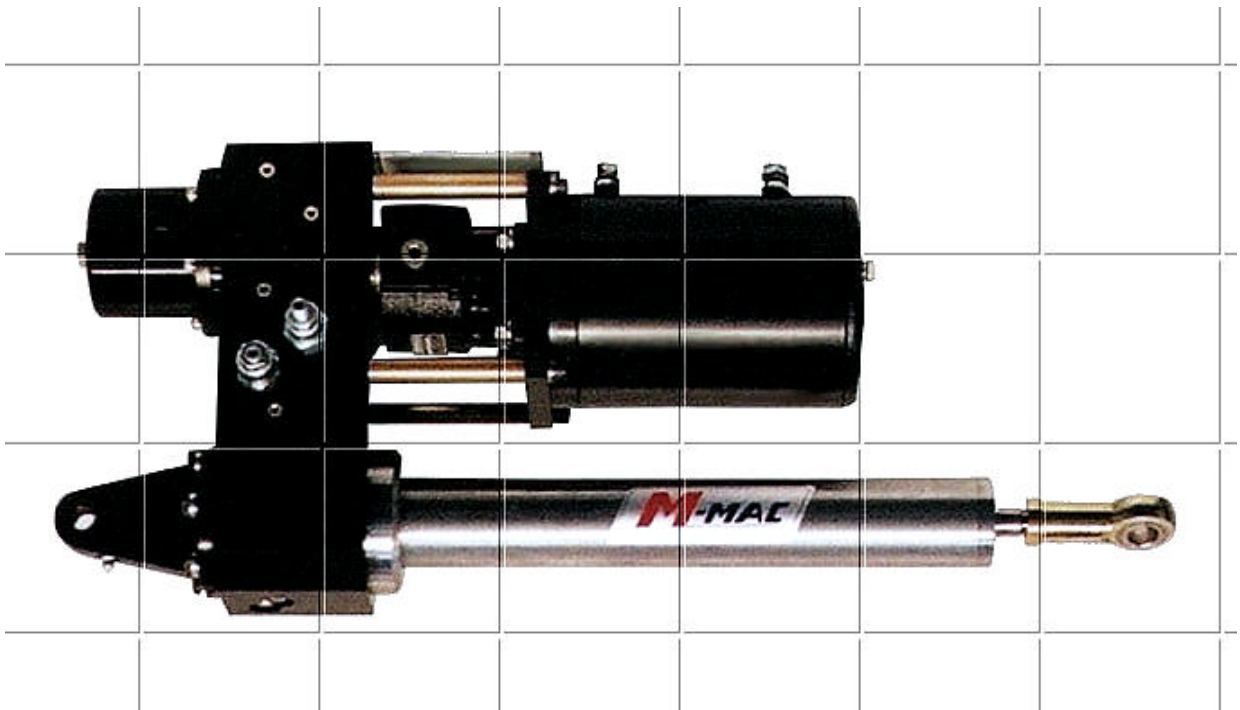




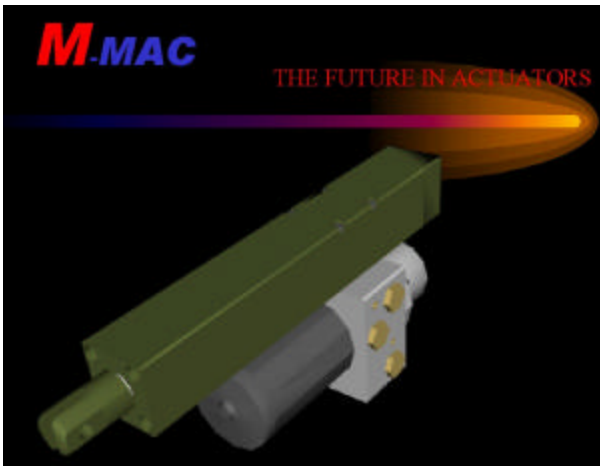
M-Mac Actuators Inc.



Electric Hydrostatic Actuators

Table of Contents

Advantages of Electric Hydrostatic Actuators	1
Features	2
Technical Specifications	3
Ordering Data.....	4
Dimensions	5
Clevis Mount	5
Trunnion Mount	6
Head Mount	7
Base Mount	8
Application Data Form	9



* Special Orders
Consult factory for price and availability

Advantages of Electric Hydrostatic Actuators

Construction

M-mac has combined the major components of a hydraulic system & packaged them in a stand alone modular linear actuator. They are completely filled with fluid during manufacture and purged of all air during assembly. No need to worry about fluid level in the reservoir, there is no reservoir.

M-mac Actuators are equipped with a volume compensator to accommodate fluid volume differential and increases in volume through thermal expansion. Completely self contained, sealed & inherently lubricated, with no external plumbing, M-mac Actuators require minimal installation, hardware & wiring and eliminate the need for periodic maintenance and adjustment



Energy Efficient

The direct conversion of electric to mechanical energy results in effective, economical linear motion. Power is only consumed when the actuator is operating, by extending or retracting a load.

Bi-directional

M-mac Actuators operate equally well under tensile or compressive loads. They hold loads indefinitely without power and can be directly interfaced to a programmable controller or other electronic control device.

Trouble Free Electric Control

Electric actuation for fast, responsive, remote control without complex, troublesome and expensive mechanical ball screw or acme thread components. Energy efficient electric control offers clean, smooth linear motion without the grinding noise of a mechanical gearbox found in mechanical ballscrew actuators. M-mac Actuators require power only when in motion and no power when stationary.

Safety

M-mac Actuators utilize pressure relief valves to protect against excessive loads and to relieve maximum pressure generated through deadheading at the end of a stroke. These pressures are fully adjustable in the field. No complicated clutch mechanism, prone to failure, that has to reset after load reduction, typical of electric mechanical actuators.

Maintenance Free

Since the actuators are inherently lubricated and sealed with zero leakage plugs, there is no exposure to contamination and since so few components are used in their construction, there is no need for maintenance. No bearings to wear or load holding brakes to fail common to electro mechanical actuators.



Features

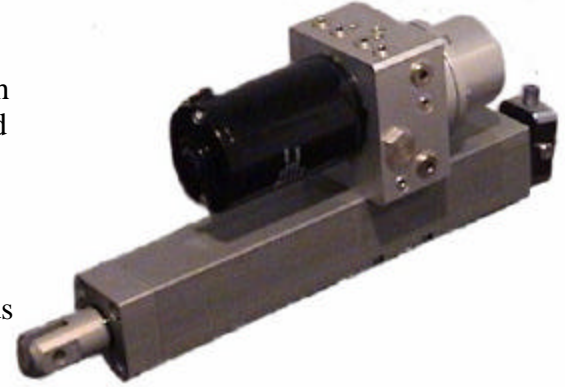
M-MAC Electric Hydrostatic Actuators are completely stand alone units. Simply install, then hook up to the appropriate electric power source. No separate power unit! No hydraulic installation required! Motors available in all common AC & DC voltages for AC-Inverter or DC-SCR motor controllers.

Hydraulic actuators have variable acceleration and deceleration, through motor control and hydraulic valving, to provide smooth load raising and lowering characteristics.

Power only consumed when the electric actuator is operating. Totally integrated circuitry, no external plumbing, pre-filled with standard hydraulic Mineral oil or Bio Degradable or Water Glycol fluids and sealed exclusively with zero leak O-ring plugs.

Operates in any orientation, with the shaft extending up, down, vertical or horizontal.

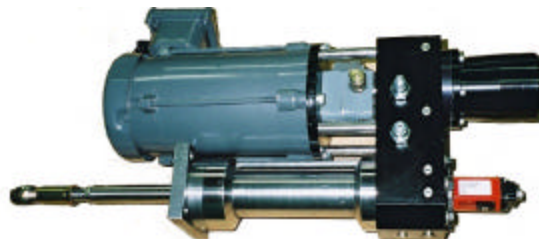
Mountings include standard Clevis Type with Spherical Bearings, Trunnion, Base or Head Mount; according to your application requirements.



✂ Typical Applications

<ul style="list-style-type: none">* Diverter Valve Actuation* Flue Dampers* Conveyor Diverters* Slide Gates* Lift Tables* Loading Docks* Tail Gates	<ul style="list-style-type: none">* Tilting Platforms* Penstock Valves* Butterfly Valves* Ball Valves* Railway Points* Ferry Ramps
---	---

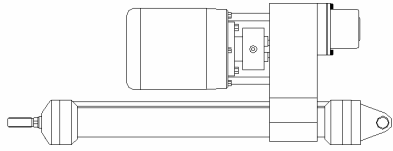
Driven by a variable frequency motor controller, the actuator has infinite speed control within its operating range and can be stopped in any position. Various modes of operation can be accomplished depending on application and a variety of optional features can be built into the units. The actuator is available with internal or externally mounted temposonic transducers. This allows for positive feedback in applications where it is necessary to close a control loop. This can be as simple as a visual feedback to a display device or feedback to a main electronic controller for more complicated loops. The high overall efficiency inherent in the actuators, coupled with the rugged, sealed construction, ensures the actuators will operate trouble free for prolonged periods of time in the most adverse environmental conditions with virtually no maintenance.



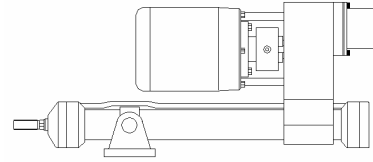
Technical Specifications

Our actuators are rated at 3000 psi maximum operating pressure. Load control is available in push and pull directions. Over pressure reliefs are fully adjustable. Standard setting is 2500psi.

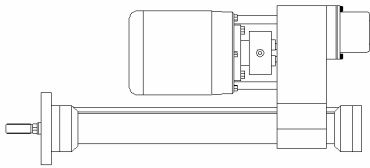
Mounting Types



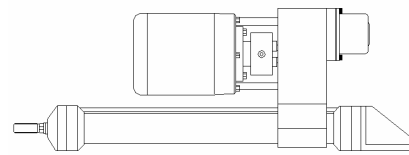
Type "C"
Clevis Mount



Type "T"
Trunnion Mount



Type "H"
Head Mount



Type "B"
Base Mount

Model	Force@ 2500 PSI Push (lbs) / pull (lbs)	Stroke	Input Voltage
M15	Push Pull 50-4,400 max / 50-3,300 max	4, 6, 8, 10, 12, 14	12VDC, 24VDC, 115,208-230/460
M20	Push Pull 50-7,800 max /50-5,700 max	4, 6, 8, 10 12, 14, 16 18, 20	12VDC, 24VDC, 115,208-230/460
M25	Push Pull 50-12,200 max /50-8,560 max	Optional, According to Application	115,208-230/460
M30	Push Pull 50-17,600 max /50-11,660 max	Optional, According to Application	115,208-230/460
M35	Push Pull 50-24,000 max /50-16,200 max	Optional, According to Application	115,208-230/460
M40	Push Pull 50-31,400 max /50-23,500 max	Optional, According to Application	115,208-230/460

Ordering Data

*Sizes M25 – M40 Stroke Lengths Made to Order

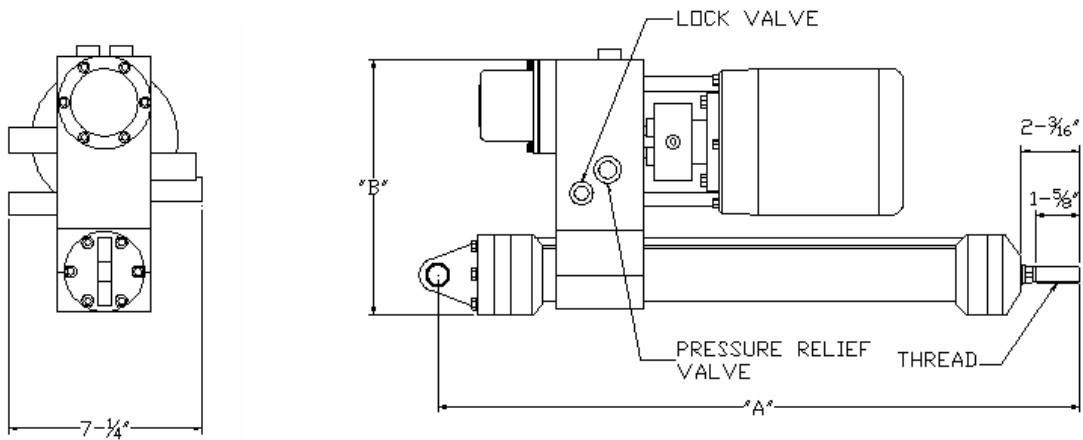
	M15	C	12	A	1.5 in/sec	230/60
1. Model	_____					
M15, M20	_____					
2. Mounting Type	_____					
C, T, H, B	_____					
3. Actuator Stroke	_____					
Inches	_____					
4. Load Lock	_____					
In Compression - A	_____					
In Tension - B	_____					
Both - C	_____					
5. Speed in / sec.	_____					
1, 1.5, 2, 2.5, 3	_____					
6. Input Voltage & Frequency	_____					



M15 with a type "C"
-Clevis Mount

Dimensions

Type "C"
Clevis Mount



M15

Overall Dim. *To calculate extended length, add stroke length to dim "A"

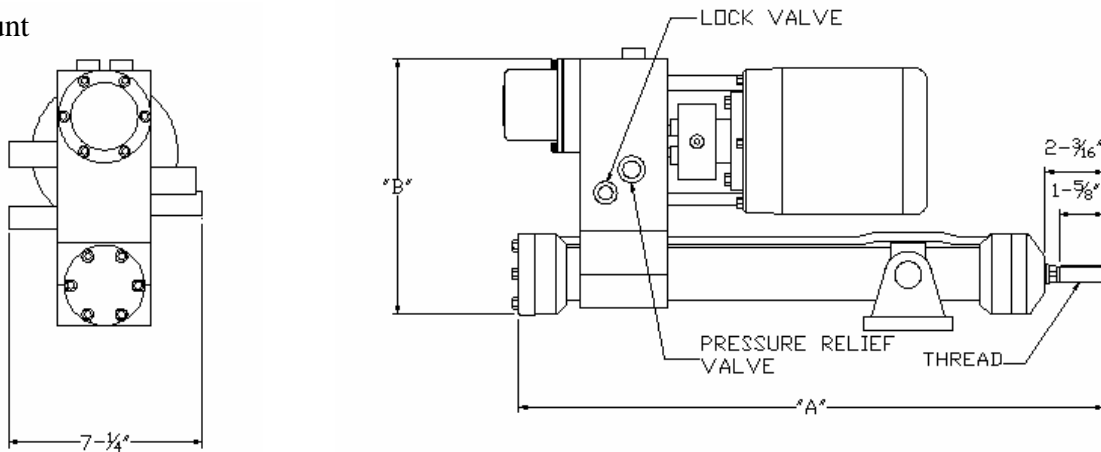
Stroke	Rod Dia.	Thread Size	Dimension "A"	Dimension "B"
4"	3/4"	5/8"-18 NF	13"	9-1/2"
6"	3/4"	5/8"-18 NF	15"	9-1/2"
8"	3/4"	5/8"-18 NF	17"	9-1/2"
10"	1"	3/4"-16 NF	19-1/4"	9-1/2"
12"	1"	3/4"-16 NF	21-1/4"	9-1/2"
14"	1"	3/4"-16 NF	23-1/4"	9-1/2"

M20

Overall Dim *To calculate extended length, add stroke length to dim "A"

Stroke	Rod Dia.	Thread Size	Dimension "A"	Dimension "B"
4"	3/4"	5/8"-18 NF	13-7/8"	10-1/2"
6"	1"	3/4"-16 NF	16-5/8"	10-1/2"
8"	1"	3/4"-16 NF	18-5/8"	10-1/2"
10"	1-3/8"	1"-12 NF	20-5/8"	10-1/2"
12"	1-3/8"	1"-12 NF	22-5/8"	10-1/2"
14"	1-3/8"	1"-12 NF	24-5/8"	10-1/2"
16"	1-3/8"	1"-12 NF	26-5/8"	10-1/2"
18"	1-3/8"	1"-12 NF	28-5/8"	10-1/2"
20"	1-3/8"	1"-12 NF	30-5/8"	10-1/2"

Type "T"
Trunnion Mount



M15

Overall Dim. *To calculate extended length, add stroke length to dim "A"

Stroke	Rod Dia.	Thread Size	Dimension "A"	Dimension "B"
4"	3/4"	5/8"-18 NF	10-7/8"	9-1/2"
6"	3/4"	5/8"-18 NF	12-7/8"	9-1/2"
8"	3/4"	5/8"-18 NF	14-7/8"	9-1/2"
10"	1"	3/4"-16 NF	17-1/8"	9-1/2"
12"	1"	3/4"-16 NF	19-1/8"	9-1/2"
14"	1"	3/4"-16 NF	21-1/8"	9-1/2"

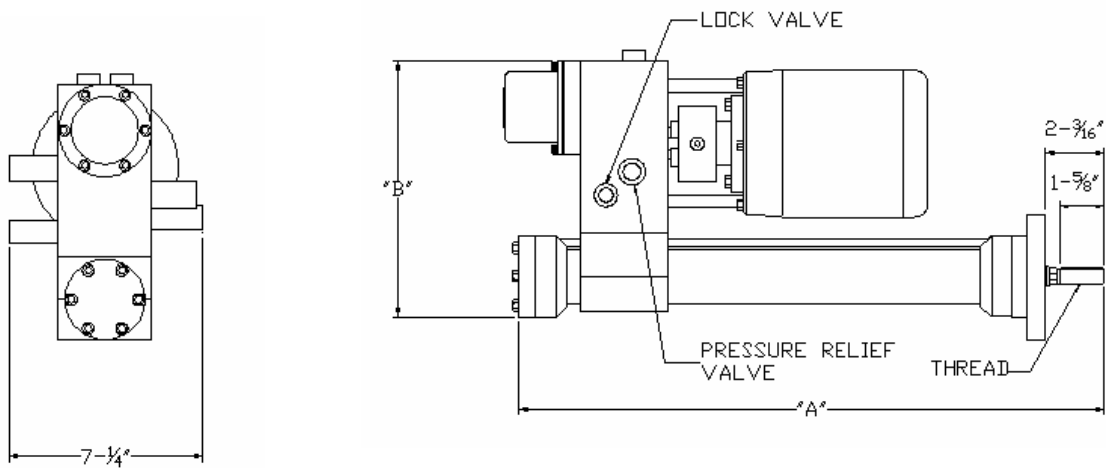
M20

Overall Dim.

*To calculate extended length, add stroke length to dim "A"

Stroke	Rod Dia.	Thread Size	Dimension "A"	Dimension "B"
4"	3/4"	5/8"-18 NF	11-3/4"	10-1/2"
6"	1"	3/4"-16 NF	14-1/2"	10-1/2"
8"	1"	3/4"-16 NF	16-1/2"	10-1/2"
10"	1-3/8"	1"-12 NF	18-1/2"	10-1/2"
12"	1-3/8"	1"-12 NF	20-1/2"	10-1/2"
14"	1-3/8"	1"-12 NF	22-1/2"	10-1/2"
16"	1-3/8"	1"-12 NF	24-1/2"	10-1/2"
18"	1-3/8"	1"-12 NF	26-1/2"	10-1/2"
20"	1-3/8"	1"-12 NF	28-1/2"	10-1/2"

Type "H"
Head Mount



M15

Overall Dim. *To calculate extended length, add stroke length to dim "A"

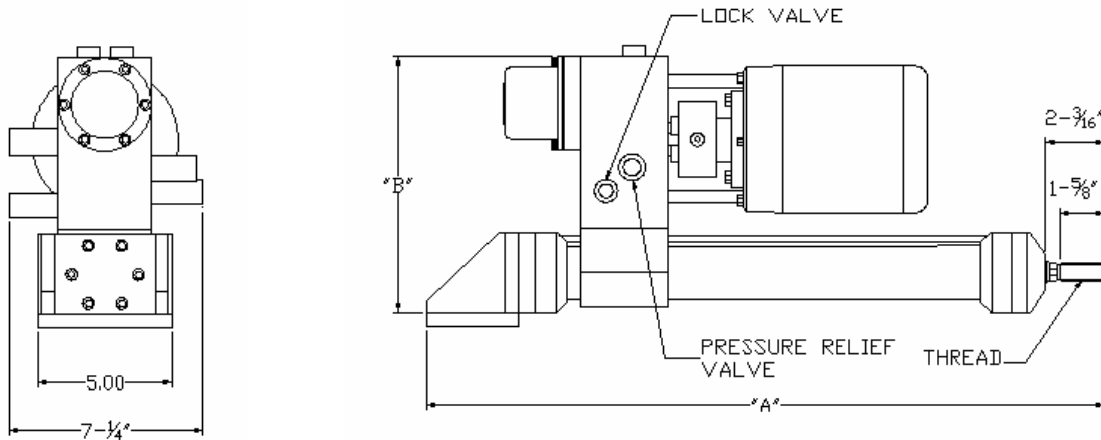
Stroke	Rod Dia.	Thread Size	Dimension "A"	Dimension "B"
4"	3/4"	5/8"-18 NF	10-7/8"	9-1/2"
6"	3/4"	5/8"-18 NF	12-7/8"	9-1/2"
8"	3/4"	5/8"-18 NF	14-7/8"	9-1/2"
10"	1"	3/4"-16 NF	17-1/8"	9-1/2"
12"	1"	3/4"-16 NF	19-1/8"	9-1/2"
14"	1"	3/4"-16 NF	21-1/8"	9-1/2"

M20

Overall Dim. *To calculate extended length, add stroke length to dim "A"

Stroke	Rod Dia.	Thread Size	Dimension "A"	Dimension "B"
4"	3/4"	5/8"-18 NF	11-3/4"	10-1/2"
6"	1"	3/4"-16 NF	14-1/2"	10-1/2"
8"	1"	3/4"-16 NF	16-1/2"	10-1/2"
10"	1-3/8"	1"-12 NF	18-1/2"	10-1/2"
12"	1-3/8"	1"-12 NF	20-1/2"	10-1/2"
14"	1-3/8"	1"-12 NF	22-1/2"	10-1/2"
16"	1-3/8"	1"-12 NF	24-1/2"	10-1/2"
18"	1-3/8"	1"-12 NF	26-1/2"	10-1/2"
20"	1-3/8"	1"-12 NF	28-1/2"	10-1/2"

Type "B"
Base Mount



M15

Overall Dim. *To calculate extended length, add stroke length to dim "A"

Stroke	Rod Dia.	Thread Size	Dimension "A"	Dimension "B"
4"	3/4"	5/8"-18 NF	14-3/8"	9-1/2"
6"	3/4"	5/8"-18 NF	16-3/8"	9-1/2"
8"	3/4"	5/8"-18 NF	18-3/8"	9-1/2"
10"	1"	3/4"-16 NF	20-5/8"	9-1/2"
12"	1"	3/4"-16 NF	22-5/8"	9-1/2"
14"	1"	3/4"-16 NF	24-5/8"	9-1/2"

M20

Overall Dim. *To calculate extended length, add stroke length to dim "A"

Stroke	Rod Dia.	Thread Size	Dimension "A"	Dimension "B"
4"	3/4"	5/8"-18 NF	15-1/4"	10-1/2"
6"	1"	3/4"-16 NF	18"	10-1/2"
8"	1"	3/4"-16 NF	20"	10-1/2"
10"	1-3/8"	1"-12 NF	22"	10-1/2"
12"	1-3/8"	1"-12 NF	24"	10-1/2"
14"	1-3/8"	1"-12 NF	26"	10-1/2"
16"	1-3/8"	1"-12 NF	28"	10-1/2"
18"	1-3/8"	1"-12 NF	30"	10-1/2"
20"	1-3/8"	1"-12 NF	32"	10-1/2"



M-MAC ACTUATORS INC.

3715 Norwood Ave.

North Vancouver, BC

Canada V7N 3P8

Phone: (604) 980-0732 * Fax (604) 980-9499

www.mmacactuators.com * Email: mmac@pz.com

