SECTION **A** — **ANGULAR MOTION GRIPPERS**

COM-PICK 2 & 3 JAW

PNEUMATIC GRIPPERS

INTRODUCTION

Angular motion grippers represent the lowest cost design. The air cylinder is an integral component of the overall gripper length (Dimension B). The piston actuator pushes the cam, or yoke, forward, rocking/pivoting the jaws open. The pull stroke closes the jaws. A four-way valve circuit is required for control.

Both two and three jaw designs are offered. Round and square body styles are stocked.

Gripping force formulas, unit weights, and dimensions are included in this section.

ENGINEERING DATA

SELF CONTAINED ACTUATOR

All models feature Compact Air cylinder actuators as an integral, yet self-contained, component. Cylinders feature low profiles, low weight aluminum alloy bodies, and stainless steel piston rods. All units are prelubricated for life.

MATERIALS

Actuators are aluminum alloy with nylon rod bushings. Pivot head is anodized aluminum for low weight and high strength. Jaws, if purchased, are "1018" steel in soft form. Pivot joints are hardend and ground dowel pins.

ACTUATOR SEALS

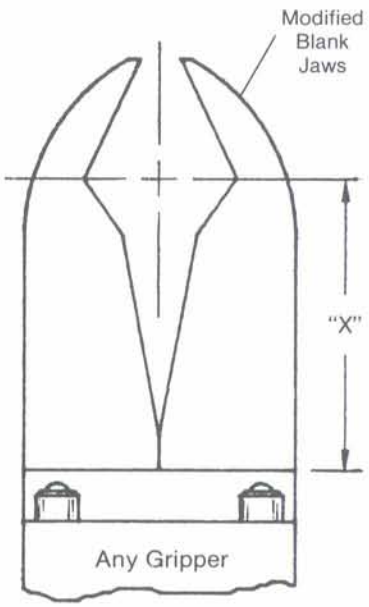
As standard, actuators are packed with seals of Buna-N rubber. Temperature limits are from 0° F to 200° F (-18° C to 90° C). All actuators are prelubricated at the factory and do not require additional lubrication.
Seal options — Section C.

TOOLING

Com-Pick grippers are "generic" in standard form. You can make your own jaws/fingers (pivot drawing available on request), purchase our soft blank or pre-modified "L" jaws, add "V" blocks, pads, sensors, etc. Also, see Section D.

THEORETICAL GRIPPING FORCE FORMULAS — 2 Jaw Type (Pre-calculated reference — next page.)

$072 = \frac{F \times .437}{.187 + X}$	$112 = \frac{F \times .562}{.234 + X}$	$162 = \frac{F \times .750}{.281 + X}$
$202 = \frac{F \times .937}{.281 + X}$	$252 = \frac{F \times 1.187}{.469 + X}$	$302 = \frac{F \times 1.437}{.469 + X}$
$402 = \frac{F \times 1.875}{.578 + X}$	$412 = \frac{F \times 2.375}{.578 + X}$	$502 = \frac{F \times 2.375}{.578 + X}$
$602 = \frac{F \times 2.375}{.625 + X}$	$802 = \frac{F \times 2.75}{.812 + X}$	



"X" DISTANCE FROM GRIPPER FACE TO CENTERLINE OF GRIPPED PART

"F" CYLINDER OUTPUT (Piston Area × PSI)

	SERIES	070	110	160	200	250	300	400	500	600	800
	BORE / ACTION	3/4	1-1/8	1-5/8	2	2-1/2	3	4	5	6	8
PISTON AREA IN.²	PUSH OPEN	.4	1	2	3	5	7	12.5	19.6	28.3	50.3
	PULL CLOSE	.36	.8	1.7	2.7	4.5	6.5	12	19.2	27.5	49.5

THEORETICAL GRIPPING FORCE FORMULA — 3 Jaw Type

(Pre-calculated reference — next page)

Use formula's above, then multiply by % below

SERIES	073	113	163	253	303	403	503	603	803
%	72%	57%	79%	85%	70%	80%	78%	100%	100%

COM-PICK 2 & 3 JAW
PNEUMATIC GRIPPERS

ENGINEERING DATA — Continued

PRESSURE RATINGS

PNEUMATIC	Clean, dry or lubricated — 5 PSI TO 200 PSI
HYDRAULIC	Consult Factory

2 Jaw Pre-Calculated Gripping Forces (In Pounds)

Nominal finger / jaw lengths (Material "1018" steel) **Stock lengths listed on page 9**
Calculations below are theoretical, figured @ 100 PSI — Jaw length equals "X" variable in formula on previous page

FINGER LENGTH		072	112	162	202	252	302	402	412	502	**602	**802
1"	OPEN	14	45	117	219	404	684	1485	1881	2949	4136	7633
	CLOSE	13	36	99	197	363	635	1425	1806	2889	4019	7512
2"	OPEN	8	25	65	123	240	407	909	1151	1805	2560	4919
	CLOSE	7	20	55	110	216	378	872	1105	1768	2488	4840
3"	OPEN	5	17	45	85	171	289	655	829	1301	1854	3628
	CLOSE	4	13	38	77	153	269	628	796	1274	1801	3570
4"	OPEN	*	*	35	65	132	225	511	648	1016	1453	2874
	CLOSE	*	*	29	59	119	209	491	622	996	1412	2828
5"	OPEN	*	*	*	53	108	183	420	532	834	1194	2379
	CLOSE	*	*	*	47	97	170	403	510	817	1161	2342

Gripping force is constant at any position of opening. If using 80 PSI, multiply above by 80%, 125 PSI multiply by 125%
* Long tooling not recommended on small grippers **Not stock items

3 JAW PRE-CALCULATED GRIPPING FORCES

Multiply above forces by % given below

SERIES	073	113	163	253	303	403	503	603	803
%	72%	57%	79%	85%	70%	80%	78%	100%	100%

ESTIMATED UNIT WEIGHTS (w/o Jaws or Fingers) (lbs)

SERIES	07	11	16	20	25	30	40	41	50	60	80
2 Jaw	.28	.50	1.2	1.75	3.0	4.0	7.8	9.0	10.8	N/A	N/A
3 Jaw	.30	.49	1.0	—	2.5	3.7	7.2	—	10.0	N/A	N/A

DOUBLE ROD END ACTUATORS

All **COM-PICK** Grippers are available with a double rod end actuator. (Part Nos. "RDG," "SDG" and "BDG"). The double rod end actuator allows indication of jaw position via limit switch or proximity switch.

Example: As jaws open — the rod retracts. As the jaws close, the rod extends.

Rod travel is variable depending on unit size. Also see Piston Sensors in section C.

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