



# HAS Hybrid Actuation System

Solar Tracking Solutions



ENGINEERING YOUR SUCCESS.

## HAS Hybrid Actuation System



Actuation systems must be efficient, precise, and durable enough to withstand harsh power-generation environments. Parker Hannifin Corporation has developed a hybrid actuation system (HAS) that is ideal for renewable-energy actuation applications, such as those used with solar panels, wind turbines, and hydro-electric dams.

The new hybrid design combines the controllability of traditional electromechanical actuators with the power density, longer life, and resistive-force capabilities of traditional hydraulic systems. The result is an improved actuation system for single and dual axis tracking and other renewable energy systems, with a wider range of capabilities.

### More efficiency, less maintenance

This high-efficiency, modular system allows for various traditional cylinder mounting configurations and stroke lengths. The hybrid design is a fully self-contained system with no hydraulic hoses or power units. Hybrid hydraulics achieve exceptional economies of scale, with the ability to move over a megawatt from a single point. This makes HAS a good choice for large or small arrays.

### Solar applications

For solar panels, HAS is an ultra-efficient, completely self-contained reversible hydraulic pump and electric motor that eliminate nearly all leak paths into or out of the package. Parker engineers designed a hybrid actuator into the pitch system so designers can move more photo-voltaic panels with fewer

actuators and controls, resulting in lower installation costs and longer service over the life of the solar field. The design offers clear advantages over comparable electromechanical actuator (EMA) systems because all the internal-wear items are permanently lubricated for extended life. The power density of HAS is typically three times that of a comparable electric cylinder.

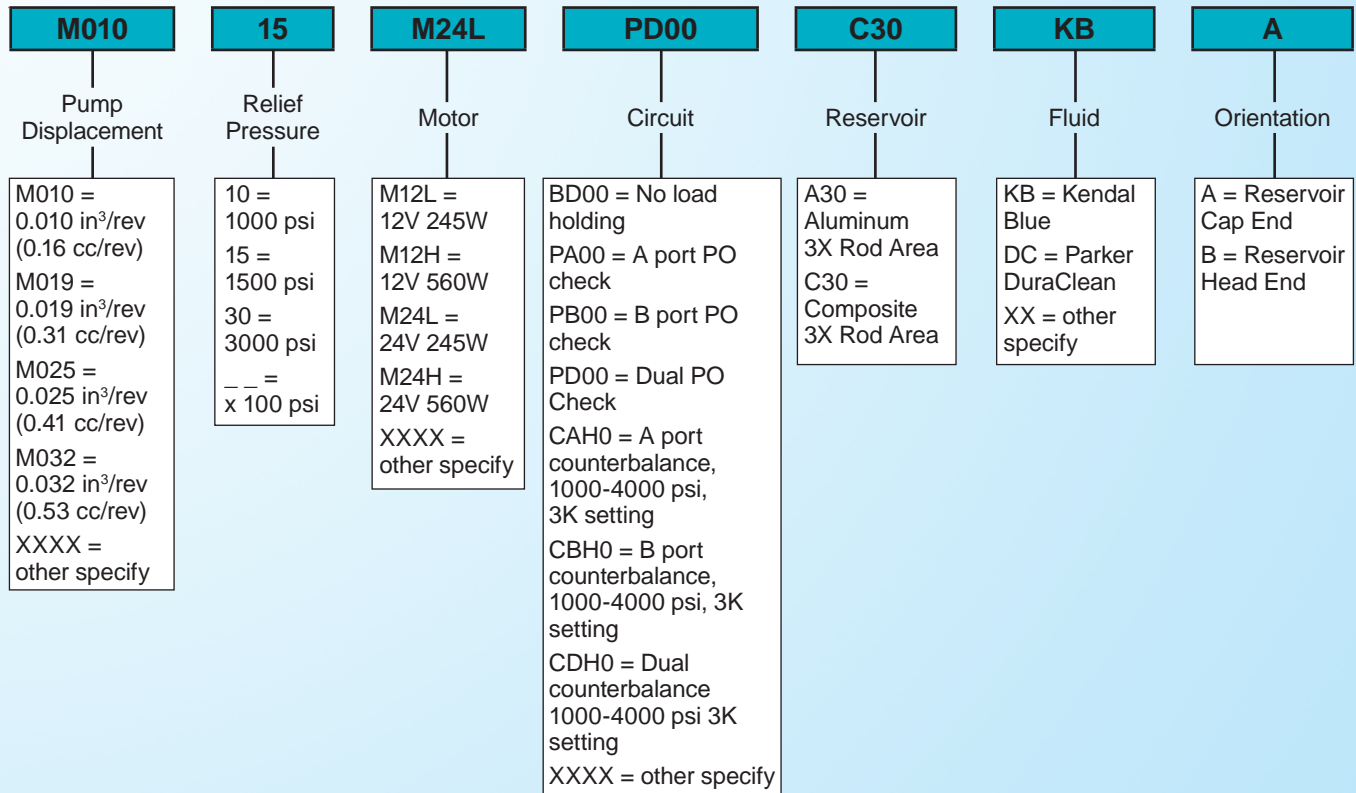
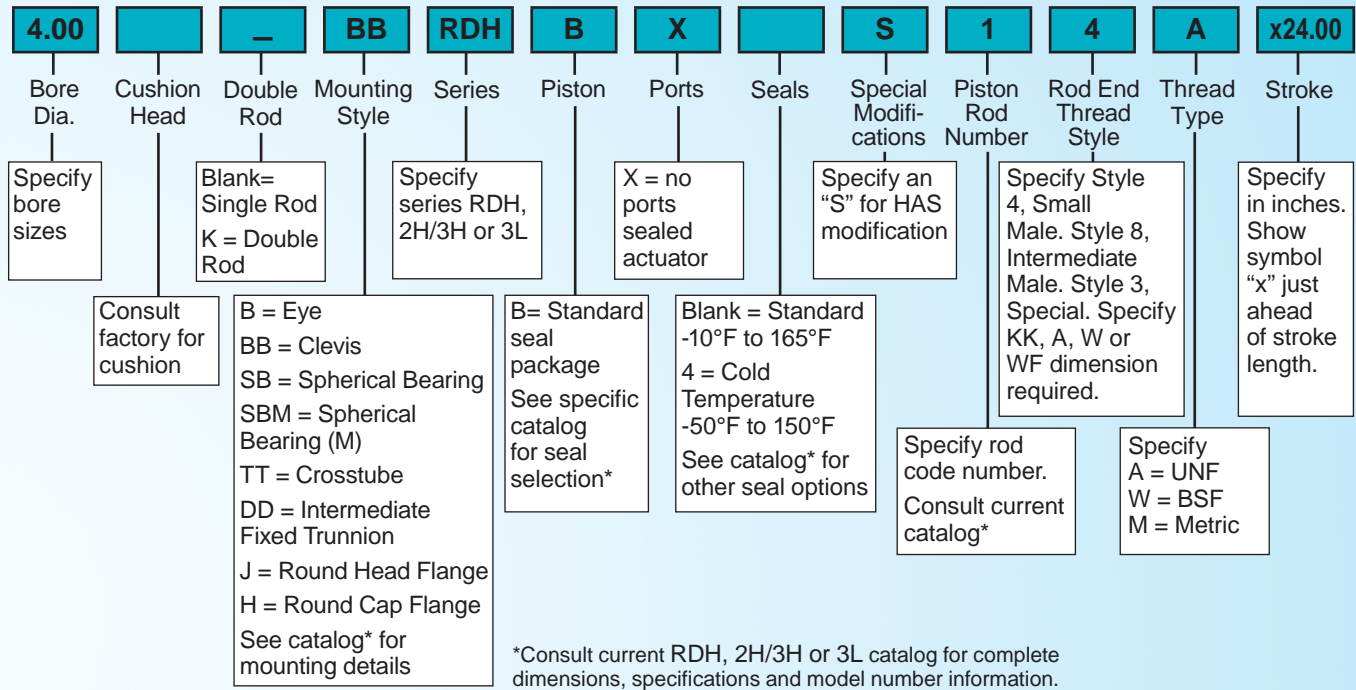


# Model Ordering Code

## How to Order Basic Model with HAS Pump Motor Code:

1. Specify the complete Parker Cylinder Model Number.
2. Specify the Pump Motor Code.

### Basic Model Numbers



## **Parker HAS actuators offer low cost, ease of maintenance and durable choice for large and small arrays**

HAS Solar Actuators are built for maintenance free operation for several years. Oil volumes are reduced minimal amounts, generally less than 1 gallon reservoir sizes. Serviceability is built into the design. The system can be serviced on site, with Parker's fluid exchange system.

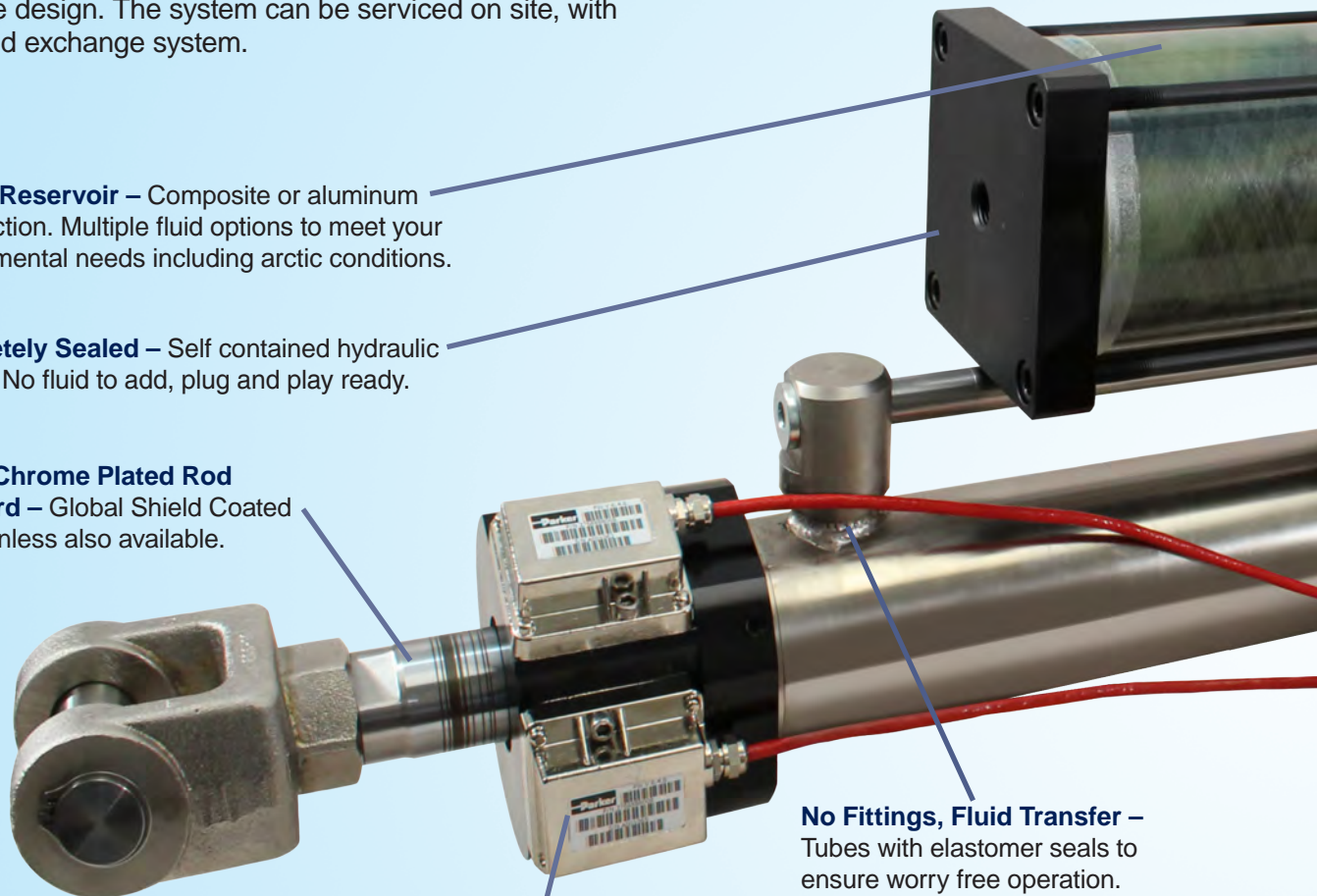
**Sealed Reservoir** – Composite or aluminum construction. Multiple fluid options to meet your environmental needs including arctic conditions.

**Completely Sealed** – Self contained hydraulic system. No fluid to add, plug and play ready.

**Heavy Chrome Plated Rod Standard** – Global Shield Coated and stainless also available.

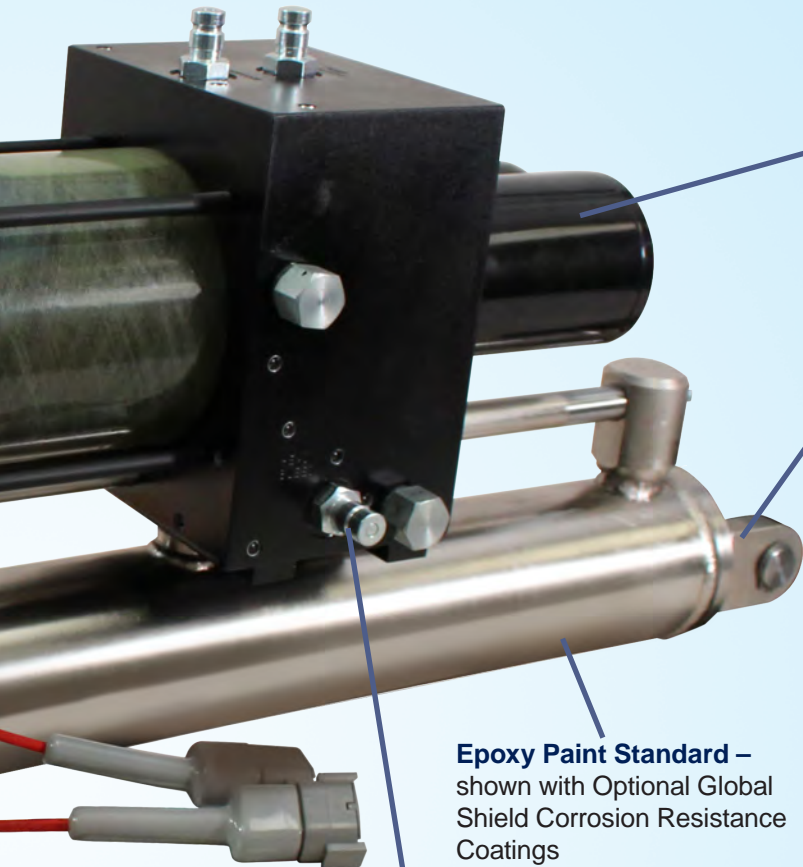
**No Fittings, Fluid Transfer** – Tubes with elastomer seals to ensure worry free operation.

**Optional Absolute Linear Feedback** – Parker's Intellinder, optical reader and bar coded rod for piston position measurements. Shown with dual sensors for redundant measurements.



### **Product Features**

- Simple two wire operation
- AC and DC supply voltages available
- Low amp draw, 50% duty cycle, high efficiency tracking solutions
- No hydraulic hoses, no hydraulic power unit, self contained system
- High locked hold force to withstand wind gusts
- No reduction in life commonly found with screw-type actuators when loaded
- Modular system allows for various traditional cylinder mounting configurations and stroke lengths
- Surface preparation for outdoor installations
- Heavy chrome plated rods are standard, Global Shield™ rod coating and stainless steel rods for extreme corrosion prevention are optional
- Available with Intellinder™ continuous feedback or end of stroke, stroke to go switch options



**Low Amp Draw** – 12 and 24V DC permanent magnet motors

**Nine Mounting Styles** – including front and rear pivoting mounts

**Epoxy Paint Standard** – shown with Optional Global Shield Corrosion Resistance Coatings

**Fluid Exchange Connections** – on solar panel servicing when required

**Other highlights include**

- Complete actuator ready for operation
- Robust steel hydraulic cylinder, welded round line or tie rod construction
- Thrust forces to 676 kN standard
- Anodized aluminum pump manifold, weight savings
- Load holding (PO checks) standard with optional counterbalance valves
- Custom circuits available
- Virtually maintenance free for low operating costs
- 25 year product life\*
- Industry leading warranty\*\*

\* Based upon typical solar tracking cycles

\*\* Extended warranty available

**General Specifications**

Bore		Model No. <sup>1</sup>	Push Force Typical, Low Amp Draw <sup>2</sup>		Maximum Force	
inch	mm		lbf	kN	lbf	kN
2.00	51	2.00 XX XX	1571	7	9425	42
2.50	64	2.50 XX XX	2454	11	14726	66
3.25	83	3.25 XX XX	4148	19	24887	112
4.00	102	4.00 XX XX	6283	28	37699	169
5.00	128	5.00 XX XX	9817	44	58905	264
6.00	153	6.00 XX XX	14137	63	84823	380
8.00	204	8.00 XX XX	25133	113	150796	676

<sup>1</sup> Consult Factory for sizing, complete model number; various stroke lengths and custom configurations available

<sup>2</sup> Increase in force will result in higher amp draw up to locked force rating

## HAS-RDH Series Cylinders from Parker

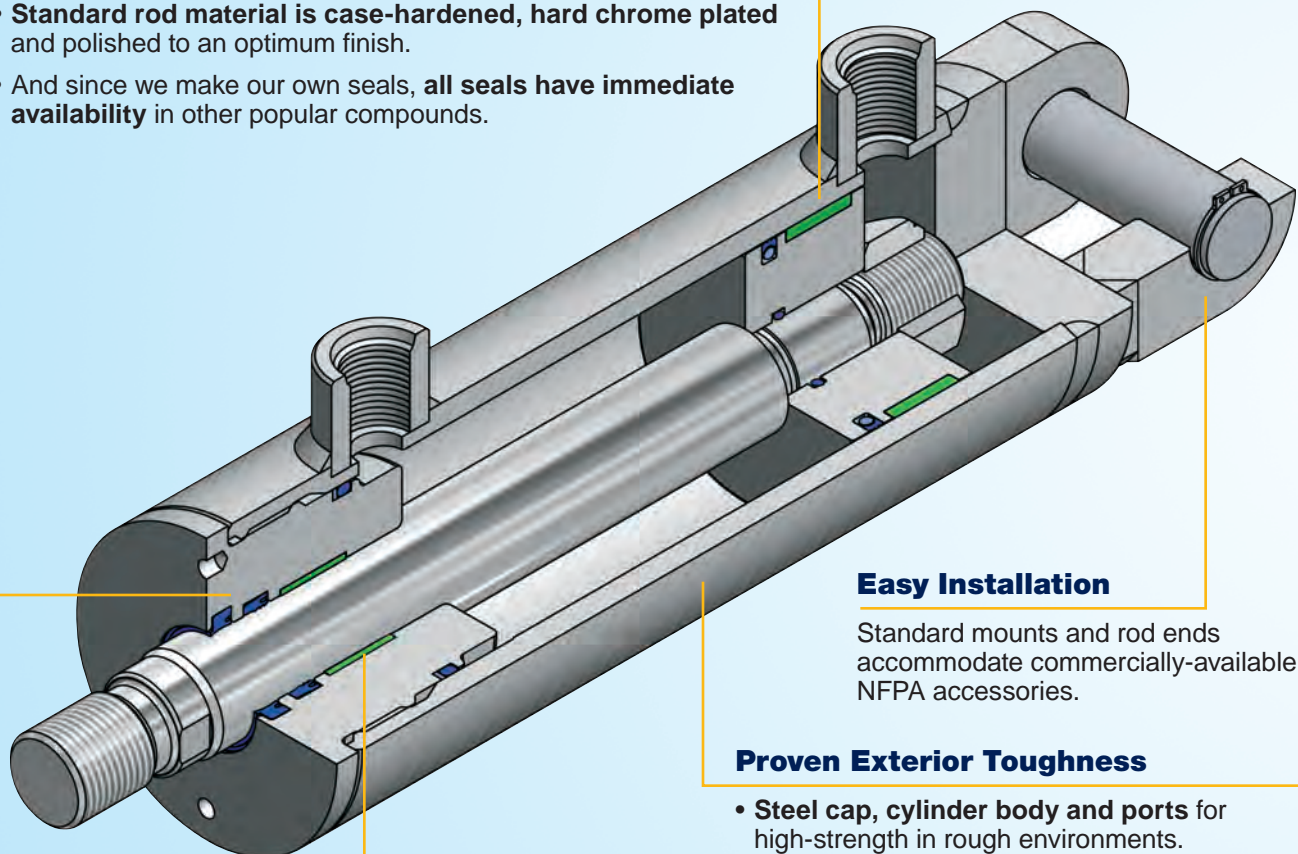
### Advanced Sealing Technology

All components are manufactured by Parker and designed for high performance, long service life, low friction and zero leakage.

- **Tri-lip rod seal** (3 sealing edges!) and bi-directional piston seal feature proven leak-free performance.
- **Durable polyurethane** material is used to maximize seal life.
- **Nitrile end seals** and backup rings on a smooth bore of the cylinder body for optimal sealing and elimination of extrusion problems.
- **Composite rod and piston wear rings** are internally lubricated for reduced friction and formulated for heavy-duty, load-bearing applications.
- **Standard rod material is case-hardened, hard chrome plated and polished** to an optimum finish.
- And since we make our own seals, **all seals have immediate availability** in other popular compounds.

### Switch-Ready

- **The Parker ALS Switch is the lowest cost point feedback solution** for carbon steel cylinders with a piston magnet ring.
- **Switches can be located anywhere along the stroke** and in any orientation.
- **Unique round body brackets** minimize installation time.
- **EPS & CLS threaded switches** are available for end-of-stroke sensing.



### Easy Installation

Standard mounts and rod ends accommodate commercially-available NFPA accessories.

### Proven Exterior Toughness

- **Steel cap, cylinder body and ports** for high-strength in rough environments.
- **Case-hardened, hard chrome plated** and polished carbon steel piston rod for damage resistance, long rod seal life and low friction.
- **Outboard urethane rod wiper seal** to remove external debris and adherents from the piston rod.
- **High quality paint coating** for interior or exterior applications.

### Composite Wear Rings

Parker WearGard™ bearing materials are backed by over 30 years of manufacturing expertise.

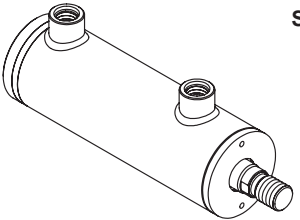
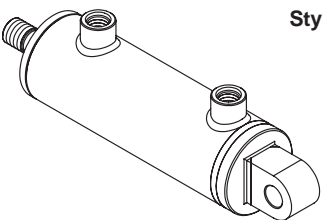
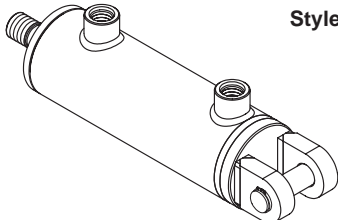
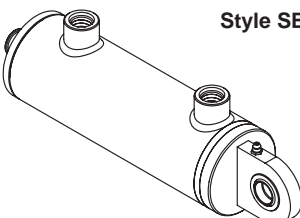
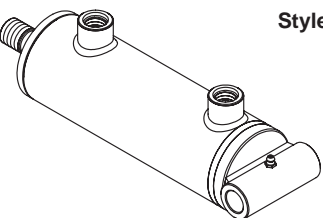
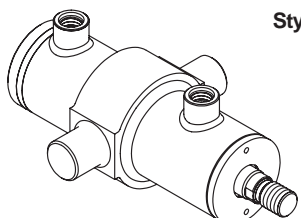
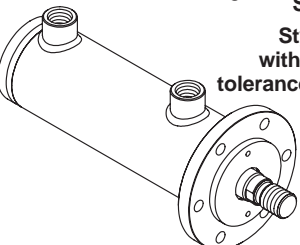
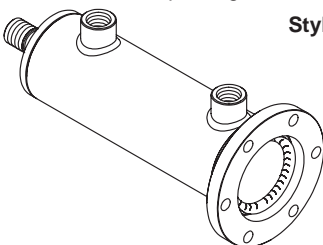
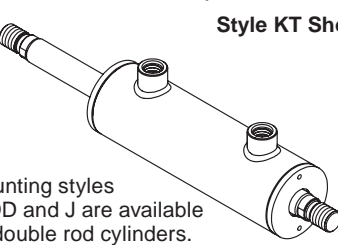
- Heat stabilized and internally lubricated for **low friction and maximum service** life in any application.
- Strength characteristics meet or exceed most metals traditionally used in wear rings.



**Environmentally Friendly**  
RoHS-compliant materials

**HAS-RDH Series Mounting Styles and Specifications**

**Available Mounting Styles**

<p>Basic, No Mount <b>Style T</b></p> 	<p>Cap Fixed Eye <b>Style B</b></p> 	<p>Cap Fixed Clevis <b>Style BB</b></p> 
<p>Spherical Bearing Cap End <b>Style SB/SBM</b></p> 	<p>Crosstube Cap End <b>Style TT</b></p> 	<p>Intermediate Fixed Trunnion <b>Style DD</b></p> 
<p>Round Head Flange <b>Style J</b> <b>Style JP</b> with close tolerance pilot</p> 	<p>Round Cap Flange <b>Style H</b></p> 	<p>Double Rod Cylinders <b>Style KT Shown</b></p>  <p>Mounting styles T, DD and J are available as double rod cylinders.</p>

**Specifications**

**Actuator**

**Type:** Hydraulic, double and single acting, (power up gravity down)

**Bore Size:** 1-1/2" thru 8" bore

**Motors**

**Motor Types:**

12V DC, 245W (M12L)

12V DC, 560W (M12H)

24V DC, 245W (M24L)

24V DC, 560W (M24H)

Other voltages available, consult factory

**Pumps**

**Type:** Gear Reversible

**Displacements:**

M010 - 0.010 in<sup>3</sup>/rev (0.16 cc/rev)

M019 - 0.019 in<sup>3</sup>/rev (0.31 cc/rev)

M025 - 0.025 in<sup>3</sup>/rev (0.41 cc/rev)

M032 - 0.032 in<sup>3</sup>/rev (0.53 cc/rev)

**Reservoir**

**Style:** Sealed, (standard) Optional Vented

**Construction:** Aluminum, Composite

**Capacity:** 3 times piston rod area

**Fluid:** Parker Duraclean™, Hyken Glacial Blu, other available

**Manifolds**

**Circuits:**

Load holding single and dual pilot operated checks

Load holding single and dual counterbalance valve

Power up, gravity down

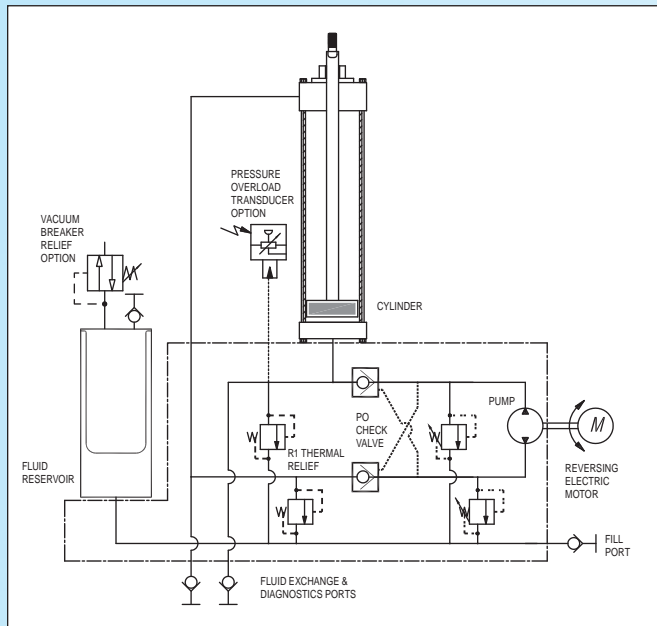
Custom solutions available

**Temperature**

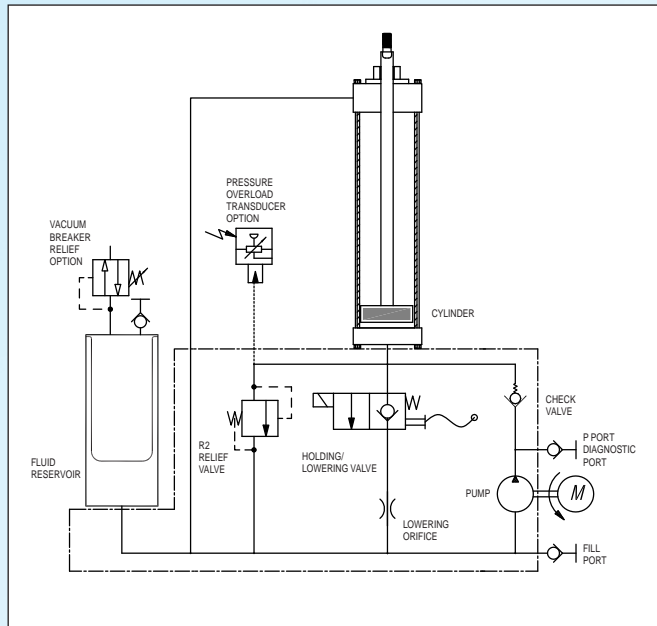
-34°C (-30°F) to 65°C (150°F)

**Hydraulic and Electric Circuits**

**Circuit Options**

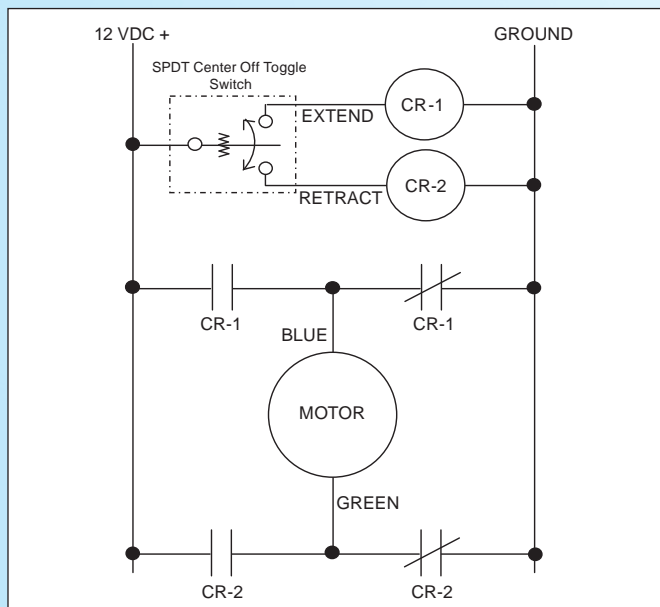


**Typical Dual Acting Hydraulic Circuit, shown with PD00 manifold option**



**Single Acting Hydraulic Circuit powered up, gravity lower**

**Electrical Schematic**



**Simplified Electrical Wiring Schematic**

Function	Positive	Ground
Extend	Blue	Green
Retract	Green	Blue

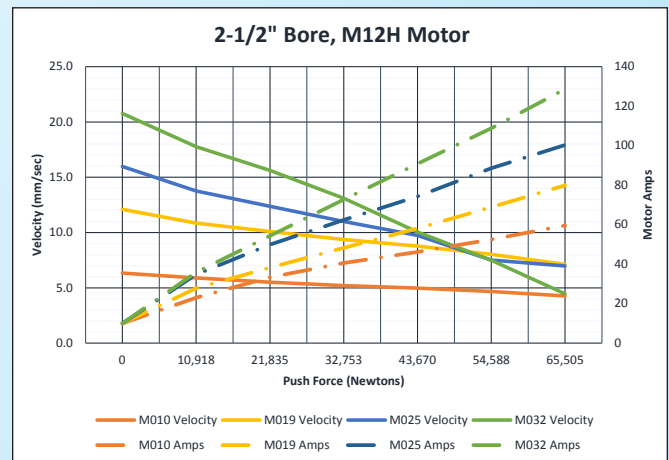
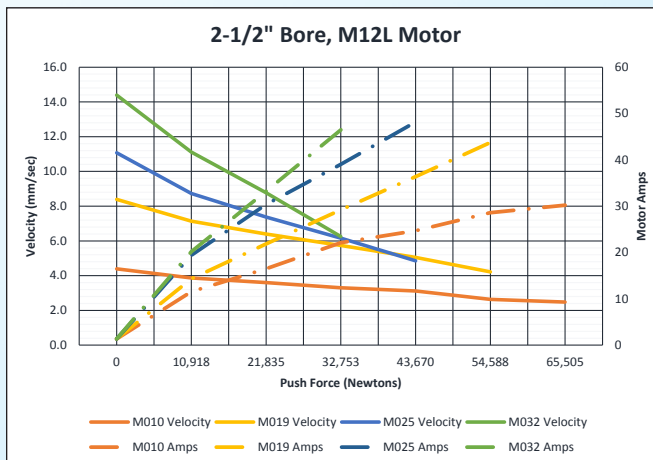
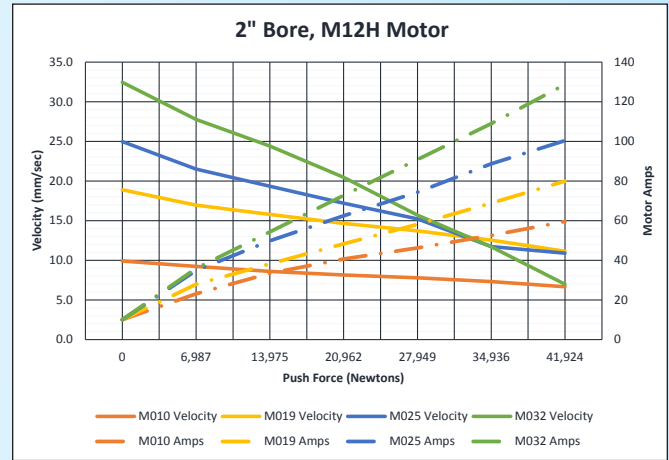
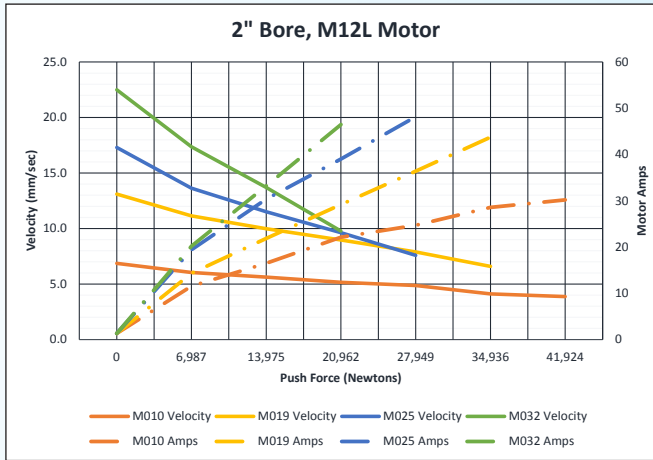
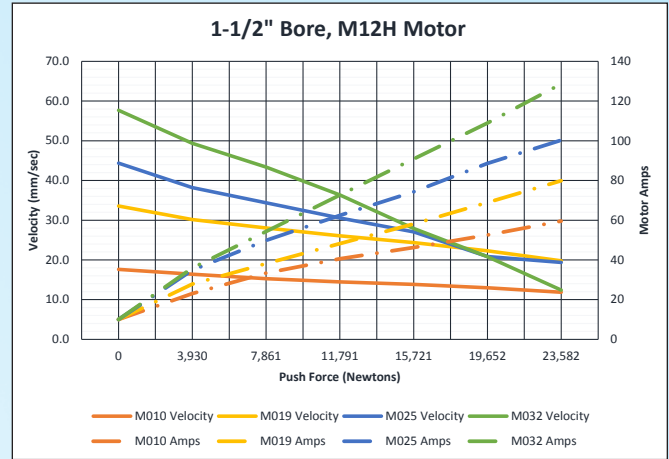
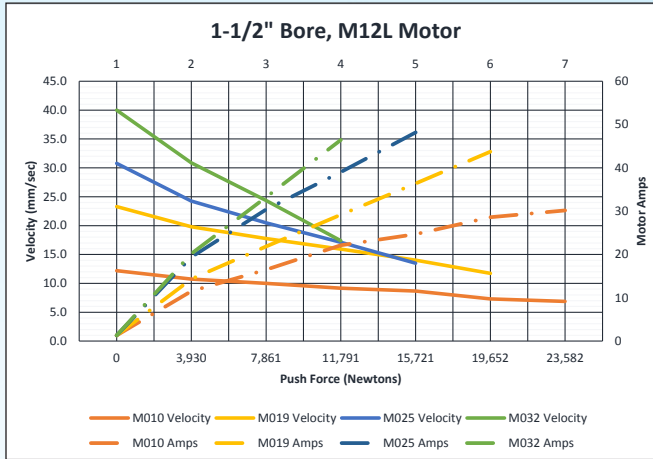
With pump on cylinder cap end

**Weight Estimates**

Bore	Base Weight (lbs)	Add per inch of stroke
1.50	5.80	0.50
2.00	10.10	0.59
2.5	14.70	1.29
3.25	25.60	1.88
4.00	33.10	2.54
5.00	69.40	4.51
6.00	106.80	6.45
7.00	158.30	8.89
8.00	224.70	11.52

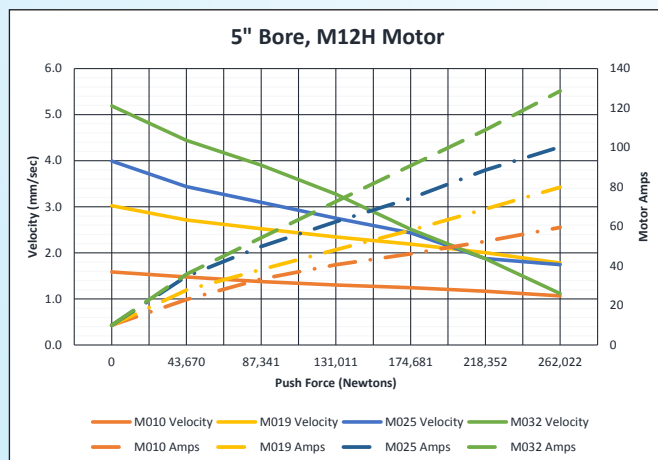
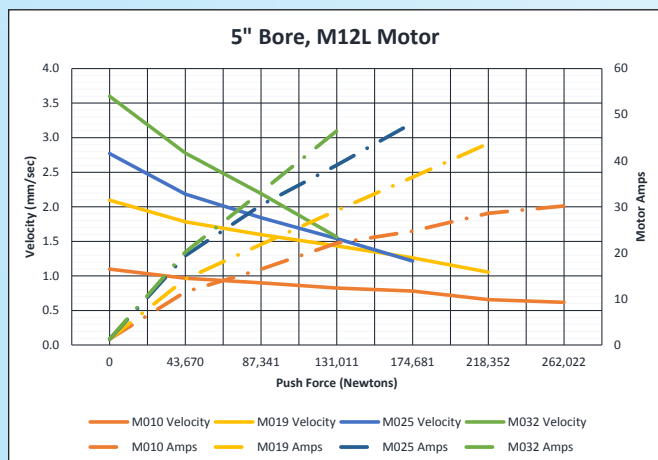
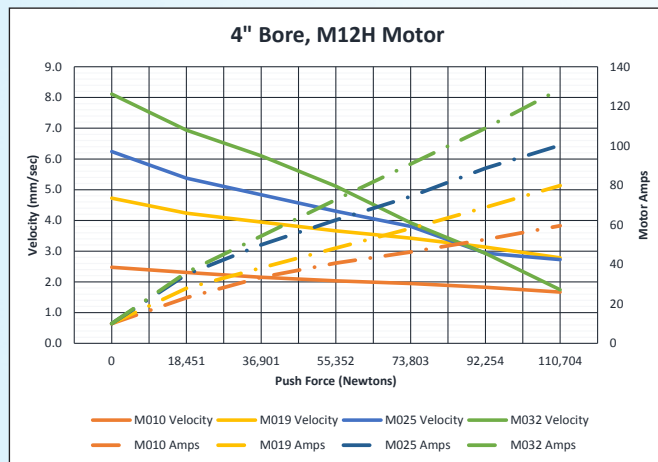
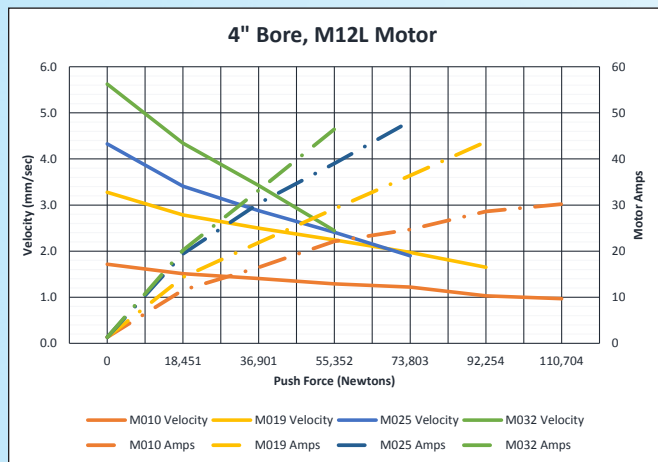
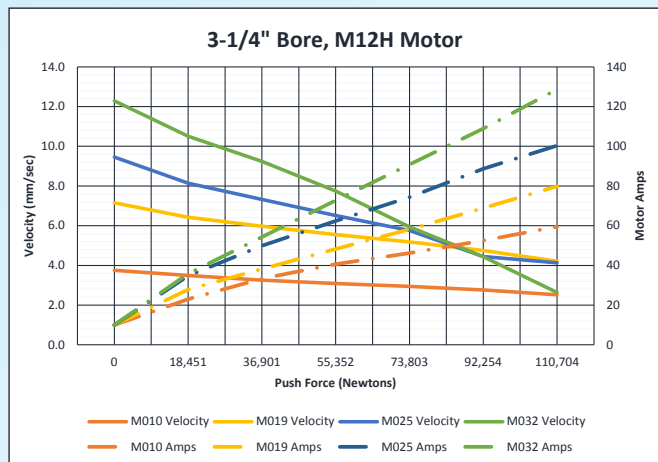
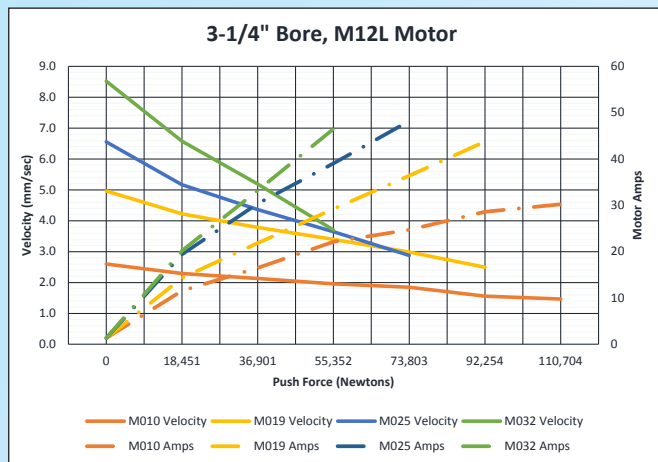
**Basic Cylinder weight in lbs.**  
 Based upon DD mount, and largest rod combination.  
 Consult factory for specific weights details.

**Performance Data – Metric**



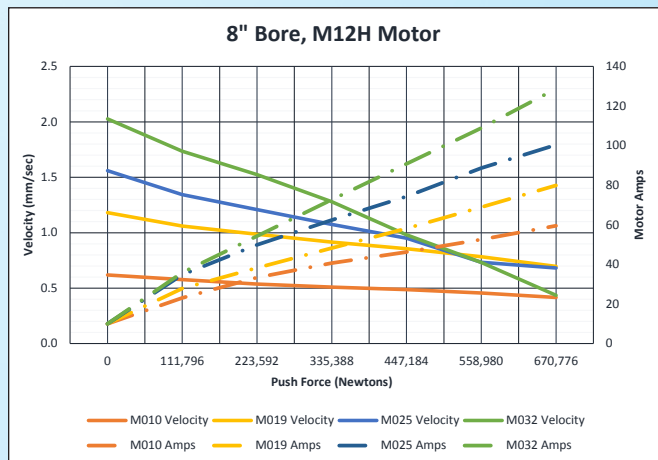
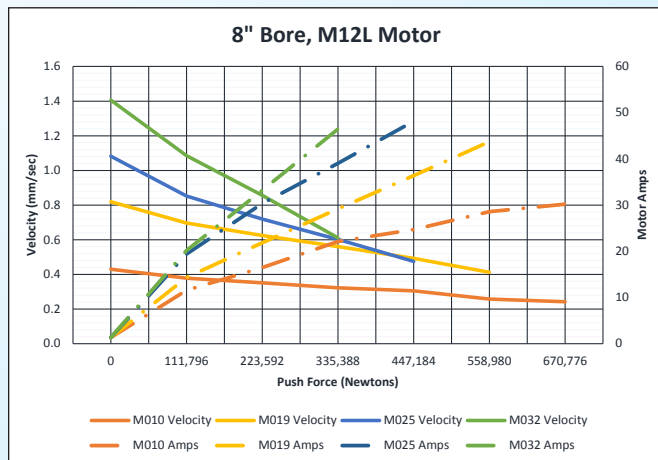
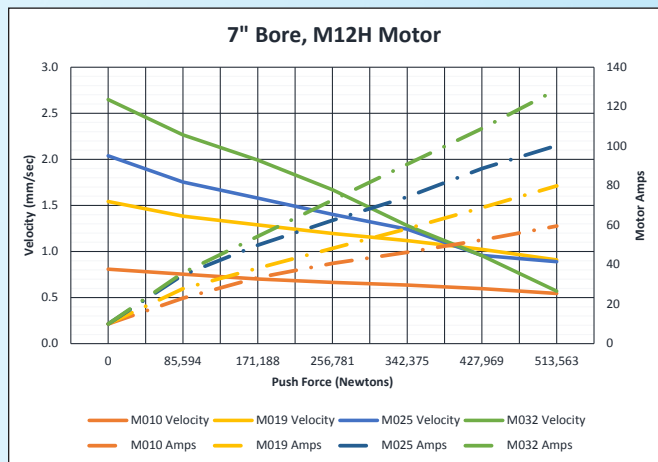
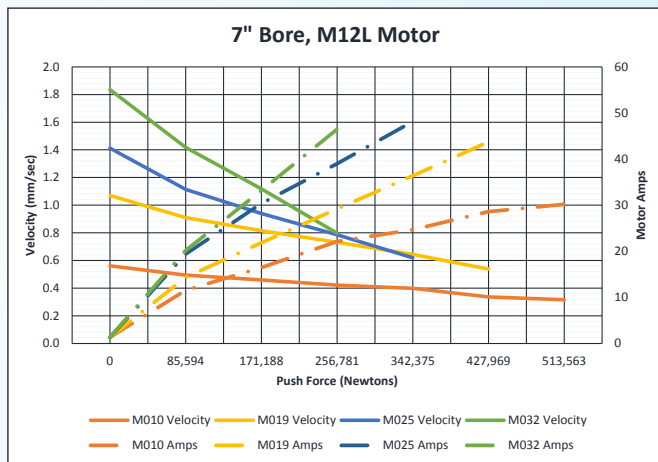
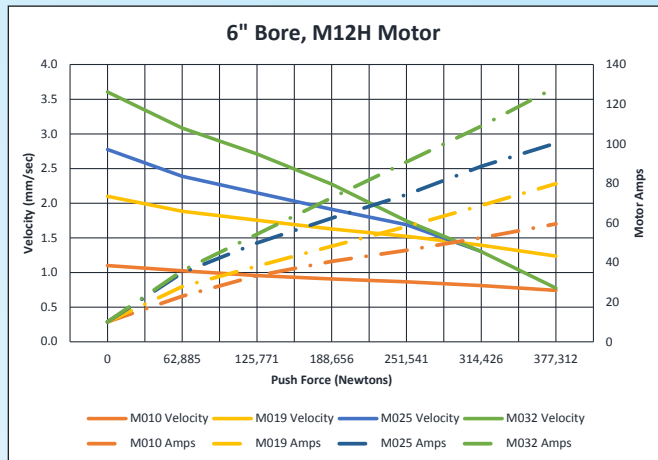
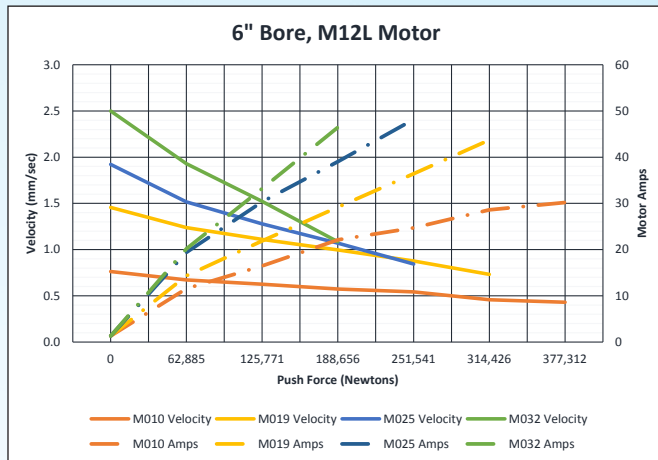
Note: Theoretical values, actual data may vary.

**Performance Data – Metric**



Note: Theoretical values, actual data may vary.

**Performance Data – Metric**



Note: Theoretical values, actual data may vary.

Performance Data – Imperial

Pump/Motor Combination		M010/M12L							M019/M12L						
Motor Amps		1.3	11.6	16.5	22.1	24.7	28.6	30.2	1.3	14.3	21.9	29.2	36.4	43.7	N/A
Pump/Motor		M010/M12H							M019/M12H						
Motor Amps		10	23	33	41	46	53	60	10	28	38	48	58	69	80
Operating PSI		0	500	1000	1500	2000	2500	3000	0	500	1000	1500	2000	2500	3000
Bore Size		Thrust Forces							Thrust Forces						
1.50	Push Force (lbs)	0	884	1767	2651	3534	4418	5301	0	884	1767	2651	3534	4418	5301
	Pump/Motor Combination	M010/M12L							M019/M12L						
	Max Velocity (inch/sec)	0.481	0.423	0.394	0.361	0.341	0.288	0.271	0.917	0.780	0.699	0.628	0.552	0.461	N/A
	Pump/Motor	M010/M12H							M019/M12H						
	Max Velocity (inch/sec)	0.693	0.646	0.602	0.570	0.545	0.512	0.467	1.323	1.187	1.105	1.025	0.959	0.878	0.779
2.00	Push Force (lbs)	0	1571	3142	4712	6283	7854	9425	0	1571	3142	4712	6283	7854	9425
	Pump/Motor Combination	M010/M12L							M019/M12L						
	Max Velocity (inch/sec)	0.270	0.238	0.222	0.203	0.192	0.162	0.152	0.516	0.439	0.393	0.353	0.310	0.260	N/A
	Pump/Motor	M010/M12H							M019/M12H						
	Max Velocity (inch/sec)	0.390	0.363	0.339	0.321	0.306	0.288	0.263	0.744	0.668	0.621	0.577	0.539	0.494	0.438
2.50	Push Force (lbs)	0	2454	4909	7363	9817	12272	14726	0	2454	4909	7363	9817	12272	14726
	Pump/Motor Combination	M010/M12L							M019/M12L						
	Max Velocity (inch/sec)	0.173	0.152	0.142	0.130	0.123	0.104	0.098	0.330	0.281	0.252	0.226	0.199	0.166	N/A
	Pump/Motor	M010/M12H							M019/M12H						
	Max Velocity (inch/sec)	0.250	0.232	0.217	0.205	0.196	0.184	0.168	0.476	0.427	0.398	0.369	0.345	0.316	0.280
3.25	Push Force (lbs)	0	4148	8296	12444	16592	20739	24887	0	4148	8296	12444	16592	20739	24887
	Pump/Motor Combination	M010/M12L							M019/M12L						
	Max Velocity (inch/sec)	0.102	0.090	0.084	0.077	0.073	0.061	0.058	0.195	0.166	0.149	0.134	0.118	0.098	N/A
	Pump/Motor	M010/M12H							M019/M12H						
	Max Velocity (inch/sec)	0.148	0.138	0.128	0.121	0.116	0.109	0.099	0.282	0.253	0.235	0.218	0.204	0.187	0.166
4.00	Push Force (lbs)	0	6283	12566	18850	25133	31416	37699	0	6283	12566	18850	25133	31416	37699
	Pump/Motor Combination	M010/M12L							M019/M12L						
	Max Velocity (inch/sec)	0.068	0.060	0.055	0.051	0.048	0.040	0.038	0.129	0.110	0.098	0.088	0.078	0.065	N/A
	Pump/Motor	M010/M12H							M019/M12H						
	Max Velocity (inch/sec)	0.097	0.091	0.085	0.080	0.077	0.072	0.066	0.186	0.167	0.155	0.144	0.135	0.123	0.110
5.00	Push Force (lbs)	0	9817	19635	29452	39270	49087	58905	0	9817	19635	29452	39270	49087	58905
	Pump/Motor Combination	M010/M12L							M019/M12L						
	Max Velocity (inch/sec)	0.043	0.038	0.035	0.033	0.031	0.026	0.024	0.083	0.070	0.063	0.056	0.050	0.042	N/A
	Pump/Motor	M010/M12H							M019/M12H						
	Max Velocity (inch/sec)	0.062	0.058	0.054	0.051	0.049	0.046	0.042	0.119	0.107	0.099	0.092	0.086	0.079	0.070
6.00	Push Force (lbs)	0	14137	28274	42412	56549	70686	84823	0	14137	28274	42412	56549	70686	84823
	Pump/Motor Combination	M010/M12L							M019/M12L						
	Max Velocity (inch/sec)	0.030	0.026	0.025	0.023	0.021	0.018	0.017	0.057	0.049	0.044	0.039	0.034	0.029	N/A
	Pump/Motor	M010/M12H							M019/M12H						
	Max Velocity (inch/sec)	0.043	0.040	0.038	0.036	0.034	0.032	0.029	0.083	0.074	0.069	0.064	0.060	0.055	0.049
7.00	Push Force (lbs)	0	19242	38485	57727	76969	96211	115454	0	19242	38485	57727	76969	96211	115454
	Pump/Motor Combination	M010/M12L							M019/M12L						
	Max Velocity (inch/sec)	0.022	0.019	0.018	0.017	0.016	0.013	0.012	0.042	0.036	0.032	0.029	0.025	0.021	N/A
	Pump/Motor	M010/M12H							M019/M12H						
	Max Velocity (inch/sec)	0.032	0.030	0.028	0.026	0.025	0.023	0.021	0.061	0.054	0.051	0.047	0.044	0.040	0.036
8.00	Push Force (lbs)	0	25133	50265	75398	100531	125664	150796	0	25133	50265	75398	100531	125664	150796
	Pump/Motor Combination	M010/M12L							M019/M12L						
	Max Velocity (inch/sec)	0.017	0.015	0.014	0.013	0.012	0.010	0.010	0.032	0.027	0.025	0.022	0.019	0.016	N/A
	Pump/Motor	M010/M12H							M019/M12H						
	Max Velocity (inch/sec)	0.024	0.023	0.021	0.020	0.019	0.018	0.016	0.047	0.042	0.039	0.036	0.034	0.031	0.027



Performance Data – Imperial

Pump/Motor Combination		M025/M12L							M032/M12L						
Motor Amps		1.3	19.4	30.4	39.0	48.2	N/A	N/A	1.3	20.2	33.2	46.5	N/A	N/A	N/A
Pump/Motor		M025/M12H							M032/M12H						
Motor Amps		10	35	50	62	74	89	100	10	36	54	73	91	109	129
Operating PSI		0	500	1000	1500	2000	2500	3000	0	500	1000	1500	2000	2500	3000
Bore Size		Thrust Forces							Thrust Forces						
1.50	Push Force (lbs)	0	884	1767	2651	3534	4418	5301	0	884	1767	2651	3534	4418	5301
	Pump/Motor Combination	M025/M12L							M032/M12L						
	Max Velocity (inch/sec)	1.211	0.955	0.806	0.674	0.531	N/A	N/A	1.574	1.215	0.959	0.684	N/A	N/A	N/A
	Pump/Motor	M025/M12H							M032/M12H						
	Max Velocity (inch/sec)	1.747	1.504	1.354	1.203	1.065	0.821	0.763	2.271	1.942	1.708	1.432	1.098	0.819	0.488
2.00	Push Force (lbs)	0	1571	3142	4712	6283	7854	9425	0	1571	3142	4712	6283	7854	9425
	Pump/Motor Combination	M025/M12L							M032/M12L						
	Max Velocity (inch/sec)	0.681	0.537	0.453	0.379	0.299	N/A	N/A	0.886	0.684	0.539	0.385	N/A	N/A	N/A
	Pump/Motor	M025/M12H							M032/M12H						
	Max Velocity (inch/sec)	0.983	0.846	0.762	0.677	0.599	0.462	0.429	1.277	1.093	0.961	0.806	0.618	0.461	0.275
2.50	Push Force (lbs)	0	2454	4909	7363	9817	12272	14726	0	2454	4909	7363	9817	12272	14726
	Pump/Motor Combination	M025/M12L							M032/M12L						
	Max Velocity (inch/sec)	0.436	0.344	0.290	0.243	0.191	N/A	N/A	0.567	0.437	0.345	0.246	N/A	N/A	N/A
	Pump/Motor	M025/M12H							M032/M12H						
	Max Velocity (inch/sec)	0.629	0.542	0.487	0.433	0.383	0.296	0.275	0.817	0.699	0.615	0.516	0.395	0.295	0.176
3.25	Push Force (lbs)	0	4148	8296	12444	16592	20739	24887	0	4148	8296	12444	16592	20739	24887
	Pump/Motor Combination	M025/M12L							M032/M12L						
	Max Velocity (inch/sec)	0.258	0.203	0.172	0.144	0.113	N/A	N/A	0.335	0.259	0.204	0.146	N/A	N/A	N/A
	Pump/Motor	M025/M12H							M032/M12H						
	Max Velocity (inch/sec)	0.372	0.320	0.288	0.256	0.227	0.175	0.162	0.484	0.414	0.364	0.305	0.234	0.175	0.104
4.00	Push Force (lbs)	0	6283	12566	18850	25133	31416	37699	0	6283	12566	18850	25133	31416	37699
	Pump/Motor Combination	M025/M12L							M032/M12L						
	Max Velocity (inch/sec)	0.170	0.134	0.113	0.095	0.075	N/A	N/A	0.221	0.171	0.135	0.096	N/A	N/A	N/A
	Pump/Motor	M025/M12H							M032/M12H						
	Max Velocity (inch/sec)	0.246	0.212	0.190	0.169	0.150	0.115	0.107	0.319	0.273	0.240	0.201	0.154	0.115	0.069
5.00	Push Force (lbs)	0	9817	19635	29452	39270	49087	58905	0	9817	19635	29452	39270	49087	58905
	Pump/Motor Combination	M025/M12L							M032/M12L						
	Max Velocity (inch/sec)	0.109	0.086	0.073	0.061	0.048	N/A	N/A	0.142	0.109	0.086	0.062	N/A	N/A	N/A
	Pump/Motor	M025/M12H							M032/M12H						
	Max Velocity (inch/sec)	0.157	0.135	0.122	0.108	0.096	0.074	0.069	0.204	0.175	0.154	0.129	0.099	0.074	0.044
6.00	Push Force (lbs)	0	14137	28274	42412	56549	70686	84823	0	14137	28274	42412	56549	70686	84823
	Pump/Motor Combination	M025/M12L							M032/M12L						
	Max Velocity (inch/sec)	0.076	0.060	0.050	0.042	0.033	N/A	N/A	0.098	0.076	0.060	0.043	N/A	N/A	N/A
	Pump/Motor	M025/M12H							M032/M12H						
	Max Velocity (inch/sec)	0.109	0.094	0.085	0.075	0.067	0.051	0.048	0.142	0.121	0.107	0.090	0.069	0.051	0.031
7.00	Push Force (lbs)	0	19242	38485	57727	76969	96211	115454	0	19242	38485	57727	76969	96211	115454
	Pump/Motor Combination	M025/M12L							M032/M12L						
	Max Velocity (inch/sec)	0.056	0.044	0.037	0.031	0.024	N/A	N/A	0.072	0.056	0.044	0.031	N/A	N/A	N/A
	Pump/Motor	M025/M12H							M032/M12H						
	Max Velocity (inch/sec)	0.080	0.069	0.062	0.055	0.049	0.038	0.035	0.104	0.089	0.078	0.066	0.050	0.038	0.022
8.00	Push Force (lbs)	0	25133	50265	75398	100531	125664	150796	0	25133	50265	75398	100531	125664	150796
	Pump/Motor Combination	M025/M12L							M032/M12L						
	Max Velocity (inch/sec)	0.043	0.034	0.028	0.024	0.019	N/A	N/A	0.055	0.043	0.034	0.024	N/A	N/A	N/A
	Pump/Motor	M025/M12H							M032/M12H						
	Max Velocity (inch/sec)	0.061	0.053	0.048	0.042	0.037	0.029	0.027	0.080	0.068	0.060	0.050	0.039	0.029	0.017



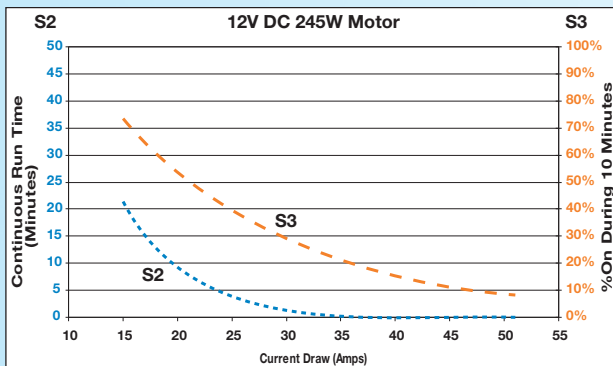
# Theoretical Pull Forces / Duty Cycle

## Theoretical Pull Forces

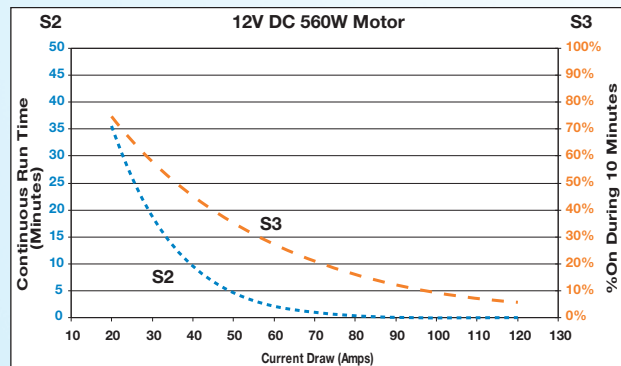
Rod Dia (inch)		To determine HAS Pull Force, select the proper rod diameter and deduct the value from the Push graphs or chart data to confirm the HAS actuator can achieve the proper pull loads.					
		Operating PSI					
		500	1000	1500	2000	2500	3000
1.000	lbs	393	785	1178	1571	1963	2356
	N	1747	3494	5240	6987	8734	10481
1.375	lbs	742	1485	2227	2970	3712	4455
	N	3303	6605	9908	13210	16513	19815
1.750	lbs	1203	2405	3608	4811	6013	7216
	N	5350	10699	16049	21398	26748	32098
2.000	lbs	1571	3142	4712	6283	7854	9425
	N	6987	13975	20962	27949	34936	41924
2.500	lbs	2454	4909	7363	9817	12272	14726
	N	10918	21835	32753	43670	54588	65505
3.000	lbs	3534	7069	10603	14137	17671	21206
	N	15721	31443	47164	62885	78607	94328
3.500	lbs	4811	9621	14432	19242	24053	28863
	N	21398	42797	64195	85594	106992	128391
4.000	lbs	6283	12566	18850	25133	31416	37699
	N	27949	55898	83847	111796	139745	167694
4.500	lbs	7952	15904	23856	31809	39761	47713
	N	35373	70746	106119	141492	176865	212238
5.000	lbs	9817	19635	29452	39270	49087	58905
	N	43670	87341	131011	174681	218352	262022
5.500	lbs	11879	23758	35637	47517	59396	71275
	N	52841	105682	158523	211364	264205	317046

For 24V motors, current draw is approximately one half charted data. Consult factory for Pull values

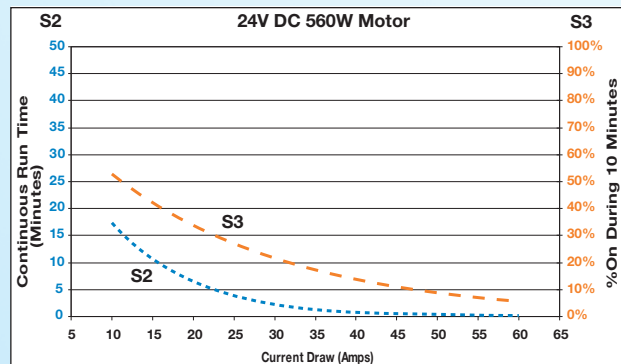
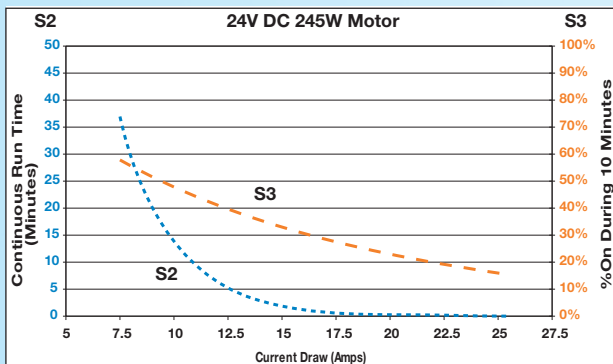
## Standard Duty Cycle Characteristics



**S2**  
Time at constant load followed by "off" time to allow the motor to cool to ambient temperature



**S3**  
Percentage of "on" time in a repetitive 10 minute cycle



Series Applications Worksheet

Please provide as much information as possible

**Customer Information**

Company Name: \_\_\_\_\_

Contact: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

E-Mail: \_\_\_\_\_

Address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Cylinder Information:** Quantity: \_\_\_\_\_

Move Distance: \_\_\_\_\_ in. \_\_\_\_\_ mm

or

Overall Stroke: \_\_\_\_\_ in. \_\_\_\_\_ mm

Rod End: Male English  
Female Metric  
Rod Eye  
Other: \_\_\_\_\_

**Mounting**  
Primary: \_\_\_\_\_

Secondary: \_\_\_\_\_

Rod Orientation: Horizontal Up Down  
Angle: \_\_\_\_\_ Degrees

**Applications Sketch and Notes:**

Grid area for sketch and notes.

Completed form can be returned via email to  
cylproductinfo@parker.com or faxed to (800) 892-1008.

**Application Information:**

Dynamic Force Required: \_\_\_\_\_ lbs / kN

Resistive (locked) Force: \_\_\_\_\_ lbs / kN

Load/Fixture Weight: \_\_\_\_\_ lbs / kN

Speed:  
Maximum: \_\_\_\_\_ in./sec. \_\_\_\_\_ mm/sec.

Minimum: \_\_\_\_\_ in./sec. \_\_\_\_\_ mm/sec.

Move Time: \_\_\_\_\_ seconds

Total Cycle Time: \_\_\_\_\_ seconds

**Environmental:**

Ambient Temp: \_\_\_\_\_

Humidity: \_\_\_\_\_

Drive Power: 12 VDC 24 VDC  
Other \_\_\_\_\_



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Parker Hannifin Corporation  
**Cylinder Division**  
500 South Wolf Road  
Des Plaines, IL 60016 USA  
phone (847) 298-2400  
fax (800) 892-1008  
[www.parker.com/cylinder](http://www.parker.com/cylinder)