DESIGN YOUR PICK & PLACE ACTUATOR

When an option is not required, leave blank.

Write out any special requirements in English or provide a dimensioned sketch. Rotomation can provide units to almost any configuration.

To expedite the order of a duplicate of a prior unit, refer to prior invoice/serial number stamped on the unit body.

NEEDLE VALVE CANNOT BE ON SAME SIDE AS PORT.

www.rotomation.com
RotoCAD
DWG/DXF Drawing Files & Part No. Description

OPTION	ROTATION DIRECTION CONTROLLED CW	CCW	BOTH	NEEDLE VALVE POSITION
FLOW CONTROL	1F	2F	3F	1,2,3 or 4
CUSHION	1C	2C	3C	1,2,3 or 4
BUMPER	1Q	2Q	3Q	
ADJUSTABLE ROTATION	1A	2A	3A	

TORQUE AT 100 PSI	ROT. BORE	RACKS	LINEAR BORE	SERIES SYMBOL
7	5/8	1	5/8	**PA01**
49	1	1	1 3/8	**PA2**
98	1	2	1 3/8	**PA22**
149	1 3/8	1	1 3/8	**PA3**
238 AT 80	1 3/8	2	1 3/8	**PA32**

SEALS, NITRILE (STD.) **-**
SEALS, FLUOROCARBON **V**

LINEAR **W, X, Y, Z** **A, B, C, D**
(PA01 A & C ONLY)
ROTARY **1, 2, 3, 4, 5**
WA4 STD
NO COST

LENGTH: **1, 2**

SERIES — **STOP TUBE** — **PORT POSITION**

PA3 – **90** – **B 4 (2)** – **D** – **1F2** – **2C2** – **1Q** – **3A** – **2SL** – **8SL** – **V** – **WA4** – **P**

ROD ROTATION ANGLE

OPTIONAL ANGLES:
30, 45, 60, 90, 100, 120, 180, 190, 270, 360, 370, 540, 550, 720, 730,
OR AS SPECIFIED

MULTI-POSITION PA22 & PA32:
3 POS: **A-P-B**
4 POS: **A-P-B/C** or **A/B-P-C**
5 POS: **A/B-P-C/D**

SEE CATALOG PAGE 39

ROD END

TYPE	SYMBOL
STD., SHOWN	**A**
OPT. - FOR SMA	**B**
OTHER: SEND SKETCH	

ROD STROKE

.5, .75, 1 TO 12 MAX.

AUX. SHAFT

AUX. SHAFT SYMBOL: **D**

MAGNETIC CONTROL OPTIONS-ROTARY

POSITION	INDICATES	OUTPUT CIRCUIT		LEAD	
1	CW	**R**	NPN Sink	**L**	9' Lead
2	CCW	**S**	PNP Source	**C**	Connector
3	BOTH	**G**	Reed		
4	3 POS., 4 SW	**N**	No Switch		
5	4 POS., 6 SW		Mag Only		
6	5 POS., 8 SW				

SEE CATALOG PAGES 39, 40 & 41

MAGNETIC CONTROL OPTION-LINEAR

POSITION	INDICATES	OUTPUT CIRCUIT		LEAD	
7	LINEAR, 1 SW	**R**	NPN Sink	**L**	9' Lead
8	LINEAR, 2 SW	**S**	PNP Source	**C**	Connector
		G	Reed		
		N	No Switch		
			Mag Only		

SEE CATALOG PAGES 40, 41

NOTE: REED SWITCH "G" NOT AVAILABLE ON PA01.

MOUNT PLATES

PLATE	SYMBOL
BOTTOM SIDE	**P**
	M

PA01 P ONLY
SEE CATALOG PAGE 42

EXTENSION CABLES FOR SWITCHES WITH PIGTAIL AND CONNECTOR

ORDER SEPARATELY	
CABLE	PART NUMBER
2 METER LENGTH	**CC2**
5 METER LENGTH	**CC5**

SEAL REPAIR KITS
PART NUMBERS FOR SEAL REPAIR KITS

FILL IN UNIT SERIES AND ALL RELATED OPTIONS:

SRK – [PA2] (SERIES) — [F] (FLOW CONTROL) — [C] (CUSHIONS) — [A] (ROTATION ADJUSTERS) — [V] (SEALS)

EXAMPLES:
SEAL KIT FOR PA2-90-A4-3C1-1A-3RL-WA4 = SRK-PA2-CA

NOTE: IF NO OPTIONS, SPECIFY SRK-PA2-STD.

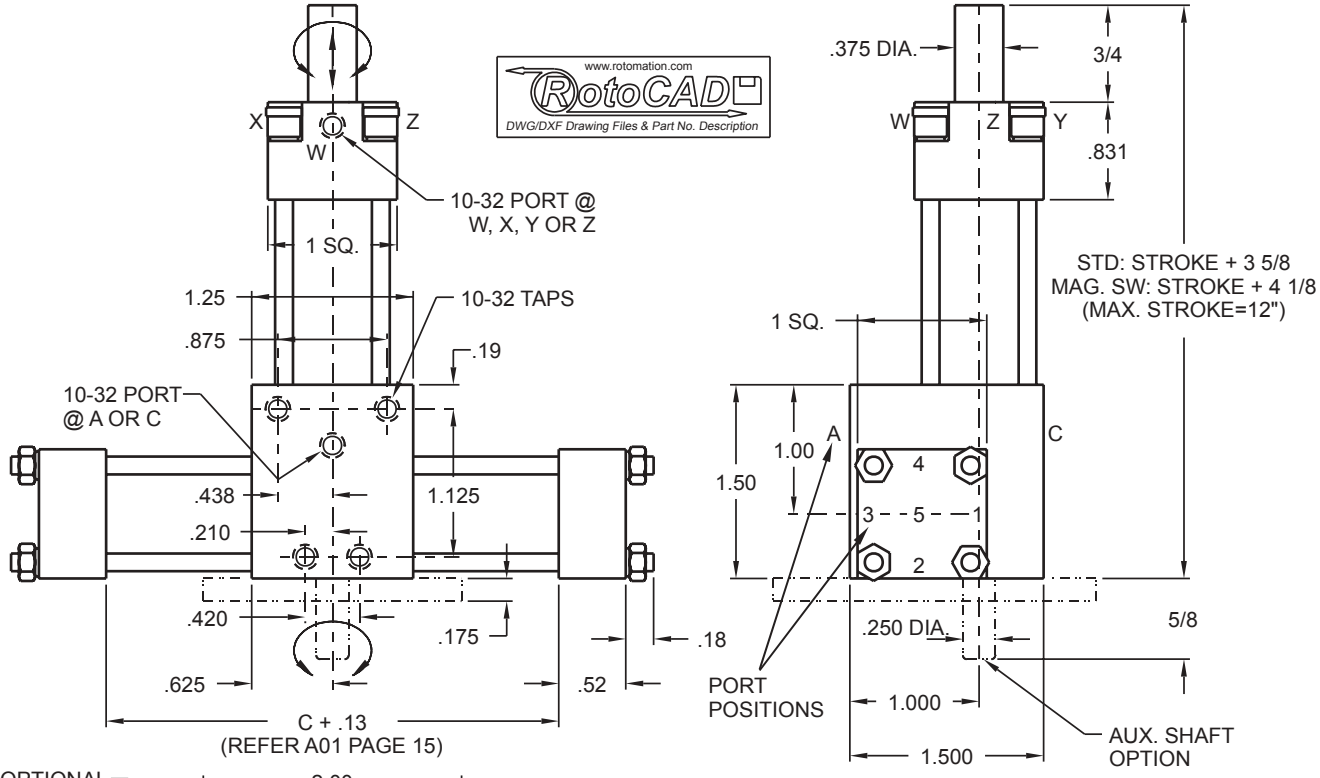
DESIGN YOUR NITPICKER (INDEXING PICK & PLACE)

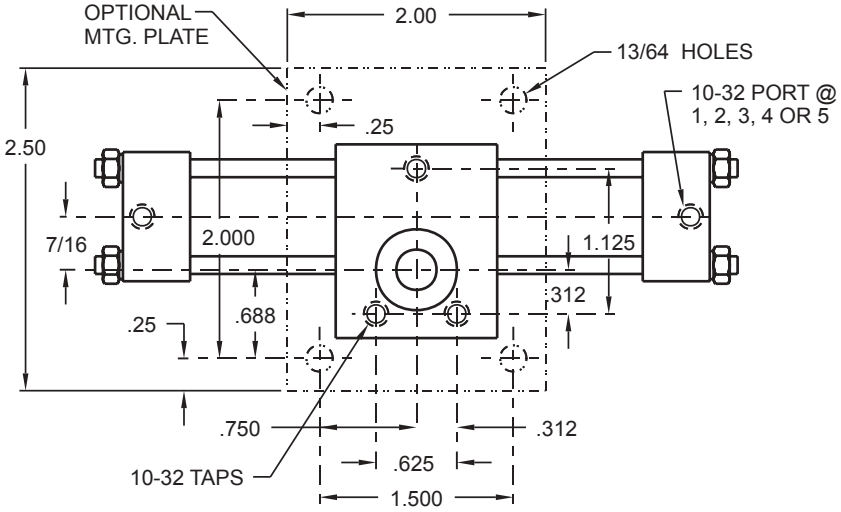
TO PROVIDE AN INDEXING ROTARY MOTION COMBINED WITH A LINEAR MOTION, CONSIDER THE NITPICKER, WHICH COMBINES THE X2 OR X22 ROTARY DRIVE WITH THE LINEAR MOTION FACILITY OF THE PA2 OR PA22.

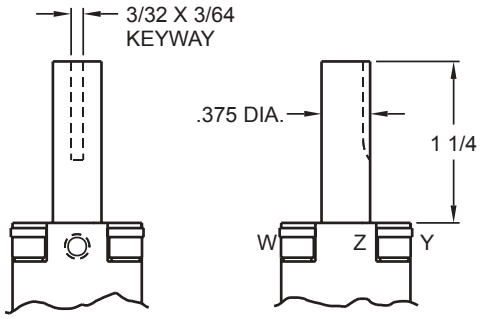
CONFIGURATION IS SIMILAR TO THE PA2 OR PA22. FOR SPECIFICATION AND ORDERING DETAILS, CONSULT FACTORY; ASK FOR THE NITPICKER DESIGN CHART. FUNCTIONS AND OPTIONS ARE SIMILAR TO THOSE OUTLINED ABOVE BUT HAVE ROTARY CHARACTERISTICS OF THE X2 AND X22.

PA01 MINIATURE PICK & PLACE ACTUATOR

LOTS OF ACTION, TINY SPACE, TINY COST







OPTIONAL ROD END (WORKS WITH SMA-37)
SHOWN AT MIDPOINT OF ROTATION

OPERATION

PRESSURE	TORQUE-IN. LB.	PUSH LB.	PULL LB.
PSI	(.07 X PSI)	(.3 X PSI)	(.19 X PSI)
60	4	18	11
80	5	24	15
100	7	30	19

Above figures are computed; output torques and forces are reduced by internal friction.

MAXIMUM RATINGS

ROTARY	PRESSURE, AIR	100
SECTION	PRESSURE, OIL	100
LINEAR	PRESSURE, AIR	100
SECTION	PRESSURE, OIL	100
TORQUE, NON-SHOCK, IN.-LB.		8
Rot. Act. Disp: in ^{3}/deg.		.0013
Weight 180 deg., 2" std. unit: lb.		0.9

Rotation Tolerance: -0 +10 deg.

Backlash: 6 deg.

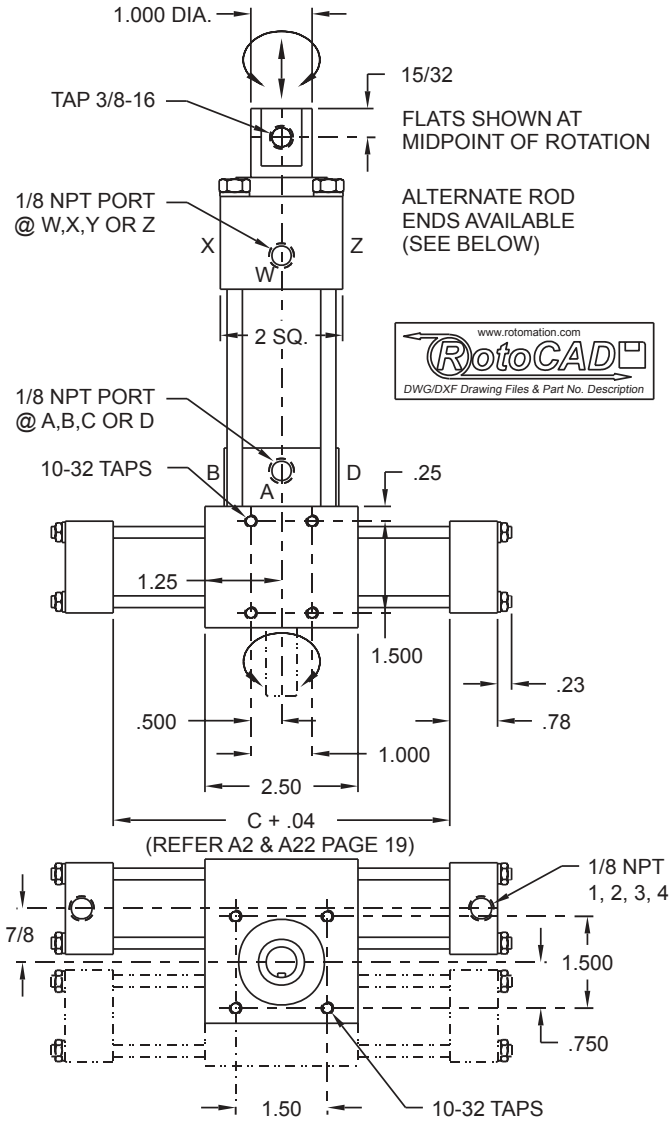
UNCONTROLLED IMPACT CAN CAUSE DAMAGE. LIMIT BOTH ROTATIONAL & LINEAR SPEEDS BY USE OF FLOW CONTROL IN EXHAUSTING CYLINDER.

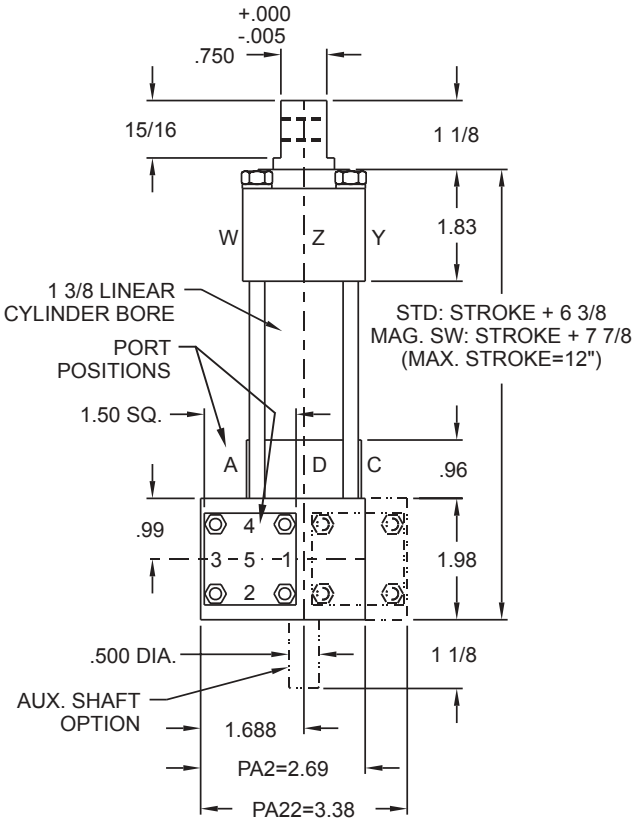
MAGNETIC SWITCH OPTIONS

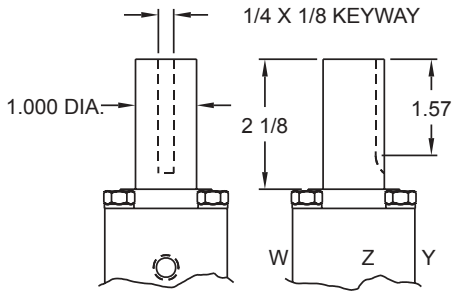
Solid state switches (R or S) are available on rotary and linear sections of unit. Switches mount to cylinders; place as required for access and phasing. Add 1/2" to cylinder length and unit height for linear switches.

NOTES:
1. Rotary options available are the same as A01.
2. Stop tubes are available to stabilize the extended shaft. Standard lengths are 1" and 2"; add to unit height. Sleeves for switch magnets serve the same function.
3. Needle valve: see page 15.

PA2 & PA22 PICK & PLACE ACTUATORS







OPTIONAL ROD END (WORKS WITH SMA-10)
SHOWN AT MIDPOINT OF ROTATION

OPERATION

PRESSURE	TORQUE-IN. LB.		PUSH LB.	PULL LB.
PSI	PA2 (.49 X PSI)	PA22 (.98 X PSI)	(1.48 X PSI)	(.70 X PSI)
60	29	58	89	42
80	39	78	118	56
100	49	98	148	70
150	73	147	222	105
200	98	196	296	140
300	NA	NA	444	210
500	NA	NA	740	350

Above figures are computed; output torques and forces are reduced by internal friction.

UNCONTROLLED IMPACT CAN CAUSE DAMAGE. LIMIT BOTH ROTATIONAL & LINEAR SPEEDS BY USE OF FLOW CONTROL IN EXHAUSTING CYLINDER.

MAGNETIC SWITCH OPTIONS

Reed (G) and solid state switches (R or S) are available on rotary and linear sections of unit. Switches mount to cylinders; place as required for access and phasing.

ROTARY INSTALLATIONS:
Find C dimension in tables on A2 & A22 page.

LINEAR INSTALLATIONS:
Add 1 1/2" to cylinder length and unit height

MAXIMUM RATINGS

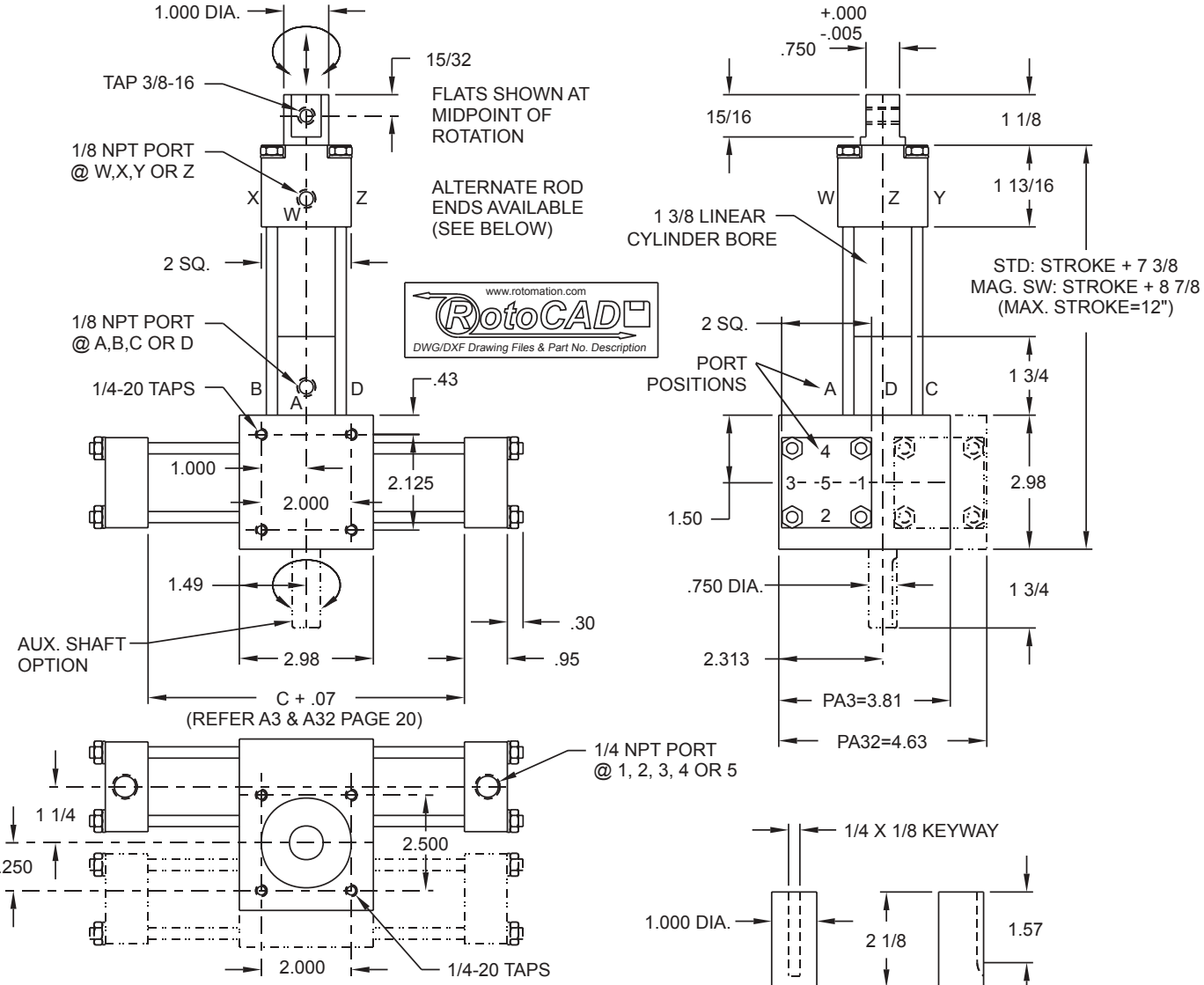
		PA2	PA22
ROTARY	PRESSURE, AIR	250	250
SECTION	PRESSURE, OIL	250	250
LINEAR	PRESSURE, AIR	250	250
SECTION	PRESSURE, OIL	500	500
TORQUE, NON-SHOCK, IN.-LB.		200	250
Rot. Act. Disp: in ^{3}/deg.		.0086	.0172
Weight 180 deg., 2" std. unit: lb.		5.4	6.7

Rotation Tolerance:
PA2 & PA22 -0 +3 deg.

Backlash:
PA2 2 deg.
PA22 1 deg.

NOTES:
1. Stop tubes are available to stabilize the extended shaft. Standard lengths are 1" and 2"; add to unit height. Sleeves for switch magnets serve the same function.
2. Needle valve: see page 19.

PA3 & PA32 PICK & PLACE ACTUATORS



OPTIONAL ROD END (WORKS WITH SMA-10) SHOWN AT MIDPOINT OF ROTATION

OPERATION

PRESSURE	TORQUE-IN. LB.		PUSH LB.	PULL LB.
PSI	PA3 (1.49 X PSI)	PA32 (2.98 X PSI)	(1.48 X PSI)	(.70 X PSI)
60	89	178	89	42
80	119	238	118	56
100	149	NA	148	70
150	223	NA	222	105
200	NA	NA	296	140
300	NA	NA	444	210
500	NA	NA	740	350

Above figures are computed; output torques and forces are reduced by internal friction.

UNCONTROLLED IMPACT CAN CAUSE DAMAGE. LIMIT BOTH ROTATIONAL & LINEAR SPEEDS BY USE OF FLOW CONTROL IN EXHAUSTING CYLINDER.

MAGNETIC SWITCH OPTIONS

Reed (G) and solid state switches (R or S) are available on rotary and linear sections of unit. Switches mount to cylinders; place as required for access and phasing.

ROTARY INSTALLATIONS:
Find C dimension in tables on A3 & A32 page.

LINEAR INSTALLATIONS:
Add 1 1/2" to cylinder length and unit height

MAXIMUM RATINGS

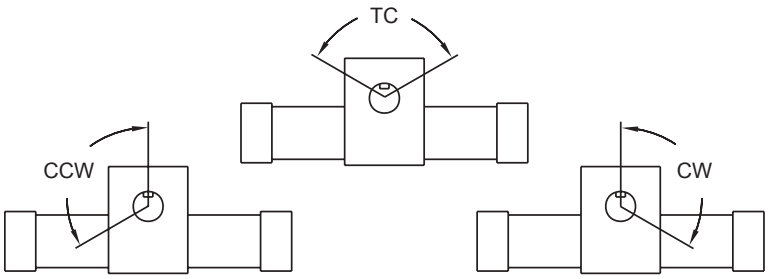
		PA3	PA32
ROTARY SECTION	PRESSURE, AIR	165	165
	PRESSURE, OIL	165	165
LINEAR SECTION	PRESSURE, AIR	250	250
	PRESSURE, OIL	500	500
TORQUE, NON-SHOCK, IN.-LB.		250	250
Rot. Act. Disp: in ^{3}/deg.		.026	.052
Weight 180 deg., 2" std. unit: lb.		9.2	11.9

Rotation Tolerance:
PA3 & PA32 -0 +2 deg.

Backlash:
PA3 2 deg.
PA32 1 deg.

NOTES:
1. Stop tubes are available to stabilize the extended shaft. Standard lengths are 1" and 2"; add to unit height. Sleeves for switch magnets serve the same function.
2. Needle valve: see page 20.

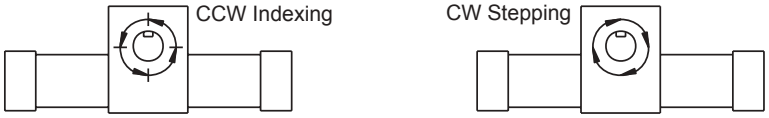
GENERAL AND MOTION CONTROL OPTIONS



ACTUATOR SHAFT KEYWAY MOTION

Symbols specify orientation of arc of motion looking at front of unit. In Top Center (TC), the keyway passes thru 12:00 o-clock (0 deg.) at the midpoint of rotation; one-half the rotation is on either side of 12:00 o-clock.

Symbol: TC, CW, CCW No cost option.

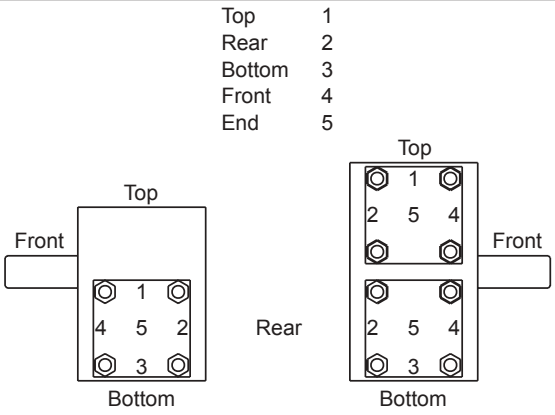


INDEXING & STEPPING ACTUATOR SHAFT KEYWAY MOTION

Specify shaft rotation looking at the projecting, load-carrying shaft.

Symbol: CW, CCW No cost option.

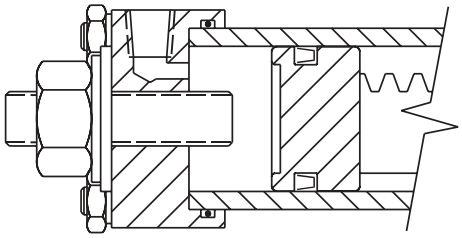
Indexing actuator: steps in specified direction to hard stops.
Stepping actuator: steps in specified direction, no hard stops. Accumulates error.



PORT POSITIONS 1, 2, 3, 4, 5
NEEDLE VALVE POSITIONS 1, 2, 3, 4
(PORT & NEEDLE VALVE CANNOT BE AT SAME POSITION)

Use numbered locations to specify desired position. No port in position 5 with options A, F or C. No port or needle valve between end caps in dual rack units; for positions 90 from shaft, specify 1, 3 (top and bottom).

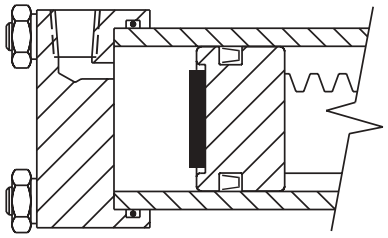
Symbols: 1, 2, 3, 4, 5
No cost option.



ROTATION ADJUSTER

Adjustable stop controls rotation over 30 deg. range by stroke reduction.
Can be combined with flow control or cushion in single rack actuators or steppers.
Not available for indexers.

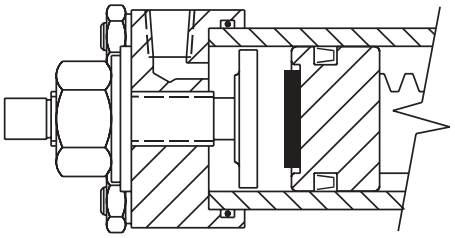
Symbol: A



BUMPER

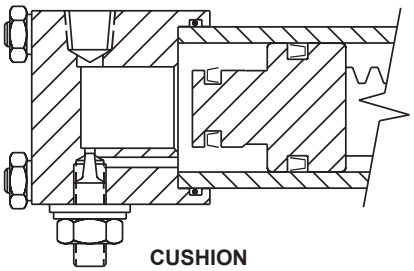
A urethane bumper is fastened to the piston face. It eliminates metal to metal contact and absorbs shock. Requires added cylinder length.

Symbol: Q



ADJUSTER AND BUMPER

Combination of adjuster and bumper. Uses enlarged adjuster face to distribute impact. Requires added cylinder length.

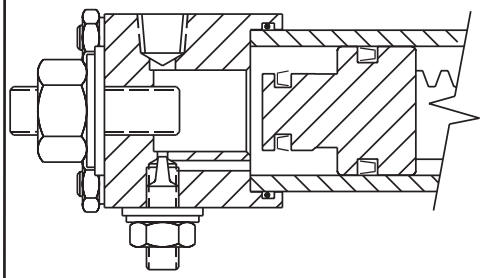


CUSHION

A reversed U-cup on the auxiliary piston closes the free passage to the port, forces exhaust through the control needle valve over last 30 deg. of rotation. For return, pressure folds U-cup down, allows full pressure and flow to piston.

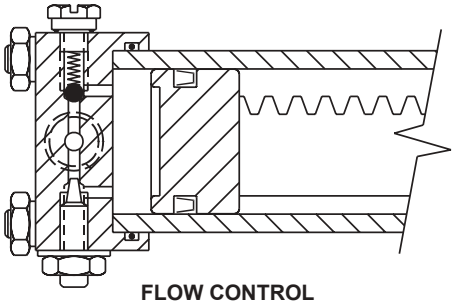
Not fully effective in drive direction in steppers or indexers because of overrunning clutch.

Symbol: C



ADJUSTER AND CUSHION

Combined adjuster and cushion for single rack actuators or steppers. Installed separately, cushion on top rack, in dual rack units. Stroke reduction also reduces cushion action.



FLOW CONTROL

Forces exhausting air to pass through control needle valve, limits operating speed throughout rotation in one direction. Check valve opens for full flow on return. Requires needle valve access; not available with port position 5. Intended primarily for air operation. Can be combined with rotation adjustment.

Symbol: F

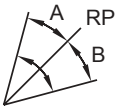
MOTION CONTROL OPTIONS

THREE POSITION ACTUATOR

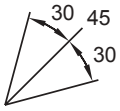
Uses internal stops for optional drive to any of three shaft positions in any sequence. Available in A12, A22, A32 and A42, but drives shaft with only one cylinder at a time; use torque factor for A1, A2, A3 or A4.
Shown: A42-45-0-45-S11-C2-RR-1/4-1, 3

To specify the positions desired in a 3 position dual rack actuator:

1. Determine central reference position RP at 0¡ to 360¡ clockwise from 12:00
2. Determine angle CCW from RP: A
3. Determine angle CW from RP: B



Specify: A-RP-B



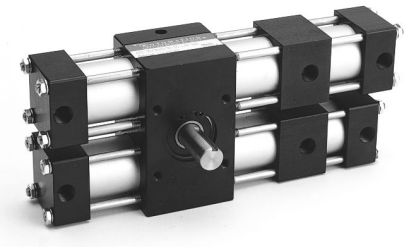
Example: 30-45-30

NOTE: MULTI-POSITION ACTUATORS REQUIRE TWO MAGNETIC SWITCHES TO INDICATE EACH INTERMEDIATE POSITION.

AIR DAMPERS

Auxiliary cylinders and pistons with adjustable pressurization through a relieving regulator give soft deceleration at cycle rates higher than conventional shock absorbers can tolerate.

Consult factory.

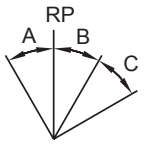


FOUR OR FIVE POSITION ACTUATORS

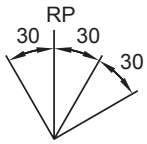
Pairs of auxiliary cylinders and pistons with stop rods added to three position actuators provide additional intermediate stop positions. All positions are accesssible in any sequence. Note that intermediate end caps are vented.
Shown: four position A22-30/30-30-30-S5-1/8-4

FOUR POSITION:
To specify the positions desired in a 4 position dual rack actuator with auxiliary cylinders:

1. Determine an inner reference position RP at 0¡ to 360¡ clockwise from 12:00
2. Determine angle CCW from RP: A
3. Determine angles CW from RP: B & C
   Enclose RP with dashes, separate others with slash.



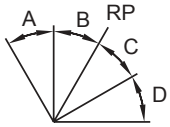
Specify: A-RP-B/C



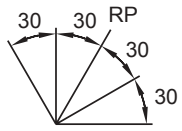
Example: 30-0-30/30

FIVE POSITION:
To specify the positions desired in a 5 position dual rack actuator with auxiliary cylinders:

1. Determine the central reference position RP at 0¡ to 360¡ clockwise from 12:00
2. Determine angles CCW from RP: A & B
3. Determine angles CW from RP: C & D
   Enclose RP with dashes, separate others with slash.



Specify: A/B-RP-C/D



Example: 30/30-30-30/30

CONSTRUCTION OPTIONS

WASHDOWN UNITS

Shaft seals built into body or integral cover plates, cylinders sealed by O-Rings, assembly threads sealed, stainless shafts, anodized body and end caps.

Symbol: J

On order, hard chrome plated shafts, electroless nickel plated body and end caps.

DUST RESISTANT UNITS

Units sealed against inward leakage
Pressurization port

Symbol: Written description

CLEAN ROOM CONSTRUCTION

Units sealed against outward leakage
Body drain or purge ports
Low vapor pressure lubrication
Dry lubrication or wear rings

Symbol: Written description

SPECIAL SEALS

High temperature or aggressive fluids: FKM
Note bearing seal limitations.

Symbol: V

Minimum fluid leakage: Pretensioned seals.
Check fluid compatibility. Note increased breakaway pressure.

Symbol: T

HIGH PRESSURE CONSTRUCTION

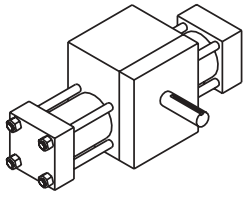
For pressures to 750 psi. Steel cylinders (no magnetic switches), hydraulic pistons with backup rings or pretensioned seals as required. Thread inserts on tie rod anchors. Body drain if desired.

Symbol: HP

HEAVY DUTY, DUST RESISTANT A4, A42, X4, X42

Sealed, non-pumping structure-dust stays out.
Pistons: two PTFE wear rings, carboxylated nitrile seals.
Cylinders: hard chrome ID, epoxy OD or aluminum with hard coat ID.
Lube: extra-tacky air cylinder grease.
Symbol: A or K

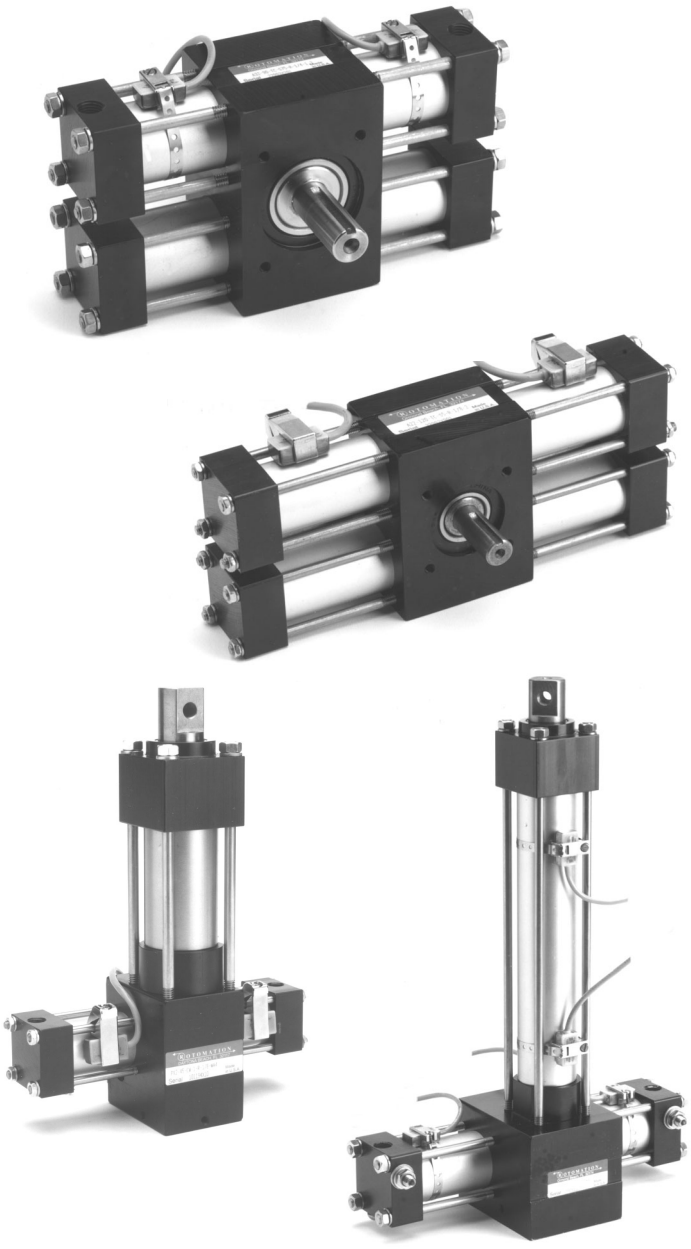
REAR MOUNT CONSTRUCTION X3, X32, X4, X42



Shaft projects from rear; front mount holes opposite. Specify shaft rotation and options relative to shaft. Note reduced impact capacity page 29.
Symbol: B

SIGNAL OPTIONS - MAGNETIC SWITCHES

TIE ROD UNITS



Two types of clamps are shown. Tie rod or strap clamps are supplied to fit best on the unit for which they are specified.

UNITS WITHOUT TIE RODS

A032

A752

AL75

Switch position is adjustable along the integral track and locked by a hex socket set screw. Pigtail leads with connectors as shown on the A752 are optional on all switches; the extension cables should be ordered separately.

SET UP AND OPERATION

Adjust switch position along exhausting cylinder to phase signal for desired sequence.

Adjustable range: 30 deg. or 1/2 stroke, whichever is smaller.

Keep magnetic materials away.

Multi-position actuators require two switches to indicate each intermediate position; a single switch will indicate each end position.

Rotomation piston magnets and switches are designed to work together. Magnets or switches may or may not work with components of other manufacture.

MAGNETIC SWITCHES

	SWITCHES FOR TIE ROD UNITS			SWITCHES FOR A032, A752 & AL75		SWITCHES FOR PBM	
	R	S	G	R	S	R	S
SWITCHING VOLTAGE	6-24 VDC	6-24 VDC	5-120 VAC/VDC	6-24 VDC	6-24 VDC	5-30 VDC	5-30 VDC
SWITCHING CURRENT	.5 A Max.	.5 A Max.	.5 A Max., .005 Min.	.20 A Max.	.20 A Max.	.20 A Max.	.20 A Max.
SWITCHING POWER	12 W Max	12 W Max	10 W Max.	4.8 W Max	4.8 W Max	6 W Max Resistive	6 W Max Resistive
VOLTAGE DROP	.5 V	.5 V	3.5 V	1.0 V Max.	1.0 V Max.	1.1 V Max.	1.1 V Max.
'R' NPN (Sinking)	L: 837-100-034 SWITCH C: 837-100-134 — BRN, GRN, WHT — LOAD — + / - — 6-24 VDC POWER SUPPLY			L: 937-000-032 SWITCH C: 937-000-332 — BRN, BLK, BLU — LOAD — + / - — 6-24 VDC POWER SUPPLY		SWITCH C: RC001 — BRN, BLK, BLU — LOAD — + / - — 5-30 VDC POWER SUPPLY	
'S' PNP (Sourcing)	L: 837-100-033 SWITCH C: 837-100-133 — BRN, GRN, WHT — LOAD — + / - — 6-24 VDC POWER SUPPLY			L: 937-100-031 SWITCH C: 937-000-331 — BRN, BLK, BLU — LOAD — + / - — 6-24 VDC POWER SUPPLY		SWITCH C: SC001 — BRN, BLK, BLU — LOAD — + / - — 5-30 VDC POWER SUPPLY	
'G' Reed	L: 837-100-004 SWITCH C: 837-100-104 N/A on A1, X1, S1 & PA01 — BRN, WHT — LOAD — + / - — 5-120 V DC or AC POWER SUPPLY			N/A		N/A	

SWITCH LEADS:

Description	Specify
9 ft. PVC cable, 3 conductor, color coded.	L
6 inch. pigtail with 8 mm quick disconnect.	C

EXTENSION CABLES - ORDER SEPARATELY

Cables have 8mm locking connector to connect to □C□ switches, above. 3 conductors color coded brown, black, blue.

Cable length	Part Number
2 m	CC2
5 m	CC5

REPLACEMENT SWITCHES

Order by number adjacent to switch block in diagrams above. Switches with leads identified by L, those with pigtail and connector by C. Switches are tested before shipment and are **NOT** returnable.

Extension cables have same color coding as A032, A752 and AL75 switches above, right.

LED indicates switch operation.

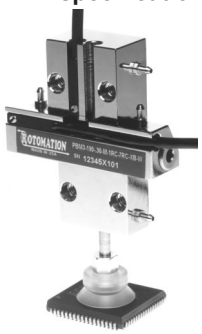
Standard lead length is 9'; connector is on 6" pigtail.

Observe polarity; reversal will damage switch.

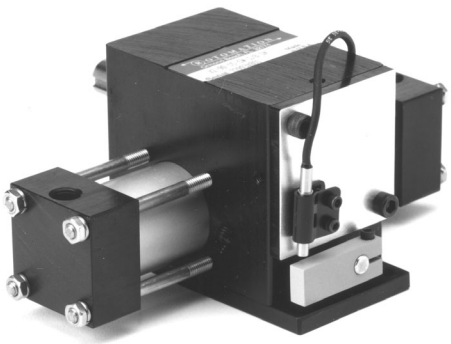
Observe maximum ratings; exceeding them will damage switch.

Reed switch has built-in surge protection; others do not.

Switches and cables resistant to moisture, dust and oil: designed to meet NEMA 4 specification.



OTHER SIGNAL OPTIONS



INDEXING ACTUATOR EXTENDED PAWL SHAFT

Shaft rotates 7 deg. at index and reset. Arm actuates switch, prox detector or pilot valve. Dimensions: see □Design Your Indexing Actuator□ page 24.

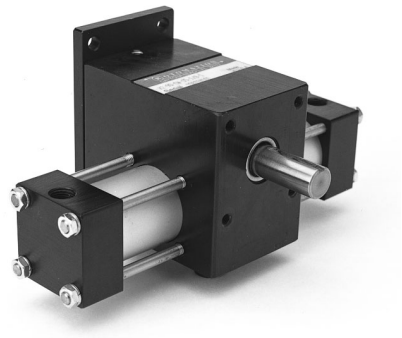
MAXIMUM LOAD TORQUE ON EXTENDED PAWL SHAFT

Unit	In. Oz.
X1 or X12	1
X2 or X22	2
X3 or X32	10
X4 or X42	17

SIGNAL PORT

For use in explosive or other atmospheres or with air logic controls. Ports provide line pressure signal at ends of rotation to actuate external devices. Fixed position, not adjustable.

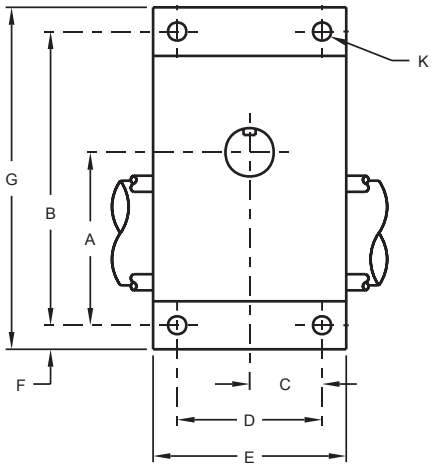
MOUNT PLATE OPTIONS

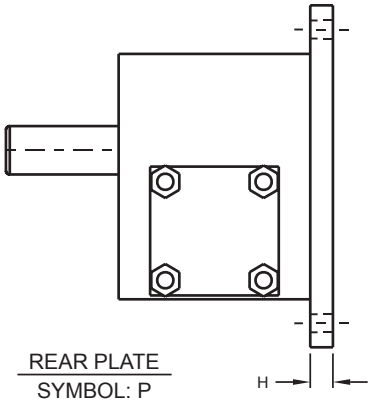


REAR MOUNT PLATE P

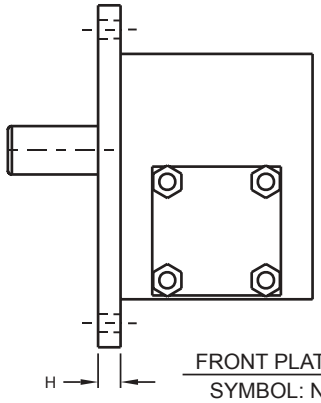
FRONT MOUNT PLATE N

BOTTOM MOUNT PLATE M





REAR PLATE
SYMBOL: P



FRONT PLATE
SYMBOL: N

INDEXING ACTUATORS: Rear plate P fits X1, X12, X2, X22; for X3, X32, X4 & X42 specify BP: rear mount construction and plate.

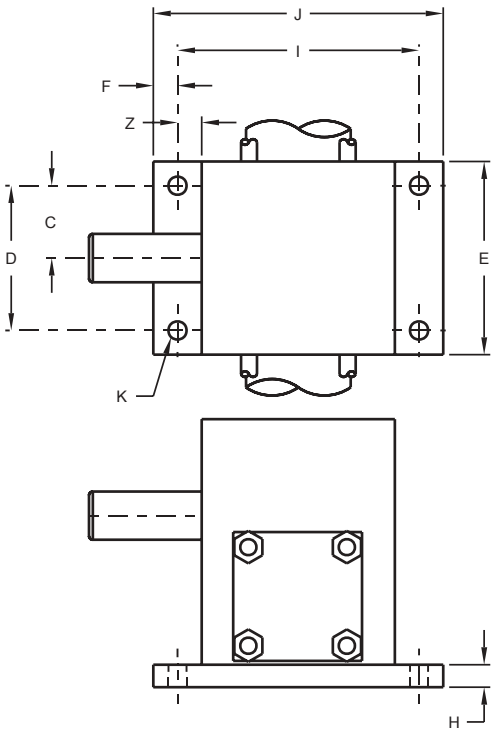
STEPPING ACTUATORS: Rear plate P not usable on S2 OR S22; others ok.

PICK AND PLACE ACTUATORS AND NITPICKERS: Mount plate P (perpendicular to rod) same as listed plate for corresponding actuator or indexer.

DIMENSIONS

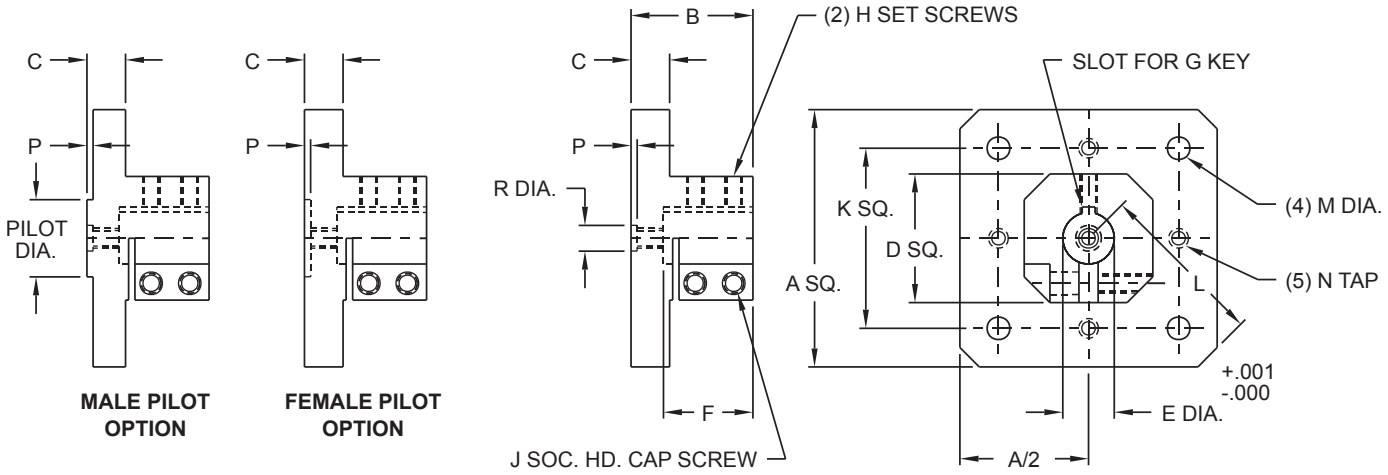
MODEL	A	B	C	D	E	F	G	H	I	J	K	Z
A01	1.188	1.875	.313	.625	1.00	3/16	2.25	.175	1.375	1.75	3/16	.188
PA01	1.312	2.000	.750	1.500	2.00	1/4	2.50	.175	NA	NA	13/64	.188
A032	1.000	2.000	.750	1.500	2.00	1/4	2.50	.175	2.000	2.50	7/32	.250
A1	1.500	2.500	.750	1.500	2.00	1/4	3.00	.175	2.500	3.00	7/32	.563
S1	1.500	2.500	.750	1.500	2.00	1/4	3.00	.175	3.125	3.63	7/32	.563
A12	1.500	3.000	.750	1.500	2.00	1/4	3.50	.175	2.500	3.00	7/32	.563
X1	1.500	2.500	.750	1.500	2.00	1/4	3.00	.175	3.125	3.63	7/32	.250
X12	1.500	3.000	.750	1.500	2.00	1/4	3.50	.175	3.125	3.63	7/32	.250
A2 or S2	1.938	3.188	.750	1.500	2.50	1/4	3.69	.235	2.500	3.00	7/32	.250
A22 or S22	1.938	3.875	.750	1.500	2.50	1/4	4.38	.235	2.500	3.00	7/32	.250
X2	1.938	3.188	.750	1.500	2.00	1/4	3.69	.235	3.500	4.00	7/32	.250
X22	1.938	3.875	.750	1.500	2.00	1/4	4.38	.235	3.500	4.00	7/32	.250
A3 or S3	2.687	4.562	1.125	2.250	3.00	3/8	5.31	.350	3.750	4.50	9/32	.375
A32 or S32	2.687	5.375	1.125	2.250	3.00	3/8	6.13	.350	3.750	4.50	9/32	.375
X3	2.687	4.562	1.125	2.250	3.00	3/8	5.31	.350	4.500	5.25	9/32	.375
X32	2.687	5.375	1.125	2.250	3.00	3/8	6.13	.350	4.500	5.25	9/32	.375
A4 or S4	3.125	5.063	1.125	2.250	3.00	3/8	5.81	.350	3.750	4.50	11/32	.375
A42 or S42	3.125	6.250	1.125	2.250	3.00	3/8	7.00	.350	3.750	4.50	11/32	.375
X4	3.125	5.063	1.125	2.250	3.00	3/8	5.81	.350	4.750	5.50	11/32	.375
X42	3.125	6.250	1.125	2.250	3.00	3/8	7.00	.350	4.750	5.50	11/32	.375

For PA01, see pg. 35



BOTTOM PLATE
SYMBOL: M

SHAFT MOUNTING ADAPTERS



		DIMENSIONS														
SIZE	SHAFT DIA.	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R
37	.375	2.00	1.063	.313	1.00	.375	.750	3/32 X .75 LG.	6-32	#8-32	1.375	1.22	.219	#10-32	.060	.250
50	.500	2.50	1.188	.375	1.25	.500	.813	1/8 X .81 LG.	6-32	#10-32	1.750	1.64	.219	#10-32	.060	.250
75	.750	3.50	1.875	.500	1.63	.750	1.375	3/16 X 1.38 LG.	10-32	1/4-20	2.500	2.25	.281	1/4-20	.060	.313
10	1.000	4.00	2.125	.625	2.25	1.000	1.500	1/4 X 1.50 LG.	1/4-20	5/16-18	3.000	2.56	.406	3/8-16	.125	.438
11	1.125	4.00	2.125	.625	2.25	1.125	1.500	1/4 X 1.50 LG.	1/4-20	5/16-18	3.000	2.56	.406	3/8-16	.125	.438

-ORDERING INFORMATION-

SMA – 50 – W – M.060

SIZE

SHAFT DIA.	SYMBOL
.375	37
.500	50
.750	75
1.000	10
1.125	11

HOLES

HOLES	SYMBOL
AS SHOWN	W
CENTER HOLE ONLY	N
USER SPECIFIED HOLES	SXXX FOR SPECIAL DRILL PATTERN

PILOT

PILOT	SYMBOL
REFERENCE BORE ONLY	LEAVE BLANK
MALE PILOT	MX.XXX WHERE X.XXX IS PILOT DIA., INCHES
FEMALE PILOT	FX.XXX WHERE X.XXX IS PILOT DIA., INCHES

NOTES:
1. Material: Clear anodized aluminum.
2. User specified holes: Send drawing. Factory will assign number XXX.
3. Adapters are stocked with no holes and with holes as shown. Special hole patterns and pilots are normally added after anodize and will expose bare aluminum.
4. Keyway is aligned with sides of plate. Reference bore 'R' is concentric with shaft bore within .001 TIR.
5. Shaft mounting adapters shipped with key, clamp screws & set screws.
6. Pilot diameter tolerance is ±.002.