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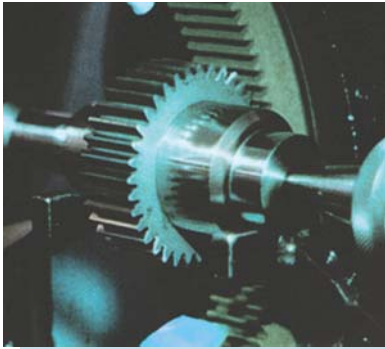
**Precision Gearheads**

*Catalog 8085/USA*



## Quality, Performance, Reliability

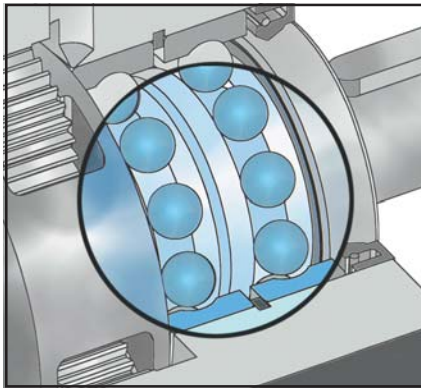
Parker Precision Gearheads are planetary gear reducers designed to excel in today's demanding servo motor applications. They offer a vast array of selectable options to satisfy nearly every application possibility. These include in-line or right-angle styles; precision or economy performance grades; and a large selection of motor mounts, frame sizes, gear ratios, and shaft sizes. A superior robust design and intrinsic quality ensure dependable performance and long term reliability for high throughput requirements and precision applications.



## Precision Honed Gearing

The planet gears found in Parker Precision Gearheads are fine-hobbed, case hardened, and precision honed to provide exceptional performance with significantly reduced noise generation. They offer *balanced axial force* operation (not found in helical gear systems) and can run at higher speeds (10,000rpm) with extremely long life needed for servomotor performance requirements.

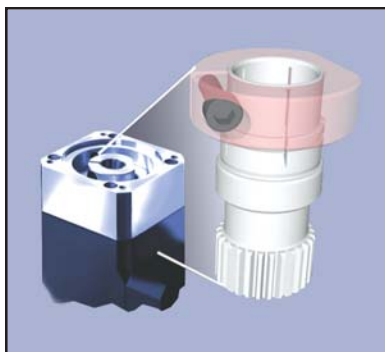
- Honed to AGMA class 12
- Quiet running
- Higher Load capacity
- Increased gear efficiency - higher input speeds
- Consistent backlash (will not degrade over time)
- No lubricant contamination from wear-in particles
- Long maintenance-free life (rated over 20,000 hours)



## Superior Bearing Design

All rotating components are fully supported by robust rolling element bearings to assure a long lifetime of reliable performance. The planet gears ride on needle roller bearings with increasing number of needles for higher load capacities. The output shaft is supported by "zero clearance" matched angular contact bearings. Radial ball bearings, selected for high input speeds, support the sun gear, protect the servo motor bearing and enable simplified assembly.

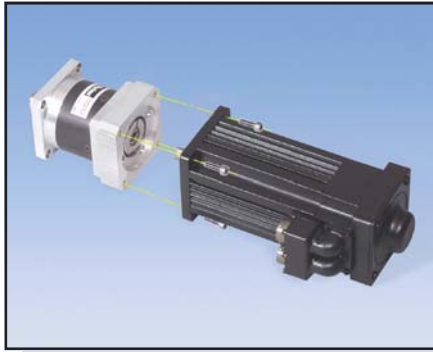
- High radial (12,000N) and axial (28,000N) load capacity
- Pre-loaded angular contact bearings on the output shaft
- Heavy duty needle bearings support planet gear
- Sun gear ball bearings protect servo motor bearings and permit high input speeds (up to 10,000rpm)



## Patented "Fast - Lock" Pinion Shaft Clamping

Parker Precision Gearheads offer a patented (US6413006131) motor shaft-to-pinion shaft clamping design which features multiple axial compression slots to provide an absolute 100% shaft lock. The pinion shaft is fully supported by ball bearings so that no pinion load is exerted on the motor bearings. Shaft selections are offered for a large variety of motor shaft sizes for fast and easy motor installation.

- Simplified mounting - only one clamp fastener
- Even compression distribution
- Increased transmittable torque
- Increased clamping safety
- Fully supported fixed pinion shaft



### Simplified Motor Mounting

Parker Precision Gearheads are offered with a wide selection of motor mounts for any commercially available servo or stepper motor. The motor mount selection determines the flange and shaft adaptor that is integrated into the gearhead design prior to shipping. For easy motor installation, there is no pinion shaft to remove, and with only four mounting screws, complete error-free installation can be accomplished within 60 seconds!

- **Wide selection of servo and stepper motor mounts**
- **Convenient 60 second motor installation**
- **No need to remove pinion shaft, which protects internal components from contamination**
- **Different motor mounts can easily be interchanged in the field**



### Application Tools and Support

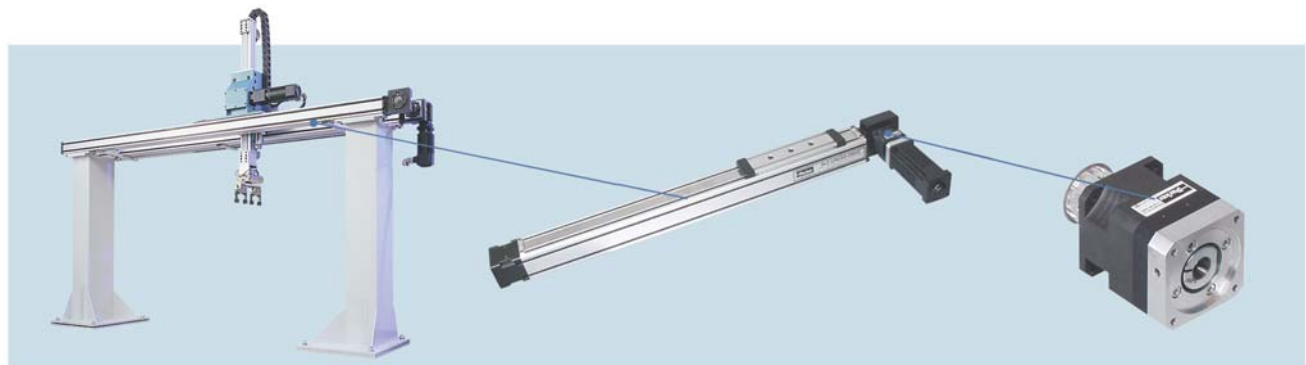
Parker Precision Gearheads make it easy for you to find, size, select, and install, the best fit solution for your gear reduction requirement.

- **Download 2D & 3D drawing files (dxf; dwg; igs; stp)**
- **Ten In-Line and Right Angle frame sizes, Precision grade or Economy grade, and 14 gear ratios to choose from**
- **Interchangeable motor mounts for all industry servo and stepper motors**
- **Can operate at any orientation and in harsh environments**
- **2 Year Warranty**
- **Unmatched global support network: Local 'Automation Technology Centers'; Regional Field Engineers; Factory Applications Engineers.**

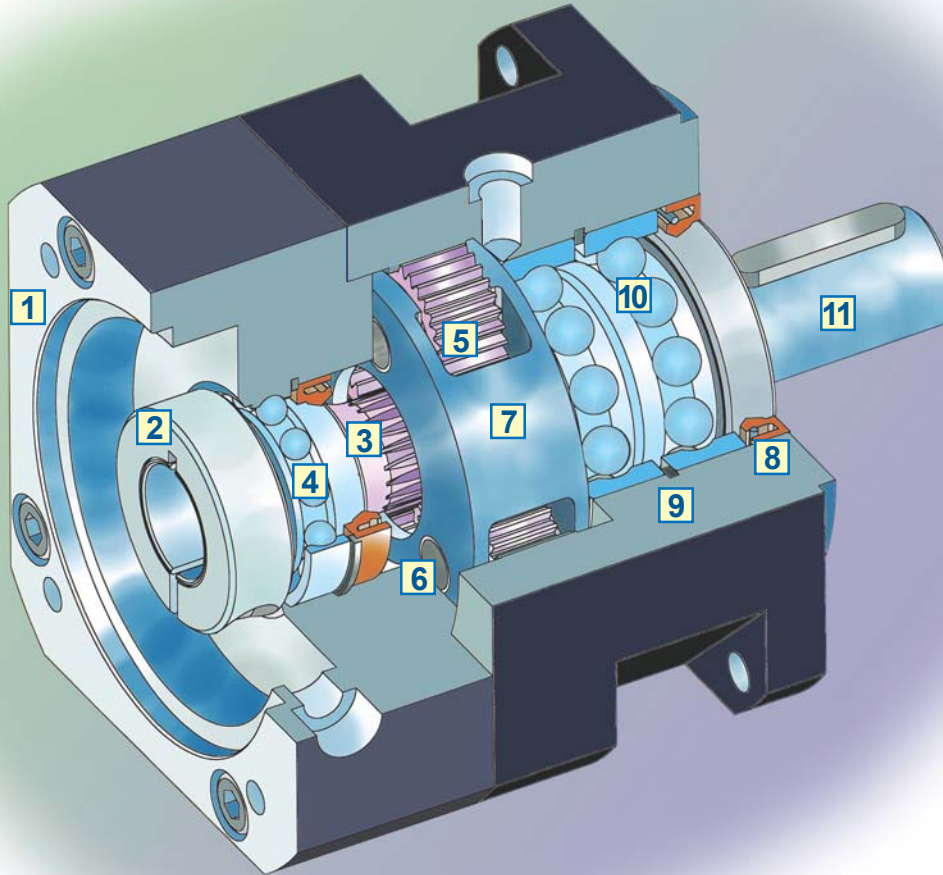
### Parker Systems Compatibility

Parker Precision Gearheads are a part of the largest selection of linear and rotary motion products available in the industry. They are easily sized and selected to provide the desired performance link between Parker linear actuators and various servo motors for multi-axis gantry robots or other high throughput electromechanical systems. All Parker products are designed for performance and mounting compatibility, eliminating the challenges and concerns often associated with the integration of electromechanical systems and subsystems.

- **Large product selection**
- **Performance and mounting compatibility**
- **Selectable levels of integration**
- **Pre-engineered multi-axis systems**



## Design Features:



### **1 Motor Mount**

Selectable motor mounts are offered for all commercially available servo & stepper motors and can be easily interchanged in the field.

### **2 “Fast Lock” Shaft Clamp**

A unique motor shaft clamp design offers evenly distributed radial compression, to assure a solid lock for higher loading capacities.

### **3 Captured Pinion Shaft**

There is no need to remove the pinion during motor installation, allowing a clean “60 second” installation with no internal contamination of lubrication.

### **4 Pinion Shaft Radial Ball Bearings**

100% pinion support means no pinion loading is transferred to the motor bearings.

### **5 Planet Gears**

Case hardened and precision honed to AGMA class 12, these planet gears match the load capacity of helical gear assemblies without producing unbalanced axial forces. Lubricated for life with high grade synthetic grease, Parker Precision Gearheads offer low backlash and quiet operation.

### **6 Needle Bearings**

Planet gear needle bearings provide greater load capacity and longer life.

### **7 Planet Gear Housing**

Dual support housing provides gear support on both ends (not cantilevered) for longer life, and maintaining position under load.

### **8 Seals**

IP65 rated seals offer leak-proof and contamination free operation - even in harsh environments.

### **9 Housing with Ring Gear**

Integrated “unibody” design with ring gear cut in the housing to maximize gear performance within the frame size envelope. The ductile iron housing provides improved heat dissipation and better noise suppression.

### **10 Angular Contact Bearings**

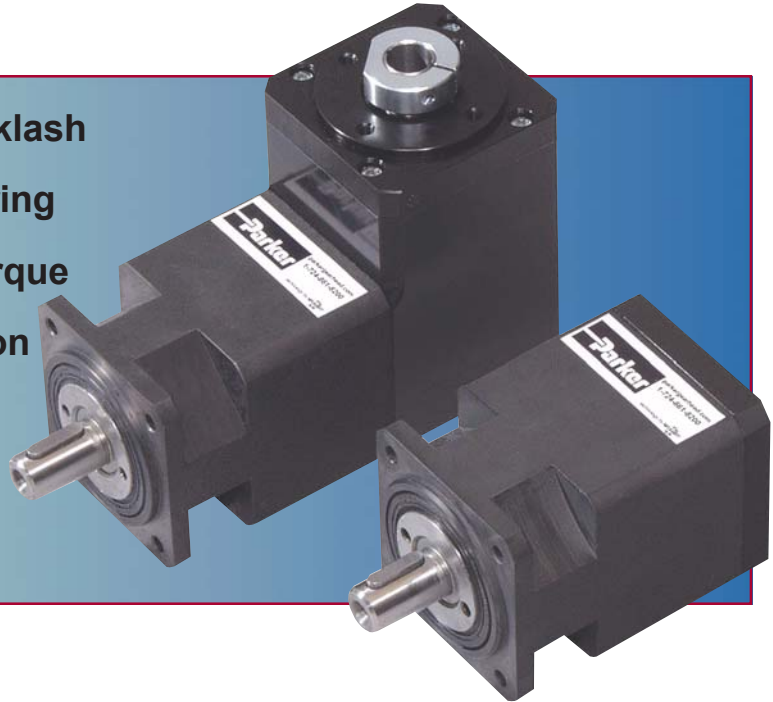
Pre-loaded dual angular contact bearings evenly distribute loads for higher radial and axial load capacity.

### **11 Output Shaft**

A case hardened (no marring) shaft with high torsional stiffness is standard. A large selection of shaft sizes and key options are available.

## GTN, GTR Precision Series

- ❑ <3 arc-minute precision backlash
- ❑ Quiet - AGMA 12 honed gearing
- ❑ Over 16,000in.-lb. output torque
- ❑ IP65 environmental protection
- ❑ Quick universal motor mounting
- ❑ Two year warranty



### GTN & GTR Specifications

Specification	units	Frame Size				
		70	90	115	142	190
<b>Backlash<sup>[1]</sup></b>	arc-min					
(ratios≤10:1)		< 3	< 3	< 3	< 3	< 3
(ratios>10:1)		< 5	< 5	< 5	< 5	< 5
<b>Maximum Input Speed</b>						
GTN <sup>[2]</sup>	rpm	10000	8000	8000	6000	6000
GTR <sup>[2]</sup>	rpm	5000	4500	4000	3500	3000
<b>Recommended Input Speed</b>						
GTN	rpm	5000	4500	4000	3500	3000
GTR	rpm	3000	2500	2500	2000	1500
<b>Noise (GTN)<sup>[3]</sup></b>	[dBa]	< 58	< 60	< 65	< 68	< 70
<b>Torsional Stiffness</b>	Nm/arcmin	2.3	4.5	10.2	32.5	100
<b>Max Radial Load<sup>[4]</sup></b>	N	3000	4000	5000	8000	12000
<b>Max Axial Load<sup>[4]</sup></b>	N	6000	9000	12000	19000	28000
<b>Efficiency</b>	%					
GTN (ratios≤10:1)		> 98	> 98	> 98	> 98	> 98
GTN (ratios>10:1)		> 95	> 95	> 95	> 95	> 95
GTR (ratios≤10:1)		> 97	> 97	> 97	> 97	> 97
GTR (ratios>10:1)		> 94	> 94	> 94	> 94	> 94
<b>Weight</b>	kg					
(ratios≤10:1)		3.0	4.3	9.0	15.4	33.5
(ratios>10:1)		3.6	5.7	11.6	18.5	45

Notes:

[1] - Values shown are for GTN in-line units. Add 2 arc-min for GTR right angle units

[2] - Intermittent duty

[3] - Measured at no load, 3,000 rpm input speed. Add 2dB for GTR units

[4] - Based on 20,000 hours of life - 50% Duty cycle

[5] - Single stage models include 3\*, 4, 5, 8, & 10:1 ratios

Dual stage models include 12\*, 15\*, 16, 20, 25, 32, 40, 64, & 100:1ratios

\* (3,12, & 5:1 - GTN units only)

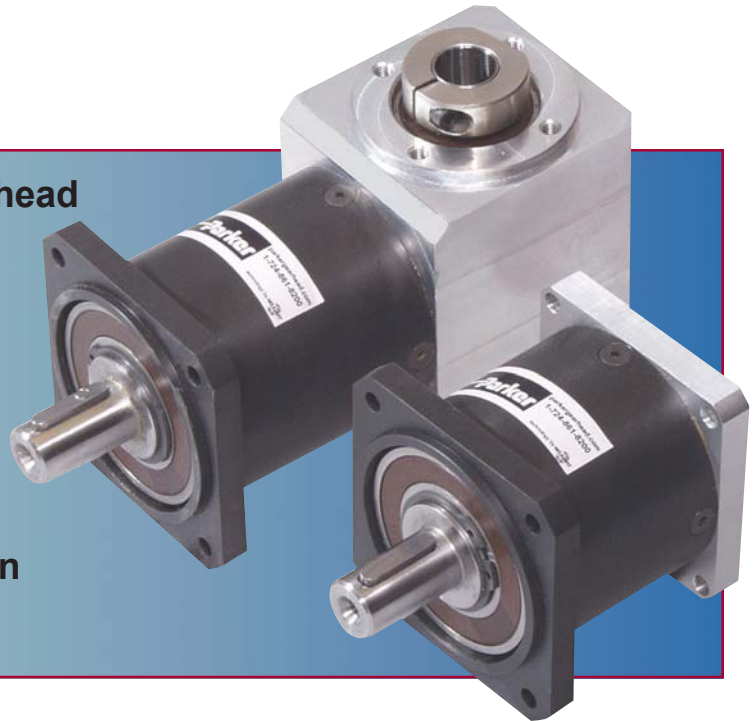
[6] - Torque ratings for models having an S11 shaft are 20% lower

ratio <sup>[5]</sup>	Moment of Inertia (kg-cm <sup>2</sup> )									
	GTN In line Units					GTR Right Angle Units				
	70	90	115	142	190	70	90	115	142	190
3:1	0.32	.81	2.10	12.14	47.50	-	-	-	-	-
4:1	0.20	0.60	1.51	7.78	29.69	1.1	2.51	5.59	24.02	120.00
5:1	0.16	0.52	1.22	6.07	23.18	1.06	2.44	5.34	22.04	116.00
8:1	0.12	0.46	1.05	4.63	16.83	1.03	2.37	5.09	20.48	110.00
10:1	0.10	0.44	1.00	4.25	15.32	1.01	2.35	5.04	20.1	105.00
12:1	0.22	0.75	2.00	12.37	30.25	-	-	-	-	-
15:1	0.21	0.74	2.00	12.35	25.53	-	-	-	-	-
16:1	0.20	0.56	1.48	7.47	28.95	1.09	2.48	5.56	23.7	40.00
20:1	0.17	0.50	1.41	6.65	22.70	1.06	2.42	5.53	22.6	35.00
25:1	0.16	0.48	1.21	5.81	22.46	1.05	2.41	5.33	21.8	35.00
32:1	0.13	0.45	1.46	6.36	16.65	1.02	2.36	5.33	22.2	34.00
40:1	0.13	0.45	1.05	5.28	16.54	1.02	2.36	5.11	21.1	32.00
64:1	0.13	0.45	1.05	4.50	16.45	1.02	2.36	5.10	20.3	32.00
100:1	0.12	0.44	1.00	4.17	15.07	1.01	2.35	5.06	20	30.00

ratio <sup>[5]</sup>	Continuous torque Rating (Nm) <sup>[6]</sup> (Peak torque = 2x continuous rating)									
	GTN In line Units					GTR Right Angle Units				
	70	90	115	142	190	70	90	115	142	190
3:1	30	75	150	400	1000	-	-	-	-	-
4:1	40	100	200	560	1200	40	64	165	465	1200
5:1	50	110	210	700	1600	50	80	210	585	1500
8:1	37	62	148	450	1000	37	62	148	450	1000
10:1	27	45	125	305	630	27	45	125	305	630
12:1	77	120	260	910	1800	-	-	-	-	-
15:1	68	110	210	780	1800	-	-	-	-	-
16:1	77	120	260	910	1800	77	120	260	910	1800
20:1	77	110	260	910	1800	77	110	260	910	1800
25:1	68	110	210	780	1800	68	110	210	780	1800
32:1	77	120	260	910	1800	77	120	260	910	1800
40:1	68	110	210	780	1800	68	110	210	780	1800
64:1	37	62	148	450	1000	37	62	148	450	1000
100:1	27	45	125	305	630	27	45	125	305	630

## PEN , PER Economy Series Flange Mounted

- ❑ Highest value economy gearhead available
- ❑ NEMA or Metric mounting flanges
- ❑ Input speeds to 8000 rpm
- ❑ Effortless motor mounting
- ❑ IP54 environmental protection
- ❑ Two year warranty



### PEN & PER Specifications

Specification	units	Frame Size		
		60mm NEMA 23	90mm NEMA 34,42	115mm
<b>Backlash<sup>[1]</sup></b>	arc-min			
(ratios ≤ 8:1)		< 20	< 12	< 8
(ratios > 8:1)		< 25	< 17	< 12
(ratio=100:1)		< 30	< 22	< 16
<b>Max Input Speed</b>				
PEN <sup>[2]</sup>	rpm	8,000	6,000	6,000
PER <sup>[2]</sup>	rpm	6,000	6,000	6,000
<b>Recommended Input Speed</b>				
PEN	rpm	4000	4000	3500
PER	rpm	3000	3000	3000
<b>Noise (PEN)<sup>[3]</sup></b>	[dBa]			
(ratios ≤ 8:1)		< 58	< 60	< 65
(ratios > 8:1)		< 58	< 60	< 65
(ratio=100:1)		< 58	< 60	< 65
<b>Torsional Stiffness</b>	Nm/arcmin	1.5	4.5	11.0
<b>Max Radial Load<sup>[4]</sup></b>	N	500	2500	3500
<b>Max Axial Load<sup>[4]</sup></b>	N	600	2800	2800
<b>Efficiency</b>	%			
PEN (ratios ≤ 8:1)		> 96	> 96	> 96
PEN (ratios > 8:1)		> 94	> 94	> 94
PEN (ratio=100:1)		> 90	> 90	> 90
PER (ratios ≤ 64:1)		> 94	> 92	> 98
<b>Weight</b>	kg			
(ratios ≤ 8:1)		.90	3.2	6.6
(ratios > 8:1)		1.1	3.7	8.6
(ratio=100:1)		1.3	4.2	10.6

[1] - Values shown are for PEN in-line units.

Add 10 arc-min for PER right angle units

[2] - Intermittent duty

[3] - Measured at no load, 3,000 rpm input speed. Add 8dB for PER units

[4] - Based on 20,000 hours of life - 50% Duty cycle

[5] - Single stage models include 3, 4, 5, & 8:1 ratios

Dual stage models include 9, 12, 15, 16, 20, 25, 32, 40, & 64:1

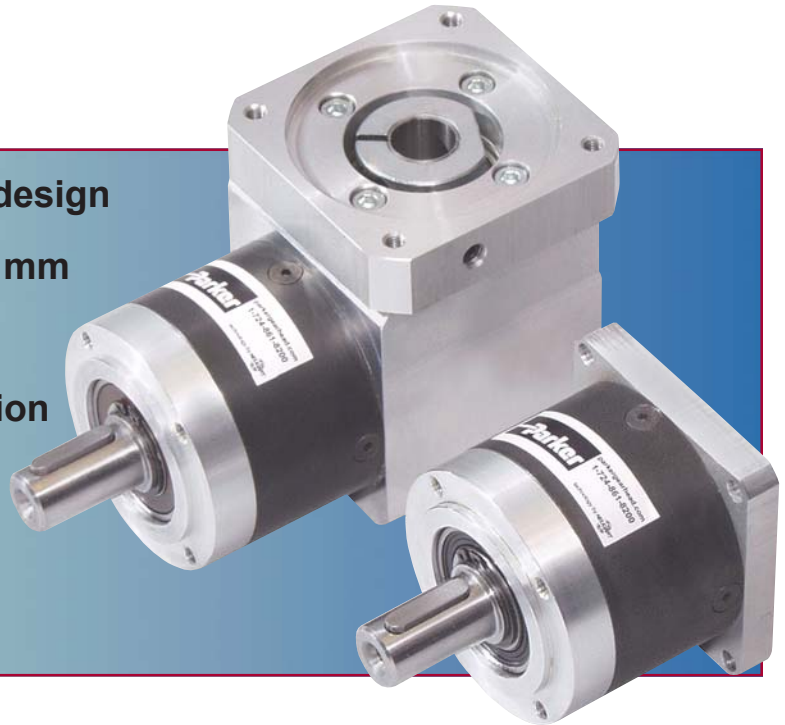
Triple stage models includes 100:1 ratio

ratio <sup>[5]</sup>	Moment of Inertia (kg-cm <sup>2</sup> )					
	PEN Inline			PER Right Angle		
	60mm NEMA 23	90mm NEMA 34,42	115mm	60mm NEMA 23	90mm NEMA 34,42	115mm
3:1	0.135	0.770	2.63	0.246	1.19	5.75
4:1	0.093	0.52	1.79	0.204	0.94	3.91
5:1	0.078	0.45	1.53	0.189	0.87	3.35
8:1	0.065	0.39	1.32	0.176	0.81	2.89
9:1	0.131	0.74	2.62	0.242	1.16	5.73
12:1	0.127	0.72	2.56	0.238	1.14	5.60
15:1	0.077	0.71	2.53	0.188	1.13	5.53
16:1	0.088	0.50	1.75	0.199	0.92	3.83
20:1	0.075	0.44	1.50	0.186	0.86	3.28
25:1	0.075	0.44	1.49	0.186	0.86	3.26
32:1	0.064	0.39	1.30	0.175	0.81	2.84
40:1	0.064	0.39	1.30	0.175	0.81	2.84
64:1	0.064	0.39	1.30	0.175	0.81	2.84
100:1	0.075	0.44	1.49	0.186	0.859	3.26

ratio <sup>[5]</sup>	Continuous torque Rating (Nm) <sup>[6]</sup> (Peak torque = 2x continuous rating)					
	PEN Inline			PER Right Angle		
	60mm NEMA 23	90mm NEMA 34,42	115mm	60mm NEMA 23	90mm NEMA 34,42	115mm
3:1	12	40	80	12	40	80
4:1	16	50	100	16	50	100
5:1	16	50	110	16	50	110
8:1	15	50	120	15	50	120
9:1	44	130	240	44	130	240
12:1	44	130	260	44	130	260
15:1	44	110	230	44	110	230
16:1	44	120	260	44	120	260
20:1	44	120	260	44	120	260
25:1	40	110	230	40	110	230
32:1	44	120	260	44	120	260
40:1	40	110	230	40	110	230
64:1	18	50	120	18	50	120
100:1	44	120	260	44	120	260

## PTN , PTR Economy Series Face Mounted

- ❑ Space saving tapped face design
- ❑ Frame sizes from 40 to 160 mm
- ❑ Input speeds to 10,000 rpm
- ❑ IP54 environmental protection
- ❑ Effortless motor mounting
- ❑ Two year warranty



### PTN & PTR Specifications

Specification	units	Frame Size (mm)				
		40	60	80	120	160
<b>Backlash<sup>[1]</sup></b>	arc-min					
(ratios ≤ 8:1)		< 30	< 20	< 12	< 8	< 8
(ratios > 8:1)		< 35	< 25	< 17	< 12	< 10
(ratio=100:1)		< 30	< 30	< 22	< 16	n/a
<b>Max Input Speed</b>	RPM					
PTN <sup>[2]</sup>		10,000	8,000	6,000	6,000	6,000
PTR <sup>[2]</sup>		n/a	6,000	6,000	6,000	n/a
<b>Recommended Input Speed</b>						
PTN	rpm	4500	4000	4000	3500	3000
PTR	rpm	n/a	3000	3000	3000	n/a
<b>Noise (PTN)<sup>[3]</sup></b>	[dBa]					
(ratios ≤ 8:1)		< 55	< 58	< 60	< 65	< 70
(ratios > 8:1)		< 55	< 58	< 60	< 65	< 70
<b>Torsional Stiffness</b>	Nm/arcmin	0.45	1.5	4.5	11.0	32.5
<b>Max Radial Load<sup>[4]</sup></b>	N	200	500	950	2000	6,000
<b>Max Axial Load<sup>[4]</sup></b>	N	200	600	2800	2800	8,000
<b>Efficiency</b>	%					
PTN (ratios ≤ 8:1)		> 96	> 96	> 96	> 96	> 96
PTN (ratios > 8:1)		> 94	> 94	> 94	> 94	> 94
PTN (ratio=100:1)		> 90	> 90	> 90	> 90	n/a
PTR (ratios ≤ 64:1)		> 94	> 94	> 92	> 88	n/a
<b>Weight</b>	kg					
(ratios ≤ 8:1)		.35	.90	3.2	6.6	18
(ratios > 8:1)		.45	1.1	3.7	8.6	22
(ratio=100:1)		.55	1.3	4.2	10.6	n/a

[1] - Values shown are for PTN in-line units.

Add 10 arc-min for PTR right angle units

[2] - Intermittent duty

[3] - Measured at no load, 3,000 rpm input speed. Add 8dB for PTR units

[4] - Based on 20,000 hours of life - 50% Duty cycle

[5] - Single stage models include 3, 4, 5, & 8:1 ratios

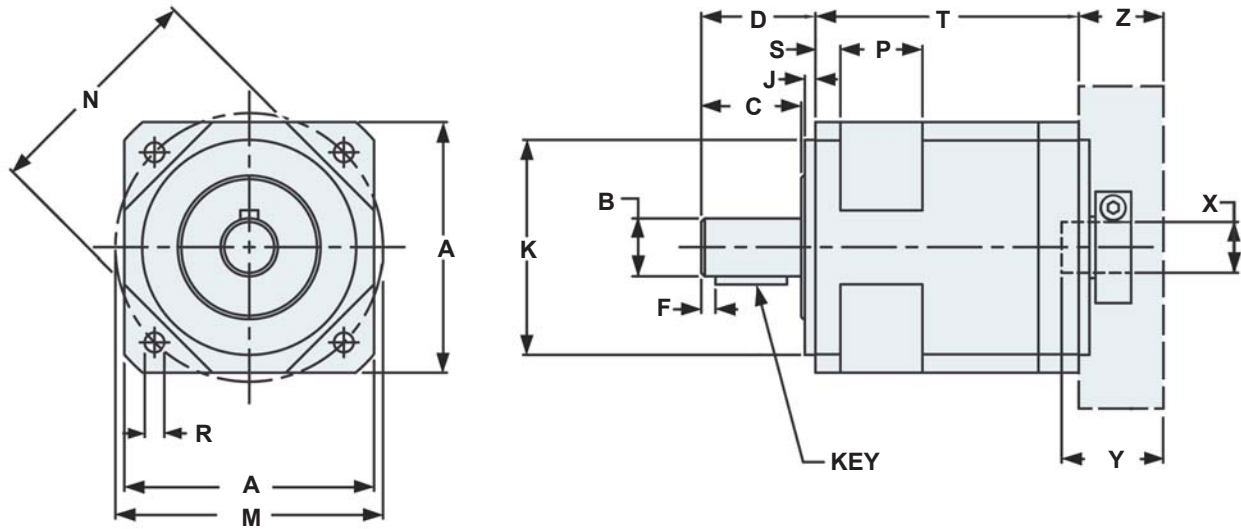
Dual stage models include 9, 12, 15, 16, 20, 25, 32, 40, & 64:1

Triple stage models includes 100:1 ratio

ratio <sup>[5]</sup>	Moment of Inertia (kg-cm <sup>2</sup> )								
	PTN Inline (mm)					PTR Right Angle (mm)			
	40	60	80	120	160	60	80	120	
3:1	0.031	0.135	0.770	2.63	12.14	0.246	1.19	5.75	
4:1	0.022	0.093	0.52	1.79	7.78	0.204	0.94	3.91	
5:1	0.019	0.078	0.45	1.53	6.07	0.189	0.87	3.35	
8:1	0.017	0.065	0.39	1.32	4.63	0.176	0.81	2.89	
9:1	0.030	0.131	0.74	2.62	n/a	0.242	1.16	5.73	
12:1	0.029	0.127	0.72	2.56	12.37	0.238	1.14	5.60	
15:1	0.023	0.077	0.71	2.53	12.35	0.188	1.13	5.53	
16:1	0.022	0.088	0.50	1.75	7.47	0.199	0.92	3.83	
20:1	0.019	0.075	0.44	1.50	6.65	0.186	0.86	3.28	
25:1	0.019	0.075	0.44	1.49	5.81	0.186	0.86	3.26	
32:1	0.017	0.064	0.39	1.30	6.36	0.175	0.81	2.84	
40:1	0.016	0.064	0.39	1.30	5.28	0.175	0.81	2.84	
64:1	0.016	0.064	0.39	1.30	4.5	0.175	0.81	2.84	
100:1	0.019	0.075	0.44	1.49	n/a	0.186	0.85	3.26	

ratio <sup>[5]</sup>	Continuous torque Rating (Nm) <sup>[6]</sup> (Peak torque = 2x continuous rating)								
	PTN Inline					PTR Right Angle			
	40	60	80	120	160	60	80	120	
3:1	4.5	12	40	80	400	12	40	80	
4:1	6	16	50	100	450	16	50	100	
5:1	6	16	50	110	450	16	50	110	
8:1	5	15	50	120	450	15	50	120	
9:1	20	44	130	240	n/a	44	130	240	
12:1	20	44	130	260	800	44	130	260	
15:1	18	44	110	230	700	44	110	230	
16:1	20	44	120	260	800	44	120	260	
20:1	20	44	120	260	800	44	120	260	
25:1	18	40	110	230	700	40	110	230	
32:1	20	44	120	260	800	44	120	260	
40:1	18	40	110	230	700	40	110	230	
64:1	7.5	18	50	120	450	18	50	120	
100:1	20	44	120	260	n/a	44	120	260	

**GTN - Precision In-line**



<b>Dimensions: mm</b>		<b>Frame Size</b>					
		<b>70</b>	<b>90</b>	<b>115</b>	<b>142</b>	<b>190</b>	
<b>Common Dimensions</b>	<b>A</b> Square output flange	70	90	115	140	190	
	<b>J</b> Output pilot length	3	3	4	5	6	
	<b>K</b> Output pilot diameter	60	80	110	130	160	
	<b>M</b> Mounting bolt hole circle	75	100	130	165	215	
	<b>N</b> Housing recess	64	87	115	140	190	
	<b>P</b> Housing recess width	23	30	34	52	52	
	<b>R</b> Mounting hole dia.	5.5	6.5	8.5	11	13.5	
	<b>S</b> Flange thickness	7	8	14	20	20	
	<b>T</b> Body Length (ratios ≤ 10:1)	62.5	69	77.5	102	121.5	
	Body Length (ratios > 10:1)	86	97.5	111	143	169	
	<b>X</b> Input bore diameter	14	19	24	35	48	
	<b>Y</b> Input shaft bore depth(max) <sup>[1]</sup>	23	30	40	50	60	
<b>Z</b> Motor flange thickness (max.) <sup>[1][2]</sup>	18.2	21.2	21.8	35.0	*		
<b>Output Shaft Dimensions</b>	<b>S7 Shaft (standard)</b>						
	<b>B</b> Output shaft diameter	19	22	32	40	55	
	<b>C</b> Useable shaft length	28	36	58	80	82	
	<b>D</b> Shaft length from face	32	41.5	64.5	87	90	
	<b>F</b> End of shaft to key	4	4	4	8	6	
	<b>KEY</b> (w x h x l)	6x6x20	6x6x28	10x8x50	12x8x65	16x10x70	
	<b>S0 Shaft (Optional)</b>						
	<b>B</b> Output shaft diameter	19	22	32	40	55	
	<b>C</b> Useable shaft length	28	36	58	80	82	
	<b>D</b> Shaft length from face	32	41.5	64.5	87	90	
	<b>F</b> End of shaft to key	n/a	n/a	n/a	n/a	n/a	
	<b>KEY</b> (w x h x l)	no key	no key	no key	no key	no key	
<b>S11 Shaft (Optional)</b>							
<b>B</b> Output shaft diameter	16	20	25	40	55		
<b>C</b> Useable shaft length	28	40	50	80	82		
<b>D</b> Shaft length from face	32	45.5	56.5	87	90		
<b>F</b> End of shaft to key	4	4	5	8	6		
<b>KEY</b> (w x h x l)	5x6x20	6x6x32	8x8x40	12x8x65	16x10x70		

[1] Maximum - standard design; consult factory for special options

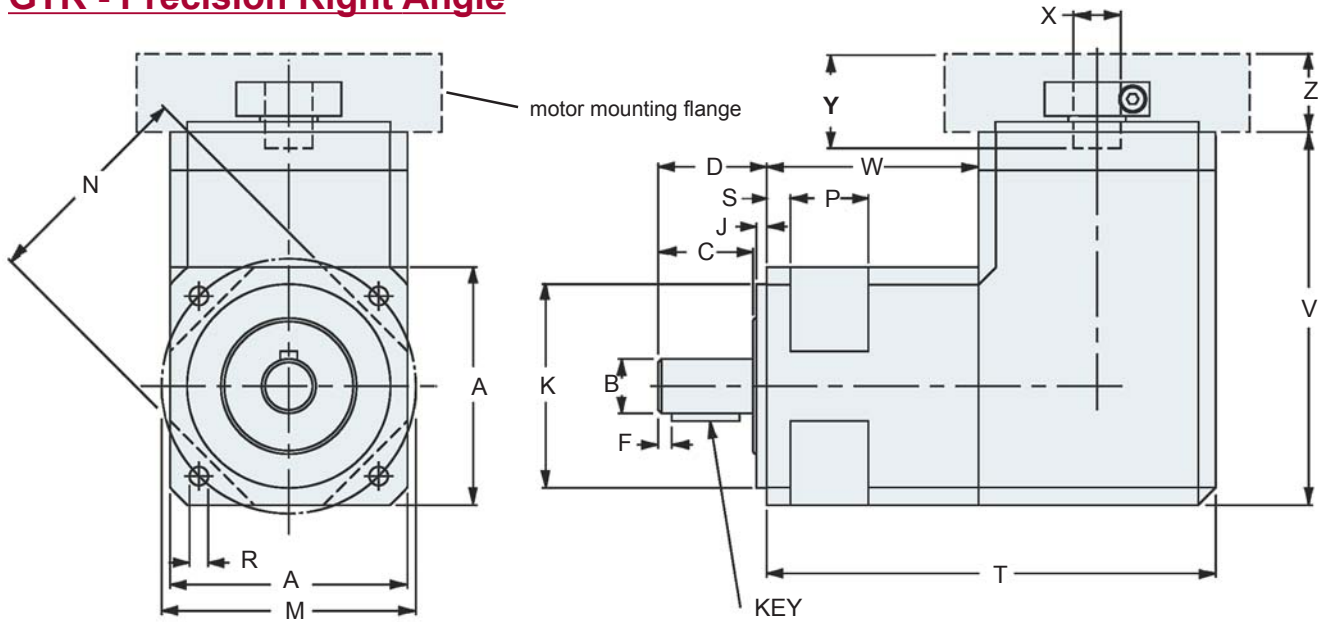
\* Consult factory

[2] Refer to the "Motor Kit Codes" listing for specific dimension





**GTR - Precision Right Angle**

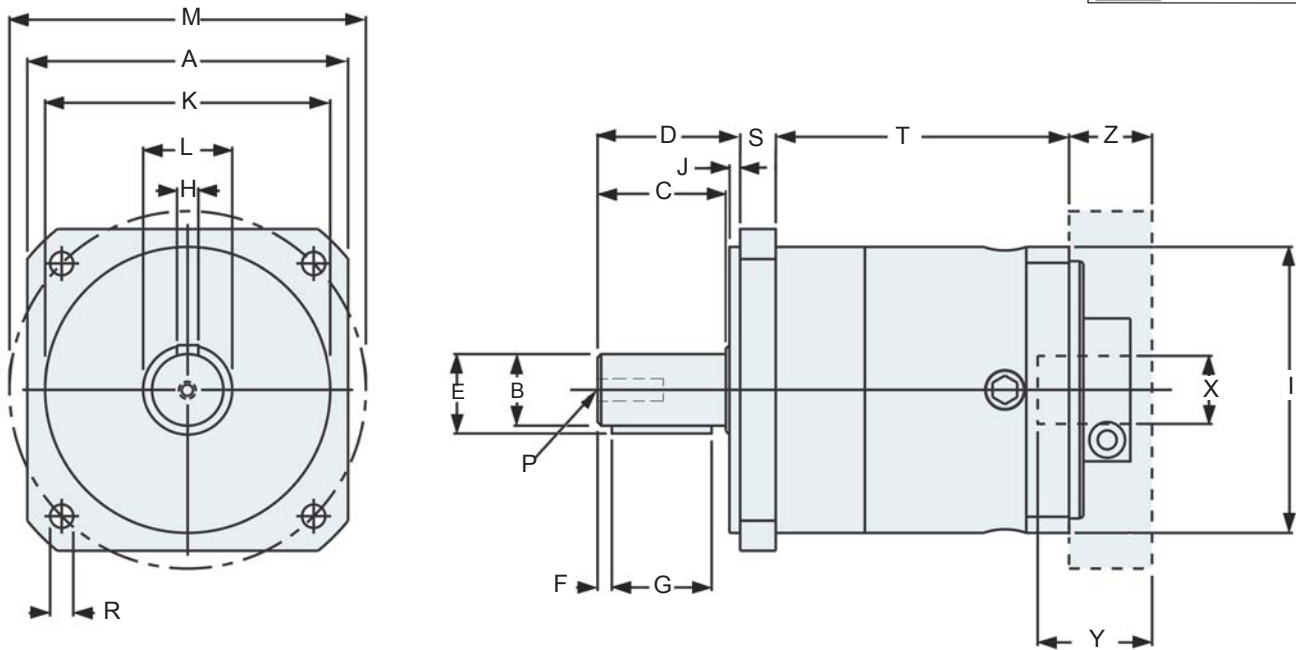


<b>Dimensions: mm</b>		<b>Frame Size</b>				
		<b>70</b>	<b>90</b>	<b>115</b>	<b>142</b>	<b>190</b>
<b>Common Dimensions</b>	<b>A</b> Square output flange	70	90	115	140	190
	<b>J</b> Output pilot length	3	3	4	5	6
	<b>K</b> Output pilot diameter	60	80	110	130	160
	<b>M</b> Mounting bolt hole circle	75	100	130	165	215
	<b>N</b> Housing recess	64	87	115	140	190
	<b>P</b> Housing recess width	23	30	34	52	52
	<b>R</b> Mounting hole dia.	5.5	6.5	8.5	11	13.5
	<b>S</b> Flange thickness	7	8	14	20	20
	<b>T</b> Body Length (ratios≤10:1)	132	159	192.5	250	321
	Body Length (ratios>10:1)	156	187.5	226	291	359
	<b>V</b> Overall Height	128	156	190	225	308
	<b>W</b> (ratios≤10:1)	62.5	69	77.5	110	131
	(ratios>10:1)	86	97.5	111	151	169
	<b>X</b> Input bore diameter	14	19	24	35	48
<b>Y</b> Input shaft bore depth(max) <sup>[1]</sup>	23	30	40	50	60	
<b>Z</b> Motor flange (max.) <sup>[1][2]</sup>	18.2	21.2	21.8	35.0	*	
<b>Output Shaft Dimensions</b>	<b>S7 Shaft (standard)</b>					
	<b>B</b> Output shaft diameter	19	22	32	40	55
	<b>C</b> Useable shaft length	28	36	58	80	82
	<b>D</b> Shaft length from face	32	41.5	64.5	87	90
	<b>F</b> End of shaft to key	4	4	4	8	6
	<b>KEY</b> (w x h x l)	6x6x20	6x6x28	10x8x50	12x8x65	16x10x70
	<b>S0 Shaft (Optional)</b>					
	<b>B</b> Output shaft diameter	19	22	32	40	55
	<b>C</b> Useable shaft length	28	36	58	80	82
	<b>D</b> Shaft length from face	32	41.5	64.5	87	90
<b>F</b> End of shaft to key	n/a	n/a	n/a	n/a	n/a	
<b>KEY</b> (w x h x l)	no key	no key	no key	no key	no key	
<b>S11 Shaft (Optional)</b>						
<b>B</b> Output shaft diameter	16	20	25	40	55	
<b>C</b> Useable shaft length	28	40	50	80	82	
<b>D</b> Shaft length from face	32	45.5	56.5	87	90	
<b>F</b> End of shaft to key	4	4	5	8	6	
<b>KEY</b> (w x h x l)	5x6x20	6x6x32	8x8x40	12x8x65	16x10x70	

[1] Maximum - standard design; consult factory for special options  
 [2] Refer to the "Motor Kit Codes" listing for specific dimension

\* Consult factory

**PEN - Economy In-line**



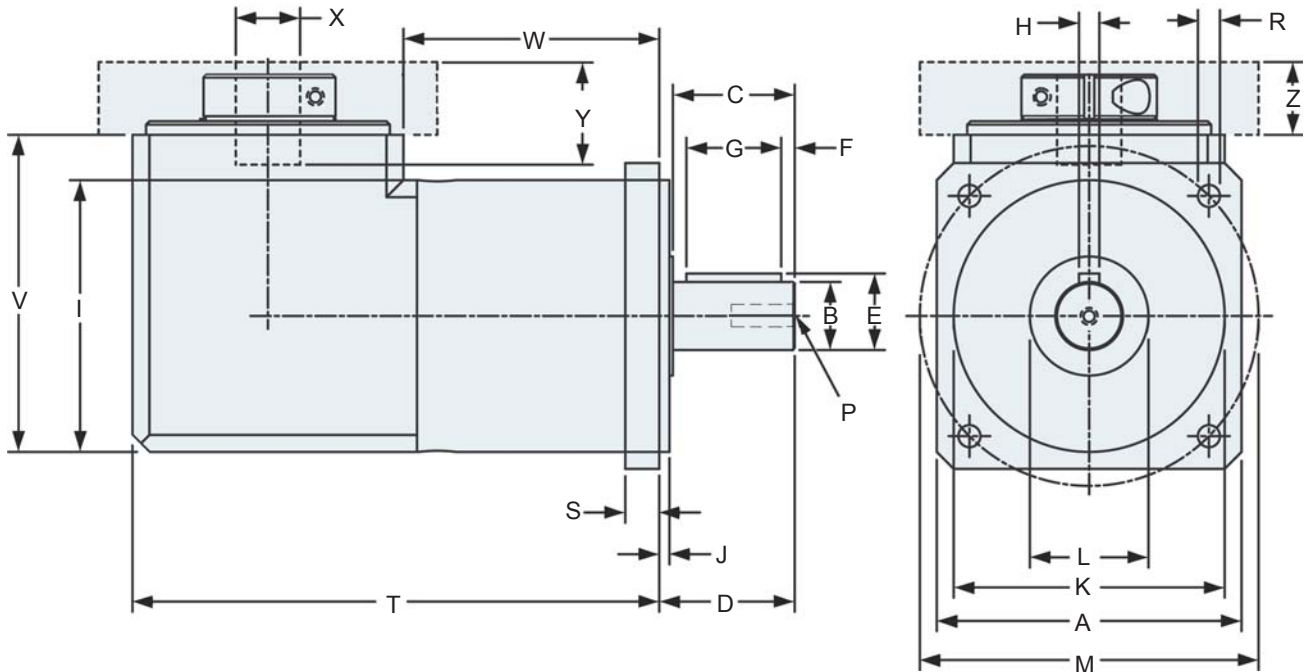
Dimensions: mm/in.	Frame Size					
	60	90	115	23	34	42
<b>A</b> Square output flange	60mm	90mm	115mm	2.36in	3.27in	3.27in
<b>B</b> Output shaft diameter	14	20	25	0.55	0.79	0.79
<b>C</b> Useable shaft length	22.5	36	50	0.87	0.98	0.98
<b>D</b> Shaft length from face	25	40	55	0.95	1.10	1.05
<b>E</b> Shaft height over key	16	22.5	28	0.63	0.89	0.89
<b>F</b> End of shaft to key	2.5	4	5	0.10	0.16	0.16
<b>G</b> Key length	25	28	40	0.98	1.10	1.10
<b>H</b> Key width	5	6	8	0.20	0.24	0.24
<b>I</b> Body diameter	60	80	115	2.36	3.15	3.15
<b>J</b> Output pilot length	2.5	3	4	0.08	0.12	0.06
<b>K</b> Output pilot diameter	50	80	110	1.50	2.87	2.21
<b>L</b> Shaft collar diameter	17	25	35	0.67	0.98	0.98
<b>M</b> Mounting hole bolt circle	70	100	130	2.63	3.87	4.95
<b>P</b> Output shaft tapped hole	M5x12	M6x16	M10x22	M5x12	M6x16	M6x16
<b>R</b> Mounting hole diameter	5.5	6.5	8.5	0.18	0.22	0.29
<b>S</b> Flange thickness	10	10	15	0.43	0.47	0.53
<b>T</b> Body Length (ratios ≤ 8:1)	57	71.5	99	2.28	2.85	2.91
Body Length (ratios > 10:1)	69	88.5	126	2.76	3.52	3.58
Body Length (ratio = 100:1)	82	106	153	3.27	4.21	4.27
<b>X</b> Input bore diameter	14 <sup>[3]</sup>	19	24	0.55 <sup>[3]</sup>	0.75	0.75
<b>Y</b> Input shaft bore depth(max) <sup>[1]</sup>	23	30	40	0.91	1.18	1.18
<b>Z</b> Motor flange thickness (max.) <sup>[1][2]</sup>	16	21.2	21.8	0.63	0.83	0.83

[1] Maximum - standard design; consult factory for special options

[2] Refer to the "Motor Kit Codes" listing for specific dimension

[3] Consult factory

**PER - Economy Right Angle**



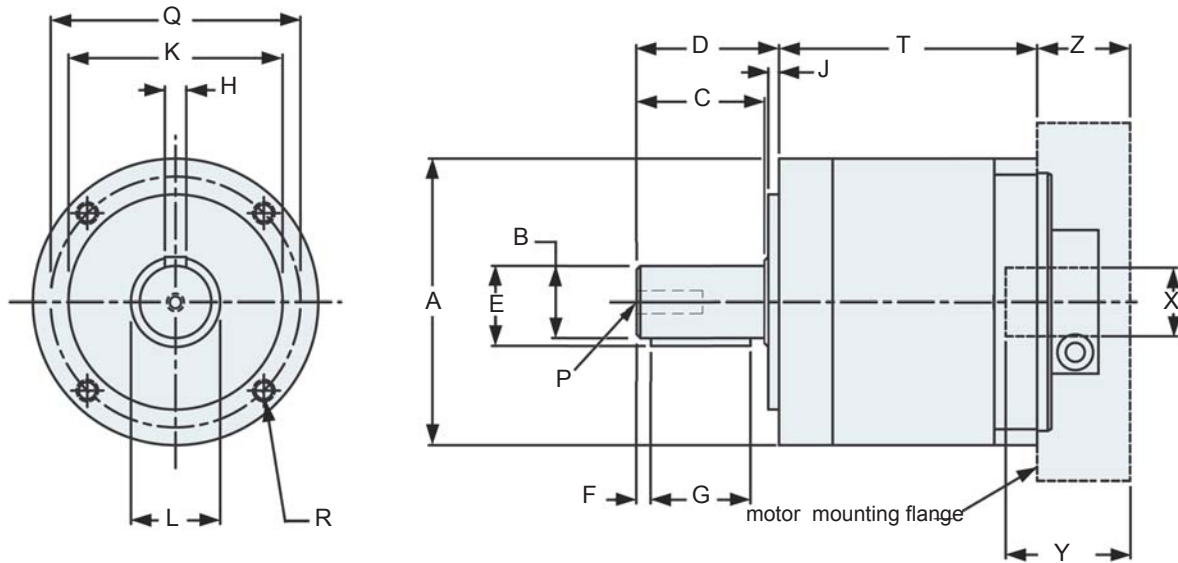
Dimensions: mm/in.	Frame Size					
	60	90	115	23	34	42
<b>A</b> Square output flange	60mm	90mm	115mm	2.36in	3.27in	3.27in
<b>B</b> Output shaft diameter	14	20	25	0.55	0.79	0.79
<b>C</b> Useable shaft length	22.5	36	50	0.87	0.98	0.98
<b>D</b> Shaft length from face	25	40	55	0.95	1.10	1.05
<b>E</b> Shaft height over key	16	22.5	28	0.63	0.89	0.89
<b>F</b> End of shaft to key	2.5	4	5	0.10	0.16	0.16
<b>G</b> Key length	25	28	40	0.98	1.10	1.10
<b>H</b> Key width	5	6	8	0.20	0.24	0.24
<b>I</b> Body diameter	60	80	115	2.36	3.15	3.15
<b>J</b> Output pilot length	2.5	3	4	0.08	0.12	0.06
<b>K</b> Output pilot diameter	50	80	110	1.50	2.87	2.21
<b>L</b> Shaft collar diameter	17	25	35	0.67	0.98	0.98
<b>M</b> Mounting hole bolt circle	70	100	130	2.63	3.87	4.95
<b>P</b> Output shaft tapped hole	M5x12	M6x16	M10x22	M5x12	M6x16	M6x16
<b>R</b> Mounting hole diameter	5.5	6.5	8.5	0.18	0.22	0.29
<b>S</b> Flange thickness	10	10	15	0.43	0.47	0.53
<b>T</b> Body Length (ratios ≤ 8:1)	122.5	155.5	219.5	4.86	6.16	6.22
Body Length (ratios > 8:1)	134.5	173.5	246.5	5.34	6.83	6.89
Body Length (ratio=100:1)	147.5	191	273.5	5.85	7.52	7.58
<b>V</b> Overall height	69.5	88.3	123.7	2.74	3.48	3.48
<b>W</b> (ratios ≤ 8:1)	58	75.5	73.9	2.28	2.85	2.91
(ratios >10:1)	70	92.5	90.9	2.76	3.52	3.58
(ratios =100:1)	83	110	108.4	3.27	4.21	4.27
<b>X</b> Input bore diameter	14 <sup>[3]</sup>	19	24	0.55 <sup>[3]</sup>	0.75	0.75
<b>Y</b> Input shaft bore depth(max) <sup>[1]</sup>	23	30	40	0.91	1.18	1.18
<b>Z</b> Motor flange thickness (max.) <sup>[1][2]</sup>	16	21.2	21.8	0.63	0.83	0.83

[1] Maximum - standard design; consult factory for special options

[2] Refer to the "Motor Kit Codes" listing for specific dimension

[3] Consult factory

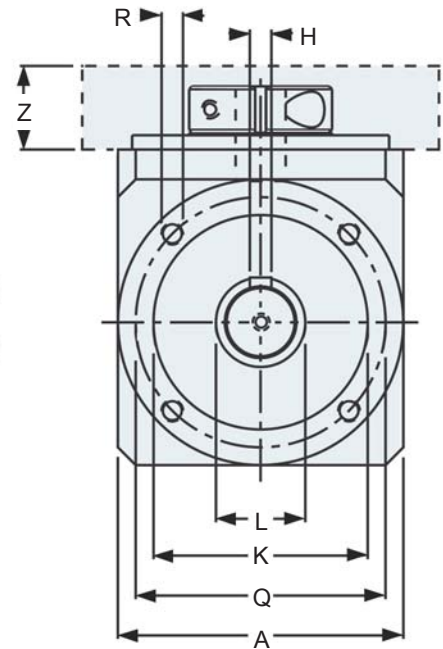
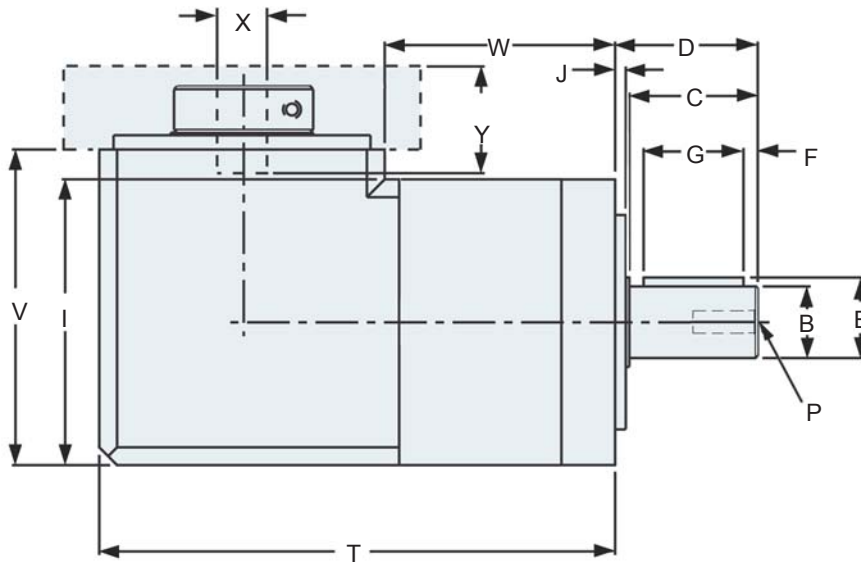
**PTN - Economy In-line**



Dimensions: mm	Frame Size				
	40	60	80	120	160
A Body diameter	40	60	80	120	160
B Output shaft diameter	10	14	20	25	40
C Useable shaft length	23	30	36	50	80
D Shaft length from face	26	35	40	55	87
E Shaft height over key	11.2	16	22.5	28	43
F End of shaft to key	2.5	2.5	3	5	8
G Key length	18	25	28	40	65
H Key width	3	5	6	8	12
J Output pilot length	2	3	3	4	5
K Output pilot diameter	26	40	60	80	130
L Shaft collar diameter	12	17	25	35	55
P Output shaft tapped hole	M3x9	M5x12	M6x16	M10x22	M16x36
Q Flange bolt hole circle	34	52	70	100	145
R Mounting threads	M4x6	M5x8	M6x10	M10x16	M12x20
T Body Length (ratios ≤ 8:1)	48.3	55.2	72.5	99.5	104
Body Length (ratios >8:1)	61.1	67.2	89.5	126.5	153.5
Body Length (ratios=100:1)	73.2	80.2	107	153.5	n/a
X Input bore diameter	8	14 <sup>[3]</sup>	19	24	35
Y Input shaft bore depth(max) <sup>[1]</sup>	25	23	30	40	50
Z Motor flange thickness (max.) <sup>[1][2]</sup>	28.5	16.0	21.2	21.8	35.0

[1] Maximum - standard design; consult factory for special options  
 [2] Refer to the "Motor Kit Codes" listing for specific dimension  
 [3] Consult factory

**PTR - Economy Right Angle**



Dimensions: mm	Frame Size		
	60	80	120
<b>A</b> Body diameter	60	80	115
<b>B</b> Output shaft diameter	14	20	25
<b>C</b> Useable shaft length	30	36	50
<b>D</b> Shaft length from face	35	40	55
<b>E</b> Shaft height over key	16	22.5	28
<b>F</b> End of shaft to key	2.5	4	5
<b>G</b> Key length	25	28	40
<b>H</b> Key width	5	6	8
<b>J</b> Output pilot length	3	3	4
<b>K</b> Output pilot diameter	40	60	80
<b>L</b> Output shaft collar diameter	17	25	35
<b>P</b> Output shaft tapped hole	M5x12	M6x16	M10x22
<b>Q</b> Flange bolt hole circle	52	70	100
<b>R</b> Mounting threads	M5x8	M6x10	M10x16
<b>T</b> Body Length (ratios ≤ 8:1)	112.5	144.5	192
Body Length (ratios >8:1)	124.5	161.5	219
Body Length (ratios=100:1)	137.5	179	246
<b>V</b> Overall height	68.5	88.3	123.7
<b>W</b> (ratios ≤ 8:1)	47	60.5	74
(ratios >8:1)	59	77.5	101
(ratios=100:1)	72 <sup>[3]</sup>	95	128
<b>X</b> Input bore diameter	14	19	24
<b>Y</b> Input shaft bore depth(max) <sup>[1]</sup>	23	30	40
<b>Z</b> Motor flange thickness (max.) <sup>[1][2]</sup>	16	21.2	21.8

[1] Maximum - standard design; consult factory for special options

[2] Refer to the "Motor Kit Codes" listing for specific dimension

[3] Consult factory

## Standard Motor Kit Codes

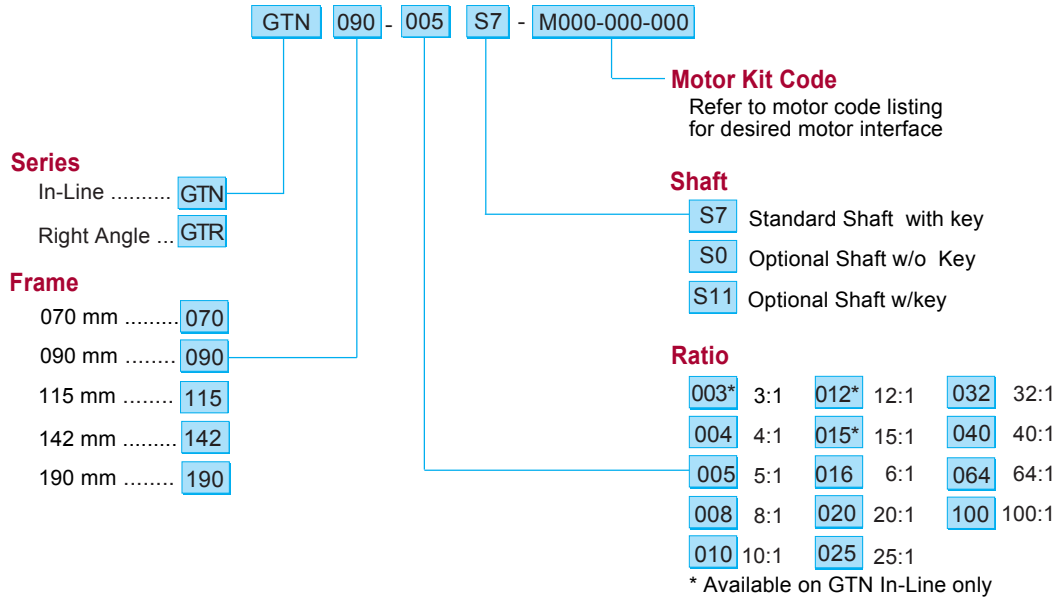
The reference chart below provides the standard "Motor Kit Numbers" that correspond with Parker servo and stepper motors. Each kit includes a mounting flange and shaft sleeve adaptor which is assembled into the gearhead. Other motor kits are available for any commercially available industrial servo or stepper motor. Please contact a Daedal applications engineer (800-245-6903) or your local Parker Automation Technology Center for a comprehensive list of Motor Kit Numbers and applicable prices.

Servo Motor				Stepper Motor			
Parker Servo Motor Number	Gearhead Frame Size	Motor Kit Number	Nominal Motor Flange Thickness (Z)*	Parker Stepper Motor Number	Gearhead Frame Size	Motor Kit Number	Nominal Motor Flange Thickness (Z)*
APEX 602;604	60;23	M051-000-000	16.0mm	ES2xB (ZETA57)	60;23	M015-140-000	16.0mm
APEX 602;604	70	M033-000-000	18.2mm	ES2xB (ZETA57)	70	M121-140-000	18.2mm
APEX 603,605,606,610	80;90;34;42	M004-128-000	21.2mm	ES3xB (ZETA83)	60;23	M034-376-000	25.0mm
APEX620;630	115;120	M063-000-000	31.8mm	ES3xB (ZETA83)	80;90;34;42	M037-364-000	23.2mm
APEX635;APEX640	142	M035-381-000	35.0mm	ES3xB (ZETA83)	115;120	M313-270-376	21.8mm
BE16x	40	M001-199-000	17.5mm	OEM-83xx	60;23	M034-376-000	25.0mm
BE23x	60;23	M043-376-000	26.0mm	OEM-83xx	80;90;34;42	M037-364-000	23.2mm
BE23x	70	M424-376-000	27.2mm	OEM-83xx	115;120	M313-270-376	21.8mm
BE23x	80;90;34;42	M443-364-000	24.2mm	OS2 (OEM57)	60;23	M015-140-000	16.0mm
BE34x	60;23	M034-679-000	25.0mm	OS2 (OEM57)	70	M121-140-000	18.2mm
BE34x	80;90;34;42	M037-365-000	23.2mm	QM57	60;23	M015-140-000	16.0mm
BE34x	115;120	M313-362-000	21.8mm	QM57	70	M121-140-000	18.2mm
HDX115;HDY115	80;90;34;42	M009-000-000	31.2mm	QM83	60;23	M034-376-000	25.0mm
HDX115;HDY115	115;120	M008-131-000	21.8mm	QM83	80;90;34;42	M037-364-000	23.2mm
HDX142;HDY142	115;120	M012-000-000	31.8mm	QM83xx	115;120	M313-270-376	21.8mm
HDX142;HDY142	142	M035-381-000	35.0mm	RS31;RS32;RS33	60;23	M034-376-000	25.0mm
HDX70;HDY70	60;23	M051-378-000	16.0mm	RS31;RS32;RS33	115;120	M313-270-376	21.8mm
HDX70;HDY70	70	M033-378-000	18.2mm	RS31;RS32;RS33	80;90;34;42	M037-364-000	23.2mm
HDX70;HDY70	80;90;34;42	M049-284-000	21.2mm	RS42; RE42	115;120	M125-422-000	37.8mm
HDX92;HDY92	80;90;34;42	M004-128-000	21.2mm	S,SX,SFX;106-178	115;120	M436-363-000	21.8mm
J034x; N034x	60;23	M034-679-000	25.0mm	S,SX,SFX;106-205	115-120	M125-422-000	37.8mm
J034x; N034x	80;90;34;42	M037-365-000	23.2mm	S,SX,SFX;106-250	115;120	M436-363-000	21.8mm
J034xxx G(3-10)	115;120	M313-362-000	21.8mm	S57;SX57;SFX57	60;23	M015-140-000	16.0mm
J070x; N070x	60;23	M051-378-000	16.0mm	S57;SX57;SFX57	70	M121-140-000	18.2mm
J070x; N070x	70	M033-378-000	18.2mm	S83;SX83	60;23	M034-376-000	25.0mm
J070x; N070x	80;90;34;42	M049-284-000	21.2mm	S83;SX83	80;90;34;42	M037-364-000	23.2mm
J092x; N092x	70	M249-000-000	25.2mm	S83;SX83	115;120	M313-270-376	21.8mm
J092x; N092x	80;90;34;42	M004-128-000	21.2mm	TS31;TS32	60;23	M034-679-000	25.0mm
J092x; N092x	115;120	M031-270-000	21.8mm	TS31;TS32	80;90;34;42	M037-365-000	23.2mm
M105x	80;90;34;42	M009-000-000	31.2mm	TS33	80;90;34;42	M037-424-000	23.2mm
M105x	115;120	M008-131-000	21.8mm	VS31;VS32	80;90;34;42	M182-365-000	29.2mm
M145x	142	M035-381-000	35.0mm				
M145x	115;120	M012-000-000	31.8mm				
M205x	190	consult factory	consult factory				
ML2340B	60;23	M043-376-000	26.0mm				
ML3450;ML3475	60;23	M034-679-000	25.0mm				
ML3450;ML3475	115;120	M313-362-000	21.8mm				
SM16x; SE16x	40	M001-199-000	17.5mm				
SM23x; SE23x **	60;23	M015-376-000	16.0mm				
SM23x; SE23x **	70	M121-376-000	18.2mm				
SM23x-L; SE23x-L**	60;23	M043-376-000	26.0mm				
SM23x-L; SE23x-L**	80;90;34;42	M443-364-000	24.2mm				
Z605;606;610	80;90;34;42	M004-128-000	21.2mm				
Z620;630;910	115;120	M063-000-000	31.8mm				
Z635;Z640;Z920	142	M035-381-000	35.0mm				
Z805;806;810	80;90;34;42	M009-000-000	31.2mm				
Z820;Z830;Z840	142	M035-381-000	35.0mm				

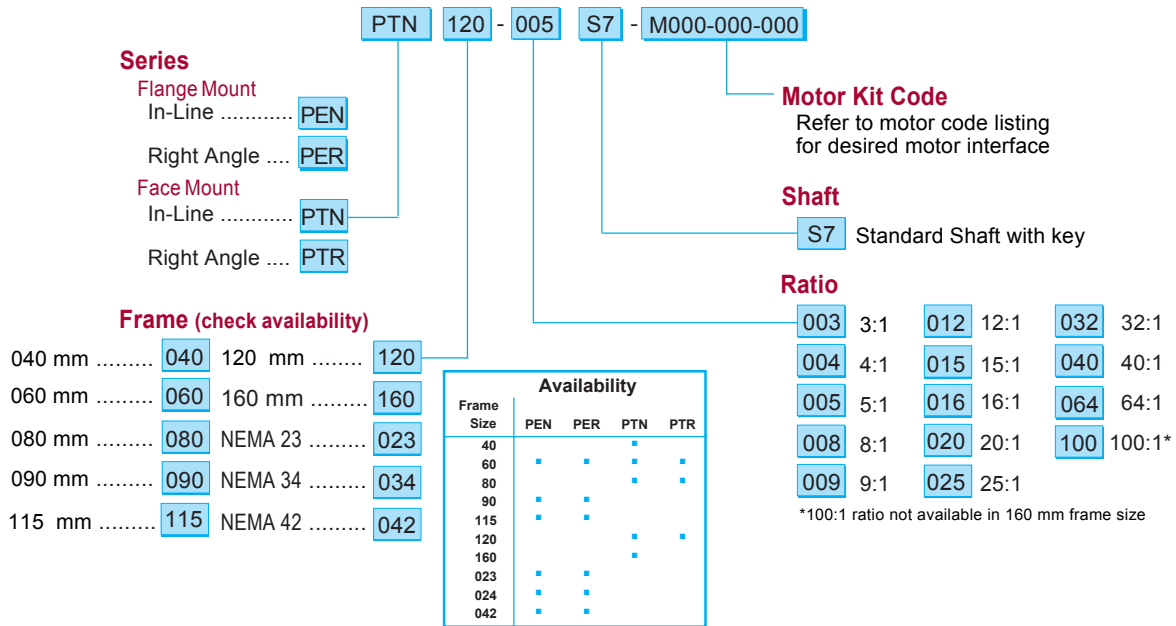
\* Refer to the dimensional drawings

\*\* x = -1, -2, or -3 only

**Precision Series**



**Economy Series**



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