

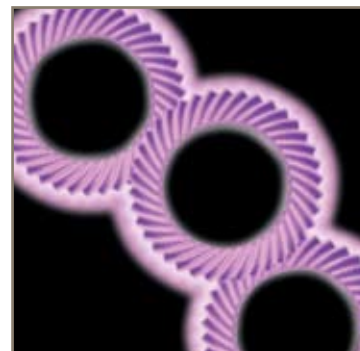


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## PV Series Gearheads:

Power and Versatility in an Economical Package



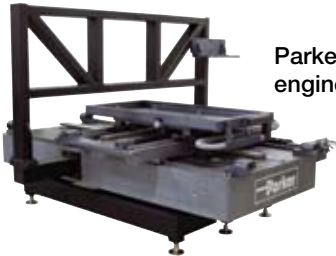
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- 3D design files
- Training materials
- Product-configuration software
- RFQ capabilities
- Videos and application stories



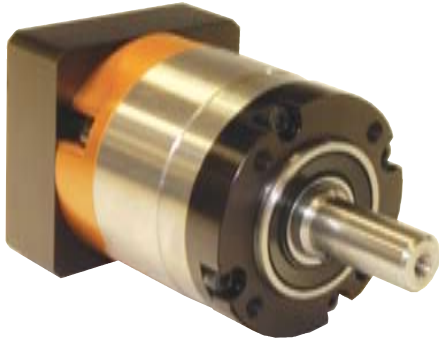
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# PV = Power + Versatility

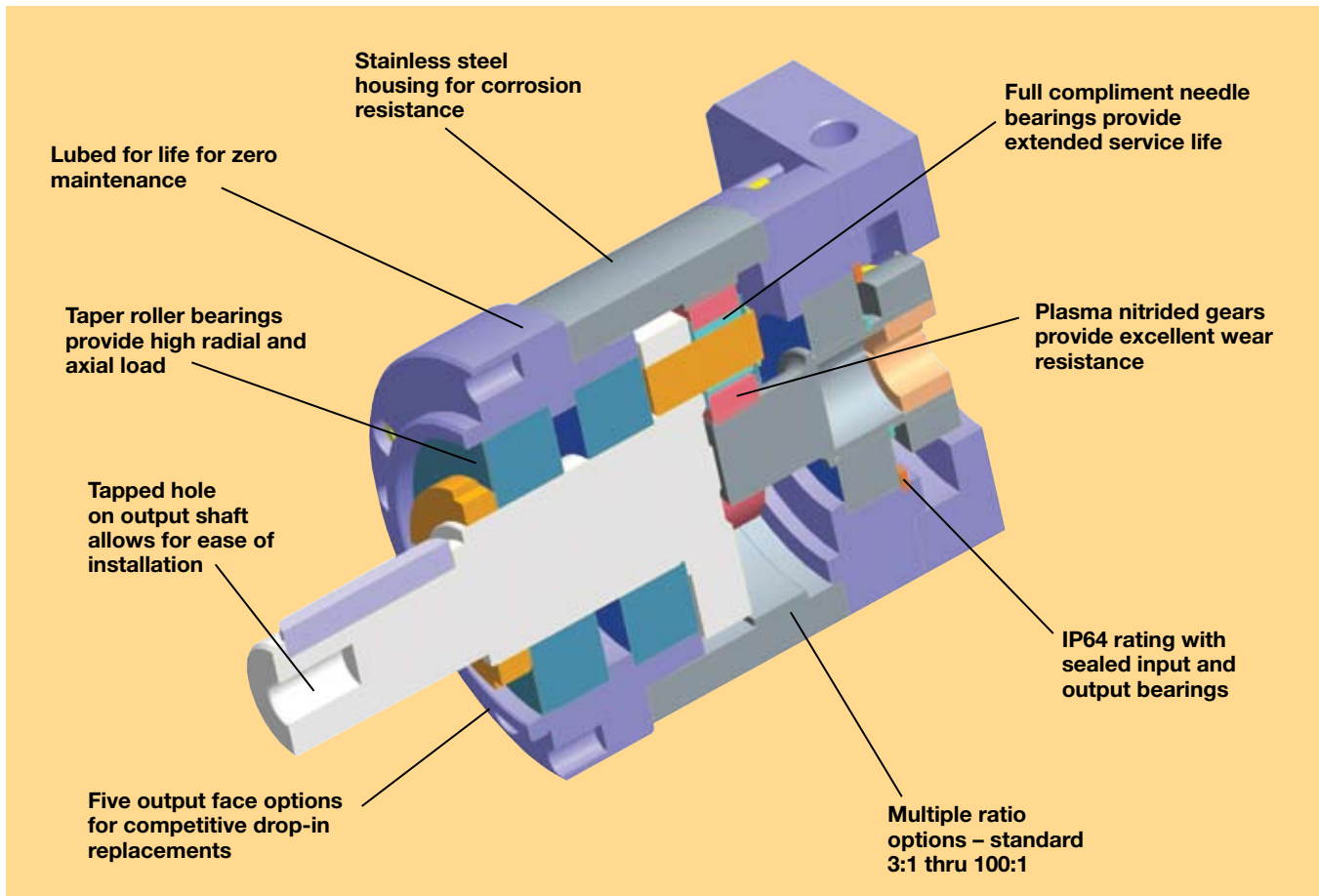
## PV Series: Value Alternative Precision Planetary Gearheads



The PV Series planetary gearhead combines power and versatility in an economical package. It comes in a wide range of options, including dimensional output face crossovers to the Parker PX, Alpha LP, Neugart PLE, Stober PE and standard NEMA gearheads.

The PV Series is available in metric or NEMA frame sizes: 40, 60, 90 and 115 mm, and NEMA sizes 17, 23, 34 and 42. Ratios are available from 3:1 to 100:1.

Whether you're an OEM or an end user searching for competitive alternatives, the PV offers a superior solution. Parker's PV Series gearheads are made in the USA.



Performance Specifications

Parameter	Units	Ratio	PV40/PV17	PV60/PV23	PV90/PV34	PV115/PV42
<b>Nominal Output Torque</b> $T_{nom r}$	Nm (in-lb)	3	– –	12.0 (106.200)	35 (309.75)	74 (654.90)
		4	5.9 (52.215)	18.9 (167.265)	56 (495.60)	111 (982.30)
		5	6.2 (54.870)	19.6 (173.460)	58 (513.30)	115 (1017.70)
		7	5.5 (48.675)	16.7 (147.795)	52 (460.20)	104 (920.40)
		10	3.5 (30.975)	10.6 (93.810)	33 (292.05)	67 (592.95)
		12	– –	18.2 (161.070)	54 (477.90)	112 (991.20)
		15	– –	19.4 (171.690)	58 (513.30)	120 (1062.00)
		16	6.5 (57.525)	– –	– –	– –
		20	6.5 (57.525)	21.5 (190.275)	67 (592.95)	136 (1203.60)
		25	6.7 (59.295)	20.0 (177.000)	63 (557.55)	126 (1115.10)
		30	– –	22.5 (199.275)	71 (628.35)	144 (1274.40)
		35	6.7 (59.295)	– –	– –	– –
		40	6.5 (57.525)	21.5 (190.275)	67 (592.95)	136 (1203.60)
		50	6.7 (59.295)	20.0 (177.000)	63 (557.55)	126 (1115.10)
		<b>Maximum Acceleration Output Torque</b> <sup>1)</sup> $T_{acc r}$	Nm (in-lb)	3	– –	24.0 (212.400)
4, 5, 12, 15	11.8 (104.430)			36.4 (322.140)	108 (955.80)	222 (1964.70)
7, 70	11.0 (97.350)			33.4 (295.590)	104 (920.40)	208 (1840.80)
10, 100	7.0 (61.950)			21.2 (187.620)	66 (584.10)	134 (1185.90)
16, 20, 25, 30, 35, 40, 50	13.0 (115.050)			40.0 (354.000)	126 (1115.10)	252 (2230.20)
<b>Emergency Stop Output Torque</b> <sup>2)</sup> $T_{em r}$	Nm (in-lb)			3, 4, 5, 12, 15, 16, 20, 25, 30, 35, 40, 50	16.0 (141.600)	55.0 (486.750)
		7, 70	13.7 (121.245)	44.0 (389.400)	137 (1212.45)	290 (2466.50)
		10, 100	9.2 (81.420)	39.0 (345.150)	122 (1079.70)	255 (2256.75)
<b>Nominal Input Speed</b> $N_{nom r}$	RPM	3 – 100	4500	4000	3500	3000
<b>Maximum Input Speed</b> $N_{max r}$	RPM	3 – 100	8000	6000	6000	5000
<b>Service Life</b>	h	3 – 100	20,000			
<b>Standard Backlash</b> <sup>3)</sup>	arc-min	3 – 10	<15	<12	<10	<8
		15 – 100	<18	<16	<14	<12
<b>Efficiency at Nominal Torque</b>	%	3 – 10	96			
		15 – 100	94			
<b>Noise Level at 3000 RPM</b> <sup>4)</sup>	db	3 – 100	<60	<65	<65	<70
<b>Maximum Allowable Case Temperature</b>	° C	3 – 100	-20 to 100			
<b>Lubrication</b>		3 – 100	Lifetime lubrication			
<b>Mounting Position</b>		3 – 100	Any			
<b>Direction of Rotation</b>		3 – 100	Same as Input			
<b>Degree of Protection</b>		3 – 100	IP64			
<b>Maximum Weight</b>	kg (lbs)	3 – 10	0.6 (1.2)	1.2 (2.5)	3.2 (7.0)	6.8 (13.5)
		15 – 100	0.9 (2.0)	1.6 (3.5)	4.3 (9.5)	9.7 (19.3)

1)  $t_{acc} + t_{dec} = 0.2 (t_{acc} + t_{cont} + t_{dec})$   $T_{cont} = 0.25 T_{acc}$

2) Maximum of 1000 stops.

3) Measured at 2% of rated torque.

4) Measure at 1m. r = rated values





## Inertia

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

Ratio	Units*	PV40/PV17	PV60/PV23	PV90/PV34	PV115/PV42
3	kg-cm <sup>2</sup>	–	0.1400	0.7400	1.9700
	in-lb-sec <sup>2</sup>	–	0.000124	0.000655	0.001743
4	kg-cm <sup>2</sup>	0.0200	0.1000	0.5000	1.3400
	in-lb-sec <sup>2</sup>	0.000018	0.000089	0.000443	0.001186
5	kg-cm <sup>2</sup>	0.0180	0.0840	0.3900	1.1300
	in-lb-sec <sup>2</sup>	0.000016	0.000074	0.000345	0.001000
7	kg-cm <sup>2</sup>	0.0160	0.0750	0.3400	0.9300
	in-lb-sec <sup>2</sup>	0.000014	0.000066	0.000301	0.000823
10	kg-cm <sup>2</sup>	0.0160	0.0070	0.3000	0.8500
	in-lb-sec <sup>2</sup>	0.000014	0.000006	0.000266	0.000752
12	kg-cm <sup>2</sup>	–	0.0970	0.4900	1.2300
	in-lb-sec <sup>2</sup>	–	0.000086	0.000434	0.001089
15	kg-cm <sup>2</sup>	–	0.0830	0.3900	1.0400
	in-lb-sec <sup>2</sup>	–	0.000073	0.000345	0.000920
16	kg-cm <sup>2</sup>	0.0190	–	–	–
	in-lb-sec <sup>2</sup>	0.000017	–	–	–
20	kg-cm <sup>2</sup>	0.0170	0.0830	0.3900	1.0400
	in-lb-sec <sup>2</sup>	0.000015	0.000073	0.000345	0.000920
25	kg-cm <sup>2</sup>	0.0170	0.0830	0.3900	1.0400
	in-lb-sec <sup>2</sup>	0.000015	0.000073	0.000345	0.000920
30	kg-cm <sup>2</sup>	–	0.0700	0.3000	0.8400
	in-lb-sec <sup>2</sup>	–	0.000062	0.000266	0.000743
35	kg-cm <sup>2</sup>	0.0160	–	–	–
	in-lb-sec <sup>2</sup>	0.000014	–	–	–
40, 50, 70, 100	kg-cm <sup>2</sup>	0.0160	0.0700	0.3000	0.8400
	in-lb-sec <sup>2</sup>	0.000014	0.000062	0.000266	0.000743

\* Note: 1 kg-cm<sup>2</sup> = 0.000885 in-lb-sec<sup>2</sup>

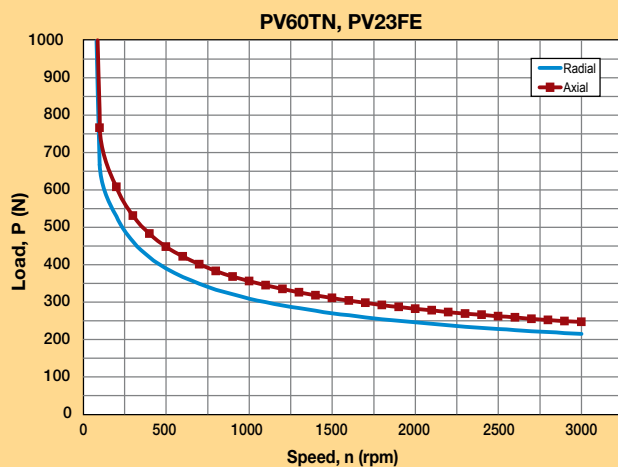
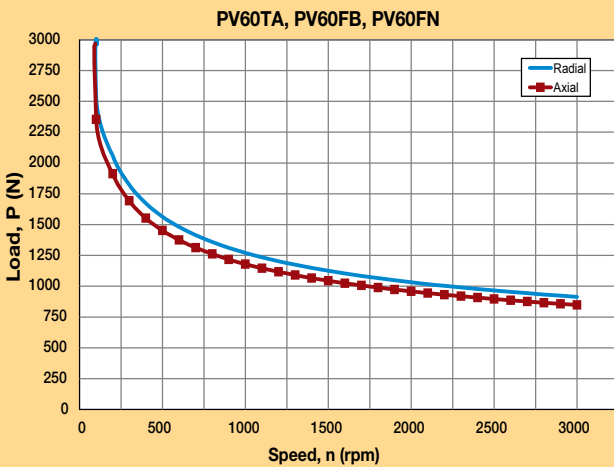
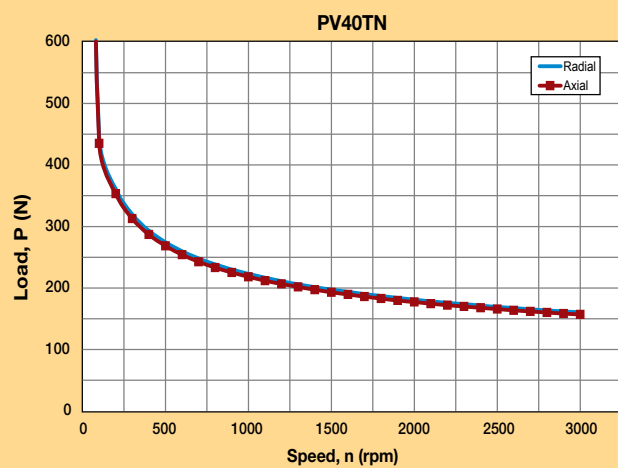
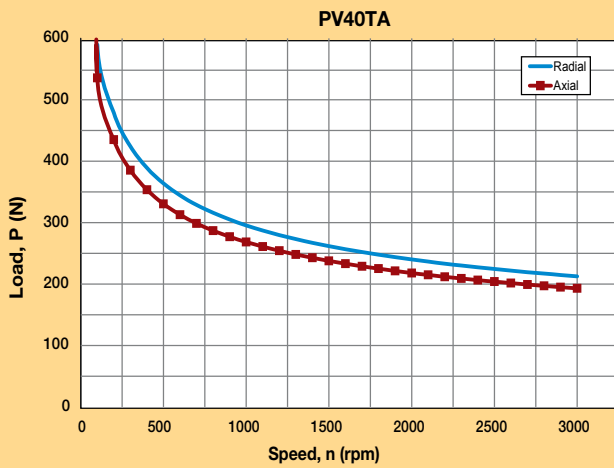
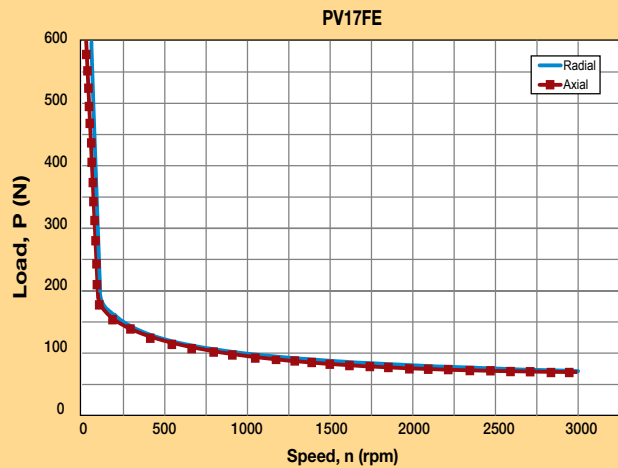
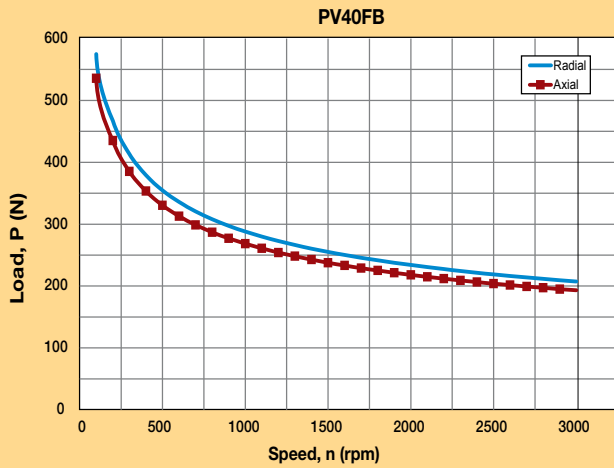
## Maximum Output Shaft Load Rating

See load rating charts on pages 6-7

	Output Face Option*	PV40/PV17	PV60/PV23	PV90/PV34	PV115/PV42
Maximum Radial Load Pr, N ** (3-100 ratios)	FE	200	665	1040	1235
	TN	440	665	1040	2100
	FB, FN, TA	590	2535	4270	8550
Maximum Axial Load Pr, N ** (3-100 ratios)	FE	190	765	1140	1300
	TN	430	765	1140	2380
	FB, FN, TA	530	2350	4670	10550

\* See How to Order page 10, items 3 & 4 for front face/output face code definitions. \*\* @100 rpm, radial load applied at center of shaft

## Output Shaft Load Ratings – PV40/PV17 & PV60/PV23

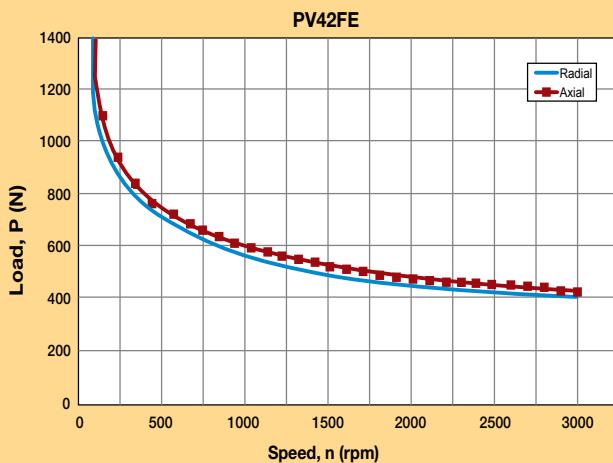
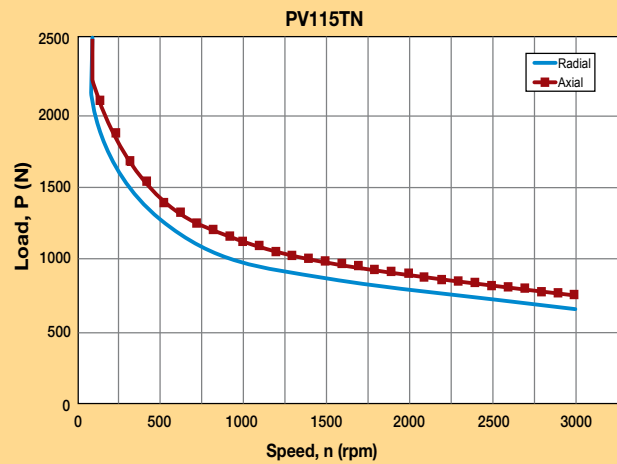
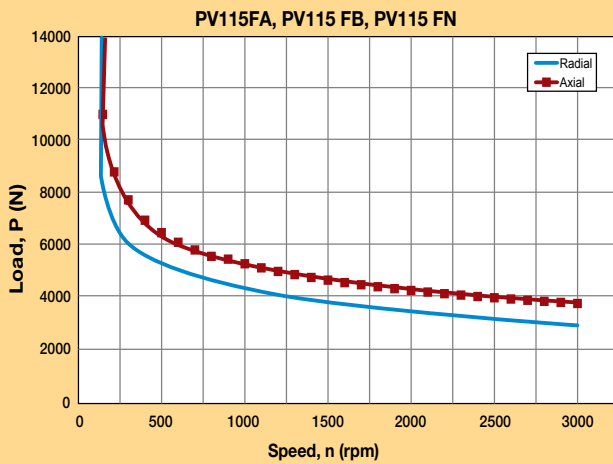
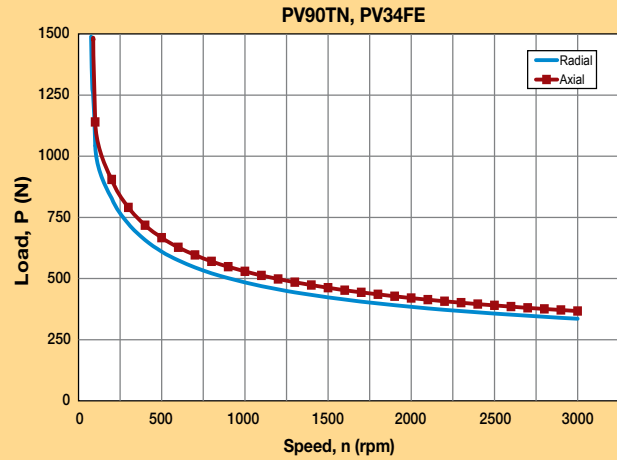
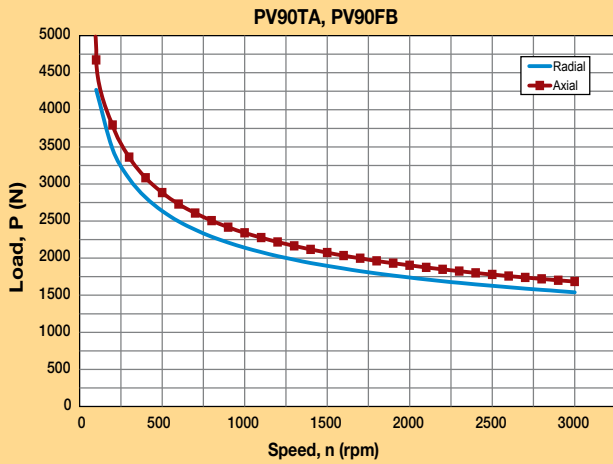


See How to Order page 10, items 3 & 4 for front face/output face code definitions.

- 1) Maximum axial load,  $F_a$ .
- 2) Maximum radial load applied to the center of the shaft,  $F_r$ .
- 3) Radial load curves can be used to combine (radial + axial) load if  $F_a/F_r < 0.22$ .
- 4) If  $F_a/F_r > 0.22$  consult factory.



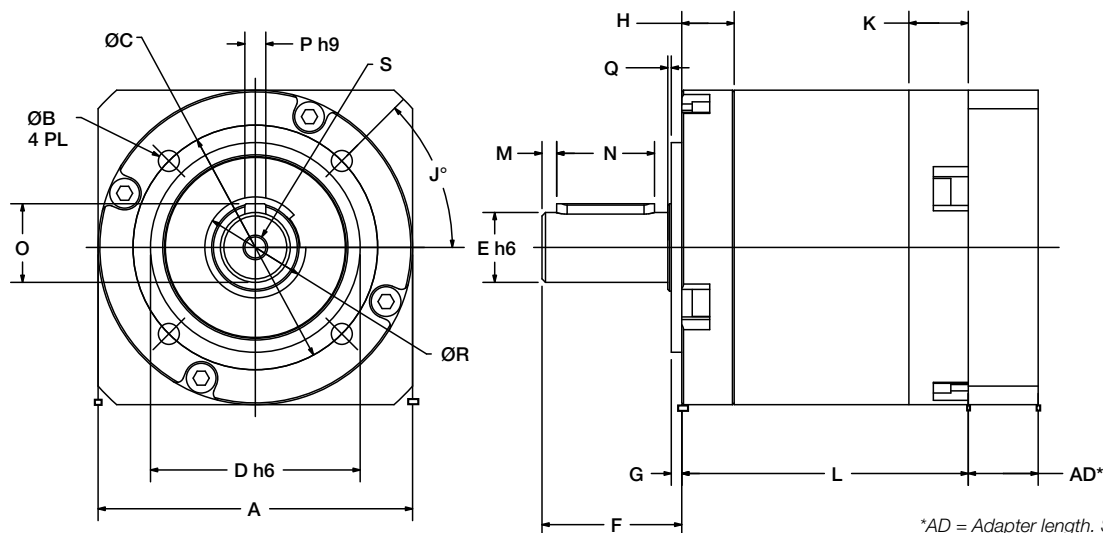
## Output Shaft Load Ratings – PV90/PV34 & PV115/PV42



See How to Order page 10, items 3 & 4 for front face/output face code definitions.

- 1) Maximum axial load,  $F_a$ .
- 2) Maximum radial load applied to the center of the shaft,  $F_r$ .
- 3) Radial load curves can be used to combine (radial + axial) load if  $F_a/F_r < 0.22$ .
- 4) If  $F_a/F_r > 0.22$  consult factory.

## Dimensions – Tapped Face (TA & TN)



\*AD = Adapter length. See how to order page for mounting kit adapter lengths.

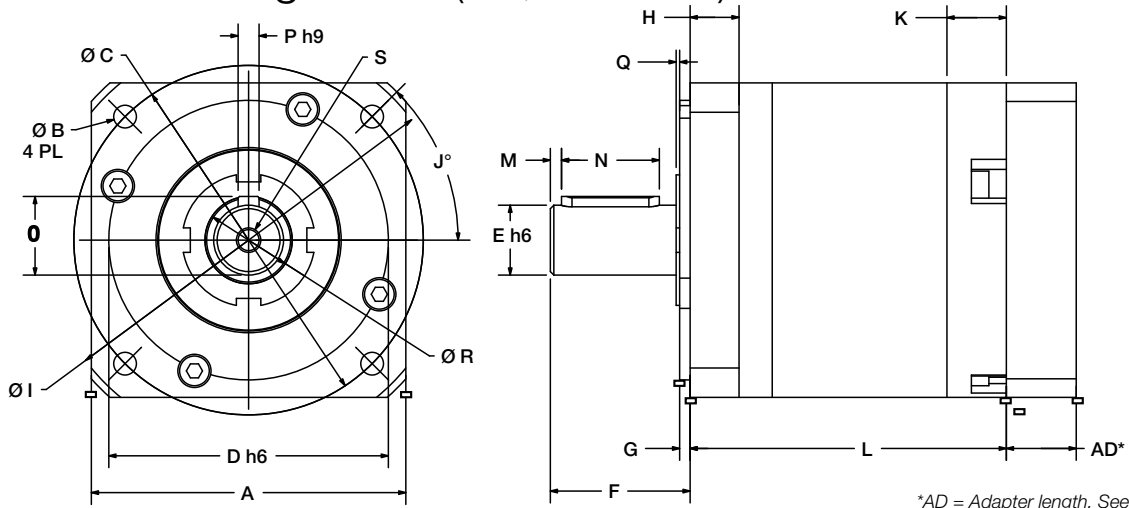
### Metric Frame Sizes

Frame Size	A		B		C		D		E		F		G		H		J	K	
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	°	mm	in
PV40TN	43	1.693	M4x7	34	1.339	26	1.024	10	0.394	26	1.024	1.5	0.059	10	0.394	45	11	0.433	
PV40TA	50	1.969	M4X10	44	1.732	35	1.378	12	0.472	25	0.984	3	0.118	10	0.394	90	11	0.433	
PV60TN	62	2.441	M5x10	52	2.047	40	1.575	14	0.551	35	1.378	2.5	0.098	12	0.472	45	16	0.630	
PV60TA	70	2.756	M5x10	62	2.362	52	2.047	16	0.630	36	1.417	5	0.197	16	0.630	90	16	0.630	
PV90TN	90	3.543	M6x11	70	2.756	60	2.362	20	0.787	40	1.575	3	0.118	15	0.591	45	17	0.670	
PV90TA	90	3.543	M6x12	80	3.150	68	2.677	22	0.866	46	1.811	5	0.197	18.5	0.728	90	17	0.670	
PV115TN	115	4.528	M10x16	100	3.937	80	3.150	25	0.984	55	2.165	4	0.157	20	0.787	45	23	0.906	
PV115TA	120	4.724	M8x20	108	4.252	90	3.543	32	1.260	70	2.756	6	0.236	28	1.102	90	23	0.906	

Frame Size	L1		L2		M		N		O		P		Q		R		S
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	
PV40TN	48.5	1.909	63	2.480	3.1	0.122	16	0.630	10.2	0.402	3	0.118	0.6	0.024	11.633	0.458	M3X6
PV40TA	48.5	1.909	63	2.480	1.3	0.051	16	0.630	13.5	0.531	4	0.157	3.5	0.138	17.831	0.702	M4x8
PV60TN	63	2.480	83	3.268	2.71	0.107	25	0.984	16	0.630	5	0.197	2.5	0.098	19.939	0.785	M5x12
PV60TA	67	2.638	87	3.425	2.21	0.087	25	0.984	18	0.709	5	0.197	3	0.118	28	1.102	M5x12
PV90TN	82	3.228	105.5	4.154	4.197	0.165	28	1.102	22.5	0.886	6	0.236	1	0.039	25	0.984	M6x12
PV90TA	85.5	3.366	109	4.291	3.197	0.126	28	1.102	24.5	0.965	6	0.236	5	0.197	38	1.496	M8x13
PV115TN	102	4.016	136	5.354	5.2	0.205	40	1.575	28	1.102	8	0.315	1	0.039	35	1.378	M10x20
PV115TA	110	4.331	144	5.669	4	0.157	50	1.969	35	1.378	10	0.394	1.8	0.071	40	1.575	M12x22



## Dimensions – Flange Face (FB, FE & FN)



\*AD = Adapter length. See how to order page for mounting kit adapter lengths.

### Metric & NEMA Frame Sizes

Frame Size	A		B		C		D		E		F		G		H		I		J	
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	°	
Metric	PV40FB	43	1.693	3.4	0.134	50	1.969	35	1.378	13	0.512	26	1.024	3	0.118	10	0.394	56	2.205	45
	PV60FB	62	2.441	5.5	0.217	70	2.756	50	1.969	16	0.630	25	0.984	2.5	0.098	10.3	0.406	80	3.150	45
	PV60FN	62	2.441	5.5	0.217	70	2.756	50	1.969	14	0.551	25	0.984	2.5	0.098	10.3	0.406	80	3.150	45
	PV90FB	90	3.543	6.5	0.256	100	3.937	80	3.150	20	0.787	40	1.575	3	0.118	14	0.551	116	4.567	45
	PV90FN	90	3.543	6.5	0.256	100	3.937	80	3.150	20	0.787	40	1.575	3	0.118	14	0.551	116	4.567	45
	PV115FB	115	4.528	8.5	0.335	130	5.118	110	4.331	24	0.945	50	1.969	3.5	0.138	18	0.709	152	5.984	45
	PV115FN	115	4.528	8.5	0.335	130	5.118	110	4.331	25	0.984	55	2.165	3.5	0.138	18	0.709	152	5.984	45

Frame Size	in		mm		in		mm		in		mm		in		mm		in		mm		°
	NEMA	PV17FE	1.693	43	0.138	3.5	1.724	43.8	0.866	22	0.250	6.35	0.984	25	0.059	1.5	0.236	6	2.165	55	45
PV23FE		2.441	62	0.195	4.95	2.625	66.675	1.500	38.1	0.375	9.525	1.000	25.4	0.098	2.5	0.374	9.5	3.150	80	45	
PV34FE		3.543	90	0.217	5.52	3.875	98.43	2.875	73.025	0.500	12.7	1.250	31.75	0.118	3	0.591	15	4.567	116	45	
PV42FE		4.528	115	0.281	7.14	4.949	125.7	2.187	55.55	0.625	15.875	1.500	38.1	0.094	2.4	0.787	20	5.984	152	45	

Frame Size	K		L1		L2		M		N		O		P		Q		R		S	
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	
Metric	PV40FB	11	0.433	48.5	1.909	63	2.480	2.1	0.083	16	0.630	15	0.591	5	0.197	2	0.079	17.831	0.702	M4x8
	PV60FB	16	0.630	71.5	2.815	91.5	3.602	3.2	0.126	16	0.630	18	0.709	5	0.197	1	0.039	28	1.102	M5x12
	PV60FN	16	0.630	71.5	2.815	91.5	3.602	3.2	0.126	16	0.630	16	0.630	5	0.197	1	0.039	28	1.102	M5x12
	PV90FB	17	0.670	90.5	3.563	114	4.488	3.197	0.126	28	1.102	22.5	0.886	6	0.236	1	0.039	38	1.496	M6x12
	PV115FB	23	0.906	114.5	4.508	148.5	5.846	4.2	0.165	40	1.575	27	1.063	8	0.315	1.5	0.059	40	1.575	M10x22
	PV115FN	23	0.906	114.5	4.508	148.5	5.846	4.2	0.165	40	1.575	27	1.063	8	0.315	1.5	0.059	40	1.575	M10x22

Frame Size	in		mm		in		mm		in		mm		in		mm		in		mm	
	NEMA	PV17FE	0.433	11	1.909	48.5	2.480	63	-	-	-	-	-	-	0.091	2.3	0.458	11.633	-	-
PV23FE		0.630	16	2.382	60.5	3.169	80.5	-	-	0.748	19	0.372	9.444	Flat	0.039	1	0.785	19.939	M5x12	
PV34FE		0.670	17	3.228	82	4.154	105.5	-	-	1.063	27	0.561	14.247	0.125	3.175	0.039	1	0.984	25	M6x12
PV42FE		0.906	23	4.016	102	5.354	136	0.016	0.4	1.120	28.45	0.705	17.91	0.188	4.775	-	-	-	-	M6x20

## How to Order

Use the tables below to configure your PV gearhead and motor mounting part number.

### Gearhead Ordering Information

Order Example:		①	②	③	④	⑤
		PV	40	T	N	- 004

①	②	③	④	⑤
Series	Frame Size	Front Face	Output Face Compatible	Ratio
PV Power Versatility Series	40 40 mm	T Tapped (round)	A Alpha/Stober N Neugart	004 4:1 005 5:1
		F Flanged (square)	B Parker Bayside (PX)	007 7:1 010 10:1 016 16:1 020 20:1 025 25:1
		F Flanged (square)	E NEMA (English)	035 35:1 040 40:1 050 50:1 070 70:1 100 100:1
	17 NEMA 17	F Flanged (square)	E NEMA (English)	035 35:1 040 40:1 050 50:1 070 70:1 100 100:1
		F Flanged (square)	E NEMA (English)	035 35:1 040 40:1 050 50:1 070 70:1 100 100:1
	60 60 mm	T Tapped (round)	A Alpha/Stober N Neugart	003 3:1 004 4:1
		F Flanged (square)	B Parker Bayside (PX) N Neugart	005 5:1 007 7:1
	23 NEMA 23	F Flanged (square)	E NEMA (English)	010 10:1 012 12:1
	90 90 mm	T Tapped (round)	A Alpha/Stober N Neugart	015 15:1 020 20:1
		F Flanged (square)	B Parker Bayside (PX)	025 25:1
	34 NEMA 34	F Flanged (square)	E NEMA (English)	030 30:1 040 40:1
	115 115 mm	T Tapped (round)	A Alpha/Stober N Neugart	050 50:1 070 70:1
		F Flanged (square)	B Parker Bayside (PX)	100 100:1
	42 NEMA 42	F Flanged (square)	E NEMA (English)	100 100:1

### Mounting Kit Ordering Information

Order Example:		⑥	⑦	⑧
		MV	60	XXX

⑥	⑦	⑧
Series	Frame Size	Factory Assigned
MV (Mounting kit for PV)	40 40 or 17	See Motor Mounting Search Tool on <a href="http://parkermotion.com">parkermotion.com</a> or consult factory for part number
	60 60 or 23	
	90 90 or 34	
	115 115 or 42	

### Mounting Kit Adapter Length\*

Frame Size	Motor Shaft Length		"AD"	
	mm	(in)	mm	(in)
40/17	12 thru 20	(0.472 thru 0.787)	13.7	(0.539)
	20.1 thru 25.4	(0.791 thru 1.000)	19.0	(0.748)
60/23	16 thru 25.4	(0.630 thru 1.000)	16.5	(0.650)
	25.4 thru 31.8	(1.004 thru 1.252)	22.5	(0.886)
90/34	20 thru 31.8	(0.787 thru 1.252)	20.0	(0.787)
	31.9 thru 40	(1.256 thru 1.575)	28.5	(1.122)
115/42	22 thru 40	(0.866 thru 1.575)	24.0	(0.945)
	40.1 thru 51	(1.579 thru 2.008)	35.0	(1.378)

\* Adapter length may vary depending on motor make and model.



## Parker Gearhead Product Overview

Product Series	Precision/Gear Geometry	In-Line/ Right Angle	Frame Sizes mm (NEMA)	Torque Continuous Nm (in-lbs)	Ratios	Backlash arc-min (std/low)	IP Rating
<b>PS</b> 	High Precision / Helical Planetary	In-Line	60 to 220	40 to 1800 (355 to 16,000)	3 to 100	4-8 (std) 3-6 (low)	IP65
<b>RS</b> 	High Precision / Helical Planetary / Spiral Bevel	Right Angle	60 to 220	35 to 1800 (310 to 16,000)	5 to 100	8-14 (std) 4-10 (low)	IP65
<b>PX</b> 	Mid Precision / Helical Planetary	In-Line	60 to 142 (NEMA 23 to NEMA 56)	30 to 280 (265 to 2500)	3 to 100	8-12 (std) 6-10 (low)	IP65
<b>RX</b> 	Mid Precision / Helical Planetary / Spur Bevel	Right Angle	60 to 142 (NEMA 23 to NEMA 56)	25 to 130 (220 to 1150)	5 to 100	16-20 (std) 12-18 (low)	IP65
<b>PV</b> 	Lower Precision / Planetary	In-Line	40 to 90 (NEMA 17 to NEMA 34)	6.5 to 71 (57 to 630)	3 to 100	10-18 (std)	IP64
<b>RT RD RB</b> 	High Precision / Spiral Bevel / Helical	Right Angle	90 to 220	23 to 565 (200 to 5000)	RT: 3 to 30 RD: 1 to 30 RB: 1 to 3	8-12 (std) 4-8 (low)	IP65
<b>NE/ NR</b> 	Lower Precision / Spur	In-Line & Right Angle	NEMA 23 to NEMA 42	6 to 40 (50 to 350)	NE: 3 to 100 NR: 1 to 100	20-30 (std) 10-15 (low)	IP54

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