

How to Order: Angular Grippers

Angular Grippers Example: ASG072-1

MAGNETIC PISTON OPTION ONLY	GRIPPER STYLE	SIZE AND NUMBER OF JAWS	JAW OPTIONS	OPTION	OPTION
A	SG	072	-	1	XXX
1	2	3	4	5	5

1

Magnetic Piston Option Only	
A	For Magnetic Piston option only. See sensor pages 21-23. Omit if not desired

2

Gripper Style	
*SG	Square End Mount
* **BG	Square Side Mount
**RG	Round Body End Mount
*NOTE: Not available in 3 jaw	
**NOTE: Not available on 1/2 bore	

3

Size and Number of Jaws		
Bore	2 Jaw	3 Jaw
1/2"	052	--
3/4"	072	073
1-1/8"	112	113
1-5/8"	162	163
2"	202	--
2-1/2"	252	253
3"	302	303
4"	402	403
4"	412	--
5"	502	503
6"	602	603
8"	802	803

4

Jaw Options	
--	No jaws required - simply omit code
--	Blank jaws required, specify length - see page 11
LJ	Premodified jaws required - see page 12

5

Options	
--	Simply omit codes if no options or accessories are desired
ADJ	Adjustable Jaw Closing
HTV	High Temperature Viton Seals
CRT*	Corrosion Resistant Teflon Seals
PA	Positive Alignment Pilot. See page 11.
*NOTE: Not available on 1/2" bore models	

Modifications Welcome

Special stroke lengths, port orientation, mounting configuration.

Angular Motion Grippers – Com–Pick Pneumatic Grippers 2 & 3 Jaw

Engineering Data

Self Contained Actuator

Cylinders feature low profiles, low weight aluminum alloy bodies, and stainless steel piston rods. All units are prelubricated for life.

Actuator Seals

As standard, actuators contain 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 — page 24.

Materials

Actuators are aluminum alloy with bronze 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 hardened and ground dowel pins.

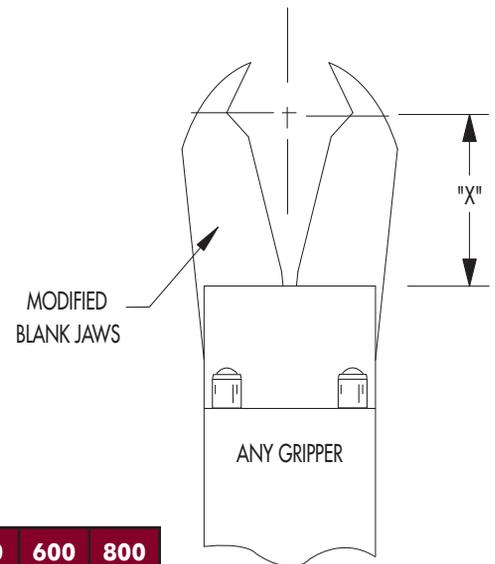
Tooling

Com-Pick grippers are “generic” in standard form. You can make your own jaws (pivot drawing available on request), purchase our soft blank or pre-modified “L” jaws, add “V” blocks, pads, sensors, etc. Also, see page 12.

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 x PSI)

	Series	070	110	160	200	250	300	400	500	600	800
	Bore	3/4	1-1/8	1-5/8	2	2-1/2	3	4	5	6	8
	Action										
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%

Angular Motion Grippers – Com–Pick Pneumatic Grippers 2 & 3 Jaw

Engineering Data — Continued

Pressure Ratings

Pneumatic	Clean, dry or lubricated — 5 PSI to 200 PSI
Hydraulic	Consult factory

2 Jaw Pre–Calculated Gripping Forces (lbs)

Nominal jaw lengths (Materials "1018" steel) Standard lengths listed on page 11												
Calculations below are theoretical, figured @ 100 PSI – Jaw length equals "X" variable in formula on previous page												
Jaw 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

NOTES: 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 standard 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 (without Jaws) (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*

*Consult factory

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 Comtronic Sensors pages 21-23.

Angular Grippers: 2 Jaw – 1/2" Bore Snap Cap Design

Rectangular Body Gripper "SG" (End Mounted and Base Mounted)

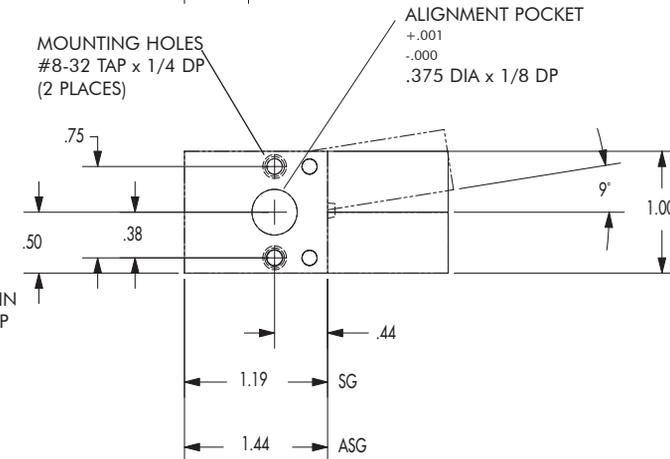
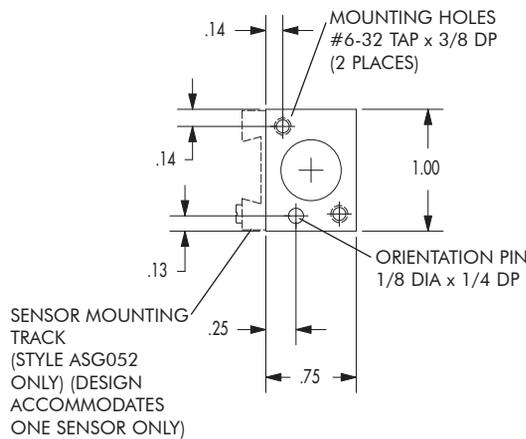
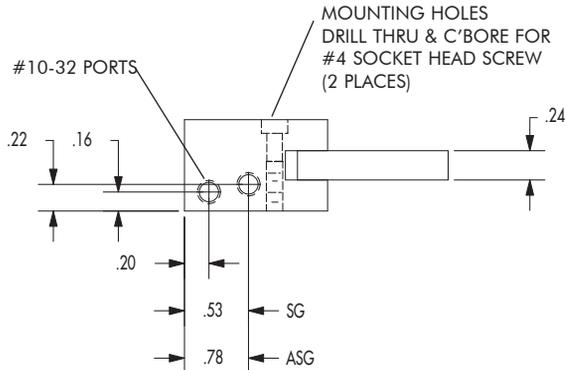
Gripper shown with 1" jaws – available with or without jaws



Design features three standard mounting patterns

Pressure Rating: 3 to 125 PSI
Clean, dry or lubricated air (air only)

Estimated Unit Weight:
SG052 = .08 lbs. / ASG052 = .11 lbs



All Dimensions in Inches

Engineering Data

G_f = Gripping force
A = Distance from gripper face to centerline of gripped part (see sketch)

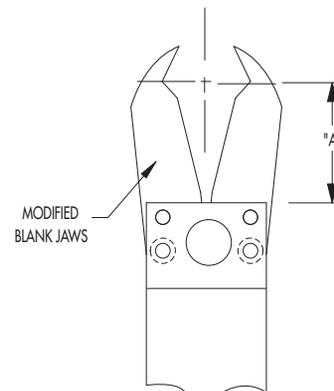
Theoretical Gripping Force Formula

$$G_f = \frac{F \times .375}{.156 + A}$$

Action	Piston Area In. ²
Push / Open	.2
Pull / Close	.15

Quick Reference Chart		
Dimension "A"	Action	Pre-Calculated Gripping Force At 100 PSI (G _f)
1/2"	Push / Open	11.43 lbs.
	Pull / Close	8.57 lbs.
1"	Push / Open	6.48 lbs.
	Pull / Close	4.86 lbs.
2"	Push / Open	3.47 lbs.
	Pull / Close	2.61 lbs.

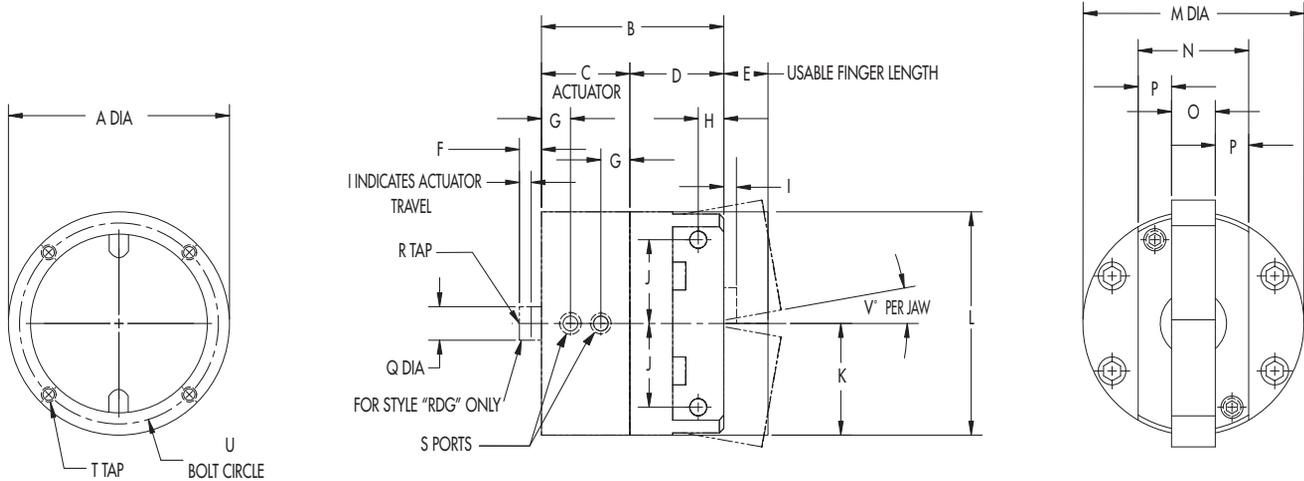
Note: Tooling over 2" long is not recommended



Angular Grippers: 2 Jaw

Round Body Gripper "RG"

Round Body Gripper with Double Rod "RDG"



Bore	Part #	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V°
3/4"	072	1-1/2"	1-9/16"	7/8"	11/16"	SEE NOTE NUMBER 2 BELOW	3/16"	9/32"	3/16"	1/8"	7/16"	5/8"	1-1/4"	1-1/2"	29/32"	.240	21/64"	5/16"	10-24 x 1/2"	* 10-32	10-24 x 7/16	1-1/8"	14°
1-1/8"	112	1-7/8"	1-7/8"	7/8"	1"		1/4"	9/32"	15/64"	1/8"	9/16"	3/4"	1-1/2"	1-7/8"	1-5/32"	.365	25/64"	1/2"	5/16-18 x 5/8"	1/8-27	10-24 x 7/16	1-1/2"	10°
1-5/8"	162	2-3/8"	2-7/16"	1-1/8"	1-5/16"		1/4"	13/32"	9/32"	1/8"	3/4"	1"	2"	2-3/8"	1-15/32"	.490	31/64"	5/8"	3/8-16 x 7/8"	1/8-27	10-24 x 7/16	2"	8°
2"	202	3"	2-11/16"	1-3/8"	1-5/16"		3/8"	7/16"	9/32"	1/4"	15/16"	1-1/4"	2-1/2"	3"	1-1/4"	.490	3/8"	5/8"	3/8-16 x 7/8"	1/8-27	1/4-20 x 5/8"	2-1/2"	14°
2-1/2"	252	3-1/2"	3-1/4"	1-1/2"	1-3/4"		3/8"	1/2"	15/32"	1/4"	1-3/16"	1-1/2"	3"	3-1/2"	2-1/32"	.615	45/64"	3/4"	1/2-13 x 1"	** 1/8-27	1/4-20 x 5/8"	3"	11°
3"	302	4"	3-1/2"	1-3/4"	1-3/4"		3/8"	9/16"	15/32"	1/4"	1-7/16"	2"	4"	4"	2"	.615	11/16"	3/4"	1/2-13 x 1-1/8"	** 1/8-27	5/16-18 x 3/4"	3-1/2"	9°
4"	402	5"	4-1/8"	2"	2-1/8"		1/2"	21/32"	37/64"	3/8"	1-7/8"	2-1/2"	5"	5"	2-1/2"	.990	3/4"	3/4"	1/2-13 x 1-5/16"	** 1/8-27	5/16-18 x 3/4"	4-1/2"	10°
4"	412	5"	4-1/8"	2"	2-1/8"		1/2"	21/32"	37/64"	3/8"	2-3/8"	3"	6"	6"	2-1/2"	.990	3/4"	3/4"	1/2-13 x 1-5/16"	** 1/8-27	5/16-18 x 3/4"	4-1/2"	8°
5"	502	6"	4-1/4"	2-1/8"	2-1/8"		1/2"	21/32"	37/64"	3/8"	2-3/8"	3"	6"	6"	2-1/2"	.990	3/4"	3/4"	1/2-13 x 1-3/8"	** 1/8-27	5/16-18 x 3/4"	5-1/2"	8°
6"	602	SEE NOTE #4 BELOW																					
8"	802	SEE NOTE #4 BELOW																					

*1/8-27 Pipe Tap Optional

**1/4-18 Pipe Tap Optional

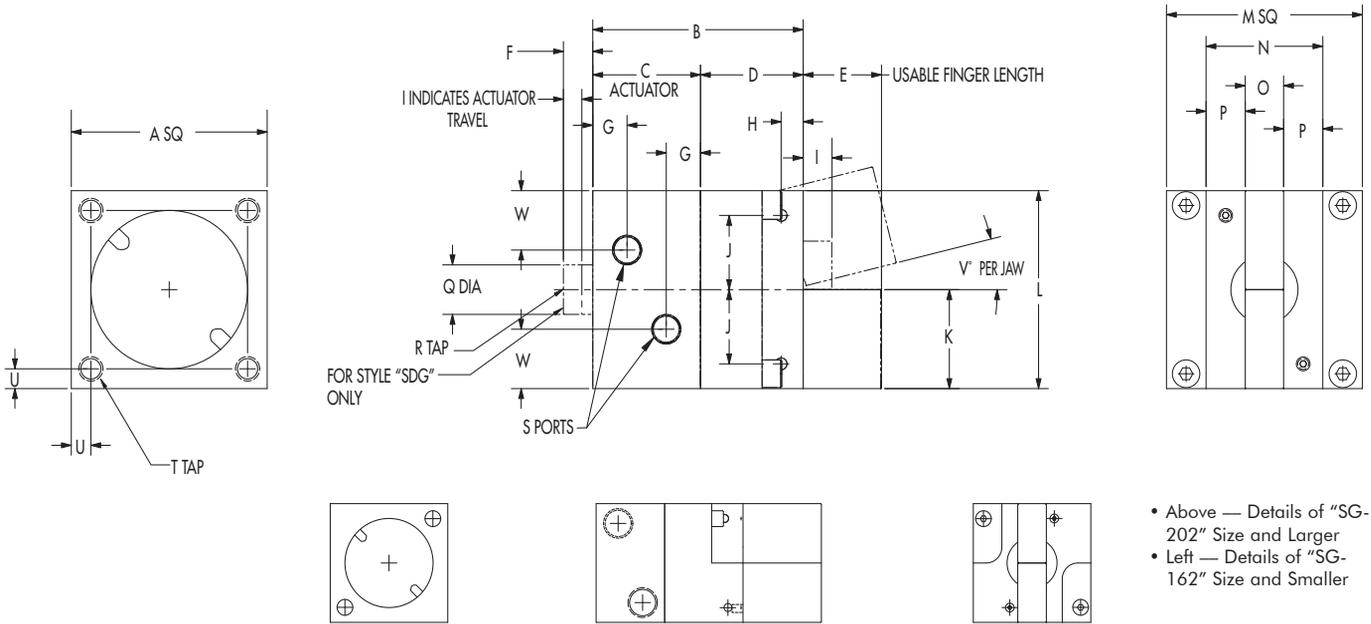
Notes:	
#1	Ports are 180° apart. Consult factory for other Port locations. Head can be indexed 90°.
#2	See chart on Page 11 for standard jaw lengths. Standard jaws are in blank form to be modified. Specials welcome.
#3	Gripping force calculations on pages 4 & 5.
#4	Due to a different pivot design on "602" & "802" sizes, above tabulated drawing does not apply. Consult factory for drawings.

All Dimensions in Inches

Angular Grippers: 2 Jaw

Square Body Gripper "SG"

Square Body Gripper With Double Rod "SDG"



- Above — Details of "SG-202" Size and Larger
- Left — Details of "SG-162" Size and Smaller

(NOTE: Port Locations and Mounting Pattern)

Bore	Part #	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V°	W
3/4"	072	1-1/4"	1-9/16"	7/8"	11/16"	SEE NOTE NUMBER 2 BELOW	3/16"	9/32"	3/16"	1/8"	7/16"	5/8"	1-1/4"	1-1/4"	7/8"	.240	1/8"	5/16"	10-24 x 1/2"	* 10-32	1/4-20 x 7/16	3/16"	14°	5/16"
1-1/8"	112	1-1/2"	1-7/8"	7/8"	1"		1/4"	9/32"	15/64"	1/8"	9/16"	3/4"	1-1/2"	1-1/2"	1-9/64"	.365	13/64"	1/2"	5/16-18 x 5/8"	1/8-27	1/4-20 x 7/16	3/16"	10°	1/4"
1-5/8"	162	2"	2-7/16"	1-1/8"	1-5/16"		1/4"	13/32"	9/32"	1/8"	3/4"	1"	2"	2"	1-9/16"	.490	5/16"	5/8"	3/8-16 x 5/8"	1/8-27	1/4-20 x 9/16	1/4"	8°	5/16"
2"	202	2-1/2"	2-11/16"	1-3/8"	1-5/16"		3/8"	7/16"	9/32"	1/4"	15/16"	1-1/4"	2-1/2"	2-1/2"	1-1/2"	.490	1/2"	5/8"	3/8-16 x 7/8"	1/8-27	5/16-18 x 11/16"	1/4"	14°	3/4"
2-1/2"	252	3"	3-1/4"	1-1/2"	1-3/4"		3/8"	1/2"	15/32"	1/4"	1-3/16"	1-1/2"	3"	3"	1-13/16"	.615	19/32"	3/4"	1/2-13 x 7/8"	1/8-27	3/8-16 x 3/4"	5/16"	11°	3/4"
3"	302	3-1/2"	3-1/2"	1-3/4"	1-3/4"		3/8"	9/16"	15/32"	1/4"	1-7/16"	2"	4"	3-1/2"	2-1/4"	.615	13/16"	3/4"	1/2-13 x 1-1/8"	** 1/8-27	3/8-16 x 7/8"	5/16"	9°	13/16"

*1/8-27 Pipe Tap Optional

**1/4-18 Pipe Tap Optional

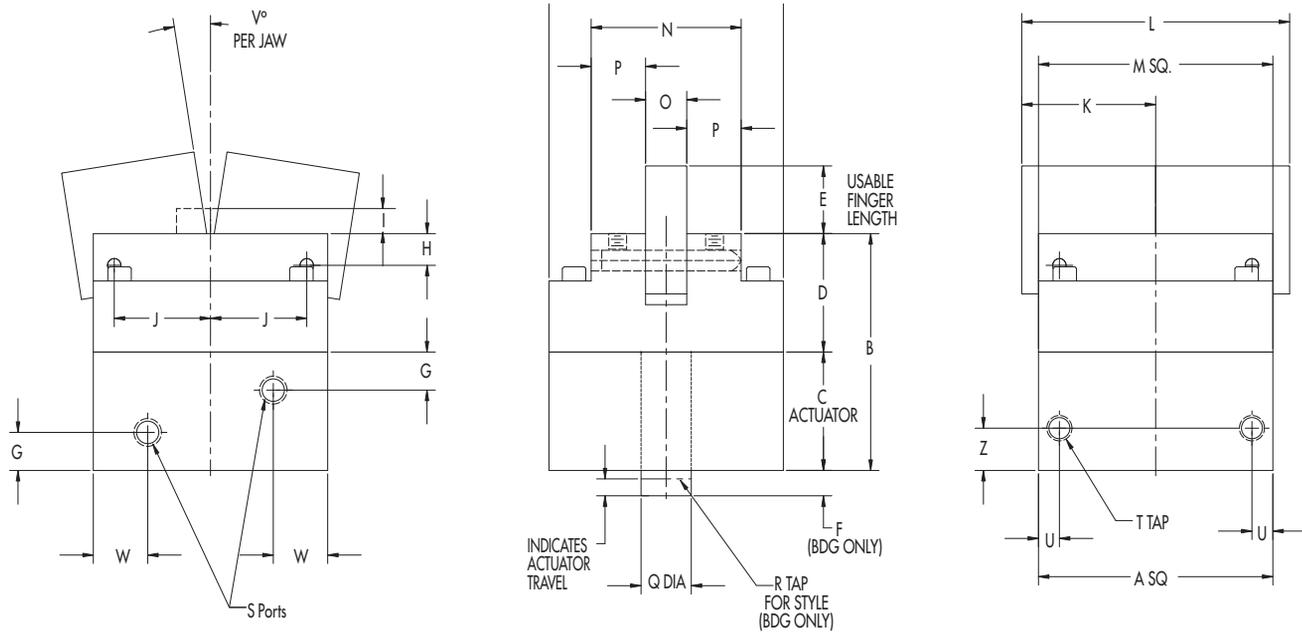
Notes:	
#1	3/4" to 1-5/8" bore have ports 180° apart and 2 MTG holes. 2" bore and up have ports on same side and 4 MTG holes. Other porting, consult factory.
#2	See chart on page 11 for standard jaws lengths. Standard jaws are in a blank form to be modified. Specials welcome.
#3	Gripping force calculations on pages 4 & 5.

All Dimensions in Inches

Angular Grippers: 2 Jaw

Base Mount Square Body Gripper "BG"

Base Mount Square Body Gripper with Double Rod "BDG"



Bore	Part #	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V°	W	Z
3/4"	072	1-1/4"	1-9/16"	7/8"	11/16"	SEE NOTE NUMBER 2 BELOW	3/16"	9/32"	3/16"	1/8"	7/16"	5/8"	1-1/4"	1-1/4"	7/8"	.240	1/8"	5/16"	10-24 x 1/2"	* 10-32	10-24 x 1/4"	3/16"	14°	5/16"	3/8"
1-1/8"	112	1-1/2"	1-7/8"	7/8"	1"		1/4"	9/32"	15/64"	1/8"	9/16"	3/4"	1-1/2"	1-1/2"	1-9/64"	.365	13/64"	1/2"	5/16-18 x 5/8"	1/8-27	10-24 x 1/4"	3/16"	10°	1/4"	3/8"
1-5/8"	162	2"	2-7/16"	1-1/8"	1-5/16"		1/4"	13/32"	9/32"	1/8"	3/4"	1"	2"	2"	1-9/16"	.490	5/16"	5/8"	3/8-16 x 5/8"	1/8-27	1/4-20 x 5/16"	1/4"	8°	5/16"	1/2"
2"	202	2-1/2"	2-11/16"	1-3/8"	1-5/16"		3/8"	7/16"	9/32"	1/4"	15/16"	1-1/4"	2-1/2"	2-1/2"	1-1/2"	.490	1/2"	5/8"	3/8-16 x 7/8"	1/8-27	5/16-18 x 1/2"	1/4"	14°	3/4"	1/2"
2-1/2"	252	3"	3-1/4"	1-1/2"	1-3/4"		3/8"	1/2"	15/32"	1/4"	1-3/16"	1-1/2"	3"	3"	1-13/16"	.615	19/32"	3/4"	1/2-13 x 7/8"	1/8-27	5/16-18 x 5/8"	1/4"	11°	3/4"	1/2"
3"	302	3-1/2"	3-1/2"	1-3/4"	1-3/4"		3/8"	9/16"	15/32"	1/4"	1-7/16"	2"	4"	3-1/2"	2-1/4"	.615	13/16"	3/4"	1/2-13 x 1-1/8"	** 1/8-27	3/8-16 x 3/4"	5/16"	9°	13/16"	5/8"

*1/8-27 Pipe Tap Optional

**1/4-18 Pipe Tap Optional

Notes:

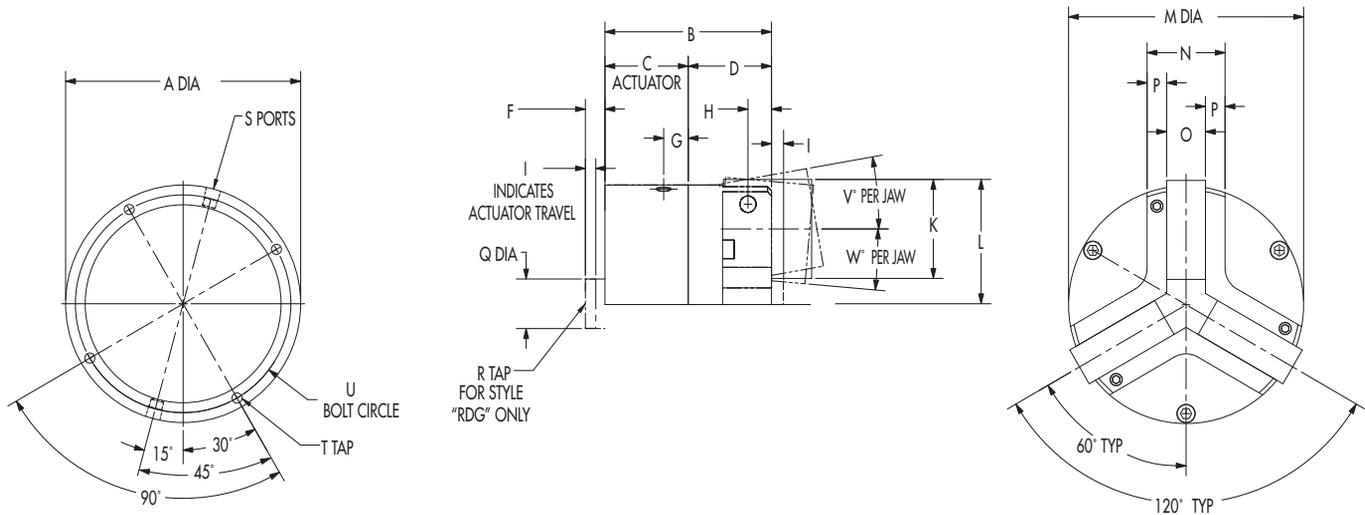
#1	All ports located on same side, diagonal to each other. Other port locations available - Consult Factory.
#2	See chart on page 11 for standard jaw lengths. Standard jaws are in blank form to be modified. Specials welcome.
#3	Gripping force calculations on pages 4 & 5.

All Dimensions in Inches

Angular Grippers: 3 Jaw

Round Body Gripper "RG"

Round Body Gripper with Double Rod "RDG"



Specials Welcome — Materials, Custom Jaws, Jaw Opening, Etc.

Bore	Part #	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V°	W°
3/4"	073	1-1/2"	1-1/2"	13/16"	11/16"	SEE NOTE NUMBER 2 BELOW	1/8"	9/32"	3/16"	1/16"	31/64"	1/2"	43/64"	1-1/2"	3/4"	.240	1/4"	5/16"	10-24 x 1/4"	* 10-32	10-24 x 3/8"	1-1/8"	10°	2°
1-1/8"	113	1-7/8"	1-9/16"	7/8"	11/16"		1/4"	9/32"	3/16"	1/8"	37/64"	1/2"	49/64"	1-7/8"	3/4"	.240	1/4"	1/2"	5/16-18 x 5/16"	1/8-27	10-24 x 3/8"	1-1/2"	10°	2°
1-5/8"	163	2-3/8"	2-1/16"	1-1/8"	15/16"		1/4"	13/32"	1/4"	1/8"	57/64"	3/4"	1-5/64"	2-3/8"	1"	.365	5/16"	5/8"	3/8-16 x 7/16"	1/8-27	10-24 x 9/16"	2"	10°	2°
2-1/2"	253	3-1/2"	2-11/16"	1-1/2"	1-3/16"		3/8"	1/2"	5/16"	1/4"	1-21/64"	1-1/4"	1-41/64"	3-1/2"	1-1/4"	.490	3/8"	3/4"	1/2-13 x 5/8"	** 1/8-27	1/4-20 x 3/4"	3"	13°	2°
3"	303	4"	3"	1-3/4"	1-1/4"		3/8"	9/16"	5/16"	1/4"	1-21/64"	1-1/4"	1-41/64"	4"	1-1/2"	.490	1/2"	3/4"	1/2-13 x 5/8"	** 1/8-27	5/16-18 x 3/4"	3-1/2"	13°	2°
4"	403	5"	3-3/4"	2"	1-3/4"		1/2"	21/32"	1/2"	3/8"	1-61/64"	2"	2-33/64"	5"	2"	.615	11/16"	1"	1/2-13 x 3/4"	** 1/8-27	5/16-18 x 3/4"	4-1/2"	13°	2°
5"	503	6"	4-1/4"	2-1/8"	2-1/8"		1/2"	21/32"	5/8"	3/8"	2-33/64"	2-1/2"	3-9/64"	6"	2"	.990	1/2"	1-1/4"	1/2-13 x 1-3/4"	** 1/8-27	5/16-18 x 3/4"	5-1/2"	10°	2°
6"	603	7"	4-5/8"	2-1/2"	2-1/8"		5/8"	25/32"	5/8"	1/2"	3-1/64"	3"	3-41/64"	7"	2"	.990	1/2"	1-1/4"	1/2-13 x 1"	** 1/8-27	5/16-18 x 3/4"	6-1/2"	10°	2°
8"	803	9"	5-3/8"	3"	2-3/8"		7/8"	25/32"	13/16"	3/4"	3-33/64"	3-1/2"	4-17/64"	9"	3"	.990	1"	1-1/2"	1/2-13 x 1"	** 1/8-27	5/16-18 x 3/4"	8-1/2"	14°	2°

*1/8-27 Pipe Tap Optional

**1/4-18 Pipe Tap Optional

Notes:

#1	All ports located on same side, diagonal to each other. Other port locations available - Consult Factory.
#2	See chart on page 11 for standard jaw lengths. Standard jaws are in blank form to be modified. Specials welcome.
#3	Gripping force calculations on pages 4 & 5.

All Dimensions in Inches

Angular Grippers: 2 & 3 Jaw

Com-Pick Pneumatic Grippers Blank Jaws — Standard Lengths

2 Jaw

Standard Blank Jaw Lengths				
Bore	Series	Standard Lengths		
1/2"	052	1/2"	1"	--
3/4"	072	1"	2"	3"
1-1/8"	112	1"	2"	3"
1-5/8"	162	1"	2"	3"
2"	202	1"	2"	3"
2-1/2"	252	1"	3"	5"
3"	302	1"	3"	5"
4"	402	1"	3"	5"
4"	412	1"	3"	5"
5"	502	1"	3"	5"
6"	602	1"	3"	5"
8"	802	1"	3"	5"

3 Jaw

Standard Blank Jaw Lengths				
Bore	Series	Standard Lengths		
3/4"	073	1"	2"	3"
1-1/8"	113	1"	2"	3"
1-5/8"	163	1"	2"	3"
2-1/2"	253	1"	2"	3"
3"	303	1"	3"	5"
4"	403	1"	3"	5"
5"	503	1"	3"	5"
6"	603	1"	3"	5"
8"	803	1"	3"	5"

Option

Any Com-Pick gripper may be purchased with or without jaws. Pivot drawings are available to aid in the designing of your own tooling. Consult the factory or your local distributor.

Tooling Only

To order a "set" of jaws only:

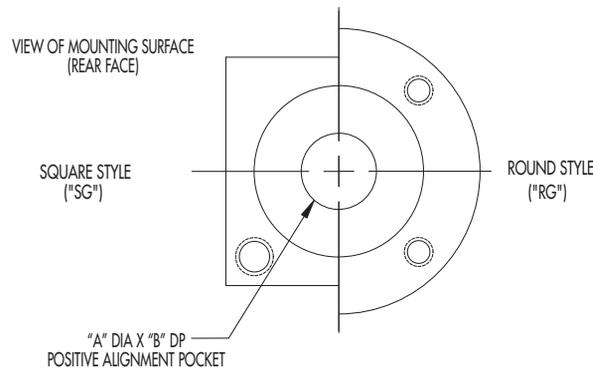
Specify: F A

Series required Length in Inches

NOTES:

- Blank jaws are made of "1018" free machining steel.
- Other materials, lengths and configurations available - Consult factory or local distributor.

Option "PA" Positive Alignment Pocket



Bore	1/2"	3/4"	1-1/8"	1-5/8"	2"	2-1/2"	3"	4"	5"	6"	8"
"A"	.250	.312	.500	.625	.750	.750	1.500	1.500	1.500	1.500	1.500
"B"	1/16	1/8	1/8	3/16	1/4	1/4	5/16	5/16	5/16	5/16	5/16

NOTES:

- "PA" Option not available on base style grippers. Consult factory for positive alignment mounting on base style. (BG/BDG)
- Not available on double rod end actuators.

All Dimensions in Inches

Angular Grippers: 2 & 3 Jaw

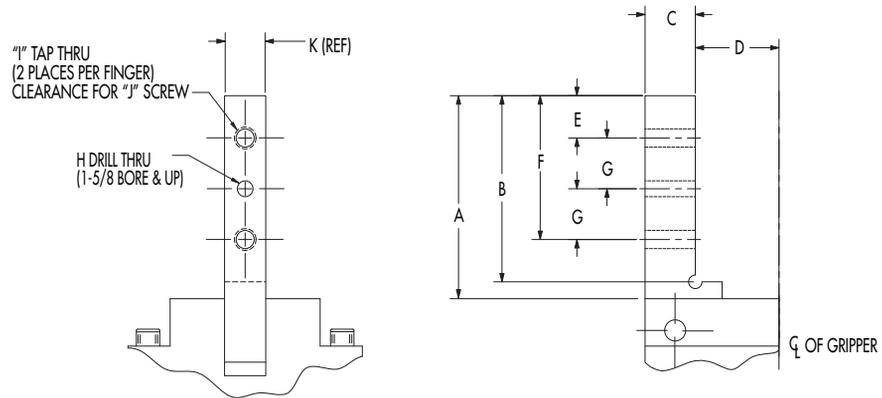
Com-Pick Pneumatic Grippers Pre-Modified "L" Jaw Option# "LJ"

Tooling Only

To order a "set" of jaws only:

Specify: F ALJ

Series required



Special Step Jaws for 2 & 3 Jaw Angular Grippers

2 Jaw Grippers

Series	A	B	C	D	E	F	G	H	I	J	K*
052	1"	7/8"	1/4"	1/4"	1/4"	5/8"	N/A	N/A	#8-32	#5	1/4"
072	1"	7/8"	1/4"	3/8"	1/4"	5/8"	N/A	N/A	#8-32	#5	1/4"
112	1"	7/8"	3/8"	3/8"	1/4"	5/8"	N/A	N/A	#10-24	#6	3/8"
162	2"	1-3/4"	1/2"	1/2"	7/16"	1-5/16"	7/16"	#31 (.120)	1/4-20	#10	1/2"
202	2"	1-3/4"	1/2"	3/4"	7/16"	1-5/16"	7/16"	#31 (.120)	1/4-20	#10	1/2"
252	3"	2-3/4"	3/4"	3/4"	5/8"	2-1/8"	3/4"	15/64	5/16-18	1/4	5/8"
302	3"	2-3/4"	3/4"	1-1/4"	5/8"	2-1/8"	3/4"	15/64	5/16-18	1/4	5/8"
402	3"	2-3/4"	1"	1-1/2"	5/8"	2-1/8"	3/4"	15/64	5/16-18	1/4	1"
412/502	3"	2-3/4"	1"	2"	5/8"	2-1/8"	3/4"	15/64	5/16-18	1/4	1"
602	Consult factory.										
802											

3 Jaw Grippers

Series	A	B	C	D	E	F	G	H	I	J	K*
073	1"	7/8"	1/4"	27/64"	1/4"	5/8"	N/A	N/A	8-32	#5	1/4"
113	1"	7/8"	1/4"	33/64"	1/4"	5/8"	N/A	N/A	8-32	#5	1/4"
163	1"	7/8"	3/8"	45/64"	1/4"	5/8"	N/A	N/A	10-24	#6	3/8"
253	2"	1-3/4"	1/2"	1-9/64"	7/16"	1-5/16"	7/16"	#31 (.120)	1/4-20	#10	1/2"
303	2"	1-3/4"	1/2"	1-9/64"	7/16"	1-5/16"	7/16"	#31 (.120)	1/4-20	#10	1/2"
403	3"	2-3/4"	3/4"	1-49/64"	5/8"	2-1/8"	3/4"	15/64	5/16-18	#1/4	5/8"
503	3"	2-3/4"	1"	2-9/64"	5/8"	2-1/8"	3/4"	15/64	5/16-18	#1/4	1"
603	Consult factory.										
803											

*K dimension is ground .010 under fraction given.

All Dimensions in Inches