

# Multi-Act Integrated Motion Controller

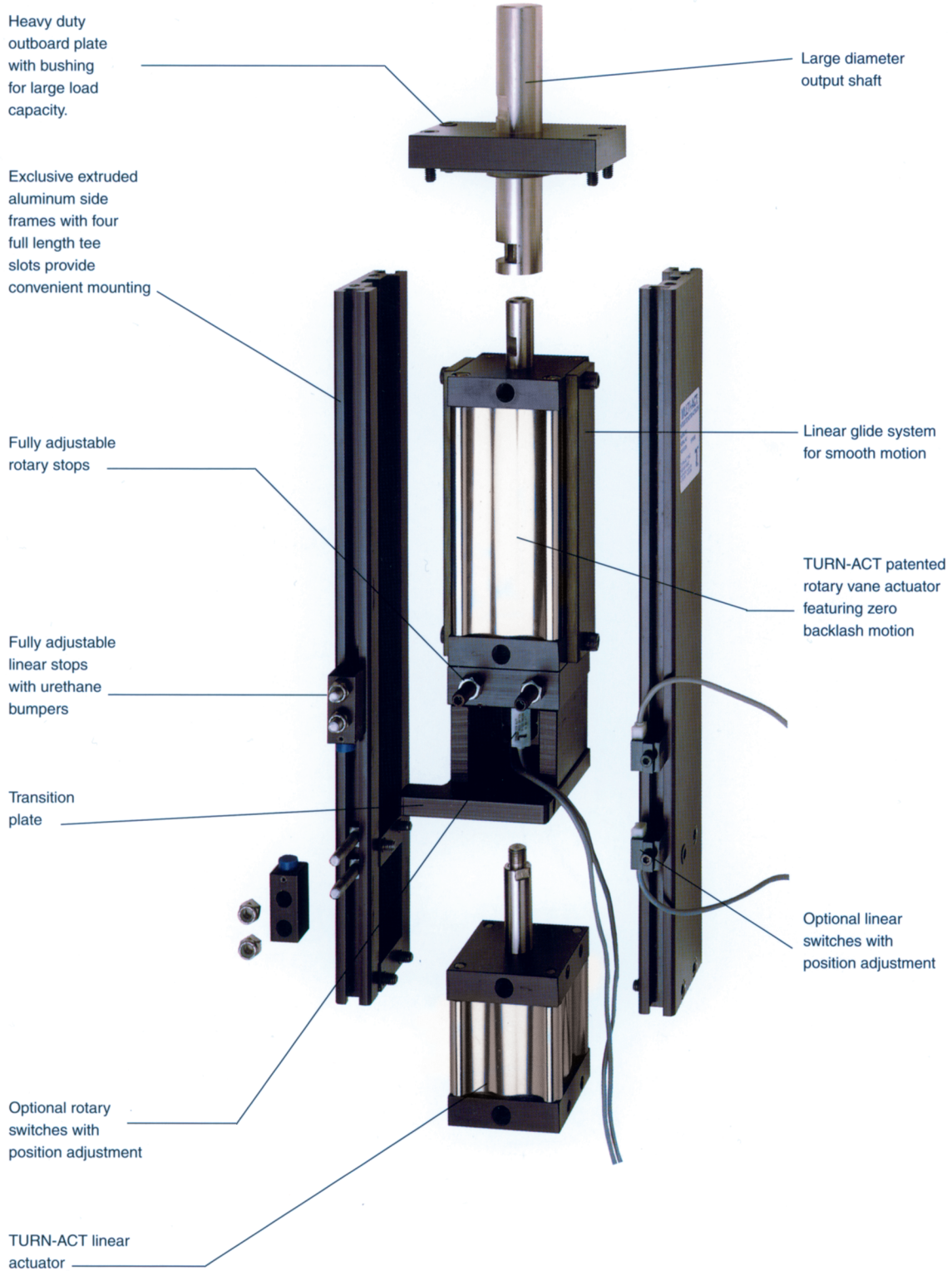


**COMPACT**<sup>®</sup>  
AUTOMATION PRODUCTS



# Multi-Act Overview

## FEATURES



# Multi-Act Dimensional Information

## DESCRIPTION

Multi-Act's Integrated Motion Actuators have an output shaft which produces both linear and rotary motions. The linear and rotary motions may be operated independently and simultaneously.

Multi-Act's exclusive use of Turn-Act's patented rotary vane actuators, linear glide system and large bore linear actuators provides smooth, virtually zero backlash motion, a first in multi-motion systems.

Multi-Act is available in three family sizes. The MAO series are compact units for limited space applications. They are available in three stroke lengths and torques to 50 inch pounds. The MA1 series are heavy duty units available in five stroke lengths and torques up to 600 inch pounds.

Multi-Act units are available with optional linear and rotary switches that are fully position adjustable.

Multi-Acts also feature linear and rotary stroke controls to permit fine tuning and repeatable motion.

Exclusive to the Multi-Act is the straight-forward model numbering system, where each model number is virtually self explanatory as to the features.

The Multi-Act featured in the cutaway image is an MA1-201-601-00 Heavy Duty Series. The linear actuator housing is secured between the two side frames. The linear actuator's shaft moves the rotary actuator along the glide system. The MAO Miniature Series differs in that the linear actuator's housing is attached to the rotary actuator. The linear actuator's shaft is attached to a base plate secured between the lower ends of the side frames. Both actuators travel in the glide system.

Please contact your authorized Turn-Act distributor for additional information.

# Multi-Act MAO Miniature Series

## SPECIFICATIONS

### PNEUMATIC

Inlets Linear and rotary actuators ..... 1/8" NPT  
 Pressure range ..... 35 to 200 psi  
 Filtration required ..... 25-50 Micron

### ROTARY - Torques @ 100 psi

0° - 90° Unit ..... 50 in. lbs.  
 0° - 270° Unit ..... 25 in. lbs.

Cylinder bore ..... 1-1/4"

Air capacity per stroke (cu. in.)

0° - 90° Unit ..... 1.68  
 0° - 270° Unit ..... 1.99

Rotations

0° - 90° Unit adjustable from 0° - 90°  
 0° - 270° Unit adjustable from 0° - 270°

At maximum rotations (adjustment screws fully backed out) internal bumpers provide a cushioned stop. Stop position may increase 2° maximum at each end of stroke due to compression of bumpers and size and speed of load.

### LINEAR - Forces @ 100 psi

Extend ..... 110 lbs.  
 Retract ..... 100 lbs.

Cylinder bore ..... 1-1/4"

Air capacity per stroke (cu. in.)

1" Extend 1.2 ..... Retract 1.1  
 2" Extend 2.4 ..... Retract 2.2  
 4" Extend 4.9 ..... Retract 2.2

Adjustments: Stroke lengths fully adjustable from zero to maximum. Linear travel stops against urethane bumpers.

### PERFORMANCE

Travel Speeds<sup>1</sup>  
 Rotary: Maximum 90° per second  
 Linear: Maximum 200" per minute

Linear backlash ..... 0"  
 Rotary backlash ..... 0.25" max.

Temperature range ..... 40°F to 180°F

For applications below 40°F, a variety of seal options are available based upon the cycle rates, temperatures and frequency of use. Consult the factory to discuss your cold temperature application for your optimum solution.

### WEIGHTS

MAO-100 ..... 7 lbs.  
 MAO-200 ..... 8 lbs.  
 MAO-400 ..... 12 lbs.  
 (Weights vary with specific models)

### MATERIALS

Rotary actuator seals ..... Urethane<sup>2</sup>  
 Rotary actuator bearings ..... Needle  
 Linear actuator seal ..... BUNA  
 Linear actuator bearings ..... Delrin<sup>3</sup>  
 Output shaft ..... Stainless Steel  
 Output bearing ..... Molybdenum Disulfide  
 Impregnated Phenolic

Multi-Act frame, transition plate, linear and rotary actuator housing ..... Hard Anodized Aluminum

Linear glide ..... Molybdenum Disulfide  
 Impregnated Phenolic

### LUBRICATION

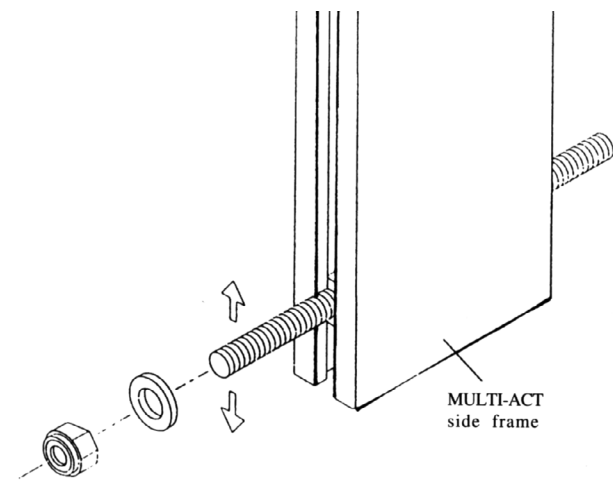
Factory pre-lubricated. Air line lubrication not required on cycle rates to 10 CPM.

### NOTES

- WARNING:** Maximum speeds depend on air pressure, slow and size and shape of loads. Damage potential exists from high speed and large rotational loads being abruptly stopped internally. Customer is responsible for proper application and circuit design that will decelerate loads.
- Patented Turn-Act Inc.
- T.M.E.I. Dupont.
- Shaft provided without keyway. Specify Trantorque. Refer to page 12.

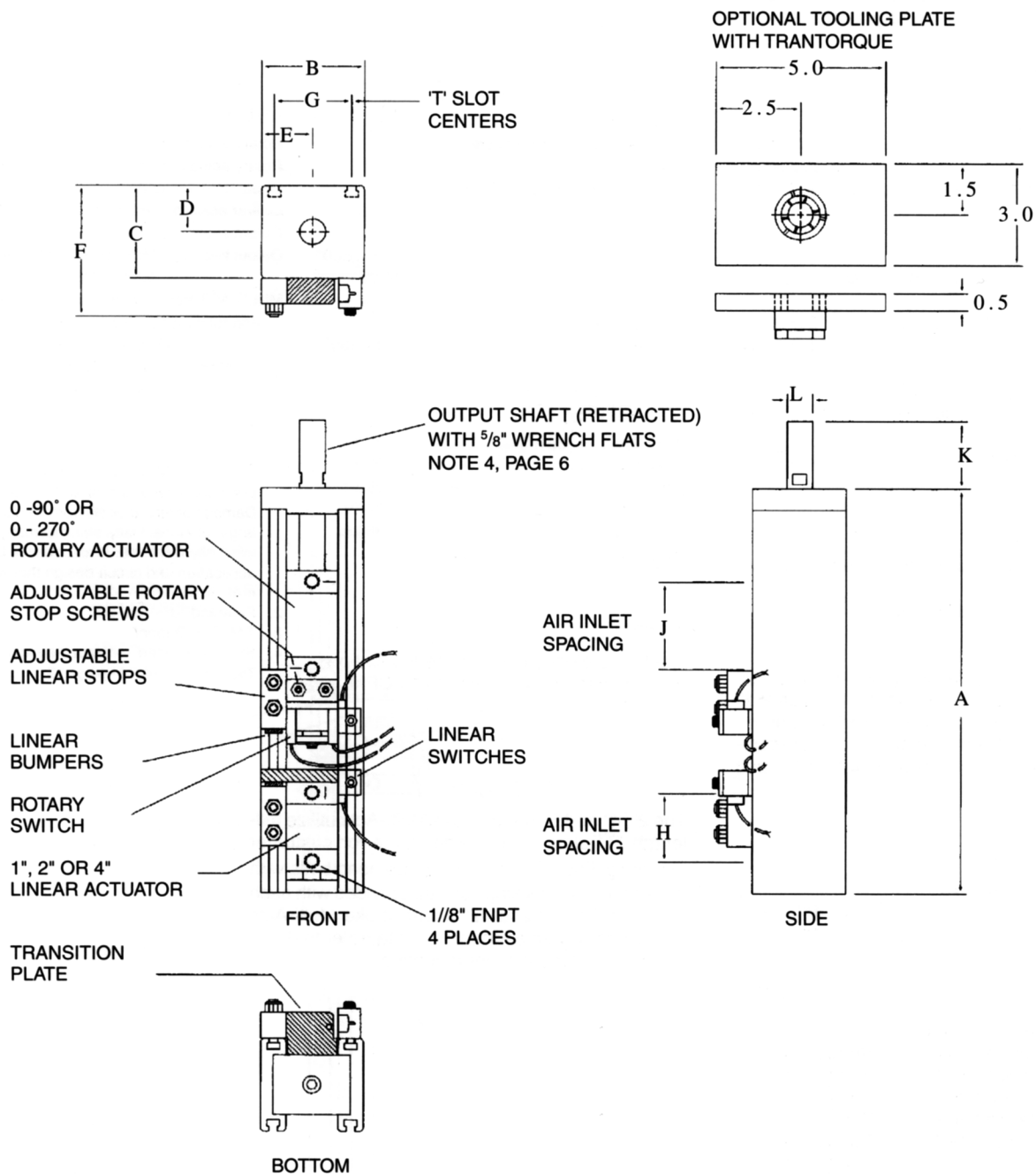
### MOUNTING SYSTEM

Four #1/4" - 20 X 1-1/4" square head bolts with flat washers and locking nuts with each Multi-Act.





# Multi-Act MAO Miniature Series



Dimensional Data (inches)						
	With Rotary Switches			Without Rotary Switches		
	1"	2"	3"	1"	2"	3"
A	12.9	14.9	18.9	10.9	12.9	16.9
B	3.0	3.0	3.0	3.0	3.0	3.0
C	2.75	2.75	2.75	2.75	2.75	2.75
D	1.38	1.38	1.38	1.38	1.38	1.38
E	1.50	1.50	1.50	1.50	1.50	1.50
F	3.9	3.9	3.9	3.9	3.9	3.9
G	2.25	2.25	2.25	2.25	2.25	2.25
H	2.7	3.7	5.7	2.7	5.7	5.7
J	2.58	2.58	2.58	2.58	2.58	2.58
K	Output Shaft Retracted 2.0					
L	Output Shaft Diameter .75					

# Multi-Act MA1 Heavy Duty Series

## SPECIFICATIONS

### PNEUMATIC

Inlets Linear and rotary actuators.....1/4" FNPT  
 Pressure range .....35 to 200 psi  
 Filtration required .....25-50 Micron

### ROTARY - Torques @ 100 psi and air capacities

0° - 90° Unit.....300 in. lbs. - 5.5 cu. in.  
 600 in. lbs. - 11.0 cu. in.  
 0° - 270° Unit.....150 in. lbs. - 8.5 cu. in.  
 300 in. lbs. - 17.0 cu. in.

Cylinder bore.....1-1/4"

### Rotations

0° - 90° Unit adjustable from 0° - 90°  
 0° - 270° Unit adjustable from 0° - 270°

At maximum rotations (adjustment screws fully backed out) internal bumpers provide a cushioned stop. Stop position may increase 2° maximum at each end of stroke due to compression of bumpers and size and speed of load.

### LINEAR - Forces @ 100 psi

Extend .....440 lbs.  
 Retract.....400 lbs.

Cylinder bore.....2-1/2"

### Air capacity per stroke (cu. in.)

2" Extend 9.8 .....Retract 8.9  
 4" Extend 19.6 .....Retract 17.8  
 6" Extend 29.4 .....Retract 26.8  
 8" Extend 36.6 .....Retract 40.2  
 12" Extend 48.8 .....Retract 53.6

Adjustments: Stroke lengths fully adjustable from zero to maximum. Linear travel stops against urethane bumpers.

### PERFORMANCE

Travel Speeds<sup>1</sup>  
 Rotary: Maximum 90° per second  
 Linear: Maximum 200" per minute

Linear backlash .....0"  
 Rotary backlash.....0.25" max.

Temperature range.....40°F to 180°F  
 For applications below 40°F, a variety of seal options are available based upon the cycle rates, temperatures and frequency of use. Consult the factory to discuss your cold temperature application for your optimum solution.

### WEIGHTS

MA1-200 .....22 lbs.  
 MA1-400 .....25 lbs.  
 MA1-600 .....28 lbs.  
 MA1-700 .....32 lbs.  
 MA1-800 .....36 lbs.  
 (Weights vary with specific models)

### MATERIALS

Rotary actuator seals .....Urethane<sup>2</sup>  
 Rotary actuator bearings .....Needle  
 Linear actuator seal.....BUNA  
 Linear actuator bearings.....Delrin<sup>3</sup>  
 Output shaft .....Stainless Steel  
 Output bearing .....Molybdenum Disulfide  
 Impregnated Phenolic  
 Multi-Act frame, transition plate, linear  
 and rotary actuator housing.....Hard Anodized  
 Aluminum  
 Linear glide.....Molybdenum Disulfide  
 Impregnated Phenolic

### LUBRICATION

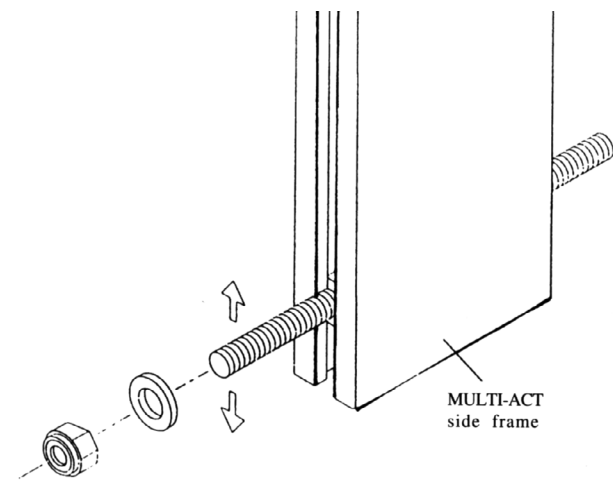
Factory pre-lubricated. Air line lubrication not required on cycle rates to 10 CPM.

### NOTES

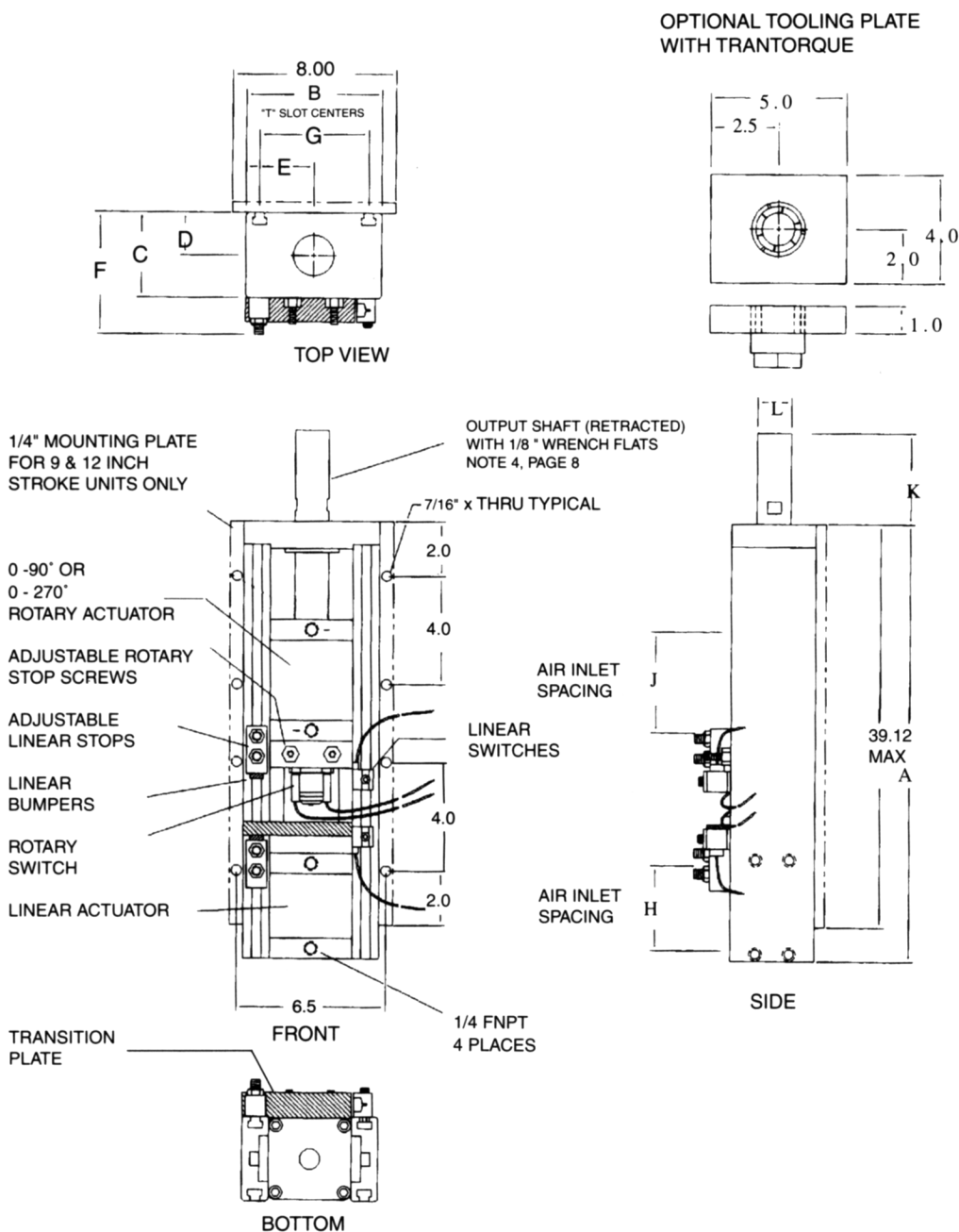
- WARNING:** Maximum speeds depend on air pressure, slow and size and shape of loads. Damage potential exists from high speed and large rotational loads being abruptly stopped internally. Customer is responsible for proper application and circuit design that will decelerate loads.
- Patented Turn-Act Inc.
- T.M.E.I. Dupont.
- Shaft provided without keyway. Specify Trantorque. Refer to page 12.

### MOUNTING SYSTEM

The 2", 4" and 6" linear stroke Multi-Act units utilize full length "T" slots in the side frame for customer mounting. Four 5/16" - 18 X 2" square head bolts with flat washers and locking nuts are provided with each Multi-Act. The 9" and 12" linear stroke Multi-Acts are furnished with a Mounting Plate (refer to drawing , page X) for customer mounting.



# Multi-Act MA1 Heavy Duty Series



## Dimensional Data (inches)

	With Rotary Switches			Without Rotary Switches		
	2"	4"	6"	2"	4"	6"
A	17.34	21.34	25.34	15.34	19.34	23.34
B	5.0	5.0	5.0	5.0	5.0	5.0
C	3.13	3.13	3.13	3.13	3.13	3.13
D	1.56	1.56	1.56	1.56	1.56	1.56
E	2.5	2.5	2.5	2.5	2.5	2.5
F	4.4	4.4	4.4	4.4	4.4	4.4
G	4.0	4.0	4.0	4.0	4.0	4.0
H	4.21	6.21	8.21	4.21	6.21	8.21
J	3.65	3.65	3.65	3.65	3.65	3.65
K	Output Shaft Retracted 3.0					
L	Output Shaft Diameter 1.25					

	With Rotary Switches					Without Rotary Switches				
	2"	4"	6"	9"	12"	2"	4"	6"	9"	12"
A	17.34	21.34	25.34	34.38	40.38	15.34	19.34	23.34	32.38	38.38
B	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
C	3.13	3.13	3.13	3.13	3.13	3.13	3.13	3.13	3.13	3.13
D	1.56	1.56	1.56	1.56	1.56	1.56	1.56	1.56	1.56	1.56
E	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
F	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
G	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
H	4.21	6.21	8.21	11.21	14.21	4.21	6.21	8.21	11.21	14.21
J	3.65	3.65	3.65	3.65	3.65	3.65	3.65	3.65	3.65	3.65
K	Output Shaft Retracted 3.0									
L	Output Shaft Diameter 1.25									

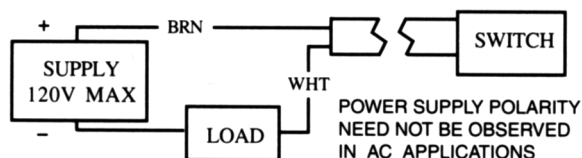
# Switches and Trantorque®

## SWITCHES

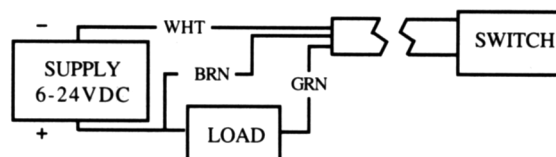
Switch Type	Function	Switching Voltage	Switching Current	Switching Power	Max Voltage Drop	Lead Length & Gauge
Reed Switch MOV* and LED.	SPST Normally Open	5-120 VDC/VAC 50/60 Hz	0.5 Amp Max. 0.005 Amp Min.	10 Watts Max.	3.5 Volts	9 feet 22 ga.
Hall Effect & Light, Sinking	Normally Open (NPN) Output	6-24 VDC	0.5 Amp Max.	N/A	0.5 Volts	9 feet 22 ga.
Hall Effect & Light, Sinking	Normally Open (PNP) Output	6-24 VDC	0.5 Amp Max.	N/A	0.5 Volts	9 feet 22 ga.

\*Metal Oxide Varistor Surge Suppression

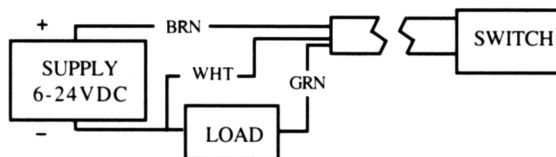
REED SWITCH



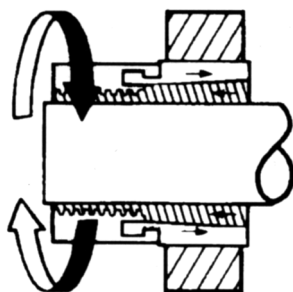
HALL EFFECT  
(NPN SINKING)



HALL EFFECT  
(PNP SINKING)

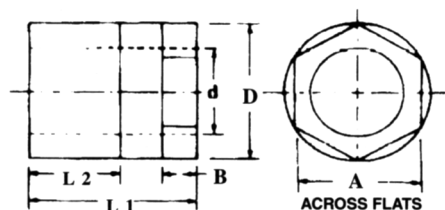


## TRANTORQUE®



Trantorques® are keyless bushings intended to eliminate the need for keyways. The Trantorque® bushings fit into the Multi-Act output shaft and into the attachment. Its unique design expands in the load attachments hub and shrinks on the shaft with the tightening of a single nut.

The positive lock and release action of Trantorque® permits exact initial positioning with easy adjustment.



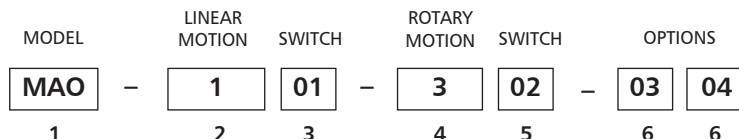
Dimensional Data (inches).

	A	B	d	D*	L1	L2
MAO	1-1/4	5/16	3/4	1-1/2	1-1/2	3/4
MA1 / MA2	1-3/4	1/2	1-1/4	2	2-1/4	1



# Multi-Act How to Order MAO, MA1 Series

Part Number Example: MAO-101-302-0304



1

Model	
MAO	Multi-Act Series 0

2

Linear Motion	
1	1 inch stroke
2	2 inch stroke
3	3 inch stroke

3

Switches	
00	None
01	Two AC/DC Reed Switches
02	Two Hall Effect, sinking switches
03	Two Hall Effect, sourcing switches

4

Rotary Motion	
3	0° - 90° Unit - Adj. Rotation 50 in.-lbs.
6	90° - 270° Unit - Adj. Rotation 25 in.-lbs.

5

Switches	
00	None
01	Two AC/DC Reed Switches
02	Two Hall Effect, sinking switches
03	Two Hall Effect, sourcing switches

6

Options	
00	None
03	Tooling plate 1/2"x3"x5" Undrilled Aluminum with Trantorque® Mtd. on center Refer to page 7
04	SS Hardware
05	Trantorque® Shaft coupler Refer to page 12
06	Enclosure Consult Distributor

1

Model	
MA1	Multi-Act Series 1

2

Linear Motion	
2	2 inch stroke
4	4 inch stroke
6	6 inch stroke
7	9 inch *
8	12 inch *

3

Switches	
00	None
01	Two AC/DC Reed Switches
02	Two Hall Effect, sinking switches
03	Two Hall Effect, sourcing switches

4

Rotary Motion	
2	0° - 90° Unit - Adj. Rotation 300 in.-lbs.
3	0° - 90° Unit - Adj. Rotation 600 in.-lbs.
5	90° - 270° Unit - Adj. Rotation 150 in.-lbs.
6	90° - 270° Unit - Adj. Rotation 300 in.-lbs.

5

Switches	
00	None
01	Two AC/DC Reed Switches
02	Two Hall Effect, sinking switches
03	Two Hall Effect, sourcing switches

6

Options	
00	None
03	Tooling plate 1"x4"x5" Undrilled Aluminum with Trantorque® Mtd. on center Refer to page 9
04	SS Hardware
05	Trantorque® Shaft coupler Refer to page 12
06	Enclosure Consult Distributor

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