6	4.6	13.6	13.6	13.6	13.6		
7 1/6	209	279	419	558	2.5	2.5	3.1	3.1	4.2	4.2	13.6	13.6	13.6	13.6		
5 1/8	293	390	585	780	2.0	2.0	2.4	2.4	3.2	3.2	13.6	13.6	13.6	13.6		

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# PM60L/LB/LH/LHB

PARVALUX®

MOTOR	Permanent magnet DC motor
PROTECTION	Ventilated (IP21)
GEARBOX	Worm and wheel (L)
POWER	105 - 460 Watts
SPEED	25 - 780 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	4.41 kg (L); 4.60 kg (LB)
RADIAL LOAD	177 N (L); 314 N (LB)
AXIAL LOAD	132 N (M); 157 N (LB)
SHAFT TYPE	Single ended as standard; hollow or double ended upon request
EXTRAS	See page 36

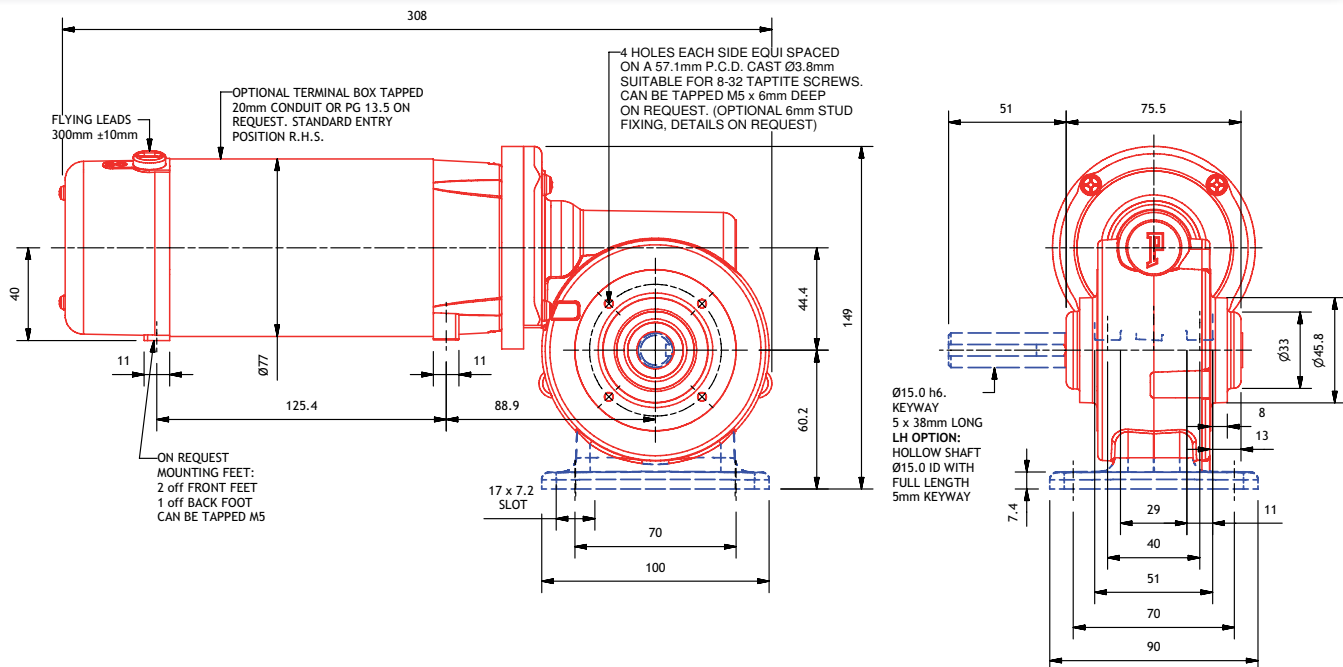


PM60LHB pictured

RATIO	MOTOR SPEED (rpm)				TORQUE (Nm)					
	1500	2000	3000	4000	CONTINUOUS		1 HOUR		15 MINUTE	
					Composite	Bronze	Composite	Bronze	Composite	Bronze
	OUTPUT SPEED (rpm)									
60	25	33	50	67	11.3	14.6	11.3	17.0	11.3	17.0
50	30	40	60	80	11.3	12.9	11.3	15.6	11.3	17.0
40	38	50	75	100	11.7	11.7	14.2	14.2	14.6	19.2
30 1/2	49	66	98	131	9.9	9.9	12.1	12.1	14.6	16.3
25 1/2	59	78	118	157	8.9	8.9	10.8	10.8	14.6	14.6
20 1/2	73	98	146	195	7.6	7.6	9.3	9.3	12.5	12.5
12 1/3	122	162	243	324	5.3	5.3	6.5	6.5	8.7	8.7
9 1/4	162	216	324	432	4.3	4.3	5.2	5.2	7.1	7.1
8 1/4	182	242	364	485	4.0	4.0	4.8	4.8	6.5	6.5
7 1/6	209	279	419	558	3.6	3.6	4.3	4.3	5.8	5.8
5 1/8	293	390	585	780	2.8	2.8	3.3	3.3	4.5	4.5

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# PM3L/LB/LH/LHB

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MOTOR	Permanent magnet DC motor
PROTECTION	Totally enclosed (IP54)
GEARBOX	Worm and wheel (L)
POWER	33 - 150 Watts
SPEED	25 - 780 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	3.62 kg (L); 3.81 kg (LB)
RADIAL LOAD	177 N (L); 314 N (LB)
AXIAL LOAD	132 N (M); 157 N (LB)
SHAFT TYPE	Single ended as standard; hollow or double ended upon request
EXTRAS	See page 36

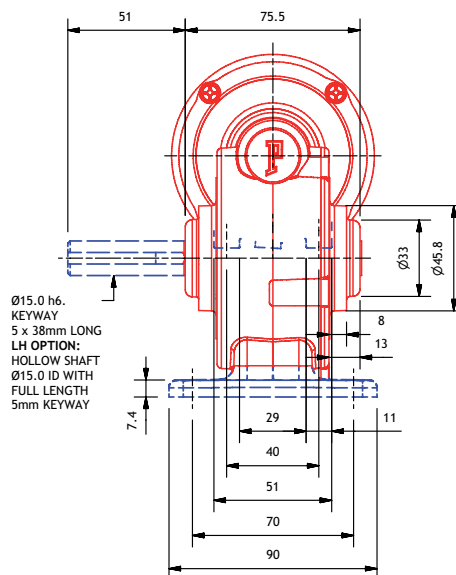
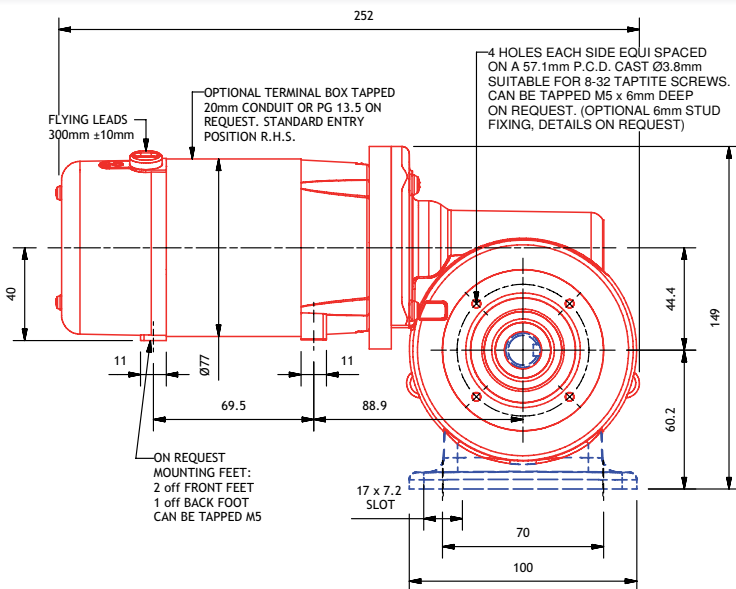


PM3LHB pictured

RATIO	MOTOR SPEED (rpm)				TORQUE (Nm)					
	1500	2000	3000	4000	CONTINUOUS		1 HOUR		15 MINUTE	
	OUTPUT SPEED (rpm)				Composite	Bronze	Composite	Bronze	Composite	Bronze
60	25	33	50	67	4.7	4.7	6.2	6.2	8.3	8.3
50	30	40	60	80	4.2	4.2	5.5	5.5	7.4	7.4
40	38	50	75	100	3.8	3.8	5.0	5.0	6.7	6.7
30 1/2	49	66	98	131	3.2	3.2	4.3	4.3	5.7	5.7
25 1/2	59	78	118	157	2.9	2.9	3.8	3.8	5.1	5.1
20 1/2	73	98	146	195	2.5	2.5	3.3	3.3	4.4	4.4
12 1/3	122	162	243	324	1.7	1.7	2.3	2.3	3.0	3.0
9 1/4	162	216	324	432	1.4	1.4	1.8	1.8	2.5	2.5
8 1/4	182	242	364	485	1.3	1.3	1.7	1.7	2.3	2.3
7 1/6	209	279	419	558	1.2	1.2	1.5	1.5	2.0	2.0
5 1/8	293	390	585	780	0.9	0.9	1.2	1.2	1.6	1.6

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# PM4L/LB/LH/LHB

PARVALUX®

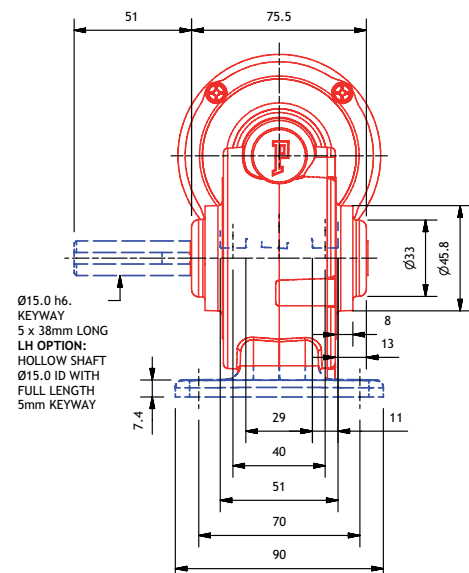
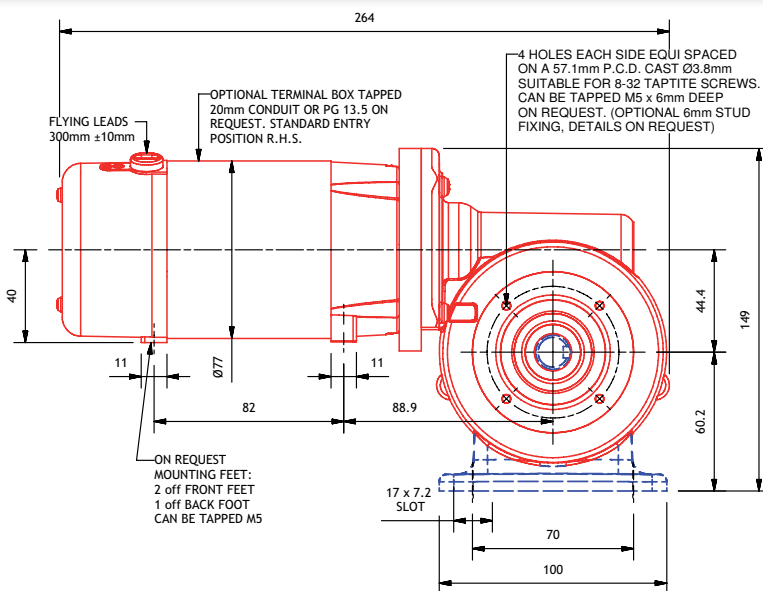
MOTOR	Permanent magnet DC motor
PROTECTION	Totally enclosed (IP54)
GEARBOX	Worm and wheel (L)
POWER	45 - 200 Watts
SPEED	25 - 780 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	3.97 kg (L); 4.16 kg (LB)
RADIAL LOAD	177 N (L); 314 N (LB)
AXIAL LOAD	132 N (M); 157 N (LB)
SHAFT TYPE	Single ended as standard; hollow or double ended upon request
EXTRAS	See page 36



PM4LHB pictured

RATIO	MOTOR SPEED (rpm)				TORQUE (Nm)					
	1500	2000	3000	4000	CONTINUOUS		1 HOUR		15 MINUTE	
					Composite	Bronze	Composite	Bronze	Composite	Bronze
	OUTPUT SPEED (rpm)									
60	25	33	50	67	6.2	6.2	8.3	8.3	11.1	11.1
50	30	40	60	80	5.5	5.5	7.4	7.4	9.8	9.8
40	38	50	75	100	5.0	5.0	6.7	6.7	8.9	8.9
30 1/2	49	66	98	131	4.3	4.3	5.7	5.7	7.6	7.6
25 1/2	59	78	118	157	3.8	3.8	5.1	5.1	6.8	6.8
20 1/2	73	98	146	195	3.3	3.3	4.4	4.4	5.8	5.8
12 1/3	122	162	243	324	2.3	2.3	3.0	3.0	4.1	4.1
9 1/4	162	216	324	432	1.8	1.8	2.5	2.5	3.3	3.3
8 1/4	182	242	364	485	1.7	1.7	2.3	2.3	3.0	3.0
7 1/6	209	279	419	558	1.5	1.5	2.0	2.0	2.7	2.7
5 1/8	293	390	585	780	1.2	1.2	1.6	1.6	2.1	2.1

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# PM5L/LB/LH/LHB

MOTOR	Permanent magnet DC motor
PROTECTION	Totally enclosed (IP54)
GEARBOX	Worm and wheel (L)
POWER	60 - 250 Watts
SPEED	25 - 780 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	4.16 kg (L); 4.35 kg (LB)
RADIAL LOAD	177 N (L); 314 N (LB)
AXIAL LOAD	132 N (M); 157 N (LB)
SHAFT TYPE	Single ended as standard; hollow or double ended upon request
EXTRAS	See page 36

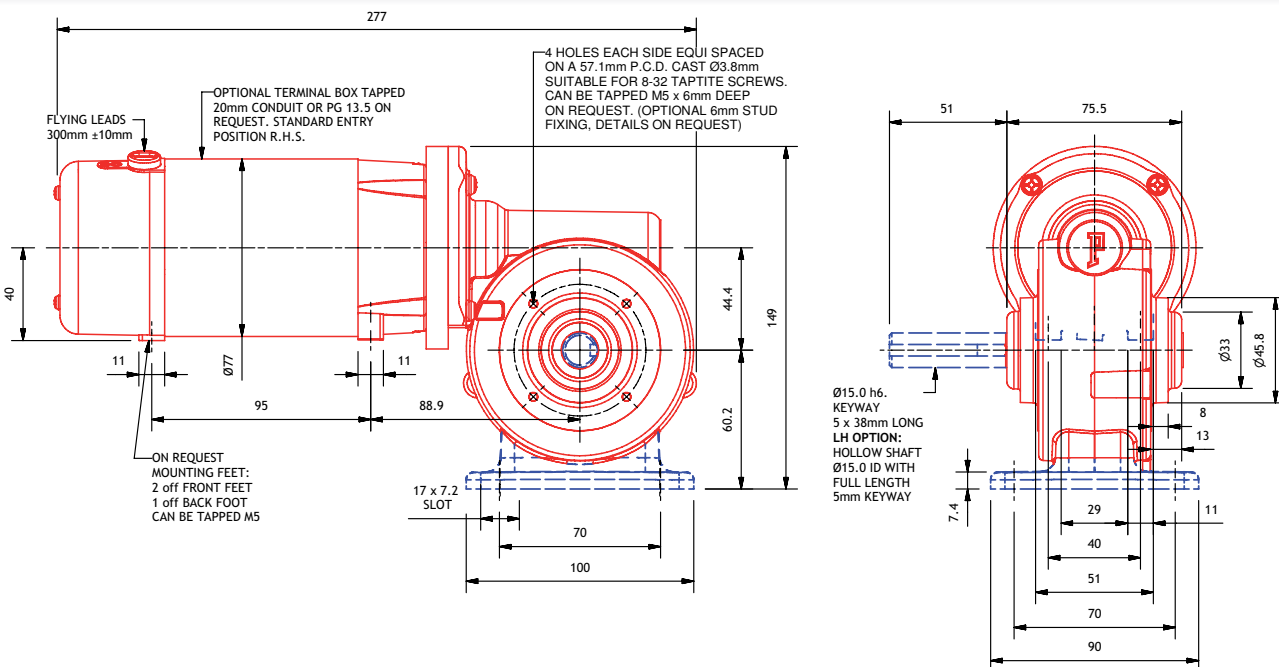


PM5LHB pictured

RATIO	MOTOR SPEED (rpm)				TORQUE (Nm)					
	1500	2000	3000	4000	CONTINUOUS		1 HOUR		15 MINUTE	
					Composite	Bronze	Composite	Bronze	Composite	Bronze
60	25	33	50	67	8.3	8.3	10.4	10.4	11.3	13.9
50	30	40	60	80	7.4	7.4	9.2	9.2	11.3	12.3
40	38	50	75	100	6.7	6.7	8.3	8.3	11.1	11.1
30 1/2	49	66	98	131	5.7	5.7	7.1	7.1	9.5	9.5
25 1/2	59	78	118	157	5.1	5.1	6.3	6.3	8.5	8.5
20 1/2	73	98	146	195	4.4	4.4	5.4	5.4	7.3	7.3
12 1/3	122	162	243	324	3.0	3.0	3.8	3.8	5.1	5.1
9 1/4	162	216	324	432	2.5	2.5	3.1	3.1	4.1	4.1
8 1/4	182	242	364	485	2.3	2.3	2.8	2.8	3.8	3.8
7 1/6	209	279	419	558	2.0	2.0	2.5	2.5	3.4	3.4
5 1/8	293	390	585	780	1.6	1.6	2.0	2.0	2.6	2.6

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# PM50L/LB/LH/LHB

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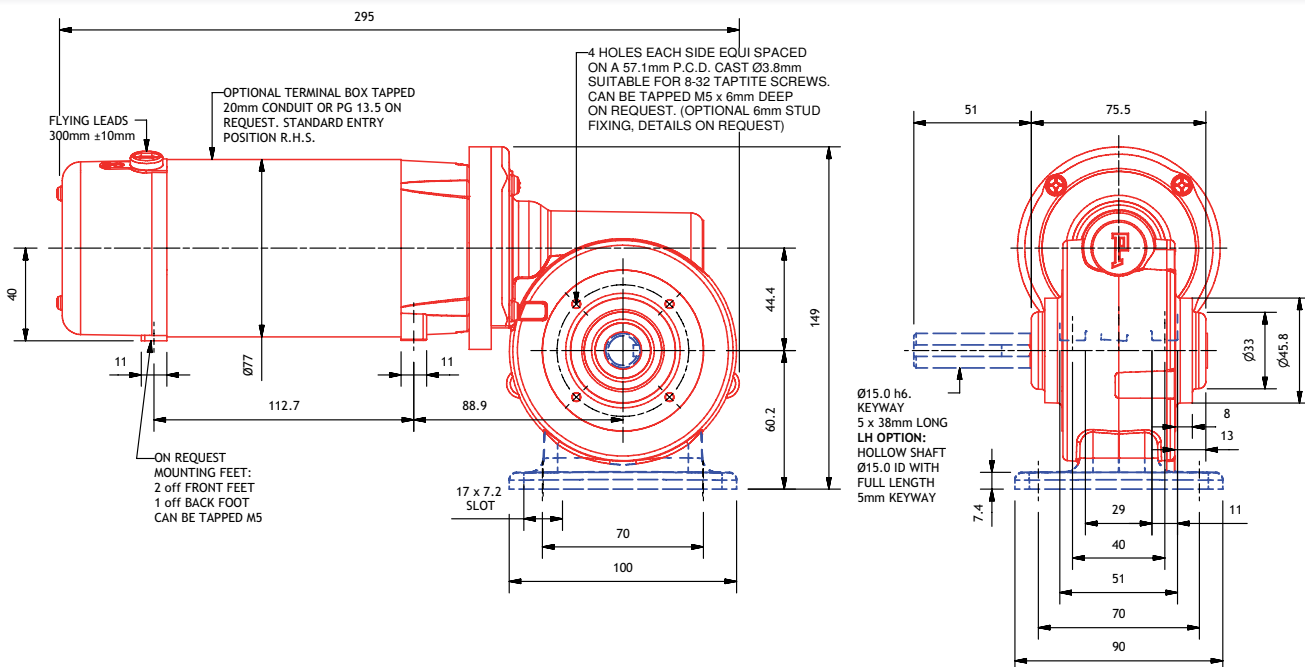
MOTOR	Permanent magnet DC motor
PROTECTION	Totally enclosed (IP54)
GEARBOX	Worm and wheel (L)
POWER	80 - 375 Watts
SPEED	25 - 780 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	4.41 kg (L); 4.60 kg (LB)
RADIAL LOAD	177 N (L); 314 N (LB)
AXIAL LOAD	132 N (M); 157 N (LB)
SHAFT TYPE	Single ended as standard; hollow or double ended upon request
EXTRAS	See page 36



PM50LHB pictured

RATIO	MOTOR SPEED (rpm)				TORQUE (Nm)					
	1500	2000	3000	4000	CONTINUOUS		1 HOUR		15 MINUTE	
					Composite	Bronze	Composite	Bronze	Composite	Bronze
	OUTPUT SPEED (rpm)									
60	25	33	50	67	10.7	10.7	11.3	13.9	11.3	17.0
50	30	40	60	80	9.5	9.5	11.3	12.3	11.3	17.0
40	38	50	75	100	8.6	8.6	11.1	11.1	14.6	15.5
30 1/2	49	66	98	131	7.3	7.3	9.5	9.5	13.3	13.3
25 1/2	59	78	118	157	6.6	6.6	8.5	8.5	11.8	11.8
20 1/2	73	98	146	195	5.6	5.6	7.3	7.3	10.2	10.2
12 1/3	122	162	243	324	3.9	3.9	5.1	5.1	7.1	7.1
9 1/4	162	216	324	432	3.2	3.2	4.1	4.1	5.8	5.8
8 1/4	182	242	364	485	2.9	2.9	3.8	3.8	5.3	5.3
7 1/6	209	279	419	558	2.6	2.6	3.4	3.4	4.7	4.7
5 1/8	293	390	585	780	2.0	2.0	2.6	2.6	3.7	3.7

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# PM90L/LB/LH/LHB

PARVALUX®

MOTOR	Permanent magnet DC motor
PROTECTION	Totally enclosed (IP54)
GEARBOX	Worm and wheel (L)
POWER	113 - 525 Watts
SPEED	25 - 780 rpm
VOLTAGE	12V, 24V, 36V or 48V, D.C.
WEIGHT	5.01 kg (L); 5.2 kg (LB)
RADIAL LOAD	177 N (L); 314 N (LB)
AXIAL LOAD	132 N (M); 157 N (LB)
SHAFT TYPE	Single ended as standard; hollow or double ended upon request
EXTRAS	See page 36



PM90LHB pictured

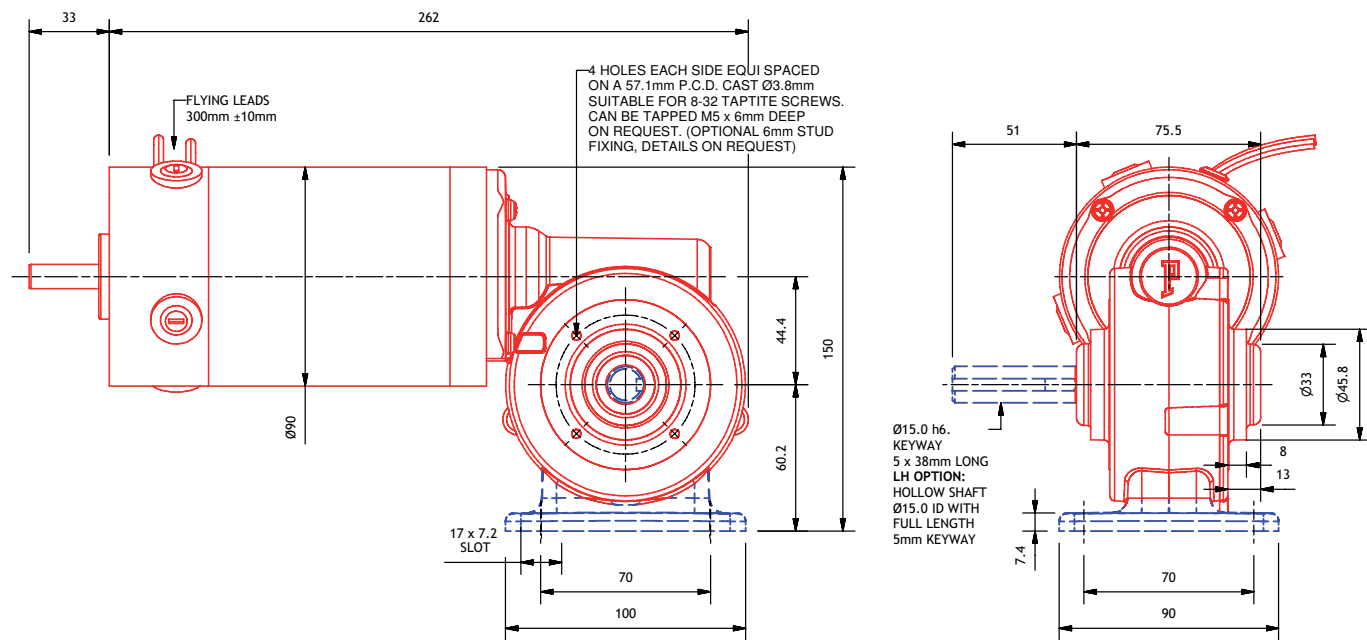
RATIO	MOTOR SPEED (rpm)				TORQUE (Nm)					
	1500	2000	3000	4000	CONTINUOUS		1 HOUR		15 MINUTE	
					Composite	Bronze	Composite	Bronze	Composite	Bronze
	OUTPUT SPEED (rpm)									
60	25	33	50	67	11.3	15.6	11.3	17.0	11.3	17.0
50	30	40	60	80	11.3	13.8	11.3	17.0	11.3	17.0
40	38	50	75	100	12.5	12.5	14.6	15.6	14.6	21.9
30 1/2	49	66	98	131	10.7	10.7	13.3	13.3	14.6	18.7
25 1/2	59	78	118	157	9.5	9.5	11.9	11.9	14.6	16.7
20 1/2	73	98	146	195	8.2	8.2	10.2	10.2	14.3	14.3
12 1/3	122	162	243	324	5.7	5.7	7.1	7.1	10.0	10.0
9 1/4	162	216	324	432	4.6	4.6	5.8	5.8	8.1	8.1
8 1/4	182	242	364	485	4.2	4.2	5.3	5.3	7.4	7.4
7 1/6	209	279	419	558	3.8	3.8	4.8	4.8	6.7	6.7
5 1/8	293	390	585	780	3.0	3.0	3.7	3.7	5.2	5.2

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# PM95L/LB/LH/LHB

MOTOR	Permanent magnet DC motor
PROTECTION	Totally enclosed (IP54)
GEARBOX	Worm and wheel (L)
POWER	168 - 788 Watts
SPEED	25 - 780 rpm
VOLTAGE	12V, 24V, 36V or 48V, D.C.
WEIGHT	6.51 kg (L); 6.7 kg (LB)
RADIAL LOAD	177 N (L); 314 N (LB)
AXIAL LOAD	132 N (M); 157 N (LB)
SHAFT TYPE	Single ended as standard; hollow or double ended upon request
EXTRAS	See page 36



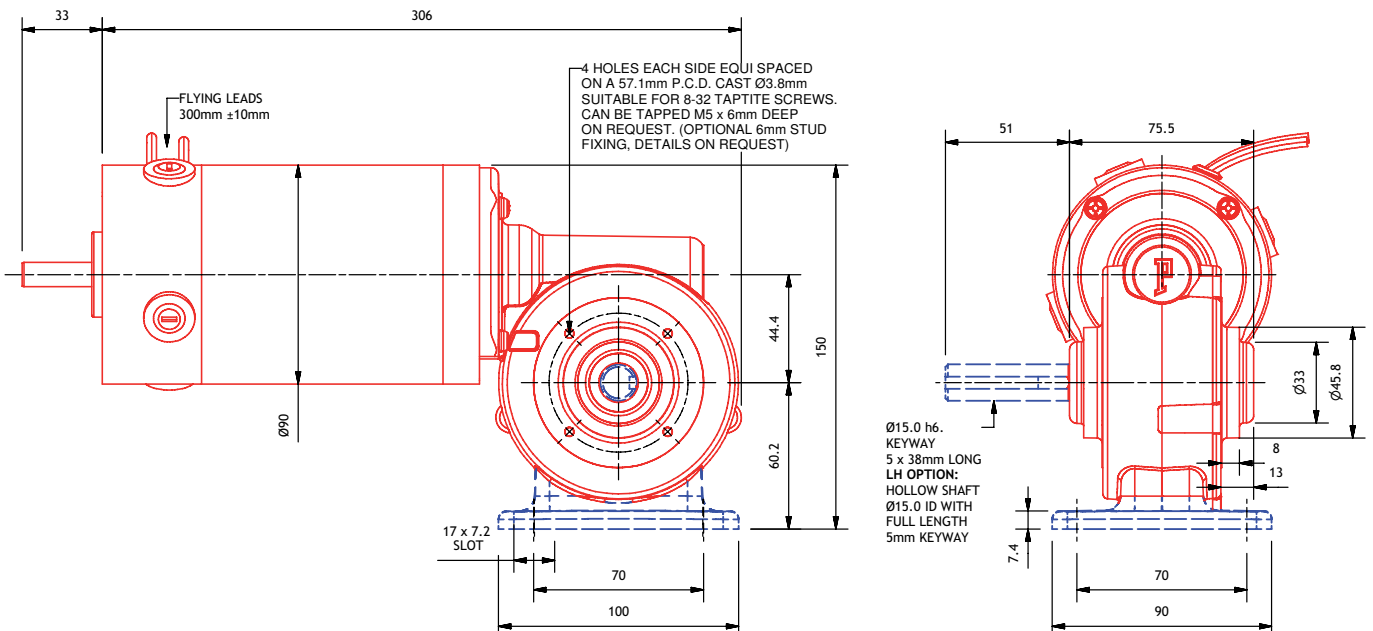
PM95LHB pictured

RATIO	MOTOR SPEED (rpm)				TORQUE (Nm)					
	1500	2000	3000	4000	CONTINUOUS		1 HOUR		15 MINUTE	
	OUTPUT SPEED (rpm)				Composite	Bronze	Composite	Bronze	Composite	Bronze
	25	33	50	67	11.3	17.0	11.3	17.0	11.3	17.0
60	25	33	50	67	11.3	17.0	11.3	17.0	11.3	17.0
50	30	40	60	80	11.3	17.0	11.3	17.0	11.3	17.0
40	38	50	75	100	14.6	18.7	14.6	22.0	14.6	22.0
30 1/2	49	66	98	131	14.6	16.0	14.6	19.9	14.6	22.0
25 1/2	59	78	118	157	14.3	14.3	14.6	17.8	14.6	22.0
20 1/2	73	98	146	195	12.2	12.2	14.6	15.3	14.6	22.4
12 1/3	122	162	243	324	8.5	8.5	10.7	10.7	14.6	14.9
9 1/4	162	216	324	432	6.9	6.9	8.7	8.7	12.1	12.1
8 1/4	182	242	364	485	6.4	6.4	7.9	7.9	11.1	11.1
7 1/6	209	279	419	558	5.7	5.7	7.1	7.1	10.0	10.0
5 1/8	293	390	585	780	4.4	4.4	5.5	5.5	7.7	7.7

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# PM1LS/LSH

- MOTOR Permanent magnet DC motor
- PROTECTION Ventilated (IP21)
- GEARBOX Worm and wheel (LS)
- POWER 45 - 200 Watts
- SPEED 25 - 780 rpm
- VOLTAGE 12V - 220V DC available range
- WEIGHT 3.21 kg
- RADIAL LOAD 314 N
- AXIAL LOAD 196 N
- SHAFT TYPE Single ended as standard; hollow or double ended upon request
- EXTRAS See page 36

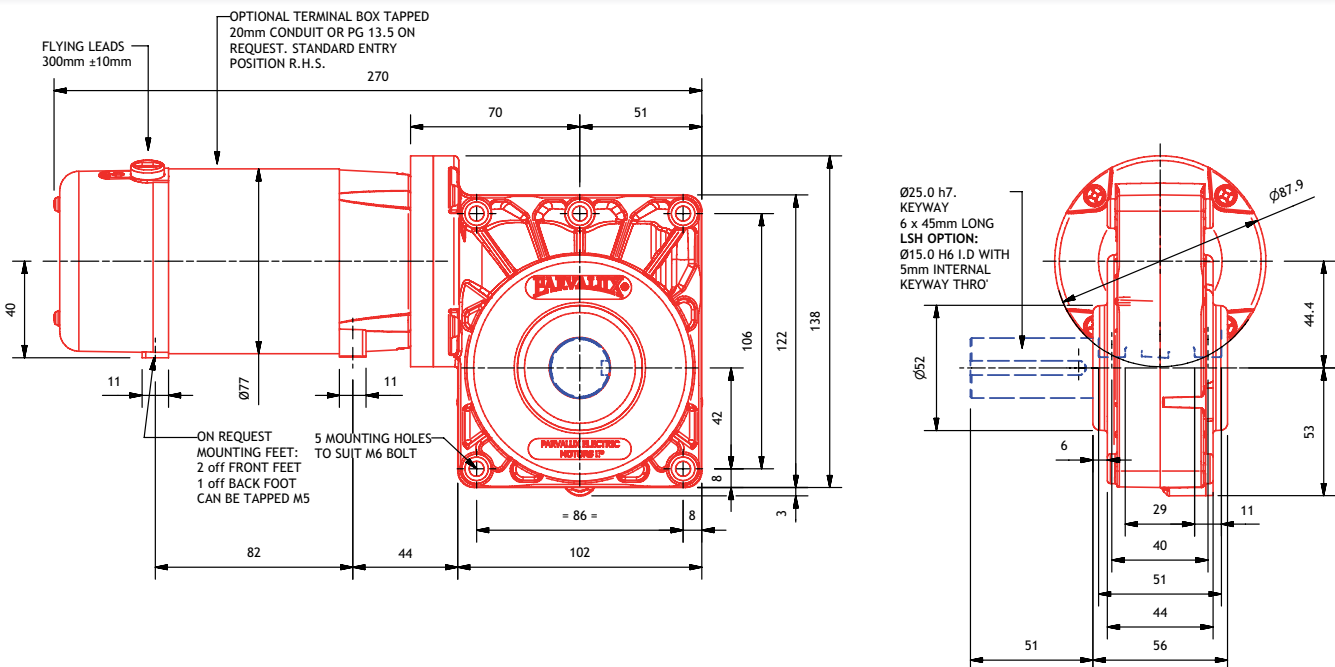


PM1LSH pictured

RATIO	MOTOR SPEED (rpm)				TORQUE (Nm)					
	OUTPUT SPEED (rpm)				CONTINUOUS		1 HOUR		15 MINUTE	
	1500	2000	3000	4000	Composite	Bronze	Composite	Bronze	Composite	Bronze
60	25	33	50	67	6.2	6.2	7.6	7.6	10.4	10.4
50	30	40	60	80	5.5	5.5	6.7	6.7	9.2	9.2
40	38	50	75	100	5.0	5.0	6.1	6.1	8.3	8.3
30 1/2	49	66	98	131	4.3	4.3	5.2	5.2	7.1	7.1
25 1/2	59	78	118	157	3.8	3.8	4.7	4.7	6.3	6.3
20 1/2	73	98	146	195	3.3	3.3	4.0	4.0	5.4	5.4
15 1/3	98	130	196	261	2.7	2.7	3.3	3.3	4.4	4.4
12 1/3	122	162	243	324	2.3	2.3	2.8	2.8	3.8	3.8
9 1/4	162	216	324	432	1.8	1.8	2.3	2.3	3.1	3.1
8 1/4	182	242	364	485	1.7	1.7	2.1	2.1	2.8	2.8
7 1/6	209	279	419	558	1.5	1.5	1.9	1.9	2.5	2.5
5 1/8	293	390	585	780	1.2	1.2	1.4	1.4	2.0	2.0

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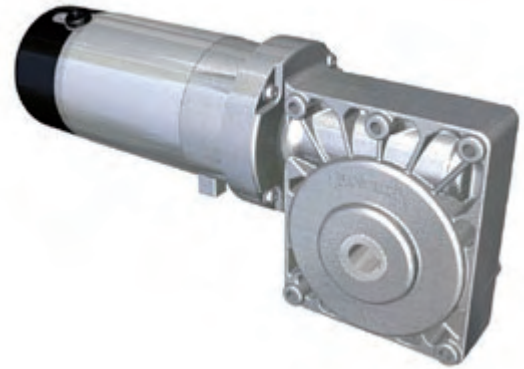
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# PM2LS/LSH



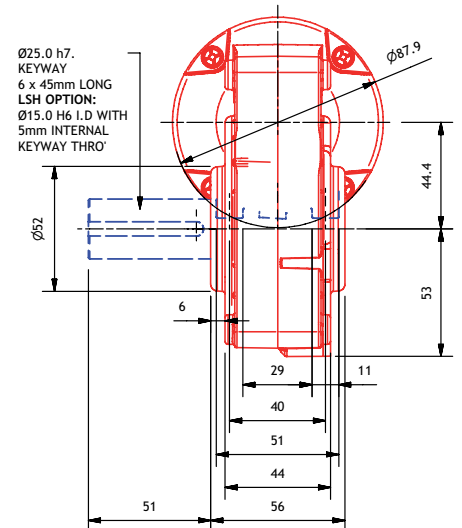
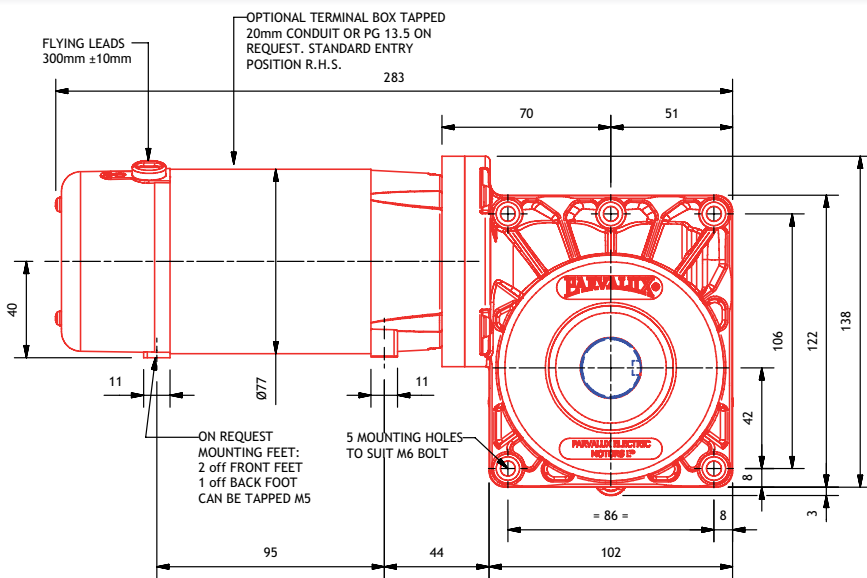
**MOTOR** Permanent magnet DC motor  
**PROTECTION** Ventilated (IP21)  
**GEARBOX** Worm and wheel (LS)  
**POWER** 60 - 265 Watts  
**SPEED** 25 - 780 rpm  
**VOLTAGE** 12V - 220V DC available range  
**WEIGHT** 3.56 kg  
**RADIAL LOAD** 314 N  
**AXIAL LOAD** 196 N  
**SHAFT TYPE** Single ended as standard; hollow or double ended upon request  
**EXTRAS** See page 36



PM2LSH pictured

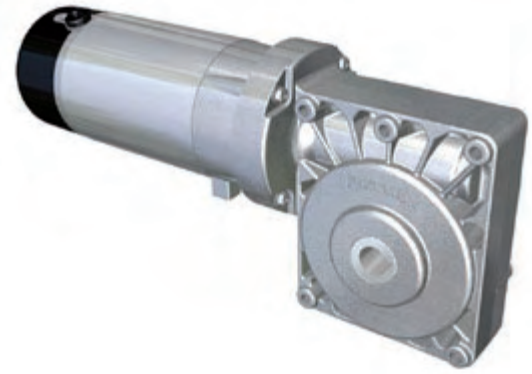
Motor Power Cont (W)	60				80				120				160				TORQUE (Nm)
	75				100				150				200				
	100				130				200				265				
RATIO	MOTOR SPEED (rpm)				CONTINUOUS		1 HOUR		15 MINUTE								
	1500	2000	3000	4000	Composite	Bronze	Composite	Bronze	Composite	Bronze							
	OUTPUT SPEED (rpm)																
60	25	33	50	67	8.3	8.3	10.4	10.4	11.3	11.3							
50	30	40	60	80	7.4	7.4	9.2	9.2	11.3	11.3							
40	38	50	75	100	6.7	6.7	8.3	8.3	11.1	11.1							
30 1/2	49	66	98	131	5.7	5.7	7.1	7.1	9.5	9.5							
25 1/2	59	78	118	157	5.1	5.1	6.3	6.3	8.5	8.5							
20 1/2	73	98	146	195	4.4	4.4	5.4	5.4	7.3	7.3							
15 1/3	98	130	196	261	3.6	3.6	4.4	4.4	5.9	5.9							
12 1/3	122	162	243	324	3.0	3.0	3.8	3.8	5.1	5.1							
9 1/4	162	216	324	432	2.5	2.5	3.1	3.1	4.1	4.1							
8 1/4	182	242	364	485	2.3	2.3	2.8	2.8	3.8	3.8							
7 1/6	209	279	419	558	2.0	2.0	2.5	2.5	3.4	3.4							
5 1/8	293	390	585	780	1.6	1.6	2.0	2.0	2.6	2.6							

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# PM6LS/LSH

- MOTOR Permanent magnet DC motor
- PROTECTION Ventilated (IP21)
- GEARBOX Worm and wheel (LS)
- POWER 75 - 330 Watts
- SPEED 25 - 780 rpm
- VOLTAGE 12V - 220V DC available range
- WEIGHT 3.75 kg
- RADIAL LOAD 314 N
- AXIAL LOAD 196 N
- SHAFT TYPE Single ended as standard; hollow or double ended upon request
- EXTRAS See page 36

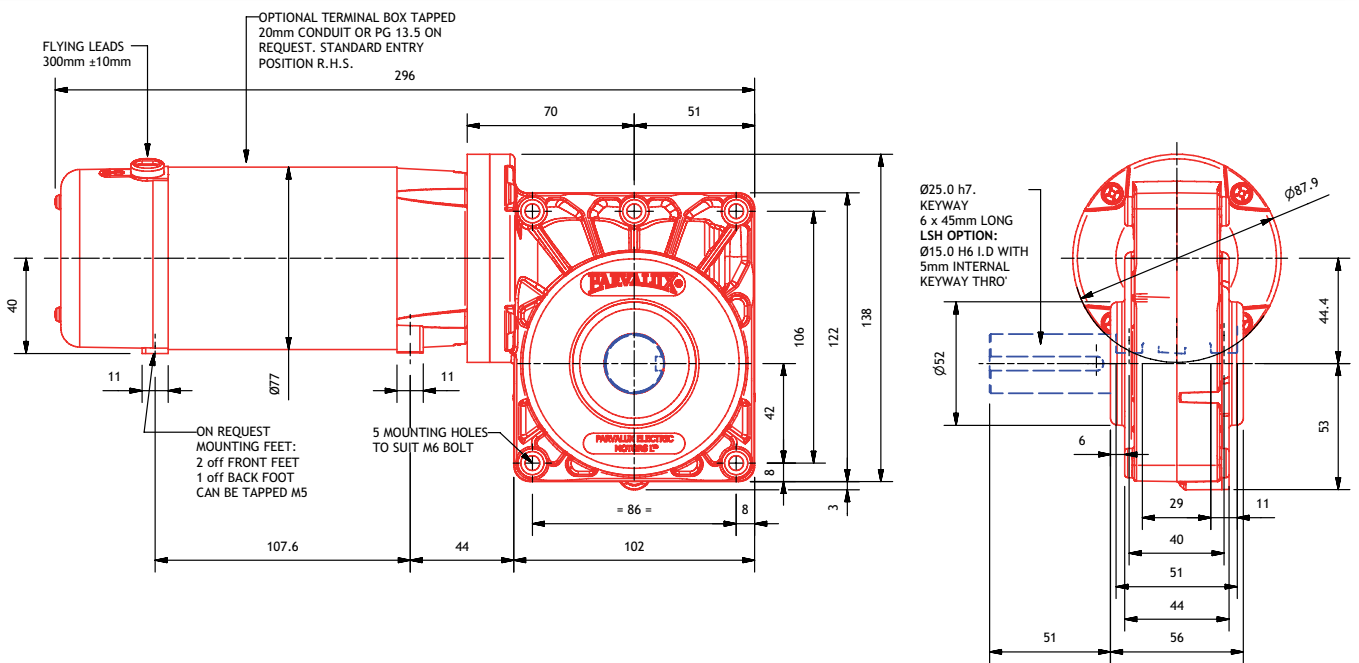


PM6LSH pictured

RATIO	MOTOR SPEED (rpm)				TORQUE (Nm)					
					CONTINUOUS		1 HOUR		15 MINUTE	
	1500	2000	3000	4000	Composite	Bronze	Composite	Bronze	Composite	Bronze
Motor Power Cont. (W)	75	100	150	200						
Motor Power 1 Hour (W)	90	120	180	240						
Motor Power 15 Min (W)	125	165	245	330						
	OUTPUT SPEED (rpm)									
60	25	33	50	67	10.4	10.4	11.3	12.5	11.3	12.0
50	30	40	60	80	9.2	9.2	11.0	11.0	11.3	13.0
40	38	50	75	100	8.3	8.3	10.0	10.0	13.6	13.6
30 1/2	49	66	98	131	7.1	7.1	8.5	8.5	11.6	11.6
25 1/2	59	78	118	157	6.3	6.3	7.6	7.6	10.4	10.4
20 1/2	73	98	146	195	5.4	5.4	6.5	6.5	8.9	8.9
15 1/3	98	130	196	261	4.4	4.4	5.3	5.3	7.3	7.3
12 1/3	122	162	243	324	3.8	3.8	4.6	4.6	6.2	6.2
9 1/4	162	216	324	432	3.1	3.1	3.7	3.7	5.0	5.0
8 1/4	182	242	364	485	2.8	2.8	3.4	3.4	4.6	4.6
7 1/6	209	279	419	558	2.5	2.5	3.1	3.1	4.2	4.2
5 1/8	293	390	585	780	2.0	2.0	2.4	2.4	3.2	3.2

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worm gearboxes



# PM60LS/LSH

PARVALUX®

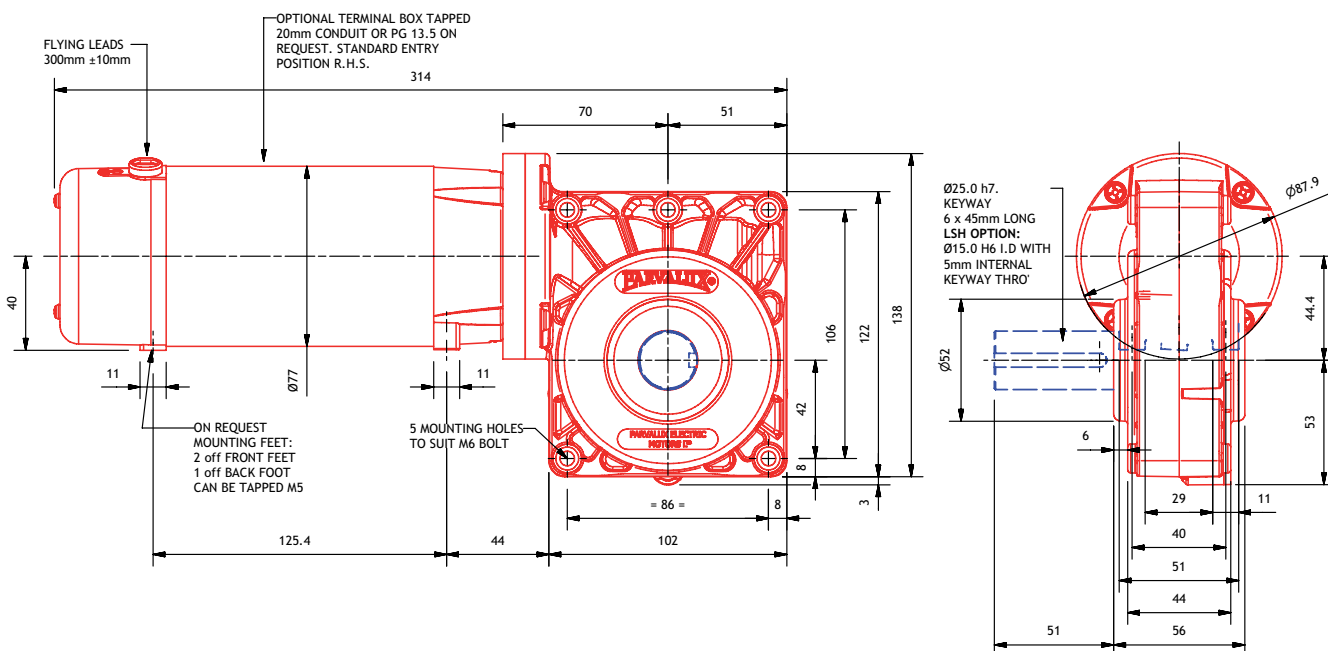
MOTOR	Permanent magnet DC motor
PROTECTION	Ventilated (IP21)
GEARBOX	Worm and wheel (LS)
POWER	105 - 460 Watts
SPEED	25 - 780 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	4.0 kg
RADIAL LOAD	314 N
AXIAL LOAD	196 N
SHAFT TYPE	Single ended as standard; hollow or double ended upon request
EXTRAS	See page 36



PM60LSH pictured

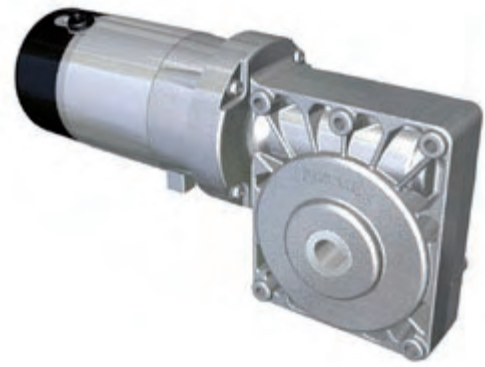
Motor Power Cont (W)	105				140				210				280			
	128				170				255				340			
	172				230				345				460			
RATIO	MOTOR SPEED (rpm)				CONTINUOUS		1 HOUR		15 MINUTE		TORQUE (Nm)					
	1500	2000	3000	4000	Composite	Bronze	Composite	Bronze	Composite	Bronze	OUTPUT SPEED (rpm)					
											1500	2000	3000	4000	Composite	Bronze
60	25	33	50	67	11.3	14.6	11.3	17.0	11.3	17.0	17.0	17.0	17.0	17.0	17.0	
50	30	40	60	80	11.3	12.9	11.3	15.6	11.3	15.6	15.6	15.6	15.6	15.6	15.6	
40	38	50	75	100	11.7	11.7	14.2	14.2	14.6	19.2	19.2	19.2	19.2	19.2	19.2	
30 1/2	49	66	98	131	9.9	9.9	12.1	12.1	14.6	16.3	16.3	16.3	16.3	16.3	16.3	
25 1/2	59	78	118	157	8.9	8.9	10.8	10.8	14.6	14.6	14.6	14.6	14.6	14.6	14.6	
20 1/2	73	98	146	195	7.6	7.6	9.3	9.3	12.5	12.5	12.5	12.5	12.5	12.5	12.5	
15 1/3	98	130	196	261	6.2	6.2	7.6	7.6	10.2	10.2	10.2	10.2	10.2	10.2	10.2	
12 1/3	122	162	243	324	5.3	5.3	6.5	6.5	8.7	8.7	8.7	8.7	8.7	8.7	8.7	
9 1/4	162	216	324	432	4.3	4.3	5.2	5.2	7.1	7.1	7.1	7.1	7.1	7.1	7.1	
8 1/4	182	242	364	485	4.0	4.0	4.8	4.8	6.5	6.5	6.5	6.5	6.5	6.5	6.5	
7 1/6	209	279	419	558	3.6	3.6	4.3	4.3	5.8	5.8	5.8	5.8	5.8	5.8	5.8	
5 1/8	293	390	585	780	2.8	2.8	3.3	3.3	4.5	4.5	4.5	4.5	4.5	4.5	4.5	

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# PM3LS/LSH

- MOTOR Permanent magnet DC motor
- PROTECTION Totally enclosed (IP54)
- GEARBOX Worm and wheel (LS)
- POWER 33 - 150 Watts
- SPEED 25 - 780 rpm
- VOLTAGE 12V - 220V DC available range
- WEIGHT 3.21 kg
- RADIAL LOAD 314 N
- AXIAL LOAD 196 N
- SHAFT TYPE Single ended as standard; hollow or double ended upon request
- EXTRAS See page 36

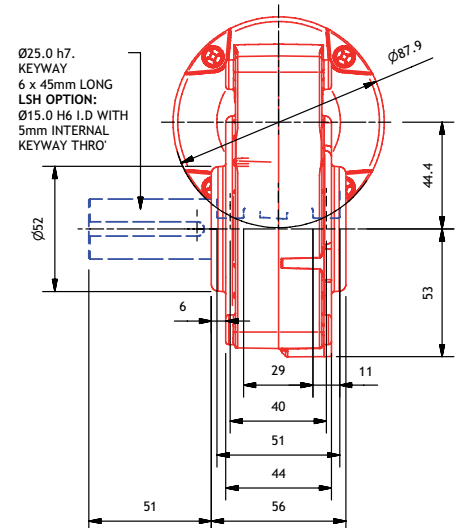
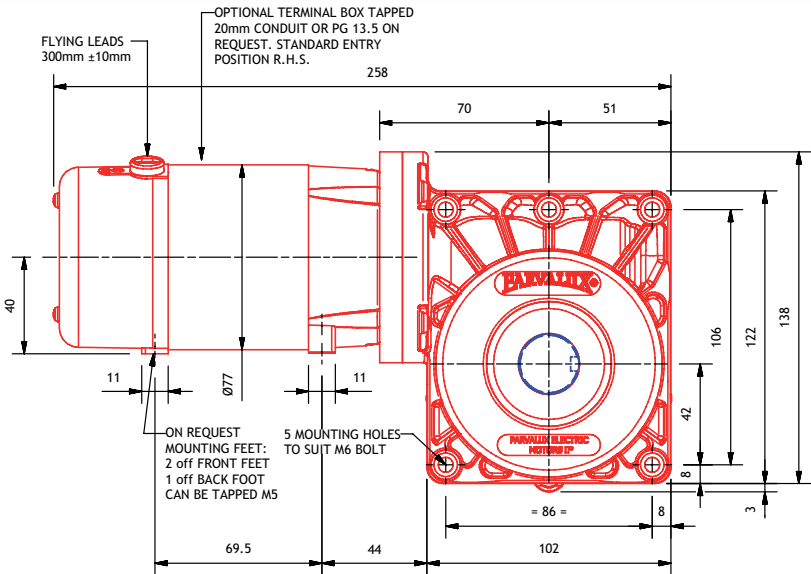


PM3LSH pictured

Motor Power Cont (W)	33				45				68				90				TORQUE (Nm)					
	45				60				90				120									
	60				90				120				150									
RATIO	MOTOR SPEED (rpm)				CONTINUOUS		1 HOUR		15 MINUTE													
	1500	2000	3000	4000	Composite	Bronze	Composite	Bronze	Composite	Bronze												
	OUTPUT SPEED (rpm)																					
60	25	33	50	67	4.7	4.7	6.2	6.2	8.3													
50	30	40	60	80	4.2	4.2	5.5	5.5	7.4													
40	38	50	75	100	3.8	3.8	5.0	5.0	6.7													
30 1/2	49	66	98	131	3.2	3.2	4.3	4.3	5.7													
25 1/2	59	78	118	157	2.9	2.9	3.8	3.8	5.1													
20 1/2	73	98	146	195	2.5	2.5	3.3	3.3	4.4													
15 1/3	98	130	196	261	2.0	2.0	2.7	2.7	3.6													
12 1/3	122	162	243	324	1.7	1.7	2.3	2.3	3.0													
9 1/4	162	216	324	432	1.4	1.4	1.8	1.8	2.5													
8 1/4	182	242	364	485	1.3	1.3	1.7	1.7	2.3													
7 1/6	209	279	419	558	1.2	1.2	1.5	1.5	2.0													
5 1/8	293	390	585	780	0.9	0.9	1.2	1.2	1.6													

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# PM4LS/LSH

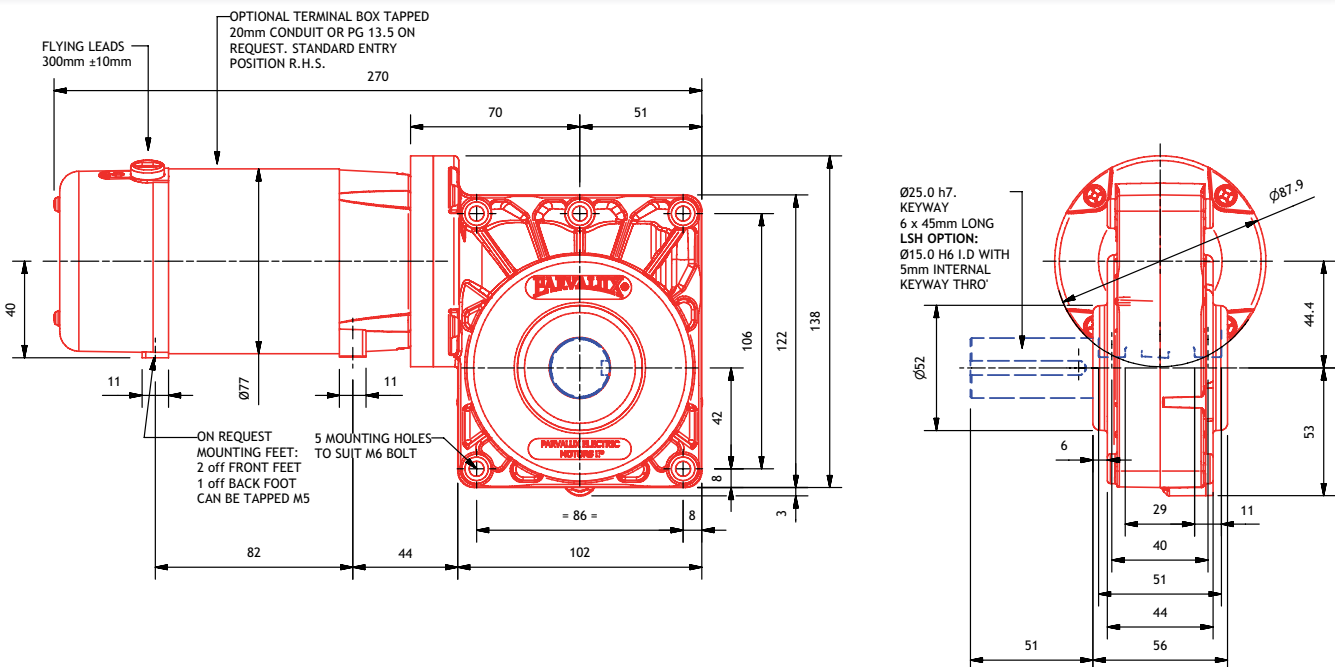
- MOTOR Permanent magnet DC motor
- PROTECTION Totally enclosed (IP54)
- GEARBOX Worm and wheel (LS)
- POWER 45 - 200 Watts
- SPEED 25 - 780 rpm
- VOLTAGE 12V - 220V DC available range
- WEIGHT 3.56 kg
- RADIAL LOAD 314 N
- AXIAL LOAD 196 N
- SHAFT TYPE Single ended as standard; hollow or double ended upon request
- EXTRAS See page 36



PM4LSH pictured

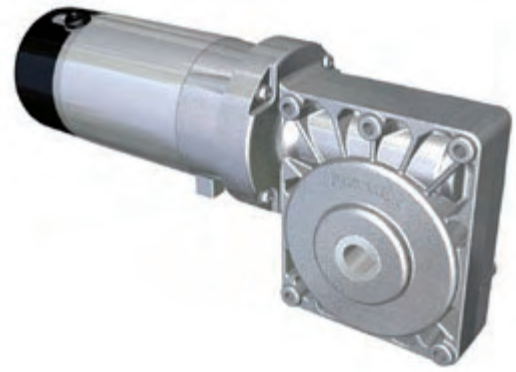
Motor Power Cont. (W)	45				60				90				120			
	60				80				120				160			
	80				120				160				200			
RATIO	MOTOR SPEED (rpm)				CONTINUOUS		1 HOUR		15 MINUTE							
	1500	2000	3000	4000	Composite	Bronze	Composite	Bronze	Composite	Bronze						
	OUTPUT SPEED (rpm)															
60	25	33	50	67	6.2	6.2	8.3	8.3	11.1	11.1						
50	30	40	60	80	5.5	5.5	7.4	7.4	9.8	9.8						
40	38	50	75	100	5.0	5.0	6.7	6.7	8.9	8.9						
30 1/2	49	66	98	131	4.3	4.3	5.7	5.7	7.6	7.6						
25 1/2	59	78	118	157	3.8	3.8	5.1	5.1	6.8	6.8						
20 1/2	73	98	146	195	3.3	3.3	4.4	4.4	5.8	5.8						
15 1/3	98	130	196	261	2.7	2.7	3.6	3.6	4.7	4.7						
12 1/3	122	162	243	324	2.3	2.3	3.0	3.0	4.1	4.1						
9 1/4	162	216	324	432	1.8	1.8	2.5	2.5	3.3	3.3						
8 1/4	182	242	364	485	1.7	1.7	2.3	2.3	3.0	3.0						
7 1/6	209	279	419	558	1.5	1.5	2.0	2.0	2.7	2.7						
5 1/8	293	390	585	780	1.2	1.2	1.6	1.6	2.1	2.1						

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# PM5LS/LSH

- MOTOR Permanent magnet DC motor
- PROTECTION Totally enclosed (IP54)
- GEARBOX Worm and wheel (LS)
- POWER 60 - 250 Watts
- SPEED 25 - 780 rpm
- VOLTAGE 12V - 220V DC available range
- WEIGHT 3.75 kg
- RADIAL LOAD 314 N
- AXIAL LOAD 196 N
- SHAFT TYPE Single ended as standard; hollow or double ended upon request
- EXTRAS See page 36

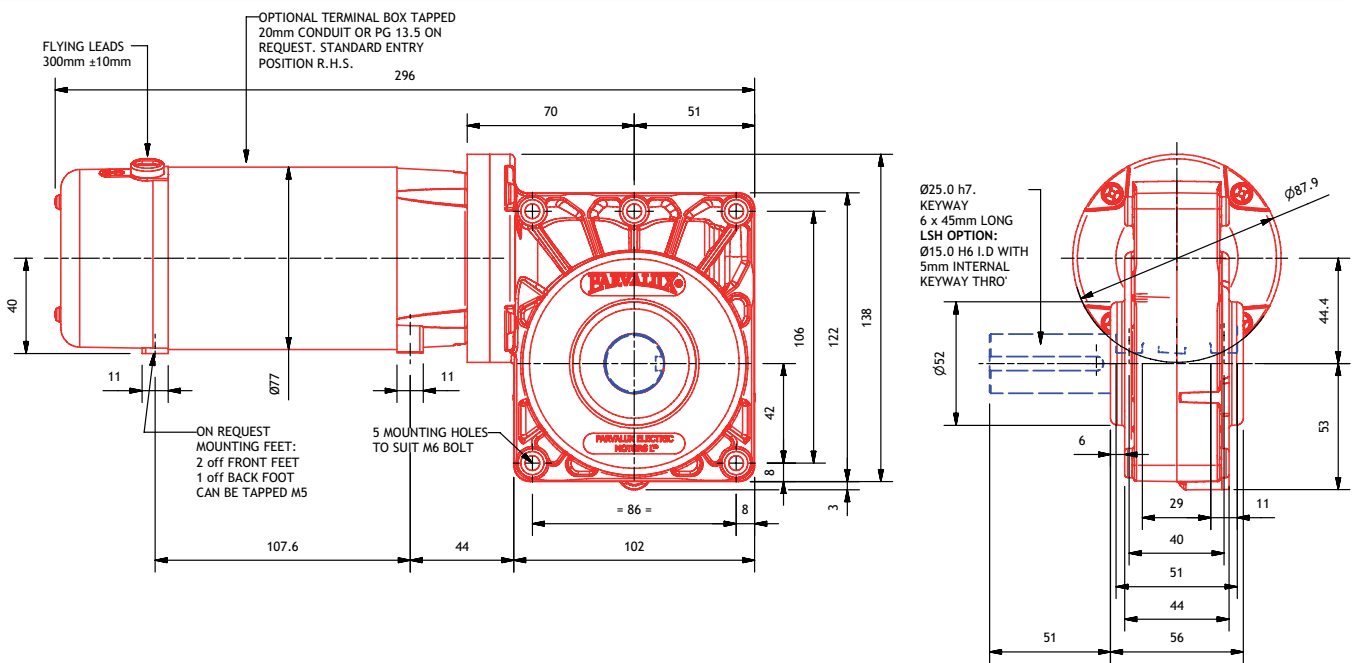


PM5LSH pictured

RATIO	MOTOR SPEED (rpm)				TORQUE (Nm)					
	OUTPUT SPEED (rpm)				CONTINUOUS		1 HOUR		15 MINUTE	
	1500	2000	3000	4000	Composite	Bronze	Composite	Bronze	Composite	Bronze
60	25	33	50	67	8.3	8.3	10.4	10.4	11.3	13.9
50	30	40	60	80	7.4	7.4	9.2	9.2	11.3	12.3
40	38	50	75	100	6.7	6.7	8.3	8.3	11.1	11.1
30 1/2	49	66	98	131	5.7	5.7	7.1	7.1	9.5	9.5
25 1/2	59	78	118	157	5.1	5.1	6.3	6.3	8.5	8.5
20 1/2	73	98	146	195	4.4	4.4	5.4	5.4	7.3	7.3
15 1/3	98	130	196	261	3.6	3.6	4.4	4.4	5.9	5.9
12 1/3	122	162	243	324	3.0	3.0	3.8	3.8	5.1	5.1
9 1/4	162	216	324	432	2.5	2.5	3.1	3.1	4.1	4.1
8 1/4	182	242	364	485	2.3	2.3	2.8	2.8	3.8	3.8
7 1/6	209	279	419	558	2.0	2.0	2.5	2.5	3.4	3.4
5 1/8	293	390	585	780	1.6	1.6	2.0	2.0	2.6	2.6

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# PM50LS/LSH

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MOTOR	Permanent magnet DC motor
PROTECTION	Totally enclosed (IP54)
GEARBOX	Worm and wheel (LS)
POWER	80 - 375 Watts
SPEED	25 - 780 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	4.0 kg
RADIAL LOAD	314 N
AXIAL LOAD	196 N
SHAFT TYPE	Single ended as standard; hollow or double ended upon request
EXTRAS	See page 36

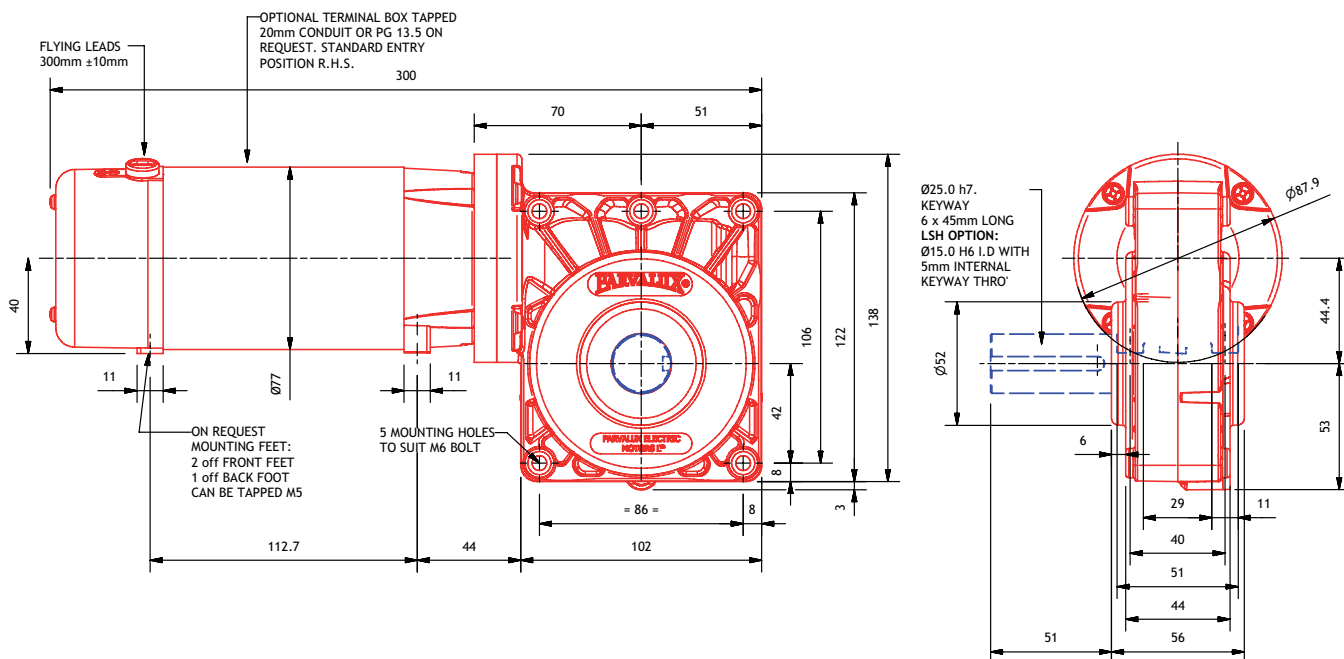


PM50LSH pictured

RATIO	MOTOR SPEED (rpm)				TORQUE (Nm)					
	1500	2000	3000	4000	CONTINUOUS		1 HOUR		15 MINUTE	
					Composite	Bronze	Composite	Bronze	Composite	Bronze
	OUTPUT SPEED (rpm)									
60	25	33	50	67	10.7	10.7	11.3	13.9	11.3	17.0
50	30	40	60	80	9.5	9.5	11.3	12.3	11.3	17.0
40	38	50	75	100	8.6	8.6	11.1	11.1	14.6	19.5
30 1/2	49	66	98	131	7.3	7.3	9.5	9.5	13.3	18.3
25 1/2	59	78	118	157	6.6	6.6	8.5	8.5	11.8	16.8
20 1/2	73	98	146	195	5.6	5.6	7.3	7.3	10.2	14.2
15 1/3	98	130	196	261	4.6	4.6	5.9	5.9	8.3	11.3
12 1/3	122	162	243	324	3.9	3.9	5.1	5.1	7.1	9.7
9 1/4	162	216	324	432	3.2	3.2	4.1	4.1	5.8	7.8
8 1/4	182	242	364	485	2.9	2.9	3.8	3.8	5.3	7.3
7 1/6	209	279	419	558	2.6	2.6	3.4	3.4	4.7	6.7
5 1/8	293	390	585	780	2.0	2.0	2.6	2.6	3.7	5.0

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# PM90LS/LSH

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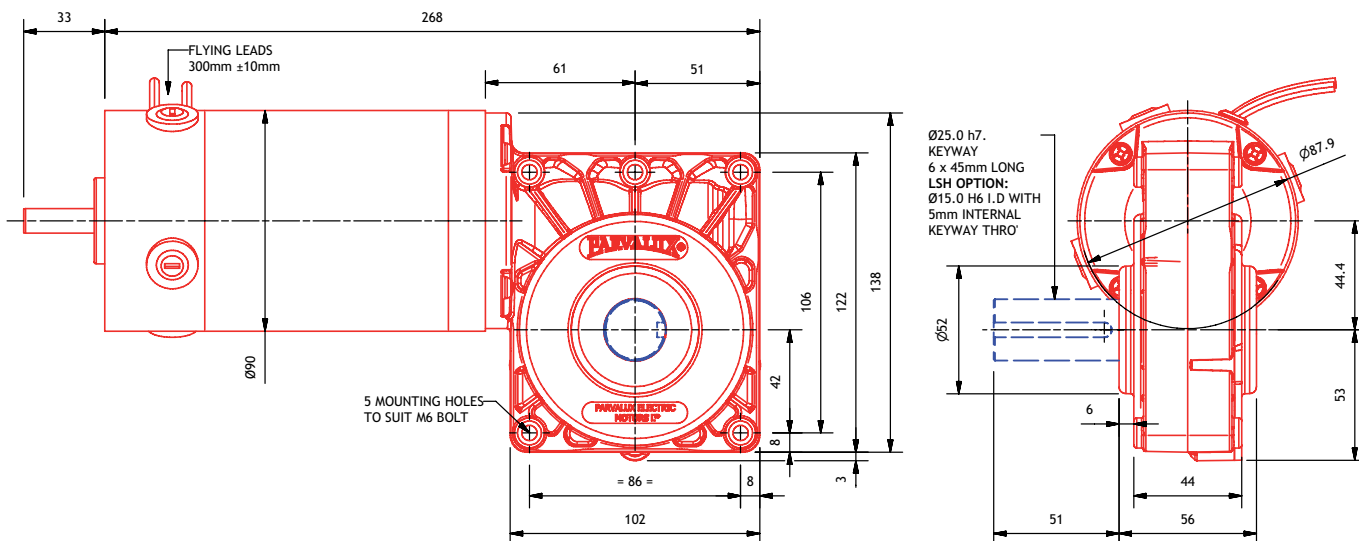
MOTOR	Permanent magnet DC motor
PROTECTION	Totally enclosed (IP54)
GEARBOX	Worm and wheel (LS)
POWER	113 - 525 Watts
SPEED	25 - 780 rpm
VOLTAGE	12V, 24V, 36V or 48V, D.C.
WEIGHT	4.6 kg
RADIAL LOAD	314 N
AXIAL LOAD	196 N
SHAFT TYPE	Single ended as standard; hollow or double ended upon request
EXTRAS	See page 36

PM90LSH pictured

RATIO	MOTOR SPEED (rpm)				TORQUE (Nm)					
	1500	2000	3000	4000	CONTINUOUS		1 HOUR		15 MINUTE	
					Composite	Bronze	Composite	Bronze	Composite	Bronze
	OUTPUT SPEED (rpm)									
60	25	33	50	67	11.3	15.6	11.3	17.0	11.3	17.0
50	30	40	60	80	11.3	13.8	11.3	17.0	11.3	17.0
40	38	50	75	100	12.5	12.5	14.6	15.6	14.6	22.9
30 1/2	49	66	98	131	10.7	10.7	13.3	13.3	14.6	18.7
25 1/2	59	78	118	157	9.5	9.5	11.9	11.9	14.6	16.7
20 1/2	73	98	146	195	8.2	8.2	10.2	10.2	14.3	14.3
15 1/3	98	130	196	261	6.7	6.7	8.3	8.3	11.7	11.7
12 1/3	122	162	243	324	5.7	5.7	7.1	7.1	10.0	10.0
9 1/4	162	216	324	432	4.6	4.6	5.8	5.8	8.1	8.1
8 1/4	182	242	364	485	4.2	4.2	5.3	5.3	7.4	7.4
7 1/6	209	279	419	558	3.8	3.8	4.8	4.8	6.7	6.7
5 1/8	293	390	585	780	3.0	3.0	3.7	3.7	5.2	5.2

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# PM95LS/LSH

PARVALUX®

MOTOR	Permanent magnet DC motor
PROTECTION	Totally enclosed (IP54)
GEARBOX	Worm and wheel (LS)
POWER	168 - 788 Watts
SPEED	25 - 780 rpm
VOLTAGE	12V, 24V, 36V or 48V, D.C.
WEIGHT	6.1 kg
RADIAL LOAD	314 N
AXIAL LOAD	196 N
SHAFT TYPE	Single ended as standard; hollow or double ended upon request
EXTRAS	See page 36

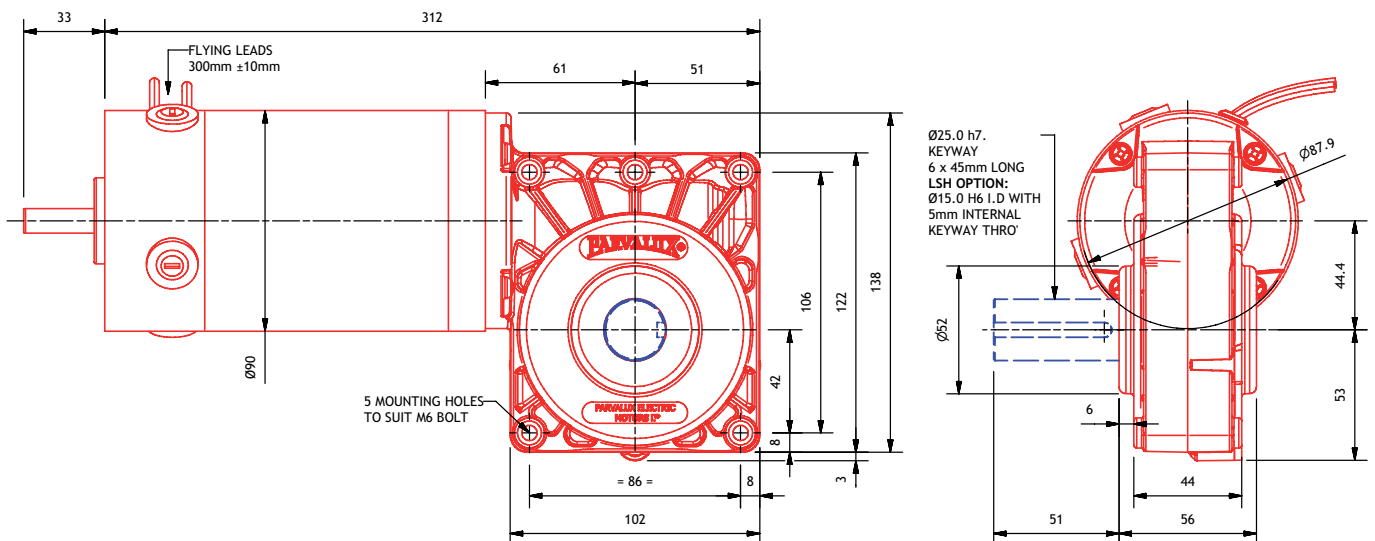


PM95LSH pictured

Motor Power Cont. (W)	168				225				337				450			
	210				281				421				563			
	294				394				590				788			
RATIO	MOTOR SPEED (rpm)				CONTINUOUS		1 HOUR		15 MINUTE							
	1500	2000	3000	4000	Composite	Bronze	Composite	Bronze	Composite	Bronze						
	OUTPUT SPEED (rpm)															
60	25	33	50	67	11.3	17.0	11.3	17.0	11.3	17.0	17.0	17.0				
50	30	40	60	80	11.3	17.0	11.3	17.0	11.3	17.0	22.0	22.0				
40	38	50	75	100	14.6	18.7	14.6	22.0	14.6	22.0	22.0	22.0				
30 1/2	49	66	98	131	14.6	16.0	14.6	19.9	14.6	22.0	22.0	22.0				
25 1/2	59	78	118	157	14.3	14.3	14.6	17.8	14.6	22.0	22.0	22.0				
20 1/2	73	98	146	195	12.2	12.2	14.6	15.3	14.6	22.4	22.4	22.4				
15 1/3	98	130	196	261	10.0	10.0	12.5	12.5	14.6	17.5	17.5	17.5				
12 1/3	122	162	243	324	8.5	8.5	10.7	10.7	14.6	14.9	14.9	14.9				
9 1/4	162	216	324	432	6.9	6.9	8.7	8.7	12.1	12.1	12.1	12.1				
8 1/4	182	242	364	485	6.4	6.4	7.9	7.9	11.1	11.1	11.1	11.1				
7 1/6	209	279	419	558	5.7	5.7	7.1	7.1	10.0	10.0	10.0	10.0				
5 1/8	293	390	585	780	4.4	4.4	5.5	5.5	7.7	7.7	7.7	7.7				

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# PM60G/GH

PARVALUX®

MOTOR	Permanent magnet DC motor
PROTECTION	Ventilated (IP21)
GEARBOX	Worm and wheel (G)
POWER	105 - 460 Watts
SPEED	20 - 320 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	5.6 kg
RADIAL LOAD	491 N
AXIAL LOAD	294 N
SHAFT TYPE	Single ended as standard; hollow or double ended upon request
EXTRAS	See page 36



PM60G pictured

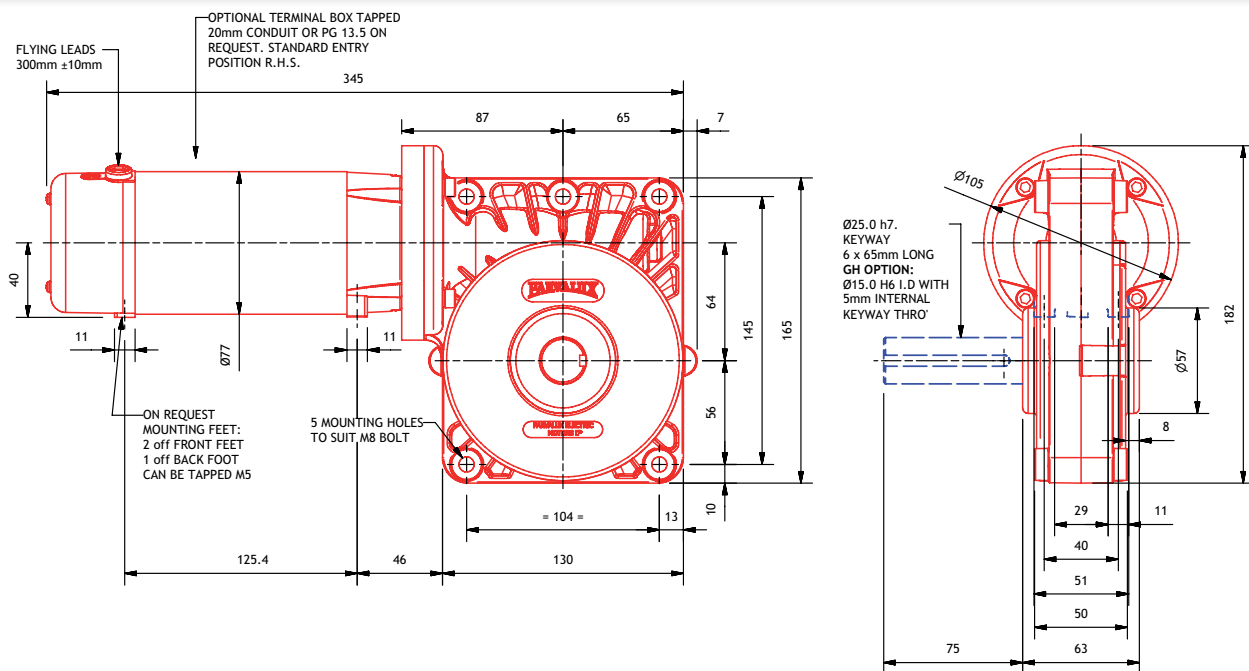
RATIO	MOTOR SPEED (rpm)				TORQUE (Nm)		
	1500	2000	3000	4000	CONTINUOUS	1 HOUR	15 MINUTE
					Composite	Composite	Composite
	OUTPUT SPEED (rpm)						
75	20	27	40	53	28.1	34.1	46.2
60	25	33	50	67	23.3	28.2	38.2
50	30	40	60	80	20.4	24.8	33.5
30	50	67	100	133	13.2	16.1	21.7
25	60	80	120	160	11.5	14.0	18.9
12 1/2	120	160	240	320	6.3	7.6	10.3

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# PM50G/GH

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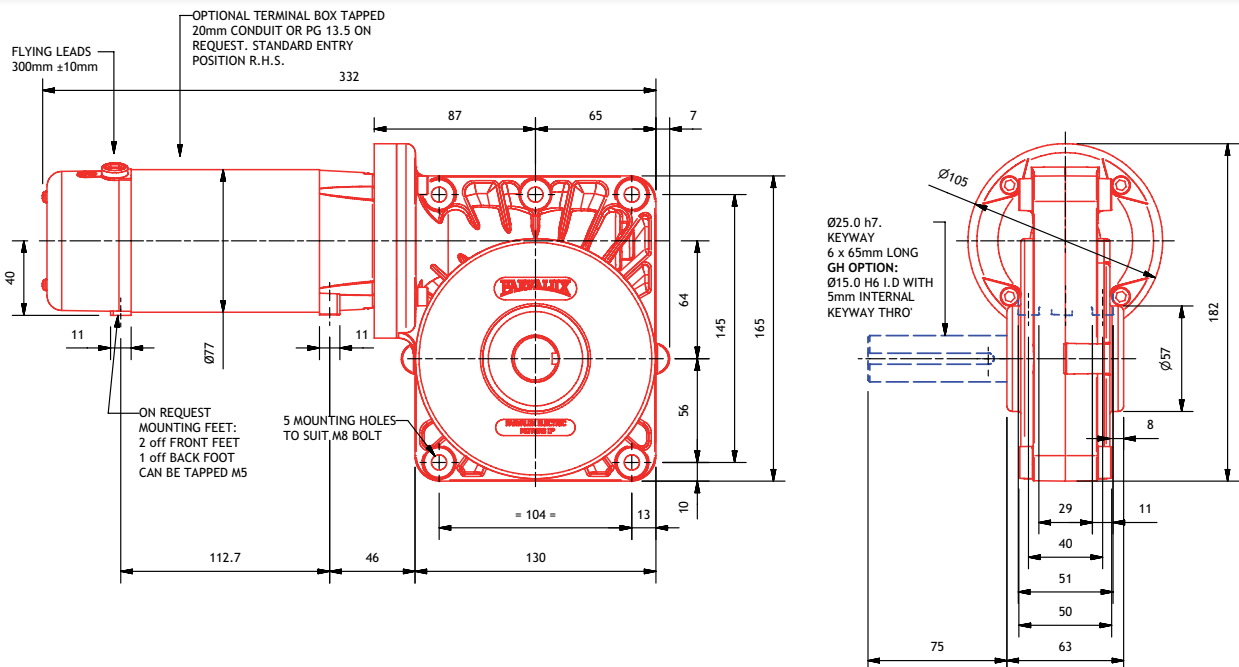
MOTOR	Permanent magnet DC motor
PROTECTION	Totally enclosed (IP54)
GEARBOX	Worm and wheel (G)
POWER	80 - 375 Watts
SPEED	20 - 320 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	5.6 kg
RADIAL LOAD	491 N
AXIAL LOAD	294 N
SHAFT TYPE	Single ended as standard; hollow or double ended upon request
EXTRAS	See page 36



PM50G pictured

Motor Power Cont. (W)	80				105				155				205				TORQUE (Nm)		
	100				135				200				265				CONTINUOUS	1 HOUR	15 MINUTE
	140				185				280				375						
RATIO	MOTOR SPEED (rpm)								Composite	Composite	Composite								
	OUTPUT SPEED (rpm)																		
	1500	2000	3000	4000															
75	20	27	40	53	20.7	26.7	37.4	47.4											
60	25	33	50	67	17.2	22.2	31.0	40.0											
50	30	40	60	80	15.0	19.4	27.2	35.0											
30	50	67	100	133	9.8	12.6	17.6	22.6											
25	60	80	120	160	8.5	11.0	15.4	20.0											
12 1/2	120	160	240	320	4.6	6.0	8.4	11.0											

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# PM90G/GH

PARVALUX®

MOTOR	Permanent magnet DC motor
PROTECTION	Totally enclosed (IP54)
GEARBOX	Worm and wheel (G)
POWER	113 - 525 Watts
SPEED	20 - 320 rpm
VOLTAGE	12V, 24V, 36V or 48V, D.C.
WEIGHT	6.2 kg
RADIAL LOAD	491 N
AXIAL LOAD	294 N
SHAFT TYPE	Single ended as standard; hollow or double ended upon request
EXTRAS	See page 36

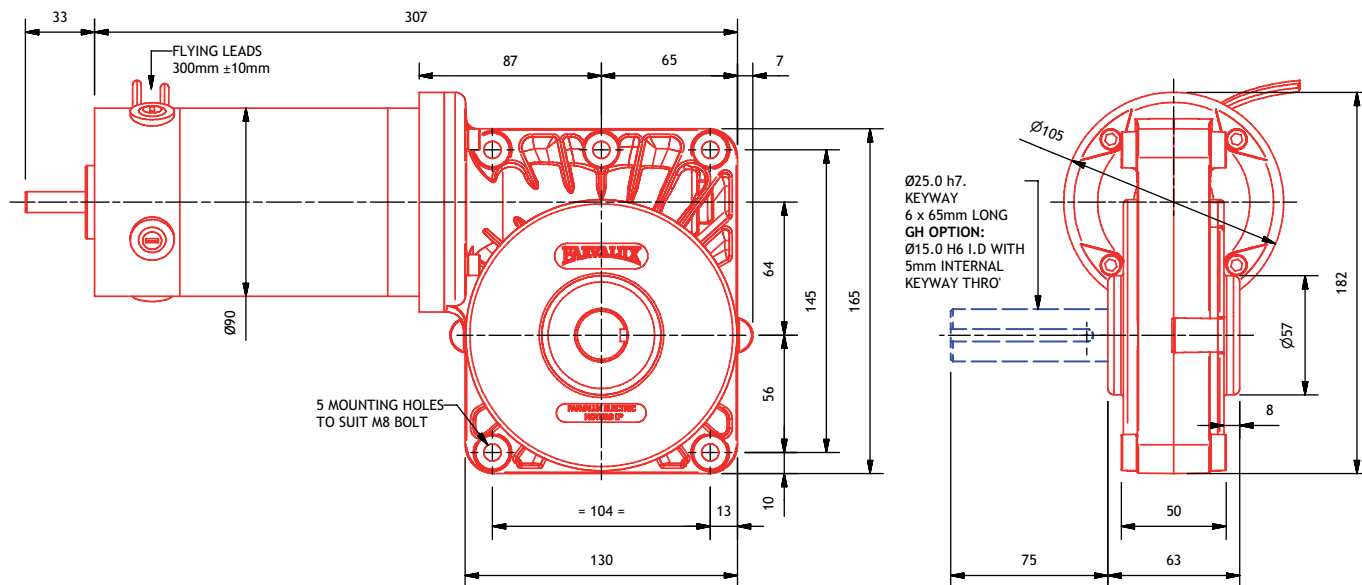


PM90G pictured

RATIO	MOTOR SPEED (rpm)				TORQUE (Nm)		
	1500	2000	3000	4000	CONTINUOUS	1 HOUR	15 MINUTE
					Composite	Composite	Composite
	OUTPUT SPEED (rpm)						
75	20	27	40	53	30.1	37.6	50.0
60	25	33	50	67	24.9	31.1	43.7
50	30	40	60	80	21.8	27.3	38.3
30	50	67	100	133	14.2	17.7	24.8
25	60	80	120	160	12.4	15.4	21.6
12 1/2	120	160	240	320	6.7	8.4	11.8

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worm gearboxes



# PM95G/GH

PARVALUX®

- MOTOR Permanent magnet DC motor
- PROTECTION Totally enclosed (IP54)
- GEARBOX Worm and wheel (G)
- POWER 168 - 788 Watts
- SPEED 20 - 320 rpm
- VOLTAGE 12V, 24V, 36V or 48V, D.C.
- WEIGHT 7.7 kg
- RADIAL LOAD 491 N
- AXIAL LOAD 294 N
- SHAFT TYPE Single ended as standard; hollow or double ended upon request
- EXTRAS See page 36



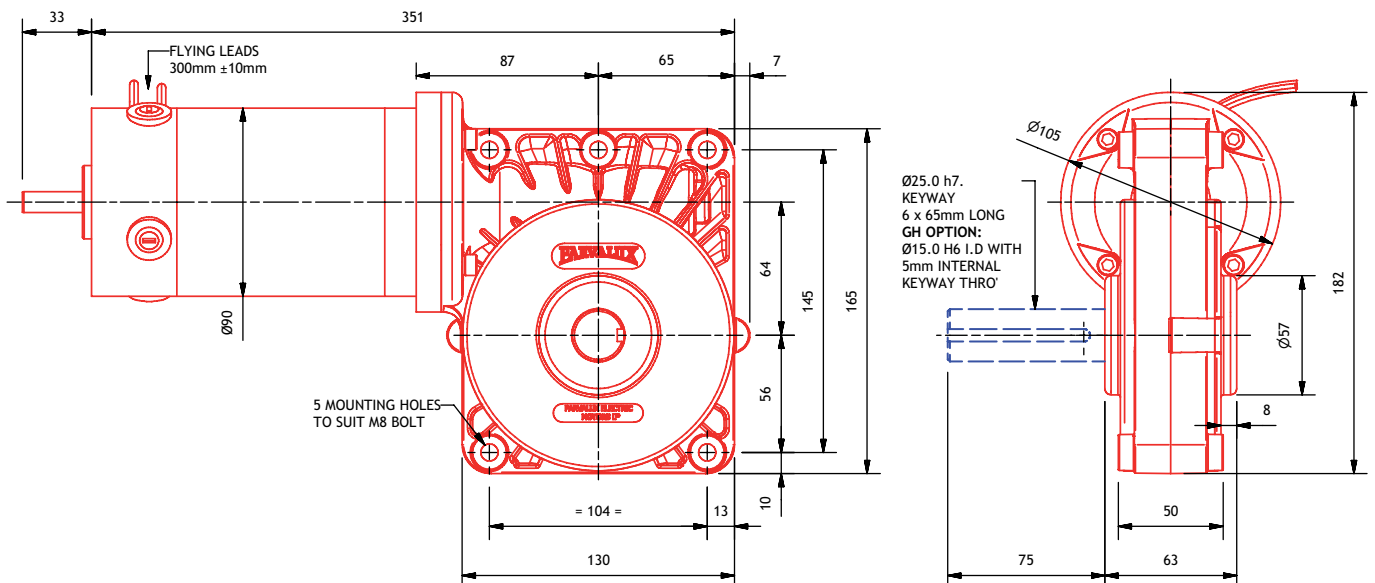
PM95G pictured

RATIO	MOTOR SPEED (rpm)				TORQUE (Nm)		
	1500	2000	3000	4000	CONTINUOUS	1 HOUR	15 MINUTE
					Composite	Composite	Composite
	OUTPUT SPEED (rpm)						
75	20	27	40	53	45.1	50.0	50.0
60	25	33	50	67	37.3	46.6	50.0
50	30	40	60	80	32.7	40.9	50.0
30	50	67	100	133	21.2	26.5	37.2
25	60	80	120	160	18.5	23.1	32.4
12 1/2	120	160	240	320	10.1	12.6	17.6

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# PM7SS

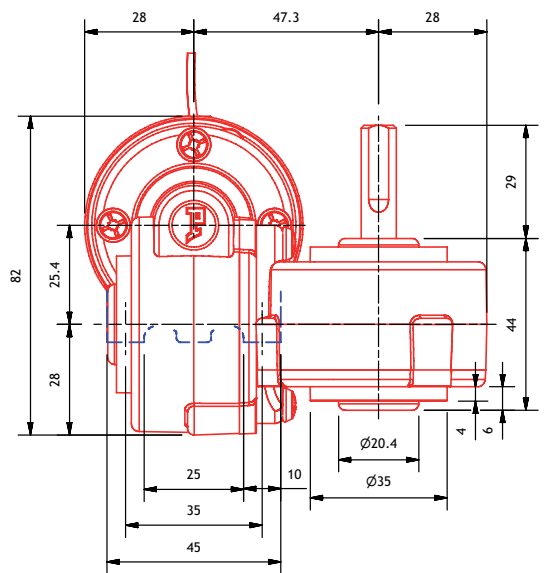
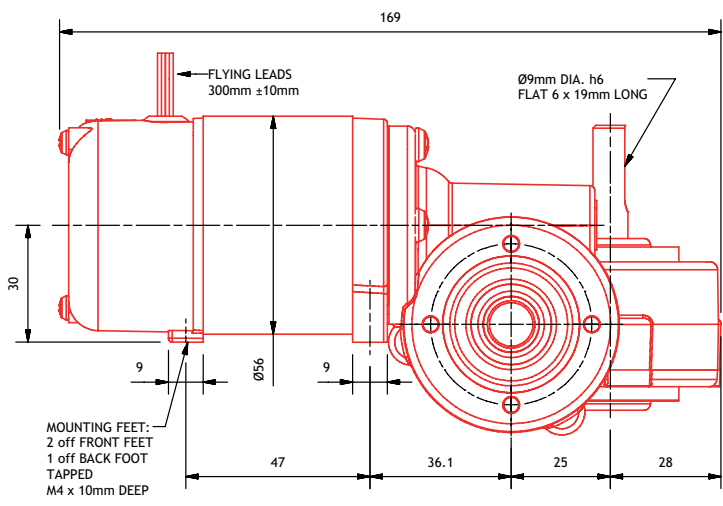
- MOTOR Permanent magnet DC motor
- PROTECTION Totally enclosed (IP54)
- GEARBOX Double reduction worm and wheel (SS)
- POWER 7.5 - 33 Watts
- SPEED 0.5 - 150 rpm
- VOLTAGE 12V - 220V DC available range
- WEIGHT 1.3 kg
- RADIAL LOAD 54 N
- AXIAL LOAD 35 N
- SHAFT TYPE Single ended or double ended upon request
- EXTRAS See page 36



RATIO	MOTOR SPEED (rpm)				TORQUE (Nm)					
	1500	2000	3000	4000	CONTINUOUS		1 HOUR		15 MINUTE	
					Composite	Bronze	Composite	Bronze	Composite	Bronze
	OUTPUT SPEED (rpm)									
2800	0.5	0.7	1.1	1.4	4.0	5.9	4.0	5.9	4.0	5.9
1440	1.0	1.4	2.1	2.8	4.0	5.9	4.0	5.9	4.0	5.9
750	2	3	4	5	4.0	5.9	4.0	5.9	4.0	5.9
500	3	4	6	8	4.0	5.9	4.0	5.9	4.0	5.9
375	4	5	8	11	4.0	5.6	4.0	5.9	4.0	5.9
300	5	7	10	13	4.0	4.7	4.0	5.9	4.0	5.9
191	8	10	16	21	3.6	3.6	4.0	4.8	4.0	5.9
153	10	13	20	26	3.1	3.1	4.0	4.1	4.0	5.9
138	11	15	22	29	2.8	2.8	3.7	3.7	4.0	4.7
103	15	19	29	39	2.3	2.3	3.0	3.0	3.8	3.8
85	18	23	35	47	1.9	1.9	2.6	2.6	3.2	3.2
71	21	28	42	56	1.7	1.7	2.3	2.3	2.9	2.9
65	23	31	46	62	1.6	1.6	2.2	2.2	2.7	2.7
58	26	34	51	69	1.5	1.5	2.0	2.0	2.5	2.5
52	29	38	58	77	1.4	1.4	1.8	1.8	2.3	2.3
43	35	46	70	93	1.2	1.2	1.6	1.6	2.0	2.0
39	38	51	77	102	1.1	1.1	1.5	1.5	1.8	1.8
32	46	62	93	124	1.0	1.0	1.3	1.3	1.6	1.6
27	56	75	112	150	0.8	0.8	1.1	1.1	1.4	1.4

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double worm



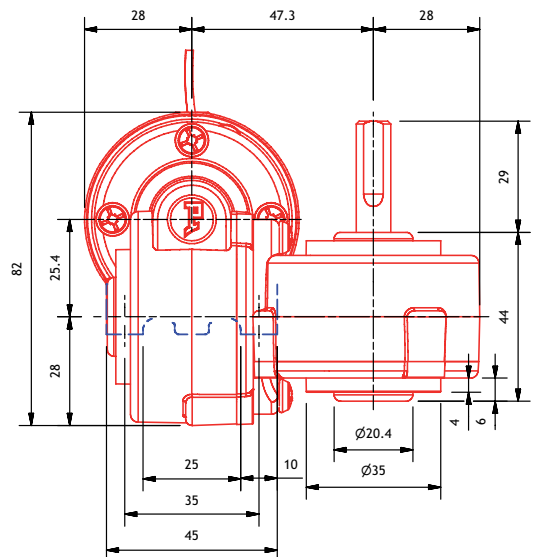
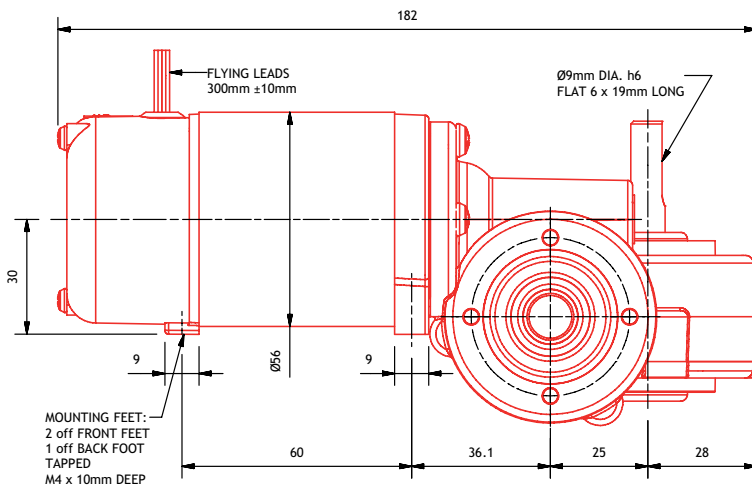
# PM8SS

MOTOR Permanent magnet DC motor  
 PROTECTION Totally enclosed (IP54)  
 GEARBOX Double reduction worm and wheel (SS)  
 POWER 13 - 48 Watts  
 SPEED 0.5 - 150 rpm  
 VOLTAGE 12V - 220V DC available range  
 WEIGHT 1.5 kg  
 RADIAL LOAD 54 N  
 AXIAL LOAD 35 N  
 SHAFT TYPE Single ended or double ended upon request  
 EXTRAS See page 36



RATIO	MOTOR SPEED (rpm)				TORQUE (Nm)					
	1500	2000	3000	4000	CONTINUOUS		1 HOUR		15 MINUTE	
					Composite	Bronze	Composite	Bronze	Composite	Bronze
	OUTPUT SPEED (rpm)									
2800	0.5	0.7	1.1	1.4	4.0	5.9	4.0	5.9	4.0	5.9
1440	1.0	1.4	2.1	2.8	4.0	5.9	4.0	5.9	4.0	5.9
750	2	3	4	5	4.0	5.9	4.0	5.9	4.0	5.9
500	3	4	6	8	4.0	5.9	4.0	5.9	4.0	5.9
375	4	5	8	11	4.0	5.9	4.0	5.9	4.0	5.9
300	5	7	10	13	4.0	5.9	4.0	5.9	4.0	5.9
191	8	10	16	21	4.0	5.9	4.0	5.9	4.0	5.9
153	10	13	20	26	4.0	5.1	4.0	5.9	4.0	5.9
138	11	15	22	29	4.0	4.7	4.0	5.9	4.0	5.9
103	15	19	29	39	3.8	3.8	4.0	5.0	4.0	5.4
85	18	23	35	47	3.2	3.2	4.0	4.3	4.0	4.7
71	21	28	42	56	2.9	2.9	3.8	3.8	4.0	4.1
65	23	31	46	62	2.7	2.7	3.6	3.6	3.9	3.9
58	26	34	51	69	2.5	2.5	3.3	3.3	3.6	3.6
52	29	38	58	77	2.3	2.3	3.0	3.0	3.3	3.3
43	35	46	70	93	2.0	2.0	2.6	2.6	2.8	2.8
39	38	51	77	102	1.8	1.8	2.4	2.4	2.7	2.7
32	46	62	93	124	1.6	1.6	2.1	2.1	2.3	2.3
27	56	75	112	150	1.4	1.4	1.8	1.8	2.0	2.0

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# PM9SS

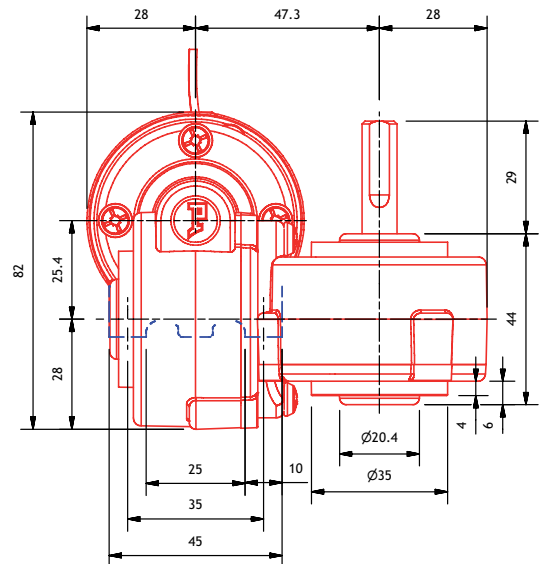
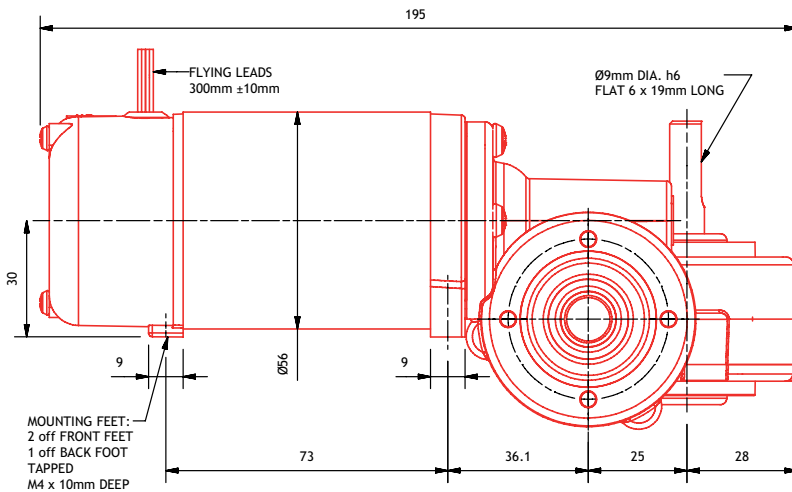
- MOTOR Permanent magnet DC motor
- PROTECTION Totally enclosed (IP54)
- GEARBOX Double reduction worm and wheel (SS)
- POWER 19 - 70 Watts
- SPEED 0.5 - 150 rpm
- VOLTAGE 12V - 220V DC available range
- WEIGHT 1.7 kg
- RADIAL LOAD 54 N
- AXIAL LOAD 35 N
- SHAFT TYPE Single ended or double ended upon request
- EXTRAS See page 36



RATIO	MOTOR SPEED (rpm)				TORQUE (Nm)					
	1500	2000	3000	4000	CONTINUOUS		1 HOUR		15 MINUTE	
					Composite	Bronze	Composite	Bronze	Composite	Bronze
	OUTPUT SPEED (rpm)									
2800	0.5	0.7	1.1	1.4	4.0	5.9	4.0	5.9	4.0	5.9
1440	1.0	1.4	2.1	2.8	4.0	5.9	4.0	5.9	4.0	5.9
750	2	3	4	5	4.0	5.9	4.0	5.9	4.0	5.9
500	3	4	6	8	4.0	5.9	4.0	5.9	4.0	5.9
375	4	5	8	11	4.0	5.9	4.0	5.9	4.0	5.9
300	5	7	10	13	4.0	5.9	4.0	5.9	4.0	5.9
191	8	10	16	21	4.0	5.9	4.0	5.9	4.0	5.9
153	10	13	20	26	4.0	5.9	4.0	5.9	4.0	5.9
138	11	15	22	29	4.0	5.9	4.0	5.9	4.0	5.9
103	15	19	29	39	4.0	5.7	4.0	5.9	4.0	5.9
85	18	23	35	47	4.0	4.9	4.0	5.8	4.0	5.9
71	21	28	42	56	4.0	4.4	4.0	5.2	4.0	5.9
65	23	31	46	62	4.0	4.1	4.0	4.8	4.0	5.9
58	26	34	51	69	3.8	3.8	4.0	4.5	4.0	5.5
52	29	38	58	77	3.5	3.5	4.0	4.1	4.0	5.0
43	35	46	70	93	3.0	3.0	3.6	3.6	4.0	4.3
39	38	51	77	102	2.8	2.8	3.3	3.3	4.0	4.1
32	46	62	93	124	2.4	2.4	2.9	2.9	3.5	3.5
27	56	75	112	150	2.1	2.1	2.5	2.5	3.0	3.0

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double worm



# PM10SS

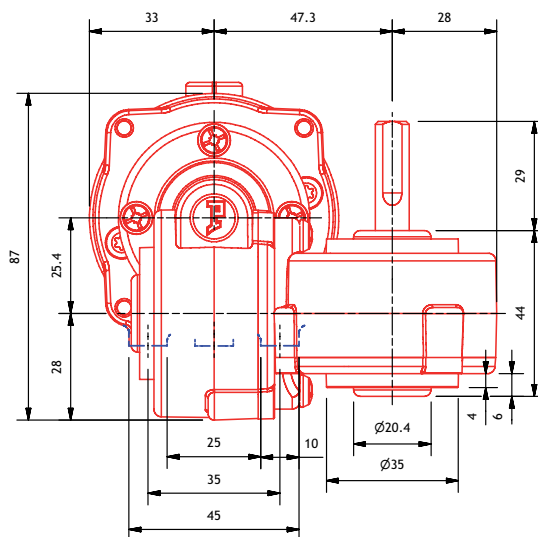
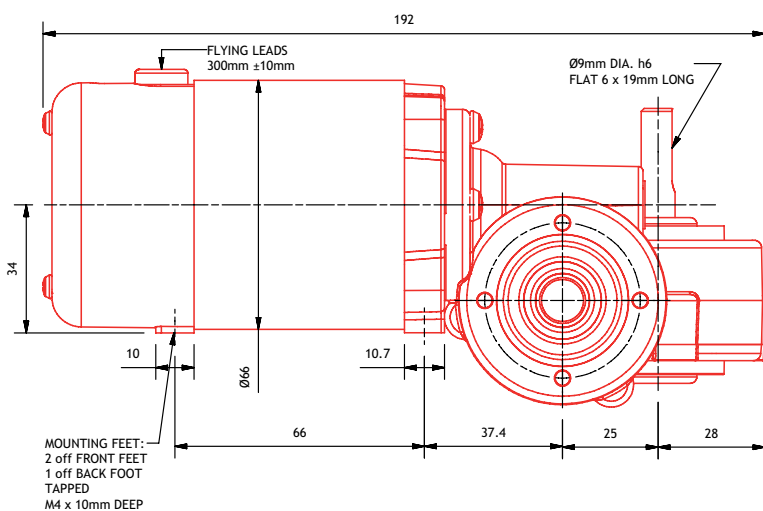
MOTOR Permanent magnet DC motor  
 PROTECTION Totally enclosed (IP54)  
 GEARBOX Double reduction worm and wheel (SS)  
 POWER 23 - 100 Watts  
 SPEED 0.5 - 150 rpm  
 VOLTAGE 12V - 220V DC available range  
 WEIGHT 1.93 kg  
 RADIAL LOAD 54 N  
 AXIAL LOAD 35 N  
 SHAFT TYPE Single ended or double ended upon request  
 EXTRAS See page 36



RATIO	MOTOR SPEED (rpm)				TORQUE (Nm)					
	1500	2000	3000	4000	CONTINUOUS		1 HOUR		15 MINUTE	
					Composite	Bronze	Composite	Bronze	Composite	Bronze
	OUTPUT SPEED (rpm)									
2800	0.5	0.7	1.1	1.4	4.0	5.9	4.0	5.9	4.0	5.9
1440	1.0	1.4	2.1	2.8	4.0	5.9	4.0	5.9	4.0	5.9
750	2	3	4	5	4.0	5.9	4.0	5.9	4.0	5.9
500	3	4	6	8	4.0	5.9	4.0	5.9	4.0	5.9
375	4	5	8	11	4.0	5.9	4.0	5.9	4.0	5.9
300	5	7	10	13	4.0	5.9	4.0	5.9	4.0	5.9
191	8	10	16	21	4.0	5.9	4.0	5.9	4.0	5.9
153	10	13	20	26	4.0	5.9	4.0	5.9	4.0	5.9
138	11	15	22	29	4.0	5.9	4.0	5.9	4.0	5.9
103	15	19	29	39	4.0	5.9	4.0	5.9	4.0	5.9
85	18	23	35	47	4.0	5.8	4.0	5.9	4.0	5.9
71	21	28	42	56	4.0	5.2	4.0	5.9	4.0	5.9
65	23	31	46	62	4.0	4.8	4.0	5.9	4.0	5.9
58	26	34	51	69	4.0	4.5	4.0	5.5	4.0	5.9
52	29	38	58	77	4.0	4.1	4.0	5.0	4.0	5.9
43	35	46	70	93	3.6	3.6	4.0	4.3	4.0	5.9
39	38	51	77	102	3.3	3.3	4.0	4.1	4.0	5.9
32	46	62	93	124	2.9	2.9	3.5	3.5	4.0	5.9
27	56	75	112	150	2.5	2.5	3.0	3.0	3.8	5.9

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# PM10MM/MBM

MOTOR	Permanent magnet DC motor
PROTECTION	Totally enclosed (IP54)
GEARBOX	Double reduction worm and wheel (MM)
POWER	23 - 100 Watts
SPEED	0.3 - 60 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	2.70 kg (MBM)
RADIAL LOAD	88 N (MM); 177 N (MBM)
AXIAL LOAD	88 N (MM); 108 N (MBM)
SHAFT TYPE	Hollow, single ended or double ended upon request
EXTRAS	See page 36

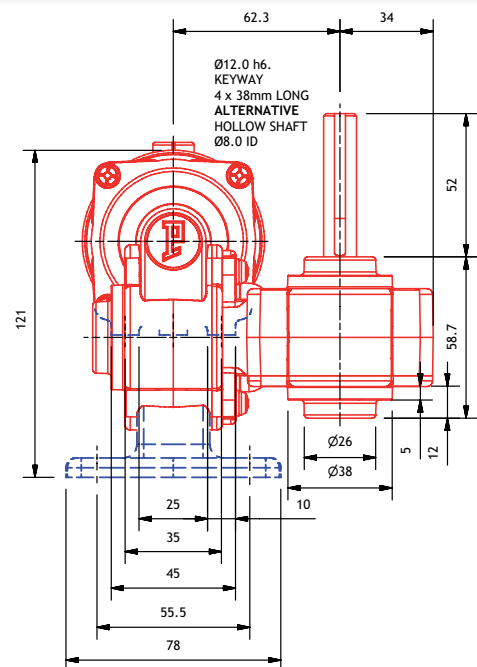
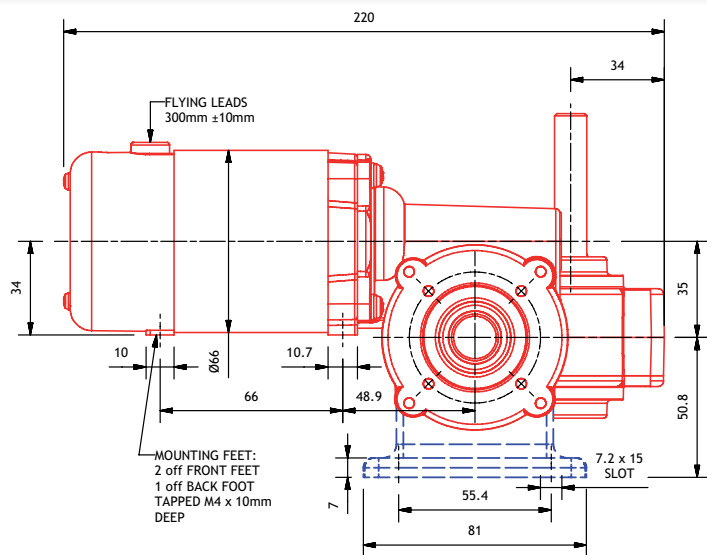


PM10MBM pictured

RATIO	MOTOR SPEED (rpm)				TORQUE (Nm)					
	1500	2000	3000	4000	CONTINUOUS		1 HOUR		15 MINUTE	
					Composite	Bronze	Composite	Bronze	Composite	Bronze
	OUTPUT SPEED (rpm)									
4320	0.3	0.5	0.7	0.9	5.9	7.9	5.9	7.9	5.9	7.9
2400	0.6	0.8	1.3	1.7	9.0	11.8	9.0	11.8	9.0	11.8
1296	1	2	2	3	9.0	11.8	9.0	11.8	9.0	11.8
675	2	3	4	6	9.0	11.8	9.0	11.8	9.0	11.8
465	3	4	6	9	9.0	11.8	9.0	11.8	9.0	11.8
400	4	5	8	10	9.0	11.8	9.0	11.8	9.0	11.8
250	6	8	12	16	9.0	11.8	9.0	11.8	9.0	11.8
198	8	10	15	20	9.0	9.7	9.0	11.8	9.0	11.8
134	11	15	22	30	8.2	8.2	9.0	10.0	9.0	11.8
102	15	20	29	39	6.7	6.7	8.2	8.2	9.0	10.4
79	19	25	38	51	5.5	5.5	6.7	6.7	8.6	8.6
67	22	30	45	60	5.0	5.0	6.1	6.1	7.7	7.7

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double worm



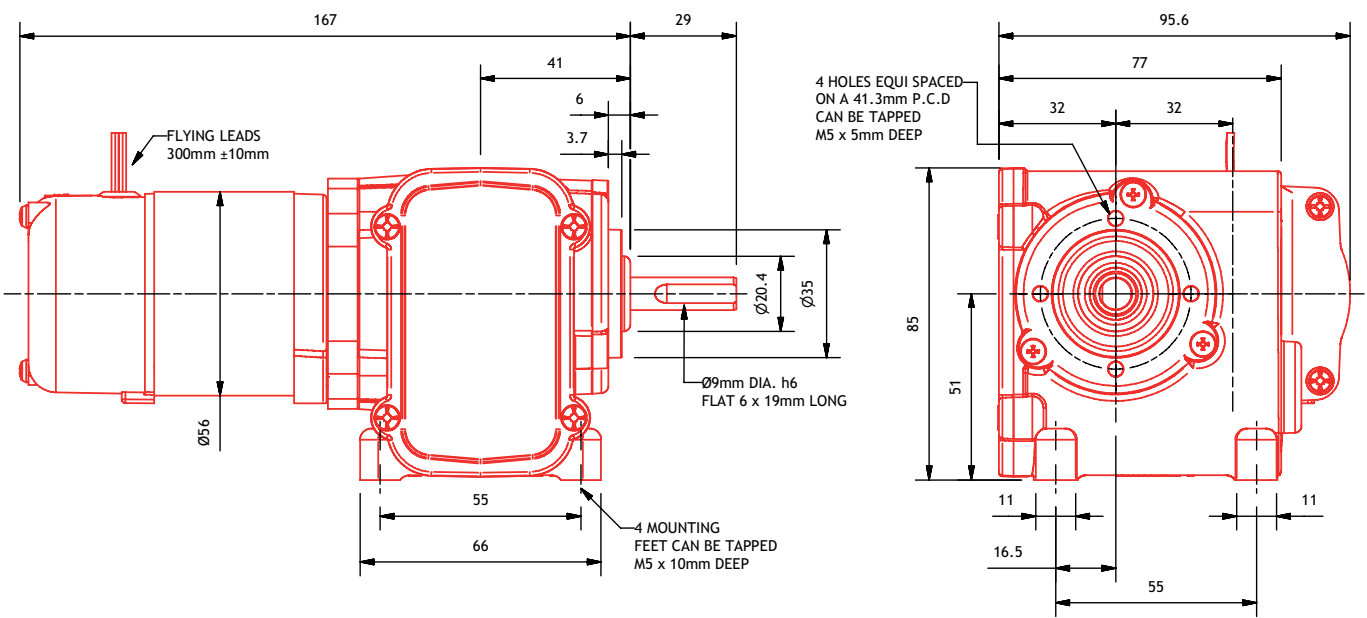
# PM7SIW

- MOTOR Permanent magnet DC motor
- PROTECTION Totally enclosed (IP54)
- GEARBOX In-line worm (SIW)
- POWER 7.5 - 33 Watts
- SPEED 1 - 235 rpm
- VOLTAGE 12V - 220V DC available range
- WEIGHT 1.5 kg
- RADIAL LOAD 78 N
- AXIAL LOAD 49 N
- SHAFT TYPE Single ended shaft
- EXTRAS See page 36



Motor Power Cont. (W)		7.5	10	15	20	TORQUE (Nm)					
Motor Power 1 Hour (W)		10	13	20	25						
Motor Power 15 Min (W)		13	17	25	33						
Ratio INT	Ratio Final	MOTOR SPEED (rpm)				CONTINUOUS		1 HOUR		15 MINUTE	
		1500	2000	3000	4000	Composite	Bronze	Composite	Bronze	Composite	Bronze
		OUTPUT SPEED (rpm)									
54	2.5	1	1.5	2	3	7.0	11.3	7.0	11.3	7.0	11.3
27	2.5	2	3	4	6	7.0	8.5	7.0	11.3	7.0	11.3
14 1/2	2.5	4	6	8	11	5.6	5.6	7.0	7.4	7.0	9.3
8 1/3	2.5	7	10	14	19	3.7	3.7	5.0	5.0	6.2	6.2
16 1/2	8 1/3	11	15	22	29	2.8	2.8	3.7	3.7	4.7	4.7
12 1/2	8 1/3	14	19	29	38	2.3	2.3	3.1	3.1	3.8	3.8
10 1/3	8 1/3	17	23	35	46	2.0	2.0	2.7	2.7	3.3	3.3
9 1/3	8 1/3	19	26	39	51	1.9	1.9	2.5	2.5	3.1	3.1
8 1/3	8 1/3	22	29	43	58	1.7	1.7	2.3	2.3	2.8	2.8
7 1/4	8 1/3	25	33	50	66	1.5	1.5	2.1	2.1	2.6	2.6
6 1/4	8 1/3	29	38	58	77	1.4	1.4	1.8	1.8	2.3	2.3
5 1/6	8 1/3	35	46	70	93	1.2	1.2	1.6	1.6	2.0	2.0
6 1/4	6 1/4	38	51	77	102	1.1	1.1	1.5	1.5	1.8	1.8
5 1/6	6 1/4	46	62	93	124	1.0	1.0	1.3	1.3	1.6	1.6
5 1/6	5 1/6	56	75	112	150	0.8	0.8	1.1	1.1	1.4	1.4
4 1/8	5 1/6	70	94	141	188	0.7	0.7	0.9	0.9	1.2	1.2
4 1/8	4 1/8	88	118	176	235	0.6	0.6	0.8	0.8	1.0	1.0

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# PM8SIW

- MOTOR Permanent magnet DC motor
- PROTECTION Totally enclosed (IP54)
- GEARBOX In-line worm (SIW)
- POWER 13 - 48 Watts
- SPEED 1 - 235 rpm
- VOLTAGE 12V - 220V DC available range
- WEIGHT 1.7 kg
- RADIAL LOAD 78 N
- AXIAL LOAD 49 N
- SHAFT TYPE Single ended shaft
- EXTRAS See page 36

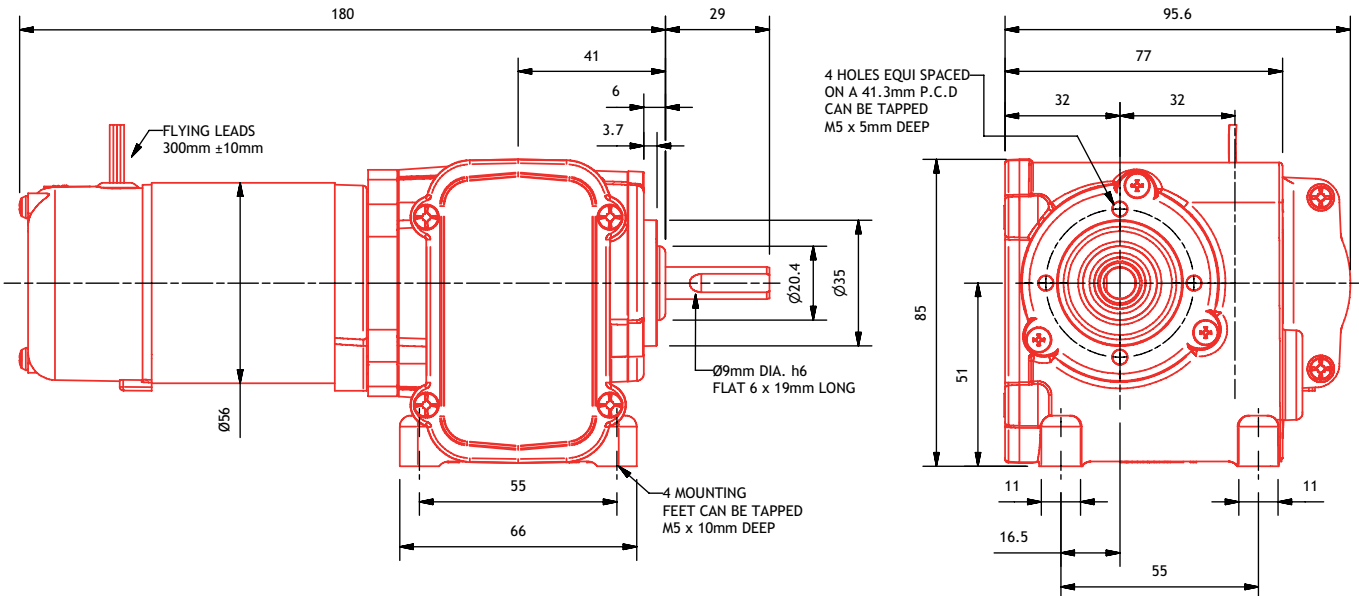


Motor Power Cont. (W)		13	17	25	33	TORQUE (Nm)					
Motor Power 1 Hour (W)		15	21	33	40						
Motor Power 15 Min (W)		18	24	36	48						
Ratio INT	Ratio Final	MOTOR SPEED (rpm)				CONTINUOUS		1 HOUR		15 MINUTE	
		1500	2000	3000	4000	Composite	Bronze	Composite	Bronze	Composite	Bronze
		OUTPUT SPEED (rpm)									
54	2.5	1	1.5	2	3	7.0	11.3	7.0	11.3	7.0	11.3
27	2.5	2	3	4	6	7.0	11.3	7.0	11.3	7.0	11.3
14 1/2	2.5	4	6	8	11	7.0	9.3	7.0	11.3	7.0	11.3
8 1/3	2.5	7	10	14	19	6.2	6.2	7.0	8.2	7.0	8.9
16 1/2	8 1/3	11	15	22	29	4.7	4.7	6.2	6.2	6.7	6.7
12 1/2	8 1/3	14	19	29	38	3.8	3.8	5.1	5.1	5.5	5.5
10 1/3	8 1/3	17	23	35	46	3.3	3.3	4.4	4.4	4.8	4.8
9 1/3	8 1/3	19	26	39	51	3.1	3.1	4.1	4.1	4.5	4.5
8 1/3	8 1/3	22	29	43	58	2.8	2.8	3.8	3.8	4.1	4.1
7 1/4	8 1/3	25	33	50	66	2.6	2.6	3.4	3.4	3.7	3.7
6 1/4	8 1/3	29	38	58	77	2.3	2.3	3.0	3.0	3.3	3.3
5 1/6	8 1/3	35	46	70	93	2.0	2.0	2.6	2.6	2.8	2.8
6 1/4	6 1/4	38	51	77	102	1.8	1.8	2.4	2.4	2.7	2.7
5 1/6	6 1/4	46	62	93	124	1.6	1.6	2.1	2.1	2.3	2.3
5 1/6	5 1/6	56	75	112	150	1.4	1.4	1.8	1.8	2.0	2.0
4 1/8	5 1/6	70	94	141	188	1.2	1.2	1.5	1.5	1.7	1.7
4 1/8	4 1/8	88	118	176	235	1.0	1.0	1.3	1.3	1.4	1.4

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in-line worm



# PM9SIW

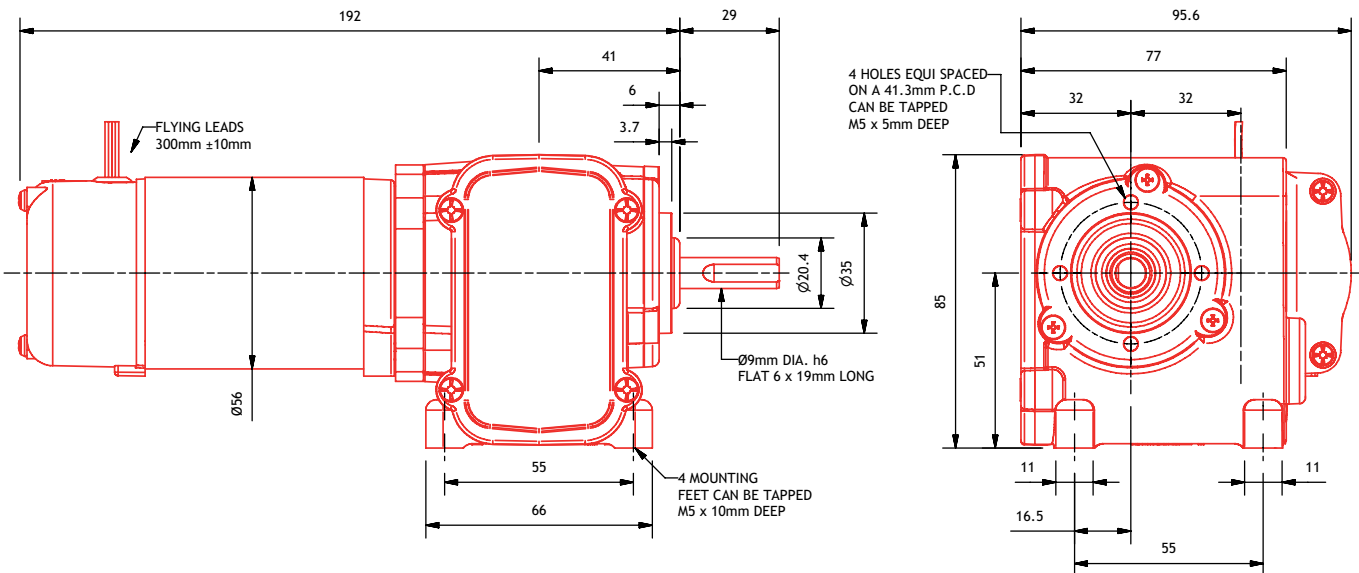
- MOTOR Permanent magnet DC motor
- PROTECTION Totally enclosed (IP54)
- GEARBOX In-line worm (SIW)
- POWER 19 - 70 Watts
- SPEED 1 - 235 rpm
- VOLTAGE 12V - 220V DC available range
- WEIGHT 1.9 kg
- RADIAL LOAD 78 N
- AXIAL LOAD 49 N
- SHAFT TYPE Single ended shaft
- EXTRAS See page 36



Motor Power Cont. (W)		19	25	38	50	TORQUE (Nm)					
Motor Power 1 Hour (W)		24	33	45	60						
Motor Power 15 Min (W)		26	36	55	70						
Ratio INT	Ratio Final	MOTOR SPEED (rpm)				CONTINUOUS		1 HOUR		15 MINUTE	
		1500	2000	3000	4000	Composite	Bronze	Composite	Bronze	Composite	Bronze
		OUTPUT SPEED (rpm)									
54	2.5	1	1.5	2	3	7.0	11.3	7.0	11.3	7.0	11.3
27	2.5	2	3	4	6	7.0	11.3	7.0	11.3	7.0	11.3
14 1/2	2.5	4	6	8	11	7.0	11.3	7.0	11.3	7.0	11.3
8 1/3	2.5	7	10	14	19	7.0	9.4	7.0	11.2	7.0	11.3
16 1/2	8 1/3	11	15	22	29	7.0	7.1	7.0	8.4	7.0	10.3
12 1/2	8 1/3	14	19	29	38	5.8	5.8	6.9	6.9	7.0	8.4
10 1/3	8 1/3	17	23	35	46	5.1	5.1	6.0	6.0	7.0	7.4
9 1/3	8 1/3	19	26	39	51	4.7	4.7	5.6	5.6	6.8	6.8
8 1/3	8 1/3	22	29	43	58	4.3	4.3	5.1	5.1	6.3	6.3
7 1/4	8 1/3	25	33	50	66	3.9	3.9	4.6	4.6	5.6	5.6
6 1/4	8 1/3	29	38	58	77	3.5	3.5	4.1	4.1	5.0	5.0
5 1/6	8 1/3	35	46	70	93	3.0	3.0	3.6	3.6	4.4	4.4
6 1/4	6 1/4	38	51	77	102	2.8	2.8	3.3	3.3	4.1	4.1
5 1/6	6 1/4	46	62	93	124	2.4	2.4	2.9	2.9	3.5	3.5
5 1/6	5 1/6	56	75	112	150	2.1	2.1	2.5	2.5	3.0	3.0
4 1/8	5 1/6	70	94	141	188	1.8	1.8	2.1	2.1	2.5	2.5
4 1/8	4 1/8	88	118	176	235	1.5	1.5	1.7	1.7	2.1	2.1

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# PM10SIW

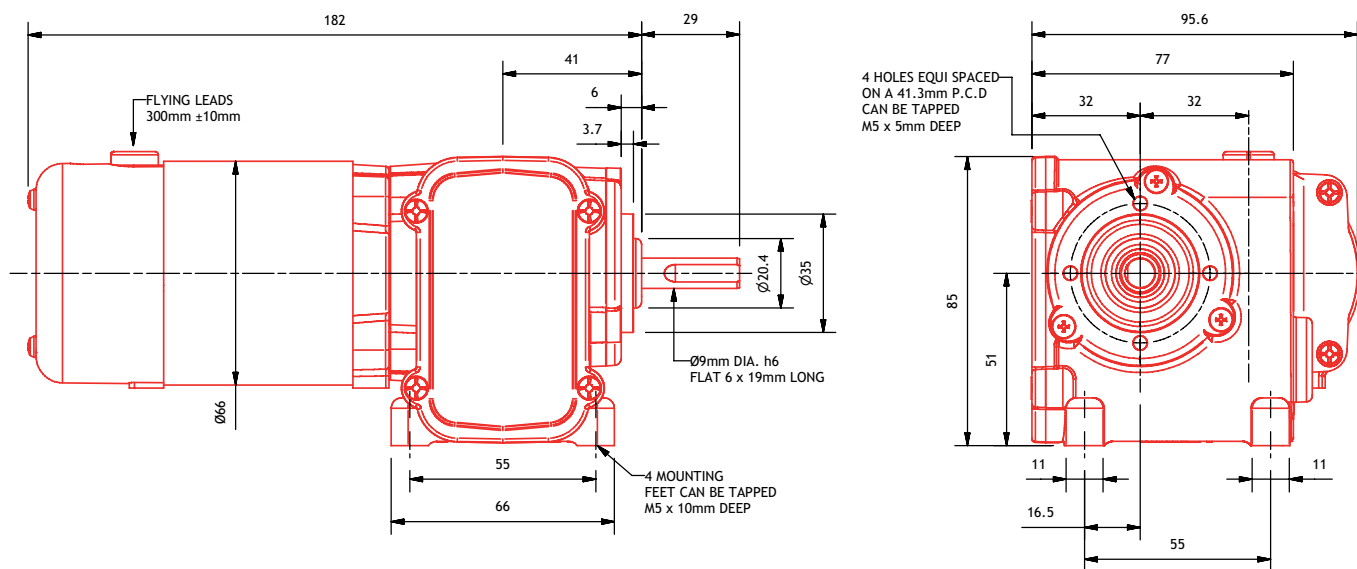
MOTOR	Permanent magnet DC motor
PROTECTION	Totally enclosed (IP54)
GEARBOX	In-line worm (SIW)
POWER	23 - 100 Watts
SPEED	1 - 235 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	2.13 kg
RADIAL LOAD	78 N
AXIAL LOAD	49 N
SHAFT TYPE	Single ended shaft
EXTRAS	See page 36



Ratio INT	Ratio Final	MOTOR SPEED (rpm)				TORQUE (Nm)					
		1500	2000	3000	4000	CONTINUOUS		1 HOUR		15 MINUTE	
						Composite	Bronze	Composite	Bronze	Composite	Bronze
		OUTPUT SPEED (rpm)									
54	2.5	1	1.5	2	3	7.0	11.3	7.0	11.3	7.0	11.3
27	2.5	2	3	4	6	7.0	11.3	7.0	11.3	7.0	11.3
14 1/2	2.5	4	6	8	11	7.0	11.3	7.0	11.3	7.0	11.3
8 1/3	2.5	7	10	14	19	7.0	11.2	7.0	11.3	7.0	11.3
16 1/2	8 1/3	11	15	22	29	7.0	8.4	7.0	10.3	7.0	11.3
12 1/2	8 1/3	14	19	29	38	6.9	6.9	7.0	8.4	7.0	10.7
10 1/3	8 1/3	17	23	35	46	6.0	6.0	7.0	7.4	7.0	9.4
9 1/3	8 1/3	19	26	39	51	5.6	5.6	6.8	6.8	7.0	8.7
8 1/3	8 1/3	22	29	43	58	5.1	5.1	6.3	6.3	7.0	8.0
7 1/4	8 1/3	25	33	50	66	4.6	4.6	5.6	5.6	7.0	7.2
6 1/4	8 1/3	29	38	58	77	4.1	4.1	5.0	5.0	6.4	6.4
5 1/6	8 1/3	35	46	70	93	3.6	3.6	4.4	4.4	5.5	5.5
6 1/4	6 1/4	38	51	77	102	3.3	3.3	4.1	4.1	5.2	5.2
5 1/6	6 1/4	46	62	93	124	2.9	2.9	3.5	3.5	4.5	4.5
5 1/6	5 1/6	56	75	112	150	2.5	2.5	3.0	3.0	3.8	3.8
4 1/8	5 1/6	70	94	141	188	2.1	2.1	2.5	2.5	3.2	3.2
4 1/8	4 1/8	88	118	176	235	1.7	1.7	2.1	2.1	2.7	2.7

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in-line worm



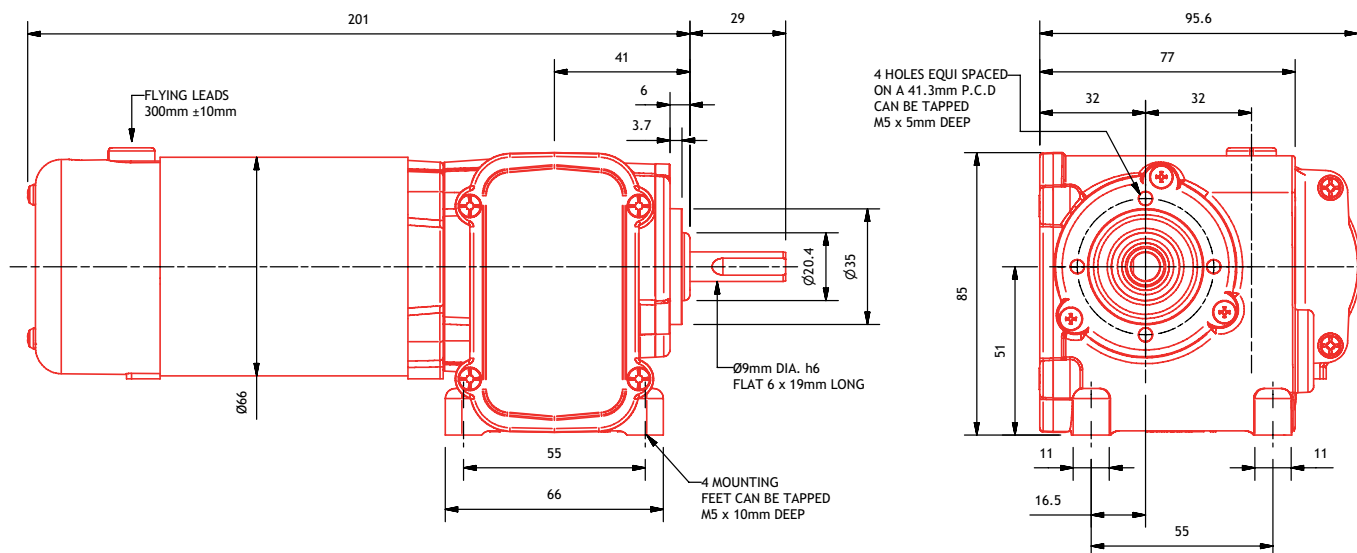
# PM11SIW

MOTOR Permanent magnet DC motor  
 PROTECTION Totally enclosed (IP54)  
 GEARBOX In-line worm (SIW)  
 POWER 33 - 130 Watts  
 SPEED 1 - 235 rpm  
 VOLTAGE 12V - 220V DC available range  
 WEIGHT 2.59 kg  
 RADIAL LOAD 78 N  
 AXIAL LOAD 49 N  
 SHAFT TYPE Single ended shaft  
 EXTRAS See page 36



Motor Power Cont. (W)		33	45	65	90	TORQUE (Nm)					
Motor Power 1 Hour (W)		40	55	80	110						
Motor Power 15 Min (W)		50	65	100	130						
Ratio INT	Ratio Final	MOTOR SPEED (rpm)				CONTINUOUS		1 HOUR		15 MINUTE	
		1500	2000	3000	4000	Composite	Bronze	Composite	Bronze	Composite	Bronze
		OUTPUT SPEED (rpm)									
54	2.5	1	1.5	2	3	7.0	11.3	7.0	11.3	7.0	11.3
27	2.5	2	3	4	6	7.0	11.3	7.0	11.3	7.0	11.3
14 1/2	2.5	4	6	8	11	7.0	11.3	7.0	11.3	7.0	11.3
8 1/3	2.5	7	10	14	19	7.0	11.3	7.0	11.3	7.0	11.3
16 1/2	8 1/3	11	15	22	29	7.0	11.3	7.0	11.3	7.0	11.3
12 1/2	8 1/3	14	19	29	38	7.0	10.0	7.0	11.3	7.0	11.3
10 1/3	8 1/3	17	23	35	46	7.0	8.7	7.0	10.7	7.0	11.3
9 1/3	8 1/3	19	26	39	51	7.0	8.1	7.0	9.9	7.0	11.3
8 1/3	8 1/3	22	29	43	58	7.0	7.4	7.0	9.1	7.0	11.3
7 1/4	8 1/3	25	33	50	66	6.7	6.7	7.0	8.2	7.0	10.3
6 1/4	8 1/3	29	38	58	77	6.0	6.0	7.0	7.3	7.0	9.2
5 1/6	8 1/3	35	46	70	93	5.1	5.1	6.3	6.3	7.0	7.9
6 1/4	6 1/4	38	51	77	102	4.8	4.8	5.9	5.9	7.0	7.4
5 1/6	6 1/4	46	62	93	124	4.1	4.1	5.1	5.1	6.4	6.4
5 1/6	5 1/6	56	75	112	150	3.6	3.6	4.4	4.4	5.5	5.5
4 1/8	5 1/6	70	94	141	188	3.0	3.0	3.7	3.7	4.6	4.6
4 1/8	4 1/8	88	118	176	235	2.5	2.5	3.1	3.1	3.9	3.9

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# PM1MIW

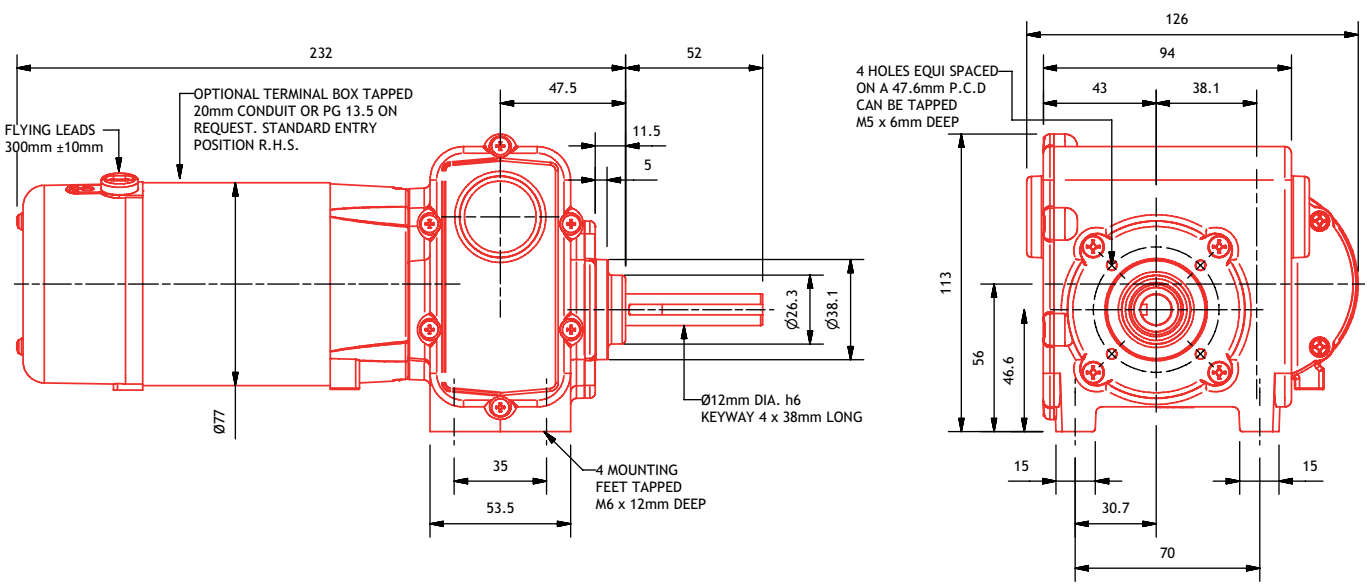
- MOTOR Permanent magnet DC motor
- PROTECTION Ventilated (IP22)
- GEARBOX In-line worm (MIW)
- POWER 45 - 200 Watts
- SPEED 1 - 235 rpm
- VOLTAGE 12V - 220V DC available range
- WEIGHT 3.86 kg
- RADIAL LOAD 265 N
- AXIAL LOAD 132 N
- SHAFT TYPE Single ended shaft
- EXTRAS See page 36



Motor Power Cont (W)		45	60	90	120	TORQUE (Nm)					
Motor Power 1 Hour (W)		55	75	110	150						
Motor Power 15 Min (W)		75	100	150	200						
Ratio INT	Ratio Final	MOTOR SPEED (rpm)				CONTINUOUS		1 HOUR		15 MINUTE	
		1500	2000	3000	4000	Composite	Bronze	Composite	Bronze	Composite	Bronze
		OUTPUT SPEED (rpm)									
54	2 5	1	1.5	2	3	17.0	28.0	17.0	28.0	17.0	28.0
27	25	2	3	4	6	17.0	28.0	17.0	28.0	17.0	28.0
14 1/2	2 5	4	6	8	11	17.0	28.0	17.0	28.0	17.0	28.0
8 1/3	25	7	10	14	19	17.0	22.3	17.0	27.3	17.0	28.0
16 1/2	8 1/3	11	15	22	29	16.8	16.8	17.0	20.6	17.0	28.0
12 1/2	8 1/3	14	19	29	38	13.8	13.8	16.9	16.9	17.0	23.0
10 1/3	8 1/3	17	23	35	46	12.0	12.0	14.7	14.7	17.0	20.1
9 1/3	8 1/3	19	26	39	51	11.2	11.2	13.7	13.7	17.0	18.6
8 1/3	8 1/3	22	29	43	58	10.3	10.3	12.5	12.5	17.0	17.1
7 1/4	8 1/3	25	33	50	66	9.2	9.2	11.3	11.3	15.4	15.4
6 1/6	8 1/3	29	39	58	78	8.1	8.1	9.9	9.9	13.6	13.6
5 1/6	8 1/3	35	46	70	93	7.1	7.1	8.7	8.7	11.9	11.9
6 1/6	6 1/6	39	53	79	105	6.5	6.5	7.9	7.9	10.8	10.8
5 1/8	6 1/6	47	63	95	127	5.6	5.6	6.9	6.9	9.3	9.3
5 1/8	5 1/8	57	76	114	152	4.9	4.9	5.9	5.9	8.1	8.1
4 1/8	5 1/8	71	95	142	189	4.1	4.1	5.0	5.0	6.9	6.9
4 1/8	4 1/8	88	118	176	235	3.5	3.5	4.3	4.3	5.8	5.8

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in-line worm



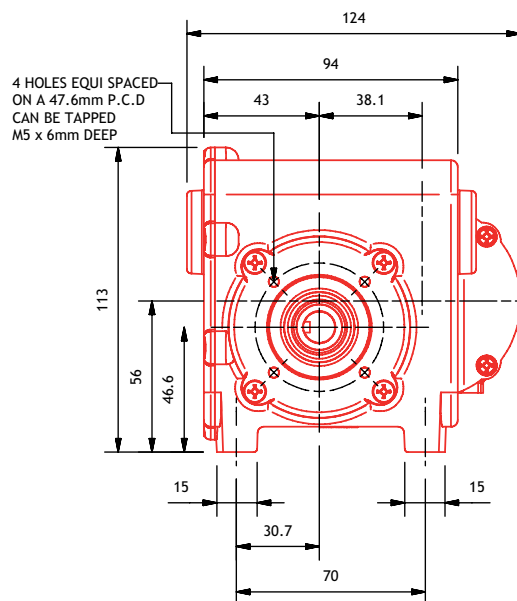
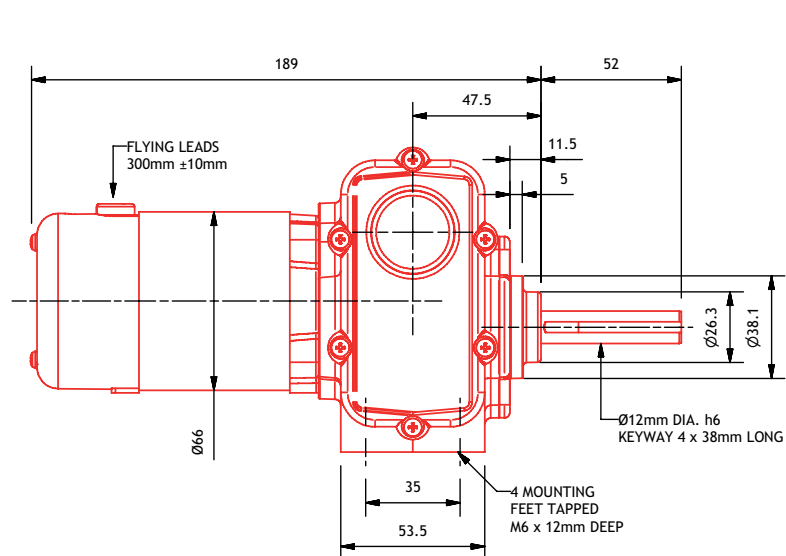
# PM10MIW

MOTOR Permanent magnet DC motor  
 PROTECTION Totally enclosed (IP54)  
 GEARBOX In-line worm (MIW)  
 POWER 23 - 100 Watts  
 SPEED 1 - 235 rpm  
 VOLTAGE 12V - 220V DC available range  
 WEIGHT 2.87 kg  
 RADIAL LOAD 265 N  
 AXIAL LOAD 132 N  
 SHAFT TYPE Single ended shaft  
 EXTRAS See page 36



Motor Power Cont (W)		23	30	45	60	TORQUE (Nm)					
Motor Power 1 Hour (W)		28	38	55	75						
Motor Power 15 Min (W)		35	50	70	100						
Ratio INT	Ratio Final	MOTOR SPEED (rpm)				CONTINUOUS		1 HOUR		15 MINUTE	
		1500	2000	3000	4000	Composite	Bronze	Composite	Bronze	Composite	Bronze
		OUTPUT SPEED (rpm)									
54	2.5	1	1.5	2	3	17.0	28.0	17.0	28.0	17.0	28.0
27	2.5	2	3	4	6	17.0	25.5	17.0	28.0	17.0	28.0
14 1/2	2.5	4	6	8	11	16.7	16.7	17.0	20.5	17.0	26.1
8 1/3	2.5	7	10	14	19	11.2	11.2	13.6	13.6	17.0	17.4
16 1/2	8 1/3	11	15	22	29	8.4	8.4	10.3	10.3	13.1	13.1
12 1/2	8 1/3	14	19	29	38	6.9	6.9	8.4	8.4	10.7	10.7
10 1/3	8 1/3	17	23	35	46	6.0	6.0	7.4	7.4	9.4	9.4
9 1/3	8 1/3	19	26	39	51	5.6	5.6	6.8	6.8	8.7	8.7
8 1/3	8 1/3	22	29	43	58	5.1	5.1	6.3	6.3	8.0	8.0
7 1/4	8 1/3	25	33	50	66	4.6	4.6	5.6	5.6	7.2	7.2
6 1/6	8 1/3	29	39	58	78	4.1	4.1	5.0	5.0	6.3	6.3
5 1/6	8 1/3	35	46	70	93	3.6	3.6	4.4	4.4	5.5	5.5
6 1/6	6 1/6	39	53	79	105	3.2	3.2	3.9	3.9	5.0	5.0
5 1/8	6 1/6	47	63	95	127	2.8	2.8	3.4	3.4	4.4	4.4
5 1/8	5 1/8	57	76	114	152	2.4	2.4	3.0	3.0	3.8	3.8
4 1/8	5 1/8	71	95	142	189	2.1	2.1	2.5	2.5	3.2	3.2
4 1/8	4 1/8	88	118	176	235	1.7	1.7	2.1	2.1	2.7	2.7

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# PM11MIW

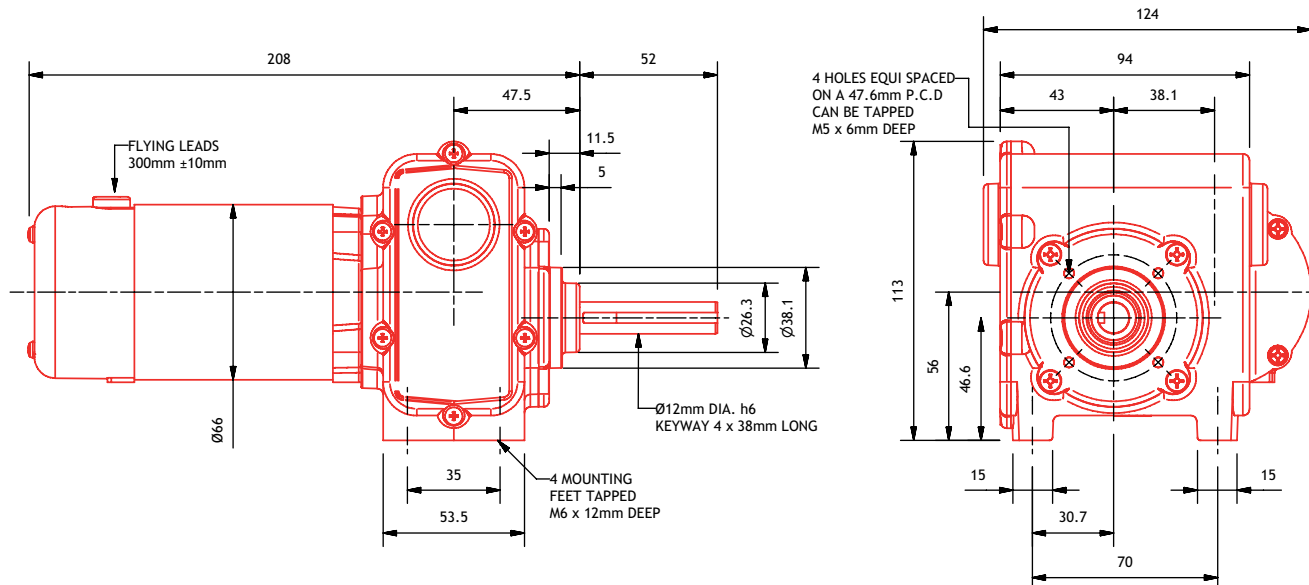
MOTOR Permanent magnet DC motor  
 PROTECTION Totally Enclosed (IP54)  
 GEARBOX In-line worm (MIW)  
 POWER 33 - 130 Watts  
 SPEED 1 - 235 rpm  
 VOLTAGE 12V - 220V DC available range  
 WEIGHT 3.35 kg  
 RADIAL LOAD 265 N  
 AXIAL LOAD 132 N  
 SHAFT TYPE Single ended shaft  
 EXTRAS See page 36



Motor Power Cont. (W)		33	45	65	90	TORQUE (Nm)					
Motor Power 1 Hour (W)		40	55	80	110						
Motor Power 15 Min (W)		50	65	100	130						
Ratio INT	Ratio Final	MOTOR SPEED (rpm)				CONTINUOUS		1 HOUR		15 MINUTE	
		1500	2000	3000	4000	Composite	Bronze	Composite	Bronze	Composite	Bronze
		OUTPUT SPEED (rpm)									
54	2.5	1	1.5	2	3	17.0	28.0	17.0	28.0	17.0	28.0
27	2.5	2	3	4	6	17.0	28.0	17.0	28.0	17.0	28.0
14 1/2	2.5	4	6	8	11	17.0	24.2	17.0	28.0	17.0	28.0
8 1/3	2.5	7	10	14	19	16.1	16.1	17.0	19.8	17.0	24.8
16 1/2	8 1/3	11	15	22	29	12.2	12.2	15.0	15.0	17.0	18.7
12 1/2	8 1/3	14	19	29	38	10.0	10.0	12.3	12.3	15.4	15.4
10 1/3	8 1/3	17	23	35	46	8.7	8.7	10.7	10.7	13.4	13.4
9 1/3	8 1/3	19	26	39	51	8.1	8.1	9.9	9.9	12.4	12.4
8 1/3	8 1/3	22	29	43	58	7.4	7.4	9.1	9.1	11.4	11.4
7 1/4	8 1/3	25	33	50	66	6.7	6.7	8.2	8.2	10.3	10.3
6 1/6	8 1/3	29	39	58	78	5.9	5.9	7.2	7.2	9.0	9.0
5 1/6	8 1/3	35	46	70	93	5.1	5.1	6.3	6.3	7.9	7.9
6 1/6	6 1/6	39	53	79	105	4.7	4.7	5.7	5.7	7.2	7.2
5 1/8	6 1/6	47	63	95	127	4.0	4.0	5.0	5.0	6.2	6.2
5 1/8	5 1/8	57	76	114	152	3.5	3.5	4.3	4.3	5.4	5.4
4 1/8	5 1/8	71	95	142	189	3.0	3.0	3.7	3.7	4.6	4.6
4 1/8	4 1/8	88	118	176	235	2.5	2.5	3.1	3.1	3.9	3.9

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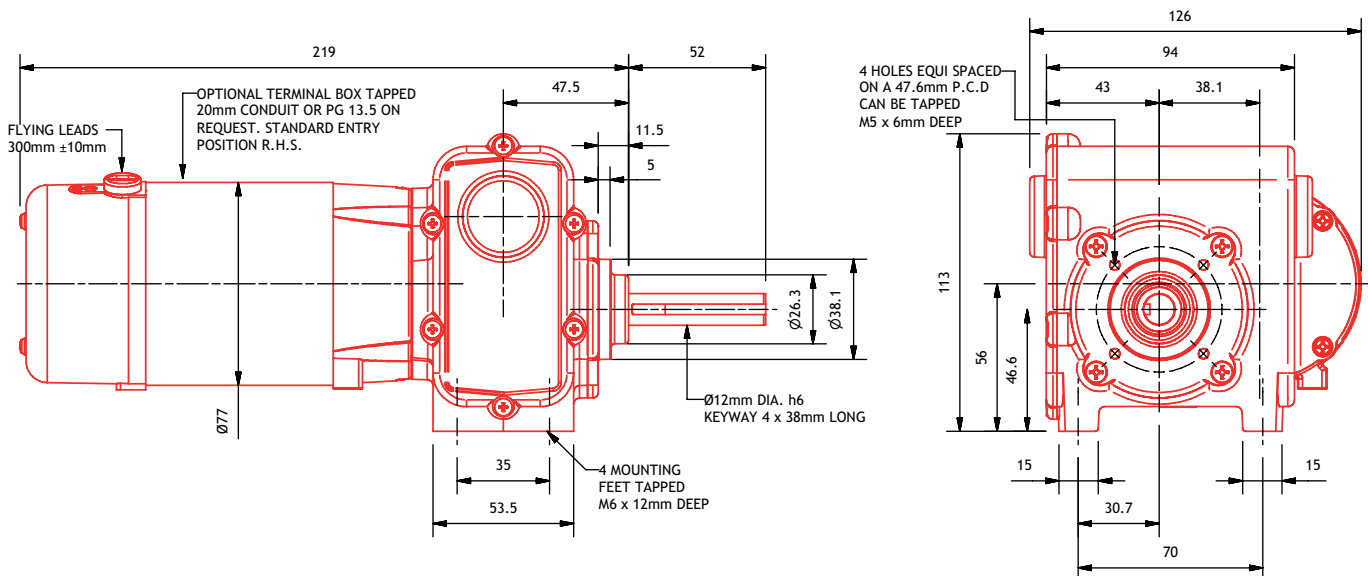
# PM3MIW

- MOTOR Permanent magnet DC motor
- PROTECTION IP54
- GEARBOX In-line worm (MIW)
- POWER 33 - 150 Watts
- SPEED 1 - 235 rpm
- VOLTAGE 12V - 220V DC available range
- WEIGHT 3.86 kg
- RADIAL LOAD 265 N
- AXIAL LOAD 132 N
- SHAFT TYPE Single ended shaft
- EXTRAS See page 36



Motor Power Cont. (W)		33	45	68	90	TORQUE (Nm)					
Motor Power 1 Hour (W)		45	60	90	120						
Motor Power 15 Min (W)		60	90	120	150						
Ratio INT	Ratio Final	MOTOR SPEED (rpm)				CONTINUOUS		1 HOUR		15 MINUTE	
		1500	2000	3000	4000	Composite	Bronze	Composite	Bronze	Composite	Bronze
		OUTPUT SPEED (rpm)									
54	2.5	1	1.5	2	3	17.0	28.0	17.0	28.0	17.0	28.0
27	2.5	2	3	4	6	17.0	28.0	17.0	28.0	17.0	28.0
14 1/2	2.5	4	6	8	11	17.0	25.3	17.0	28.0	17.0	28.0
8 1/3	2.5	7	10	14	19	16.9	16.9	17.0	22.3	17.0	28.0
16 1/2	8 1/3	11	15	22	29	12.7	12.7	16.8	16.8	17.0	22.4
12 1/2	8 1/3	14	19	29	38	10.4	10.4	13.8	13.8	17.0	18.4
10 1/3	8 1/3	17	23	35	46	9.1	9.1	12.0	12.0	16.1	16.1
9 1/3	8 1/3	19	26	39	51	8.4	8.4	11.2	11.2	14.9	14.9
8 1/3	8 1/3	22	29	43	58	7.7	7.7	10.3	10.3	13.7	13.7
7 1/4	8 1/3	25	33	50	66	7.0	7.0	9.2	9.2	12.3	12.3
6 1/6	8 1/3	29	39	58	78	6.2	6.2	8.1	8.1	10.9	10.9
5 1/6	8 1/3	35	46	70	93	5.4	5.4	7.1	7.1	9.5	9.5
6 1/6	6 1/6	39	53	79	105	4.9	4.9	6.5	6.5	8.6	8.6
5 1/8	6 1/6	47	63	95	127	4.2	4.2	5.6	5.6	7.5	7.5
5 1/8	5 1/8	57	76	114	152	3.7	3.7	4.9	4.9	6.5	6.5
4 1/8	5 1/8	71	95	142	189	3.1	3.1	4.1	4.1	5.5	5.5
4 1/8	4 1/8	88	118	176	235	2.6	2.6	3.5	3.5	4.6	4.6

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# PM1LIW

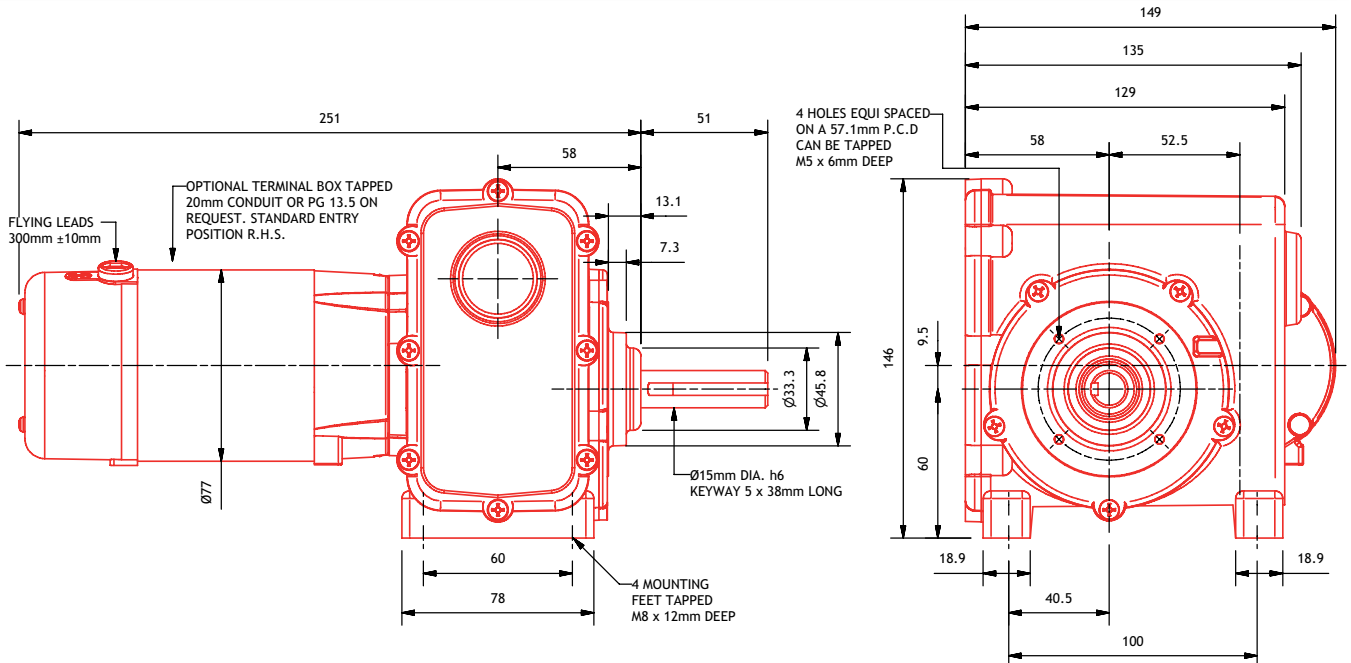
- MOTOR Permanent magnet DC motor
- PROTECTION Ventilated (IP21)
- GEARBOX In-line worm (LIW)
- POWER 45 - 200 Watts
- SPEED 1 - 108 rpm
- VOLTAGE 12V - 220V DC available range
- WEIGHT 5.54 kg
- RADIAL LOAD 353 N
- AXIAL LOAD 196 N
- SHAFT TYPE Single ended shaft
- EXTRAS See page 36



Motor Power Cont (W)		45	60	90	120	TORQUE (Nm)					
Motor Power 1 Hour (W)		55	75	110	150						
Motor Power 15 Min (W)		75	100	150	200						
Ratio INT	Ratio Final	MOTOR SPEED (rpm)				CONTINUOUS		1 HOUR		15 MINUTE	
		1500	2000	3000	4000	Composite	Bronze	Composite	Bronze	Composite	Bronze
		OUTPUT SPEED (rpm)									
60	20 1/2	1	1.6	2	3	28.0	45.0	28.0	45.0	28.0	45.0
44	20 1/2	2	2	3	4	28.0	45.0	28.0	45.0	28.0	45.0
36	20 1/2	2	3	4	5	28.0	45.0	28.0	45.0	28.0	45.0
27	20 1/2	3	4	5	7	28.0	44.7	28.0	45.0	28.0	45.0
20 1/2	20 1/2	4	5	7	10	28.0	37.2	28.0	45.0	28.0	45.0
16 1/2	20 1/2	4	6	9	12	28.0	32.1	28.0	39.2	28.0	45.0
12 1/3	20 1/2	6	8	12	16	26.0	26.0	28.0	31.7	28.0	43.3
8 1/3	20 1/2	9	12	18	23	19.5	19.5	23.9	23.9	28.0	37.6
7 1/4	20 1/2	10	13	20	27	17.6	17.6	21.5	21.5	28.0	29.3
5 1/8	20 1/2	14	19	29	38	13.5	13.5	16.4	16.4	22.4	22.4
10 1/3	9	16	22	32	43	12.6	12.6	15.5	15.5	21.1	21.1
8 1/3	9	20	27	40	53	10.8	10.8	13.2	13.2	17.9	17.9
7 1/4	9	23	31	46	61	9.7	9.7	11.8	11.8	16.2	16.2
5 1/8	9	33	43	65	87	7.4	7.4	9.1	9.1	12.4	12.4
4 1/8	9	40	54	81	108	6.3	6.3	7.7	7.7	10.5	10.5

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in-line worm



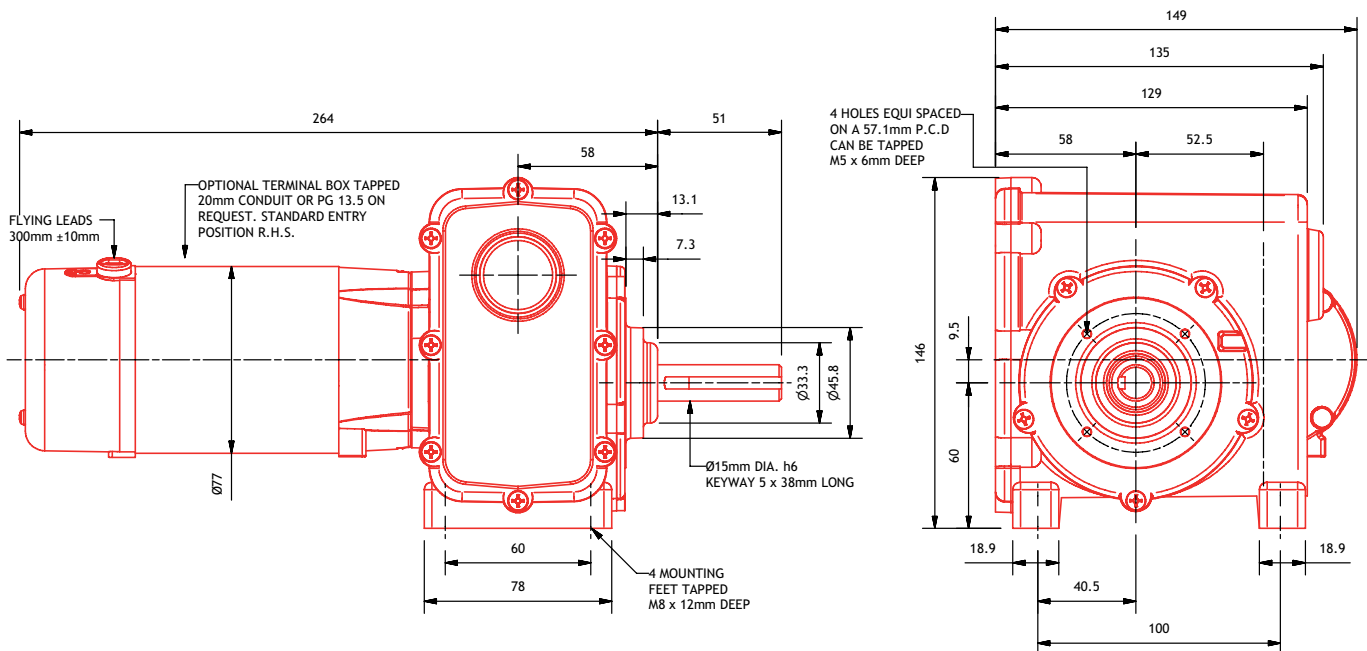
# PM2LIW

MOTOR Permanent magnet DC motor  
 PROTECTION Ventilated (IP21)  
 GEARBOX In-line worm (LIW)  
 POWER 60 - 265 Watts  
 SPEED 1 - 108 rpm  
 VOLTAGE 12V - 220V DC available range  
 WEIGHT 5.89 kg  
 RADIAL LOAD 353 N  
 AXIAL LOAD 196 N  
 SHAFT TYPE Single ended shaft  
 EXTRAS See page 36



Motor Power Cont. (W)	60	80	120	160	TORQUE (Nm)						
Motor Power 1 Hour (W)	75	100	150	200							
Motor Power 15 Min (W)	100	130	200	265							
Ratio INT	Ratio Final	MOTOR SPEED (rpm)				CONTINUOUS		1 HOUR		15 MINUTE	
		1500	2000	3000	4000	Composite	Bronze	Composite	Bronze	Composite	Bronze
		OUTPUT SPEED (rpm)									
60	20 1/2	1	1.6	2	3	28.0	45.0	28.0	45.0	28.0	45.0
44	20 1/2	2	2	3	4	28.0	45.0	28.0	45.0	28.0	45.0
36	20 1/2	2	3	4	5	28.0	45.0	28.0	45.0	28.0	45.0
27	20 1/2	3	4	5	7	28.0	45.0	28.0	45.0	28.0	45.0
20 1/2	20 1/2	4	5	7	10	28.0	45.0	28.0	45.0	28.0	45.0
16 1/2	20 1/2	4	6	9	12	28.0	42.7	28.0	45.0	28.0	45.0
12 1/3	20 1/2	6	8	12	16	28.0	34.6	28.0	43.3	28.0	45.0
8 1/3	20 1/2	9	12	18	23	26.1	26.1	28.0	32.6	28.0	43.4
7 1/4	20 1/2	10	13	20	27	23.5	23.5	28.0	29.3	28.0	39.1
5 1/8	20 1/2	14	19	29	38	17.9	17.9	22.4	22.4	28.0	29.9
10 1/3	9	16	22	32	43	16.9	16.9	21.1	21.1	28.0	28.1
8 1/3	9	20	27	40	53	14.4	14.4	17.9	17.9	23.9	23.9
7 1/4	9	23	31	46	61	12.9	12.9	16.2	16.2	21.5	21.5
5 1/8	9	33	43	65	87	9.9	9.9	12.4	12.4	16.5	16.5
4 1/8	9	40	54	81	108	8.4	8.4	10.5	10.5	13.9	13.9

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# PM6LIW

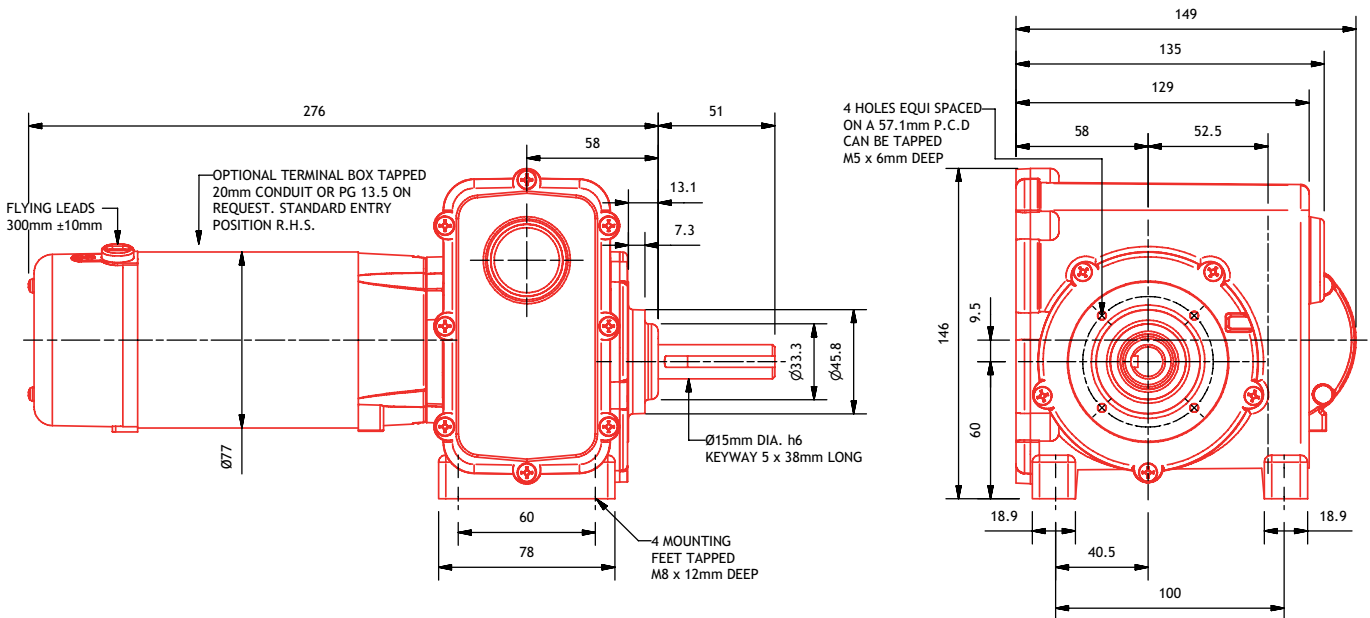
MOTOR Permanent magnet DC motor  
 PROTECTION Ventilated (IP21)  
 GEARBOX In-line worm (LIW)  
 POWER 75 - 330 Watts  
 SPEED 1 - 108 rpm  
 VOLTAGE 12V - 220V DC available range  
 WEIGHT 6.08 kg  
 RADIAL LOAD 353 N  
 AXIAL LOAD 196 N  
 SHAFT TYPE Single ended shaft  
 EXTRAS See page 36



Motor Power Cont. (W)	75	100	150	200	TORQUE (Nm)						
Motor Power 1 Hour (W)	90	120	180	240							
Motor Power 15 Min (W)	125	165	245	330							
Ratio INT	Ratio Final	MOTOR SPEED (rpm)				CONTINUOUS		1 HOUR		15 MINUTE	
		1500	2000	3000	4000	Composite	Bronze	Composite	Bronze	Composite	Bronze
		OUTPUT SPEED (rpm)									
60	20 1/2	1	1.6	2	3	28.0	45.0	28.0	45.0	28.0	45.0
44	20 1/2	2	2	3	4	28.0	45.0	28.0	45.0	28.0	45.0
36	20 1/2	2	3	4	5	28.0	45.0	28.0	45.0	28.0	45.0
27	20 1/2	3	4	5	7	28.0	45.0	28.0	45.0	28.0	45.0
20 1/2	20 1/2	4	5	7	10	28.0	45.0	28.0	45.0	28.0	45.0
16 1/2	20 1/2	4	6	9	12	28.0	45.0	28.0	45.0	28.0	45.0
12 1/3	20 1/2	6	8	12	16	28.0	43.3	28.0	45.0	28.0	45.0
8 1/3	20 1/2	9	12	18	23	28.0	32.6	28.0	39.1	28.0	45.0
7 1/4	20 1/2	10	13	20	27	28.0	29.3	28.0	35.2	28.0	45.0
5 1/8	20 1/2	14	19	29	38	22.4	22.4	26.9	26.9	28.0	36.6
10 1/3	9	16	22	32	43	21.1	21.1	25.3	25.3	28.0	34.4
8 1/3	9	20	27	40	53	17.9	17.9	21.5	21.5	28.0	29.3
7 1/4	9	23	31	46	61	16.2	16.2	19.4	19.4	26.4	26.4
5 1/8	9	33	43	65	87	12.4	12.4	14.8	14.8	20.2	20.2
4 1/8	9	40	54	81	108	10.5	10.5	12.5	12.5	17.1	17.1

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in-line worm



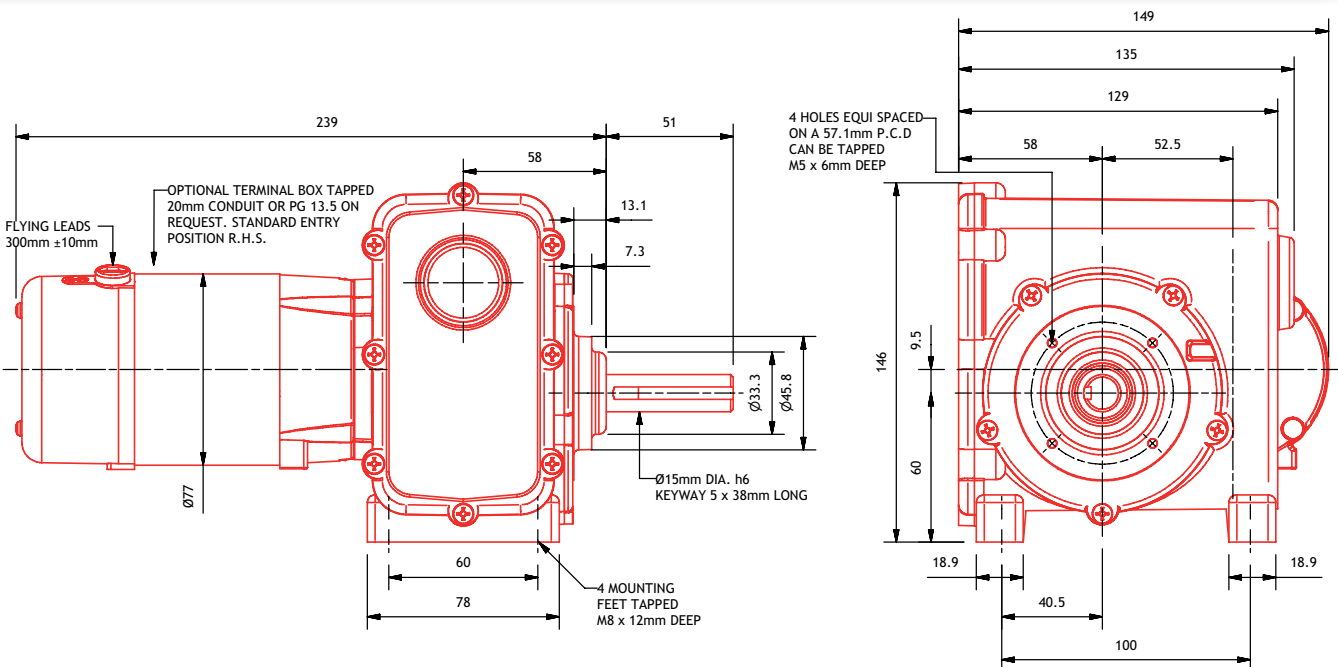
# PM3LIW

- MOTOR Permanent magnet DC motor
- PROTECTION Totally enclosed (IP54)
- GEARBOX In-line worm (LIW)
- POWER 33 - 150 Watts
- SPEED 1 - 108 rpm
- VOLTAGE 12V - 220V DC available range
- WEIGHT 5.54 kg
- RADIAL LOAD 353 N
- AXIAL LOAD 196 N
- SHAFT TYPE Single ended shaft
- EXTRAS See page 36



Motor Power Cont. (W)		33	45	68	90	TORQUE (Nm)					
Motor Power 1 Hour (W)		45	60	90	120						
Motor Power 15 Min (W)		60	90	120	150						
Ratio INT	Ratio Final	MOTOR SPEED (rpm)				CONTINUOUS		1 HOUR		15 MINUTE	
		1500	2000	3000	4000	Composite	Bronze	Composite	Bronze	Composite	Bronze
		OUTPUT SPEED (rpm)									
60	20 1/2	1	1.6	2	3	28.0	45.0	28.0	45.0	28.0	45.0
44	20 1/2	2	2	3	4	28.0	45.0	28.0	45.0	28.0	45.0
36	20 1/2	2	3	4	5	28.0	40.4	28.0	45.0	28.0	45.0
27	20 1/2	3	4	5	7	28.0	33.8	28.0	44.7	28.0	45.0
20 1/2	20 1/2	4	5	7	10	28.0	28.1	28.0	37.2	28.0	45.0
16 1/2	20 1/2	4	6	9	12	24.2	24.2	28.0	32.1	28.0	42.7
12 1/3	20 1/2	6	8	12	16	19.6	19.6	26.0	26.0	28.0	34.6
8 1/3	20 1/2	9	12	18	23	14.8	14.8	19.5	19.5	26.1	26.1
7 1/4	20 1/2	10	13	20	27	13.3	13.3	17.6	17.6	23.5	23.5
5 1/8	20 1/2	14	19	29	38	10.2	10.2	13.5	13.5	17.9	17.9
10 1/3	9	16	22	32	43	9.6	9.6	12.6	12.6	16.9	16.9
8 1/3	9	20	27	40	53	8.1	8.1	10.8	10.8	14.4	14.4
7 1/4	9	23	31	46	61	7.3	7.3	9.7	9.7	12.9	12.9
5 1/8	9	33	43	65	87	5.6	5.6	7.4	7.4	9.9	9.9
4 1/8	9	40	54	81	108	4.7	4.7	6.3	6.3	8.4	8.4

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# PM4LIW

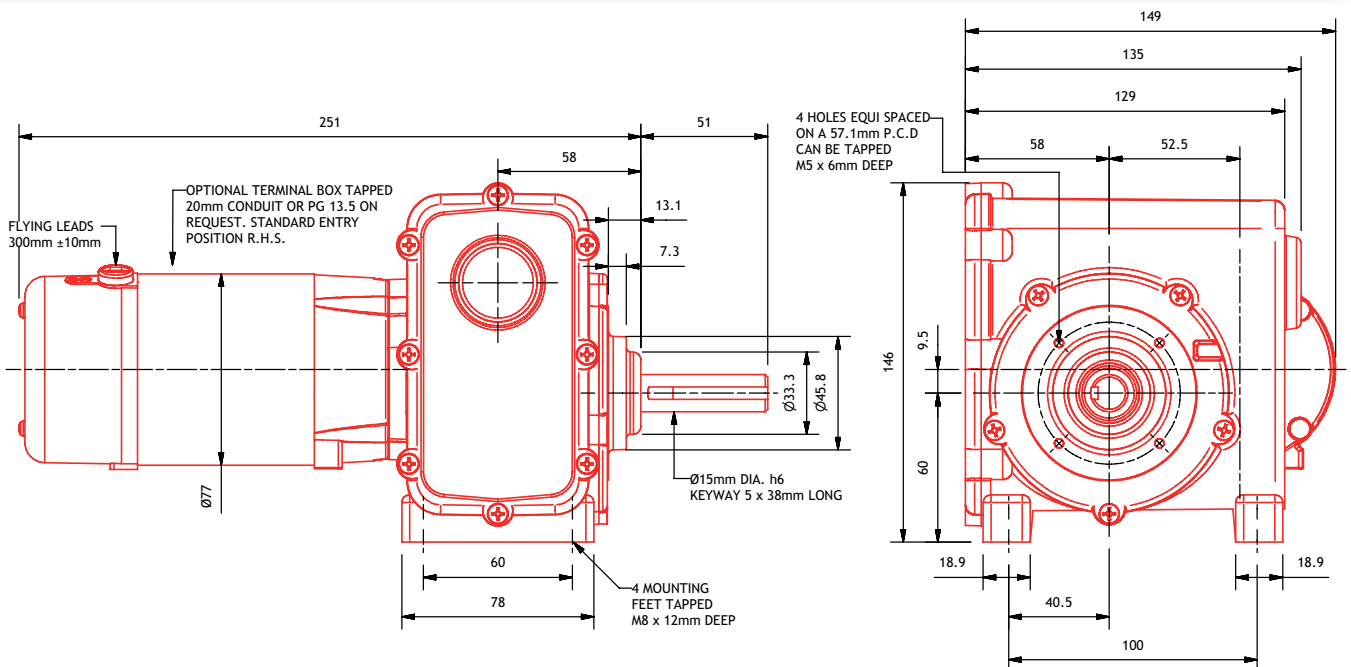
- MOTOR Permanent magnet DC motor
- PROTECTION IP54
- GEARBOX In-line worm (LIW)
- POWER 45 - 200 Watts
- SPEED 1 - 108 rpm
- VOLTAGE 12V - 220V DC available range
- WEIGHT 5.89 kg
- RADIAL LOAD 353 N
- AXIAL LOAD 196 N
- SHAFT TYPE Single ended shaft
- EXTRAS See page 36



Motor Power Cont. (W)		45	60	90	120	TORQUE (Nm)					
Motor Power 1 Hour (W)		60	80	120	160						
Motor Power 15 Min (W)		80	120	160	200						
Ratio INT	Ratio Final	MOTOR SPEED (rpm)				CONTINUOUS		1 HOUR		15 MINUTE	
		1500	2000	3000	4000	Composite	Bronze	Composite	Bronze	Composite	Bronze
		OUTPUT SPEED (rpm)									
60	20 1/2	1	1.6	2	3	28.0	45.0	28.0	45.0	28.0	45.0
44	20 1/2	2	2	3	4	28.0	45.0	28.0	45.0	28.0	45.0
36	20 1/2	2	3	4	5	28.0	45.0	28.0	45.0	28.0	45.0
27	20 1/2	3	4	5	7	28.0	44.7	28.0	45.0	28.0	45.0
20 1/2	20 1/2	4	5	7	10	28.0	37.2	28.0	45.0	28.0	45.0
16 1/2	20 1/2	4	6	9	12	28.0	32.1	28.0	42.7	28.0	45.0
12 1/3	20 1/2	6	8	12	16	26.0	26.0	28.0	34.6	28.0	45.0
8 1/3	20 1/2	9	12	18	23	19.5	19.5	26.1	26.1	28.0	34.7
7 1/4	20 1/2	10	13	20	27	17.6	17.6	23.5	23.5	28.0	31.3
5 1/8	20 1/2	14	19	29	38	13.5	13.5	17.9	17.9	23.9	23.9
10 1/3	9	16	22	32	43	12.6	12.6	16.9	16.9	22.5	22.5
8 1/3	9	20	27	40	53	10.8	10.8	14.4	14.4	19.1	19.1
7 1/4	9	23	31	46	61	9.7	9.7	12.9	12.9	17.2	17.2
5 1/8	9	33	43	65	87	7.4	7.4	9.9	9.9	13.2	13.2
4 1/8	9	40	54	81	108	6.3	6.3	8.4	8.4	11.2	11.2

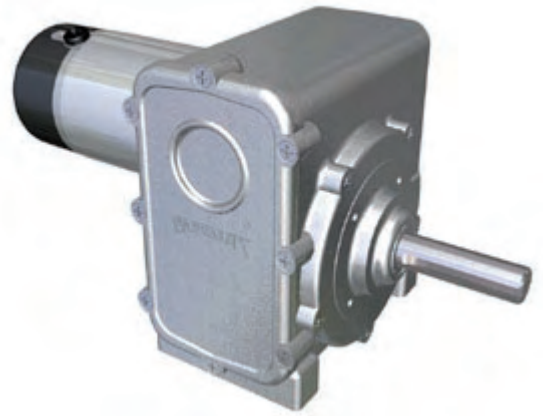
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in-line worm



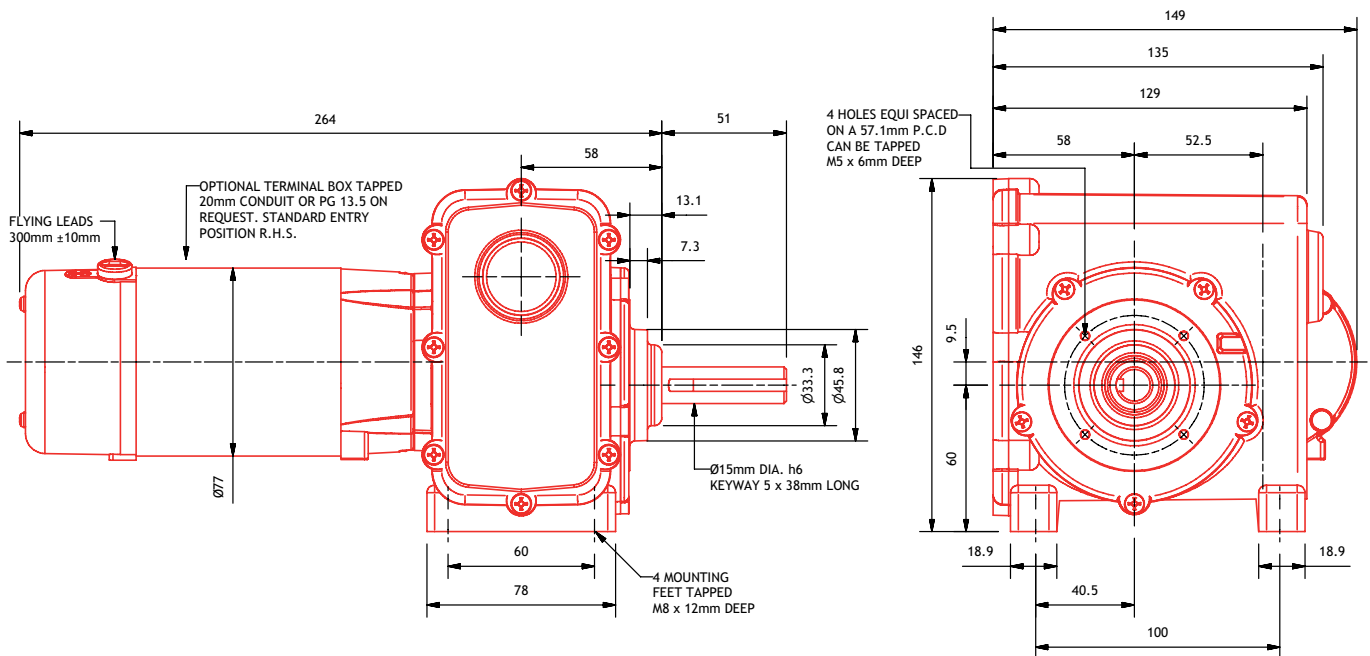
# PM5LIW

MOTOR	Permanent magnet DC motor
PROTECTION	Totally enclosed (IP54)
GEARBOX	In-line worm (LIW)
POWER	60 - 250 Watts
SPEED	1 - 108 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	6.08 kg
RADIAL LOAD	353 N
AXIAL LOAD	196 N
SHAFT TYPE	Single ended shaft
EXTRAS	See page 36



Motor Power Cont. (W)		60	80	120	160	TORQUE (Nm)					
Motor Power 1 Hour (W)		75	100	150	200	CONTINUOUS		1 HOUR		15 MINUTE	
Motor Power 15 Min (W)		100	150	200	250	Composite		Composite		Composite	
Ratio INT	Ratio Final	MOTOR SPEED (rpm)				CONTINUOUS		1 HOUR		15 MINUTE	
		1500	2000	3000	4000	Composite	Bronze	Composite	Bronze	Composite	Bronze
		OUTPUT SPEED (rpm)									
60	20 1/2	1	1.6	2	3	28.0	45.0	28.0	45.0	28.0	45.0
44	20 1/2	2	2	3	4	28.0	45.0	28.0	45.0	28.0	45.0
36	20 1/2	2	3	4	5	28.0	45.0	28.0	45.0	28.0	45.0
27	20 1/2	3	4	5	7	28.0	45.0	28.0	45.0	28.0	45.0
20 1/2	20 1/2	4	5	7	10	28.0	45.0	28.0	45.0	28.0	45.0
16 1/2	20 1/2	4	6	9	12	28.0	42.7	28.0	45.0	28.0	45.0
12 1/3	20 1/2	6	8	12	16	28.0	34.6	28.0	43.3	28.0	45.0
8 1/3	20 1/2	9	12	18	23	26.1	26.1	28.0	32.6	28.0	43.4
7 1/4	20 1/2	10	13	20	27	23.5	23.5	28.0	29.3	28.0	39.1
5 1/8	20 1/2	14	19	29	38	17.9	17.9	22.4	22.4	28.0	29.9
10 1/3	9	16	22	32	43	16.9	16.9	21.1	21.1	28.0	28.1
8 1/3	9	20	27	40	53	14.4	14.4	17.9	17.9	23.9	23.9
7 1/4	9	23	31	46	61	12.9	12.9	16.2	16.2	21.5	21.5
5 1/8	9	33	43	65	87	9.9	9.9	12.4	12.4	16.5	16.5
4 1/8	9	40	54	81	108	8.4	8.4	10.5	10.5	13.9	13.9

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# PM7SIS

- MOTOR Permanent magnet DC motor
- PROTECTION Totally enclosed (IP54)
- GEARBOX In-line spur (SIS)
- POWER 7.5 - 33 Watts
- SPEED 5 - 182 rpm
- VOLTAGE 12V - 220V DC available range
- WEIGHT 1.4 kg
- RADIAL LOAD 88 N
- AXIAL LOAD 44 N
- SHAFT TYPE Single ended shaft
- EXTRAS See page 36

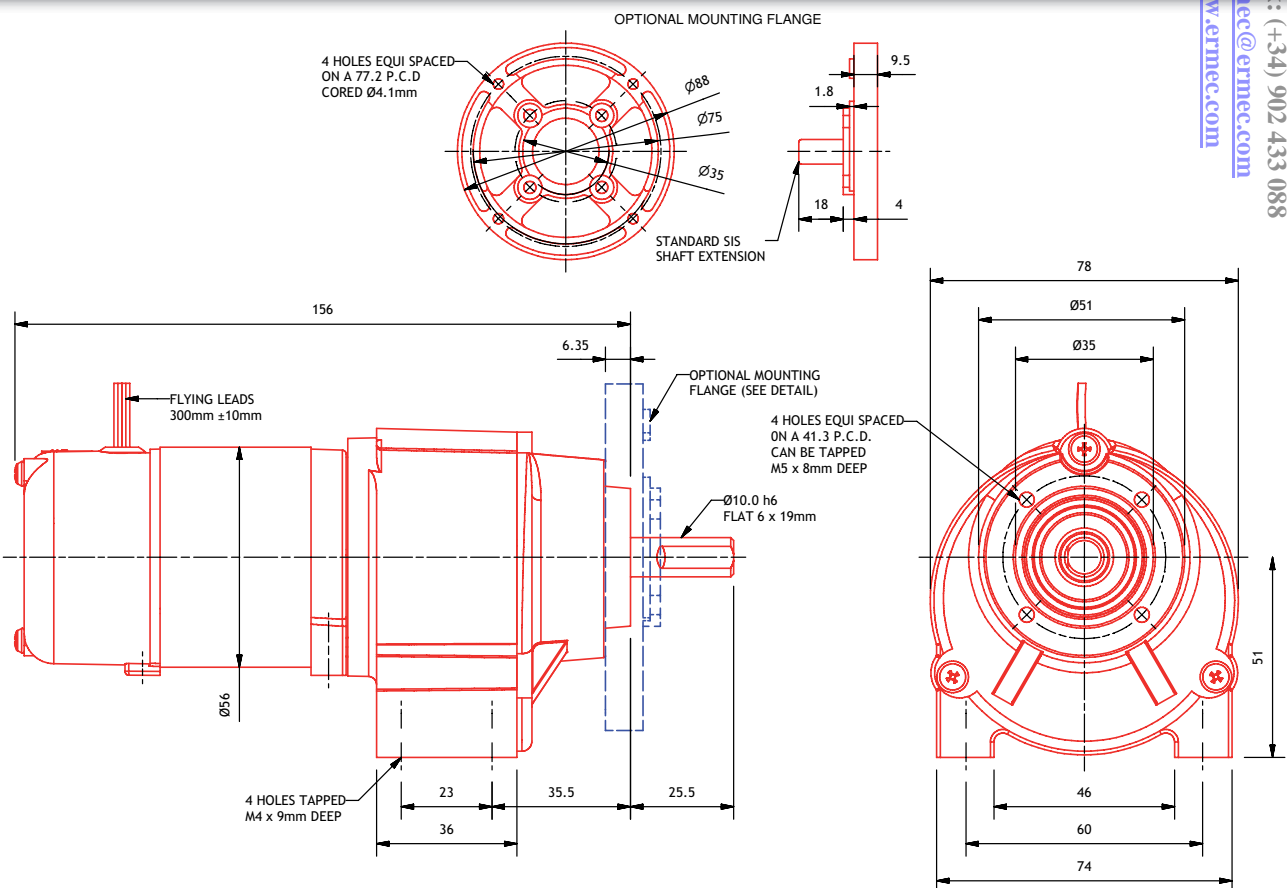


PM7SIS pictured with optional mounting flange

Motor Power Cont. (W)	7.5	10	15	20	TORQUE (Nm)		
Motor Power 1 Hour (W)	10	13	20	25	CONTINUOUS	1 HOUR	15 MINUTE
Motor Power 15 Min (W)	13	17	25	33			
Ratio Final	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
	1500	2000	3000	4000			
OUTPUT SPEED (rpm)							
303	5	7	10	13	6.7	7.9	7.9
228	7	9	13	18	5.7	7.5	7.5
172	9	12	17	23	4.7	6.3	7.0
129	12	16	23	31	4.3	5.7	7.1
94	16	21	32	43	3.2	4.3	5.5
71	21	28	42	56	2.5	3.3	4.4
53	28	38	57	75	1.9	2.6	3.3
29	52	69	103	138	1.1	1.5	1.9
22	68	91	136	182	0.9	1.2	1.5

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in-line spur

# PM8SIS

- MOTOR Permanent magnet DC motor
- PROTECTION Totally enclosed (IP54)
- GEARBOX In-line spur (SIS)
- POWER 13 - 48 Watts
- SPEED 5 - 182 rpm
- VOLTAGE 12V - 220V DC available range
- WEIGHT 1.6 kg
- RADIAL LOAD 88 N
- AXIAL LOAD 44 N
- SHAFT TYPE Single ended shaft
- EXTRAS See page 36

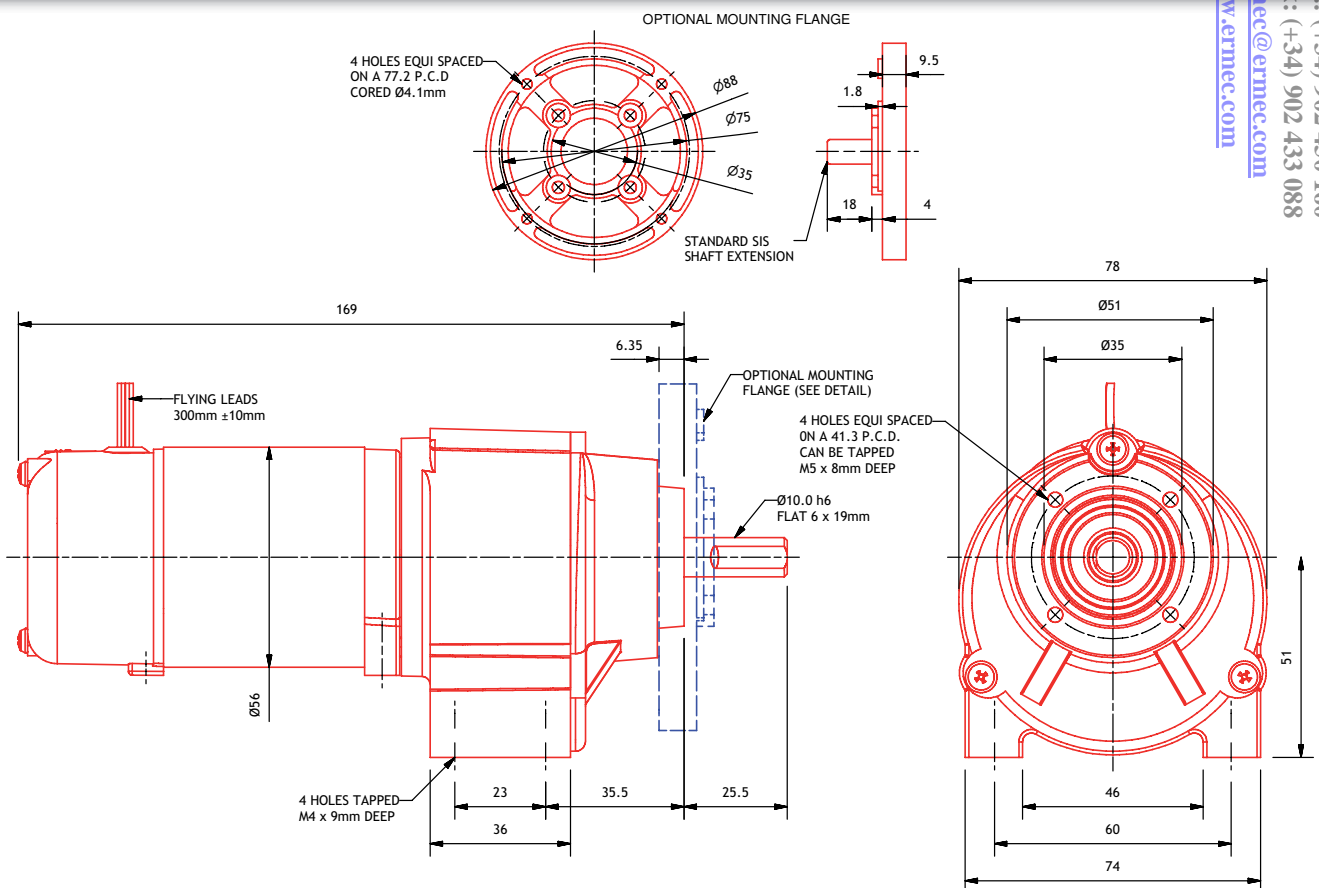


PM8SIS pictured with optional mounting flange

Ratio Final	MOTOR SPEED (rpm)				TORQUE (Nm)		
	1500	2000	3000	4000	CONTINUOUS	1 HOUR	15 MINUTE
	OUTPUT SPEED (rpm)						
303	5	7	10	13	7.9	7.9	7.9
228	7	9	13	18	7.9	7.9	7.9
172	9	12	17	23	7.9	7.9	7.9
129	12	16	23	31	7.1	7.9	7.9
94	16	21	32	43	5.4	7.1	7.3
71	21	28	42	56	4.1	5.4	5.9
53	28	38	57	75	3.2	4.2	4.6
29	52	69	103	138	1.9	2.5	2.7
22	68	91	136	182	1.5	2.0	2.2

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# PM9SIS

MOTOR	Permanent magnet DC motor
PROTECTION	Totally enclosed (IP54)
GEARBOX	In-line spur (SIS)
POWER	19 - 70 Watts
SPEED	5 - 182 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	1.8 kg
RADIAL LOAD	88 N
AXIAL LOAD	44 N
SHAFT TYPE	Single ended shaft
EXTRAS	See page 36



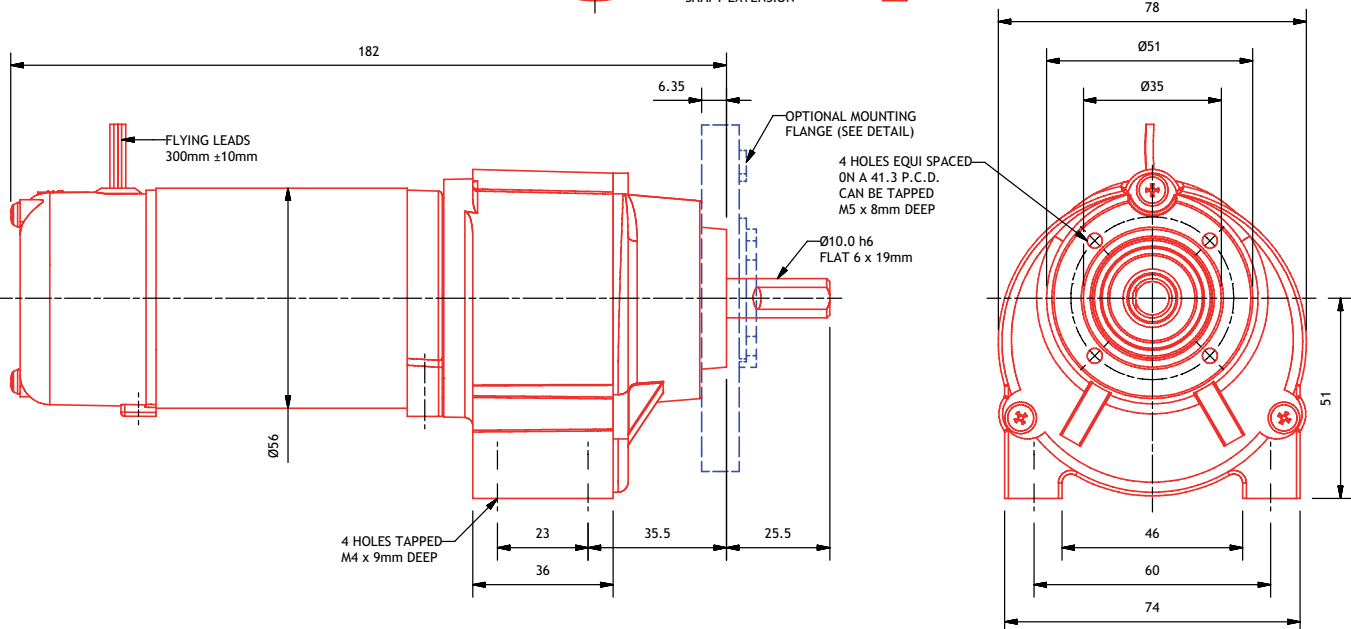
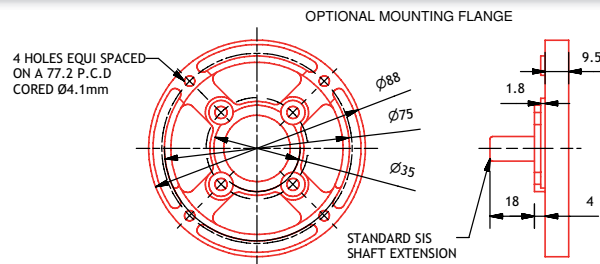
PM9SIS pictured with optional mounting flange

Motor Power Cont. (W)	MOTOR SPEED (rpm)				TORQUE (Nm)		
	Ratio Final				CONTINUOUS	1 HOUR	15 MINUTE
	1500	2000	3000	4000			
19	25	38	50				
24	33	45	60				
26	36	55	70				
	OUTPUT SPEED (rpm)						
	5	7	10	13	7.9	7.9	7.9
	7	9	13	18	7.9	7.9	7.9
	9	12	17	23	7.9	7.9	7.9
	12	16	23	31	7.9	7.9	7.9
	16	21	32	43	7.9	7.9	7.9
	21	28	42	56	6.2	7.4	7.9
	28	38	57	75	4.9	5.8	7.0
	52	69	103	138	2.9	3.4	4.2
	68	91	136	182	2.3	2.7	3.3

Distribución de componentes eléctricos



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in-line spur

# PM10SIS

MOTOR	Permanent magnet DC motor
PROTECTION	Totally enclosed (IP54)
GEARBOX	In-line spur (SIS)
POWER	23 -100 Watts
SPEED	5 - 182 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	2.04 kg
RADIAL LOAD	88 N
AXIAL LOAD	44 N
SHAFT TYPE	Single ended shaft
EXTRAS	See page 36

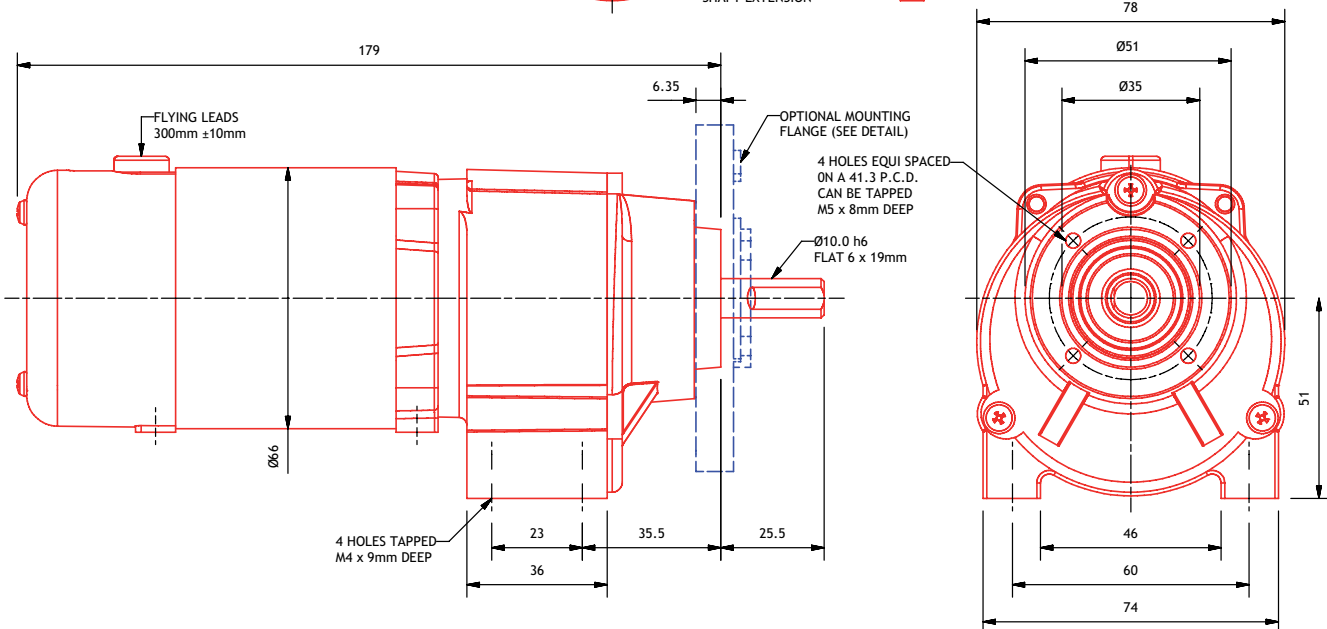
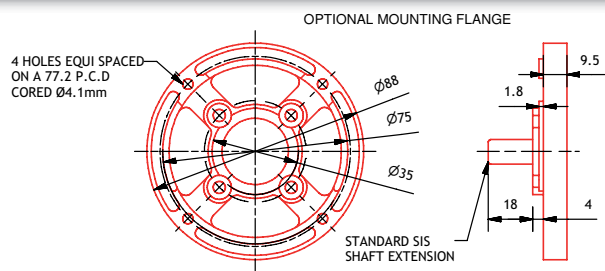


PM10SIS pictured with optional mounting flange

Motor Power Cont. (W)	23				30				45				60				TORQUE (Nm)		
	28				38				55				75						
	35				50				70				100						
Ratio Final	MOTOR SPEED (rpm)								CONTINUOUS	1 HOUR	15 MINUTE								
	1500	2000	3000	4000															
	OUTPUT SPEED (rpm)																		
303	5	7	10	13	7.9	7.9	7.9	7.9	7.9	7.9	7.9								
228	7	9	13	18	7.9	7.9	7.9	7.9	7.9	7.9	7.9								
172	9	12	17	23	7.9	7.9	7.9	7.9	7.9	7.9	7.9								
129	12	16	23	31	7.9	7.9	7.9	7.9	7.9	7.9	7.9								
94	16	21	32	43	7.9	7.9	7.9	7.9	7.9	7.9	7.9								
71	21	28	42	56	7.4	7.9	7.9	7.9	7.9	7.9	7.9								
53	28	38	57	75	5.8	7.0	7.0	7.0	7.0	7.0	7.0								
29	52	69	103	138	3.4	4.2	4.2	4.2	4.2	4.2	4.2								
22	68	91	136	182	2.7	3.3	3.3	3.3	3.3	3.3	3.3								

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# PM11SIS

MOTOR Permanent magnet DC motor  
 PROTECTION Totally enclosed (IP54)  
 GEARBOX In-line spur (SIS)  
 POWER 33 - 130 Watts  
 SPEED 5 - 182 rpm  
 VOLTAGE 12V - 220V DC available range  
 WEIGHT 2.5 kg  
 RADIAL LOAD 88 N  
 AXIAL LOAD 44 N  
 SHAFT TYPE Single ended shaft  
 EXTRAS See page 36



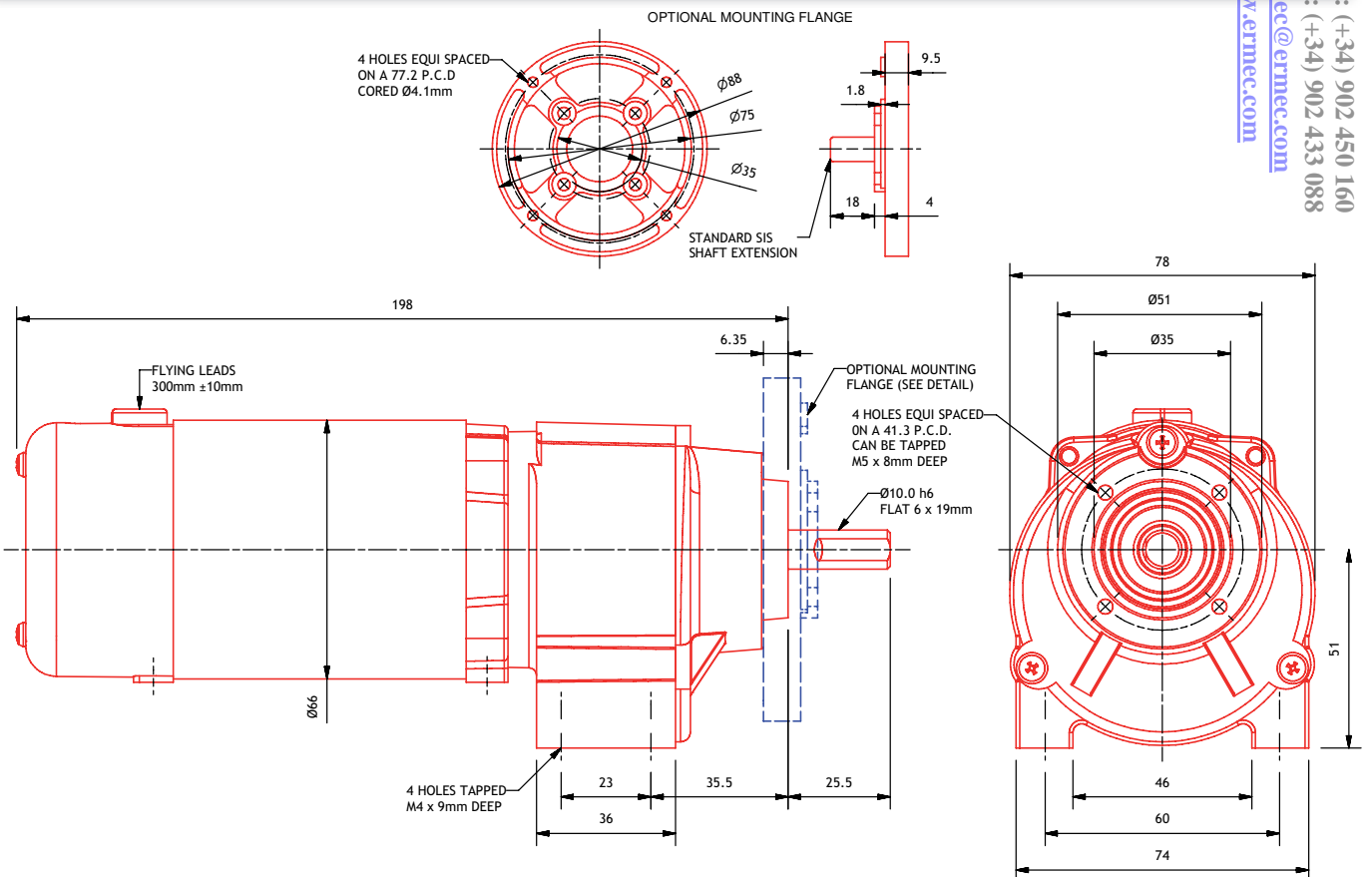
PM11SIS pictured with optional mounting flange

Motor Power Cont. (W)	33				45				65				90				TORQUE (Nm)		
	40				55				80				110						
	50				65				100				130						
Ratio Final	MOTOR SPEED (rpm)								CONTINUOUS	1 HOUR	15 MINUTE								
	1500	2000	3000	4000															
OUTPUT SPEED (rpm)												CONTINUOUS	1 HOUR	15 MINUTE					
303	5	7	10	13	7.9	7.9	7.9												
228	7	9	13	18	7.9	7.9	7.9												
172	9	12	17	23	7.9	7.9	7.9												
129	12	16	23	31	7.9	7.9	7.9												
94	16	21	32	43	7.9	7.9	7.9												
71	21	28	42	56	7.9	7.9	7.9												
53	28	38	57	75	7.9	7.9	7.9												
29	52	69	103	138	4.9	5.7	5.7												
22	68	91	136	182	3.9	4.8	5.7												

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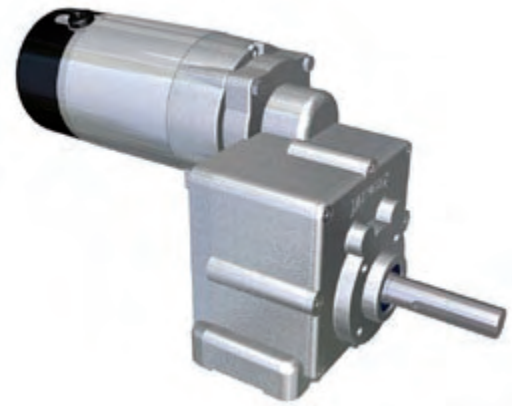
in-line spur



# PM1MIS

PARVALUX®

MOTOR	Permanent magnet DC motor
PROTECTION	Ventilated (IP21)
GEARBOX	In-line spur (MIS)
POWER	45 - 200 Watts
SPEED	15 - 623 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	4.13 kg
RADIAL LOAD	216 N
AXIAL LOAD	137 N
SHAFT TYPE	Single ended shaft
EXTRAS	See page 36

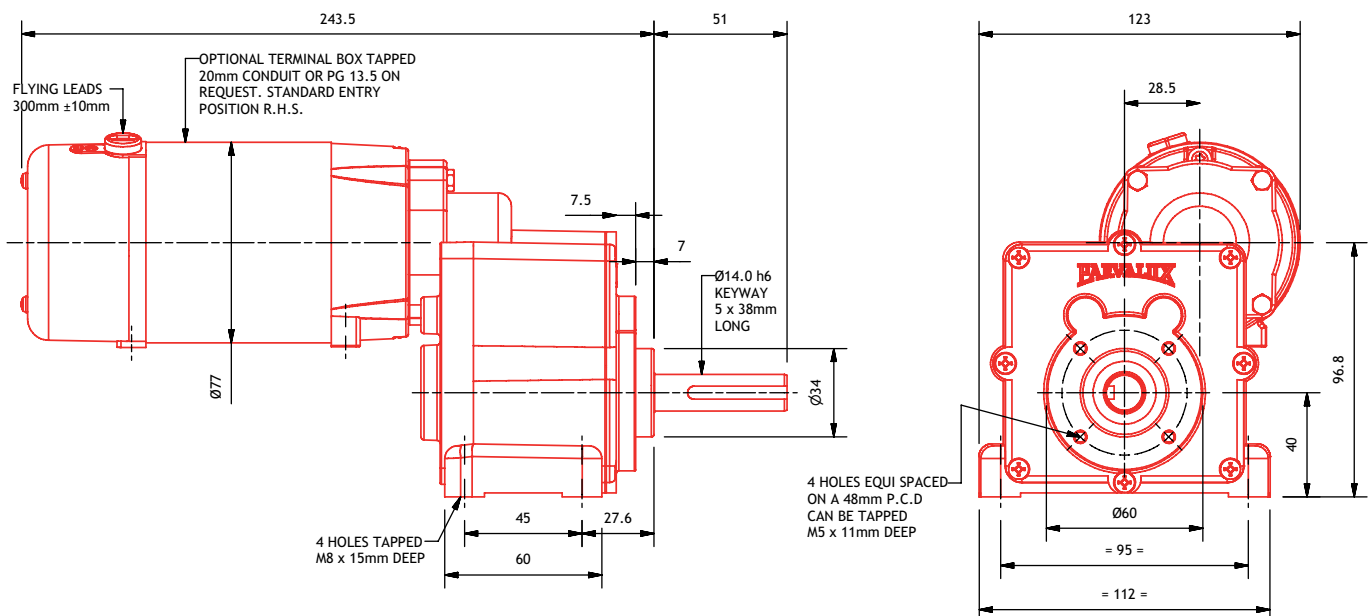


		45	60	90	120	TORQUE (Nm)		
Motor Power Cont (W)		45	60	90	120			
Motor Power 1 Hour (W)		55	75	110	150			
Motor Power 15 Min (W)		75	100	150	200			
RATIO PINION	RATIO SPUR	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
3.23	31.3	15	20	30	40	22	27	37
2.13	31.3	22	30	45	60	15	18	25
3.23	13.45	35	46	69	92	10	12	17
1.12	31.3	43	57	86	114	8	10	13
2.13	13.45	52	70	105	140	6	7	10
3.23	5.73	81	108	162	216	4	5	7
1.12	13.45	100	133	199	266	4	5	7
2.13	5.73	123	164	246	328	3	3	5
1.12	5.73	234	312	467	623	2	2	3

Distribución de componentes eléctricos y electrónicos

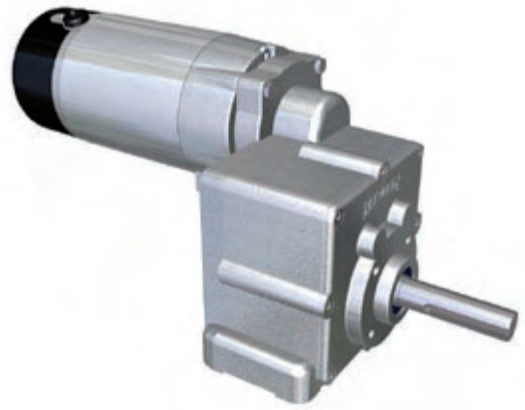


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# PM2MIS

MOTOR Permanent magnet DC motor  
 PROTECTION Ventilated (IP21)  
 GEARBOX In-line spur (MIS)  
 POWER 60 - 265 Watts  
 SPEED 15 - 623 rpm  
 VOLTAGE 12V - 220V DC available range  
 WEIGHT 4.48 kg  
 RADIAL LOAD 216 N  
 AXIAL LOAD 137 N  
 SHAFT TYPE Single ended shaft  
 EXTRAS See page 36

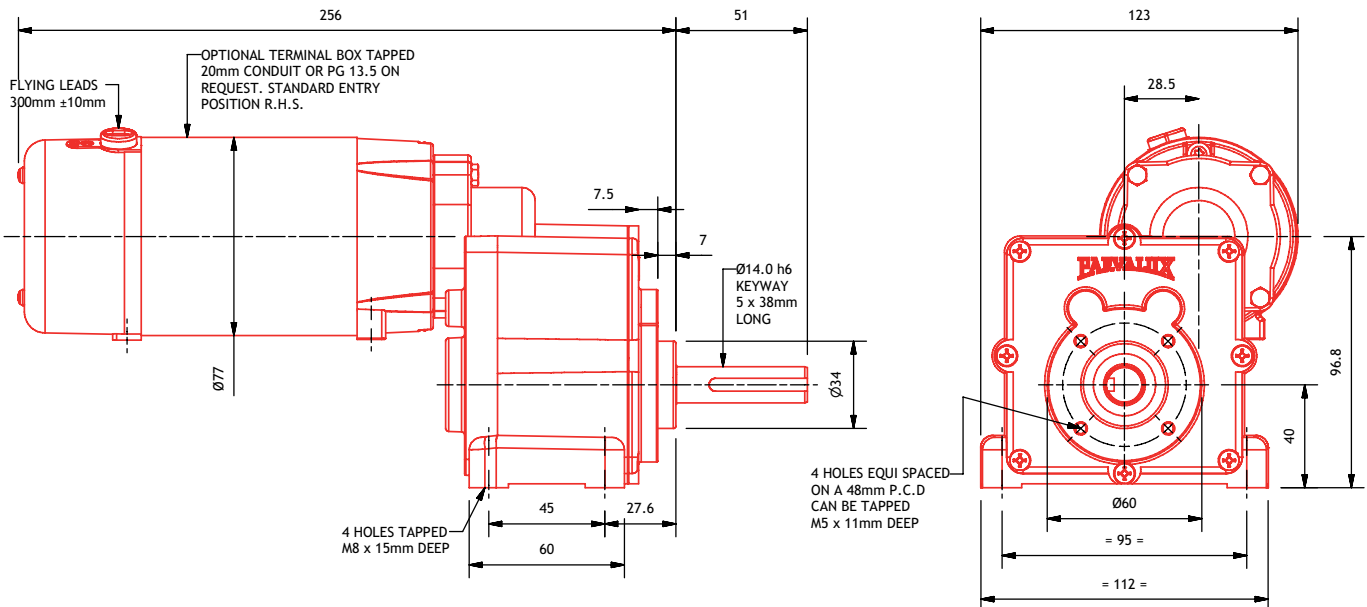


Motor Power Cont. (W)		60	80	120	160	TORQUE (Nm)		
Motor Power 1 Hour (W)		75	100	150	200			
Motor Power 15 Min (W)		100	130	200	265			
RATIO PINION	RATIO SPUR	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
3.23	31.3	15	20	30	40	29	37	45
2.13	31.3	22	30	45	60	20	25	33
3.23	13.45	35	46	69	92	13	17	22
1.12	31.3	43	57	86	114	11	13	18
2.13	13.45	52	70	105	140	8	10	13
3.23	5.73	81	108	162	216	5	7	9
1.12	13.45	100	133	199	266	5	7	9
2.13	5.73	123	164	246	328	4	5	6
1.12	5.73	234	312	467	623	2	3	4

Distribución de componentes eléctricos y electrónicos



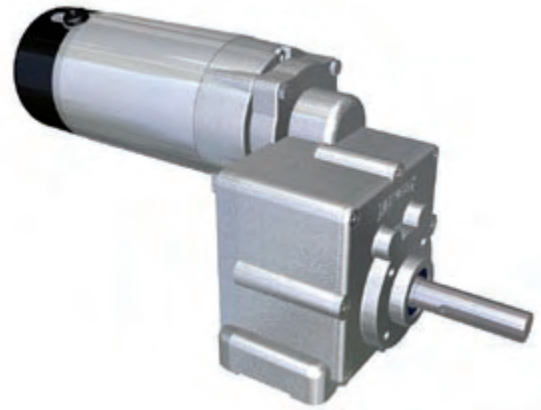
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in-line spur

# PM6MIS

PARVALUX®



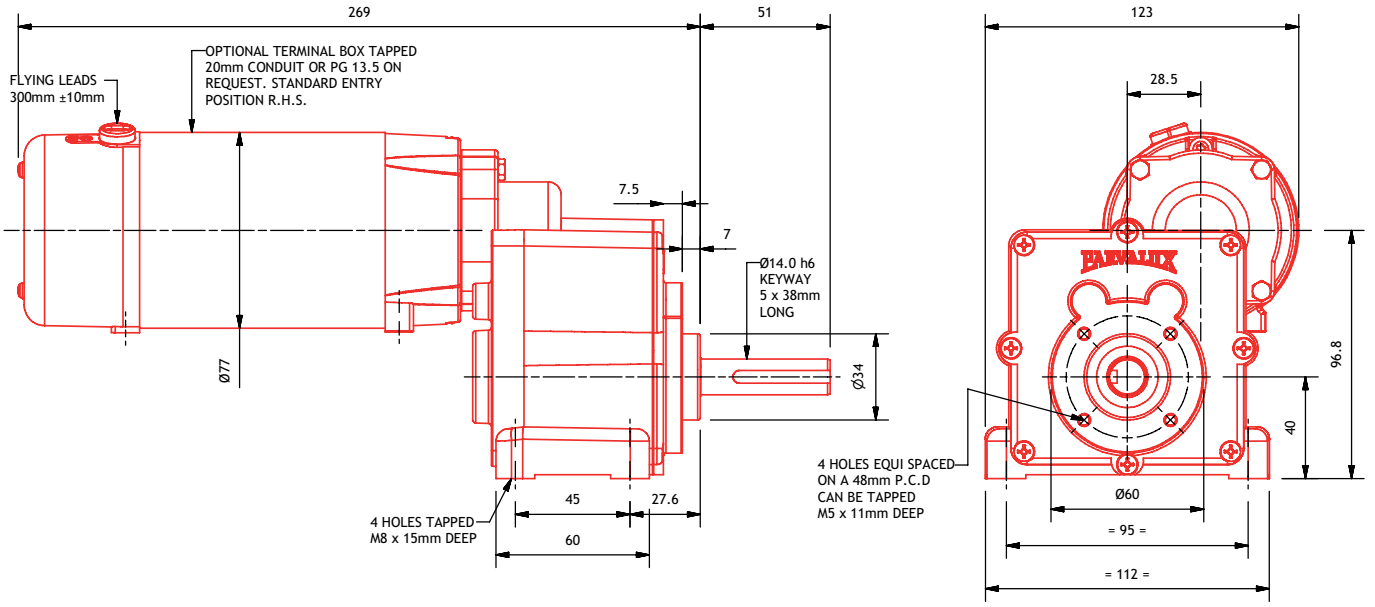
MOTOR Permanent magnet DC motor  
 PROTECTION Totally enclosed (IP54)  
 GEARBOX In-line spur (MIS)  
 POWER 75 - 330 Watts  
 SPEED 15 - 623 rpm  
 VOLTAGE 12V - 220V DC available range  
 WEIGHT 4.67 kg  
 RADIAL LOAD 216 N  
 AXIAL LOAD 137 N  
 SHAFT TYPE Single ended shaft  
 EXTRAS See page 36

		75	100	150	200	TORQUE (Nm)		
Motor Power Cont. (W)		75	100	150	200			
Motor Power 1 Hour (W)		90	120	180	240			
Motor Power 15 Min (W)		125	165	245	330			
RATIO PINION	RATIO SPUR	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
3.23	31.3	15	20	30	40	37	44	45
2.13	31.3	22	30	45	60	25	30	41
3.23	13.45	35	46	69	92	17	20	27
1.12	31.3	43	57	86	114	13	16	22
2.13	13.45	52	70	105	140	10	12	16
3.23	5.73	81	108	162	216	7	8	11
1.12	13.45	100	133	199	266	7	8	11
2.13	5.73	123	164	246	328	5	6	8
1.12	5.73	234	312	467	623	3	3	4

Distribución de componentes eléctricos y electrónicos



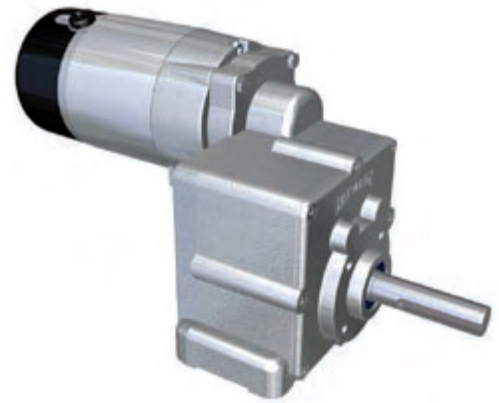
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# PM3MIS

PARVALUX®

MOTOR Permanent magnet DC motor  
 PROTECTION Totally enclosed (IP54)  
 GEARBOX In-line spur (MIS)  
 POWER 33 - 150 Watts  
 SPEED 15 - 623 rpm  
 VOLTAGE 12V - 220V DC available range  
 WEIGHT 4.13 kg  
 RADIAL LOAD 216 N  
 AXIAL LOAD 137 N  
 SHAFT TYPE Single ended shaft  
 EXTRAS See page 36

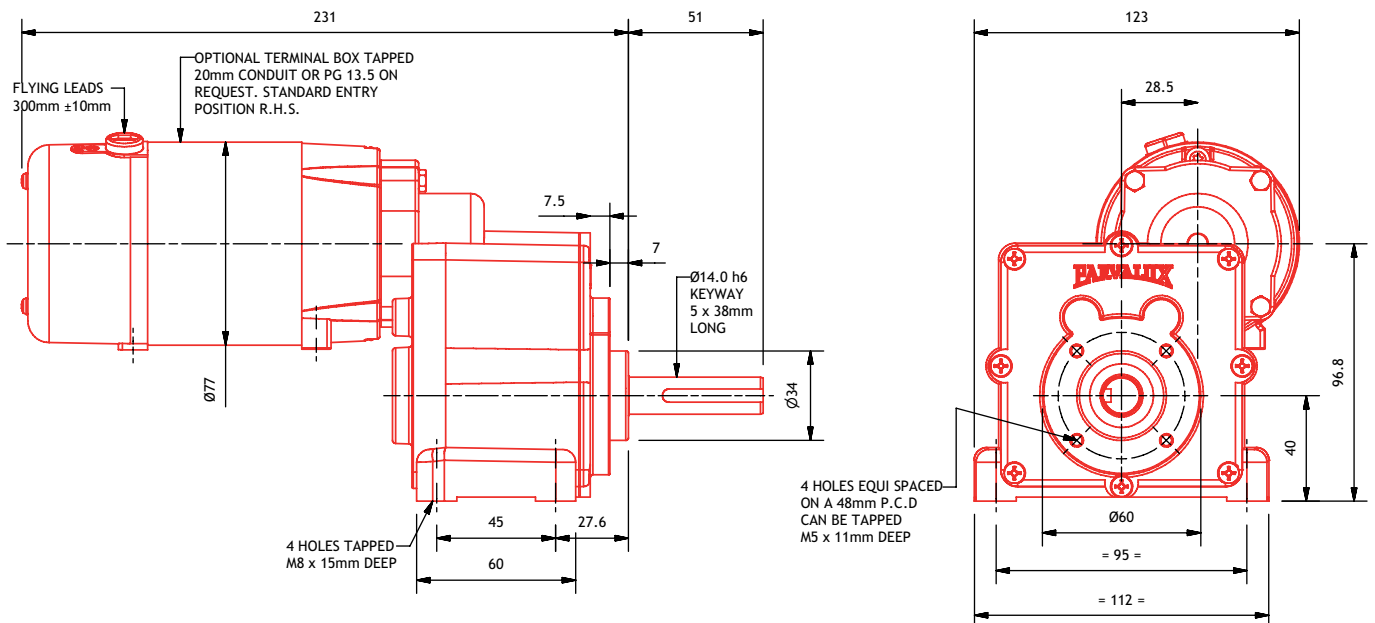


Motor Power Cont. (W)		33	45	68	90	TORQUE (Nm)		
Motor Power 1 Hour (W)		45	60	90	120			
Motor Power 15 Min (W)		60	90	120	150			
RATIO PINION	RATIO SPUR	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
3.23	31.3	15	20	30	40	17	22	29
2.13	31.3	22	30	45	60	11	15	20
3.23	13.45	35	46	69	92	8	10	13
1.12	31.3	43	57	86	114	6	8	11
2.13	13.45	52	70	105	140	5	6	8
3.23	5.73	81	108	162	216	3	4	5
1.12	13.45	100	133	199	266	3	4	5
2.13	5.73	123	164	246	328	2	3	4
1.12	5.73	234	312	467	623	1	2	2

Distribución de componentes eléctricos y electrónicos



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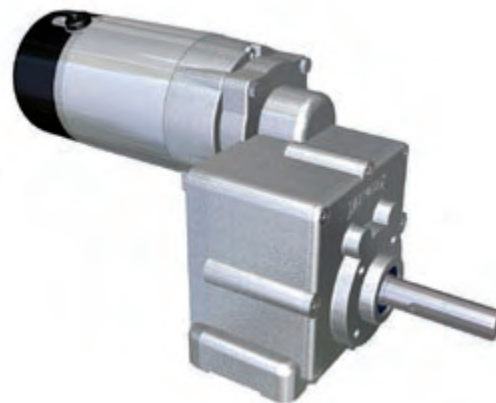


in-line spur

# PM4MIS

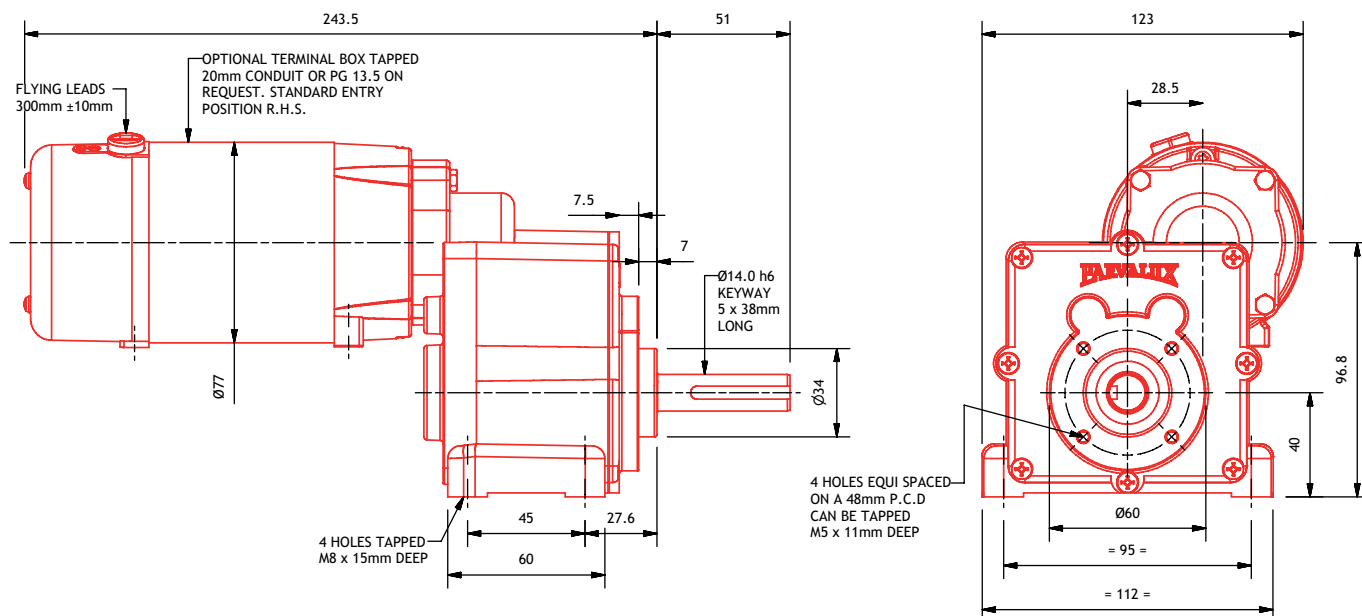
PARVALUX®

MOTOR	Permanent magnet DC motor
PROTECTION	Totally enclosed (IP54)
GEARBOX	In-line spur (MIS)
POWER	45 - 200 Watts
SPEED	15 - 623 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	4.48 kg
RADIAL LOAD	216 N
AXIAL LOAD	137 N
SHAFT TYPE	Single ended shaft
EXTRAS	See page 36



		45	60	90	120	TORQUE (Nm)		
Motor Power Cont. (W)		45	60	90	120			
Motor Power 1 Hour (W)		60	80	120	160			
Motor Power 15 Min (W)		80	120	160	200			
RATIO PINION	RATIO SPUR	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
3.23	31.3	15	20	30	40	22	29	39
2.13	31.3	22	30	45	60	15	20	27
3.23	13.45	35	46	69	92	10	13	18
1.12	31.3	43	57	86	114	8	11	14
2.13	13.45	52	70	105	140	6	8	11
3.23	5.73	81	108	162	216	4	5	7
1.12	13.45	100	133	199	266	4	5	7
2.13	5.73	123	164	246	328	3	4	5
1.12	5.73	234	312	467	623	2	2	3

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# PM5MIS



- MOTOR Permanent magnet DC motor
- PROTECTION Totally enclosed (IP54)
- GEARBOX In-line spur (MIS)
- POWER 60 - 250 Watts
- SPEED 15 - 623 rpm
- VOLTAGE 12V - 220V DC available range
- WEIGHT 4.67 kg
- RADIAL LOAD 216 N
- AXIAL LOAD 137 N
- SHAFT TYPE Single ended shaft
- EXTRAS See page 36

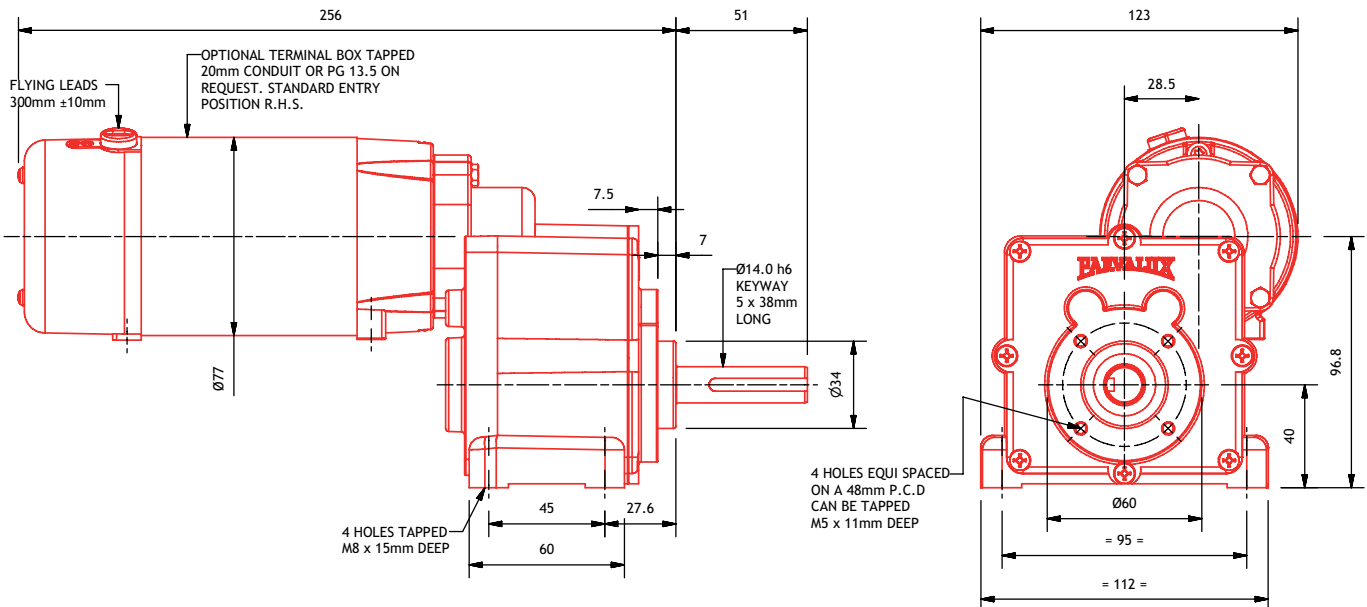
Motor Power Cont. (W)		60	80	120	160	TORQUE (Nm)		
Motor Power 1 Hour (W)		75	100	150	200			
Motor Power 15 Min (W)		100	150	200	250			
RATIO PINION	RATIO SPUR	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
3.23	31.3	15	20	30	40	29	37	45
2.13	31.3	22	30	45	60	20	25	33
3.23	13.45	35	46	69	92	13	17	22
1.12	31.3	43	57	86	114	11	13	18
2.13	13.45	52	70	105	140	8	10	13
3.23	5.73	81	108	162	216	5	7	9
1.12	13.45	100	133	199	266	5	7	9
2.13	5.73	123	164	246	328	4	5	6
1.12	5.73	234	312	467	623	2	3	4

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in-line spur



# PM1LIS

PARVALUX®

MOTOR	Permanent magnet DC motor
PROTECTION	Ventilated (IP21)
GEARBOX	In-line spur (LIS)
POWER	45 - 200 Watts
SPEED	4 - 667 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	5.76 kg
RADIAL LOAD	265 N
AXIAL LOAD	177 N
SHAFT TYPE	Single ended shaft
EXTRAS	See page 36



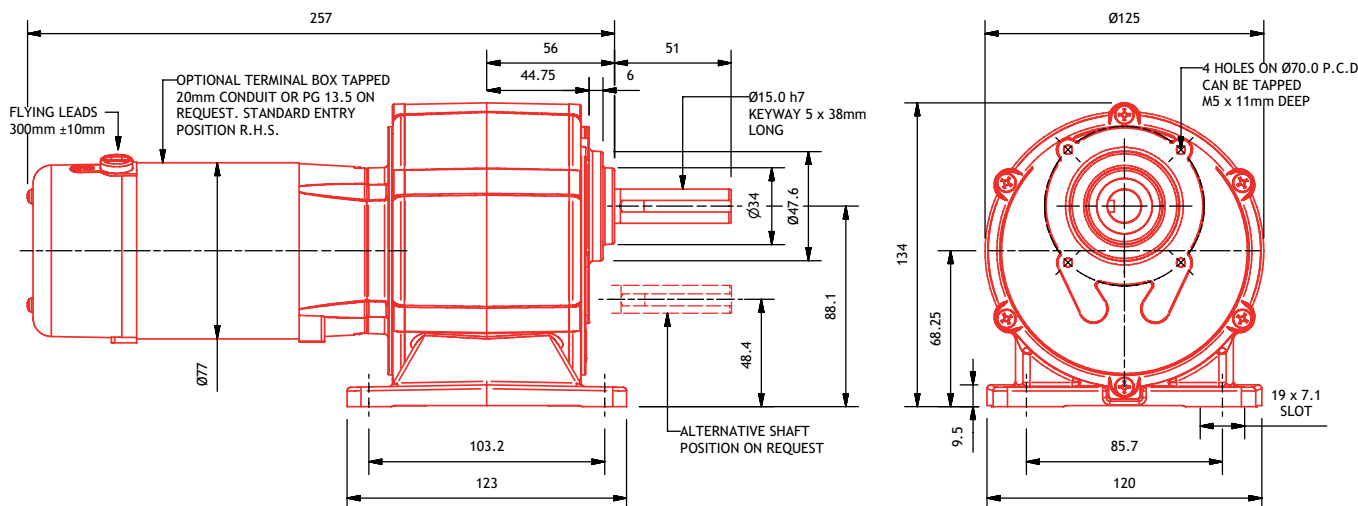
Motor Power Cont. (W)		45	60	90	120	TORQUE (Nm)		
Motor Power 1 Hour (W)		55	75	110	150			
Motor Power 15 Min (W)		75	100	150	200			
RATIO PINION	RATIO SPUR	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
3	115	4	6	9	12	71	74	74
2	115	7	9	13	17	47	58	74
3	56	9	12	18	24	37	45	61
1	115	13	17	26	35	24	29	40
3	25	20	27	40	53	16	20	27
1	56	27	36	54	71	12	15	21
2	25	30	40	60	80	11	13	18
1	25	60	80	120	160	5	7	9
3	6	83	111	167	222	4	5	7
2	6	125	167	250	333	3	3	4
1	6	250	333	500	667	1	2	2

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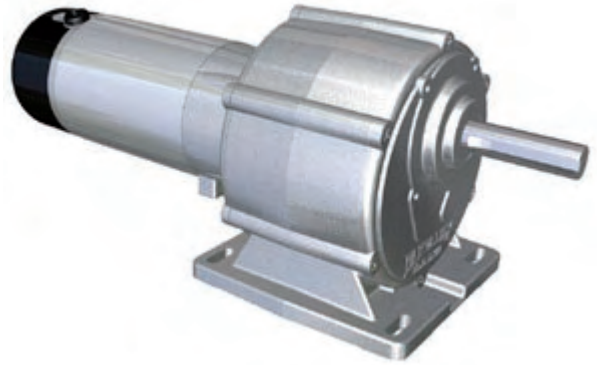
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# PM6LIS

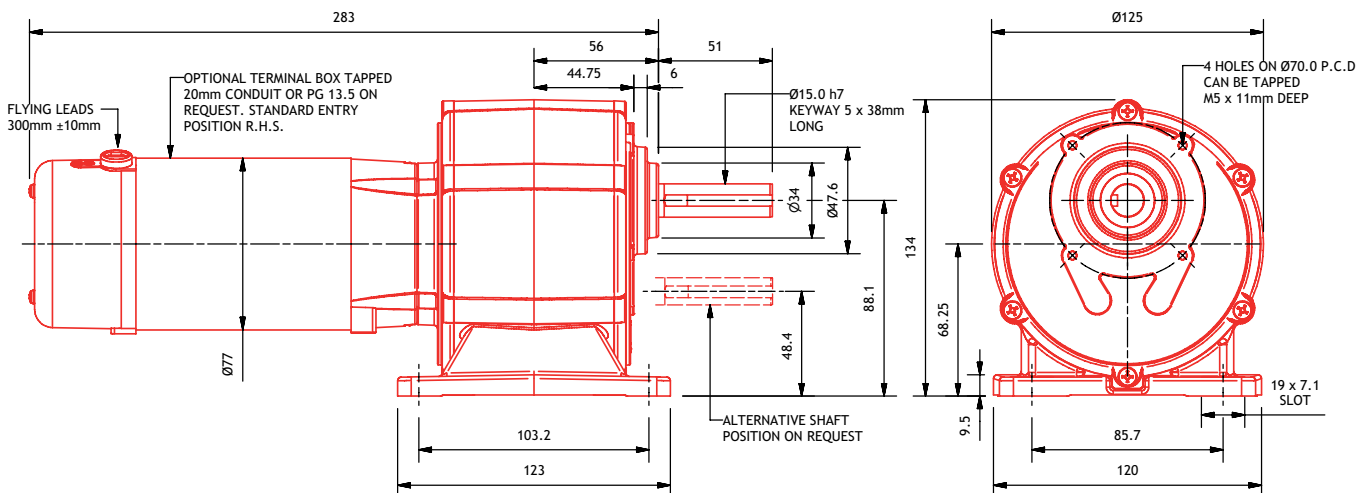
- MOTOR Permanent magnet DC motor
- PROTECTION Ventilated (IP21)
- GEARBOX In-line spur (LIS)
- POWER 75 - 330 Watts
- SPEED 4 - 667 rpm
- VOLTAGE 12V - 220V DC available range
- WEIGHT 6.30 kg
- RADIAL LOAD 265 N
- AXIAL LOAD 177 N
- SHAFT TYPE Single ended shaft
- EXTRAS See page 36



Motor Power Cont. (W)		75	100	150	200	TORQUE (Nm)		
Motor Power 1 Hour (W)		90	120	180	240			
Motor Power 15 Min (W)		125	165	245	330			
RATIO PINION	RATIO SPUR	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
3	115	4	6	9	12	74	74	74
2	115	7	9	13	17	74	74	74
3	56	9	12	18	24	61	74	98
1	115	13	17	26	35	40	47	63
3	25	20	27	40	53	27	33	44
1	56	27	36	54	71	21	25	33
2	25	30	40	60	80	18	22	29
1	25	60	80	120	160	9	11	15
3	6	83	111	167	222	7	8	11
2	6	125	167	250	333	4	5	7
1	6	250	333	500	667	2	3	4

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# PM60LIS

PARVALUX®

MOTOR	Permanent magnet DC motor
PROTECTION	Ventilated (IP21)
GEARBOX	In-line spur (LIS)
POWER	105 - 460 Watts
SPEED	4 - 667 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	6.55 kg
RADIAL LOAD	265 N
AXIAL LOAD	177 N
SHAFT TYPE	Single ended shaft
EXTRAS	See page 36



Motor Power Cont. (W)		105	140	210	280	TORQUE (Nm)		
Motor Power 1 Hour (W)		128	170	255	340			
Motor Power 15 Min (W)		172	230	345	460			
RATIO PINION	RATIO SPUR	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
3	115	4	6	9	12	74	74	74
2	115	7	9	13	17	74	74	74
3	56	9	12	18	24	86	100	100
1	115	13	17	26	35	55	67	74
3	25	20	27	40	53	38	47	51
1	56	27	36	54	71	29	35	47
2	25	30	40	60	80	26	31	42
1	25	60	80	120	160	13	16	21
3	6	83	111	167	222	9	11	15
2	6	125	167	250	333	6	7	10
1	6	250	333	500	667	3	4	5

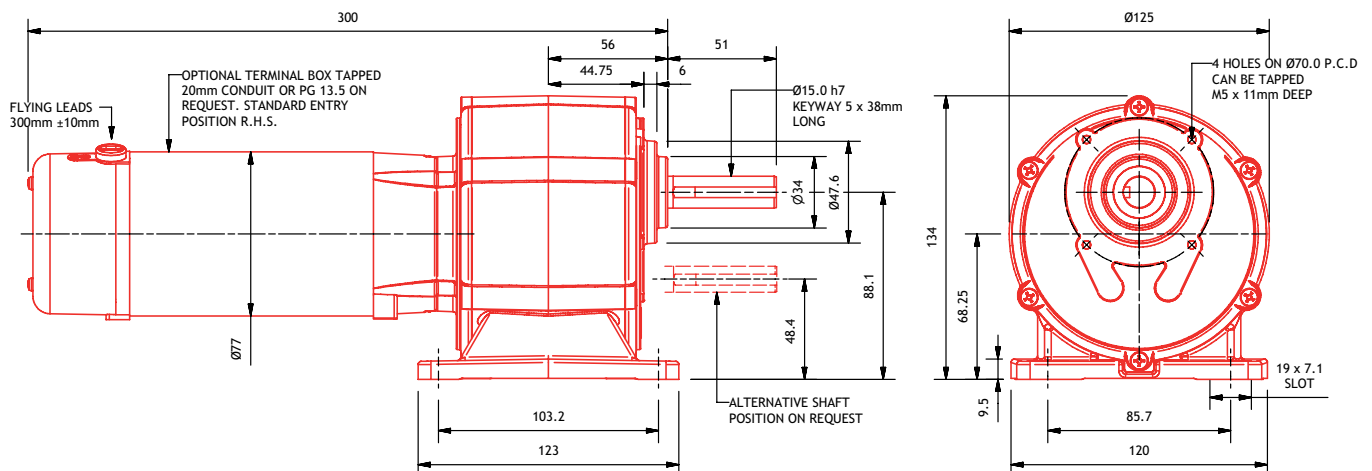
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in-line spur



# PM10LIS

MOTOR Permanent magnet DC motor  
 PROTECTION Totally enclosed (IP54)  
 GEARBOX In-line spur (LIS)  
 POWER 23 - 100 Watts  
 SPEED 4 - 667 rpm  
 VOLTAGE 12V - 220V DC available range  
 WEIGHT 4.77 kg  
 RADIAL LOAD 265 N  
 AXIAL LOAD 177 N  
 SHAFT TYPE Single ended shaft  
 EXTRAS See page 36

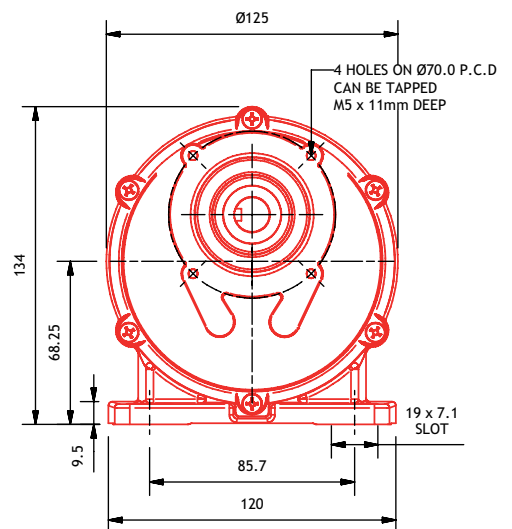
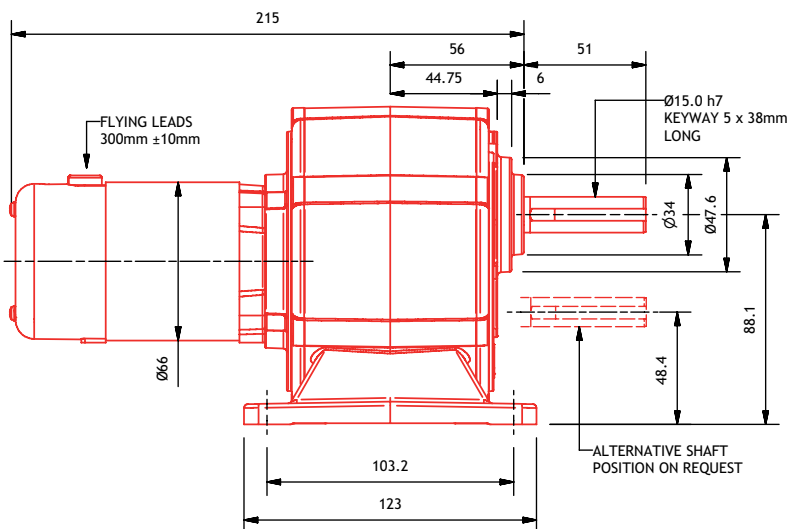


Motor Power Cont. (W)		23	30	45	60	TORQUE (Nm)		
Motor Power 1 Hour (W)		28	38	55	75			
Motor Power 15 Min (W)		35	50	70	100			
RATIO PINION	RATIO SPUR	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
3	115	4	6	9	12	36	43	55
2	115	7	9	13	17	24	29	37
3	56	9	12	18	24	18	23	29
1	115	13	17	26	35	12	14	18
3	25	20	27	40	53	8	10	13
1	56	27	36	54	71	6	8	10
2	25	30	40	60	80	5	7	9
1	25	60	80	120	160	3	3	4
3	6	83	111	167	222	2	2	3
2	6	125	167	250	333	1	2	2
1	6	250	333	500	667	1	1	1

Distribución de componentes eléctricos electrónicos



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# PM11LIS

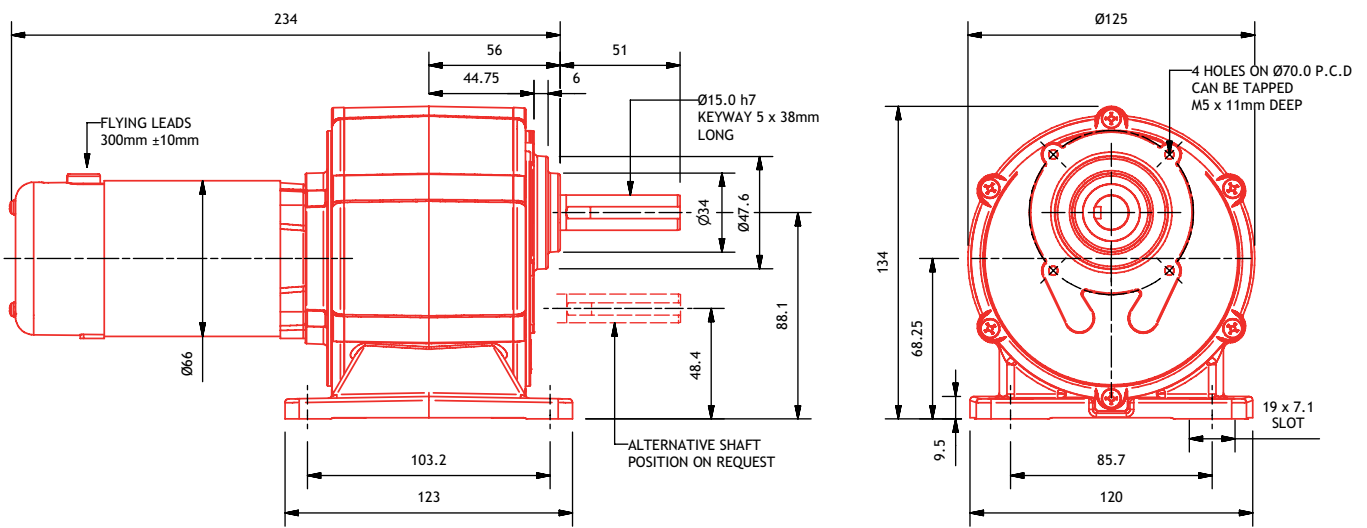
MOTOR Permanent magnet DC motor  
 PROTECTION Totally enclosed (IP54)  
 GEARBOX In-line spur (LIS)  
 POWER 33 - 130 Watts  
 SPEED 4 - 667 rpm  
 VOLTAGE 12V - 220V DC available range  
 WEIGHT 5.23 kg  
 RADIAL LOAD 265 N  
 AXIAL LOAD 177 N  
 SHAFT TYPE Single ended shaft  
 EXTRAS See page 36



Motor Power Cont. (W)		33	45	65	90	TORQUE (Nm)		
Motor Power 1 Hour (W)		40	55	80	110	CONTINUOUS	1 HOUR	15 MINUTE
Motor Power 15 Min (W)		50	65	100	130			
RATIO PINION	RATIO SPUR	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
3	115	4	6	9	12	51	63	74
2	115	7	9	13	17	34	42	53
3	56	9	12	18	24	27	33	41
1	115	13	17	26	35	17	21	26
3	25	20	27	40	53	12	15	18
1	56	27	36	54	71	9	11	14
2	25	30	40	60	80	8	10	12
1	25	60	80	120	160	4	5	6
3	6	83	111	167	222	3	4	4
2	6	125	167	250	333	2	2	3
1	6	250	333	500	667	1	1	1

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# PM3LIS

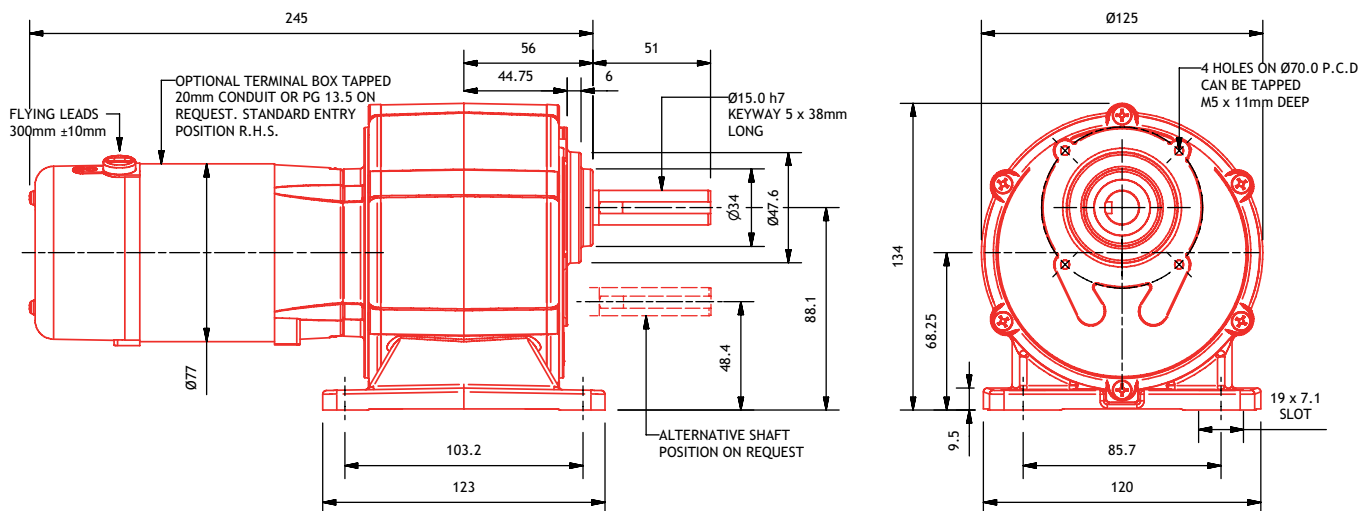
PARVALUX®

MOTOR Permanent magnet DC motor  
 PROTECTION Totally enclosed (IP54)  
 GEARBOX In-line spur (LIS)  
 POWER 33 - 150 Watts  
 SPEED 4 - 667 rpm  
 VOLTAGE 12V - 220V DC available range  
 WEIGHT 5.76 kg  
 RADIAL LOAD 265 N  
 AXIAL LOAD 177 N  
 SHAFT TYPE Single ended shaft  
 EXTRAS See page 36



Motor Power Cont. (W)		33	45	68	90	TORQUE (Nm)		
Motor Power 1 Hour (W)		45	60	90	120			
Motor Power 15 Min (W)		60	90	120	150			
RATIO PINION	RATIO SPUR	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
3	115	4	6	9	12	54	71	74
2	115	7	9	13	17	36	47	63
3	56	9	12	18	24	28	37	49
1	115	13	17	26	35	18	24	32
3	25	20	27	40	53	12	16	22
1	56	27	36	54	71	9	12	16
2	25	30	40	60	80	8	11	15
1	25	60	80	120	160	4	5	7
3	6	83	111	167	222	3	4	5
2	6	125	167	250	333	2	3	4
1	6	250	333	500	667	1	1	2

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# PM4LIS

MOTOR Permanent magnet DC motor  
 PROTECTION Totally enclosed (IP54)  
 GEARBOX In-line spur (LIS)  
 POWER 45 - 200 Watts  
 SPEED 4 - 667 rpm  
 VOLTAGE 12V - 220V DC available range  
 WEIGHT 6.11 kg  
 RADIAL LOAD 265 N  
 AXIAL LOAD 177 N  
 SHAFT TYPE Single ended shaft  
 EXTRAS See page 36

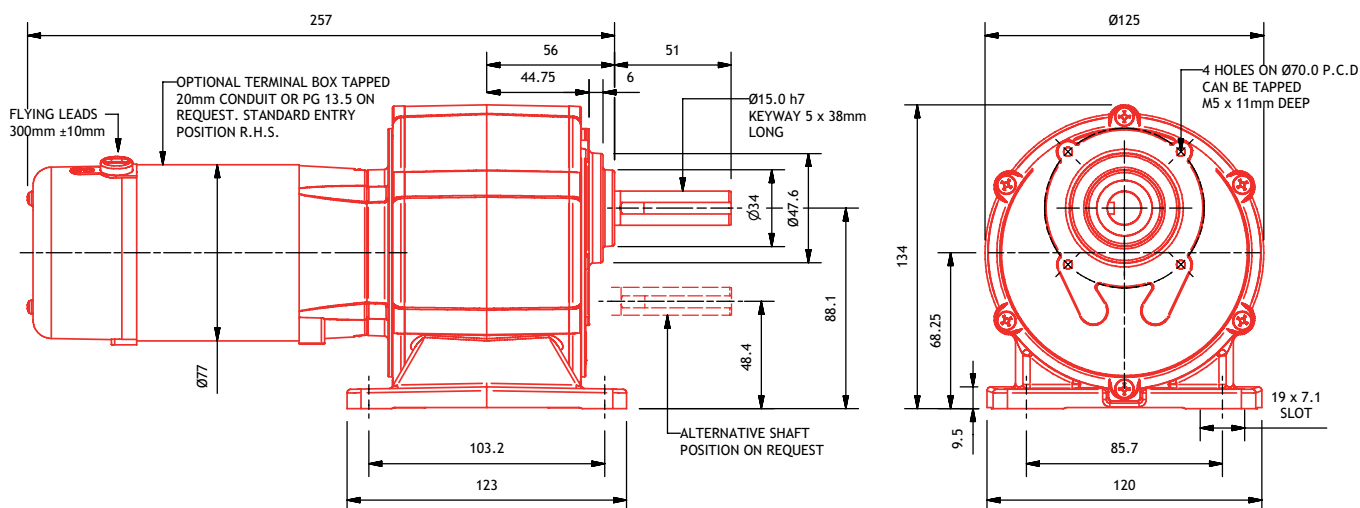


Motor Power Cont. (W)		45	60	90	120	TORQUE (Nm)		
Motor Power 1 Hour (W)		60	80	120	160			
Motor Power 15 Min (W)		80	120	160	200			
RATIO PINION	RATIO SPUR	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
3	115	4	6	9	12	71	74	74
2	115	7	9	13	17	47	63	74
3	56	9	12	18	24	37	49	65
1	115	13	17	26	35	24	32	42
3	25	20	27	40	53	16	22	29
1	56	27	36	54	71	12	16	22
2	25	30	40	60	80	11	15	19
1	25	60	80	120	160	5	7	10
3	6	83	111	167	222	4	5	7
2	6	125	167	250	333	3	4	5
1	6	250	333	500	667	1	2	2

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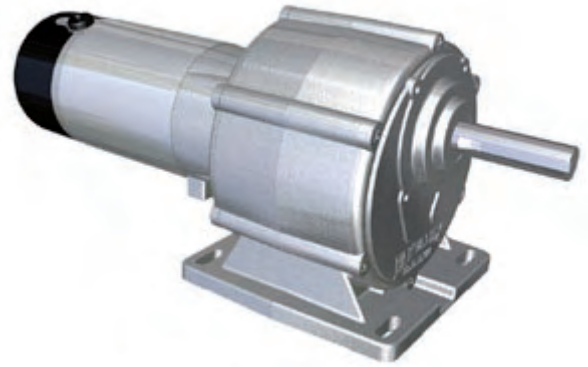
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in-line spur



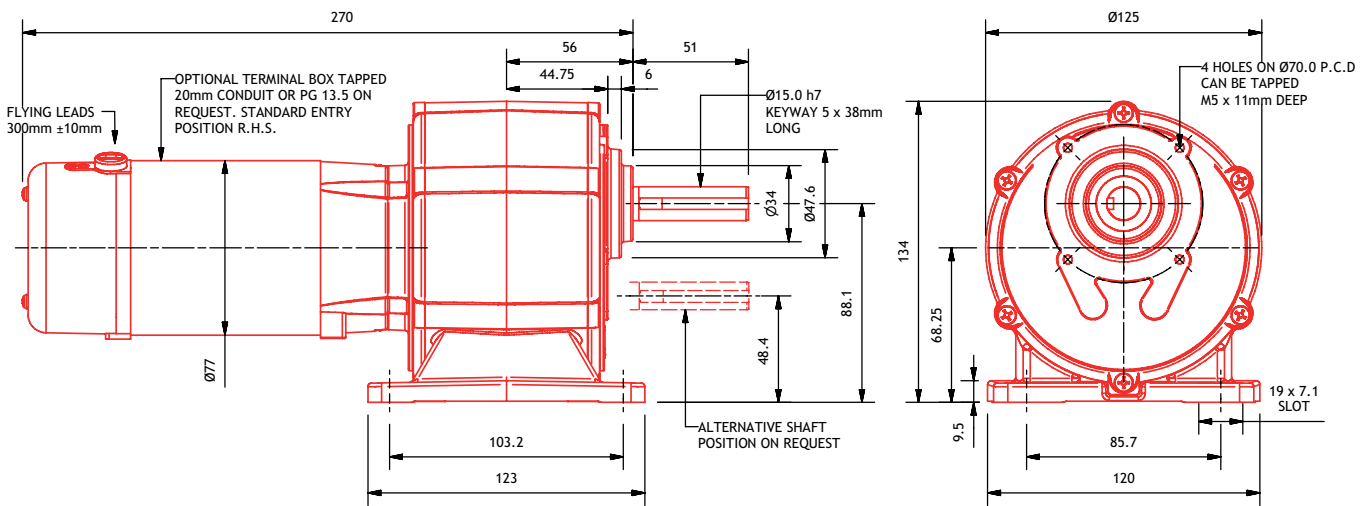
# PM5LIS

MOTOR Permanent magnet DC motor  
 PROTECTION Totally enclosed (IP54)  
 GEARBOX In-line spur (LIS)  
 POWER 60 - 250 Watts  
 SPEED 4 - 667 rpm  
 VOLTAGE 12V - 220V DC available range  
 WEIGHT 6.30 kg  
 RADIAL LOAD 265 N  
 AXIAL LOAD 177 N  
 SHAFT TYPE Single ended shaft  
 EXTRAS See page 36



Motor Power Cont. (W)		60	80	120	160	TORQUE (Nm)		
Motor Power 1 Hour (W)		75	100	150	200			
Motor Power 15 Min (W)		100	150	200	250			
RATIO PINION	RATIO SPUR	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
3	115	4	6	9	12	74	74	74
2	115	7	9	13	17	63	74	74
3	56	9	12	18	24	49	61	82
1	115	13	17	26	35	32	40	53
3	25	20	27	40	53	22	27	37
1	56	27	36	54	71	16	21	27
2	25	30	40	60	80	15	18	24
1	25	60	80	120	160	7	9	12
3	6	83	111	167	222	5	7	9
2	6	125	167	250	333	4	4	6
1	6	250	333	500	667	2	2	3

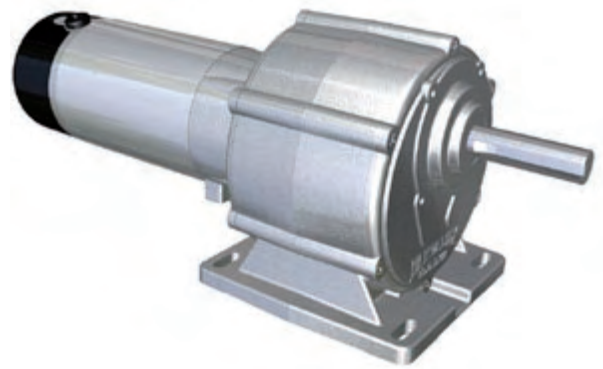
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# PM50LIS

PARVALUX®

MOTOR	Permanent magnet DC motor
PROTECTION	Totally enclosed (IP54)
GEARBOX	In-line spur (LIS)
POWER	80 - 375 Watts
SPEED	4 - 667 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	6.55 kg
RADIAL LOAD	265 N
AXIAL LOAD	177 N
SHAFT TYPE	Single ended shaft
EXTRAS	See page 36



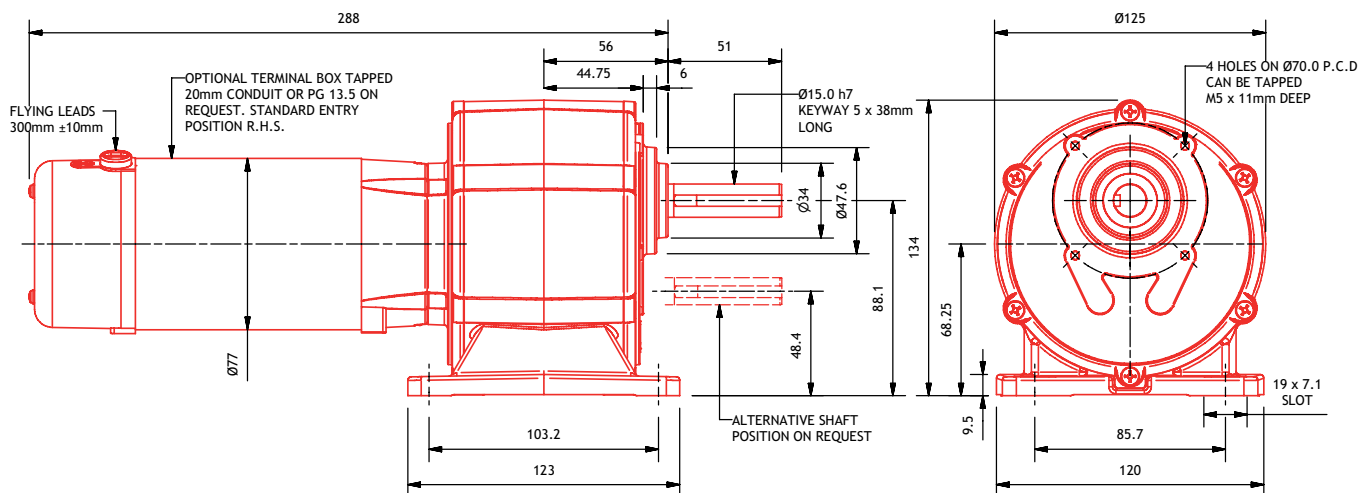
Motor Power Cont. (W)		80	105	155	205	TORQUE (Nm)		
Motor Power 1 Hour (W)		100	135	200	265			
Motor Power 15 Min (W)		140	185	280	375			
RATIO PINION	RATIO SPUR	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
3	115	4	6	9	12	74	74	74
2	115	7	9	13	17	74	74	74
3	56	9	12	18	24	63	82	100
1	115	13	17	26	35	41	53	74
3	25	20	27	40	53	28	37	51
1	56	27	36	54	71	21	27	38
2	25	30	40	60	80	19	24	34
1	25	60	80	120	160	9	12	17
3	6	83	111	167	222	7	9	12
2	6	125	167	250	333	5	6	8
1	6	250	333	500	667	2	3	4

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in-line spur



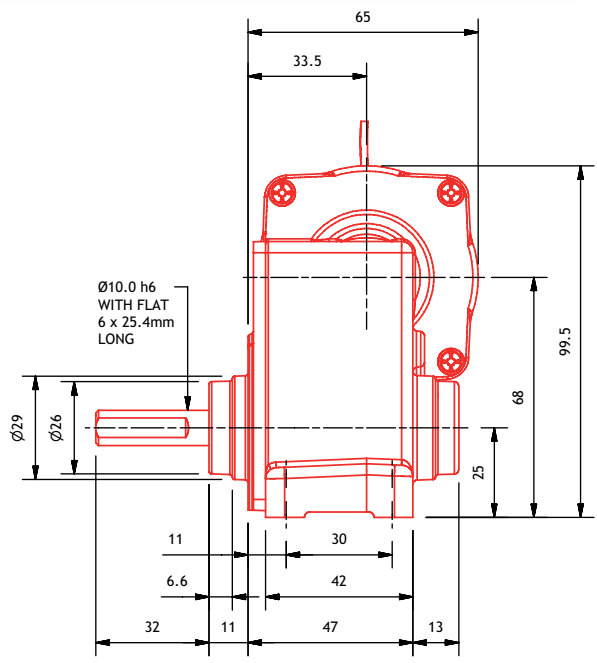
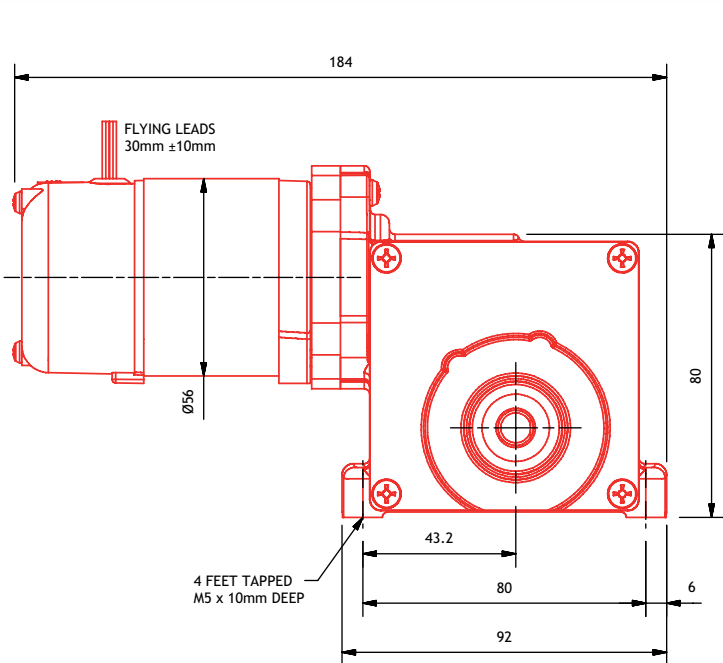
# PM7SWS

- MOTOR Permanent magnet DC motor
- PROTECTION Totally enclosed (IP54)
- GEARBOX Worm spur (SWS)
- POWER 7.5 - 33 Watts
- SPEED 1 - 101 rpm
- VOLTAGE 12V - 220V DC available range
- WEIGHT 1.35 kg
- RADIAL LOAD 177 N
- AXIAL LOAD 112 N
- SHAFT TYPE Single ended or double ended shaft as standard
- EXTRAS See page 36



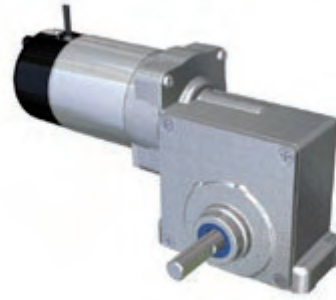
Motor Power Cont. (W)		7.5	10	15	20	TORQUE (Nm)		
Motor Power 1 Hour (W)		10	13	20	25	CONTINUOUS	1 HOUR	15 MINUTE
Motor Power 15 Min (W)		13	17	25	33			
Ratio Worm	Ratio Spur	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
44	31.3	1	1.5	2	3	11	11	11
22 1/2	31.3	2	3	4	6	11	11	11
12 1/2	31.3	4	5	8	10	10.5	11	11
9 1/3	31.3	5	7	10	14	8	10	11
9 1/3	23.5	7	9	14	18	6.5	9	11
6 1/4	23.5	10	14	20	27	5	6	8
12 1/2	9.6	13	17	25	33	3	5	6
9 1/3	9.6	17	22	33	45	3	4	5
5 1/6	9.6	30	40	60	81	2	2	3
4 1/8	9.6	38	51	76	101	1.5	2	2.5

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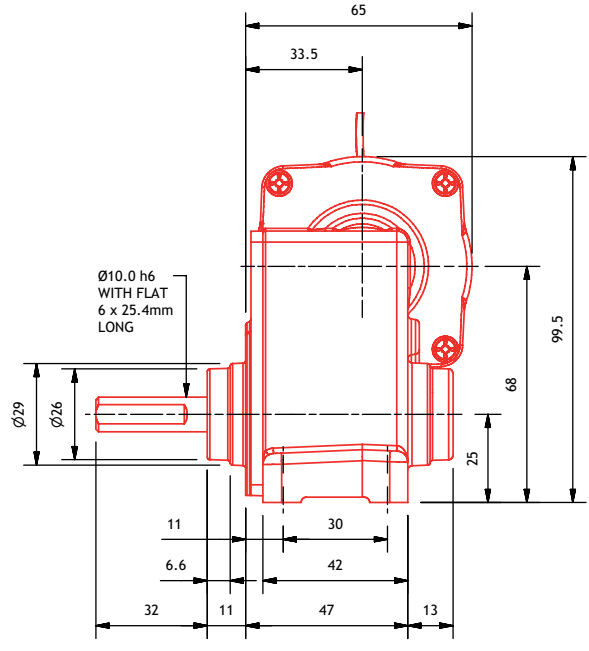
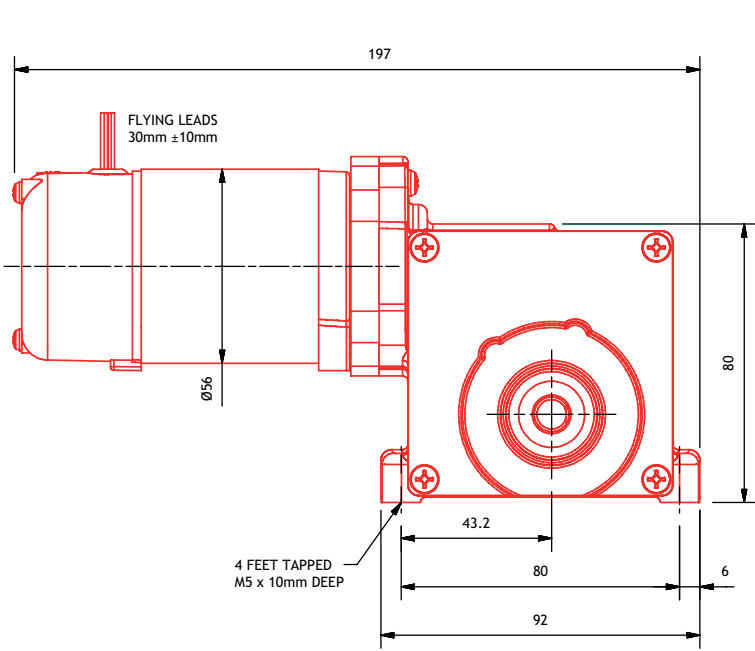
# PM8SWS

MOTOR	Permanent magnet DC motor
PROTECTION	Totally enclosed (IP54)
GEARBOX	Worm spur (SWS)
POWER	13 - 48 Watts
SPEED	1 - 101 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	1.55 kg
RADIAL LOAD	177 N
AXIAL LOAD	112 N
SHAFT TYPE	Single ended or double ended shaft as standard
EXTRAS	See page 36



		13	17	25	33	TORQUE (Nm)		
Motor Power Cont. (W)		13	17	25	33			
Motor Power 1 Hour (W)		15	21	33	40			
Motor Power 15 Min (W)		18	24	36	48			
Ratio Worm	Ratio Spur	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
44	31.3	1	1.5	2	3	11	11	11
22 1/2	31.3	2	3	4	6	11	11	11
12 1/2	31.3	4	5	8	10	11	11	11
9 1/3	31.3	5	7	10	14	11	11	11
9 1/3	23.5	7	9	14	18	11	11	11
6 1/4	23.5	10	14	20	27	8	11	11
12 1/2	9.6	13	17	25	33	6	8	8
9 1/3	9.6	17	22	33	45	5	6	7
5 1/6	9.6	30	40	60	81	3	4	4
4 1/8	9.6	38	51	76	101	2.5	3	3.6

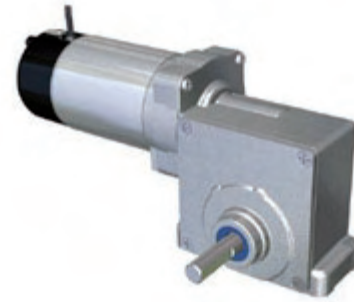
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worm spur

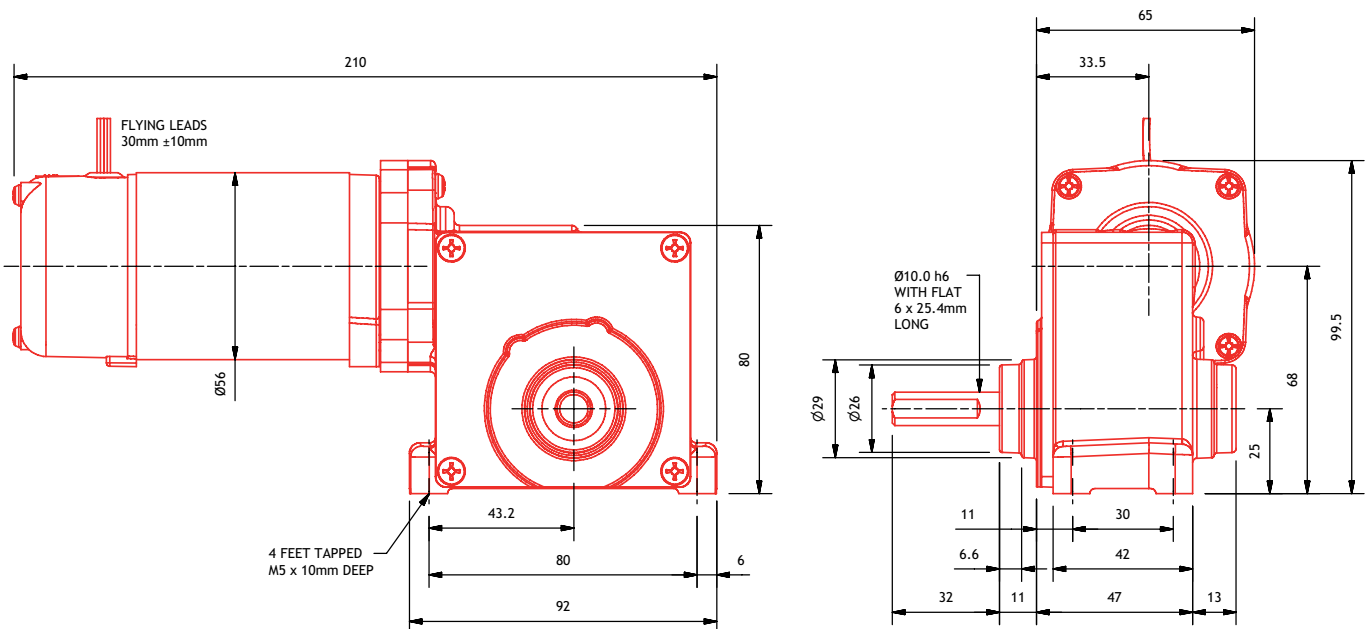
# PM9SWS

MOTOR Permanent magnet DC motor  
 PROTECTION Totally enclosed (IP54)  
 GEARBOX Worm spur (SWS)  
 POWER 19 - 70 Watts  
 SPEED 1 - 101 rpm  
 VOLTAGE 12V - 220V DC available range  
 WEIGHT 1.75 kg  
 RADIAL LOAD 177 N  
 AXIAL LOAD 112 N  
 SHAFT TYPE Single ended or double ended shaft as standard  
 EXTRAS See page 36



Motor Power Cont. (W)		19	25	38	50	TORQUE (Nm)		
Motor Power 1 Hour (W)		24	33	45	60			
Motor Power 15 Min (W)		26	36	55	70			
Ratio Worm	Ratio Spur	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
44	31.3	1	1.5	2	3	11	11	11
22 1/2	31.3	2	3	4	6	11	11	11
12 1/2	31.3	4	5	8	10	11	11	11
9 1/3	31.3	5	7	10	14	11	11	11
9 1/3	23.5	7	9	14	18	11	11	11
6 1/4	23.5	10	14	20	27	11	11	11
12 1/2	9.6	13	17	25	33	9	10	11
9 1/3	9.6	17	22	33	45	7	8	10
5 1/6	9.6	30	40	60	81	4	5	6
4 1/8	9.6	38	51	76	101	4	4	5

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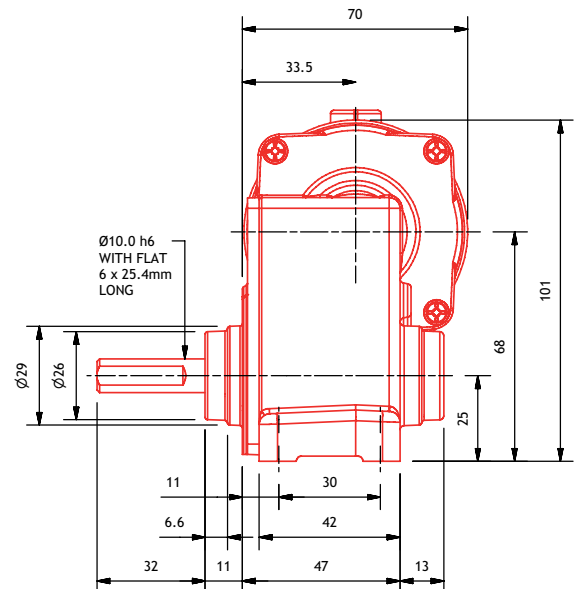
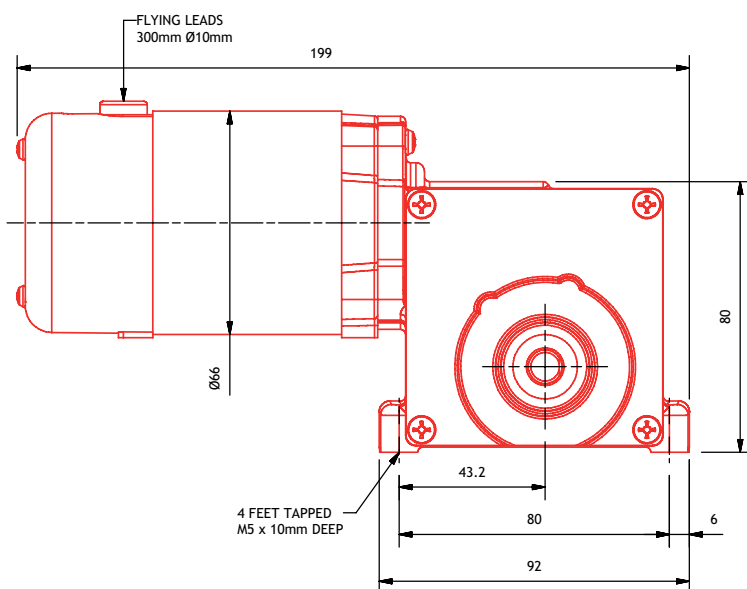
# PM10SWS

MOTOR	Permanent magnet DC motor
PROTECTION	Totally enclosed (IP54)
GEARBOX	Worm spur (SWS)
POWER	23 - 100 Watts
SPEED	1 - 101 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	1.97 kg
RADIAL LOAD	177 N
AXIAL LOAD	112 N
SHAFT TYPE	Single ended or double ended shaft as standard
EXTRAS	See page 36



Motor Power Cont (W)		23	30	45	60	TORQUE (Nm)		
Motor Power 1 Hour (W)		28	38	55	75			
Motor Power 15 Min (W)		35	50	70	100			
Ratio Worm	Ratio Spur	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
44	31.3	1	1.5	2	3	11	11	11
22 1/2	31.3	2	3	4	6	11	11	11
12 1/2	31.3	4	5	8	10	11	11	11
9 1/3	31.3	5	7	10	14	11	11	11
9 1/3	23.5	7	9	14	18	11	11	11
6 1/4	23.5	10	14	20	27	11	11	11
12 1/2	9.6	13	17	25	33	10	11	11
9 1/3	9.6	17	22	33	45	8	10	11
5 1/6	9.6	30	40	60	81	5	6	8
4 1/8	9.6	38	51	76	101	4	5	7

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worm spur

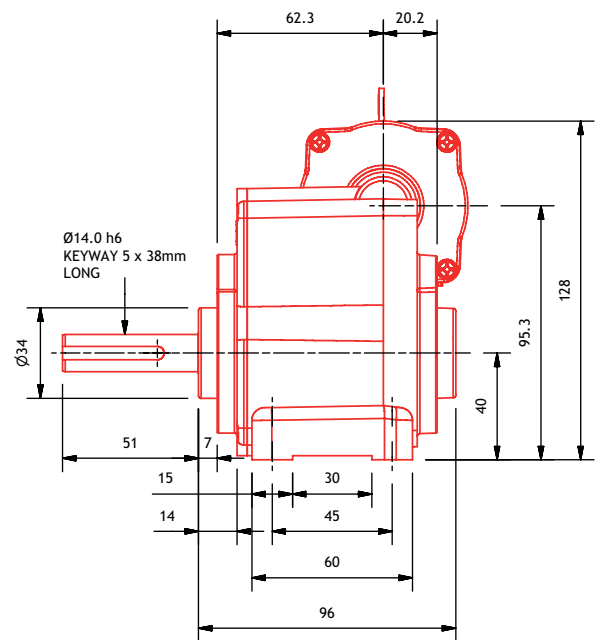
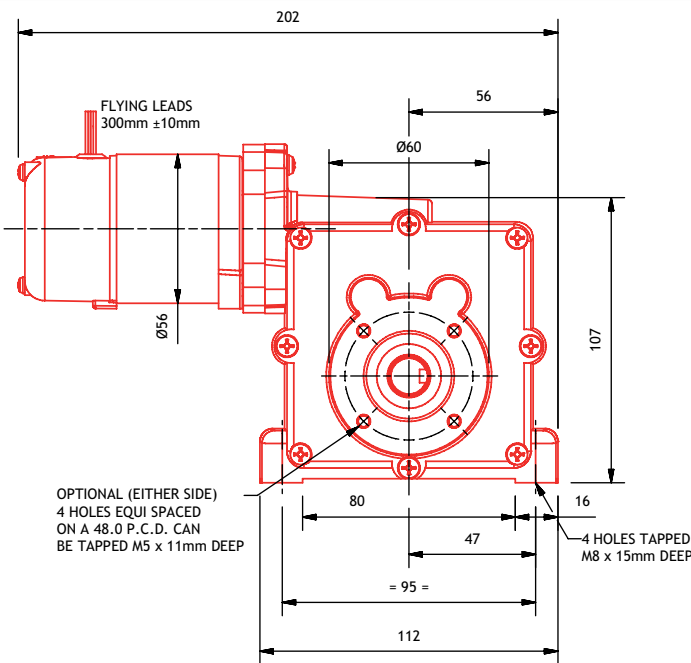
# PM7MWS

MOTOR Permanent magnet DC motor  
 PROTECTION Totally enclosed (IP54)  
 GEARBOX Worm spur (MWS)  
 POWER 7.5 - 33 Watts  
 SPEED 1 - 149 rpm  
 VOLTAGE 12V - 220V DC available range  
 WEIGHT 3.25 kg  
 RADIAL LOAD 353 N  
 AXIAL LOAD 177 N  
 SHAFT TYPE Single ended or double ended shaft as standard  
 EXTRAS See page 36



Motor Power Cont. (W)		7.5	10	15	20	TORQUE (Nm)		
Motor Power 1 Hour (W)		10	13	20	25	CONTINUOUS	1 HOUR	15 MINUTE
Motor Power 15 Min (W)		13	17	25	33			
Ratio Worm	Ratio Spur	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
40	35.39	1	1.4	2	3	27	35	44
27	35.39	1.6	2	3	4	21	28	35
18 1/2	35.39	2.3	3	5	6	16	22	27
12 1/2	35.39	3	5	7	9	12	16	20
9 1/3	35.39	5	6	9	12	10	13	17
7 1/4	35.39	6	8	12	16	8	11	14
5 1/6	35.39	8	11	16	22	6	8	10
4 1/8	35.39	10	14	21	27	5	7	9
8 1/3	15.1	12	16	24	32	4	5	7
7 1/4	15.1	14	18	27	37	3	5	6
6 1/4	15.1	16	21	32	42	3	4	5
4 1/8	15.1	24	32	48	64	2.3	3	4
8 1/3	6.5	28	37	55	74	1.8	2.4	3
7 1/4	6.5	32	42	64	85	1.6	2.1	2.6
6 1/4	6.5	37	49	74	98	1.4	2	2.4
5 1/6	6.5	45	60	89	119	1.2	1.6	2
4 1/8	6.5	56	75	112	149	1	1.4	1.7

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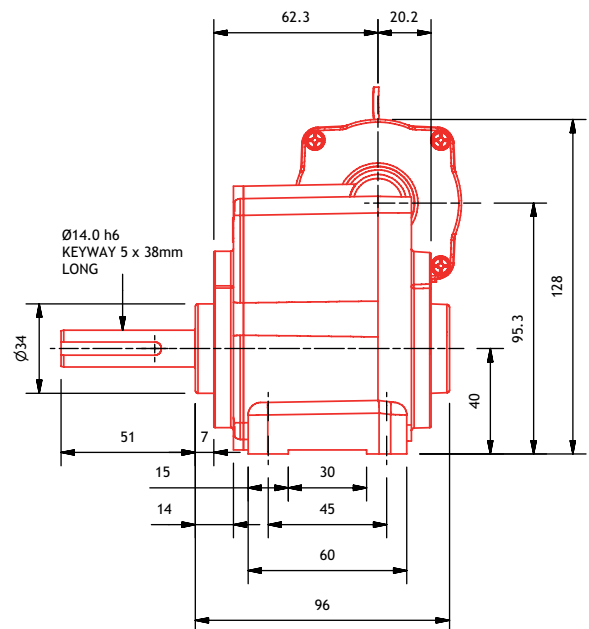
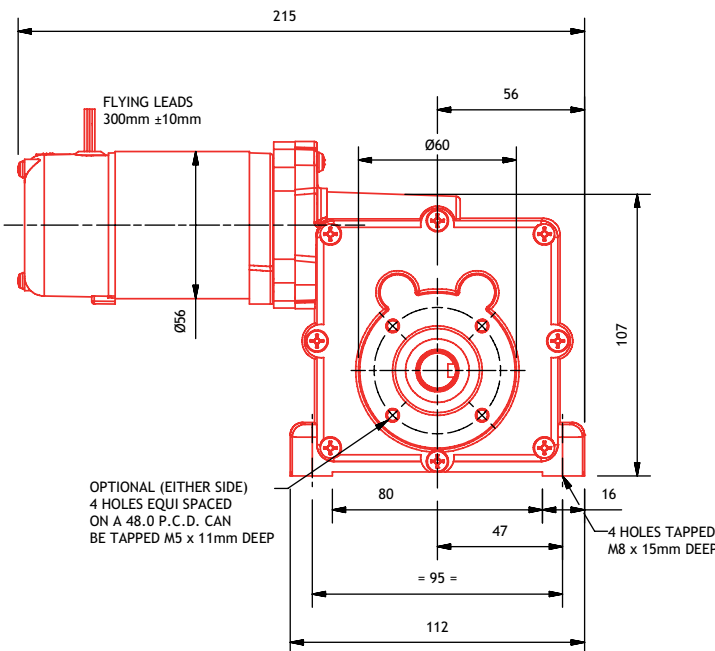
# PM8MWS

MOTOR	Permanent magnet DC motor
PROTECTION	Totally enclosed (IP54)
GEARBOX	Worm spur (MWS)
POWER	13 - 48 Watts
SPEED	1 - 149 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	3.45 kg
RADIAL LOAD	353 N
AXIAL LOAD	177 N
SHAFT TYPE	Single ended or double ended shaft as standard
EXTRAS	See page 36



Motor Power Cont (W)		13	17	25	33	TORQUE (Nm)		
Motor Power 1 Hour (W)		15	21	33	40			
Motor Power 15 Min (W)		18	24	36	48			
Ratio Worm	Ratio Spur	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
4 0	35.39	1	1.4	2	3	44	45	45
27	35.39	1.6	2	3	4	35	45	45
18 1/2	35.39	2.3	3	5	6	27	36	39
12 1/2	35.39	3	5	7	9	20	27	29
9 1/3	35.39	5	6	9	12	17	22	24
7 1/4	35.39	6	8	12	16	14	18	20
5 1/6	35.39	8	11	16	22	10	13	14
4 1/8	35.39	10	14	21	27	9	12	13
8 1/3	15.1	12	16	24	32	7	9	10
7 1/4	15.1	14	18	27	37	6	8	8
6 1/4	15.1	16	21	32	42	5	7	7
4 1/8	15.1	24	32	48	64	4	5	5
8 1/3	6.5	28	37	55	74	3	4	4
7 1/4	6.5	32	42	64	85	2.6	3.5	3.8
6 1/4	6.5	37	49	74	98	2.4	3	3.4
5 1/6	6.5	45	60	89	119	2	2.7	3
4 1/8	6.5	56	75	112	149	1.7	2.3	2.5

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worm spur

# PM9MWS

MOTOR	Permanent magnet DC motor
PROTECTION	Totally enclosed (IP54)
GEARBOX	Worm spur (MWS)
POWER	19 - 70 Watts
SPEED	1 - 149 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	3.65 kg
RADIAL LOAD	353 N
AXIAL LOAD	177 N
SHAFT TYPE	Single ended or double ended shaft as standard
EXTRAS	See page 36

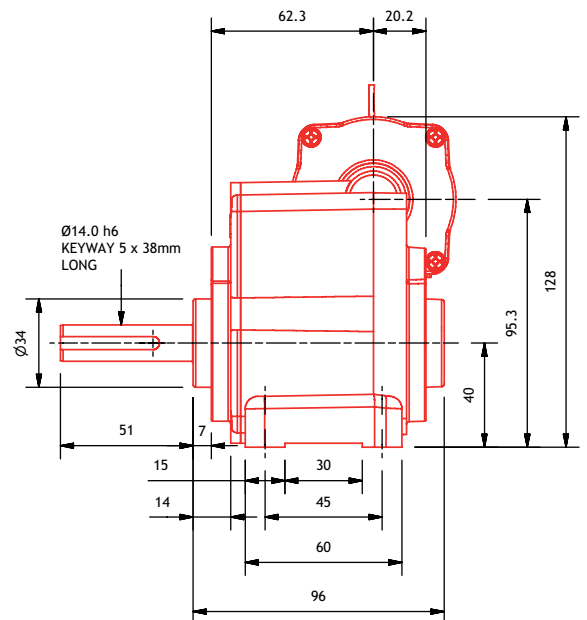
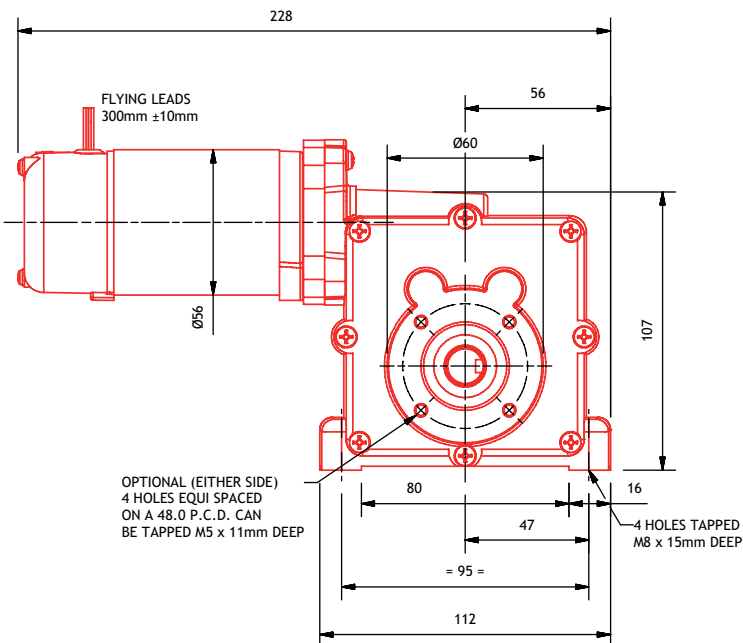


Motor Power Cont. (W)		19	25	38	50	TORQUE (Nm)		
Motor Power 1 Hour (W)		24	33	45	60			
Motor Power 15 Min (W)		26	36	55	70			
Ratio Worm	Ratio Spur	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
4 0	35.39	1	1.4	2	3	45	45	45
27	35.39	1.6	2	3	4	45	45	45
18 1/2	35.39	2.3	3	5	6	41	45	45
12 1/2	35.39	3	5	7	9	31	37	45
9 1/3	35.39	5	6	9	12	25	30	36
7 1/4	35.39	6	8	12	16	21	25	30
5 1/6	35.39	8	11	16	22	15	18	21
4 1/8	35.39	10	14	21	27	13	16	19
8 1/3	15.1	12	16	24	32	10	12	15
7 1/4	15.1	14	18	27	37	9	10	13
6 1/4	15.1	16	21	32	42	8	9	11
4 1/8	15.1	24	32	48	64	6	7	8
8 1/3	6.5	28	37	55	74	4	5	6
7 1/4	6.5	32	42	64	85	4.0	4.8	5.8
6 1/4	6.5	37	49	74	98	3.6	4	5.2
5 1/6	6.5	45	60	89	119	3	3.7	4
4 1/8	6.5	56	75	112	149	2.6	3.1	3.8

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# PM10MWS

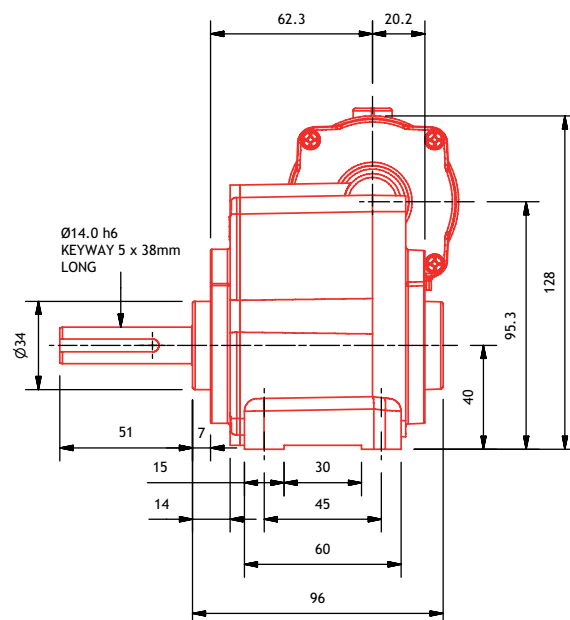
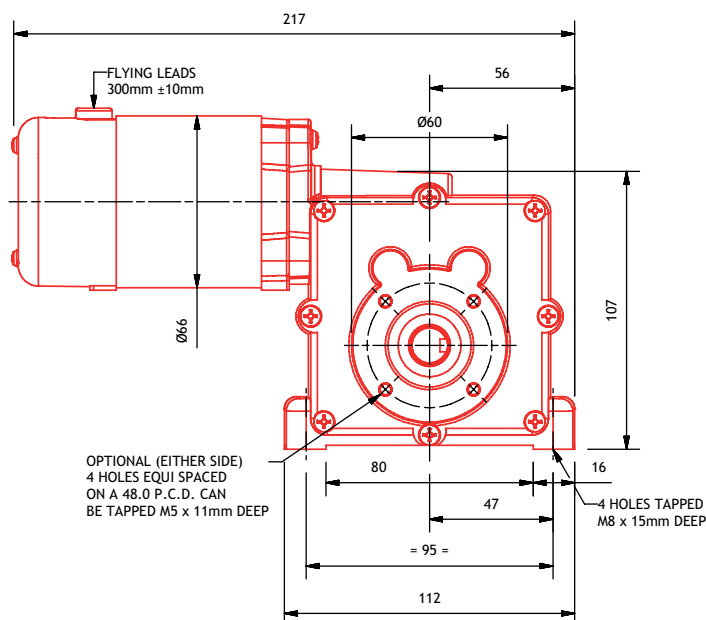
MOTOR	Permanent magnet DC motor
PROTECTION	Totally enclosed (IP54)
GEARBOX	Worm spur (MWS)
POWER	23 - 100 Watts
SPEED	1 - 149 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	3.87 kg
RADIAL LOAD	353 N
AXIAL LOAD	177 N
SHAFT TYPE	Single ended or double ended shaft as standard
EXTRAS	See page 36



Motor Power Cont (W)	23	30	45	60	TORQUE (Nm)			
Motor Power 1 Hour (W)	28	38	55	75	CONTINUOUS	1 HOUR	15 MINUTE	
Motor Power 15 Min (W)	35	50	70	100				
Ratio Worm	Ratio Spur	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
4 0	35.39	1	1.4	2	3	45	45	45
27	35.39	1.6	2	3	4	45	45	45
18 1/2	35.39	2.3	3	5	6	45	45	45
12 1/2	35.39	3	5	7	9	37	45	45
9 1/3	35.39	5	6	9	12	30	36	45
7 1/4	35.39	6	8	12	16	25	30	38
5 1/6	35.39	8	11	16	22	18	21	27
4 1/8	35.39	10	14	21	27	16	19	25
8 1/3	15.1	12	16	24	32	12	15	19
7 1/4	15.1	14	18	27	37	10	13	16
6 1/4	15.1	16	21	32	42	9	11	15
4 1/8	15.1	24	32	48	64	7	8	11
8 1/3	6.5	28	37	55	74	5	6	8
7 1/4	6.5	32	42	64	85	4.8	5.8	7.4
6 1/4	6.5	37	49	74	98	4.3	5	6.6
5 1/6	6.5	45	60	89	119	4	4.5	6
4 1/8	6.5	56	75	112	149	3.1	3.8	4.8

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worm spur

# PM11MWS

MOTOR	Permanent magnet DC motor
PROTECTION	Totally enclosed (IP54)
GEARBOX	Worm spur (MWS)
POWER	33 - 130 Watts
SPEED	1 - 149 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	4.33 kg
RADIAL LOAD	353 N
AXIAL LOAD	177 N
SHAFT TYPE	Single ended or double ended shaft as standard
EXTRAS	See page 36



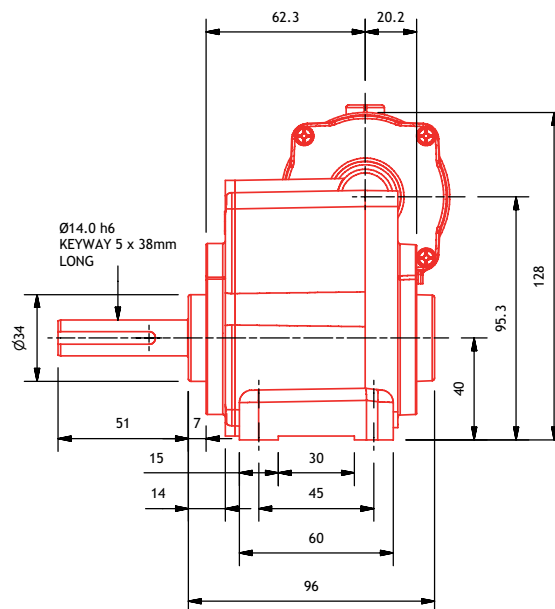
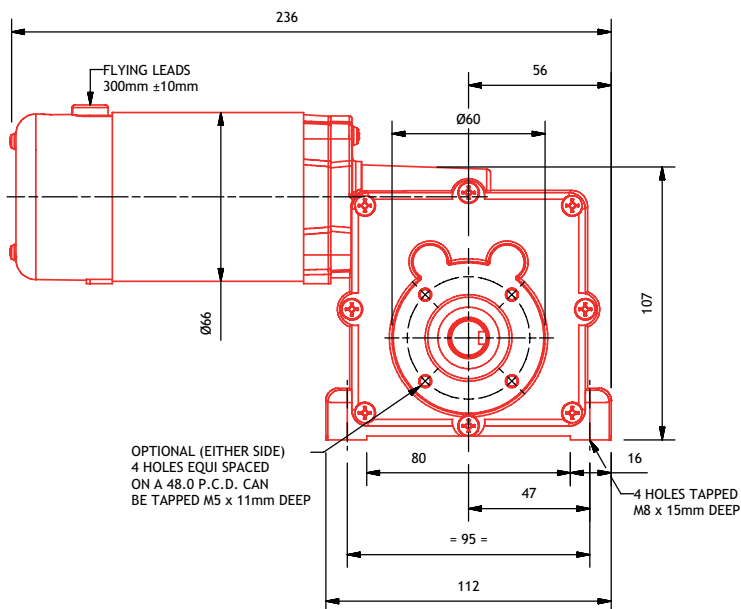
Motor Power Cont. (W)	33	45	65	90	TORQUE (Nm)			
Motor Power 1 Hour (W)	40	55	80	110				
Motor Power 15 Min (W)	50	65	100	130				
Ratio Worm	Ratio Spur	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
4 0	35.39	1	1.4	2	3	45	45	45
27	35.39	1.6	2	3	4	45	45	45
18 1/2	35.39	2.3	3	5	6	45	45	45
12 1/2	35.39	3	5	7	9	45	45	45
9 1/3	35.39	5	6	9	12	43	45	45
7 1/4	35.39	6	8	12	16	36	44	45
5 1/6	35.39	8	11	16	22	25	31	39
4 1/8	35.39	10	14	21	27	23	28	35
8 1/3	15.1	12	16	24	32	17	21	22
7 1/4	15.1	14	18	27	37	15	19	22
6 1/4	15.1	16	21	32	42	14	17	21
4 1/8	15.1	24	32	48	64	10	12	15
8 1/3	6.5	28	37	55	74	8	9	9
7 1/4	6.5	32	42	64	85	6.9	8.5	9.0
6 1/4	6.5	37	49	74	98	6.1	8	9.0
5 1/6	6.5	45	60	89	119	5	6.5	8
4 1/8	6.5	56	75	112	149	4.5	5.5	6.9

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# PM1LWS

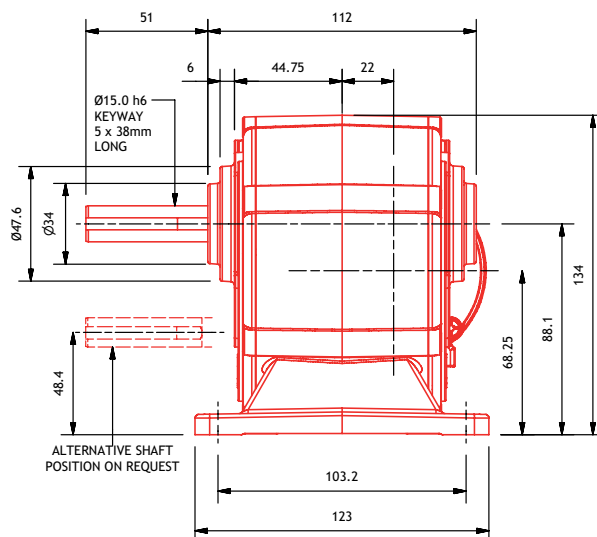
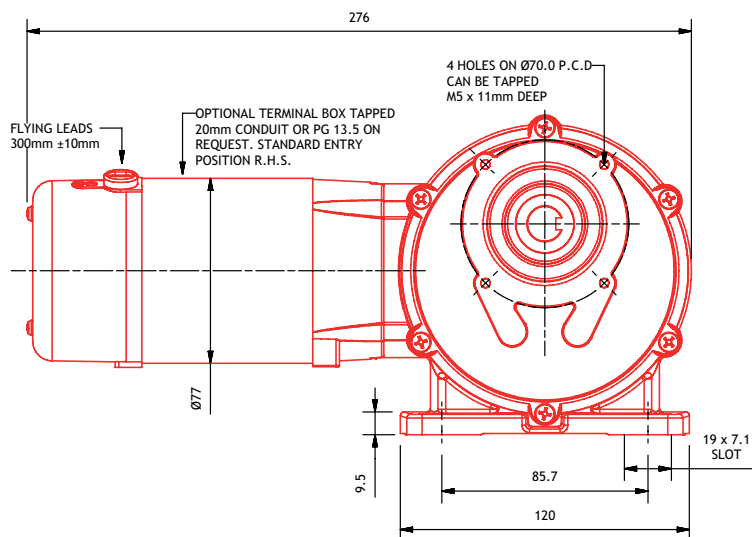
PARVALUX®

MOTOR	Permanent magnet DC motor
PROTECTION	Ventilated (IP21)
GEARBOX	Worm spur (LWS)
POWER	45 - 200 Watts
SPEED	0.4 - 80 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	6.02 kg
RADIAL LOAD	446 N
AXIAL LOAD	226 N
SHAFT TYPE	Single ended or double ended shaft as standard
EXTRAS	See page 36



Motor Power Cont. (W)		45	60	90	120	TORQUE (Nm)		
Motor Power 1 Hour (W)		55	75	110	150			
Motor Power 15 Min (W)		75	100	150	200			
Ratio Worm	Ratio Spur	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
3 0	115	0.4	0.6	0.9	1.2	100	100	100
16 1/2	115	0.8	1.1	1.6	2.1	100	100	100
8 1/3	115	1.6	2.1	3.1	4	100	100	100
7 1/4	115	1.8	2.4	3.6	5	100	100	100
12 1/2	56	2.1	2.9	4.3	6	100	100	100
10 1/3	56	2.6	3.5	5.2	7	96	100	100
9 1/3	56	2.9	3.8	5.7	8	89	100	100
8 1/3	56	3.2	4.3	6.4	9	82	100	100
7 1/4	56	3.7	4.9	7.4	10	73	90	100
6 1/4	56	4.3	5.7	8.6	11	66	80	100
13 1/3	25	4.5	6.0	9	12	51	62	62
12 1/2	25	4.8	6.4	10	13	49	60	62
10 1/3	25	5.8	8	12	15	43	52	62
9 1/3	25	6.4	9	13	17	40	48	62
8 1/3	25	7	10	14	19	36	45	61
6 1/4	25	10	13	19	26	29	36	49
16 1/2	6	15	20	30	40	14	18	24
9 1/3	6	27	36	54	71	10	12	16
8 1/3	6	30	40	60	80	9	11	15

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worm spur

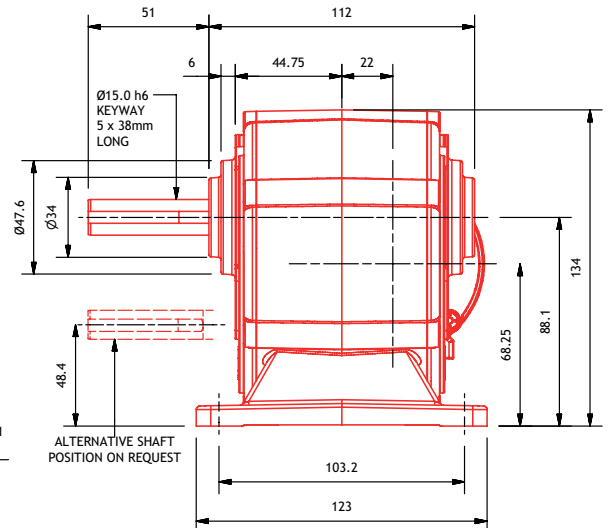
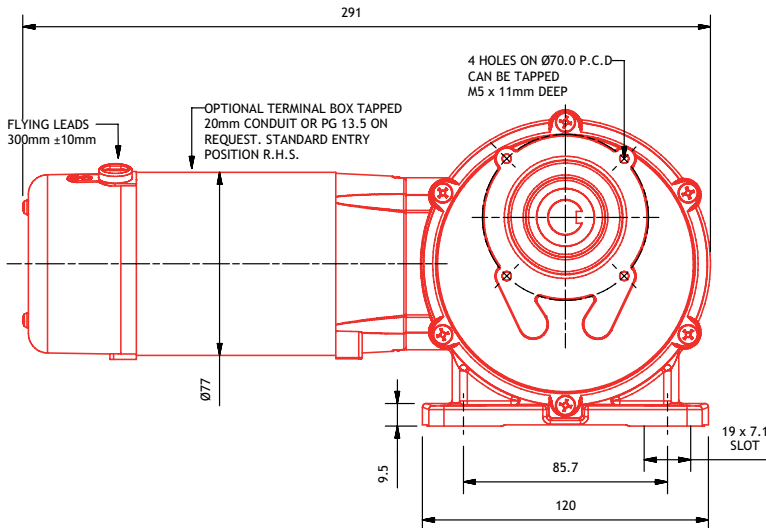
# PM2LWS

MOTOR	Permanent magnet DC motor
PROTECTION	Totally enclosed (IP21)
GEARBOX	Worm spur (LWS)
POWER	60 - 265 Watts
SPEED	0.4 - 80 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	6.37 kg
RADIAL LOAD	446 N
AXIAL LOAD	226 N
SHAFT TYPE	Single ended or double ended shaft as standard
EXTRAS	See page 36



Motor Power Cont (W)		60	80	120	160	TORQUE (Nm)		
Motor Power 1 Hour (W)		75	100	150	200			
Motor Power 15 Min (W)		100	130	200	265			
Ratio Worm	Ratio Spur	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
3 0	115	0.4	0.6	0.9	1.2	100	100	100
16 1/2	115	0.8	1.1	1.6	2.1	100	100	100
8 1/3	115	1.6	2.1	3.1	4	100	100	100
7 1/4	115	1.8	2.4	3.6	5	100	100	100
12 1/2	56	2.1	2.9	4.3	6	100	100	100
10 1/3	56	2.6	3.5	5.2	7	100	100	100
9 1/3	56	2.9	3.8	5.7	8	100	100	100
8 1/3	56	3.2	4.3	6.4	9	100	100	100
7 1/4	56	3.7	4.9	7.4	10	98	100	100
6 1/4	56	4.3	5.7	8.6	11	88	100	100
13 1/3	25	4.5	6.0	9	12	62	62	62
12 1/2	25	4.8	6.4	10	13	62	62	62
10 1/3	25	5.8	8	12	15	57	62	62
9 1/3	25	6.4	9	13	17	53	62	62
8 1/3	25	7	10	14	19	49	61	62
6 1/4	25	10	13	19	26	39	49	62
16 1/2	6	15	20	30	40	19	24	32
9 1/3	6	27	36	54	71	13	16	21
8 1/3	6	30	40	60	80	12	15	19

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# PM6LWS

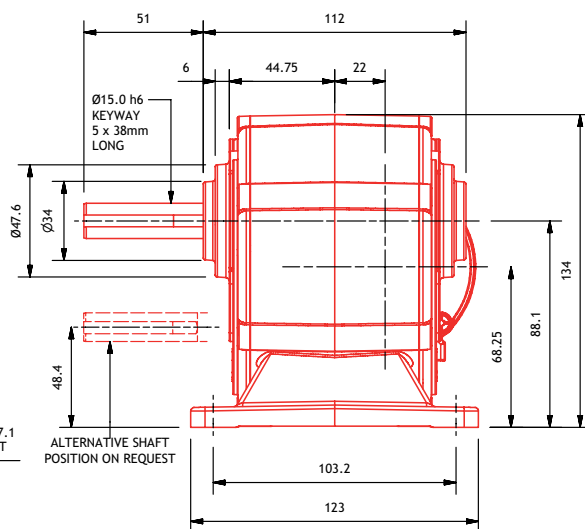
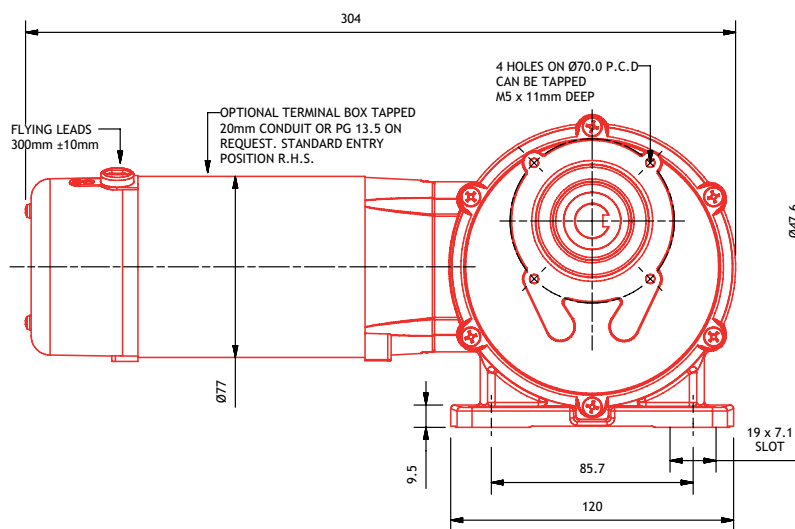
PARVALUX®

MOTOR	Permanent magnet DC motor
PROTECTION	Ventilated (IP21)
GEARBOX	Worm spur (LWS)
POWER	75 - 330 Watts
SPEED	0.4 - 80 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	6.56 kg
RADIAL LOAD	446 N
AXIAL LOAD	226 N
SHAFT TYPE	Single ended or double ended shaft as standard
EXTRAS	See page 36



Motor Power Cont (W)		75	100	150	200	TORQUE (Nm)		
Motor Power 1 Hour (W)		90	120	180	240			
Motor Power 15 Min (W)		125	165	245	330			
Ratio Worm	Ratio Spur	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
3 0	115	0.4	0.6	0.9	1.2	100	100	100
16 1/2	115	0.8	1.1	1.6	2.1	100	100	100
8 1/3	115	1.6	2.1	3.1	4	100	100	100
7 1/4	115	1.8	2.4	3.6	5	100	100	100
12 1/2	56	2.1	2.9	4.3	6	100	100	100
10 1/3	56	2.6	3.5	5.2	7	100	100	100
9 1/3	56	2.9	3.8	5.7	8	100	100	100
8 1/3	56	3.2	4.3	6.4	9	100	100	100
7 1/4	56	3.7	4.9	7.4	10	100	100	100
6 1/4	56	4.3	5.7	8.6	11	100	100	100
13 1/3	25	4.5	6.0	9	12	62	62	62
12 1/2	25	4.8	6.4	10	13	62	62	62
10 1/3	25	5.8	8	12	15	62	62	62
9 1/3	25	6.4	9	13	17	62	62	62
8 1/3	25	7	10	14	19	61	62	62
6 1/4	25	10	13	19	26	49	59	62
16 1/2	6	15	20	30	40	24	29	32
9 1/3	6	27	36	54	71	16	19	26
8 1/3	6	30	40	60	80	15	17	24

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worm spur

# PM60LWS

PARVALUX®

MOTOR	Permanent magnet DC motor
PROTECTION	Ventilated (IP21)
GEARBOX	Worm spur (LWS)
POWER	105 - 460 Watts
SPEED	0.4 - 80 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	6.80 kg
RADIAL LOAD	446 N
AXIAL LOAD	226 N
SHAFT TYPE	Single, double and hollow shaft as standard
EXTRAS	See page 36



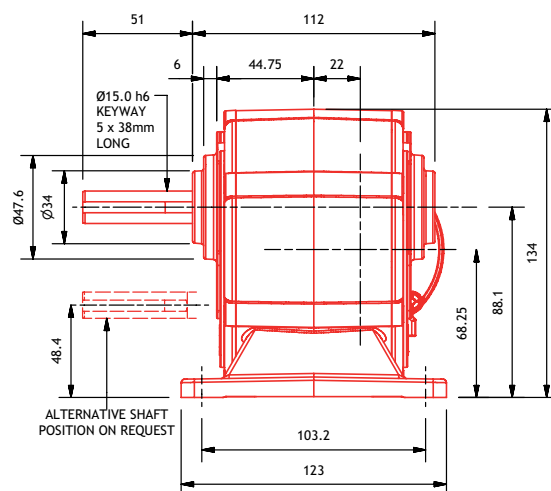
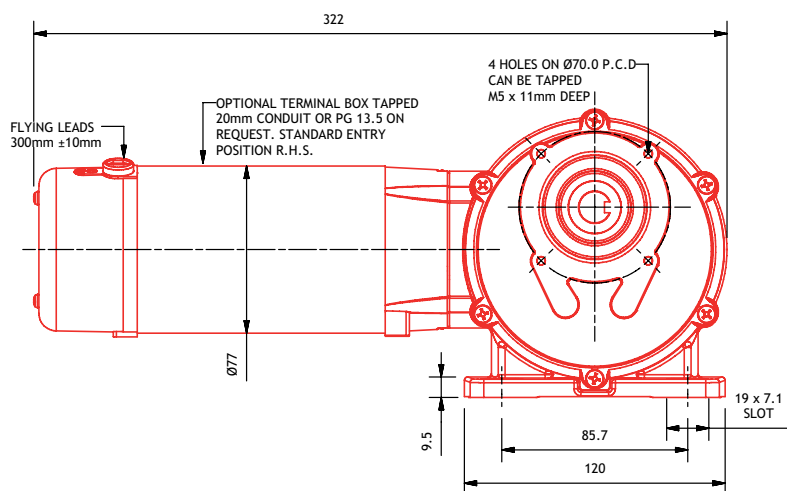
Motor Power Cont (W)		105	140	210	280	TORQUE (Nm)		
Motor Power 1 Hour (W)		128	170	255	340	CONTINUOUS	1 HOUR	15 MINUTE
Motor Power 15 Min (W)		172	230	345	460			
Ratio Worm	Ratio Spur	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
3 0	115	0.4	0.6	0.9	1.2	100	100	100
16 1/2	115	0.8	1.1	1.6	2.1	100	100	100
8 1/3	115	1.6	2.1	3.1	4	100	100	100
7 1/4	115	1.8	2.4	3.6	5	100	100	100
12 1/2	56	2.1	2.9	4.3	6	100	100	100
10 1/3	56	2.6	3.5	5.2	7	100	100	100
9 1/3	56	2.9	3.8	5.7	8	100	100	100
8 1/3	56	3.2	4.3	6.4	9	100	100	100
7 1/4	56	3.7	4.9	7.4	10	100	100	100
6 1/4	56	4.3	5.7	8.6	11	100	100	100
13 1/3	25	4.5	6.0	9	12	62	62	62
12 1/2	25	4.8	6.4	10	13	62	62	62
10 1/3	25	5.8	8	12	15	62	62	62
9 1/3	25	6.4	9	13	17	62	62	62
8 1/3	25	7	10	14	19	62	62	62
6 1/4	25	10	13	19	26	62	62	62
16 1/2	6	15	20	30	40	32	32	32
9 1/3	6	27	36	54	71	22	27	32
8 1/3	6	30	40	60	80	20	25	32

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# PM10LWS

PARVALUX®

MOTOR	Permanent magnet DC motor
PROTECTION	Totally enclosed (IP54)
GEARBOX	Worm spur (LWS)
POWER	23 - 100 Watts
SPEED	0.4 - 80 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	5.03 kg
RADIAL LOAD	446 N
AXIAL LOAD	226 N
SHAFT TYPE	Single ended or double ended shaft as standard
EXTRAS	See page 36



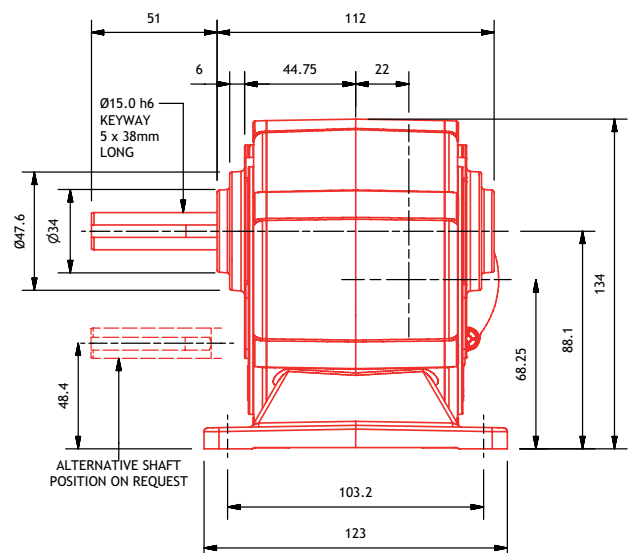
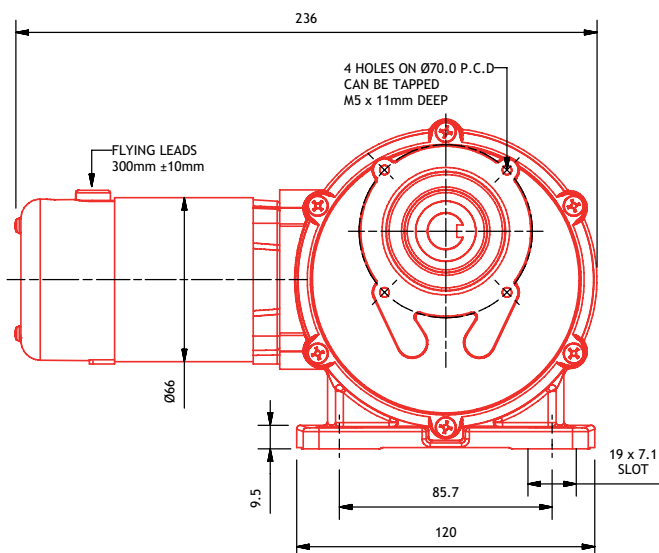
Motor Power Cont. (W)		23	30	45	60	TORQUE (Nm)		
Motor Power 1 Hour (W)		28	38	55	75			
Motor Power 15 Min (W)		35	50	70	100			
Ratio Worm	Ratio Spur	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
3 0	115	0.4	0.6	0.9	1.2	100	100	100
16 1/2	115	0.8	1.1	1.6	2.1	100	100	100
8 1/3	115	1.6	2.1	3.1	4	84	100	100
7 1/4	115	1.8	2.4	3.6	5	75	92	100
12 1/2	56	2.1	2.9	4.3	6	55	67	86
10 1/3	56	2.6	3.5	5.2	7	48	59	75
9 1/3	56	2.9	3.8	5.7	8	44	54	69
8 1/3	56	3.2	4.3	6.4	9	41	50	63
7 1/4	56	3.7	4.9	7.4	10	37	45	57
6 1/4	56	4.3	5.7	8.6	11	33	40	51
13 1/3	25	4.5	6.0	9	12	26	31	40
12 1/2	25	4.8	6.4	10	13	25	30	38
10 1/3	25	5.8	8	12	15	21	26	33
9 1/3	25	6.4	9	13	17	20	24	31
8 1/3	25	7	10	14	19	18	22	28
6 1/4	25	10	13	19	26	15	18	23
16 1/2	6	15	20	30	40	7	9	11
9 1/3	6	27	36	54	71	5	6	7
8 1/3	6	30	40	60	80	4	5	7

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worm spur

# PM11LWS

PARVALUX®

MOTOR	Permanent magnet DC motor
PROTECTION	Totally enclosed (IP54)
GEARBOX	Worm spur (LWS)
POWER	33 - 130 Watts
SPEED	0.4 - 80 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	5.49 kg
RADIAL LOAD	446 N
AXIAL LOAD	226 N
SHAFT TYPE	Single ended or double ended shaft as standard
EXTRAS	See page 36



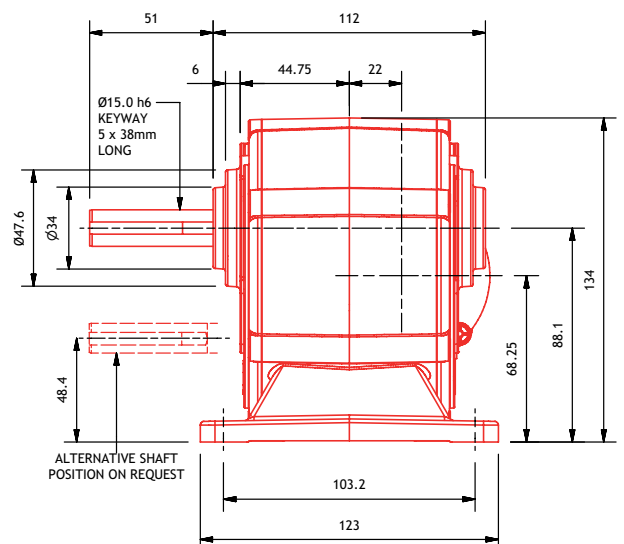
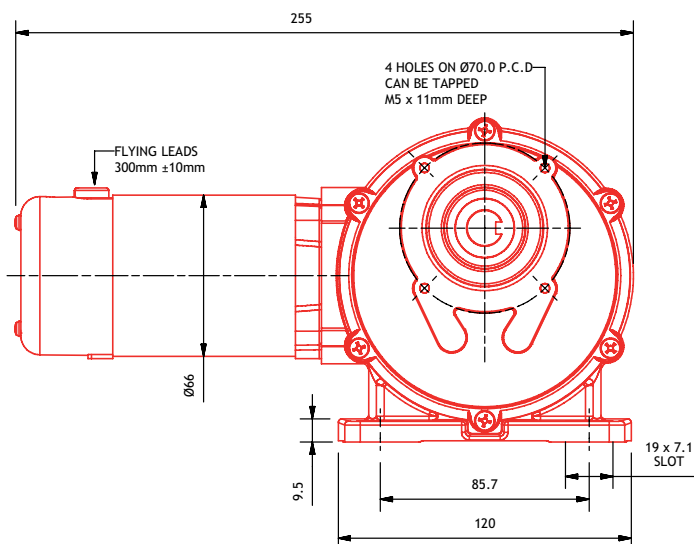
Motor Power Cont (W)		33	45	65	90	TORQUE (Nm)		
Motor Power 1 Hour (W)		40	55	80	110	CONTINUOUS	1 HOUR	15 MINUTE
Motor Power 15 Min (W)		50	65	100	130			
Ratio Worm	Ratio Spur	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
3 0	115	0.4	0.6	0.9	1.2	100	100	100
16 1/2	115	0.8	1.1	1.6	2.1	100	100	100
8 1/3	115	1.6	2.1	3.1	4	100	100	100
7 1/4	115	1.8	2.4	3.6	5	100	100	100
12 1/2	56	2.1	2.9	4.3	6	79	98	100
10 1/3	56	2.6	3.5	5.2	7	69	85	100
9 1/3	56	2.9	3.8	5.7	8	64	79	99
8 1/3	56	3.2	4.3	6.4	9	59	73	91
7 1/4	56	3.7	4.9	7.4	10	53	65	82
6 1/4	56	4.3	5.7	8.6	11	47	58	73
13 1/3	25	4.5	6.0	9	12	37	46	57
12 1/2	25	4.8	6.4	10	13	35	44	55
10 1/3	25	5.8	8	12	15	31	38	48
9 1/3	25	6.4	9	13	17	29	35	44
8 1/3	25	7	10	14	19	26	32	40
6 1/4	25	10	13	19	26	21	26	33
16 1/2	6	15	20	30	40	10	13	16
9 1/3	6	27	36	54	71	7	8	11
8 1/3	6	30	40	60	80	6	8	10

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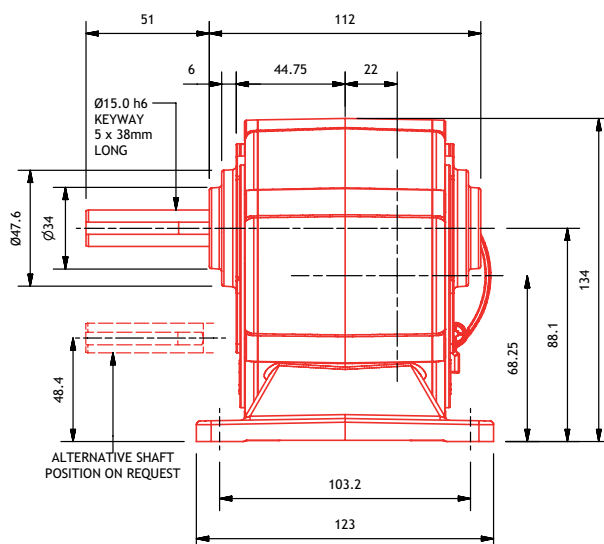
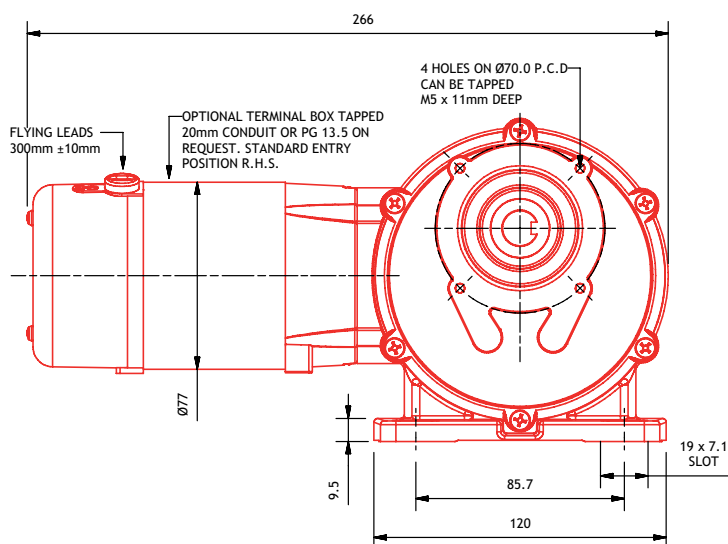
# PM3LWS

MOTOR	Permanent magnet DC motor
PROTECTION	Totally enclosed (IP54)
GEARBOX	Worm spur (LWS)
POWER	33 - 150 Watts
SPEED	0.4 - 80 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	6.02 kg
RADIAL LOAD	446 N
AXIAL LOAD	226 N
SHAFT TYPE	Single ended or double ended shaft as standard
EXTRAS	See page 36



Motor Power Cont. (W)		33	45	68	90	TORQUE (Nm)		
Motor Power 1 Hour (W)		45	60	90	120			
Motor Power 15 Min (W)		60	90	120	150			
Ratio Worm	Ratio Spur	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
3 0	115	0.4	0.6	0.9	1.2	100	100	100
16 1/2	115	0.8	1.1	1.6	2.1	100	100	100
8 1/3	115	1.6	2.1	3.1	4	100	100	100
7 1/4	115	1.8	2.4	3.6	5	100	100	100
12 1/2	56	2.1	2.9	4.3	6	83	100	100
10 1/3	56	2.6	3.5	5.2	7	72	96	100
9 1/3	56	2.9	3.8	5.7	8	67	89	100
8 1/3	56	3.2	4.3	6.4	9	62	82	100
7 1/4	56	3.7	4.9	7.4	10	56	73	98
6 1/4	56	4.3	5.7	8.6	11	50	66	88
13 1/3	25	4.5	6.0	9	12	39	51	62
12 1/2	25	4.8	6.4	10	13	37	49	62
10 1/3	25	5.8	8	12	15	32	43	57
9 1/3	25	6.4	9	13	17	30	40	53
8 1/3	25	7	10	14	19	28	36	49
6 1/4	25	10	13	19	26	22	29	39
16 1/2	6	15	20	30	40	11	14	19
9 1/3	6	27	36	54	71	7	10	13
8 1/3	6	30	40	60	80	7	9	12

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worm spur

# PM4LWS

- MOTOR Permanent magnet DC motor
- PROTECTION Totally enclosed (IP54)
- GEARBOX Worm spur (LWS)
- POWER 45 -200 Watts
- SPEED 0.4 - 80 rpm
- VOLTAGE 12V - 220V DC available range
- WEIGHT 6.37 kg
- RADIAL LOAD 446 N
- AXIAL LOAD 226 N
- SHAFT TYPE Single ended or double ended shaft as standard
- EXTRAS See page 36



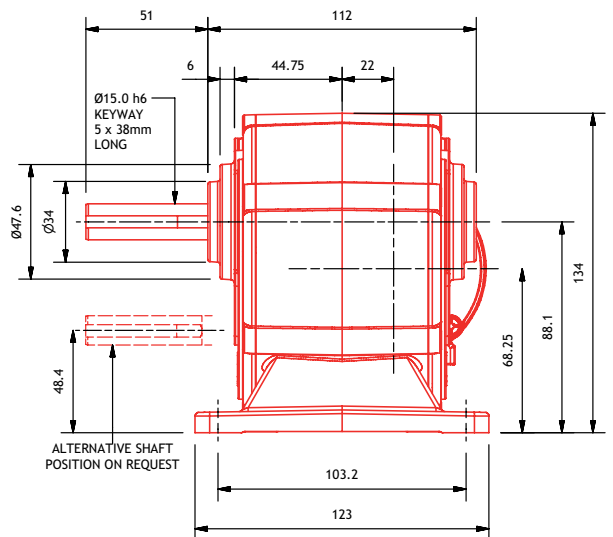
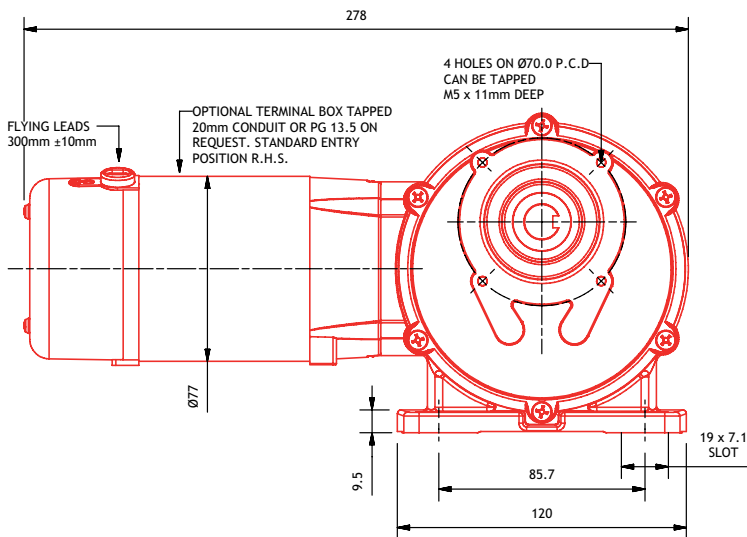
Motor Power Cont (W)		45	60	90	120	TORQUE (Nm)		
Motor Power 1 Hour (W)		60	80	120	160			
Motor Power 15 Min (W)		80	120	160	200			
Ratio Worm	Ratio Spur	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
3 0	115	0.4	0.6	0.9	1.2	100	100	100
16 1/2	115	0.8	1.1	1.6	2.1	100	100	100
8 1/3	115	1.6	2.1	3.1	4	100	100	100
7 1/4	115	1.8	2.4	3.6	5	100	100	100
12 1/2	56	2.1	2.9	4.3	6	100	100	100
10 1/3	56	2.6	3.5	5.2	7	96	100	100
9 1/3	56	2.9	3.8	5.7	8	89	100	100
8 1/3	56	3.2	4.3	6.4	9	82	100	100
7 1/4	56	3.7	4.9	7.4	10	73	98	100
6 1/4	56	4.3	5.7	8.6	11	66	88	100
13 1/3	25	4.5	6.0	9	12	51	62	62
12 1/2	25	4.8	6.4	10	13	49	62	62
10 1/3	25	5.8	8	12	15	43	57	62
9 1/3	25	6.4	9	13	17	40	53	62
8 1/3	25	7	10	14	19	36	49	62
6 1/4	25	10	13	19	26	29	39	52
16 1/2	6	15	20	30	40	14	19	26
9 1/3	6	27	36	54	71	10	13	17
8 1/3	6	30	40	60	80	9	12	16

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# PM5LWS

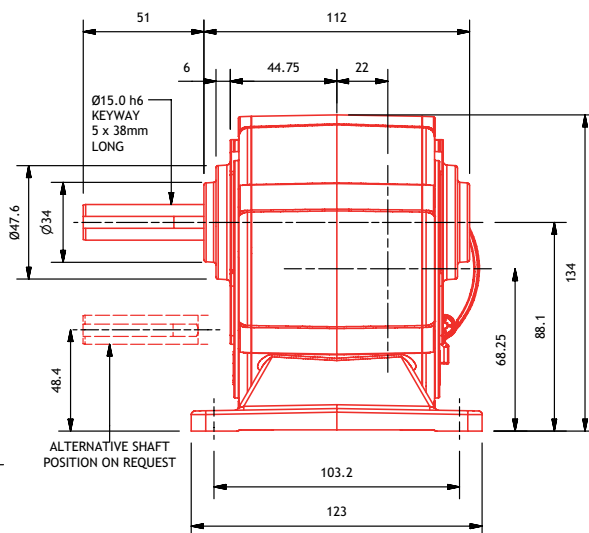
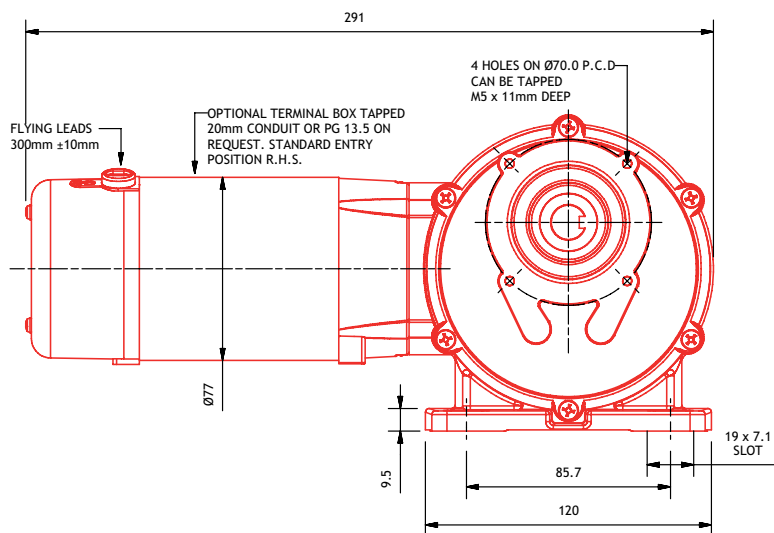
MOTOR	Permanent magnet DC motor
PROTECTION	Totally enclosed (IP54)
GEARBOX	Worm spur (LWS)
POWER	60 - 250 Watts
SPEED	0.4 - 80 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	6.56 kg
RADIAL LOAD	446 N
AXIAL LOAD	226 N
SHAFT TYPE	Single ended or double ended shaft as standard
EXTRAS	See page 36



Motor Power Cont (W)		60	80	120	160	TORQUE (Nm)		
Motor Power 1 Hour (W)		75	100	150	200			
Motor Power 15 Min (W)		100	150	200	250			
Ratio Worm	Ratio Spur	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
3 0	115	0.4	0.6	0.9	1.2	100	100	100
16 1/2	115	0.8	1.1	1.6	2.1	100	100	100
8 1/3	115	1.6	2.1	3.1	4	100	100	100
7 1/4	115	1.8	2.4	3.6	5	100	100	100
12 1/2	56	2.1	2.9	4.3	6	100	100	100
10 1/3	56	2.6	3.5	5.2	7	100	100	100
9 1/3	56	2.9	3.8	5.7	8	100	100	100
8 1/3	56	3.2	4.3	6.4	9	100	100	100
7 1/4	56	3.7	4.9	7.4	10	98	100	100
6 1/4	56	4.3	5.7	8.6	11	88	100	100
13 1/3	25	4.5	6.0	9	12	62	62	62
12 1/2	25	4.8	6.4	10	13	62	62	62
10 1/3	25	5.8	8	12	15	57	62	62
9 1/3	25	6.4	9	13	17	53	62	62
8 1/3	25	7	10	14	19	49	61	62
6 1/4	25	10	13	19	26	39	49	62
16 1/2	6	15	20	30	40	19	24	32
9 1/3	6	27	36	54	71	13	16	21
8 1/3	6	30	40	60	80	12	15	19

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worm spur

# PM50LWS

PARVALUX®

MOTOR	Permanent magnet DC motor
PROTECTION	Totally enclosed (IP54)
GEARBOX	Worm spur (LWS)
POWER	80 - 375 Watts
SPEED	0.4 - 80 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	6.80 kg
RADIAL LOAD	446 N
AXIAL LOAD	226 N
SHAFT TYPE	Single ended or double ended shaft as standard
EXTRAS	See page 36



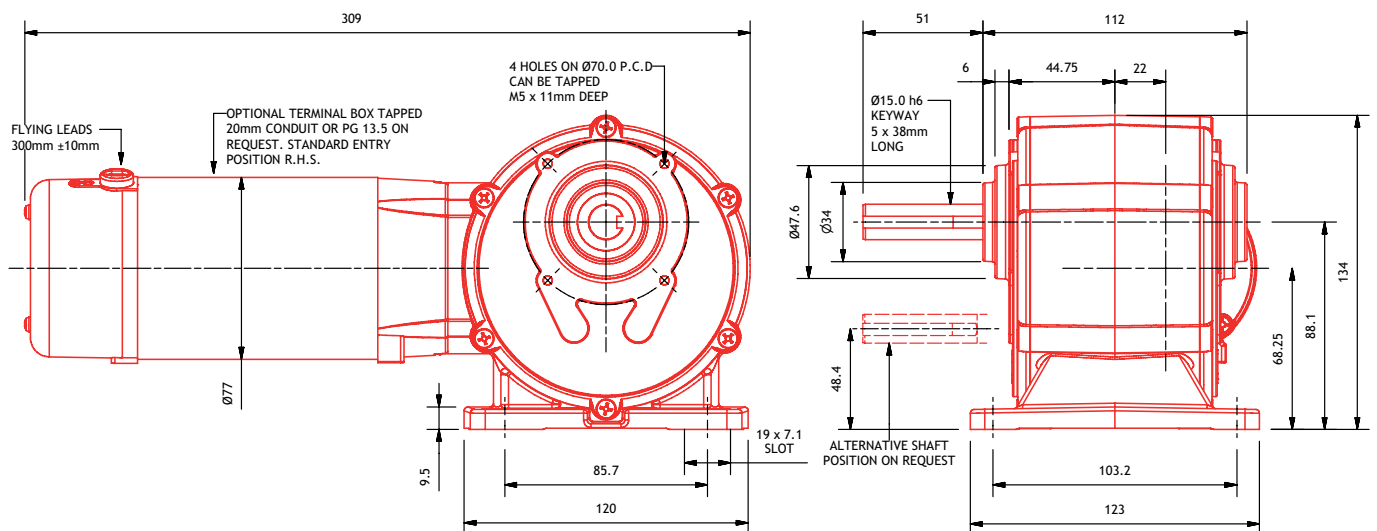
Motor Power Cont. (W)		80	105	155	205	TORQUE (Nm)		
Motor Power 1 Hour (W)		100	135	200	265			
Motor Power 15 Min (W)		140	185	280	375			
Ratio Worm	Ratio Spur	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
3 0	115	0.4	0.6	0.9	1.2	100	100	100
16 1/2	115	0.8	1.1	1.6	2.1	100	100	100
8 1/3	115	1.6	2.1	3.1	4	100	100	100
7 1/4	115	1.8	2.4	3.6	5	100	100	100
12 1/2	56	2.1	2.9	4.3	6	100	100	100
10 1/3	56	2.6	3.5	5.2	7	100	100	100
9 1/3	56	2.9	3.8	5.7	8	100	100	100
8 1/3	56	3.2	4.3	6.4	9	100	100	100
7 1/4	56	3.7	4.9	7.4	10	100	100	100
6 1/4	56	4.3	5.7	8.6	11	100	100	100
13 1/3	25	4.5	6.0	9	12	62	62	62
12 1/2	25	4.8	6.4	10	13	62	62	62
10 1/3	25	5.8	8	12	15	62	62	62
9 1/3	25	6.4	9	13	17	62	62	62
8 1/3	25	7	10	14	19	62	62	62
6 1/4	25	10	13	19	26	50	62	62
16 1/2	6	15	20	30	40	25	32	32
9 1/3	6	27	36	54	71	16	21	30
8 1/3	6	30	40	60	80	15	19	27

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# PM90LWS

PARVALUX®



MOTOR	Permanent magnet DC motor
PROTECTION	Totally enclosed (IP54)
GEARBOX	Worm spur (LWS)
POWER	113 - 525 Watts
SPEED	0.4 - 80 rpm
VOLTAGE	12V, 24V, 36V or 48V, D.C.
WEIGHT	7.4 kg
RADIAL LOAD	446 N
AXIAL LOAD	226 N
SHAFT TYPE	Single ended or double ended shaft as standard
EXTRAS	See page 36

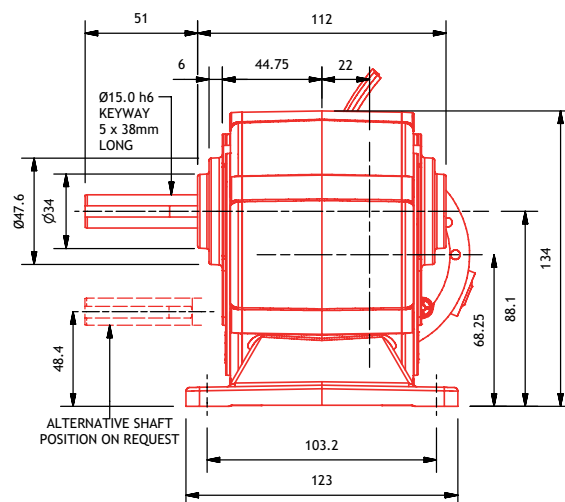
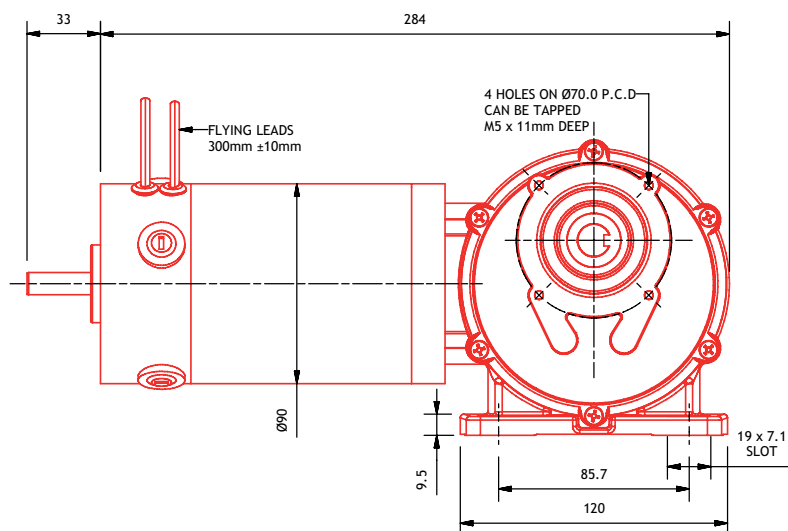
Motor Power Cont. (W)		113	150	225	300	TORQUE (Nm)		
Motor Power 1 Hour (W)		141	188	281	375			
Motor Power 15 Min (W)		198	263	394	525			
Ratio Worm	Ratio Spur	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
3 0	115	0.4	0.6	0.9	1.2	100	100	100
16 1/2	115	0.8	1.1	1.6	2.1	100	100	100
8 1/3	115	1.6	2.1	3.1	4	100	100	100
7 1/4	115	1.8	2.4	3.6	5	100	100	100
12 1/2	56	2.1	2.9	4.3	6	100	100	100
10 1/3	56	2.6	3.5	5.2	7	100	100	100
9 1/3	56	2.9	3.8	5.7	8	100	100	100
8 1/3	56	3.2	4.3	6.4	9	100	100	100
7 1/4	56	3.7	4.9	7.4	10	100	100	100
6 1/4	56	4.3	5.7	8.6	11	100	100	100
13 1/3	25	4.5	6.0	9	12	62	62	62
12 1/2	25	4.8	6.4	10	13	62	62	62
10 1/3	25	5.8	8	12	15	62	62	62
9 1/3	25	6.4	9	13	17	62	62	62
8 1/3	25	7	10	14	19	62	62	62
6 1/4	25	10	13	19	26	62	62	62
16 1/2	6	15	20	30	40	32	32	32
9 1/3	6	27	36	54	71	24	30	32
8 1/3	6	30	40	60	80	22	27	32

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worm spur

# PM95LWS

PARVALUX®



MOTOR	Permanent magnet DC motor
PROTECTION	Totally enclosed (IP54)
GEARBOX	Worm spur (LWS)
POWER	168 - 525 Watts
SPEED	0.4 - 80 rpm
VOLTAGE	12V, 24V, 36V or 48V, D.C.
WEIGHT	8.9 kg
RADIAL LOAD	446 N
AXIAL LOAD	226 N
SHAFT TYPE	Single ended or double ended shaft as standard
EXTRAS	See page 36

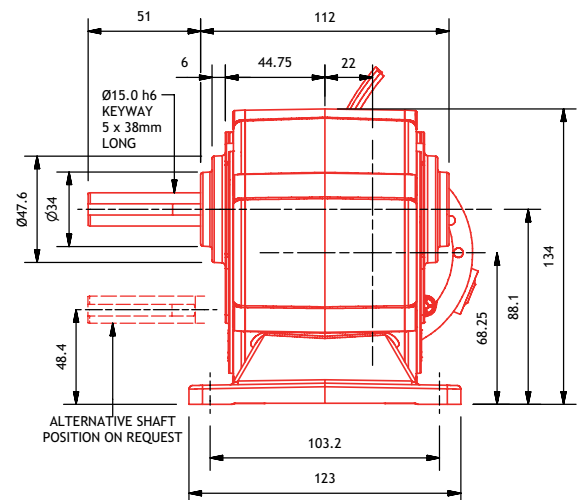
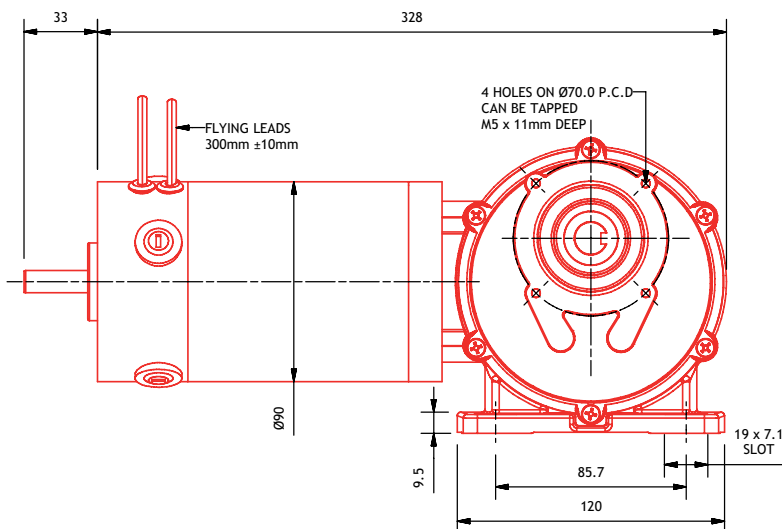
Motor Power Cont (W)		168	225	337	450	TORQUE (Nm)		
Motor Power 1 Hour (W)		210	281	421	563			
Motor Power 15 Min (W)		294	394	590	525			
Ratio Worm	Ratio Spur	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
3 0	115	0.4	0.6	0.9	1.2	100	100	100
16 1/2	115	0.8	1.1	1.6	2.1	100	100	100
8 1/3	115	1.6	2.1	3.1	4	100	100	100
7 1/4	115	1.8	2.4	3.6	5	100	100	100
12 1/2	56	2.1	2.9	4.3	6	100	100	100
10 1/3	56	2.6	3.5	5.2	7	100	100	100
9 1/3	56	2.9	3.8	5.7	8	100	100	100
8 1/3	56	3.2	4.3	6.4	9	100	100	100
7 1/4	56	3.7	4.9	7.4	10	100	100	100
6 1/4	56	4.3	5.7	8.6	11	100	100	100
13 1/3	25	4.5	6.0	9	12	62	62	62
12 1/2	25	4.8	6.4	10	13	62	62	62
10 1/3	25	5.8	8	12	15	62	62	62
9 1/3	25	6.4	9	13	17	62	62	62
8 1/3	25	7	10	14	19	62	62	62
6 1/4	25	10	13	19	26	62	62	62
16 1/2	6	15	20	30	40	32	32	32
9 1/3	6	27	36	54	71	32	32	32
8 1/3	6	30	40	60	80	32	32	32

Distribución de componentes



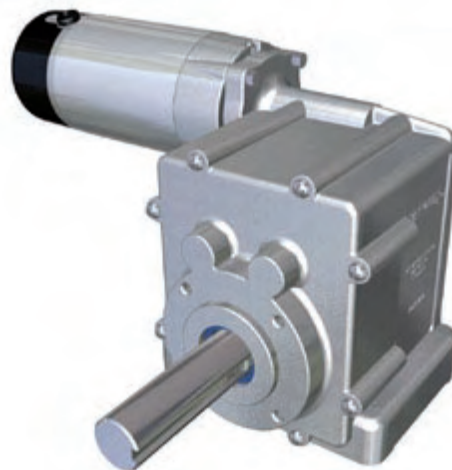
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# PM6GWS

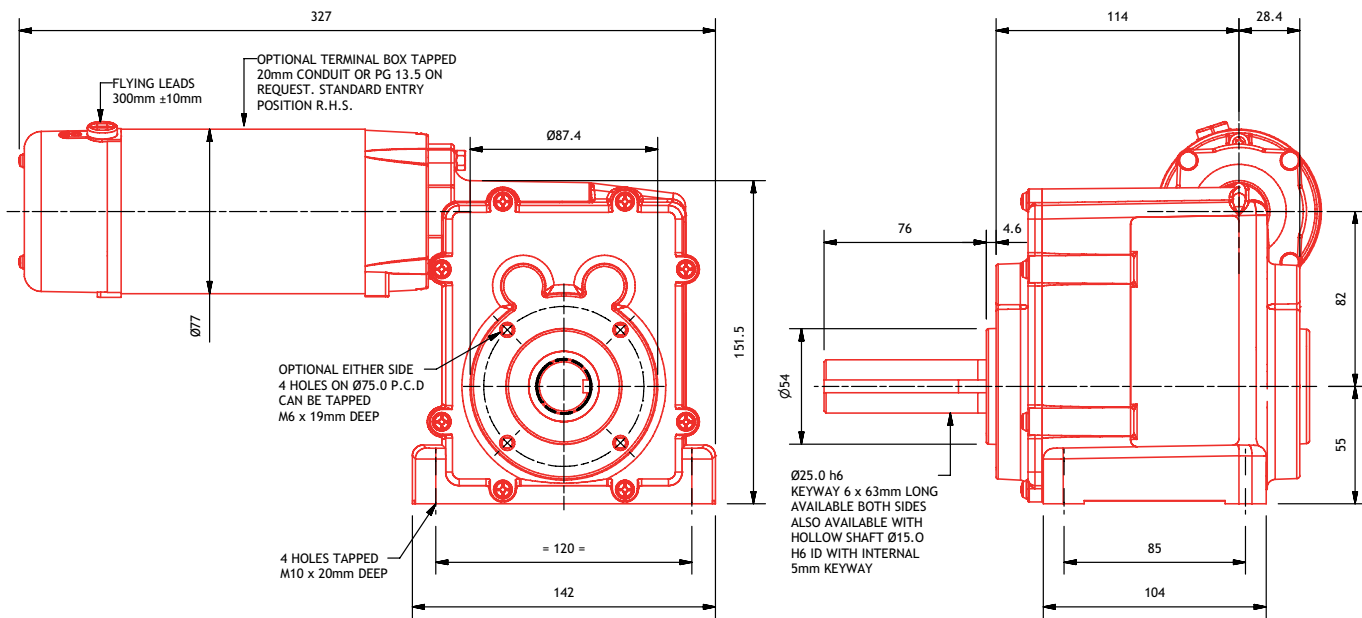
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MOTOR	Permanent magnet DC motor
PROTECTION	Ventilated (IP21)
GEARBOX	Worm spur (GWS)
POWER	75 - 330 Watts
SPEED	0.5 - 71 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	9.65 kg
RADIAL LOAD	667 N
AXIAL LOAD	353 N
SHAFT TYPE	Single ended or double ended shaft as standard
EXTRAS	See page 36

Motor Power Cont. (W)		75	100	150	200	TORQUE (Nm)		
Motor Power 1 Hour (W)		90	120	180	240			
Motor Power 15 Min (W)		125	165	245	330			
Ratio Worm	Ratio Spur	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
3 0	110	0.5	0.6	0.9	1.2	250	250	250
16 1/2	110	0.8	1.1	1.7	2.2	250	250	250
9 1/3	110	1.5	1.9	2.9	4	250	250	250
7 1/4	110	1.9	2.5	3.8	5	240	250	250
5 1/8	110	2.7	3.5	5.3	7	184	221	250
7 1/4	57	3.6	4.8	7.3	10	125	150	204
6 1/6	57	4.3	5.7	8.5	11	110	132	179
10 1/3	25	5.8	7.7	11.6	15	74	89	121
8 1/3	25	7.2	9.6	14.4	19	63	75	103
6 1/6	25	9.7	13.0	19.5	26	50	60	81
12 1/3	11	11.1	14.7	22	29	38	46	63
8 1/3	11	16.4	21.8	33	44	29	35	47
6 1/6	11	22.1	29	44	59	23	28	37
5 1/8	11	26.6	35	53	71	20	24	33

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worm spur

# PM60GWS

PARVALUX®



MOTOR	Permanent magnet DC motor
PROTECTION	Ventilated (IP21)
GEARBOX	Worm spur (GWS)
POWER	105 - 460 Watts
SPEED	0.5 - 71 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	9.90 kg
RADIAL LOAD	667 N
AXIAL LOAD	353 N
SHAFT TYPE	Single ended or double ended shaft as standard
EXTRAS	See page 36

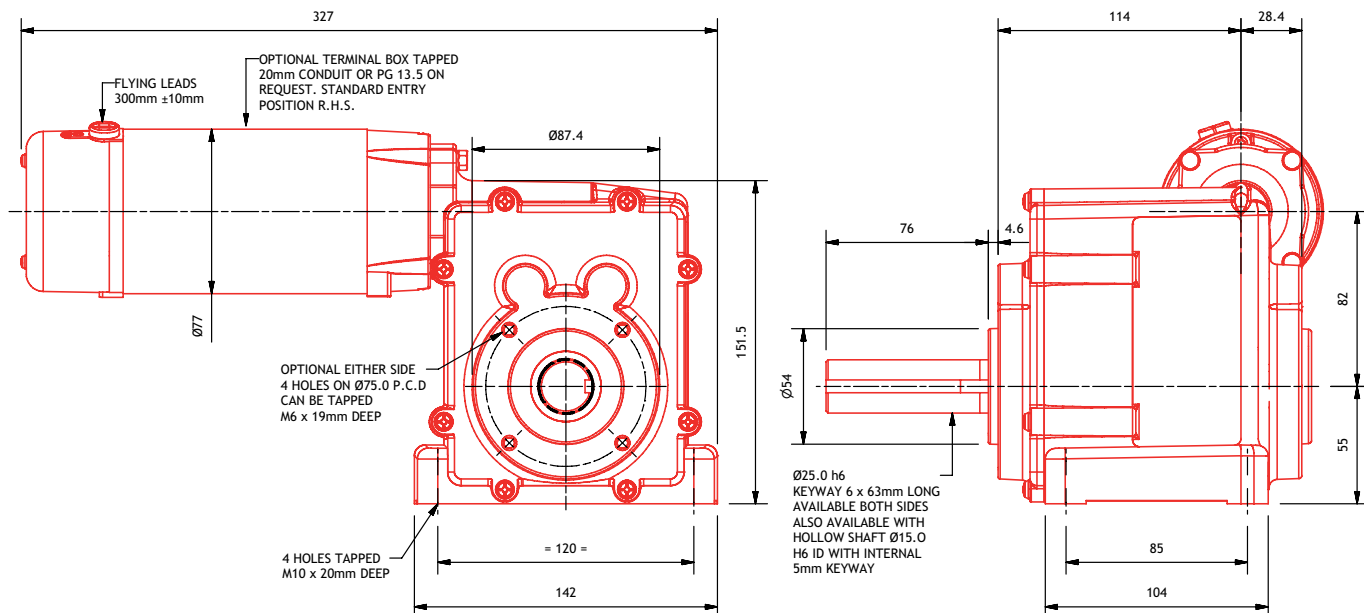
Motor Power Cont. (W)		105	140	210	280	TORQUE (Nm)		
Motor Power 1 Hour (W)		128	170	255	340			
Motor Power 15 Min (W)		172	230	345	460			
Ratio Worm	Ratio Spur	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
3 0	110	0.5	0.6	0.9	1.2	250	250	250
16 1/2	110	0.8	1.1	1.7	2.2	250	250	250
9 1/3	110	1.5	1.9	2.9	4	250	250	250
7 1/4	110	1.9	2.5	3.8	5	250	250	250
5 1/8	110	2.7	3.5	5.3	7	250	250	250
7 1/4	57	3.6	4.8	7.3	10	174	212	250
6 1/6	57	4.3	5.7	8.5	11	154	187	250
10 1/3	25	5.8	7.7	11.6	15	103	125	170
8 1/3	25	7.2	9.6	14.4	19	88	107	145
6 1/6	25	9.7	13.0	19.5	26	70	85	115
12 1/3	11	11.1	14.7	22	29	54	65	88
8 1/3	11	16.4	21.8	33	44	40	49	67
6 1/6	11	22.1	29	44	59	32	39	53
5 1/8	11	26.6	35	53	71	28	34	46

Distribución de componentes

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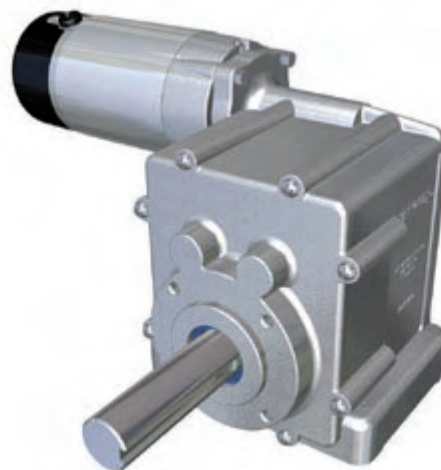
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# PM5GWS

PARVALUX®

MOTOR	Permanent magnet DC motor
PROTECTION	Totally enclosed (IP54)
GEARBOX	Worm spur (GWS)
POWER	60 - 250 Watts
SPEED	0.5 - 71 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	9.65 kg
RADIAL LOAD	667 N
AXIAL LOAD	353 N
SHAFT TYPE	Single ended or double ended shaft as standard
EXTRAS	See page 36

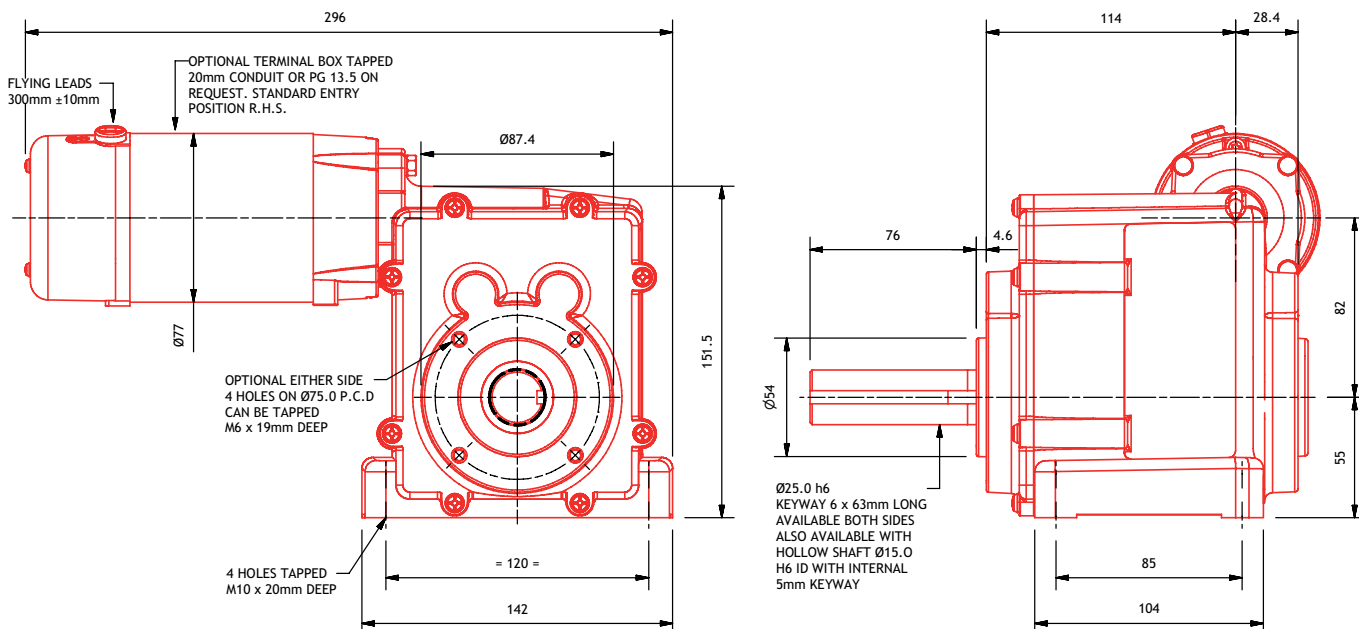


Motor Power Cont (W)		60	80	120	160	TORQUE (Nm)		
Motor Power 1 Hour (W)		75	100	150	200			
Motor Power 15 Min (W)		100	150	200	250			
Ratio Worm	Ratio Spur	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
3 0	110	0.5	0.6	0.9	1.2	250	250	250
16 1/2	110	0.8	1.1	1.7	2.2	250	250	250
9 1/3	110	1.5	1.9	2.9	4	233	250	250
7 1/4	110	1.9	2.5	3.8	5	192	240	250
5 1/8	110	2.7	3.5	5.3	7	147	184	245
7 1/4	57	3.6	4.8	7.3	10	100	125	166
6 1/6	57	4.3	5.7	8.5	11	88	110	146
10 1/3	25	5.8	7.7	11.6	15	59	74	98
8 1/3	25	7.2	9.6	14.4	19	50	63	84
6 1/6	25	9.7	13.0	19.5	26	40	50	67
12 1/3	11	11.1	14.7	22	29	31	38	51
8 1/3	11	16.4	21.8	33	44	23	29	39
6 1/6	11	22.1	29	44	59	18	23	31
5 1/8	11	26.6	35	53	71	16	20	27

Distribución de componentes



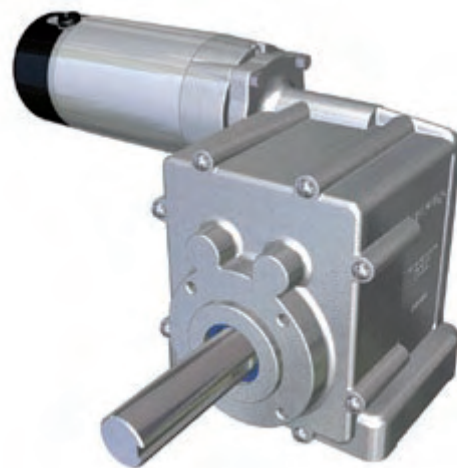
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worm spur

# PM50GWS

PARVALUX®



MOTOR	Permanent magnet DC motor
PROTECTION	Totally enclosed (IP54)
GEARBOX	Worm spur (GWS)
POWER	80 - 375 Watts
SPEED	0.5 - 71 rpm
VOLTAGE	12V - 220V DC available range
WEIGHT	9.90 kg
RADIAL LOAD	667 N
AXIAL LOAD	353 N
SHAFT TYPE	Single ended or double ended shaft as standard
EXTRAS	See page 36

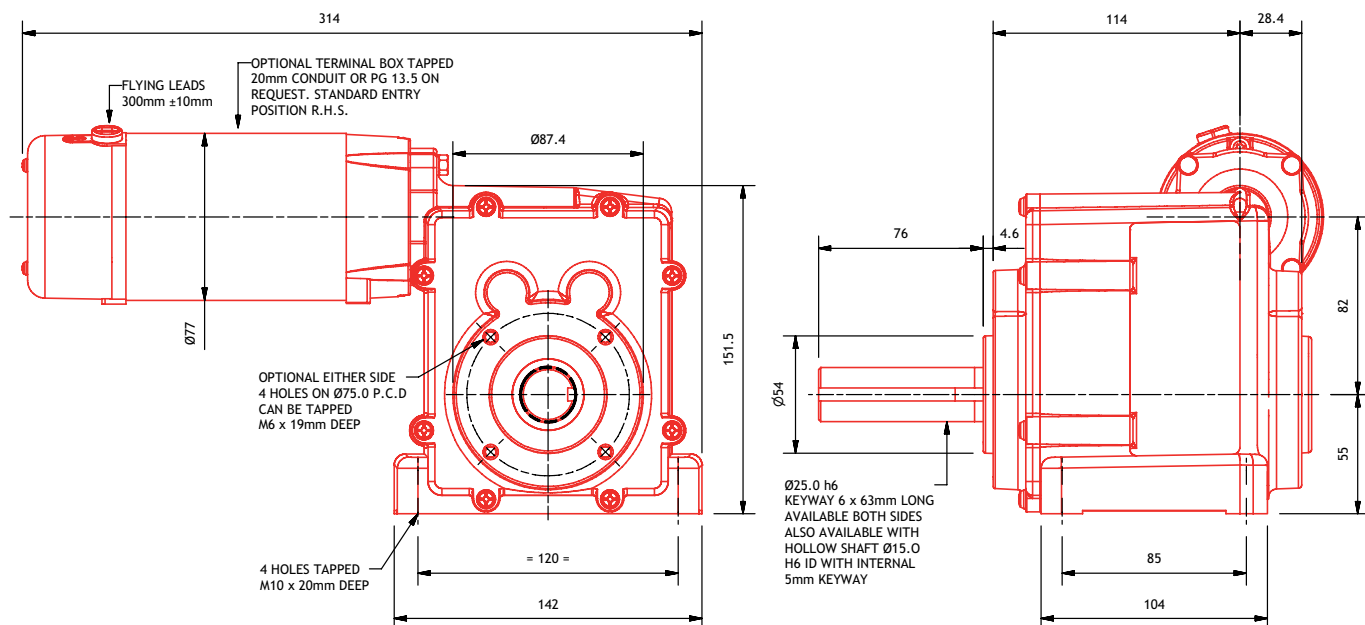
Motor Power Cont. (W)		80	105	155	205	TORQUE (Nm)		
Motor Power 1 Hour (W)		100	135	200	265			
Motor Power 15 Min (W)		140	185	280	375			
Ratio Worm	Ratio Spur	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
3 0	110	0.5	0.6	0.9	1.2	250	250	250
16 1/2	110	0.8	1.1	1.7	2.2	250	250	250
9 1/3	110	1.5	1.9	2.9	4	250	250	250
7 1/4	110	1.9	2.5	3.8	5	249	250	250
5 1/8	110	2.7	3.5	5.3	7	190	245	250
7 1/4	57	3.6	4.8	7.3	10	129	166	233
6 1/6	57	4.3	5.7	8.5	11	114	146	205
10 1/3	25	5.8	7.7	11.6	15	76	98	138
8 1/3	25	7.2	9.6	14.4	19	65	84	117
6 1/6	25	9.7	13.0	19.5	26	52	67	93
12 1/3	11	11.1	14.7	22	29	40	51	72
8 1/3	11	16.4	21.8	33	44	30	39	54
6 1/6	11	22.1	29	44	59	24	31	43
5 1/8	11	26.6	35	53	71	21	27	37

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# PM90GWS

PARVALUX®



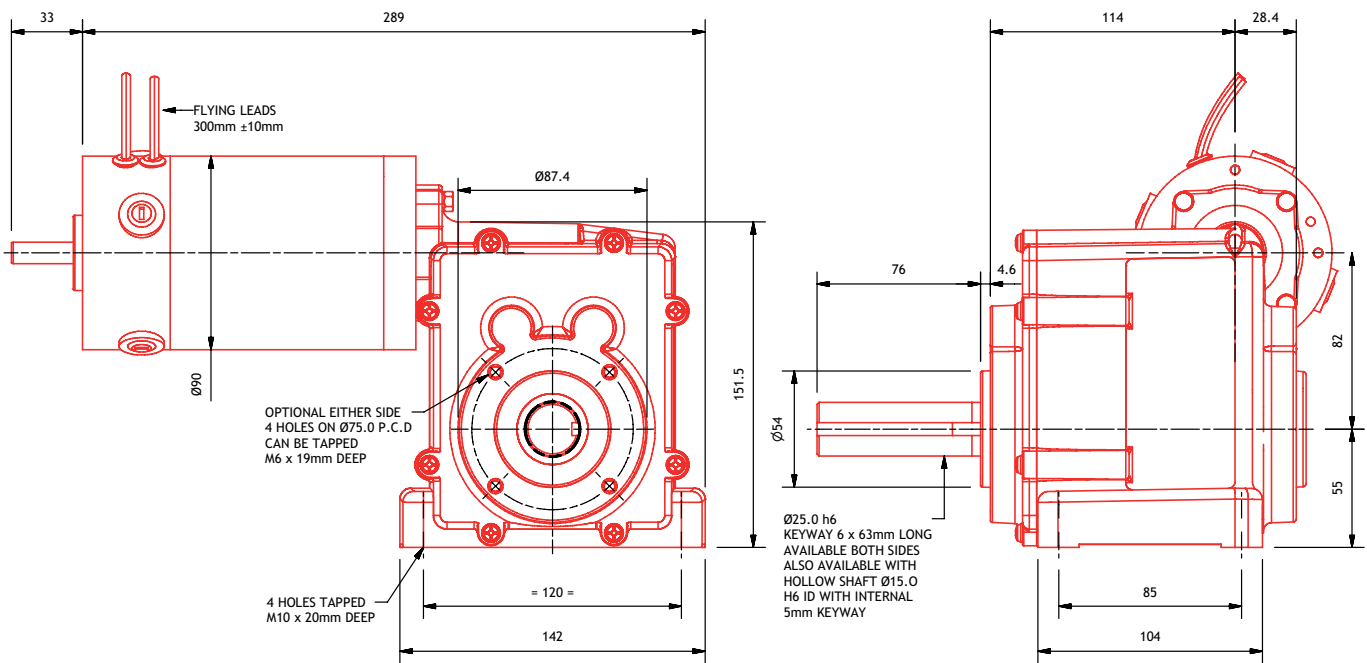
MOTOR	Permanent magnet DC motor
PROTECTION	Totally enclosed (IP54)
GEARBOX	Worm spur (GWS)
POWER	113 - 525 Watts
SPEED	0.5 - 71 rpm
VOLTAGE	12V, 24V, 36V or 48V, D.C.
WEIGHT	10.5 kg
RADIAL LOAD	667 N
AXIAL LOAD	353 N
SHAFT TYPE	Single ended or double ended shaft as standard
EXTRAS	See page 36

Motor Power Cont (W)		113	150	225	300	TORQUE (Nm)		
Motor Power 1 Hour (W)		141	188	281	375			
Motor Power 15 Min (W)		198	263	394	525			
Ratio Worm	Ratio Spur	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
3 0	110	0.5	0.6	0.9	1.2	250	250	250
16 1/2	110	0.8	1.1	1.7	2.2	250	250	250
9 1/3	110	1.5	1.9	2.9	4	250	250	250
7 1/4	110	1.9	2.5	3.8	5	250	250	250
5 1/8	110	2.7	3.5	5.3	7	250	250	250
7 1/4	57	3.6	4.8	7.3	10	187	233	250
6 1/6	57	4.3	5.7	8.5	11	165	206	250
10 1/3	25	5.8	7.7	11.6	15	111	138	194
8 1/3	25	7.2	9.6	14.4	19	94	118	165
6 1/6	25	9.7	13.0	19.5	26	75	93	131
12 1/3	11	11.1	14.7	22	29	58	72	90
8 1/3	11	16.4	21.8	33	44	43	54	76
6 1/6	11	22.1	29	44	59	34	43	60
5 1/8	11	26.6	35	53	71	30	37	52

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worm spur

# PM95GWS

PARVALUX®



MOTOR	Permanent magnet DC motor
PROTECTION	Totally enclosed (IP54)
GEARBOX	Worm spur (GWS)
POWER	168 - 788 Watts
SPEED	0.5 - 71 rpm
VOLTAGE	12V, 24V, 36V or 48V, D.C.
WEIGHT	12 kg
RADIAL LOAD	667 N
AXIAL LOAD	353 N
SHAFT TYPE	Single ended or double ended shaft as standard
EXTRAS	See page 36

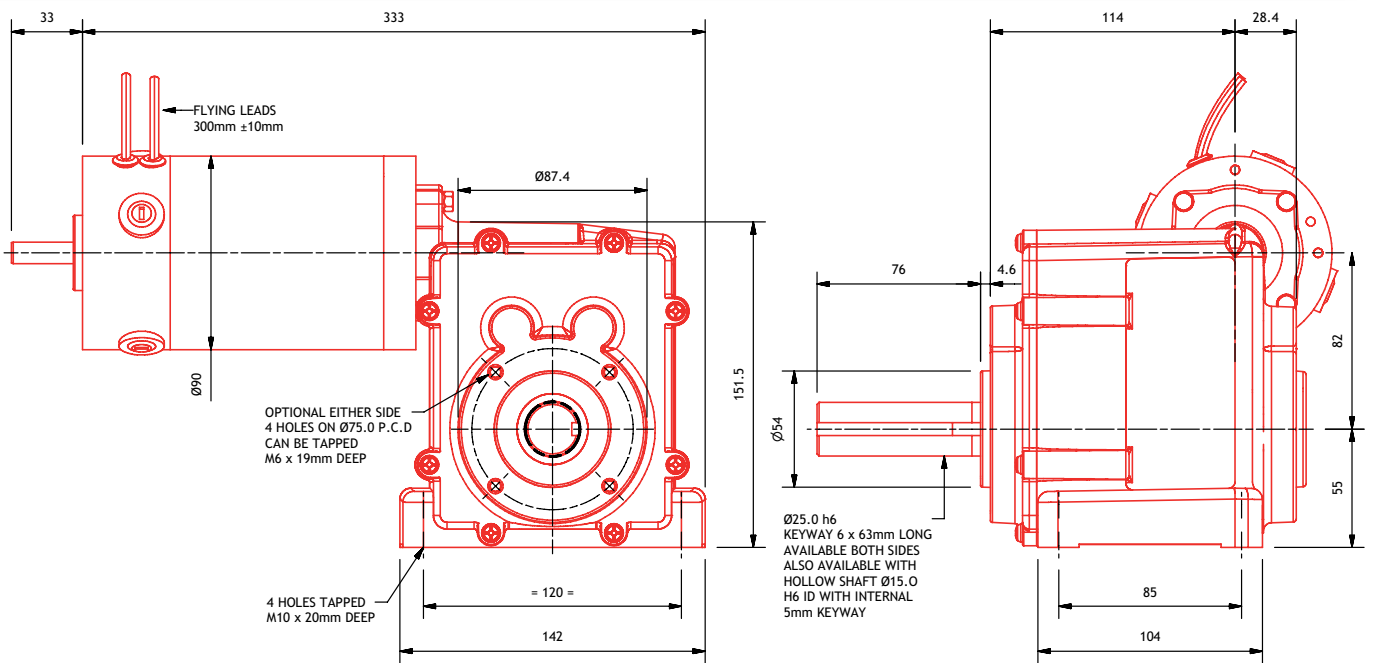
Motor Power Cont. (W)		168	225	337	450	TORQUE (Nm)		
Motor Power 1 Hour (W)		210	281	421	563			
Motor Power 15 Min (W)		294	394	590	788			
Ratio Worm	Ratio Spur	MOTOR SPEED (rpm)				CONTINUOUS	1 HOUR	15 MINUTE
		1500	2000	3000	4000			
		OUTPUT SPEED (rpm)						
3 0	110	0.5	0.6	0.9	1.2	250	250	250
16 1/2	110	0.8	1.1	1.7	2.2	250	250	250
9 1/3	110	1.5	1.9	2.9	4	250	250	250
7 1/4	110	1.9	2.5	3.8	5	250	250	250
5 1/8	110	2.7	3.5	5.3	7	250	250	250
7 1/4	57	3.6	4.8	7.3	10	250	250	250
6 1/6	57	4.3	5.7	8.5	11	247	250	250
10 1/3	25	5.8	7.7	11.6	15	166	200	200
8 1/3	25	7.2	9.6	14.4	19	141	176	200
6 1/6	25	9.7	13.0	19.5	26	112	140	196
12 1/3	11	11.1	14.7	22	29	86	90	90
8 1/3	11	16.4	21.8	33	44	65	81	90
6 1/6	11	22.1	29	44	59	52	64	90
5 1/8	11	26.6	35	53	71	45	56	78

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# Planetary data

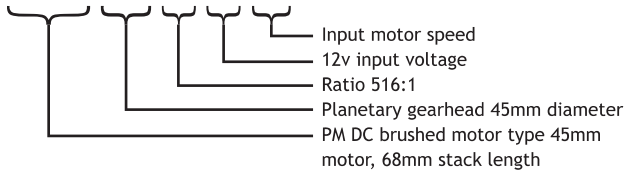


PM71-110 pictured

The product can be ordered simply using the unique four digit product stock code or alternatively the type code. For example:

**EXAMPLE TYPE CODE**

PM45-68 PG45 516 12v 2400



MOTOR	Voltage	No Load Current	Rated Current	Rated Speed	Output Watts	IP rating
PM38 - 63	24 (12)	0.25 ( 0.5)	0.5 (1)	2400	3.8	IP 44
PM45 - 68	24 (12)	0.25 (0.5)	0.8 (1.6)	2500	11	IP 44
PM45 - 68	24 (12)	0.35 (0.7)	1 (2)	3200	14	IP 44
PM60 - 75	24 (12)	0.16 (0.32)	0.43 (0.9)	890	3.7	IP 44
PM60 - 75	24 (12)	0.3 (0.6)	0.8 (1.6)	1500	5	IP 44
PM60 - 75	24 (12)	0.4 (0.8)	1.1 (2.2)	2500	10	IP 44
PM60 - 105	24 (12)	0.32 (0.64)	1.6 (3.2)	1550	20	IP 44
PM 60 - 105	24 (12)	0.4 (0.8)	2.2 (4.4)	2500	30	IP 44
PM 71 - 110	24 (12)	0.4 (0.8)	2.4 (4.8)	1600	33	IP 44
PM 71 - 110	24 (12)	0.5 (1.0)	3.5 (7)	2400	59	IP 44

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**About the range**

DC brushed motors fitted with compact, efficient planetary gearheads. Designed for a huge range of diverse industrial applications, our range provides tremendous output torque at incredibly competitive prices. In this way, the product will appeal to machine and product designers wishing to obtain long lifetimes while maintaining their profitability.

The range consists of DC brushed motors providing an output torque from 0.05 Nm to 30 Nm and output speeds from 3 rpm to 863 rpm. Motor diameter is 38 mm through to 71 mm allowing use in small areas.

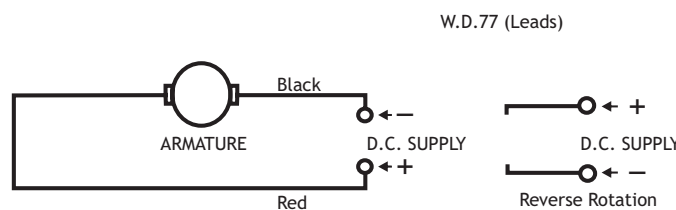
Manufactured from a die-cast aluminium housing, the motors utilise a conventional long-life brush gear coupled with strong ferrite magnets for a trouble free life. With a "sealed for life" gearbox, the combined unit is ready for installation immediately and requires no maintenance. Available in 12v or 24v as standard, we are able to provide other variations upon request.

**Motor & Gearbox Construction Details**

- Voltage Range: PM38:12V, PM45 - PM71:24V D.C.
- other voltages 12V - 50V D.C. quoted for on request
- Starting Current: Approximately 3 times full load
- Rotation: Reversible two leads as standard
- Motor Construction: Shielded ball bearings spring loaded for quiet running
- Gearboxes: Fitted with sealed ball bearings, composite primary gear and steel secondary gears; all steel gears available upon request, grease lubricated for life and suitable for mounting in any position
- Connections: 300mm flying leads (+/- 10mm)
- Insulation: Class 'B' (maximum temperature rise 90°C at a maximum ambient of 40°C).
- Motor enclosure: DC planetary gear motors conform to IP44 rating

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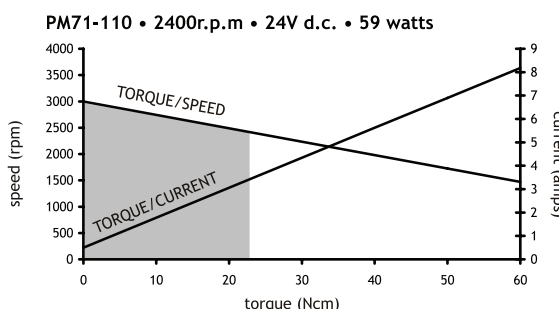
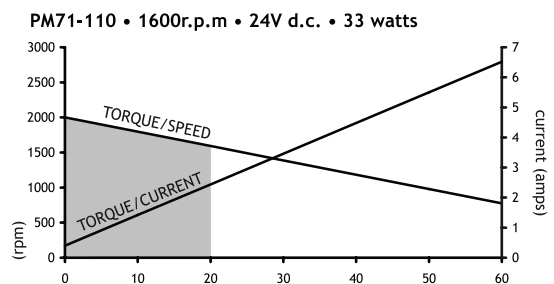
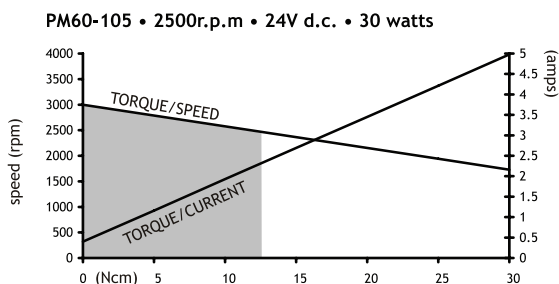
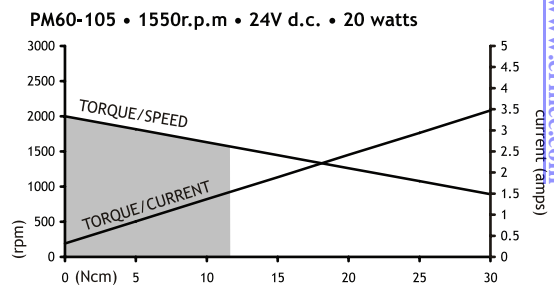
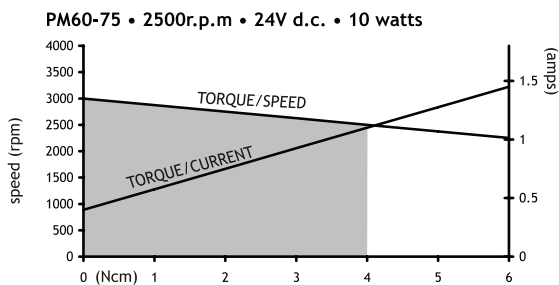
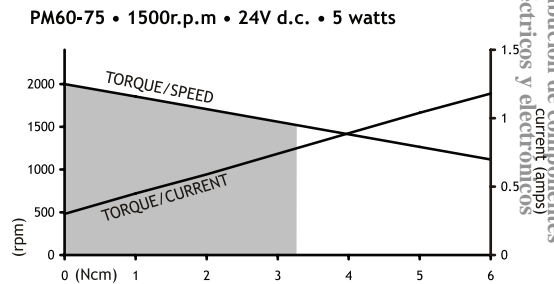
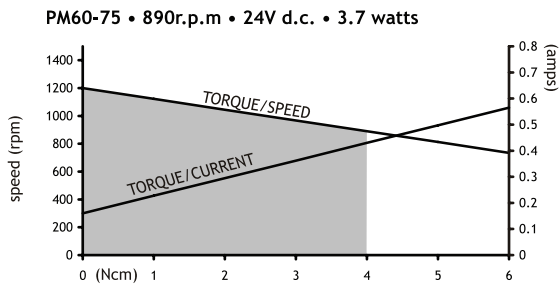
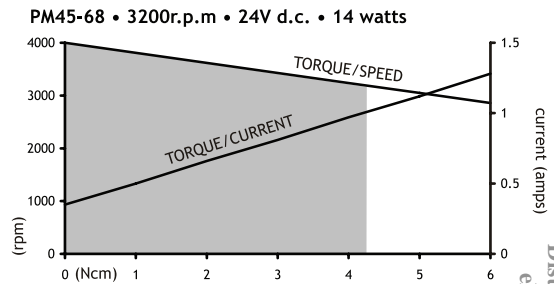
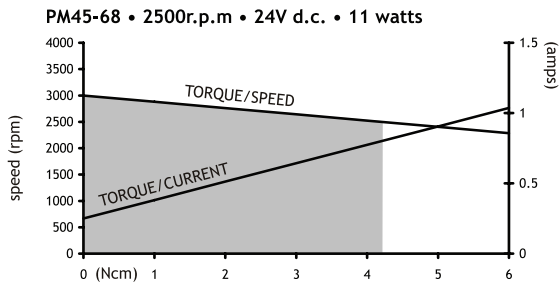
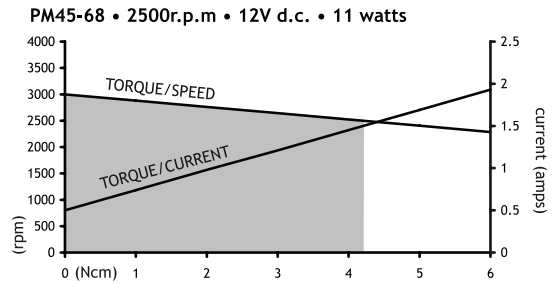
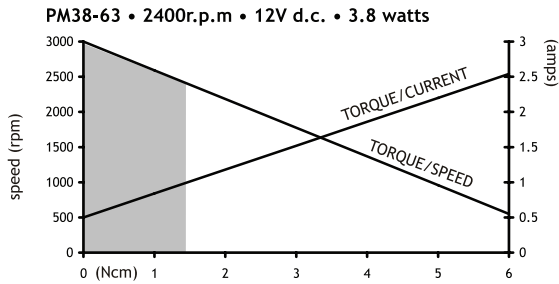
**wiring diagram**



**MOTOR ROTATION ANTI-CLOCKWISE LOOKING ON DRIVE END**

planetary

# Planetary data



= maximum continuous rating

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# PM38-63PG36

MOTOR	Permanent magnet DC motor
PROTECTION	Totally enclosed (IP44)
GEARBOX	Planetary
POWER	3.8 - 5.7 Watts
SPEED	3 - 647 rpm
VOLTAGE	12V DC standard; 24V - 50V on request
WEIGHT	0.40 kg (ST1); 0.45 kg (ST2); 0.50 kg (ST3); 0.55 kg (ST4)
RADIAL LOAD	13 N (ST1); 26 N (ST2); 39 N (ST3); 39 N (ST4)
AXIAL LOAD	5 N (ST1); 10 N (ST2); 15 N (ST3); 15N (ST4)
SHAFT TYPE	Single shaft as standard
EXTRAS	See page 36



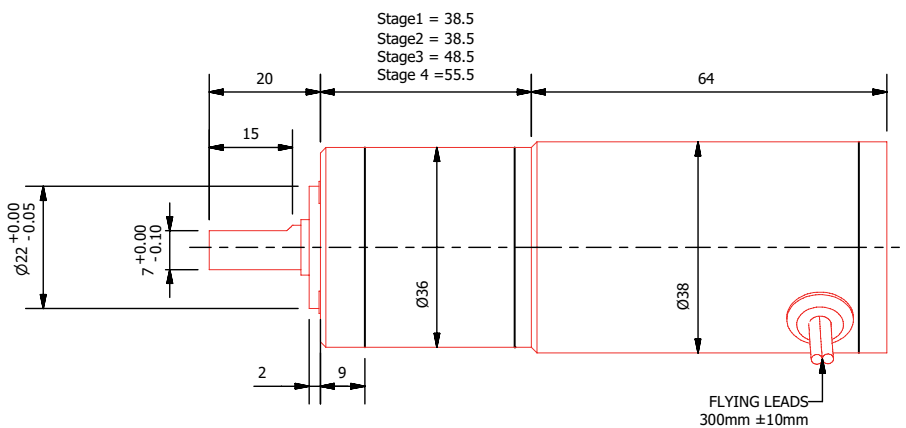
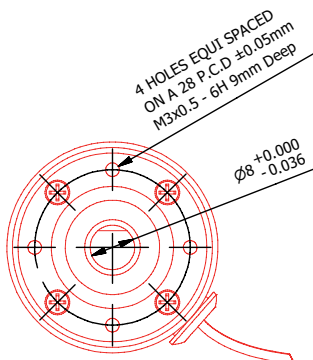
PM38-63 with stage 1 gearbox (PG36) pictured

Motor Power Cont. (W)		3.8	TORQUE (Nm)		
Motor Power 1 Hour (W)		4.8			
Motor Power 15 Min (W)		5.7			
STAGE	RATIO	MOTOR SPEED (rpm)	CONTINUOUS	1 HOUR	15 MINUTE
		2400			
		OUTPUT SPEED (rpm)			
4	720	3	3.0	3.0	3.0
4	369	7	3.0	3.0	3.0
4	264	9	3.0	3.0	3.0
4	189	13	2.4	3.0	3.0
3	139	17	1.8	2.2	2.7
3	100	24	1.3	1.6	1.9
3	71	34	0.9	1.1	1.4
3	51	47	0.7	0.8	1.0
2	27	89	0.3	0.4	0.5
2	19	126	0.2	0.3	0.4
2	14	171	0.2	0.2	0.3
1	5.18	463	0.1	0.1	0.1
1	3.71	647	0.0	0.1	0.1

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planetary

# PM45-68PG36

MOTOR	Permanent magnet DC motor
PROTECTION	Totally enclosed (IP44)
GEARBOX	Planetary
POWER	11.0 - 16.5 Watts
SPEED	25 - 674 rpm
VOLTAGE	24V DC standard; 12V - 50V on request
WEIGHT	0.65 kg (STAGES 1 & 2); 0.70 kg (STAGE 3)
RADIAL LOAD	13 N (ST1); 26 N (ST2); 39 N (ST3); 39 N (ST4)
AXIAL LOAD	5 N (ST1); 10 N (ST2); 15 N (ST3); 15N (ST4)
SHAFT TYPE	Single shaft as standard
EXTRAS	See page 36

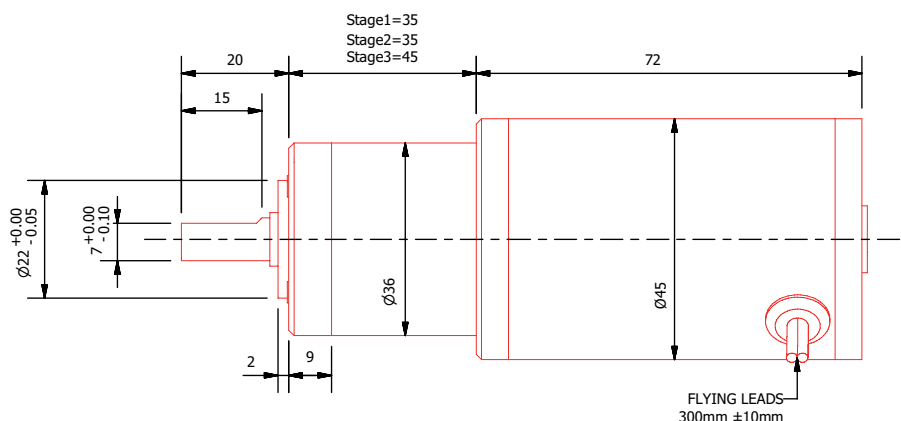
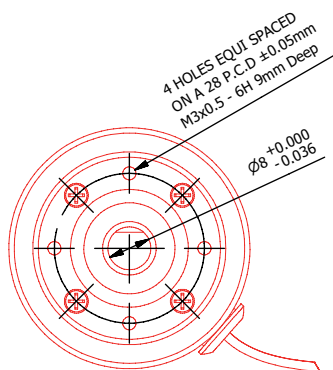


PM45-68 with stage 1 gearbox (PG36) pictured

Motor Power Cont. (W)		11.0	TORQUE (Nm)		
Motor Power 1 Hour (W)		13.8			
Motor Power 15 Min (W)		16.5			
STAGE	RATIO	MOTOR SPEED (rpm)	CONTINUOUS	1 HOUR	15 MINUTE
		2500			
		OUTPUT SPEED (rpm)			
3	100	25	3.0	3.0	3.0
3	51	49	1.9	2.4	2.8
2	27	93	1.0	1.3	1.5
2	19	132	0.7	0.9	1.1
1	5	483	0.2	0.2	0.3
1	4	674	0.1	0.2	0.2

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# PM45-68PG45

MOTOR	Permanent magnet DC motor
PROTECTION	Totally enclosed (IP44)
GEARBOX	Planetary
POWER	11.0 - 21.0 Watts
SPEED	5 - 863 rpm
VOLTAGE	24V DC standard; 12V - 50V on request
WEIGHT*	0.85 kg (ST1 & ST2); 0.925 kg (ST3); 0.95 kg (ST4)
RADIAL LOAD*	40 N (ST1); 70 N (ST2); 100 N (ST3); 130 N (ST4)
AXIAL LOAD*	10 N (ST1); 20 N (ST2); 30 N (ST3); 40 N (ST4)
SHAFT TYPE	Single shaft as standard
EXTRAS	See page 36



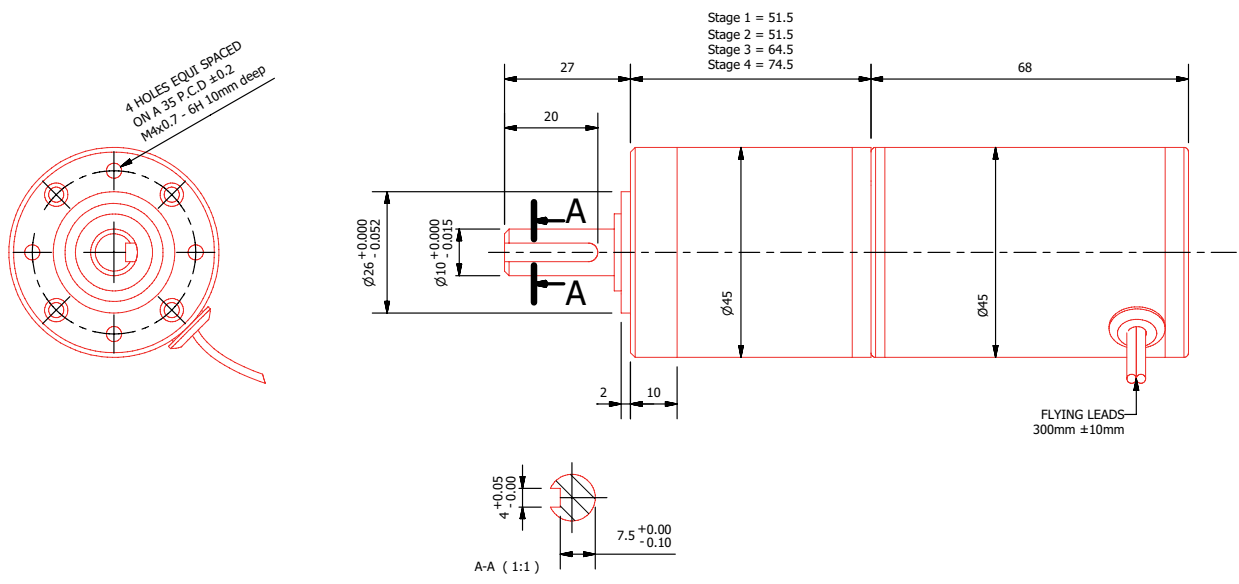
PM45-68 with stage 1 gearbox (PG45) pictured

Motor Power Cont. (W)		11.0	14.0	TORQUE (Nm)		
Motor Power 1 Hour (W)		13.8	17.5			
Motor Power 15 Min (W)		16.5	21.0			
STAGE	RATIO	MOTOR SPEED (rpm)		CONTINUOUS	1 HOUR	15 MINUTE
		2500	3200			
		OUTPUT SPEED (rpm)				
4	516	5	6	10.0	10.0	10.0
4	369	7	9	10.0	10.0	10.0
4	264	9	12	9.4	10.0	10.0
4	189	13	17	6.7	8.4	10.0
3	139	18	23	4.9	6.2	7.4
3	100	25	32	3.6	4.4	5.3
3	71	35	45	2.5	3.2	3.8
3	51	49	63	1.8	2.3	2.7
2	27	93	119	1.0	1.2	1.4
2	19	132	168	0.7	0.8	1.0
2	14	179	229	0.5	0.6	0.7
1	5.18	483	618	0.2	0.2	0.3
1	3.71	674	863	0.1	0.2	0.2

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\*ST=Stage

planetary

# PM60-75PG56

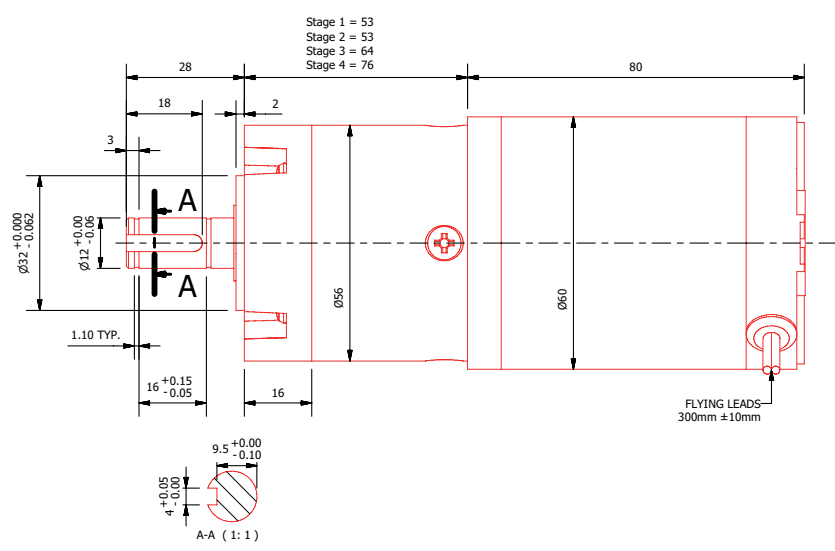
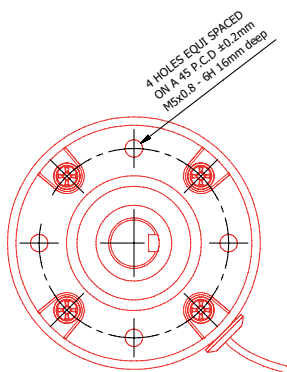
MOTOR	Permanent magnet DC motor
PROTECTION	Totally enclosed (IP44)
GEARBOX	Planetary
POWER	3.7 - 15.0 Watts
SPEED	3 - 694 rpm
VOLTAGE	24V DC standard; 12V - 50V on request
WEIGHT*	1.25 kg (ST1 & ST2); 1.40 kg (ST3); 1.50 kg (ST4)
RADIAL LOAD*	80 N (ST1); 140 N (ST2); 200 N (ST3); 260 N (ST4)
AXIAL LOAD*	20 N (ST1); 40 N (ST2); 60 N (ST3); 80 N (ST4)
SHAFT TYPE	Single shaft as standard
EXTRAS	See page 36



PM60-75 with stage 1 gearbox (PG56) pictured

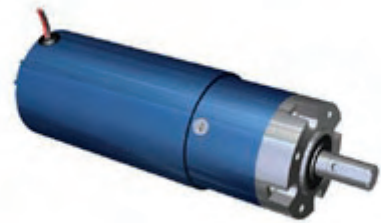
Motor Power Cont. (W)		3.7	6.0	10.0	TORQUE (Nm)		
Motor Power 1 Hour (W)		4.6	7.5	12.5			
Motor Power 15 Min (W)		5.5	9.0	15.0			
STAGE	RATIO	MOTOR SPEED (rpm)			CONTINUOUS	1 HOUR	15 MINUTE
		890	1500	2500			
		OUTPUT SPEED (rpm)					
4	326	3	5	8	10.6	13.2	15.9
4	276	3	5	9	9.0	11.2	13.4
4	234	4	6	11	7.6	9.5	11.4
4	198	4	8	13	6.4	8.0	9.6
4	168	5	9	15	5.5	6.8	8.2
3	76	12	20	33	2.5	3.1	3.7
3	65	14	23	38	2.1	2.6	3.2
3	55	16	27	45	1.8	2.2	2.7
3	47	19	32	53	1.5	1.9	2.3
2	18	49	83	139	0.6	0.7	0.9
2	15	59	100	167	0.5	0.6	0.7
2	13	68	115	192	0.4	0.5	0.6
1	4.25	209	353	588	0.1	0.2	0.2
1	3.6	247	417	694	0.1	0.1	0.2

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# PM60-105PG56

MOTOR	Permanent magnet DC motor
PROTECTION	Totally enclosed (IP44)
GEARBOX	Planetary
POWER	20.0 - 48.0 Watts
SPEED	5 - 694 rpm
VOLTAGE	24V DC standard; 12V - 50V on request
WEIGHT*	1.50 kg (ST1 & ST2); 1.65 kg (ST3); 1.9 kg (ST4)
RADIAL LOAD*	80 N (ST1); 140 N (ST2); 200 N (ST3); 260 N (ST4)
AXIAL LOAD*	20 N (ST1); 40 N (ST2); 60 N (ST3); 80 N (ST4)
SHAFT TYPE	Single shaft as standard
EXTRAS	See page 36



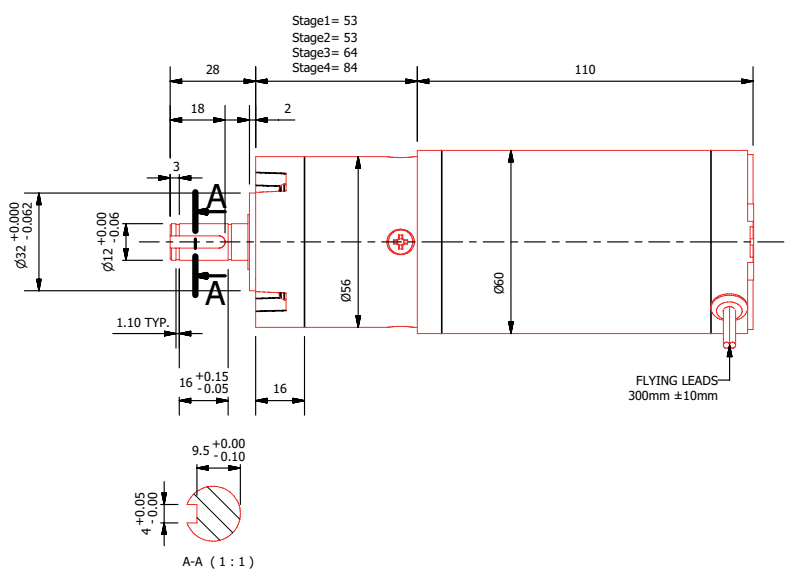
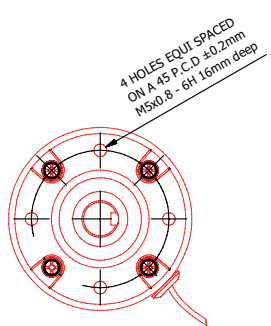
PM60-105 with stage 1 gearbox (PG56) pictured

Motor Power Cont. (W)		20.0	32.0	TORQUE (Nm)		
Motor Power 1 Hour (W)		25.0	40.0			
Motor Power 15 Min (W)		30.0	48.0			
STAGE	RATIO	MOTOR SPEED (rpm)		CONTINUOUS	1 HOUR	15 MINUTE
		1550	2500			
		OUTPUT SPEED (rpm)				
4	326	5	8	30.0	30.0	30.0
4	276	6	9	28.9	30.0	30.0
4	234	7	11	24.5	30.0	30.0
4	198	8	13	20.7	25.9	30.0
4	168	9	15	17.6	22.0	26.4
3	76	20	33	8.0	10.0	11.9
3	65	24	38	6.8	8.5	10.2
3	55	28	45	5.8	7.2	8.6
3	47	33	53	4.9	6.2	7.4
2	18	86	139	1.9	2.4	2.8
2	15	103	167	1.6	2.0	2.4
2	13	119	192	1.4	1.7	2.0
1	4.25	365	588	0.4	0.6	0.7
1	3.6	431	694	0.4	0.5	0.6

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\*ST=Stage

# PM71-110PG56

MOTOR	Permanent magnet DC motor
PROTECTION	Totally enclosed (IP44)
GEARBOX	Planetary
POWER	40.0 - 88.0 Watts
SPEED	5 - 667 rpm
VOLTAGE	24V DC standard; 12V - 50V on request
WEIGHT*	1.75 kg (ST1 & ST2); 1.90 kg (ST3); 2.2 kg (ST4)
RADIAL LOAD*	80 N (ST1); 140 N (ST2); 200 N (ST3); 260 N (ST4)
AXIAL LOAD*	20 N (ST1); 40 N (ST2); 60 N (ST3); 80 N (ST4)
SHAFT TYPE	Single shaft as standard
EXTRAS	See page 36



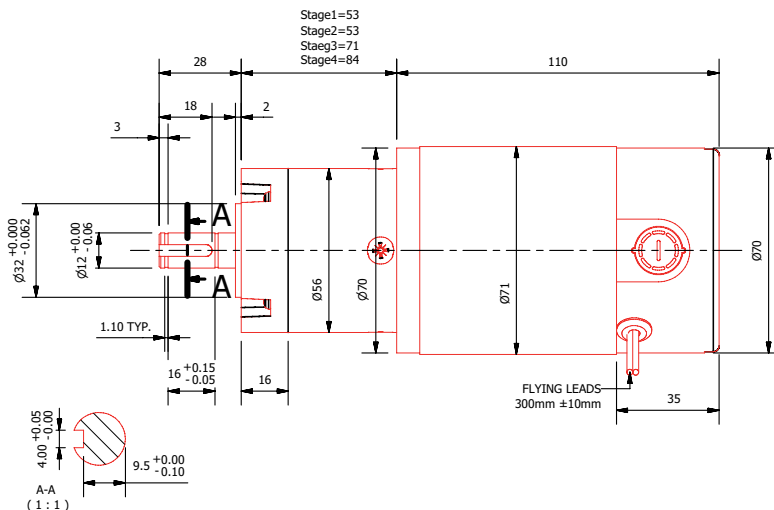
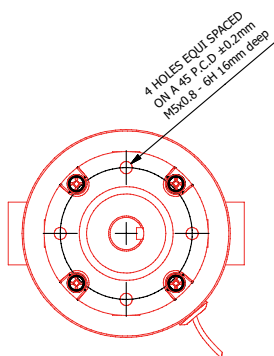
PM71-110 with stage 1 gearbox (PG56) pictured

Motor Power Cont. (W)		40.0	59.0	TORQUE (Nm)		
Motor Power 1 Hour (W)		50.0	74.0			
Motor Power 15 Min (W)		60.0	88.0			
STAGE	RATIO	MOTOR SPEED (rpm)		CONTINUOUS	1 HOUR	15 MINUTE
		1600	2400			
		OUTPUT SPEED (rpm)				
4	326	5	7	30.0	30.0	30.0
4	276	6	9	30.0	30.0	30.0
4	234	7	10	30.0	30.0	30.0
4	198	8	12	30.0	30.0	30.0
4	168	10	14	30.0	30.0	30.0
3	76	21	32	15.2	19.0	22.6
3	65	25	37	13.0	16.3	19.3
3	55	29	44	11.0	13.8	16.4
3	47	34	51	9.4	11.8	14.0
2	18	89	133	3.6	4.5	5.4
2	15	107	160	3.0	3.8	4.5
2	13	123	185	2.6	3.3	3.9
1	4.25	376	565	0.8	1.1	1.3
1	3.6	444	667	0.7	0.9	1.1

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# 3 point fixing option

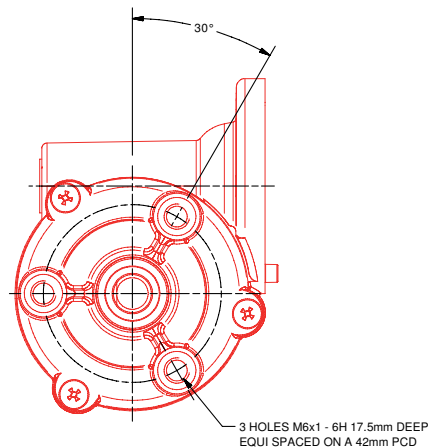
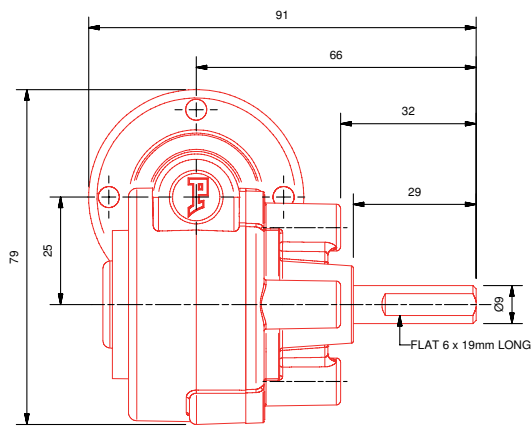
Alternative gearbox lid with 3 tapped holes  
Available for S, M & L worm-wheel gearboxes

	S3P	M3P	L3P
Fixing holes	3 x M6	3 x M6	3 x M8
PCD	42mm	50.8mm	72mm

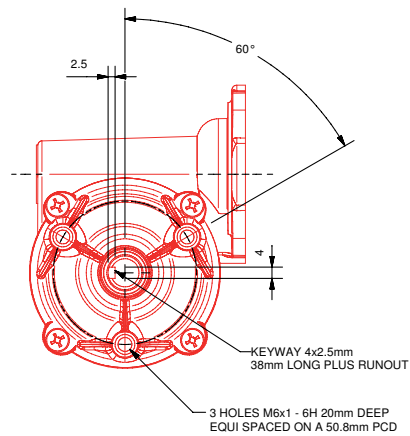
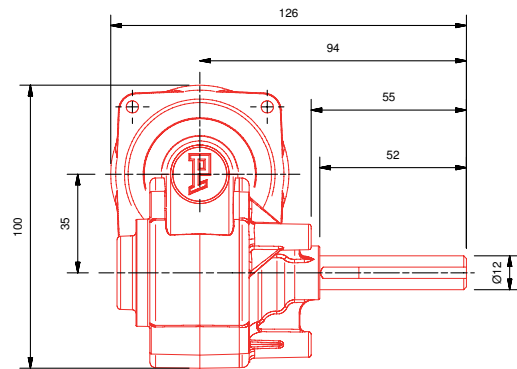


L3P pictured

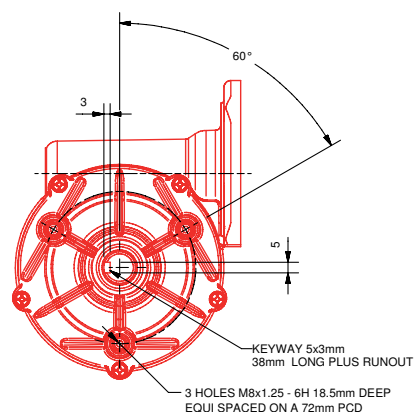
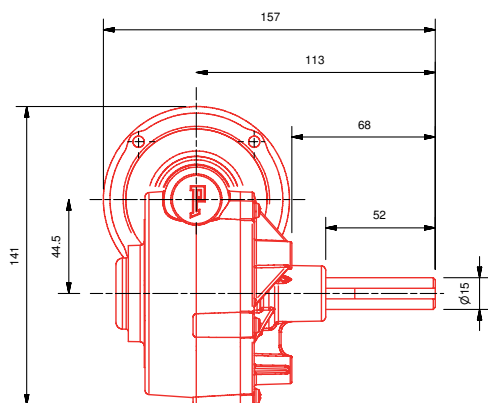
Parvalux S3P fixing option



Parvalux M3P fixing option



Parvalux L3P fixing option



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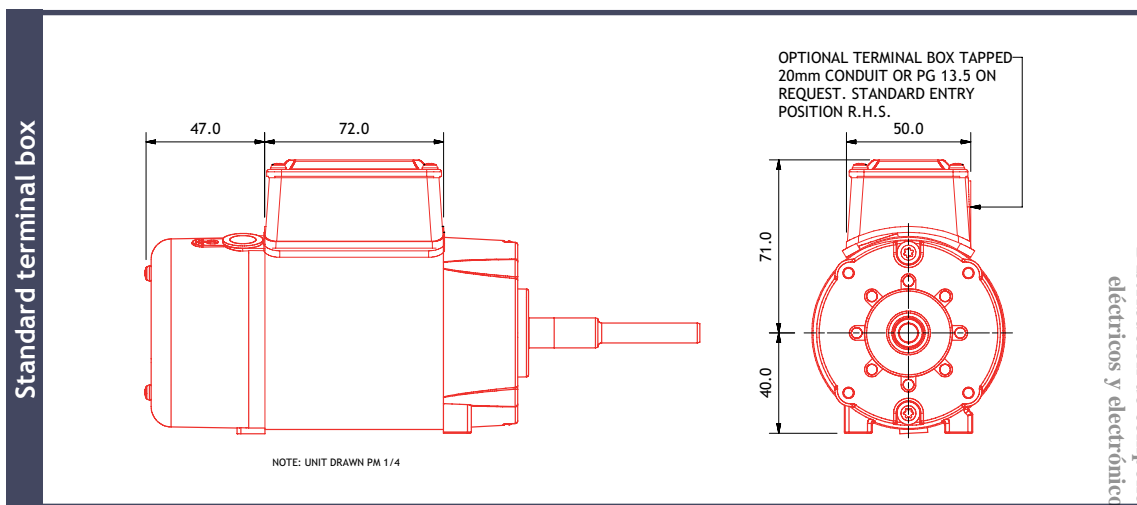
# terminal box

Die-cast terminal box with sealed lid  
 Hole for cable exit gland can be tapped M20 or PG13.5  
 Glass filled polyamide terminal block

Motor ranges - optional	PM1-6, PM50, PM60;
Additional height	typically 32-35 mm
Connections	Accept leads up to 2.5 mm <sup>2</sup> Screw terminal for earth
Protection	IP54



PM1 with terminal box pictured



# gearbox information

## Torque Ratings

All gearbox torque figures have been reproduced to represent an accurate output figure. These figures may be affected by tolerances created during production techniques as well as application circumstances once the units have been installed. A margin of + or - 10% should be taken into consideration on these figures during your selection of an appropriate unit.

## Gear units

- Worm gear units: The output shaft is pressed into gear wheels of composite or bronze, with hardened and polished steel worms.
- Worm/spur gear units: The drive pinion comprises either a composite or bronze worm gear with a pressed steel helical pinion insert driving a spur steel gear train rotating on intershafts. The final gear is pressed and keyed onto the final shaft.
- Spur units: The steel pinion drives helical/spur cut steel gears rotating on intershafts. The final gear is pressed and keyed onto the final shaft.
- Planetary units: The composite drive pinion drives a series of steel secondary gears.

Gearbox and quality ball bearings are packed with an appropriate grade of NLGI 1/2 grease as standard. All units are sealed for life utilising 'O' rings on all key mating surfaces and are suitable for running in any mounting position.

## Gearbox positions

Alternative positions for the gearboxes can be arranged to suit customer requirements but unless specified, will be supplied in standard position as shown on the individual drawings. This also applies to the gearbox shaft extensions.

## Lubricants

Parvalux gearboxes are charged as standard with NLGI 1/2 rated grease and are sealed and lubricated for life. In certain conditions, Parvalux gearboxes may be filled with multi-grade (20/50) oil or semi-fluid grease and sealed for life. Working temperatures of lubricants: -

- Grease: - 15°C to +120°C
- Oil: - 15°C to +150°C

For units used in extreme temperature environments (below 0°C or above 40°C), please contact our sales team (sales@parvalux.co.uk).

## Single and double worm reduction gearboxes

Whilst worm gearing has lower efficiency than spur gearing it is true to say that generally the noise level of worm gear reduction is much lower and therefore, where noise is an important factor, this type of gearing should be considered. To prevent premature gear failure or excessive gear wear, the maximum gear loading and thermal rating of the particular gearbox must be taken into consideration; otherwise there is a danger of stripping the gear wheel teeth or failure of the lubrication

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# spring applied brakes

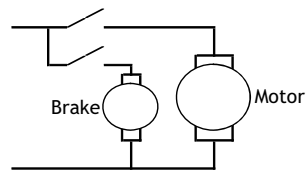
Fail safe, spring applied, electromagnetic release brakes  
 Holding and stopping applications  
 Range of AC and DC supply voltages  
 Mounted to rear of motor  
 Environmental protection up to IP55



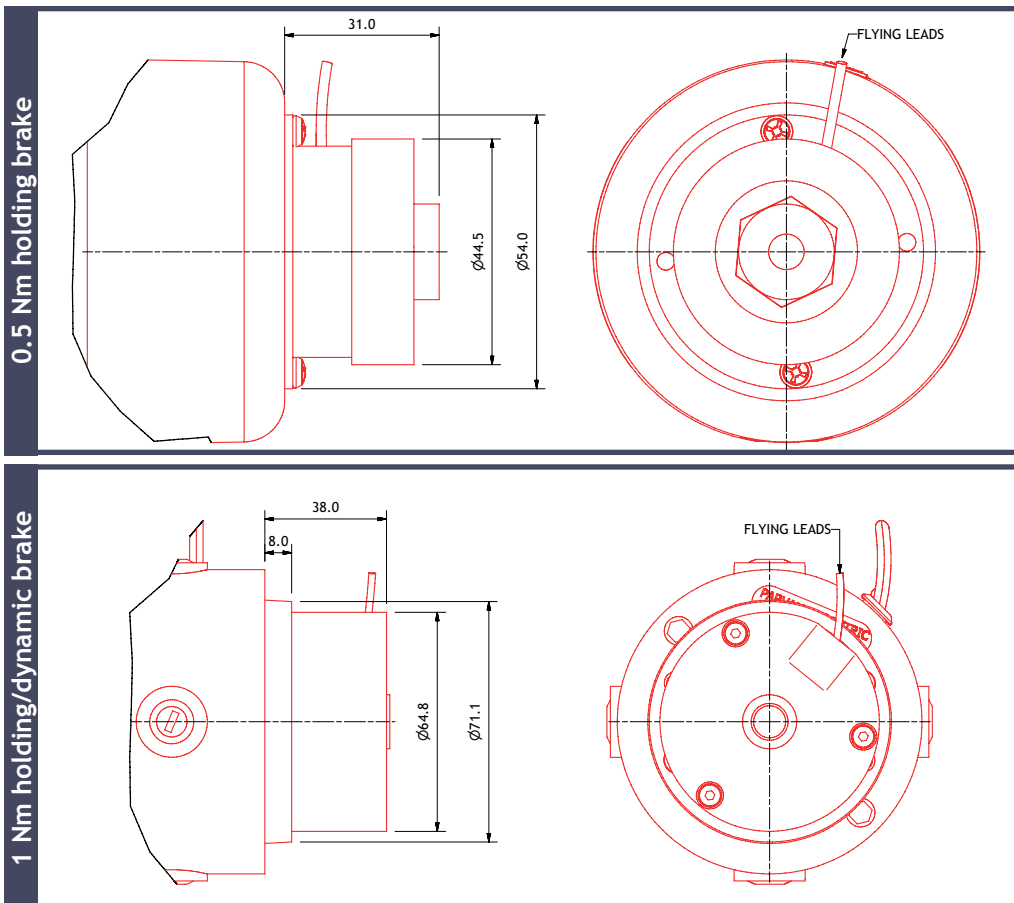
PM95 with holding/dynamic brake pictured

Type	Holding brake	Holding/dynamic brake	Holding/dynamic brake
Torque	0.5 Nm	0.4 Nm	1.0 Nm
Motor ranges (additional length in mm shown in brackets)	PM1-6, 10, 11, 50, 60; (+31)	PM1, 3, 5, 10, 11; (+38)	PM2, 4, 6, 50, 60, 90, 95; (+38)
Supply voltage	12/24 Vdc	24 Vdc/ 110/230 Vac	24 Vdc/ 110/230 Vac
Coil power	8.5 W	14 W	14 W
Coil VA (AC brakes)	-	24 VA	24 VA
Max. stopping power	-	50 kJ/h	50 kJ/h
Connections	300 mm flying leads	300 mm flying leads	300 mm flying leads
Protection	-	IP55	IP55

## example wiring diagram



Example wiring of motor brake operating from the same supply and switched using double pole switch to prevent the voltage from the motor keeping the brake open while decelerating.



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# incremental encoder

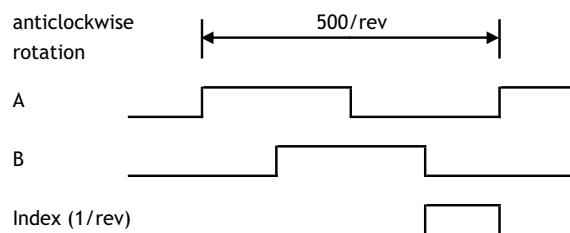


PM10 with encoder pictured

HEDS compatible 2 channel encoder with index pulse  
 Standard line count 500 CPR (up to 1250 CPR available)  
 Supply voltage 5 V  
 Output voltage TTL compatible  
 Mounted to rear of motor

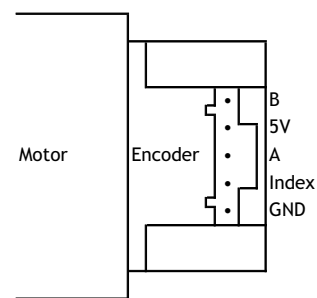
Motor ranges (additional length in mm shown in brackets)	PM1-6, PM7-9, PM10, PM11, PM50, PM60; (+16.5) PM90, PM95; (+21)
Current consumption	typ. 60 mA with no load
Connections	5-way socket for latching connector 300 mm flying leads available
Protection	IP30

## encoder output signals



A leads B for anticlockwise motor rotation  
 (positive connected to red lead on PM motors)  
 Index pulse is gated with A and B both low

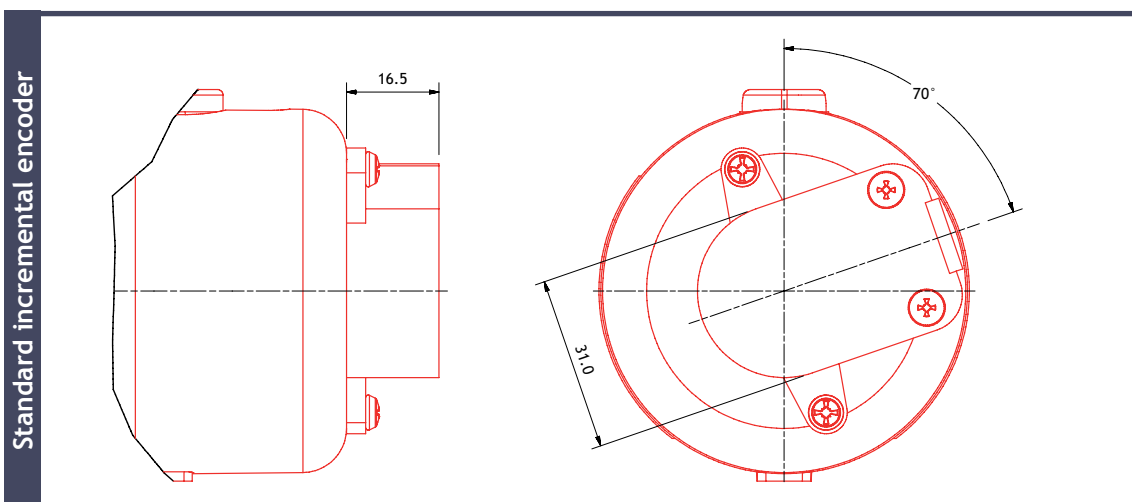
## encoder connector



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Standard incremental encoder

# brushless tachogenerator

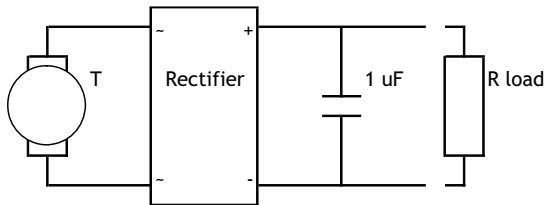
Single phase AC 24-pole  
 200 Hz/krpm output frequency (12 cycles/rev)  
 Output can be filtered to produce DC speed signal  
 Mounted to rear of motor



PM7 with tachogenerator pictured

Motor ranges (additional length in mm shown in brackets)	PM7-9, 10, 11; (+10) PM1-6, 50, 60; (+18)
Resistance	600 ohm
Inductance	80 mH
Connections	300 mm flying leads
Protection	IP20

## example DC output filter



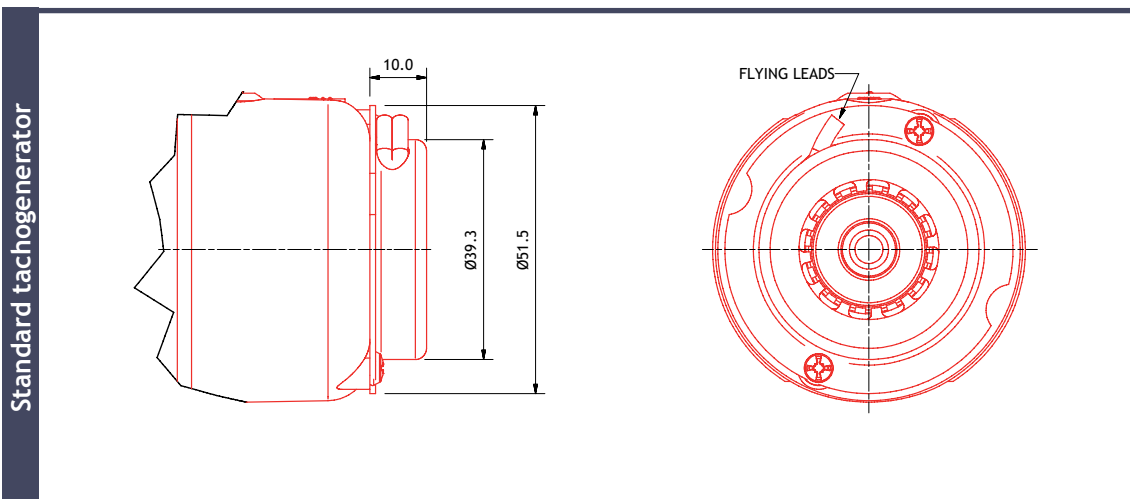
## output voltage characteristic

Output filter circuit	Tacho only	DC filter circuit 10 kohm load	DC filter circuit 47 kohm load
Output voltage characteristic	$V_{rms} = k_{rpm} * 6.4$ $- (k_{rpm}^2) / 3$	$V_{dc} = k_{rpm} * 6.5$ $- (k_{rpm}^2) / 3$	$V_{dc} = k_{rpm} * 7.7$ $- (k_{rpm}^2) / 3$
Voltage ripple		1-2 V <sub>ptp</sub>	1-2 V <sub>ptp</sub>

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Standard tachogenerator



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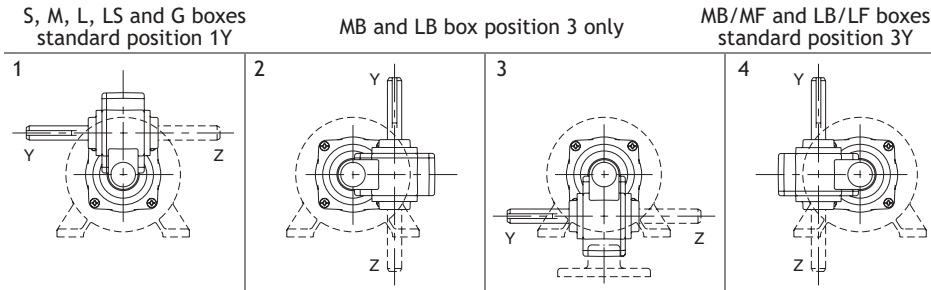
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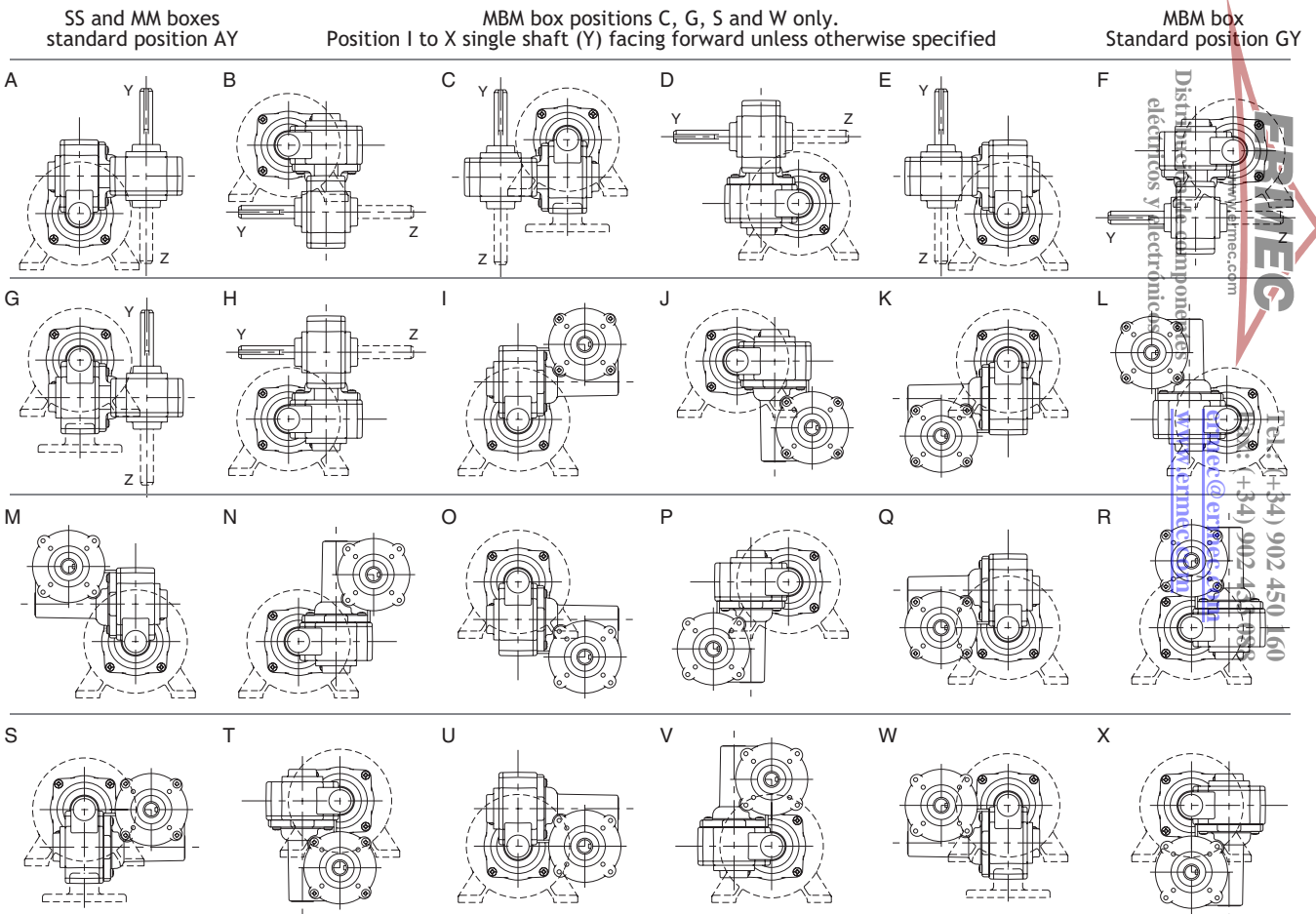
# shaft and worm gearbox positions

Single shaft Y standard – Z shaft optional on request  
 Double shaft extensions Y and Z available at extra cost

## Single reduction



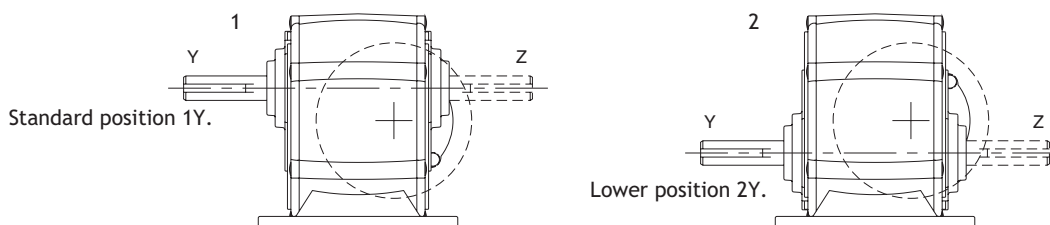
## Double reduction



All the above positions correspond to the end elevation drawing of the appropriate unit with feet at the base of drawing.

## Shaft positions worm and multi spur gearbox

Single shaft Y standard – Z shaft optional on request. Double shaft extensions Y and Z available at extra cost



# mechanical data

GEARBOX TYPE	GEAR	RATIO / STAGE	MECHANICAL RATING (Nm)		THERMAL RATING (Watts)		*RADIAL LOADING (N)	AXIAL LOADING (N)
			Composite	Bronze	Composite	Bronze		
S	Worm	4 1/8:1 to 40:1	2.9	4.5	20	25	69	35
		44:1 to 60:1	2.3	4				
		66:1 to 72:1	1.5	2.5				
M	Worm	4 1/8:1 to 40:1	7.9	11.8	38	45	132	88
		44:1 to 60:1	5.9	7.9				
		66:1 to 72:1	5.1	7.3				
MB or MF	Worm	4 1/8:1 to 40:1	7.9	11.8	40	48	226	108
		44:1 to 60:1	5.9	7.9				
		66:1 to 72:1	5.1	7.3				
L or LH	Worm	5:1 to 40:1	14.6	22	60	72	177	132
		50:1 to 60:1	11.3	17				
LS or LSH	Worm	5:1 to 40:1	14.6	22	60	72	314	196
		50:1 to 60:1	11.3	17				
LB or LF or LHB	Worm	5:1 to 40:1	14.6	-	60	72	314	157
		50:1 to 60:1	11.3	17				
G or GH	Worm	12 1/2:1 to 75:1	50	-	100	-	491	294
SS	Double worm	47:1 to 2880:1	4	5.9	25	30	54	35
		3000:1 to 4300:1	2.7	4				
		4320:1 to 5184:1	1.5	2.5				
MM	Double worm	47:1 to 2880:1	9	11.8	45	54	88	88
		3000:1 to 4300:1	5.9	7.9				
		4320:1 to 5184:1	5.1	7.3				
MBM	Double worm	47:1 to 2880:1	9	11.8	47	58	177	108
		3000:1 to 4300:1	5.9	7.9				
		4320:1 to 5184:1	5.1	7.3				
SIW	In-line worm	ALL RATIOS	7	11.3	28	38	78	46
MIW	In-line worm	ALL RATIOS	17	28	50	65	265	132
LIW	In-line worm	ALL RATIOS	28	45	-	-	353	196
SIS	In-line spur	22:1 to 33:1	5.7	-	-	-	88	44
		53:1 to 347:1	7.9	-	-	-	-	-
MIS	In-line spur	5.73:1 SPUR	12	-	-	-	216	137
		13.45:1 SPUR	28	-	-	-	-	-
		31.3:1 SPUR	45	-	-	-	-	-
LIS	In-line spur	6:1 SPUR	23	-	-	-	265	177
		25:1 SPUR	51	-	-	-	-	-
		56:1/115:1 SPUR	74	-	-	-	-	-
SWS	Worm/spur	ALL RATIOS	11	-	-	-	177	112
MWS	Worm/spur	6.5:1 SPUR	9	-	-	-	353	177
		15.1:1 SPUR	22	-	-	-	-	-
		35.39:1 SPUR	45	-	-	-	-	-
LWS	Worm/spur	6:1 SPUR	45	-	-	-	446	226
		25:1 SPUR	62	-	-	-	-	-
		56:1/115:1 SPUR	100	-	-	-	-	-
GWS	Worm/spur	11:1 SPUR	90	-	-	-	667	353
		25:1 SPUR	200	-	-	-	-	-
		57:1/110:1 SPUR	250	-	-	-	-	-
PG36	Planetary	1 stage	1	-	-	-	13	5
PG36	Planetary	2 stage	3	-	-	-	26	10
PG36	Planetary	3 stage	6	-	-	-	39	15
PG36	Planetary	4 stage	6	-	-	-	39	15
PG45	Planetary	1 stage	2	-	-	-	40	10
PG45	Planetary	2 stage	5	-	-	-	70	20
PG45	Planetary	3 stage	15	-	-	-	100	30
PG45	Planetary	4 stage	30	-	-	-	130	40
PG56	Planetary	1 stage	3	-	-	-	80	20
PG56	Planetary	2 stage	10	-	-	-	140	40
PG56	Planetary	3 stage	30	-	-	-	200	60
PG56	Planetary	4 stage	60	-	-	-	260	80

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\* Based on midway point of standard shaft extension

# gearbox thermal rating limits

**PRODUCTS** Parvalux worm gearboxes S, M, MB, MF, L, LH, LB, LF, LHB, LS, LSH, G, GH, SS, MM, MBM, SIW, MIW

**ENCLOSED** Table 1 (thermal rating), table 2 (worm efficiency)

**NOTE** For the above range of gearboxes, the maximum continuous output power (S1 duty cycle) is limited by the maximum thermal rating of the gearbox. The following datasheet describes the required calculation.

**TABLE 1: Maximum thermal rating (Watts)**

Gearbox Type	Thermal Rating (Watts)	
	Composite	Bronze
S	20	25
M	38	45
MB, MF	40	48
L, LH, LB, LF, LHB, LS, LSH	60	72
G, GH	100	-
SS	25	30
MM	45	54
MBM	47	58
SIW	28	38
MIW	50	65

**EXAMPLE 1**

Using the gearbox efficiency figures attached (table 2), an example calculation is as follows: PM7S, 4000 rpm input speed, 70:1 ratio (delrin), 57 rpm output speed, 1.2Nm required.

$$\therefore \text{Approx. thermal rating } (W) = \frac{57 \times 1.2}{9.55} \times \left( \frac{1}{0.330} - 1 \right) = 7.16 \times 2.03 = 14.5 \text{ W}$$

The thermal rating of the S gearbox is 20W (from table 1) and therefore the maximum continuous output torque of 1.2Nm is acceptable.

**EXAMPLE 2**

PM7S, 4000 rpm input speed, 44:1 ratio (delrin), 91 rpm output speed, 2.3Nm required continuously run.

$$\therefore \text{Approx. thermal rating } (W) = \frac{91 \times 2.3}{9.55} \times \left( \frac{1}{0.419} - 1 \right) = 21.92 \times 1.39 = 30.4 \text{ W}$$

The thermal rating of the S gearbox is 20W (from table 1) and therefore the 30.4W exceeds the maximum rating by over 50%. This will damage the gearbox; therefore the S gearbox is insufficient for this application.

**EXAMPLE 3**

PM7S, 4000 rpm input speed, 44:1 ratio (delrin), 91 rpm output speed, 2.3Nm required with a duty cycle of 20%.

$$\text{Approx. thermal rating } (W) = \frac{91 \times 2.3}{9.55} \times \left( \frac{1}{0.419} - 1 \right) = 21.92 \times 1.39 = 30.4 \text{ W}$$

$$x = \sqrt{\left( \frac{100}{20} \right)} = 2.24$$

$$\therefore \text{Approx. intermittent thermal rating } (W) = 20 \times 2.24 = 44.8 \text{ W}$$

The thermal rating of the S gearbox is 20W (from table 1), but due to the low duty cycle of the application the thermal rating of the gearbox of 30.4W is within the maximum intermittent rating of 44.8W.

**CONTINUOUS DUTY CYCLE (S1)**

The thermal rating of the gearbox can be calculated using the following formula: -

$$\text{Approx. thermal rating } (W) = \frac{\text{Final RPM} \times \text{Torque (Nm)}}{9.55} \times \left( \frac{1}{\eta} - 1 \right)$$

$\eta$  = efficiency of the gearbox (see below)

**INTERMITTENT DUTY CYCLE**

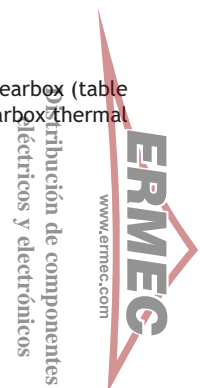
For intermittent duty the thermal rating for the gearbox (table 1) is increased by multiplying the appropriate gearbox thermal rating by the factor x:

$$x = \sqrt{\left( \frac{100\%}{\text{Duty cycle \%}} \right)}$$

**TABLE 2: Gearbox efficiency**

Single worm efficiency (except G box)			
Ratio	Effic	Ratio	Effic
4 1/8	0.845	22 1/2	0.540
5 1/6	0.804	24 1/2	0.524
6 1/4	0.770	25	0.521
7 1/4	0.743	27	0.507
8 1/3	0.718	30	0.488
9 1/3	0.698	33	0.471
10 1/3	0.680	36	0.455
11 1/3	0.663	40	0.436
12 1/3	0.645	44	0.419
13 1/2	0.632	48	0.403
14 1/2	0.619	54	0.382
15 1/2	0.607	60	0.363
16 1/2	0.595	66	0.346
18 1/2	0.575	72	0.330
20 1/2	0.556		

Single worm efficiency (G box)	
Ratio	Effic
12 1/2	0.75
25	0.69
30	0.66
50	0.61
60	0.58
75	0.56



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# EMC guidelines

<b>PRODUCT</b>	PM1 - PM95
<b>VOLTAGE</b>	DC 12V / 300V PM1 - PM60 DC 12V / 24V PM90/95
<b>DIRECTIVE</b>	2004/108/EC
<b>STANDARDS</b>	EN55014 EN61000-6-4 Class A EN61000-6-3 Class B

In order to meet the directive 2004/108/EC, an EMC filter is required in the power supply line to all motor types. The filter is selected according to voltage, speed and current and with a large range of potential winding types we strongly recommend that you contact one of our technical advisers to ensure correct selection. The following table provides a summary of recommended filters:

Type	Motor Voltage	rpm	Filter	Standard
PM1 - PM60	12V - 300V	1500 - 5000	10A / 25A / 50A	EN55014
PM90	12V	4000/3000	50A	EN61000-6-4 CLASSA*
PM90	12V	2000/1500	25A	EN61000-6-4 CLASSA*
PM90	24V	4000/3000	25A	EN61000-6-4 CLASSA*
PM90	24V	2000/1500	10A	EN61000-6-4 CLASSA*
PM95	12V	4000	65A	EN61000-6-4 CLASSA*
PM95	12V	3000	50A	EN61000-6-4 CLASSA*
PM95	12V	2000/1500	25A	EN61000-6-4 CLASSA*
PM95	24V	4000/3000/2000/1500	25A	EN61000-6-4 CLASSA*

\*If EN61000-6-3 class B is required (PM90/95 only), an additional ferrite sleeve and 2 capacitors are required.

ACCESSORY	FILTER				CAPACITOR***	FERRITE SLEEVE
	10A	25A	50A	65A**		
						
Parvalux part no.	50296	50297	50291	On application**	50293	50292
Dimensions (mm)	40 dia x 75 long	46 dia x 98 long	64 dia x 75 long	On application**	5.5 x 12.5 x 18 W x H x D	26 dia x 28.5 long
					lead pitch 15 mm	placed 10cm from motor

\*\*Please check for availability

\*\*\*2 capacitors required

## EMC installation requirements

- The maximum permitted lead length between motor and filter is 600mm.
  - SUPPLY: Brown, Blue + Earth
  - MOTOR: Red, Black + Earth
- The filters needs to be fitted as close to the motor as possible.
- The earth leads must be connected to the motor and firmly to an earth reference point (or negative terminal if a battery is used)

## EMC installation requirements EN61000-6-3 CLASS B (PM90/95 only)

- Carry out filter installation as described above.
- Ferrite to be placed 10cm from motor body.
- Two capacitors must be fitted, one between each motor supply lead and earth



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# CE directive

## CE Marking

With the declaration of conformity and the CE mark on the product the manufacturer certifies that the product complies with the requirements of all relevant EC New Approach Directives. For each of the relevant New Approach Directives the manufacturer is to adopt an appropriate Harmonised Standard.

## Machinery Directive 98/37/EC

The Machinery Directive describes a machine as “an assembly of linked parts or components, at least one of which moves, with the appropriate actuators, control and power circuits, etc., joined together for a specific application...” Parvalux products as supplied do not have a specific application as they do not perform a complete mechanical function and must be installed by a competent person. As a result, compliance with the Machinery Directive is not required provided that a safety standard relevant to the type of equipment is adopted, for example the generic electrical safety standard EN60204-1.

## Electromagnetic Compatibility Directive 89/336/EEC - 2004/108/EC

The Electromagnetic Compatibility (EMC) Directive exists to govern the radio frequency electromagnetic emissions from equipment such that in its intended use it does not disturb other equipment. The Directive also governs the immunity of electrical equipment containing electronic components to electromagnetic interference that may be produced by other electrical equipment. Parvalux products comply with the EMC Directive when installed in accordance with the manufacturer's instructions.

## Low Voltage Directive 73/23/EEC - 2006/95/EC

The Low Voltage Directive exists to ensure that electrical equipment is safe in respect of all risks, electrical and otherwise. Parvalux chooses to adopt EN60204-1 for motors within the scope of the Low Voltage Directive, and also to comply with the safety aspects of this standard for motors with operating voltages below the scope of the LVD. Equipment with voltage ratings in the range 50-1000Vac and 75-1500Vdc is covered.

## CE Marking and the responsibilities of the customer

It is the responsibility of the customer or machine manufacturer who places an assembly or finished product using a Parvalux product on the market within the EC, to comply with the New Approach Directives relevant to that assembly or finished product.

## Standards for safe operation

EN60034-1:2004	Rotating electrical machines. Rating and performance.
EN60034-5:2001	Rotating electrical machines. Degrees of protection provided by the integral design of rotating electrical machines (IP code).
EN60034-6:1991	Rotating electrical machines. Methods of cooling (IC code).
EN60034-8:2002	Rotating electrical machines. Terminal markings and direction of rotation.
EN60034-9:2005	Rotating electrical machines. Noise limits.
EN60034-11:2004	Rotating electrical machines. Thermal protection.
EN60034-12:2002	Rotating electrical machines. Starting performance of single-speed three-phase cage induction motors.
EN60034-18-1:1994	Rotating electrical machines. Functional evaluation of insulation systems. General guidelines.
EN60204-1:2006	Electrical equipment of machines. General requirements.

## Standards for compliance with EMC limit values

EN55014-1:2006	Electromagnetic compatibility. Requirements for household appliances, electric tools and similar apparatus. Emission.
EN61000-6-1:2007	Electromagnetic compatibility (EMC). Generic standards. Immunity for residential, commercial and light-industrial environments.
EN61000-6-2:2006	Electromagnetic compatibility (EMC). Generic standards. Immunity for industrial environments.
EN61000-6-3:2007	Electromagnetic compatibility (EMC). Generic standards. Emission standard. For residential, commercial and light-industrial environments.
EN61000-6-4:2007	Electromagnetic compatibility (EMC). Generic standards. Emission standard. For industrial environments.

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# IP protection

The degrees of protection against ingress protection of foreign bodies and liquids are indicated by the first two characteristic numerals as detailed in the tables below. For switch and control gear the classification is recognised internationally and is described in detail in BS EN 60529.

**First (IP) Number**  
Protection against solid foreign objects

IP	Requirements	Meaning protection of persons against access to hazardous parts with:
0	No protection	Non-protected
1	Full penetration of 50mm diameter sphere not allowed. Contact with hazardous parts not permitted.	Back of hand
2	Full penetration of 12.5mm diameter sphere not allowed. The jointed test finger shall have adequate clearance from hazardous parts.	Finger
3	The access probe of 2.5mm diameter shall not penetrate.	Tool
4	The access probe of 1.0mm diameter shall not penetrate.	Wire
5	Limited ingress of dust permitted (no harmful deposit)	Wire
6	Totally protected against ingress of dust.	Wire

**Second (IP) Number**  
Protection against harmful ingress of water

IP	Requirements	Meaning protection from water:
0	No protection	Non-protected
1	Protected against vertically falling drops of water - limited ingress permitted.	Vertically dripping
2	Protected against vertically falling drops of water with enclosure tilted 15° from the vertical - limited ingress permitted.	Dripping up to 15° from the vertical
3	Protected against sprays to 60° from the vertical - limited ingress permitted.	Limited spraying
4	Protected against water splashed from all directions - limited ingress permitted.	Splashing from all directions
5	Protected against low pressure jets of water from all directions - limited ingress permitted.	Hosing jets from all directions
6	Protected against strong jets of water - limited ingress permitted.	Strong hosing jets from all directions
7	Protected against the effects of immersion between 15cm and 1m.	Temporary immersion
8	Protected against long periods of immersion under pressure.	Continuous immersion

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The 2nd numeral as an 'X' denotes that the unit has not been tested against harmful ingress of water. (Inherent protection only).

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