

Industrial planetary gearheads

IP57 series

The IP57 gear box is designed to provide long life in industrial automation, industrial, scientific and process control applications that require repetitive cycling featuring high dynamics, accurate velocity or positional control. Advanced manufacturing techniques, combined with a design focused on the needs of state of the art motion control has resulted in a combination of optimised performance characteristics combined with economic prices.

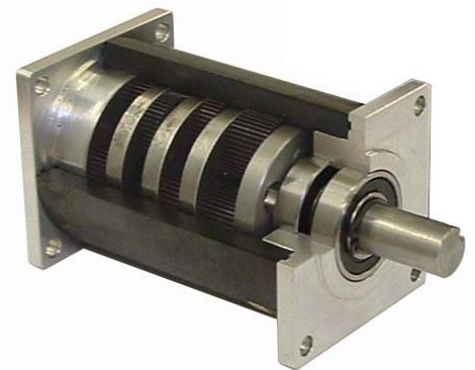
Key features

- Planetary construction for high torque and compact dimensions
- NEMA23 frame size, IP43 for NEMA17 and IP86 for NEMA35 are also available.
- Suitable for use with both servo and stepper motors
- Wide range of standard ratios with additional options also available
- Exact gear ratios simplify calibration in positional control systems
- mounting kit options to fit most motors
- Standard options available from stock



Construction

The IP57 is based on an all metal planetary design for high strength. The materials and the treatment processes employed have been carefully selected to achieve high strength and long life. The output shaft / carrier assembly is machined from solid for optimum strength and torsional rigidity. The IP57 may be constructed with up to 4 stages to provide a gear ratio of up to 10,000:1. Unlike some multi-stage designs this is achieved using a single part annular to improve unit sealing and torsional stiffness. Each gear stage may be provided with a number of alternative ratios. IP57 series gearheads utilise precision gears to provide a controlled backlash and are therefore ideal for use in positioning systems. The design is based on the use of exact gear ratios to make the calibration of digital positioning systems easier.



Gear ratios

The IP57 design enables a wide range of gear ratios to be selected.

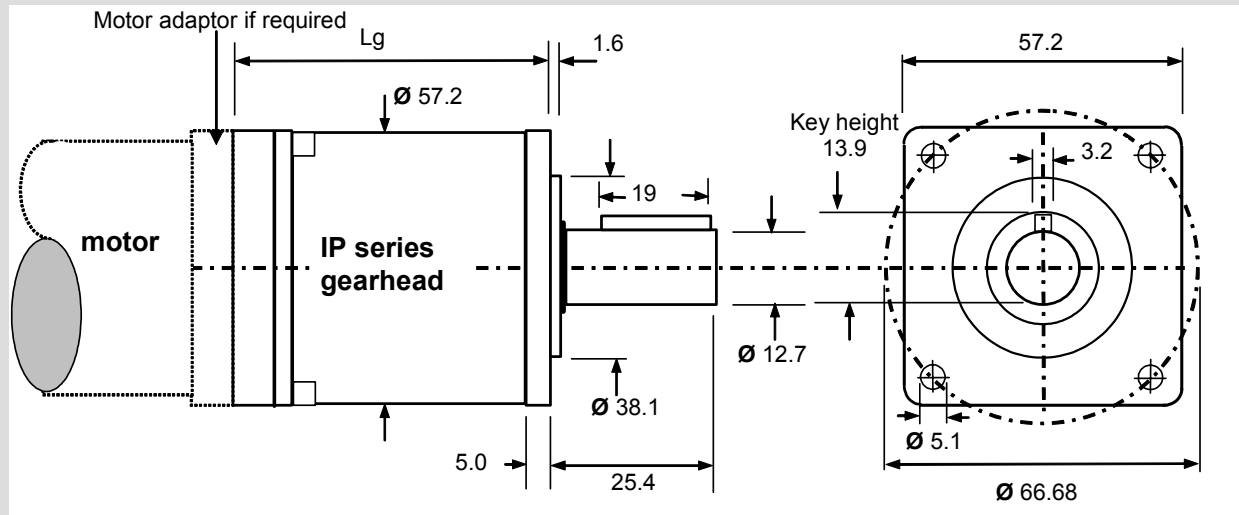
- Standard ratios are usually available from stock
- Semi-standard units are built to order but carry a price premium for small quantities.
- Special ratios may be engineered to meet customer's special projects, typically within a 12 week timescale

Gear ratios options

Single stage units	2 stage units	3 stage units
	● 9:1	○ 36:1
● 3:1	○ 12:1	● 45:1
○ 4:1	● 15:1	○ 60:1
■ 5:1	○ 16:1	● 75:1
○ 7:1	○ 20:1	○ 80:1
■ 10:1	■ 25:1	● 90:1
	● 30:1	● 125:1
	○ 40:1	● 150:1
	■ 50:1	■ 250:1
	○ 70:1	● 300:1
	■ 100:1	○ 400:1
		■ 500:1
		○ 700:1
		■ 1000:1

Dimensions: mm

IP57 series

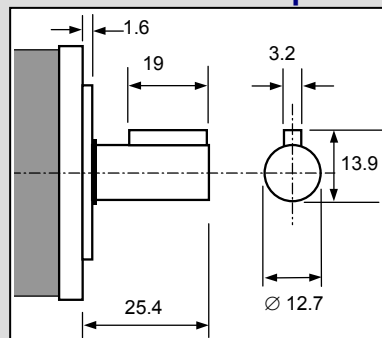


IP57 Gearhead length (Lg) : mm

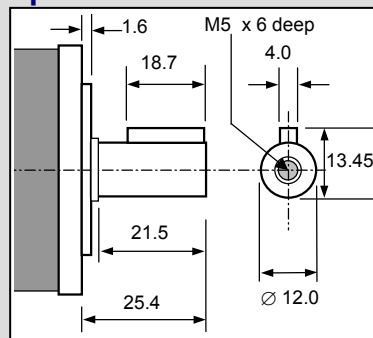
Single stage units		2 stage units		3 stage units	
● 3:1 B	54	● 9:1 B	66	○ 36:1 B	79
○ 4:1 B	54	○ 12:1 B	66	● 45:1 B	79
■ 5:1 A	54	● 15:1 B	66	○ 60:1 B	79
○ 7:1 A	68	○ 16:1 B	66	● 75:1 B	79
■ 10:1 A	68	○ 20:1 B	66	○ 80:1 B	79
		■ 25:1 A	66	● 90:1 B	93
		● 30:1 B	80	● 125:1 A	79
		○ 40:1 B	80	● 150:1 A	93
		■ 50:1 A	80	■ 250:1 A	93
		○ 70:1 A	80	● 300:1 B	93
		■ 100:1 A	80	○ 400:1 B	93
				■ 500:1 A	93
				○ 700:1 A	93
				■ 1000:1 A	93

Also see preferred shaft options for above ratios:

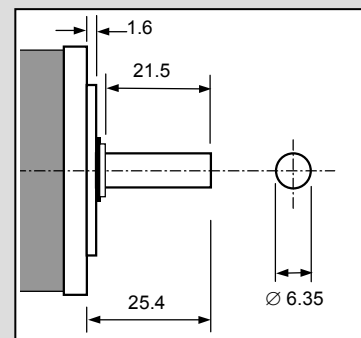
IP57 Gearhead output shaft options:



Standard shaft 'type A'
(Available from stock)



Semi-standard shaft 'type B'
(Special order only)

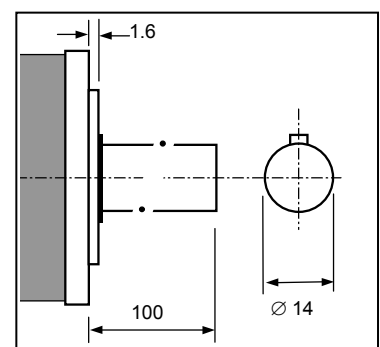


Semi-standard shaft 'type C'
(Special Order only)

Note: The preferred shaft options for each gear ratio are shown in the table above. When using the type 'C' shaft the maximum torque capacity of the gearhead is limited to 4 Nm

Special shafts

Special shafts can be provided to meet customer special requirements
The limiting values that may be specified are shown in the drawing



Specification

IP57 series

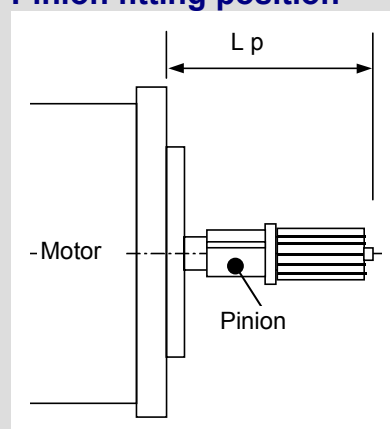
Gearhead	Number of stages	Gear ratio (i:1)	Maximum Continuous Torque (Nm)	Max. Peak Torque (Nm)	Typical Backlash (arc min.)	Efficiency	Typical Inertia @ input (Kgcm ²)	Mass (Kg)		
IP57-M01	1	5	6	12	20	92%	0.027	0.7		
		10	5.4	10.5			0.018	0.8		
IP57-M02	2	25	15	24	30	84%	0.024	0.9		
		50					0.017	1.0		
		100	13.5	21.5			0.017	1.0		
IP57-M03	3	125	20	40	40	78%	0.024	1.1		
		250					0.017	1.2		
		500	18	36			0.017	1.2		
		1000					0.017	1.2		
		10,000		25			40	0.017		

Note: Maximum Torque ratings apply for Shaft options A & B
Maximum Torque capacity of Shaft Option C = 3 Nm

General Specification

Maximum Shaft Radial Load	500 N @ 12 mm from gearhead mounting face for shaft options A & B 80 N @ 12 mm from gearhead mounting face for shaft option C
Maximum Shaft Axial Load	490 N
Maximum Recommended input speed	5000 rpm
Output Bearing type	Ball Bearings
Operating Temperature range	-40 to + 65 Degree C
Typical Input Friction @ motor	≤ 0.05 Nm

Pinion fitting position



Dimension 'Lp'		
Gearhead Ratio	Motor shaft diameter ≤ 6.35 mm	Motor shaft diameter ≤ 8 mm
5:1	28.25 / 28.35 mm	41.95 / 42.05 mm
10:1	41.95 / 42.05 mm	
25:1	22.35 / 22.45 mm	36.05 / 36.15 mm
50:1	36.05 / 36.15 mm	
100:1		
250:1		
500:1		
1000:1		

Note: standard pinion fitted to motor shaft using Loctite 638 adhesive.

How to Order

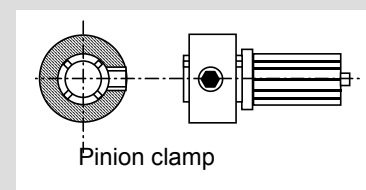
Typical Part Number: **IP57** - **M** **01** - **5** - **A**

↑ ↑ ↑ ↑ ↑
 Ø 57 mm Planetary Gearhead Motor mounting Number of stages Ratio Output shaft option

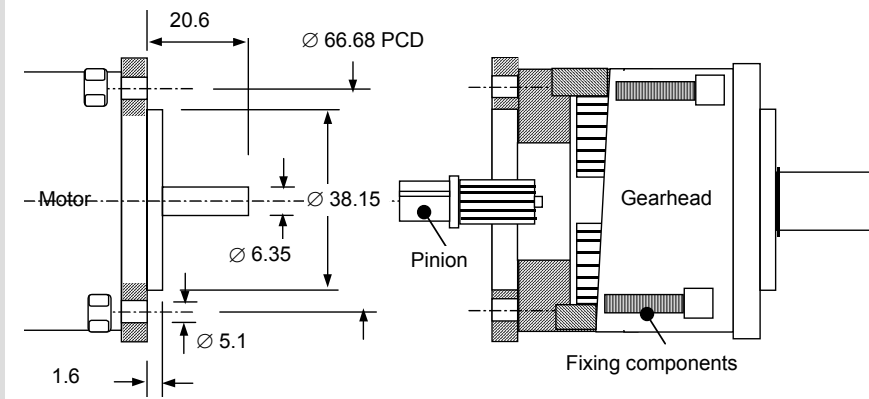
Pinion clamp for 6 & 6.35 mm bore pinions: 400MAX00024
Pinion clamp for 8 mm bore pinions: 400MAX00025

Optional Pinion clamp

An optional pinion clamp may be ordered separately. This enables the pinion to be clamped in position using an Alan key supplied with the clamp kit.

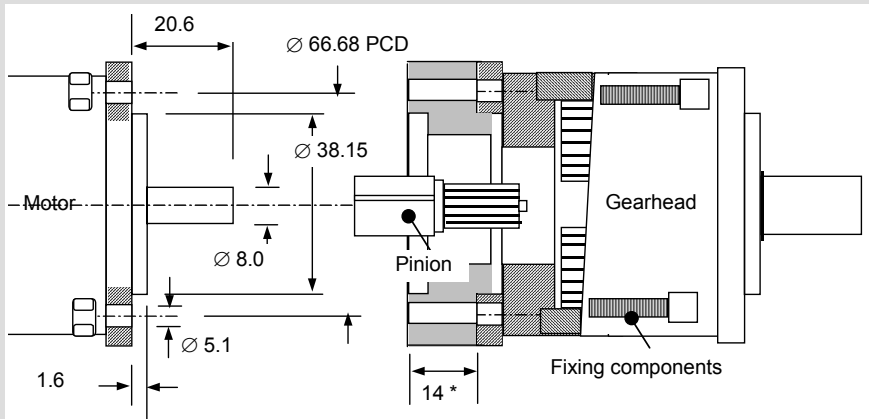


Standard NEMA23 Motor mounting kit for motors with 6.35 mm diameter shaft



Gearhead		Fitting Kit
IP57-M01-	5 B	400MAX00001
IP57-M01-	10 B	400MAX00002
IP57-M02-	25 B	400MAX00003
IP57-M02-	50 B	
IP57-M02-	100 B	
IP57-M03-	250 B	400MAX00004
IP57-M03-	500 B	
IP57-M03-	1000 B	

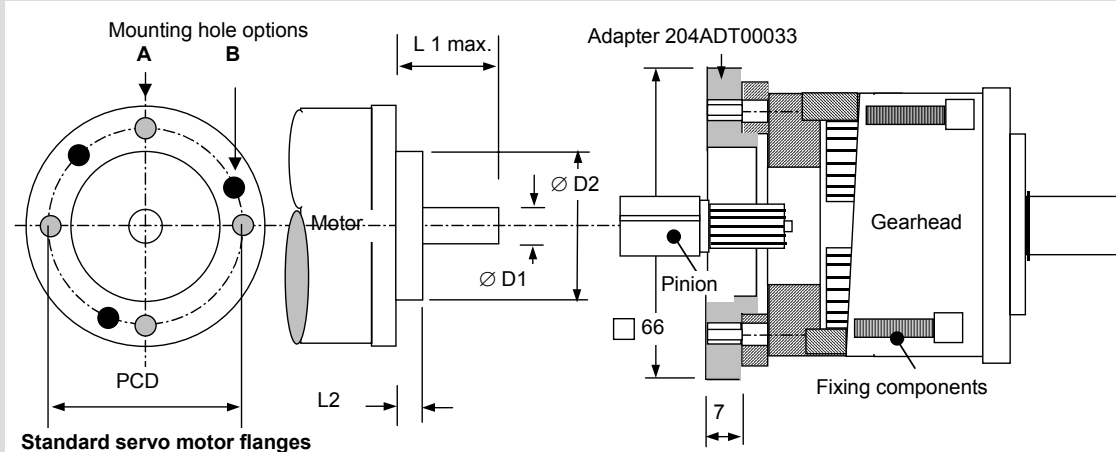
Standard NEMA23 Motor mounting kit for motors with 8.0 mm diameter shaft



Gearhead		Fitting Kit
IP57-M01-	5 B *	400MAX00017
IP57-M01-	10 B	400MAX00018
IP57-M02-	25 B *	400MAX00019
IP57-M02-	50 B	
IP57-M02-	100 B	
IP57-M03-	250 B	400MAX00020
IP57-M03-	500 B	
IP57-M03-	1000 B	

Note * Gearhead assembly length increased by 14 mm on 5: & 25:1 ratios

Motor mounting kits for motors with round flange and face mounting



Motor Details	Shaft diameter	Ø D1	6 mm	6 mm	8 mm
	Max shaft length	L1	25 mm	25 mm	25 mm
	Bearing register	Ø D2	28 mm	25 mm	25 mm
	Max register length	L2	8.8 mm	3 mm	3 mm
	Mounting holes		3 x M4	4 x M5 max	4 x M5 max
	Mounting hole	PCD	50 mm	38.89 mm	38.89 mm
	Standard Gearheads		Fitting kits		
	IP57-M01-	5 B	400MAX00005	400MAX00009	400MAX00013
	IP57-M01-	10 B	400MAX00006	400MAX00010	400MAX00014
	IP57-M02-	25 B	400MAX00007	400MAX00011	400MAX00015
	IP57-M02-	50 B to	400MAX00008	400MAX00012	400MAX00016
	IP57-M03-	1000 B			
Special Fitting Tools			None	204MSC00002	204MSC00008