

# Parallel Motion Grippers – Com–Pick II Pneumatic Grippers 2 Jaw

## Introduction

### True Parallel Motion Grippers & Accessories

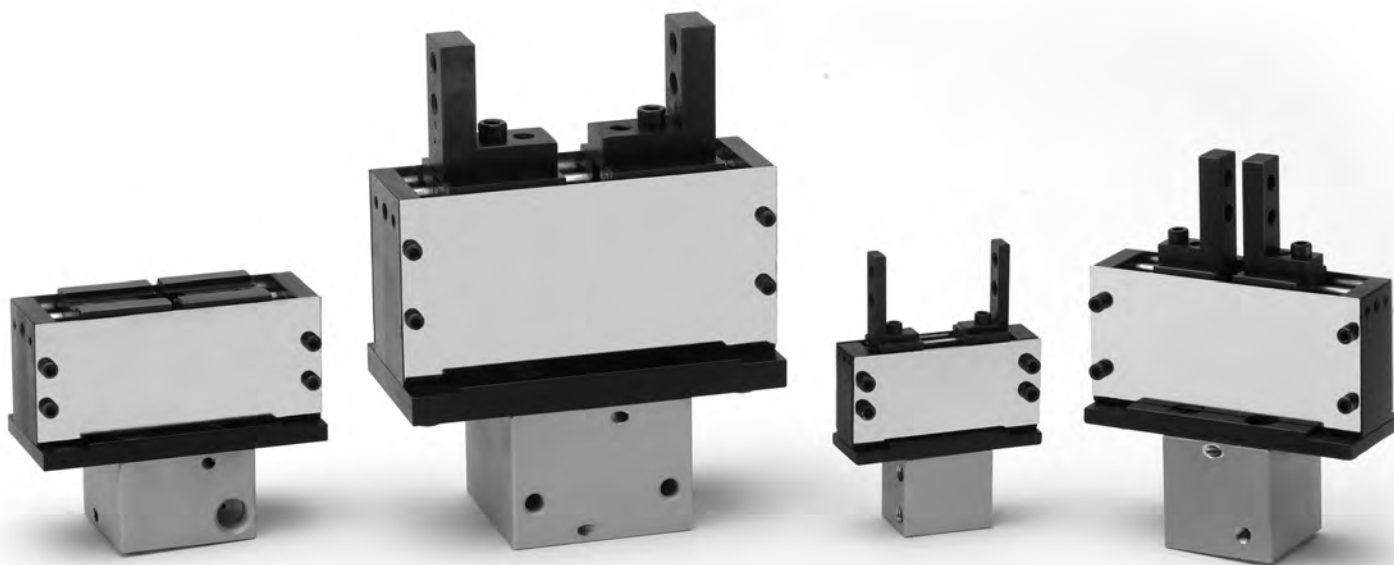
**Com–Pick II** grippers are designed for use in industrial applications such as robotics, pick-n-place, automated assembly, and manipulator/tooling. All units feature a self-contained, double-acting actuator. "Generic" grippers can be mounted to any manufacturer's robot, manipulator or actuator by way of an adapter flange. Low unit weight, high output and compact size are features of all models. Special materials, tooling, and adapter flanges are available upon request.

Seal options, jaw options, sensor options, etc., can be easily added at assembly for prompt delivery of all variations.

Parallel motion grippers represent a highly versatile and flexible design. The integral pneumatic cylinder pushes the jaws open. The jaws slide along two hardened guide rods providing rigid, long lasting true parallel motion. The pull stroke closes the jaws. A four-way valve circuit is required for control.

All units are of two jaw design.

Gripping forces, formulas, unit weights, and dimensions are included in the following sections.



# How to Order: Parallel Grippers

**Parallel Grippers** Example: APBG072X12-LF

MAGNETIC PISTON OPTION ONLY	GRIPPER STYLE	BORE		JAW TRAVEL		OPTION	OPTION
A	PBG	072	X	12	-	LF	XX
1	2	3		4		5	6

**1**

Magnetic Piston	
Code	Description
A	Magnetic piston Cylinder and sensor mounting rail

**2**

Style	
Code	Description
PSG	Parallel Square Body (End Mount) Gripper
PBG	Parallel Square Body (Side Mount) Gripper

**3**

Code	Bore
052	1/2"
072	3/4"
112	1-1/8"
132	1-3/8"
162	1-5/8"
202	2"

**4**

Code	Jaw Travel
18	1/8" (Only available on 1/2" bore)
14	1/4" (Only available on 1/2-1-1/8" bore)
12	1/2" (Only available on 3/4" bore and up)
34	3/4" (Only available on 1-3/8" bore and up)

**5**

Jaw Option	
Code	Description
LF	L Shape Jaw

**6**

Options	
Code	Description
ADJC	Adjustment Closed
ADJO	Adjustment Open
HTV	High Temperature Viton Seals

# Parallel Motion Grippers – Com-Pick II Pneumatic Grippers 2 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 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 — page 24.

### Materials

Actuators are aluminum alloy with bronze rod bushings. All sliding parts are heat treated steel for long, trouble-free operation. Mechanism cover pieces are stamped stainless steel.

### Tooling

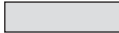
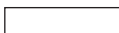
Com-Pick II grippers are “generic” in standard form. Base jaws are slotted and tapped for tooling. Pre-modified “L” jaws are available or you can add your own V-blocks, pads, sensors, etc. Also, see page 18.

## Pressure Ratings

<b>Pneumatic</b>	Clean, dry or lubricated — 15 PSI to 200 PSI (125 PSI In 052 series)
<b>Hydraulic</b>	Consult factory

## Pre-Calculated Gripping Forces

Gripper		Air Pressure (PSI)				
Series	Bore	20 PSI	40 PSI	60 PSI	80 PSI	100 PSI
052	1/2"	2 LBS.	4 LBS.	6 LBS.	8 LBS.	10 LBS.
		1.5 LBS.	3 LBS.	4.5 LBS.	6 LBS.	7.5 LBS.
072	3/4"	4.4 LBS.	8.8 LBS.	13.2 LBS.	17.6 LBS.	22 LBS.
		3.6 LBS.	7.2 LBS.	10.8 LBS.	14.4 LBS.	18 LBS.
112	1-1/8"	10 LBS.	20 LBS.	30 LBS.	40 LBS.	50 LBS.
		8 LBS.	16 LBS.	24 LBS.	32 LBS.	40 LBS.
132	1-3/8"	15 LBS.	30 LBS.	45 LBS.	60 LBS.	75 LBS.
		12 LBS.	24 LBS.	36 LBS.	48 LBS.	60 LBS.
162	1-5/8"	20 LBS.	40 LBS.	60 LBS.	80 LBS.	100 LBS.
		17 LBS.	34 LBS.	51 LBS.	68 LBS.	85 LBS.
202	2"	30 LBS.	60 LBS.	90 LBS.	120 LBS.	150 LBS.
		27 LBS.	54 LBS.	81 LBS.	108 LBS.	135 LBS.

	— Open — I.D. Gripping
	— Closed — O.D. Gripping

### \* Important Notes \*

- Gripping forces are theoretical and will vary due to friction. 7% to 10% force reduction per inch of tooling length is approximate force loss.
- Long, heavy tooling decreases performance of the gripper and should be avoided.

Maximum recommended tooling length:

- Series 052, 072 and 112 = 2"
- Series 132, 162 and 202 = 5"

# Parallel Motion Grippers – Com-Pick II Pneumatic Grippers 2 Jaw

## Engineering Data Continued

### Estimated Unit Weights Without Tooling (Lbs)

Series	052	072	112	132	162	202
Short Travel	.21	.60	.95	2.05	2.20	2.65
Long Travel	.25	.70	1.10	2.30	2.45	2.95

### Theoretical Gripping Force Formulas

NOTE: Gripping forces are constant at any point of jaw travel. Due to friction caused by leverage, 7% to 10% force loss per inch of tooling length should be considered. Long jaw tooling will reduce the life of the gripper and is not recommended. Consult factory.

$$\text{Gripping Force} = \frac{\text{PSI} \times \text{Piston Area}}{2}$$

BORE SERIES	1/2" 052	3/4" 072	1-1/8" 112	1-3/8" 132	1-5/8" 162	2" 202
IN. <sup>2</sup> Push (Open)	.2	.44	1.0	1.5	2	3
IN. <sup>2</sup> Pull (Close)	.15	.36	.8	1.2	1.7	2.7

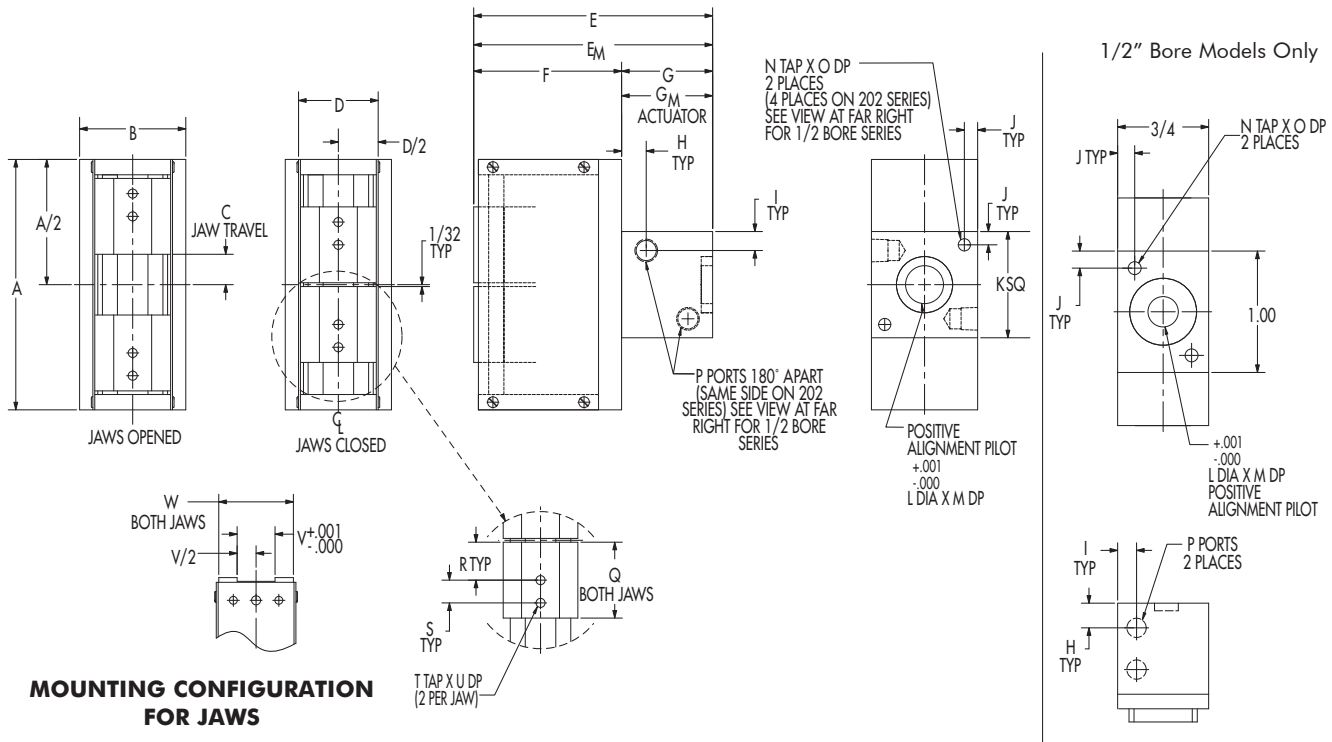
### Double Rod End Actuators

Unlike the angular type grippers, Double Rod End Actuators are not standard for Parallel Grippers due to the extra length the double ended rod adds in the longer strokes required for parallel gripping. Double Rod End Actuators can be special ordered. Primary application for this option is limit sensing with mechanical switches. See pages 21-23 for sensors.

# Parallel Grippers: 2 Jaw

## Square Body Grippers "PSG" (End/Rear Face Mounted)

**Important Note:** Unit mounting holes are ONLY difference between styles "PSG" & "PBG"



Bore	Gripper	Part #	A	B	C	D	E	**E <sub>M</sub>	F	G	**G <sub>M</sub>	H	I	J	K	L
1/2"	Square 1/2 Bore x 1/8 Jaw Travel	PSG052 x 1/8	1-7/8	3/4	1/8	9/16	1-3/4	2.0	1.0	3/4	1.0	13/64	5/32	9/64	1.0	.250
	Square 1/2 Bore x 1/4 Jaw Travel	PSG052 x 1/4	2-1/8	3/4	1/4	9/16	2-1/8	2-3/8	1-1/4	7/8	1-1/8	13/64	5/32	9/64	1.0	.250
3/4"	Square 3/4 Bore x 1/4 Jaw Travel	PSG072 x 1/4	2-5/8	1-1/4	1/4	13/16	2-3/8	2-5/8	1-3/8	1.0	1-1/4	9/32	5/16	3/16	1-1/4	.312
	Square 3/4 Bore x 1/2 Jaw Travel	PSG072 x 1/2	3-1/8	1-1/4	1/2	13/16	3.0	3-1/4	1-3/4	1-1/4	1-1/2	9/32	5/16	3/16	1-1/4	.312
1-1/8"	Square 1-1/8 Bore x 1/4 Jaw Travel	PSG112 x 1/4	3-1/8	1-1/2	1/4	1-1/16	2-5/8	2-7/8	1-5/8	1.0	1-1/4	9/32	1/4	3/16	1-1/2	.500
	Square 1-1/8 Bore x 1/2 Jaw Travel	PSG112 x 1/2	3-5/8	1-1/2	1/2	1-1/16	3-1/4	3-1/2	2.0	1-1/4	1-1/2	9/32	1/4	3/16	1-1/2	.500
1-3/8"	Square 1-3/8 Bore x 1/2 Jaw Travel	PSG132 x 1/2	4-1/8	1-3/4	1/2	1-5/16	3-15/16	4-3/16	2-7/16	1-1/2	1-3/4	13/32	5/16	7/32	1-3/4	.625
	Square 1-3/8 Bore x 3/4 Jaw Travel	PSG132 x 3/4	4-5/8	1-3/4	3/4	1-5/16	4-9/16	4-13/16	2-13/16	1-3/4	2.0	13/32	5/16	7/32	1-3/4	.625
1-5/8"	Square 1-5/8 Bore x 1/2 Jaw Travel	PSG162 x 1/2	4-1/8	2.0	1/2	1-5/16	3-15/16	4-3/16	2-7/16	1-1/2	1-3/4	13/32	5/16	1/4	2.0	.625
	Square 1-5/8 Bore x 3/4 Jaw Travel	PSG162 x 3/4	4-5/8	2.0	3/4	1-5/16	4-9/16	4-13/16	2-13/16	1-3/4	2.0	13/32	5/16	1/4	2.0	.625
2"	Square 2.0 Bore x 1/2 Jaw Travel	PSG202 x 1/2	4-1/8	2-1/2	1/2	1-5/16	4-1/16	4-5/16	2-7/16	1-5/8	1-7/8	7/16	3/4	1/4	2-1/2	.750
	Square 2.0 Bore x 3/4 Jaw Travel	PSG202 x 3/4	4-5/8	2-1/2	3/4	1-5/16	4-11/16	4-15/16	2-13/16	1-7/8	2-1/8	7/16	3/4	1/4	2-1/2	.750

Bore	Part #	M	N	O	P	Q	R	S	T	U	V	W
1/2"	PSG052 x 1/8	1/16	#6-32	5/16	#10-32	1/2	1/4	5/32	#4-40	7/32	.250	.480
	PSG052 x 1/4	1/16	#6-32	3/8	#10-32	1/2	1/4	5/32	#4-40	7/32	.250	.480
3/4"	PSG072 x 1/4	1/8	#1/4-20	1/2	#10-32*	3/4	3/8	1/4	#6-32	3/16	.375	.730
	PSG072 x 1/2	1/8	#1/4-20	1/2	#10-32*	3/4	3/8	1/4	#6-32	3/16	.375	.730
1-1/8"	PSG112 x 1/4	1/8	#1/4-20	1/2	#1/8-27	1.0	1/2	5/16	#6-32	1/4	.500	.980
	PSG112 x 1/2	1/8	#1/4-20	1/2	#1/8-27	1.0	1/2	5/16	#6-32	1/4	.500	.980
1-3/8"	PSG132 x 1/2	3/16	#1/4-20	1/2	#1/8-27	1-1/4	5/8	3/8	#10-24	3/8	.625	1.230
	PSG132 x 3/4	3/16	#1/4-20	1/2	#1/8-27	1-1/4	5/8	3/8	#10-24	3/8	.625	1.230
1-5/8"	PSG162 x 1/2	3/16	#1/4-20	1/2	#1/8-27	1-1/4	5/8	3/8	#10-24	3/8	.625	1.230
	PSG162 x 3/4	3/16	#1/4-20	1/2	#1/8-27	1-1/4	5/8	3/8	#10-24	3/8	.625	1.230
2"	PSG202 x 1/2	1/4	#5/16-18	5/8	#1/8-27	1-1/4	5/8	3/8	#10-24	3/8	.625	1.230
	PSG202 x 3/4	1/4	#5/16-18	5/8	#1/8-27	1-1/4	5/8	3/8	#10-24	3/8	.625	1.230

\* 1/8-27 Pipe Tap, Optional  
\*\* For magnetic piston, specify prefix "A". Refer to page 21 for track locations and see pages 22-23 for additional sensor information.

See Notes on page 18.

All Dimensions in Inches



# Parallel Grippers: 2 Jaw

## Com-Pick II Pneumatic Grippers

**Jaw Options:** Jaw inserts below can be mounted to Master Jaws on gripper using 1 screw. By turning and

### "L" Shaped Jaw Option "LF"

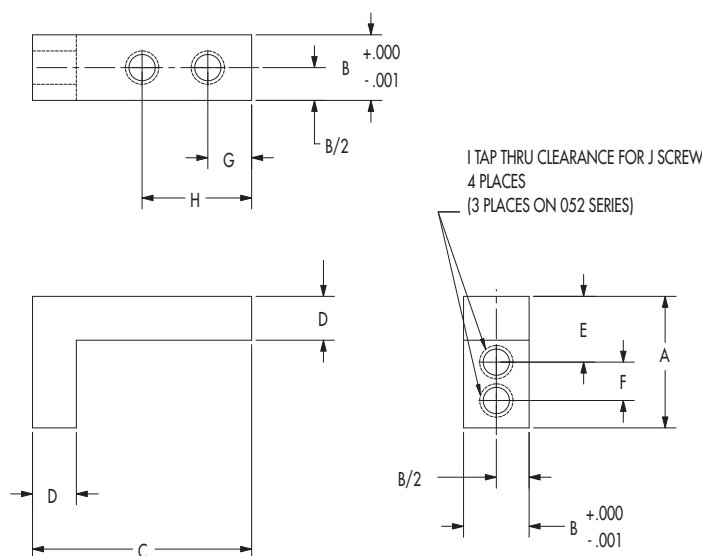
Tooling Only

To order a "set" of jaws only:

Specify: F **112** PLF

Series  
required

See Ordering Instructions to order attached to gripper



Gripper Series	Bore (Ref.)	A	B	C	D	E	F	G	H	I	J
052	1/2"	1/2	.249	1.0	1/8	1/4	-	3/16	1/2	#8-32	#4
072	3/4"	3/4	.374	1-1/4	1/4	3/8	7/32	1/4	5/8	#10-24	#6
112	1-1/8"	1.0	.499	1-1/4	1/4	1/2	9/32	1/4	5/8	#10-24	#6
132	1-3/8"	1-1/4	.624	1-1/2	3/8	5/8	11/32	1/4	11/16	#1/4-20	#10
162	1-5/8"										
202	2"										

#### Notes:

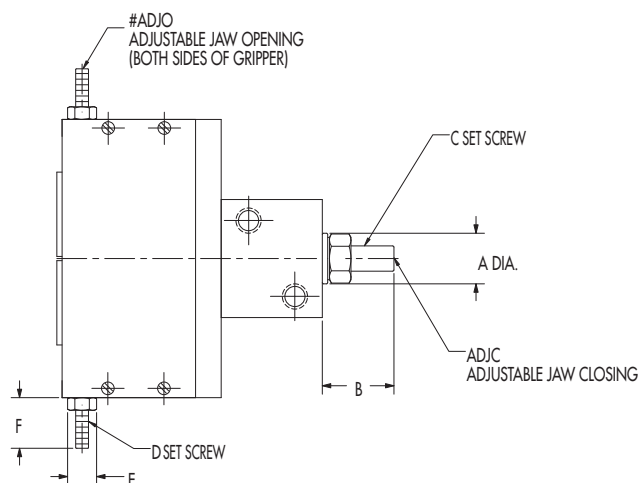
#1	Several mounting options for different open and closed position.
#2	Jaws made of "1018" Steel.
#3	Mounting screws are provided.

# Options and Accessories

## Com – Pick and Comp – Pick II

### Adjustable Jaw Travel – Parallel Grippers Option "ADJO" / "ADJC"

Bore	Gripper Series	A	B	C	D	E	F
1/2"	PG052 x 1/8	15/32	3/8	10-32	4-40	.29	5/16
	PG052 x 1/4	15/32	1/2	10-32	4-40	.29	7/16
3/4"	PG072 x 1/4	9/16	11/16	1/4-20	6-32	.36	7/16
	PG072 x 1/2	9/16	15/16	1/4-20	6-32	.36	11/16
1-1/8"	PG112 x 1/4	3/4	13/16	3/8-16	8-32	.36	7/16
	PG112 x 1/2	3/4	1-1/16	3/8-16	8-32	.36	11/16
1-3/8"	PG132 x 1/2	3/4	1-1/16	3/8-16	10-24	.43	3/4
	PG132 x 3/4	3/4	1-5/16	3/8-16	10-24	.43	1
1-5/8"	PG162 x 1/2	3/4	1-1/16	3/8-16	10-24	.43	3/4
	PG162 x 3/4	3/4	1-5/16	3/8-16	10-24	.43	1
2"	PG202 x 1/2	1	1-1/4	1/2-13	10-24	.43	3/4
	PG202 x 3/4	1	1-1/2	1/2-13	10-24	.43	1

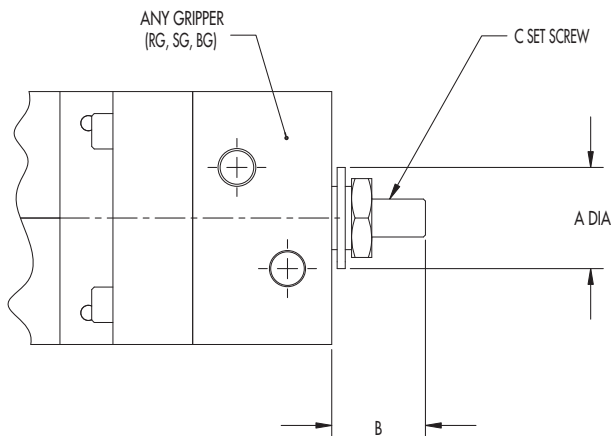


#### Notes:

#1	ADJC consists of Set Screw, Locking Nut, and Thread Seal. (Max. 200°F)
#2	ADJO consists of 2 Set Screws and 2 Locking Nuts.
#3	"PA" option not available on ADJC option.

### Adjustable Jaw Travel – Angular Grippers Option ADJ (Closed Adjustment Only)

#### Adjustment of Jaw Closure on 2 & 3 Jaw Angular Grippers



Series	052	072/073	112/113	162/163	202	252/253	302/303	402/412/403	502/503	602/603	802/803
Bore	1/2	3/4	1-1/8	1-5/8	2	2-1/2	3	4	5	6	8
A	15/32	9/16	3/4	3/4	1	1	1-3/8	1-3/8	1-3/8	1-3/8	1-3/8
B	3/8	9/16	11/16	11/16	15/16	15/16	1-1/4	1-3/8	1-3/8	1-1/2	1-3/4
C	10-32	1/4-28	3/8-24	3/8-24	1/2-13	1/2-13	3/4-10	3/4-10	3/4-10	3/4-10	3/4-10

#### Notes:

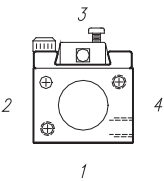
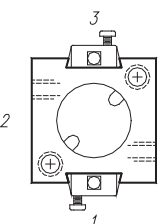
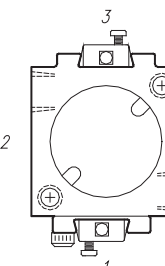
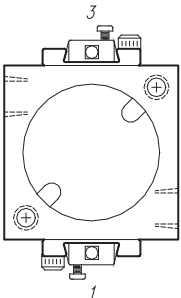
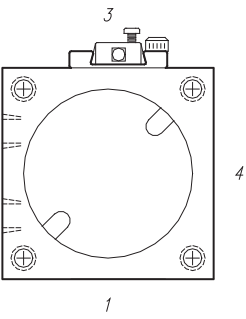
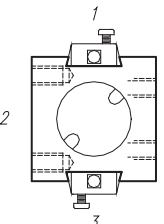
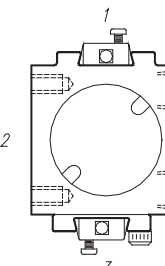
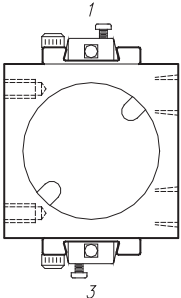
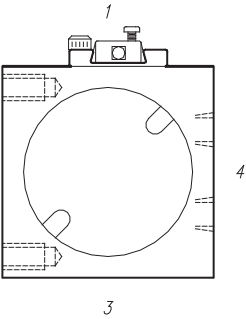
#1	Adjustment consists of Set Screw, Locking Nut, and Thread Seal. (Max. 200°F)
#2	Adjustment for Jaw closing only.
#3	"PA" option not available with ADJ option.

Dimensions typical for RG, SG, & BG style angular grippers.

# Options and Accessories

## Sensor Track Locations for Magnetic Piston Grippers

Diagrams illustrate rear of gripper actuator

	1/2"	3/4"	1-1/8"	1-3/8" – 1-5/8"	2" – 3"
Style "S" End Mount	Design accommodates one sensor only 			♦ Parallel grippers with 3/4" jaw travel have one sensor mounting track  ♦ Omit track on side 1	
Style "B" Base Mount				 ♦ Omit track on side 3	

### Dimensional Information

#### Angular Gripper

1/2" – See page 6

3/4" thru 8" – Prefix "A" adds 1/4" to the overall actuator length

#### Parallel Gripper

Pre-calculated on dimensional pages 16-17

NOTE: The magnetic option is designed for sensing jaws "fully open" and "fully closed" only, not for indication of part. Reliable limit sensing may be adversely affected by minimal stroke grippers when sensing both open and close positions.

Consult factory for 6" and 8" bore sensor track locations.

# Sensors

## Standard Limit Sensors

- Low Cost and compact size
- Dual LED indicators for power and signal
- Circuit protection for surge and polarity
- High-flex robotic grade cable with 4,8mm (3/16") bend radius. 105 strand primaries.
- CE compliant / IP67 and NEMA 6P rated
- 100% solid state device for maximum life
- 3 cord options

(Shown with Quick Disconnect Option)



Part No.		Sensor Type (Wiring diagrams and definitions on page 23)	Cord Types		
			Quick Disconnect	1 Meter	3 Meter
Sinking	WSKL	NPN		3	
	WSKLP		3*		
	WSKL-3				3
	WSKLPS		3*		
Sourcing	WSCL	PNP		3	
	WSCLP		3*		
	WSCL-3				3
	WSCLPS		3*		

\*NOTE: Mating 3 socket receptacle available, part # R3

### 3 Prong Plug

#WSKLP, #WSCLP, #WSKLPS, #WSCLPS

WS\_LP

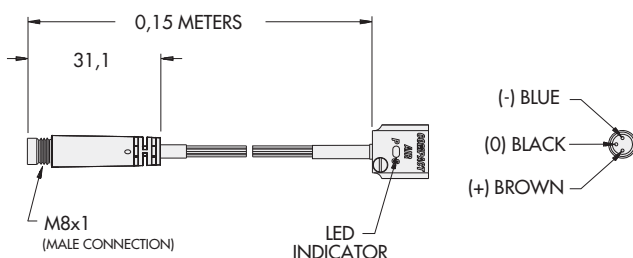
WS\_LPS

## Optional Quick Disconnect Sensor Cable

with threaded, sealed connectors

Part Number – Specify **K** or **C**

### Plug – 3 Prong



### 3 Socket Mating Cable

For use with:

#WSKLP, #WSCLP, #WSKLPS, #WSCLPS,

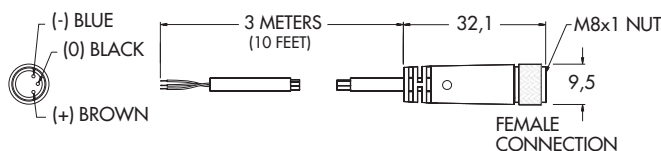


Sold Separately

Part Number

R3

### Receptacle – 3 Socket



# Sensors

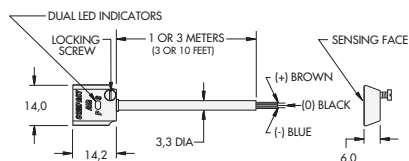
## Comtronic® Sensors Dimensional Information

Must specify 'K' (sinking) or 'C' (sourcing) when ordering

Part Number – Specify K or C

**WS\_L**      **WS\_L-3**

"3" denotes 3 meter cable



**Part No. WSKL-3** – Sinking output with 3 meter cable.

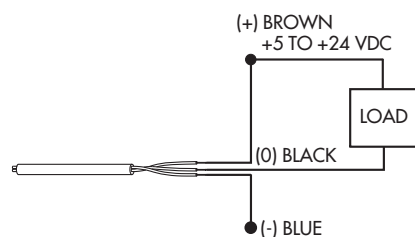


Specifications		
Parameters	Comtronic® Standard Limit Sensors	
	NPN (sinking)	PNP (sourcing)
Part Number	WSKL, WSKL3, WSKLP, WSKLPS	WSCL, WSCL3, WSCLP, WSCLPS
Operating Voltage	5-24 VDC	
Current Consumption On Off	16mA (at 24V) 7mA (at 24V)	14mA (at 24V) 7mA (at 24V)
Switching Current	100mA Max	
Voltage Drop	1.5 V Max @ 100mA	
Operating Frequency	1 KHz Max	
Switch Logic	Sinking, Normally Open	Sourcing, Normally Open
LED Function Green Red	Power On Switch Active (Magnet Present)	
Operating Temperature	0°C to 70°C	
Circuit Protection	Reverse Polarity / Surge Absorber	
Environmental Certifications	IEC standard IP67, NEMA 6P	
Wire Type	High flex, 24 AWG / 105 strand primary	
Housing Material	Zinc diecast	
Housing Color Code	Black	Silver
Shock Resistance	30G Max	
Vibration Strength	9G Max	

## Wiring Diagrams and Definitions

For units with flying leads

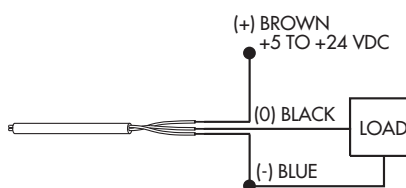
### NPN Output Sinking (K)



- Ideal for complex controls utilizing multiple power supplies.

A "sinking" output sensor complete a circuit by connecting the load to ground. Sinking output sensors in a sequence can have different supply voltages. The ground is their common factor.

### PNP Output Sourcing (C)



- Ideal for single power supply applications.

A "sourcing" output sensor completes a circuit by connecting the load to the supply current. All sourcing output sensors must have the same supply voltage.

# Options and Accessories

## Com–Pick and Com–Pick II 2 & 3 Jaw Pneumatic Grippers

### Actuator Seal Options

Seal Type	Standard	Option	Code	(PSI) Pressure	°F Temperature Range
<b>BUNA–N</b>	<b>3</b>		--	2-200 PSI	0°F TO 200°F
<b>** Hi Temp. Viton</b>		<b>3</b>	HTV	10-200 PSI	0°F TO 400°F
<b>**Corrosion Resistant Teflon</b>		<b>3</b>	CRT*	10-200 PSI	200°F TO 500°F

\* Not available on parallel grippers and 1/2" bore models.

\*\* Due to metal expansion in elevated temperatures, our Jaw fit may have to be re-ground to compensate  
Consult factory regarding other seal compounds or applications using media other than compressed air.

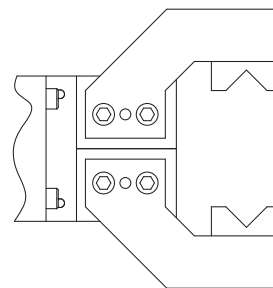
## Application Ideas

### Specials Welcome

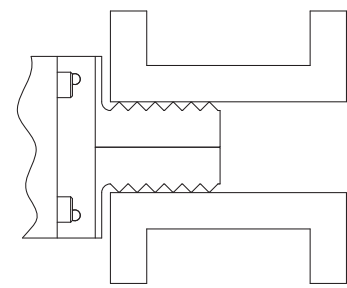
For Engineering or Technical Assistance Consult Factory.



Typical Modifications to Blank Jaws

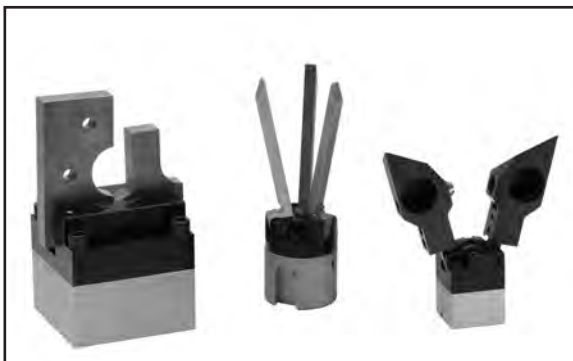


**Bolt–on tooling**

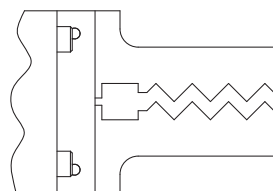


**I.D. Gripping**

- Textile applications
- Bulk wire handling

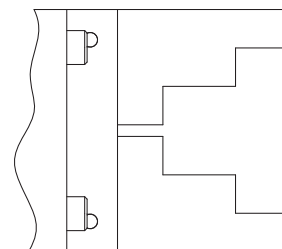


Special Tooling Modifications



**"Spru–pickers" for Plastic Molds**

- Serrated and carburized jaws



**Stepped Jaws**

- Benchtop workholding
- Multi-sized parts handling