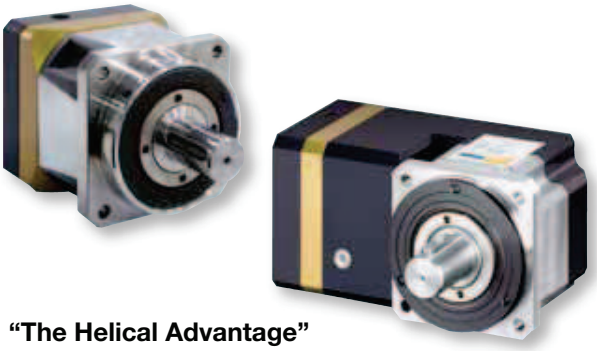
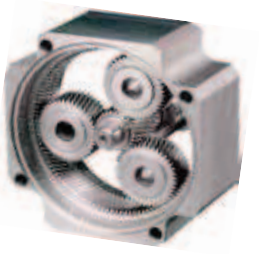
Helical Planetary Gearhead Features

Parker planetary gearheads incorporate the latest technology enhancements...

- **Latest technology in seals to reduce heat and wear**
- **Oil lubrication reduces friction and operating temperature, increasing gear life**

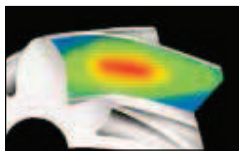


Helical Planetary Design



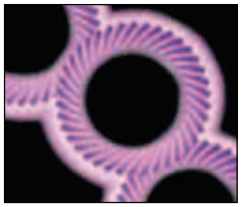
Helical gears have more tooth contact and greater face width than spur gears. This results in higher loads, smoother tooth engagement, quieter operation and lower backlash.

HeliCrown®



Parker developed the HeliCrown gear tooth to further optimize Stealth's® performance. Since most vibration occurs at the entry and exit points of a gear tooth, HeliCrown eliminates metal only in these areas, without sacrificing gear strength, producing a quieter and stronger gear.

Plasma Nitriding



Parker's in-house Plasma Nitriding process results in an ideal gear tooth. The surface is very hard (65 Rc) and the core is strong, but flexible (36 Rc). The result is a wear-resistant gear tooth that can withstand heavy shock, ensuring high accuracy for the life of the gearhead.

ServoMount®

Parker's ServoMount design features a balanced input gear supported by a floating bearing. This unique design compensates for motor shaft runout and misalignment, ensuring TRUE alignment of the input sun gear with the planetary section and allowing input speeds up to 6,000 RPM. ServoMount ensures error-free installation to any motor, in a matter of minutes.

"The Helical Advantage"

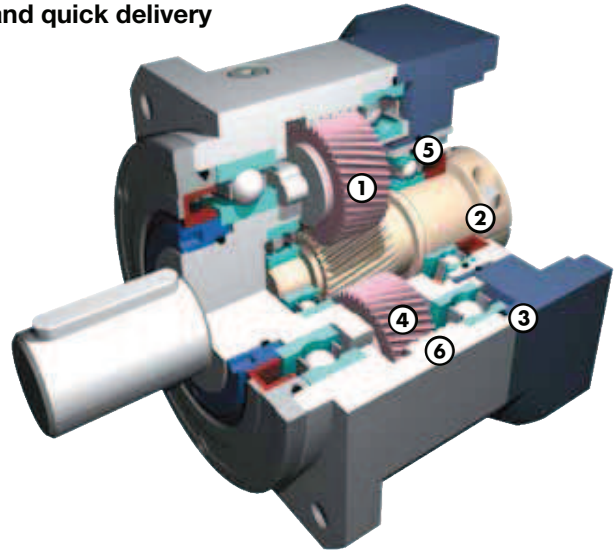
Parker planetary gearheads are a superior design with construction integrity to deliver power, speed and accuracy – quietly and efficiently.

Power...	30% more torque than comparably sized gearheads
Speed...	up to 6,000 RPM input speeds
Accuracy...	Less than 3 arc-minutes backlash
Quiet...	Less than 68 dB noise
Efficiency...	Over 97% efficiency

Parker Stealth® planetary gearhead features

Features unique to Generation II Stealth® gearheads

- **Widely spaced angular contact bearings provide higher radial load capacity**
- **Full compliment of needle bearings for increased service life**
- **Universal mounting kits offer easier mounting and quick delivery**



Common features for all Generation I & II Stealth® gearheads

① **Helical Planetary** – Provides smooth, quiet operation, high torque and high accuracy.

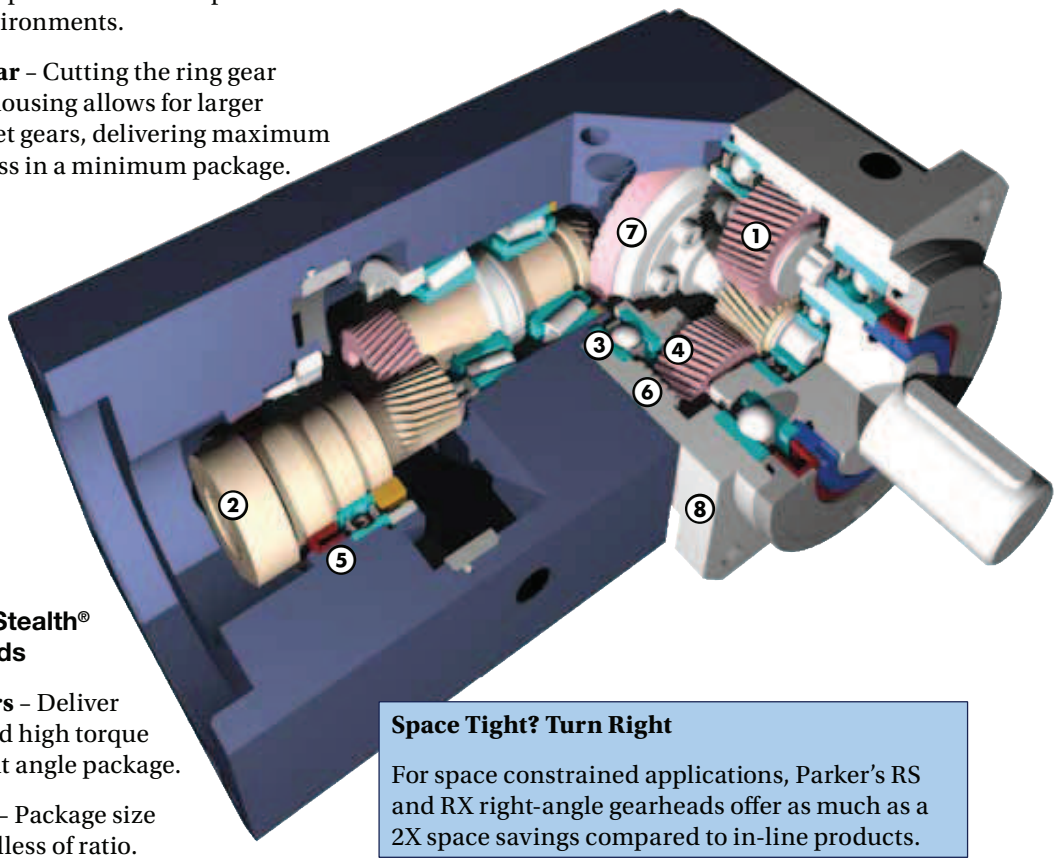
② **ServoMount®** – Motor-mounting design ensures error-free installation and the balanced pinion allows higher input speeds.

③ **Precision Bearings** – Provide high speed and high radial and axial load capacity.

④ **HeliCrown®** – Parker's proprietary gear tooth geometry ensures quieter operation and higher loads than conventional gears.

⑤ **Sealed Unit** – Vition seals and O-Rings provide IP65 protection to prevent leaks and protect against harsh environments.

⑥ **Integral Ring Gear** – Cutting the ring gear directly into the housing allows for larger bearing and planet gears, delivering maximum power and stiffness in a minimum package.



Features unique to Stealth® right-angle gearheads

⑦ **Spiral Bevel Gears** – Deliver high efficiency and high torque in a compact, right angle package.

⑧ **Compact Design** – Package size is the same regardless of ratio.

Space Tight? Turn Right

For space constrained applications, Parker's RS and RX right-angle gearheads offer as much as a 2X space savings compared to in-line products.

Generation II Stealth® Series

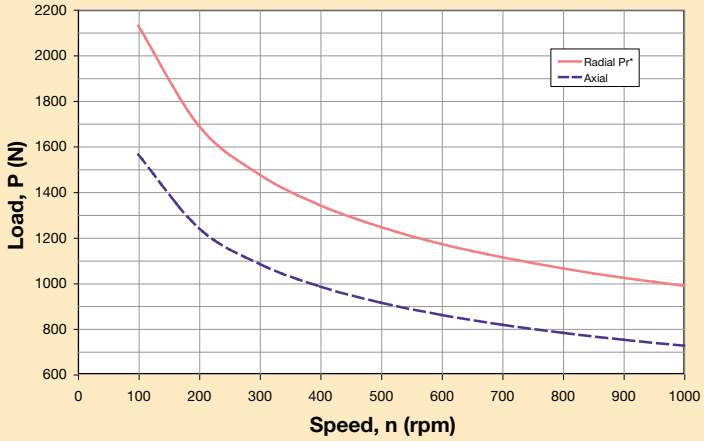
RX Generation II Performance Specifications

Parameter	Units	Ratio	RX60 Gen II		RX90 Gen II		RX115 Gen II	
Nominal Output Torque [1] $T_{nom\ r}$	Nm (in-lb)	5	10	(89)	44	(390)	68	(602)
		10	19	(168)	64	(566)	128	(566)
		15,20,25,50	24	(212)	66	(585)	136	(584)
		30,40,100	20	(177)	60	(530)	128	(531)
Maximum Acceleration Output Torque [2] $T_{acc\ r}$	Nm (in-lb)	5	15	(133)	66	(584)	102	(903)
		10	28	(248)	96	(850)	128	(1132)
		15,20,25,50	36	(319)	100	(885)	136	(1203)
		30,40,100	30	(266)	90	(797)	128	(1132)
Emergency Stop Output Torque [3] $T_{em\ r}$	Nm (in-lb)	5	32	(283)	120	(1062)	216	(1912)
		10	58	(513)	192	(1700)	384	(3398)
		15,20,25,50	64	(566)	200	(1770)	408	(3611)
		30,40,100	48	(425)	160	(1416)	345	(3053)
Nominal Input Speed $N_{nom\ r}$	RPM	5,10	3200		2800		2400	
		15,20,25,30,40	3700		3300		2900	
		50,100	4200		3800		3400	
Maximum Input Speed $N_{max\ r}$ [4]	RPM	5 – 100	6000		5300		4500	
Maximum Radial Load Pr_{max} [5, 7]	N (lbs)		1550	(348)	2800	(1079)	5500	(1236)
Maximum Axial Load Pa_{max} [6]	N (lbs)		2100	(475)	3600	(810)	6800	(1530)
Service Life	h		20,000					
Standard Backlash [8]	arc-min	5 – 10	<20		<18		<16	
		15 – 100	<20		<18		<16	
Low Backlash [8]	arc-min	5 – 10	<18		<16		<14	
		15 – 100	<16		<14		<12	
Efficiency at Nominal Torque	%	5 – 100	94		94		94	
Noise Level at 3000 RPM [9]	db	5 – 100	<65		<68		<68	
Torsional Stiffness	Nm/arc-min (in-lb/arc-min)	5 – 100	2.5	(22)	10	(90)	22	(195)
Maximum Allowable Case Temperature	° C	5 – 100	-20 to 90					
Lubrication		5 – 100	Per Maintenance Schedule					
Mounting Position		5 – 100	Any					
Degree of Protection			IP65					
Maximum Weight	kg (lbs)	5 – 100	2.0	(4.4)	6.0	(13.2)	11.0	(24.2)

1) At nominal speed Nnom r.
2) Parker MotionSizer sizing software available for free download at parkermotion.com.
3) Maximum of 1000 stops.
4) For intermittent operation.
5) Max radial load applied to the center of the shaft at 100 rpm.
6) Max axial load at 100 rpm.
7) For combined radial and axial load consult factory.
8) Measured at 2% of rated torque.
9) Measure at 1m.

RX Generation II Output Shaft Load Rating

RX60 / RX23

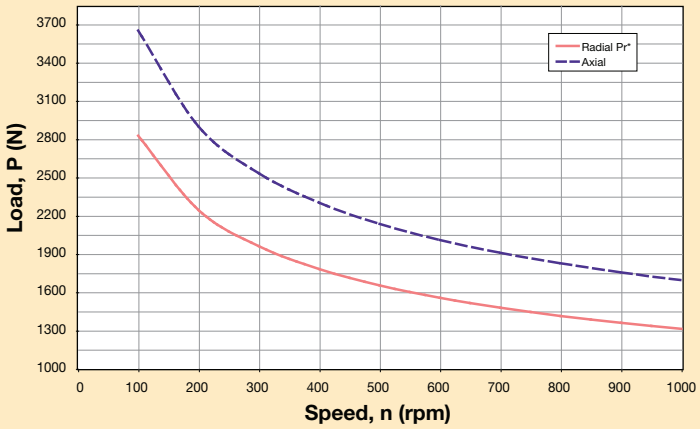


Formulas to calculate radial load (Prx) at any distance "X" from the gearhead mounting surface:

Prx = Pr * 78 mm / (63 + X)

Prx = Pr * 3.07 in / (2.48 in + X)

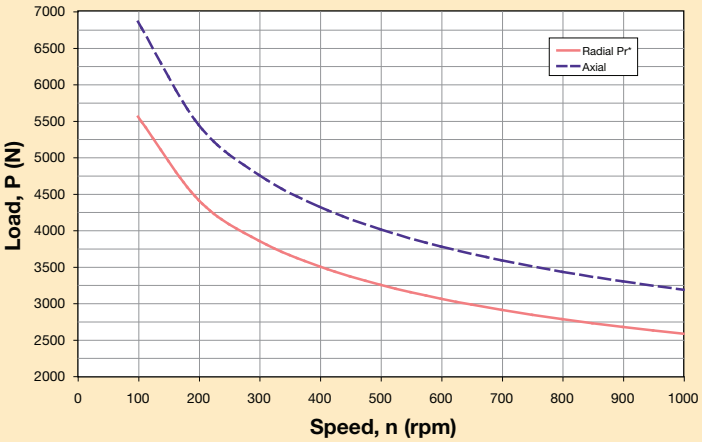
RX90 / RX34



Prx = Pr * 95 mm / (73 + X)

Prx = Pr * 3.74 in / (2.87 in + X)

RX115 / RX42



Prx = Pr * 115 mm / (73 + X)

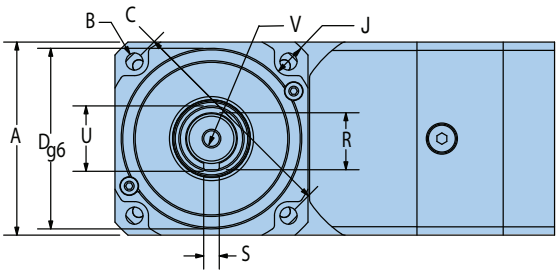
Prx = Pr * 4.53 in / (3.43 in + X)

* Radial load applied to center of the shaft.

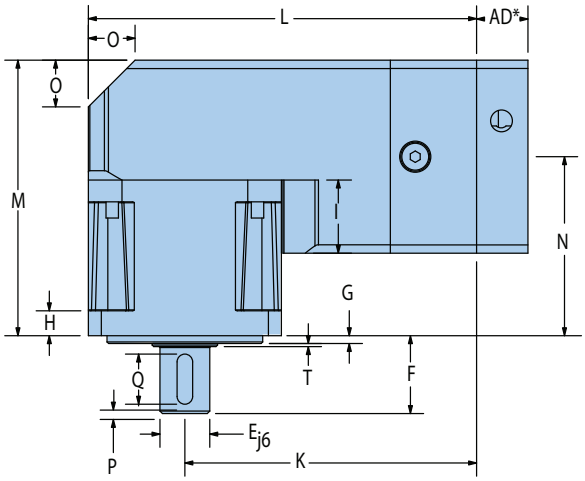
Generation II Stealth® Series

RX Generation II Dimensions

Free 3D Solid Models and drawings available at parkermotion.com



RX Gearheads also available with
Flange Mount Option – Contact Factory



Metric Frame Sizes

Frame Size	A Square Flange		B Bolt Hole		C Bolt Circle		D Pilot Diameter		E Output Shaft Diameter		F Output Shaft Length		G Pilot Thickness		H Flange Thickness		I Recess Length		J Housing Recess		K Distance to Output Centerline	
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
RX60	62	2.441	5.5	0.217	70	2.756	50	1.969	16	0.630	25	0.984	2.5	0.098	13	0.512	23.5	0.925	5	0.197	93.7	3.689
RX90	90	3.543	6.5	0.256	100	3.937	80	3.150	20	0.787	40	1.575	3	0.118	17	0.669	36.5	1.437	6.5	0.256	132	5.197
RX115	115	4.528	8.5	0.335	130	5.118	110	4.331	24	0.945	50	1.969	3.5	0.138	20	0.787	47.5	1.870	7.5	0.295	153.5	6.043

Frame Size	L Housing Length		M Housing Width		N Distance to Input Centerline		O Taper Distance		P Distance from Shaft End		Q Keyway Length		R Key Height		S Keyway Width		T Shoulder Height		U Shoulder Diameter		V Tap & Depth (end of shaft)
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	
RX60	124.5	4.902	88.5	3.484	57.5	2.264	14	0.551	3	0.118	16	0.630	18	0.709	5	0.197	0.5	0.020	21	0.827	M5x8
RX90	177	6.969	114	4.469	68.5	2.697	25	0.984	5	0.197	28	1.102	24.5	0.965	6	0.236	0.5	0.020	29	1.142	M8x16
RX115	211	8.307	138	5.445	81	3.189	32	1.260	7	0.276	32	1.260	27	1.063	8	0.315	1	0.039	36	1.417	M8x16

NEMA Frame Sizes

Frame Size	B Bolt Hole		C Bolt Circle		D Pilot Diameter		E Output Shaft Diameter		F Output Shaft Length		Q Keyway Length		R Keyway Depth		S Keyway Width	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
RX23	0.2	4.953	2.625	66.675	1.5	38.100	0.38	9.525	1	25.400	—	—	—	—	—	—
RX34	0.22	5.512	3.88	98.425	2.88	73.025	0.5	12.700	1.25	31.750	1.06	27.000	0.07	1.829	0.13	3.251
RX42	0.28	7.137	4.95	125.730	2.19	55.550	0.63	15.875	1.5	38.100	1.14	29.007	0.09	2.388	0.19	4.775

RX23 has a flat on output shaft, not a keyway
NOTE: NEMA Sizes have 20% lower torque/stiffness ratings due to smaller output shaft diameter.

RX Generation II Universal Mounting Kits*

Adapter Length "AD" Dimension

Frame Size	Motor Shaft Length		Gearhead Adapter Length	
	mm	in	mm	in
60	16 – 35 35.1 – 41	0.630 – 1.378 1.382 – 1.614	16.5 22.5	0.65 0.886
90	20 – 40 40.1 – 48	0.787 – 1.575 1.579 – 1.890	20 28.5	0.787 1.122
115	22 – 50 50.1 – 61	0.866 – 1.969 1.972 – 2.402	24 35	0.945 1.378

* Know your motor and need our mounting kit part number? See page 29 or use our Motor Mounting Search Tool on our website at: www.parkermotion.com

RX Generation II Inertia

All moment of inertia values are as reflected at the input of the gearhead

Ratio	Units*	RX60 / RX23	RS90 / RX34	RS115 / RX42
5	kg-cm²	0.2200	0.8100	2.5000
	in-lb-sec²	0.000195	0.000717	0.002213
10	kg-cm²	0.1900	0.6100	1.9000
	in-lb-sec²	0.000168	0.000540	0.001682
15	kg-cm²	0.1800	0.6000	1.7000
	in-lb-sec²	0.150000	0.000531	0.001505
20	kg-cm²	0.1700	0.5100	1.4000
	in-lb-sec²	0.000150	0.000451	0.001239
25	kg-cm²	0.1600	0.4200	1.3000
	in-lb-sec²	0.000142	0.000372	0.001151
30	kg-cm²	0.1800	0.6000	1.7000
	in-lb-sec²	0.000159	0.000531	0.001505
40	kg-cm²	0.1700	0.5100	1.4000
	in-lb-sec²	0.000150	0.000451	0.001239
50	kg-cm²	0.1500	0.4000	1.1000
	in-lb-sec²	0.000133	0.000354	0.000974
100	kg-cm²	0.1500	0.4000	1.1000
	in-lb-sec²	0.000133	0.000354	0.000974

* Note: 1 kg-cm² = 0.000885 in-lb-sec²

Generation II Stealth® Series

Generation II Stealth® How to Order

Choose gearhead series, frame size, ratio, backlash and specify motor, make and model for mounting kit from the charts below and on the following page.

Sizing/Selection Design Assistance

To properly size and select a gearhead for a specific application requires consideration of several interrelated parameters including: speed, continuous torque, repetitive peak torque or acceleration torque, emergency stop torque, duty cycle, ambient temperature and radial and axial shaft load.

The 9 step procedure on pages 72-73 provides a straightforward method of selecting the correct gearhead for your application.

Gearhead Ordering Information

	①	②		③		④		⑤	⑥
Order Example:	PS	60	-	003	-	XXX	-	S	2

① Series	② Frame Size	③ Ratio	④ Special Options*	⑤ Backlash	⑥ GEN 2 Identifier
PS	60, 90, 115, 142	003, 004, 005, 007, 010, 015, 020, 025, 030, 040, 050, 070, 100	XXX = Factory issued	S = Standard L = Low	2
PX	60, 90, 115, 23, 34, 42	003, 004, 005, 007, 010, 015, 020, 025, 030, 040, 050, 070, 100	XXX = Factory issued T01 = Flange Mount		
RS	60, 90, 115, 142	005, 010, 015, 020, 025, 030, 040, 050, 100	XXX = Factory issued		
RX	60, 90, 115, 23, 34, 42	005, 010, 015, 020, 025, 030, 040, 050, 100	XXX = Factory issued (Contact factory for Flange Mount Option)		

* Standard special options include: F01 Food Grade, W01 Washdown, G01 Genl Spacer Plate, L02 No lubricant (standard is oil filled), V01 Vacuum, C01 CleanRoom Class 10,000. Leave blank if no special option required.

Motor Mounting How to Order

Know your motor and need our mounting kit part number? Use the charts below or use our Motor Mounting Search Tool on our website at:

www.parkermotion.com

	⑦		⑧
Order Example:	MU	60 -	XXX

	⑦	⑧
Universal Mounting*	**Frame Size ****	**Mounting Kit Suffix Number**
MU	60, 90, 115	See Motor Mounting Selection Tool on our website at: www.parkermotion.com

* Common to PS, PX, RS and RX Series Gearheads
**PX/RX23 use MU60, PX/RX34 use MU90, PX/RX42 use MU115

Universal Mounting Kit Adapter Length "AD" Dimension

	Motor Shaft Length		Gearhead Adapter Length	
Frame Size	**mm**	**in**	**mm**	**in**
60	16 – 35 35.1 – 41	0.630 – 1.378 1.382 – 1.614	16.5 22.5	0.65 0.886
90	20 – 40 40.1 – 48	0.787 – 1.575 1.579 – 1.890	20 28.5	0.787 1.122
115	22 – 50 50.1 – 61	0.866 – 1.969 1.972 – 2.402	24 35	0.945 1.378
142	26 – 62 46 – 82	1.023 – 2.44 1.811 – 3.23	30 50	1.181 1.969

Recommended Parker Motor and Mounting Kit

	Recommended Servo Motor			Recommended Stepper Motor		
Frame Size	**Motor**	**Mounting Kit**	**AD Dimension**	**Motor**	**Mounting Kit**	**AD Dimension**
60 or 23	BE23 SM23	MU60-033	16.5 mm	LV23 HV23	MU60-005	16.5 mm
90 or 34	MPP092 BE34	MU90-092 MU90-005	20 mm	LV34 HV34	MU90-005	20 mm
115 or 42	MPP100 MPP115	MU-115-039 MU115-010	24 mm			
142	MPP115 MPP142	MU142-010 Mu142-146	30 mm			