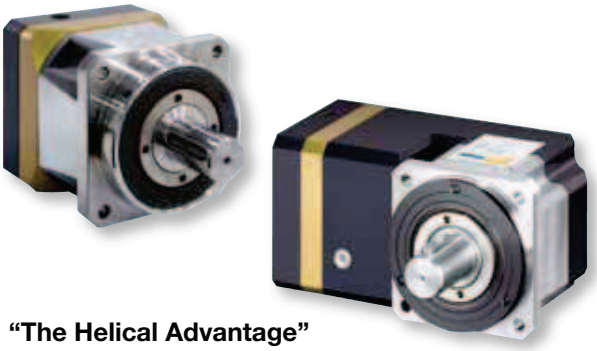
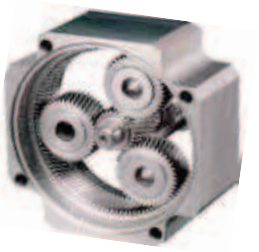
Helical Planetary Gearhead Features

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**

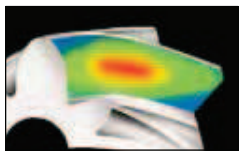


Helical Planetary Design



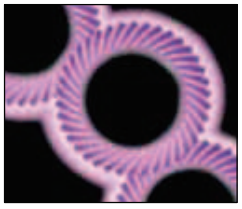
Helical gears have more tooth contact and greater face width than spur gears. This results in higher loads, smoother tooth engagement, quieter operation and lower backlash.

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"

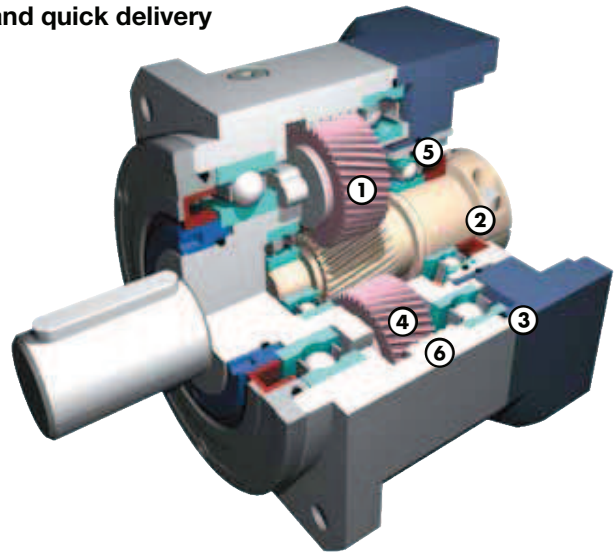
Parker planetary gearheads are a superior design with construction integrity to deliver power, speed and accuracy – quietly and efficiently.

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.

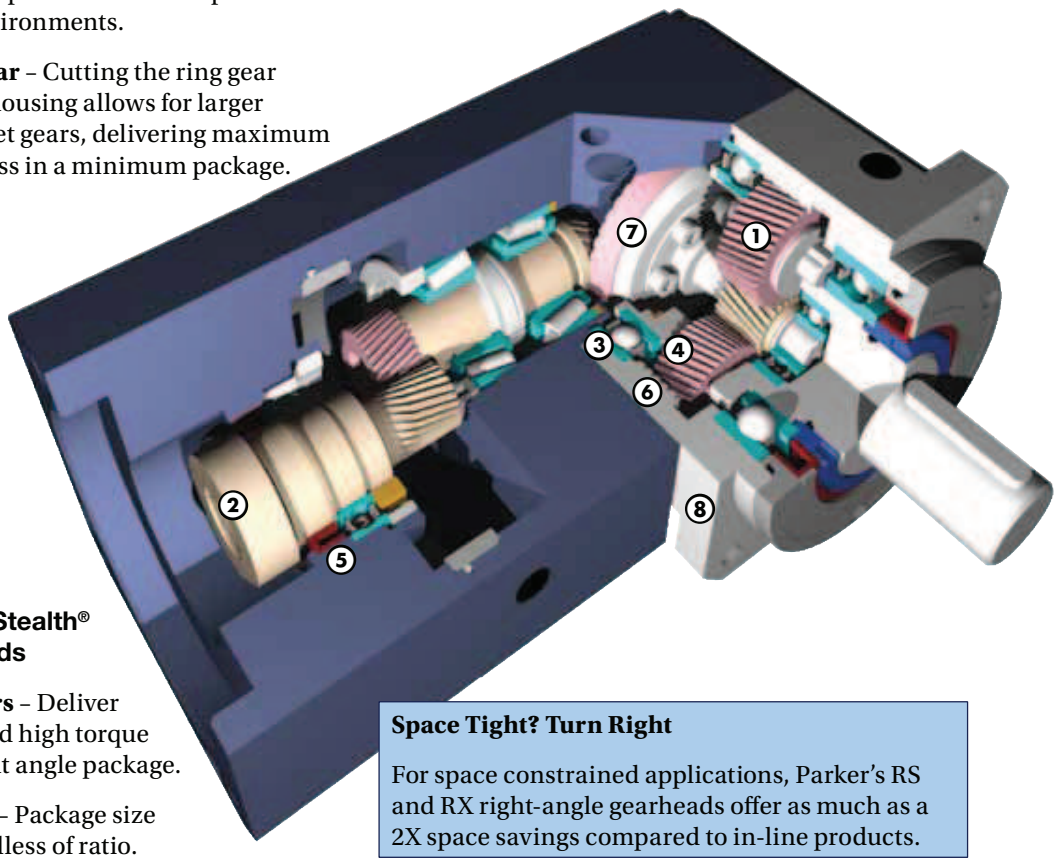
② **ServoMount®** – Motor-mounting design ensures error-free installation and the balanced pinion allows higher input speeds.

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

RS Generation II Performance Specifications

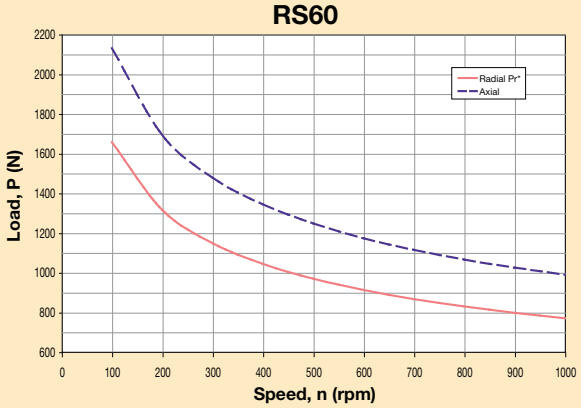
Parameter	Units	Ratio	RS60 Gen II		RS90 Gen II		RS115 Gen II		RS142 Gen II	
Nominal Output Torque [1] $T_{nom\ r}$	Nm (in-lb)	5	13	(115)	55	(487)	85	(752)	225	(1992)
		10	24	(212)	80	(708)	160	(1415)	365	(3232)
		15,20,25,50	35	(310)	88	(779)	220	(1947)	430	(3807)
		30,40,100	30	(266)	86	(752)	195	(1726)	310	(2745)
Maximum Acceleration Output Torque [2] $T_{acc\ r}$	Nm (in-lb)	5	19	(168)	83	(743)	127	(1124)	337	(2984)
		10	36	(320)	120	(743)	240	(2124)	547	(4843)
		15,20,25,50	45	(400)	123	(867)	255	(2257)	645	(5711)
		30,40,100	37	(327)	112	(797)	240	(2124)	465	(4717)
Emergency Stop Output Torque [3] $T_{em\ r}$	Nm (in-lb)	5	40	(355)	150	(1327)	270	(2390)	625	(5534)
		10	72	(637)	240	(2125)	480	(4248)	1000	(8854)
		15,20,25,50	80	(708)	250	(2213)	510	(4514)	1100	(9739)
		30,40,100	60	(531)	200	(1770)	430	(3806)	830	(7349)
Nominal Input Speed $N_{nom\ r}$	RPM	5 to 10	3200		2800		2400		2000	
		15,20,25,30,40	3700		3300		2900		2500	
		50,100	4200		3800		3400		3000	
Maximum Input Speed $N_{max\ r}$ [4]	RPM	5 – 100	6000		5300		4500		3800	
Maximum Radial Load Pr_{max} [5, 7]	N (lbs)		1650	(370)	4800	(1080)	7500	(1685)	10,000	(2247)
Maximum Axial Load Pa_{max} [6]	N (lbs)		2100	(475)	3600	(810)	6800	(1530)	8800	(1976)
Service Life	h		20,000							
Standard Backlash [8]	arc-min	5 – 10	<14		<12		<12		<10	
		15 – 100	<12		<10		<10		<8	
Low Backlash [8]	arc-min	5 – 10	<10		<8		<8		<6	
		15 – 100	<8		<6		<6		<4	
Efficiency at Nominal Torque	%	5 – 100	94		94		94		94	
Noise Level at 3000 RPM [9]	db	5 – 100	<65		<68		<68		<70	
Torsional Stiffness	Nm/arc-min (in-lb/arc-min)	5 – 100	2.5	(22)	10	(90)	22	(195)	42	(372)
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)	24	(52)

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.

RS Generation II Output Shaft Load Rating

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

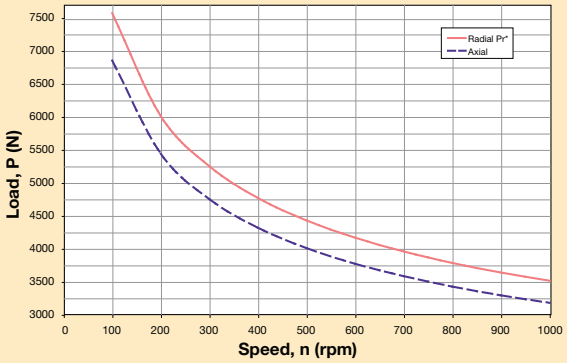
RS60



Prx = Pr * 75 mm / (49 + X)

Prx = Pr * 2.95 in / (1.93 in + X)

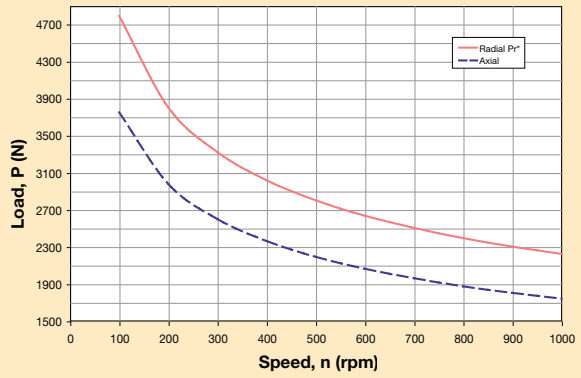
RS115



Prx = Pr * 124 mm / (81 + X)

Prx = Pr * 4.88 in / (3.19 in + X)

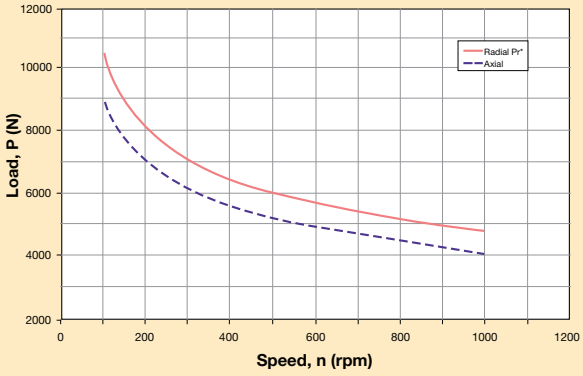
RS90



Prx = Pr * 96 mm / (62 + X)

Prx = Pr * 3.78 in / (2.44 in + X)

RS142



Prx = Pr * 156 mm / (93 + X)

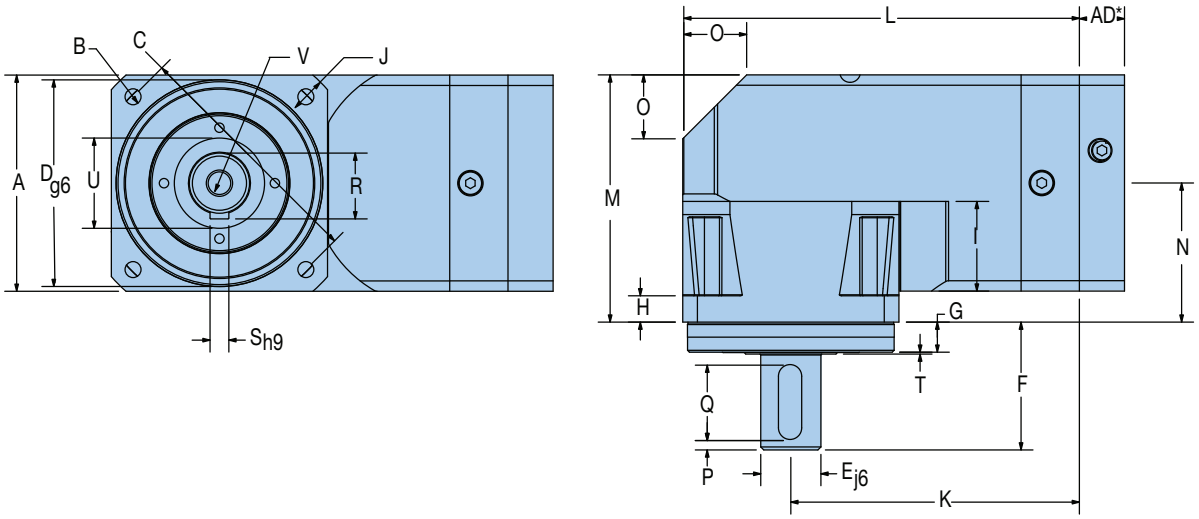
Prx = Pr * 6.14 in / (3.66 in + X)

* Radial load applied to center of the shaft.

Generation II Stealth® Series

RS Generation II Dimensions

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



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	
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
RS60	62	2.441	5.5	0.217	70	2.756	50	1.969	16	0.630	40	1.575	11	0.433	8	0.315
RS90	90	3.543	6.5	0.256	100	3.937	80	3.150	22	0.866	52	2.047	15	0.591	10	0.394
RS115	115	4.528	8.5	0.335	130	5.118	110	4.331	32	1.260	68	2.677	16	0.630	14	0.551
RS142	142	5.591	11.0	0.433	165	6.496	130	5.118	40	1.575	102	4.016	20	0.787	15	0.591

Frame Size	I Recess Length		J Housing Recess		K Distance to Output Centerline		L Housing Length		M Housing Width		N Distance to Input Centerline		O Taper Distance		P Distance from Shaft End	
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
RS60	23.5	0.925	5.0	0.197	66.0	2.598	124.7	4.909	78.0	3.071	47.0	1.850	15	0.591	2	0.079
RS90	33.0	1.299	6.5	0.256	132.0	5.197	177.0	6.969	103.0	4.055	58.0	2.283	27	1.063	3	0.118
RS115	42.0	1.653	7.5	0.295	153.5	6.043	211.0	8.307	132.0	5.177	74.0	2.913	34	1.339	5	0.197
RS142	56.5	2.224	10.0	0.394	198.5	7.815	269.5	10.610	158.2	6.228	87.2	3.433	42	1.654	5	0.197

Frame Size	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	
RS60	25	0.984	18.0	0.709	5	0.197	0.5	0.020	22	0.866	M5x8
RS90	32	1.260	24.5	0.965	6	0.236	0.5	0.020	35	1.378	M8x16
RS115	40	1.575	35.0	1.378	10	0.394	1	0.039	45	1.772	M12x25
RS142	63	2.480	43.0	1.693	12	0.472	2.5	0.098	78	3.071	M16x32

RS 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
142	26 – 62 62.1 – 82	1.023 – 2.441 2.445 – 3.228	30 50	1.181 1.969

* 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

RS Generation II Inertia

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

Ratio	Units*	RS60	RS90	RS115	RS142
5	kg-cm²	0.2200	0.8100	2.5000	9.4000
	in-lb-sec²	0.000195	0.000717	0.002213	0.008319
10	kg-cm²	0.1900	0.6100	1.9000	6.7000
	in-lb-sec²	0.000168	0.000540	0.001682	0.005929
15	kg-cm²	0.1800	0.6000	1.7000	6.6000
	in-lb-sec²	0.150000	0.000531	0.001505	0.005841
20	kg-cm²	0.1700	0.5100	1.4000	5.2000
	in-lb-sec²	0.000150	0.000451	0.001239	0.004602
25	kg-cm²	0.1600	0.4200	1.3000	4.5000
	in-lb-sec²	0.000142	0.000372	0.001151	0.003983
30	kg-cm²	0.1800	0.6000	1.7000	6.7000
	in-lb-sec²	0.000159	0.000531	0.001505	0.005929
40	kg-cm²	0.1700	0.5100	1.4000	5.2000
	in-lb-sec²	0.000150	0.000451	0.001239	0.004602
50	kg-cm²	0.1500	0.4000	1.1000	3.4000
	in-lb-sec²	0.000133	0.000354	0.000974	0.003009
100	kg-cm²	0.1500	0.4000	1.1000	3.4000
	in-lb-sec²	0.000133	0.000354	0.000974	0.003009

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