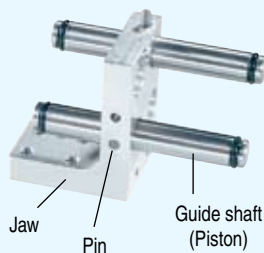


"SPG" Series Parallel Grippers

Five steps to building the finest grippers available. . .

(1) Start with a pair of symmetrical jaws

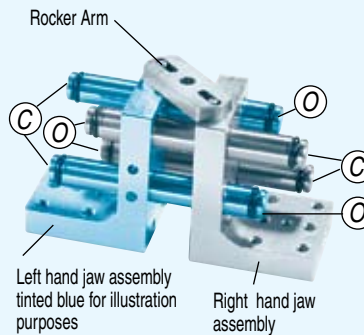


Integral Jaw/Guide Shaft/Piston Assembly

A pair of ground, stainless steel guide shafts (which double as air pistons) are press fit and pinned to each gripper jaw.

Jaws can be aluminum or steel. Shafts are placed diagonally and spaced far apart for maximum jaw stability.

(2) Couple the mating internal parts

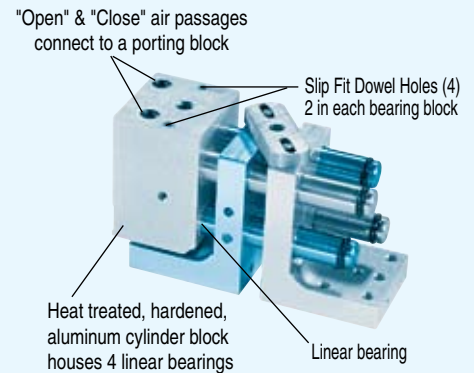


Only Three Moving Parts

Two jaw units are linked by a rocker arm that synchronizes jaw motion. The arm does not drive the jaws so wear is minimal.

The shaft/pistons of each jaw pass freely thru enlarged holes in its mate. "C" in the photo indicates the opposing piston faces to which air pressure is applied for jaw closing. "O" targets the opposing "jaw open" faces.

(3) Add one symmetrical cylinder block

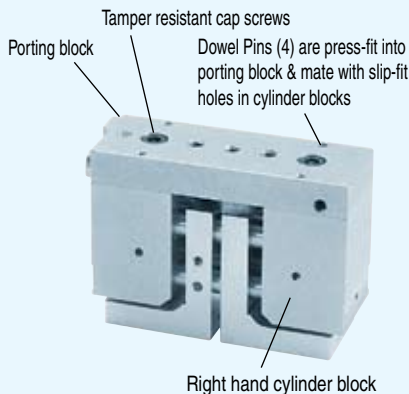


Four Cylinders in Each Block

are connected by internal air passages to the "C" and "O" piston faces shown in the step 2 photo.

Each cylinder incorporates permanently lubricated, high-performance linear bearings that provide clean, drip-proof operation and allow use of a non-lubricated air supply. Opening and closing forces are equal, allowing the grippers to be used for both OD & ID gripping.

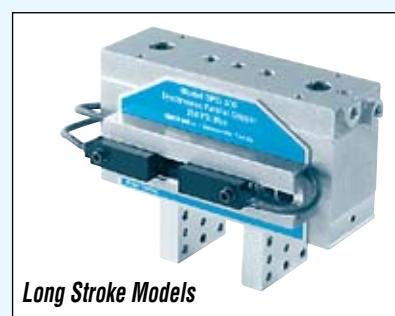
(4) Add the other cylinder block and dowel the porting block on top



No Troublesome Gibs to Wear or Adjust.

Four dowel pins align the porting block perfectly with the cylinder blocks. Eight high-performance linear bearings guide the four pistons through the entire length of the gripper body. Centering accuracy is maintained to .002" and side play is .0015" or less per jaw. Most applications can expect extended gripper life to 15 million cycles – and even more!

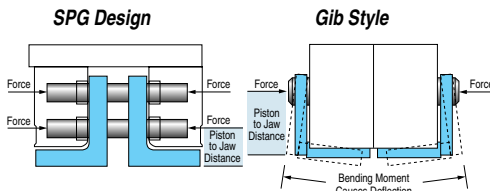
(5) Apply this patented design to a wide range of sizes, strokes and grip forces. Then, offer all the convenient options that cannot be found on other grippers.



"SPG" Series Parallel Grippers

Problem #1: Conventional grippers place the power cylinder some distance above the jaw. The jaw is driven by a "linkage" that creates a "bending moment" which results in loss of force and creates wear points for future maintenance headaches.

Solution: SPG Gripper jaws are powered directly by air pressure applied to the ends of the guide shafts which act as pistons. Four equal pistons power the jaws inward; four equal pistons power the jaws outward.

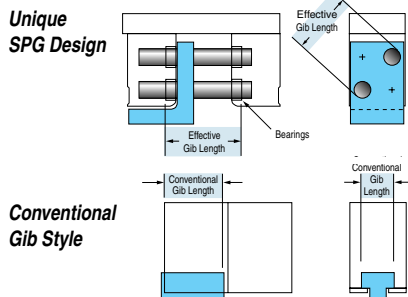


Reduced Jaw Deflection

SPG Grippers have eliminated complex piston-to-jaw linkages and gibs. Bending moments are significantly reduced because force is applied directly to the jaw units at a distance very close to the gripping surface. Loss of force is minimized. Opening & closing forces are equal for use with either ID or OD gripping.

Problem #2: Many grippers have "metal on metal" sliding gib in a "T" slot.

Solution: SPG Gripper jaws are guided by four stainless steel guide shafts supported by eight high-performance linear bearings.



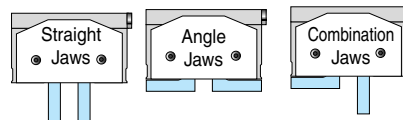
Long Term Performance

SPG guide shafts are placed far apart for sturdy "play free" jaw support. Gib type designs have metal-to-metal sliding contact and a narrow support area that can deflect and cause play.

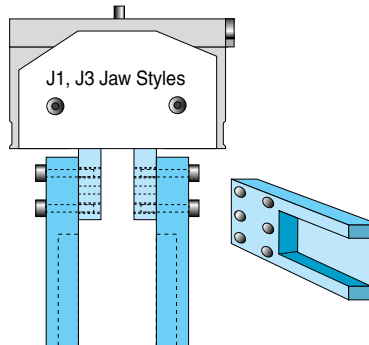
Problem #3: It is difficult to attach tooling to competitive gripper jaws.

Solution: SPG Grippers offer a choice of jaw styles for easy attachment of tooling.

Note that all SPG Gripper jaws have three rows of tapped mounting holes and dowel holes for increased versatility. SPG Gripper jaws are available in steel or aluminum.

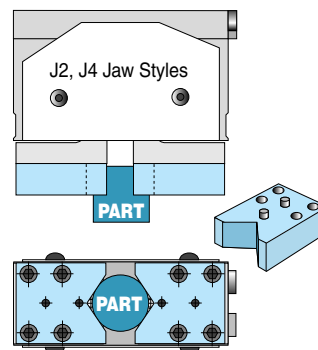


(a) Straight Jaws (J1-Aluminum or J3-Steel) are ideal for attaching blade type gripping fingers.



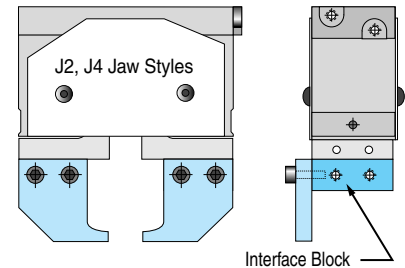
Here, jaws provide opposing flat mounting surfaces for inexpensive fingers with pockets used to grip rectangular parts.

(b) Angle Jaws (J2-Aluminum or J4-Steel) have a slip fit dowel hole and a slip fit dowel slot, assuring precise slip fit attachment of end tooling without the expense of maintaining perfect dowel centerlines.



Here, the J2/J4 angle jaws and easy-to-make "Vee Blocks" are used to grip cylindrical parts.

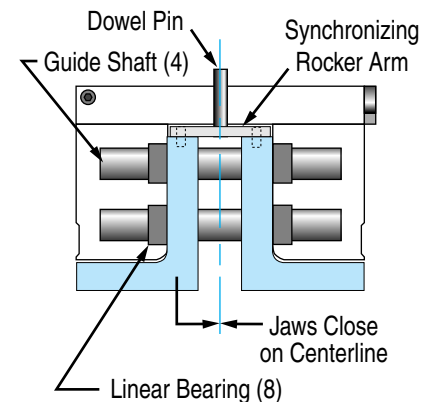
(c) Interface blocks ("Option H") can be attached to J2/J4 angle jaws allowing tooling to be mounted on any side of the block. Below, option "H" Interface Blocks have been utilized to provide side tapped holes for mounting offset blade type gripping fingers.



Problem #4: Competitive grippers do not hold tolerances close enough that a replacement gripper can be installed without major readjustment and realignment.

Solution: SPG Grippers are very precisely machined on a specially tooled 4-axis CNC machining center.

Fabco-Air does 100% of the gripper manufacturing in-house, insuring that SPG Grippers interchange perfectly with each other. SPG Gripper jaws close completely together

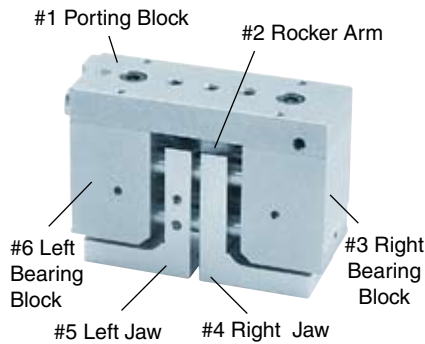


against one another, establishing gripper centerline. The dowel pin, on which the rocker arm pivots to establish centering, serves a dual purpose. It also is the dowel that the customer uses to engage his tooling. Thus, all centerlines are one and the same!!

Solving conventional gripper problems with only 3 moving parts!

Problem #5: Competitive grippers are difficult to repair – lots of parts, etc.

Solution: SPG Grippers have only three moving parts, and six total!

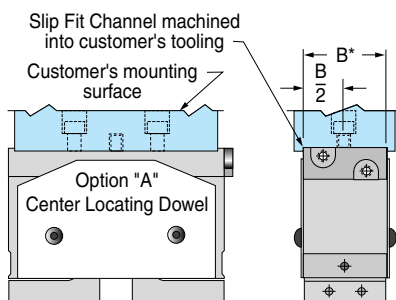


Left and right jaws are identical. Left and right cylinder blocks are identical. Porting block is doweled to cylinder blocks. SPG grippers are easy to repair. They can be disassembled and reassembled in minutes – literally!

There is no adjusting of gibs, no "timing" or "synchronization" of mating parts. Replacement of wear parts is generally limited to seals – and possibly the synchronizing rocker arm!

Problem #6: Competitive grippers are difficult to attach to their mating actuator arm.

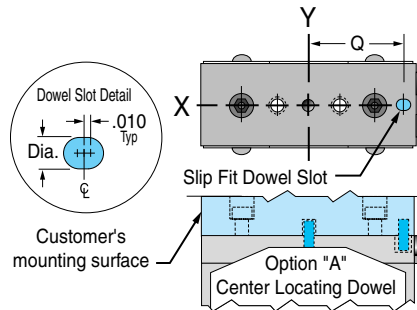
Solution: SPG Grippers can be easily doweled into mounting surfaces with either of the following approaches:



(1) Use SPG Gripper "Option A" which provides a center locating dowel on top of the gripper. Machine a slip fit channel .030" deep into customer's tooling to accept Gripper

dimension "B". "B" is machined to a tolerance of $\pm .001$ on all SPG Models. Mounting the gripper is accomplished by "slipping" the gripper's dowel into a slip fit dowel hole and pushing the gripper into the machined channel. Removal is easy and does not require "prying" the gripper off of two "stuck" dowel holes.

(2) The second method utilizes the slip fit dowel slot that is included with the center locating dowel pin "Option A". The center dowel pin establishes gripper centerline on



an X-Y plane. The end dowel locates the X Axis preventing rotation. The "Q" dimension is not critical. It can be held to $\pm .005$ and still provide precision engagement in the gripper dowel slot.

Fabco-Air SPG Grippers are very versatile and can be modified to suit special applications as described in the following examples.

Special Example #1

Verifying parts presence and/or gauging

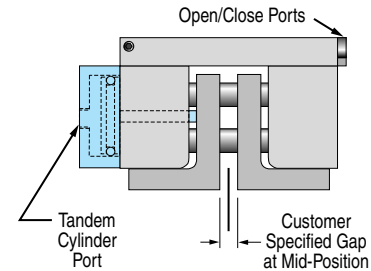
The symmetrical nature of the SPG Gripper allows a pair of prox sensors to be installed on each side. Two sensors on one side of the gripper are used to verify full open and full close jaw positions.

The two sensors on the opposite side can be set so that each sensor is "just made" when a part is gripped. An oversize, under-size, or missing part will cause enough jaw travel that one of the two sensors will "drop out", indicating a "no go" situation. If both sensors are "made", a gripped part is present and within tolerance.

Special Example #2

Three position jaws

Fabco-Air has made three-position grippers by modifying the booster piston of a **High Force SPG Gripper** and installing it at one end of the gripper. Line pressure applied to this booster piston overrides "Jaw Open"

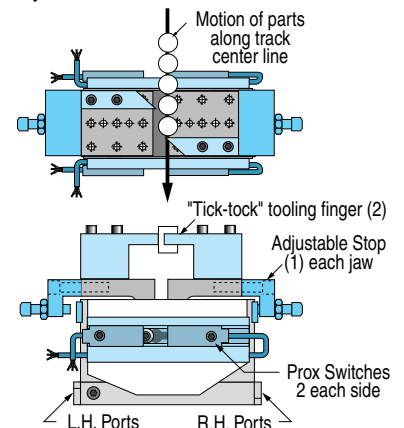


pressure – and will position the jaws in a "mid" location. From this "mid" position, the jaws can be either opened or closed allowing I.D. or O.D. gripping if a family of parts is to be handled with the same gripper.

Special Example #3

Application tip – Escapement Device

The SPG Gripper can be used as a programmable escapement device by simply specifying option "Q", non-synchronous motion. In this configuration each jaw can be operated independently with its own 4-way air valve. "Tick-tock" tooling fingers can be attached to the jaws and two sets of sensors added to provide "open/close" verification for each jaw.



Typical Escapement Sequence:

- 1) Left jaw closes
- 2) Right jaw opens (part escapes)
- 3) Right jaw closes
- 4) Left jaw opens (letting another part in)

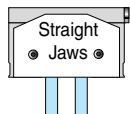
"SPG" Series Parallel Grippers

Gripper Selection Guide

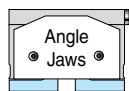
Choice of Stroke & Grip Force

Model	Stroke	Grip Force Per Jaw at 100 psi	
	(Open)	Closing	Opening
SPG 100	0.25"	5.5 lbs	5.5 lbs
SPG 200	0.40"	9.8 lbs	9.8 lbs
SPG 300	0.54"	22 lbs	22 lbs
SPG 300LS	1.16"	22 lbs	22 lbs
SPG 300HF	0.54"	100 lbs	22 lbs
SPG 300LSHF	1.16"	100 lbs	22 lbs
SPG 600	1.38"	88 lbs	88 lbs
SPG 600LS	3.75"	88 lbs	88 lbs
SPG 600HF	1.38"	402 lbs	88 lbs
SPG 600LSHF	3.75"	402 lbs	88 lbs

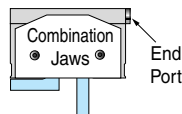
Choice of Jaw Styles



J1 – Aluminum
J3* – Steel



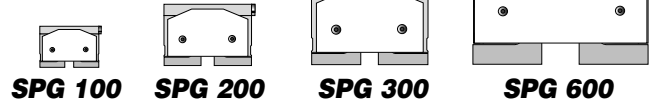
J2 – Aluminum
J4* – Steel



J1/J2 (shown),
J2/J1, J3/J4*,
or J4/J3*
List first the jaw you
want near end port

***Note: Steel jaws are required
on all high force models**

Standard Stroke Models

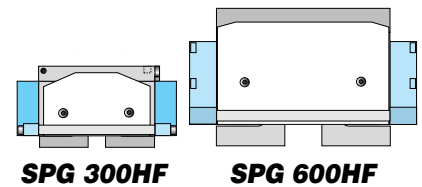


High Force Models

Jaw closing force is increased by
Integral booster pistons.

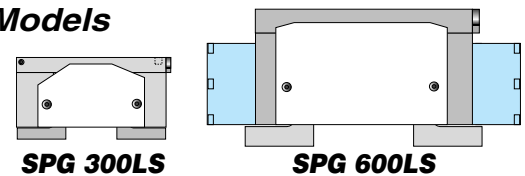
Note:

Jaw opening force is not increased.



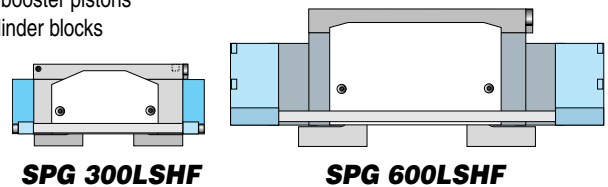
Long Stroke Models

Jaw opening is increased
with greater guide shaft
travel through longer
cylinder blocks



Long Stroke, High Force Models

incorporate both booster pistons
and extended cylinder blocks



Choice of Sensors – See page 12 & 13

Proximity Switches, Front Face Mount



(Model SPG300LS shown)

Uses rectangular body
proximity switches mounted in
a T-slot bracket on the gripper
face. Switches are actuated
by a pin on one jaw.
Very precise sensing.



**5mm Prox. Switches,
End Mount** – Threaded
body prox. switches are
mounted in a bracket on the
grripper end and actuated
by cap screw(s). **Available
complete with switches or
as brackets only.**

Electronic or Reed Switches, Front Face Mount

Electronic sensors or magnetic reed switches are mounted in a
dovetail slotted extrusion on the gripper face and actuated by a
magnet on one jaw.

Cost effective and compact.



(Model SPG200 shown)

Other Options – See page 14 & 15

Center Locating Dowel Pin – Option "A"

Dowel pin option establishes gripper
centerline and
includes an
outboard dowel
slot for precise
alignment.



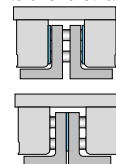
(Model SPG300HF shown)

Non-Synchronous Compliant Type – Option "N"

This configuration is provided by simply
removing the rocker arm that normally
provides synchronization. Jaws will comply
to the centerline established by the part
to be gripped. The combination of equal
piston forces and internal friction prevents
jaw drift.

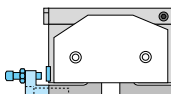
Bumper Options "C", "D" & "E"

The SPG is the only gripper in its class
to offer urethane bumper pads for quiet,
high-speed cycling.
Available on SPG200
and larger models for
"open", "closed" or
both positions. Can be
"stacked" to limit stroke.

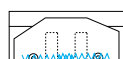
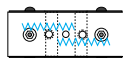


Non-Synchronous Fixed Refer- ence Type – Option "P"

(J2 & J4 Jaw Styles Only)
Jaws operate completely independently thru
2 sets of ports (2 air valves required). One
jaw is fitted with an adjustable stop for fixed
reference point,
and operates at
50% more psi.



Spring Open Option "F" & Spring Close Option "G"



can be used to
maintain grip force
with loss of air
pressure (fail safe)
or as single acting
grippers (single supply
line to port).

Escapement Device – Option "Q"

(J2 & J4 Jaw Styles Only)
Same as Option "P" except both jaws
have adjustable stops and operate on
equal pressure. (See page 5, special
example #3.)

Viton Seals – Option "V"

Interface Blocks – Option "H"

Blocks provide a
convenient way to
attach endtooling
to J2 and J4 style
jaws. (Application
shown on page 4,
Problem #3C.)



Ports Front & Rear – Option "B"

Note: End ports plugged

Not available on SPG100 Models, SPG600
Models, or Long Stroke Models.

Strain Relief – Option "R"

Air tubing is held
by slotted clamps
attached to the
grripper face. Not
available on High
Force Models or SPG600 Models.



The extremely tough grippers that never need adjusting!

How to Order

Gripper Sizing Guide

Select a model based on stroke & grip force

Model	Stroke (Open)	Grip Force Per Jaw at 100 psi	
		Closing	Opening
SPG 100	0.25"	5.5 lbs	5.5 lbs
SPG 200	0.40"	9.8 lbs	9.8 lbs
SPG 300	0.54"	22 lbs	22 lbs
SPG 300LS	1.16"	22 lbs	22 lbs
SPG 300HF	0.54"	100 lbs	22 lbs
SPG 300LSHF	1.16"	100 lbs	22 lbs
SPG 600	1.38"	88 lbs	88 lbs
SPG 600LS	3.75"	88 lbs	88 lbs
SPG 600HF	1.38"	402 lbs	88 lbs
SPG 600LSHF	3.75"	402 lbs	88 lbs

Jaw Styles

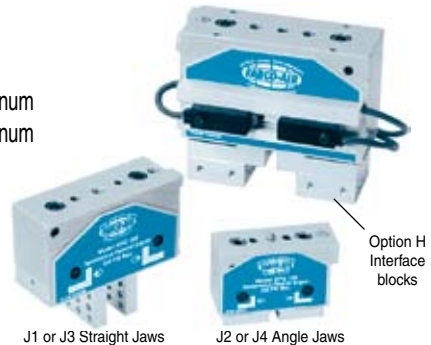
- J1*Straight jaw – aluminum
- J3Straight jaw – steel
- J2*Angle jaw – aluminum
- J4Angle jaw – steel
- J1/J2* .. Combination jaws – aluminum
- J2/J1* .. Combination jaws – aluminum
- J3/J4* .. Combination jaws – steel
- J4/J3* ... Combination jaws – steel

*Note: J1 and J2 not available with high force models.

*Note: First jaw listed is closest to end ports

Fabco-Air welcomes your "specials!"

See special example numbers 1 – 3 on page 5.



EXAMPLE

SPG 300

– J2

– S04

– ACFH

Model

Jaw style

Sensor options

Other options

Sensing Option Packages (Pages 12 & 13)

Use "S00" if NO Sensors desired

Proximity Switch Mounted On Front Face Of Gripper

Electrical characteristics – 24VDC, 3-wire w/LED

S01 – S05 Available on all models with J1 – J4 style jaws.

- S01 Single switch (PNP) sourcing
- S02 Single switch (NPN) sinking
- S03 Dual switch (PNP) sourcing
- S04 Dual switch (NPN) sinking
- S05 Switch package without switches

5mm Threaded Prox Switch Mounted On End Opposite Ports

Electrical characteristics – 24VDC, 3-wire w/LED

S11 – S15 Available on SPG200 & SPG300 with J2 / J4 style jaws. Not available on high force models.

- S11 Switch package without switches
- S12 Single switch (PNP) sourcing
- S13 Single switch (NPN) sinking
- S14 Dual switch (PNP) sourcing
- S15 Dual switch (NPN) sinking

5mm Threaded Prox Switch Mounted On Same End As Ports

Electrical characteristics – 24VDC, 3-wire w/LED

S16 – S20 Available on SPG200 & SPG300 with J2 / J4 style jaws. Not available on high force models.

- S16 Switch package without switches
- S17 Single switch (PNP) sourcing
- S18 Single switch (NPN) sinking
- S19 Dual switch (PNP) sourcing
- S20 Dual switch (NPN) sinking

Electronic Sensor Mounted On Front Face

Electrical characteristics – LED, 6-24 VDC, 0.20 Amp Max, 0.5 Volt Drop

E20 – E24 Available on all models with J1 – J4 style jaws.

Use Suffix 'C' for Quick Disconnect

- E20 Sensor package without sensors
- E21, E21C Single sensor (PNP) sourcing
- E22, E22C Single sensor (NPN) sinking
- E23, E23C Dual sensor (PNP) sourcing
- E24, E24C Dual sensor (NPN) sinking

Magnetic Reed Switch Mounted On Front Face

- E20 Switch package without switches
- E25, E25C Single switch, No LED, 0-120 VDC/VAC, 0.5 Amp Max, 5 Watt Max, 0 Voltage Drop
- E27, E27C Single switch LED, 5-120 VDC/VAC, 0.03 Amp Max, 4 Watt Max, 2.0 Voltage Drop
- E28, E28C Dual switch, No LED, 0-120 VDC/VAC, 0.5 Amp Max, 5 Watt Max, 0 Voltage Drop
- E30, E30C Dual switch, LED, 5-120 VDC/VAC, 0.03 Amp Max, 4 Watt Max, 2.0 Voltage Drop

E20, E25 – E30 Available on all models with J1 – J4 style jaws. Use Suffix 'C' for Quick Disconnect

Adjustable Stops Using Bumper Pads

Example C3

Quantity (3) Bumpers in each open position reduce open motion by 3 times bumper thickness

Quick Disconnect Cordsets for Electronic Sensors and Reed Switches

Codes E21C - E30C

Quick disconnect style switches are supplied with 6 inch pigtail with male connector.

Order female connector cordsets separately as follows:

- CFC-1M 1 meter
- CFC-2M 2 meters
- CFC-5M 5 meters

Note: Prewired styles are supplied with nine foot leadwire.

Other Options (Pages 14 & 15)

- A Center locating dowel
- 1, 2, 4 B Front & rear ports (end ports plugged)
- 1 C Bumpers (2) to cushion opening
- 1 D Bumper (1) to cushion closing
- 1 E Bumpers (3) to cushion opening and closing motion
- 1, 2, 3 F Spring option: Jaws spring open
- 1, 2, 3 G Spring option: Jaws spring closed
- 3 H Interface blocks (2) for J2/J4 Jaws
- 1, 3 N Non-synchronous: compliant type
- 1, 3 P Non-synchronous fixed ref. type
- 1, 3 Q Escapement style
- 3, 4 R Strain relief for air tubing
- V Viton seals

Exceptions

- 1 Not available on Model SPG100
- 2 Not available on long stroke models
- 3 Not available on high force models
- 4 Not available on SPG600 models

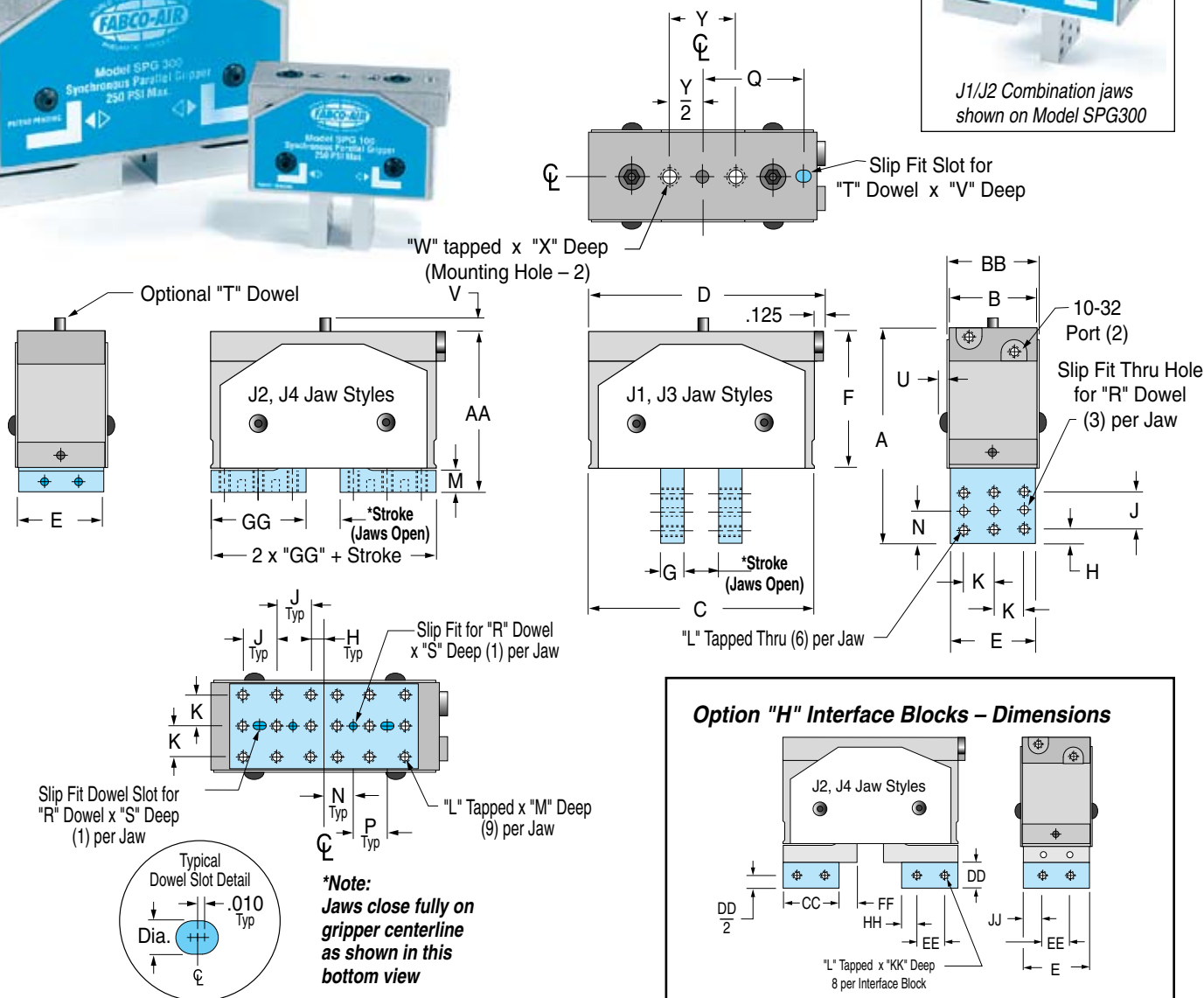
Ordering Example

SPG300LS - J1 - S04 - S02 - NV
Specifies a non-synchronous, compliant type, long stroke gripper with straight aluminum jaws, three face-mounted sinking proximity sensors (2 front/1 back), and Viton seals.



"SPG" Series Parallel Grippers

SPG 100, SPG 200 & SPG 300



Gripper Dimensions

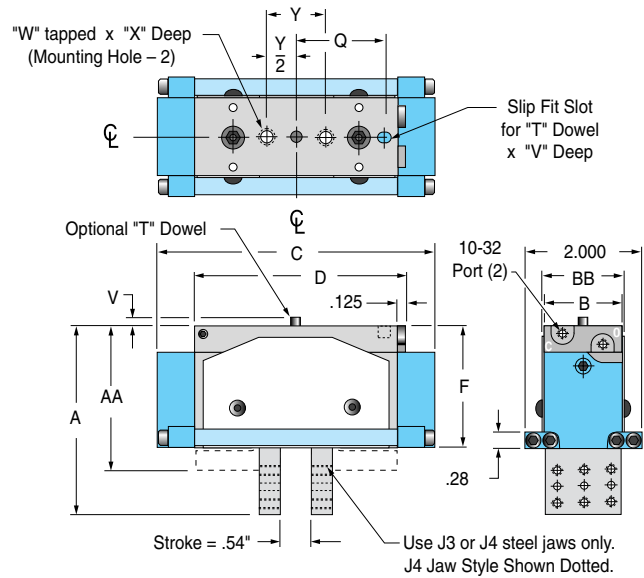
Models SPG 100, SPG 200, SPG 300, SPG 300LS, SPG 300HF, SPG 300LSHF																				
Model	Stroke	A	AA	B	BB	C	CC	D	DD	E	EE	F	FF	G	GG	H	HH	J	JJ	K
SPG 100	.25	1.750	1.375	.750	.81	1.875	.594	2.000	.250	.720	.375	1.156	.156	.187	.750	.094	.110	.281	.172	.250
SPG 200	.40	2.250	1.750	.990	1.05	2.625	.875	2.750	.375	.960	.500	1.469	.250	.235	1.125	.125	.187	.437	.230	.312
SPG 300	.54	3.125	2.531	1.312	1.38	3.500	1.125	3.625	.500	1.281	.625	2.129	.375	.355	1.500	.187	.250	.562	.328	.468
SPG 300LS	1.16	"	"	"	"	4.125	"	4.250	"	"	"	"	"	"	"	"	"	"	"	"
SPG 300HF	.54	"	"	"	"	4.750	"	3.625	"	"	"	"	"	"	"	"	"	"	"	"
SPG 300LSHF	1.16	"	"	"	"	6.000	"	4.250	"	"	"	"	"	"	"	"	"	"	"	"

Small to Mid-Size Gripper Models

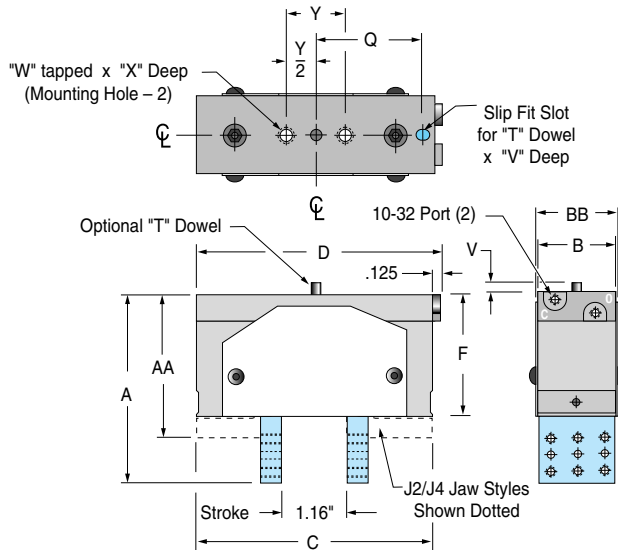
SPG 300HF High Force Models



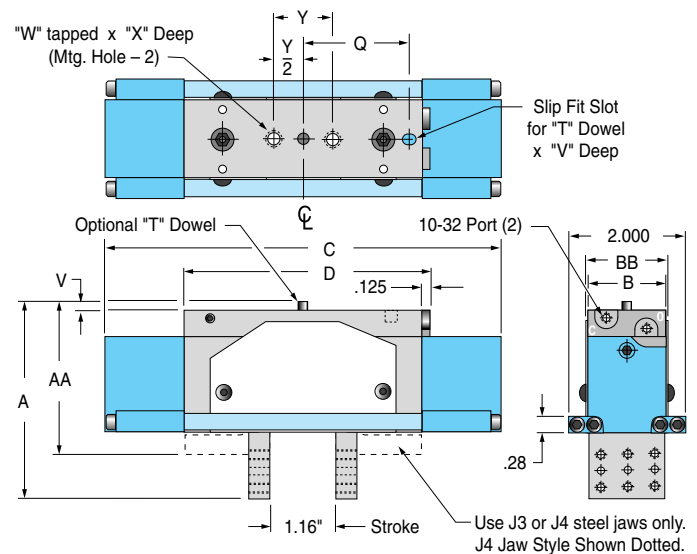
Note: Jaw detail dimensions on this page are identical to SPG300 dimensions shown on page 8.



SPG 300LS Long Stroke Models



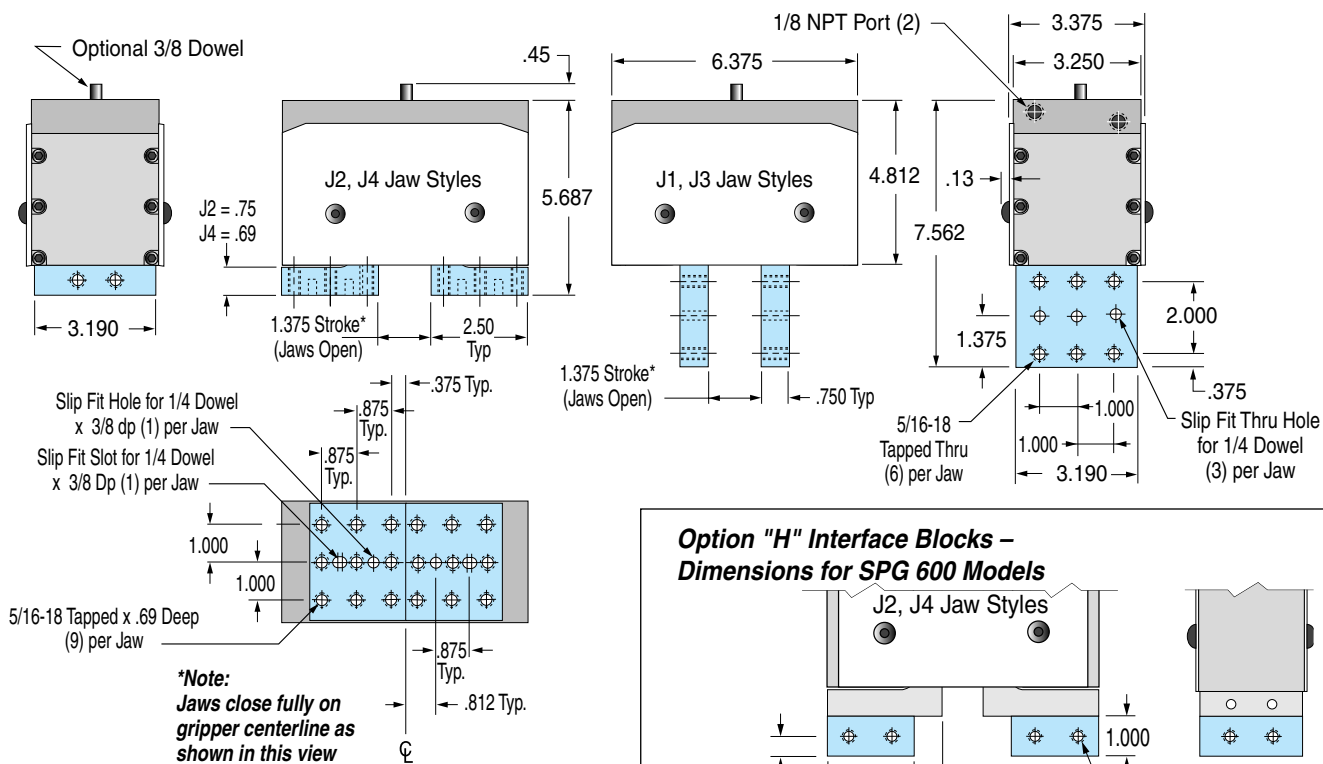
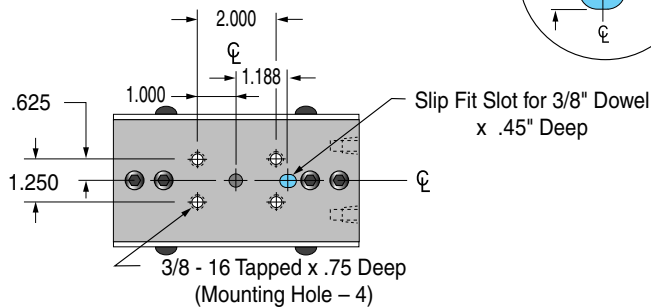
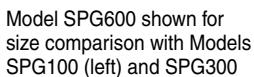
SPG 300LSHF Long Stroke, High Force Models



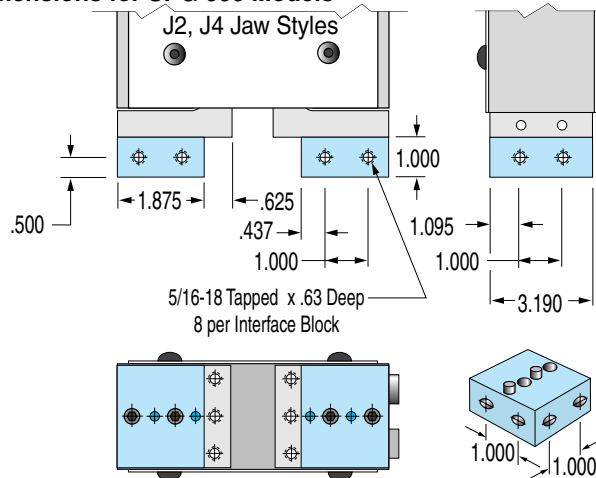
Models SPG 100, SPG 200, SPG 300, SPG 300LS, SPG 300HF, SPG 300LSHF														
Model	KK	L	M	N	P	Q	R	S	T	U	V	W	X	Y
SPG 100	.25	#4-40	.187	.235	.281	.875	3/32	.10	1/8	.06	.09	#8-32	.31	.562
SPG 200	.35	#6-32	.235	.344	.438	1.125	1/8	.16	3/16	.06	.16	#10-24	.38	.875
SPG 300	.50	#8-32	.340	.469	.562	1.500	1/8	.16	3/16	.07	.18	1/4-20	.40	1.000
SPG 300LS	"	"	"	"	"	1.812	"	"	"	"	"	"	"	"
SPG 300HF	"	"	"	"	"	1.500	"	"	"	"	"	"	"	"
SPG 300LSHF	"	"	"	"	"	1.812	"	"	"	"	"	"	"	"

Weight with Aluminum Jaws	for Steel Jaws add	Model
0.2 lbs	.08 lbs	SPG 100
0.5 lbs	.18 lbs	SPG 200
1.2 lbs	.40 lbs	SPG 300
1.4 lbs	"	SPG 300LS
1.6 lbs	"	SPG 300HF
1.9 lbs	"	SPG 300LSHF

SPG 600 Basic Models

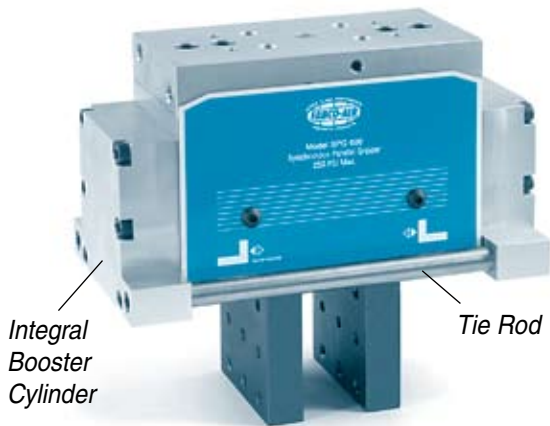


Option "H" Interface Blocks – Dimensions for SPG 600 Models

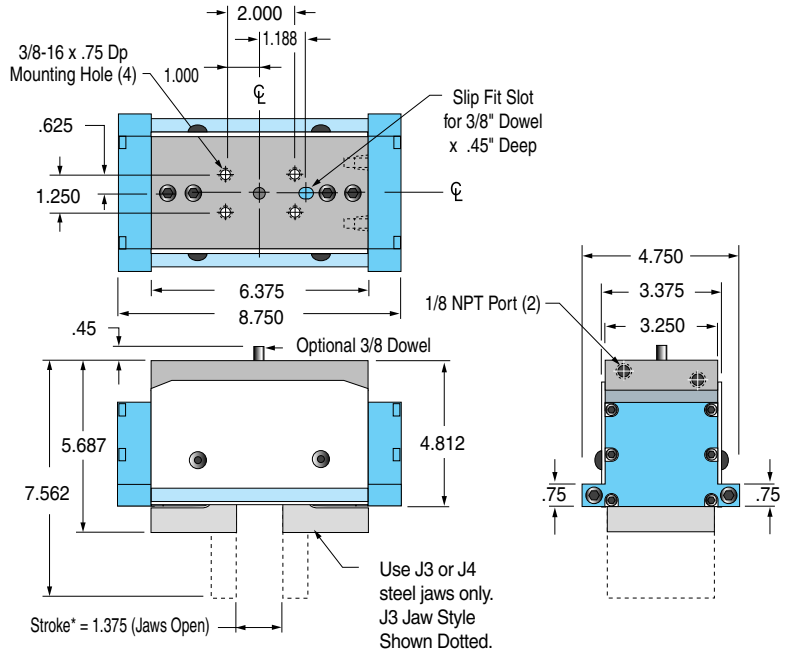


Large Size Models

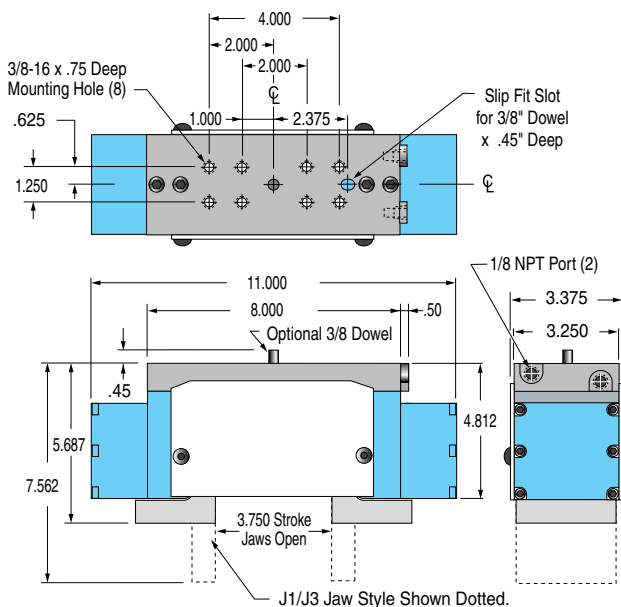
SPG 600HF High Force Models



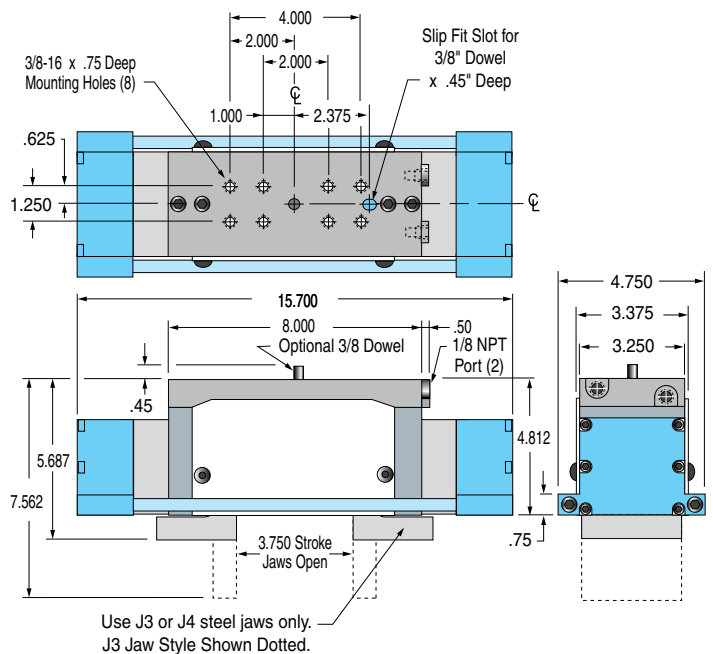
Note: Jaw detail dimensions on this page are identical to jaw dimensions shown on page 10.



SPG 600LS Long Stroke Models



SPG 600LSHF Long Stroke, High Force Models



Gripper Weights

Model	Weight with Aluminum Jaws	for Steel Jaws add
SPG600	10.5 lbs	5.1 lbs
SPG600LS	13.7 lbs	5.1 lbs
SPG600HF	13.3 lbs	5.1 lbs
SPG600LSHF	20.3 lbs	5.1 lbs

"SPG" Series Parallel Grippers



Long Stroke Model SPG300LS shown with face mounted proximity switches. Mounting bracket has convenient slot to channel wiring to the side of gripper.

Proximity Switches – Option Codes S01 - S04

All SPG Gripper models are available with rectangular body proximity sensors attached to the face of the gripper by a tee slot bracket. Switches are actuated by sensing a pin on one jaw. Single and dual position sensors are available for verifying open/close/both jaw positions.

Specials – Because SPG Grippers are symmetrical, a third switch can be added on the opposite side to detect parts presence. If jaws "overtravel" the grip point, the third switch is actuated signaling that no part was present to "stop" the jaw travel. (Call our applications department for details.)

Note: These sensors are extremely sensitive and can make and break dual switches with as little as .025" jaw travel!

Sensors can be mounted with the leadwires adjacent to the port, allowing the air supply tubing and sensor wires to be neatly bundled together. Or, the wires can be routed to exit on the side opposite the ports.

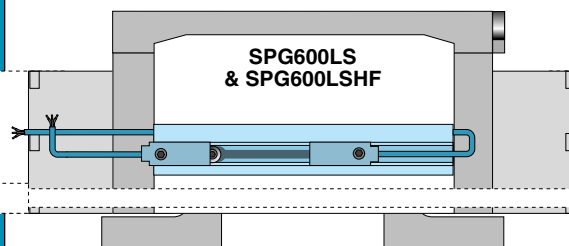
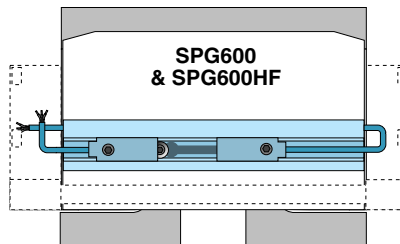
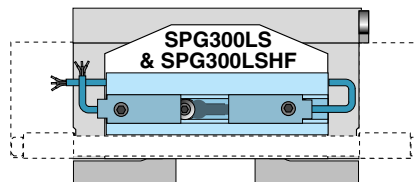
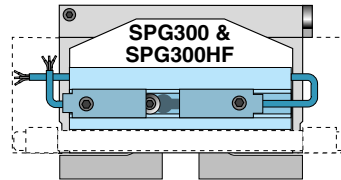
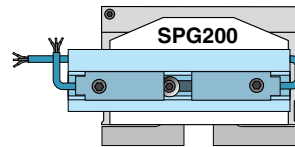
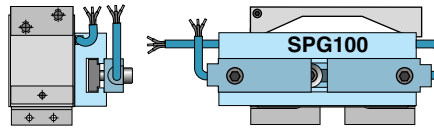
Proximity Switches – Option Codes S11 - S20

SPG 200 and 300 models (except High Force) with "J2" or "J4" jaw styles can be ordered with an alternate prox switch option utilizing a 5mm threaded body. Switches are mounted on either end of the gripper and are actuated by sensing the head of cap screws attached to the jaw end(s).



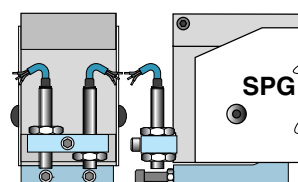
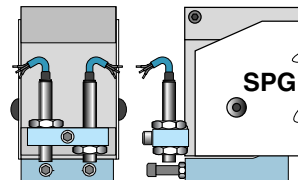
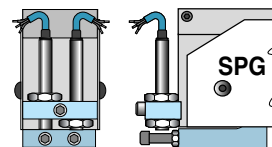
Code S19 or S20 – Dual 5mm threaded body prox switches shown on Model SPG200

Sensing Options S01 – S05



Sensing Options

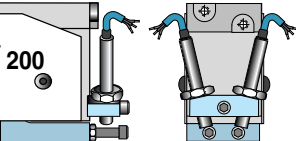
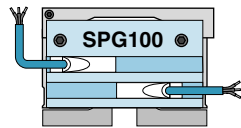
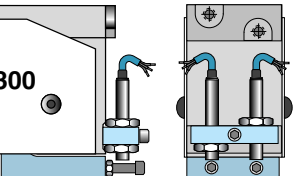
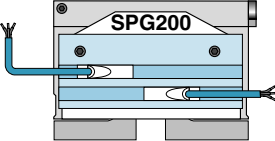
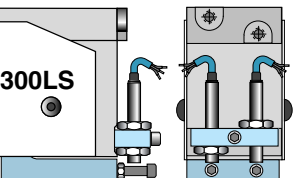
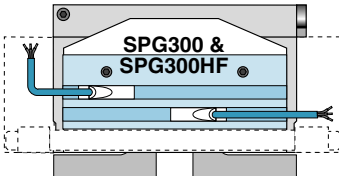

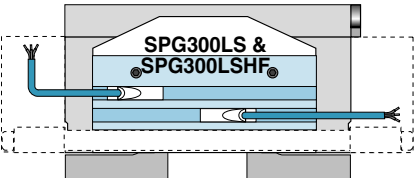

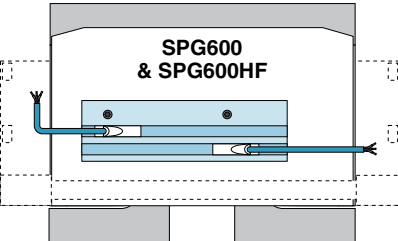
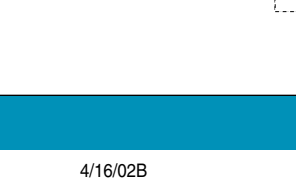
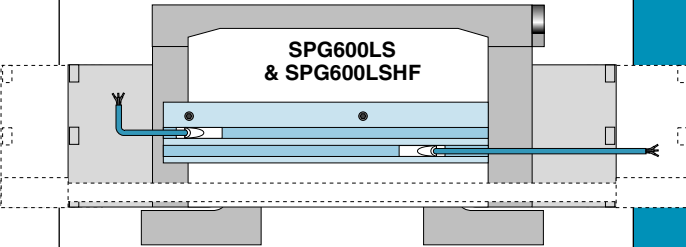
5mm Proximity switches are not available on the Model SPG 100



5mm Proximity switches are not available on the Model SPG 600

5mm Prox switches are not available on Model SPG 600LS

The unique grippers offering an extensive choice of sensors!

S11 – S20	Sensing Options E20– E30
	
	
	
	
	
	



Model SPG300 shown with Code E23C or E24C face mounted, quick-disconnect, electronic sensors.

Electronic Sensors – Option Codes E20–E24

Magnetic Reed Switches – Option Codes E25–E30

All SPG Grippers are available with electronic sensors or reed switches that are clamped on a bracket mounted on either face of the gripper. These are actuated by a magnet attached to one jaw. Single and dual position sensors are available for verifying open/close/both jaw positions.

Specials – Brackets can be mounted on both faces to accommodate three or four sensors or switches. See "Special Examples 1 & 3" on page 5.

Prewired Style Switches: Codes E21 - E30

Prewired styles are supplied with 9 foot leadwire.

Quick Disconnect Style Switches: Codes E21C - E30C

Quick disconnect style switches are supplied with 6" pigtail with male connector. Order female connector cordsets separately as follows:

CFC-1M..... 1 meter

CFC-2M..... 2 meters

CFC-5M..... 5 meters

See "How to Order" guide on page 7.

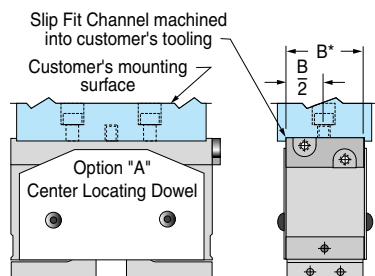
"SPG" Series Parallel Grippers

Center Locating Dowel Pin - Option "A"

Dowel pin facilitates precision mounting.

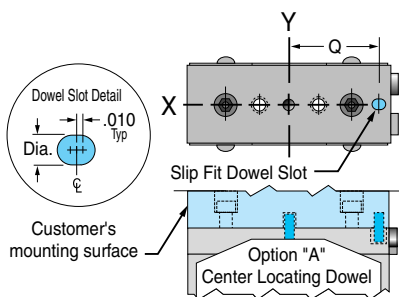
Mounting method (1)

Machine a slip fit channel .030" deep into customer's tooling to accept Gripper dimension "B". Mounting the gripper is accomplished by "slipping" the gripper's



dowel into a slip fit dowel hole and pushing the gripper into the machined channel. Removal is easy and does not required "prying" the gripper off two "stuck dowel holes. (See dimensions pages 8-11)

Mounting Method (2) Utilizes the slip fit dowel slot that is included with the center locating dowel pin. The center dowel pin establishes gripper centerline on an X-Y plane. The end dowel locates the X Axis

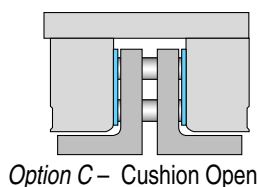


preventing rotation. The "Q" dimension is not critical. It can be held to $\pm .005$ and still provide precision engagement in the gripper dowel slot.

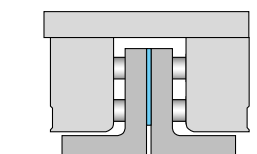
Ports Front & Rear - Option "B"

End ports are plugged. Not available on SPG100, SPG600, or Long Stroke Models.

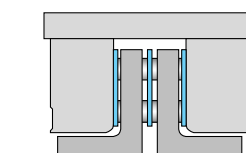
Bumper Options "C", "D" & "E" (Not available on SPG100 Models) For quiet, high speed cycling - or for Adjustable Stops



Option C - Cushion Open



Option D - Cushion Close



Option E - Cushion Both

Quiet, high speed cycling - The SPG is the only gripper in its class to offer bumpers (both extend and retract) for quiet, high-speed cycling. Urethane pads (1/32" thick, except SPG600 1/16" thick) can be installed against the outside of the jaws for cushioning at the "open" position - or one pad in the center can be used to cushion the "closed" position. Available on SPG200 and larger models for "open", "closed" or "both" positions.

Adjustable Stops - By simply "stacking" the bumper pads, custom strokes can be achieved in 1/32" increments (1/16" on SPG600). This is an ideal way of limiting stroke length when high speed cycling is desired with the minimum amount of time consuming stroke.

To order, specify the number of pads to be "stacked" at the open and/or closed position as follows:

C3 = three pads on each side for open

D2 = two pads in between jaws for close.

Bumper Location

Quantity of Bumpers in Stack

Non-Synchronous Grippers Compliant Type - Option "N"

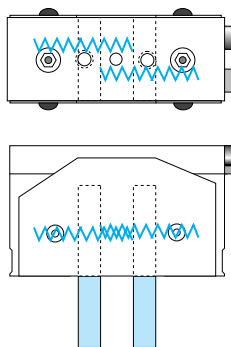
This configuration is provided by simply removing the rocker arm that normally provides synchronization. Jaws will comply to the centerline established by the part to be gripped. The combination of equal piston forces and internal friction prevents jaw drift.

Not available on SPG100 or High Force models.

The family of grippers offering the widest choice of options!

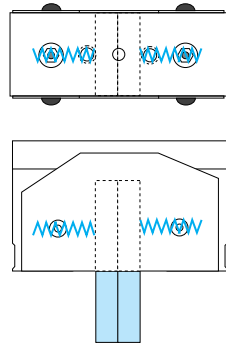
Spring Options - "F" & "G" (Not available on SPG100, Long Stroke, or High Force Models) For "Failsafe" or "Single Acting" Operation

Spring options can be used to maintain grip force with loss of air pressure (fail safe) or as single acting grippers (single air supply line to port).



Also, springs can be used to "assist" gripping force.

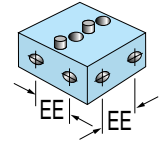
Example: SPG 300 with "G" option would have a standard closing grip force of 22 pounds per jaw (at 100 psi as shown in the Gripper Selection Guide, page 6), plus a spring assist of 12 pounds per jaw at full open (reference the chart below), for a total of approximately 34 pounds per jaw gripping force.



Spring Force Per Jaw To Open (Option F)		
Model	Spring Force @ Full Open	Spring Force @ Full Close
SPG200	3.8 lbs	4.9 lbs
SPG300	7.4 lbs	12.0 lbs
SPG600	35.0 lbs	70.0 lbs

Spring Force Per Jaw To Close (Option G)		
Model	Spring Force @ Full Close	Spring Force @ Full Open
SPG200	3.5 lbs	5.3 lbs
SPG300	7.1 lbs	12.0 lbs
SPG600	33.0 lbs	63.0 lbs

Interface Blocks - Option "H"



Interface blocks can be attached to J2/J4 jaws allowing tooling to be mounted on any side of the block. See "problem #2, solution C" on page 4. Dimensions are on pages 8 & 10.

Strain Relief - Option "R"

Air tubing is held by slotted clamps attached to the face of the gripper. **Not available on SPG600 or High Force models.**



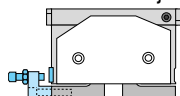
Viton Seals - Option "V"

High temperature seals

Non-Synchronous Grippers

Fixed Reference Type - Option "P" (J2 & J4 Jaw Styles Only)

Jaws operate completely independently thru 2 sets of ports (2 air valves required). One jaw is fitted with an adjustable stop for fixed reference point. Fixed reference jaw requires 50% more pressure than its mating jaw.



Not available on SPG100 or High Force models.

Escapement Device

- Option "Q"

(J2 & J4 Jaw Styles Only)

Same as Option "P" except that both jaws have adjustable stops and operate on equal pressure. See "Special Example #3 on page 5 for details. **Not available on SPG100 or High Force models.**