“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 through 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.

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Specifications subject to change without notice or incurring obligations.
**“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.

**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.

**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.

**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, ensuring 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!!*
Problem #5: Competitive grippers are difficult to repair – lots of parts, etc.
Solution: SPG Grippers have only three moving parts, and six total!

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 ±.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 ±.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 #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.

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, undersize, 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.

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“SPG” Series Parallel Grippers

The extremely tough grippers that never need adjusting!

Specifications subject to change without notice or incurring obligations.

Other Options – See page 14 & 15

Choice of Sensors – See page 12 & 13

Other Options – See page 14 & 15

Proximity Switches, Front Face Mount
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.

(Model SPG300LS shown)

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)

Spring Open Option “F” & Spring Close Option “G”

Spring Open blocks provide a convenient way to attach end tooling to J2 and J4 style jaws. (Application shown on page 4, Problem #3C.)

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.

Non-Synchronous 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, and operates at 50% more psi.

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 end tooling 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 gripper face. Not available on High Force Models or SPG600 Models.

Choice of Stroke & Grip Force

<table>
<thead>
<tr>
<th>Model</th>
<th>Stroke (Open)</th>
<th>Grip Force Per Jaw at 100 psi</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPG 100</td>
<td>0.25&quot;</td>
<td>5.5 lbs</td>
</tr>
<tr>
<td>SPG 200</td>
<td>0.40&quot;</td>
<td>9.8 lbs</td>
</tr>
<tr>
<td>SPG 300</td>
<td>0.54&quot;</td>
<td>22 lbs</td>
</tr>
<tr>
<td>SPG 300LS</td>
<td>1.16&quot;</td>
<td>100 lbs</td>
</tr>
<tr>
<td>SPG 300HF</td>
<td>0.54&quot;</td>
<td>100 lbs</td>
</tr>
<tr>
<td>SPG 300LHSF</td>
<td>1.16&quot;</td>
<td>100 lbs</td>
</tr>
<tr>
<td>SPG 600</td>
<td>1.38&quot;</td>
<td>88 lbs</td>
</tr>
<tr>
<td>SPG 600LS</td>
<td>3.75&quot;</td>
<td>88 lbs</td>
</tr>
<tr>
<td>SPG 600HF</td>
<td>1.38&quot;</td>
<td>88 lbs</td>
</tr>
<tr>
<td>SPG 600LSHF</td>
<td>3.75&quot;</td>
<td>88 lbs</td>
</tr>
</tbody>
</table>

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
corporate both booster pistons and extended cylinder blocks

Choice of Jaw Styles

J1 – Aluminum
J2 – Aluminum
J3* – Steel
J4* – Steel

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

Electro-Hydraulic Cylinder block
Uses rectangular body cylinder block to provide a high-speed cycling motion with greater guide shaft travel and extended cylinder blocks.

End Port
(Front & Rear)
5 mm Prox. Switches, End Mount
5 mm Prox. Switches, Front Face Mount

5 mm Prox. Switches, Rear Face Mount

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 gripper 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

<table>
<thead>
<tr>
<th>Model</th>
<th>Stroke (Open)</th>
<th>Grip Force Per Jaw at 100 psi</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPG 100</td>
<td>0.25&quot;</td>
<td>5.5 lbs, 5.5 lbs</td>
</tr>
<tr>
<td>SPG 200</td>
<td>0.40&quot;</td>
<td>9.8 lbs, 9.8 lbs</td>
</tr>
<tr>
<td>SPG 300</td>
<td>0.54&quot;</td>
<td>22 lbs, 22 lbs</td>
</tr>
<tr>
<td>SPG 300LS</td>
<td>1.16&quot;</td>
<td>88 lbs, 88 lbs</td>
</tr>
<tr>
<td>SPG 300HF</td>
<td>0.54&quot;</td>
<td>100 lbs, 22 lbs</td>
</tr>
<tr>
<td>SPG 300LSHF</td>
<td>1.16&quot;</td>
<td>100 lbs, 22 lbs</td>
</tr>
<tr>
<td>SPG 600</td>
<td>1.38&quot;</td>
<td>88 lbs, 88 lbs</td>
</tr>
<tr>
<td>SPG 600LS</td>
<td>3.75&quot;</td>
<td>88 lbs, 88 lbs</td>
</tr>
<tr>
<td>SPG 600HF</td>
<td>1.38&quot;</td>
<td>402 lbs, 88 lbs</td>
</tr>
<tr>
<td>SPG 600LSHF</td>
<td>3.75&quot;</td>
<td>402 lbs, 88 lbs</td>
</tr>
</tbody>
</table>

#### Jaw Styles

- J1*: Straight jaw – aluminum
- J2*: Angle jaw – aluminum
- J3*: Straight jaw – steel
- J4*: Angle jaw – steel
- J1/J2*: Combination jaws – aluminum
- J2/J4*: Combination jaws – aluminum
- J3/J4*: Combination jaws – steel
- J4/J4*: Combination jaws – steel

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

### Sensing Option Packages (Pages 12 & 13)

#### Proximity Switch Mounted On Front Face Of Gripper

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

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

#### 5mm Threaded Prox Switch Mounted On End Opposite Ports


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

#### 5mm Threaded Prox Switch Mounted On Same End As Ports

- 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 (NPV) sourcing
- S19: Dual switch (PNP) sourcing
- S20: Dual switch (NPV) sourcing

#### Electronic Sensor Mounted On Front Face

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

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

#### Magnetic Reed Switch Mounted On Front Face


- E20: Switch package without switches
- E25, E25C: Single switch, No LED, 0-120 VDC/VAC, 0.03 Amp Max, 5 Watt Max, 0 Voltage Drop
- E27, E27C: Single switch LED, 0-120 VDC/VAC, 0.07 Amp Max, 5 Watt Max, 2.0 Voltage Drop
- E28, E28C: Dual switch, No LED, 0-120 VDC/VAC, 0.07 Amp Max, 5 Watt Max, 0 Voltage Drop
- E30, E30C: Dual switch, LED, 0-120 VDC/VAC, 0.07 Amp Max, 4 Watt Max, 2.0 Voltage Drop

### 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.

### Adjustable Stops Using Bumper Pads

Example C3

Bumpers stack in open position

Bumpers reduce open motion by 3 times bumper thickness

### Other Options (Pages 14 & 15)

- **A**: Center locating dowel
- **B**: Front & rear ports
- **C**: Bumpers (2) to cushion opening
- **D**: Bumper (1) to cushion closing
- **E**: Bumpers (3) to cushion opening and closing motion
- **F**: Spring option: Jaws spring open
- **G**: Spring option: Jaws spring closed
- **H**: Interface blocks (2) for J2/J4 Jaws
- **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

**Dual**

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.

8/2/99A Specifications subject to change without notice or incurring obligations.
“SPG” Series Parallel Grippers

SPG 100, SPG 200 & SPG 300

Gripper Dimensions

| 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| .975 | .81  | 1.875| .594 | .720 | .200 | .250 | .725 | .875 | .270 | .375 | .500 | .500 | .125 | .125 | .125 | .125 |
| SPG 200  | .40    | 2.250| 1.900| 1.05 | 2.625| .875 | .270 | .375 | .500 | .500 | .125 | .125 | .125 | .125 | .125 | .125 | .125 | .125 | .125 |
| SPG 300  | .54    | 3.125| 2.531| 1.36 | 3.500| 1.125| 3.825| .500 | .625 | .212 | .375 | .500 | .355 | 1.500| 1.675| .250 | .562 | .328 | .468 |
| SPG 300LS| 1.16   |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| SPG 300HF| .54    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| SPG 300LSHF| 1.16 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |

*Note: Jaws close fully on gripper centerline as shown in this bottom view

Typical Dowel Slot Detail

Option "H" Interface Blocks – Dimensions

J1/J2 Combination jaws shown on Model SPG300

2 x "GG" + Stroke (Jaws Open)

Option "H" Interface Blocks – Dimensions

Typical Dowel Slot Detail

Slip Fit Slot for "T" Dowel x "V" Deep (Mounting Hole – 2)

Slip Fit Slot for "R" Dowel x "S" Deep (Jaws Open)

Slip Fit Dowel Slot for "R" Dowel x "S" Deep (1) per Jaw

Slip Fit for "R" Dowel x "S" Deep (1) per Jaw
**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

---

<table>
<thead>
<tr>
<th>Models SPG 100, SPG 200, SPG 300, SPG 300LS, SPG 300HF, SPG 300LSHF</th>
<th>Weight with Aluminum Jaws</th>
<th>for Steel Jaws add</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPG 100</td>
<td>0.2 lbs</td>
<td>.08 lbs</td>
</tr>
<tr>
<td>SPG 200</td>
<td>0.5 lbs</td>
<td>.18 lbs</td>
</tr>
<tr>
<td>SPG 300</td>
<td>1.2 lbs</td>
<td>.40 lbs</td>
</tr>
<tr>
<td>SPG 300LS</td>
<td>1.4 lbs</td>
<td>&quot;</td>
</tr>
<tr>
<td>SPG 300HF</td>
<td>1.6 lbs</td>
<td>&quot;</td>
</tr>
<tr>
<td>SPG 300LSHF</td>
<td>1.9 lbs</td>
<td>&quot;</td>
</tr>
</tbody>
</table>

Specifications subject to change without notice or incurring obligations.
### "SPG" Series Parallel Grippers

**SPG 600 Basic Models**

#### J1, J3 Jaw Styles

- **Slip Fit Slot for 3/8" Dowel x .45" Deep**
- **3/8 - 16 Tapped x .75 Deep**
- **(Mounting Hole – 4)**

#### J2, J4 Jaw Styles

- **Slip Fit Thru Hole for 1/4 Dowel x 3/8 dp (1) per Jaw**
- **Slip Fit Slot for 1/4 Dowel x 3/8 dp (1) per Jaw**
- **5/16-18 Tapped x .69 Deep**
- **(9) per Jaw**

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

- **Slip Fit Thru Hole for 1/4 Dowel x .63 Deep**
- **8 per Interface Block**

---

Specifications subject to change without notice or incurring obligations.

8/14/97
**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**

<table>
<thead>
<tr>
<th>Model</th>
<th>Weight with Aluminum Jaws</th>
<th>Weight with Steel Jaws add</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPG600</td>
<td>10.5 lbs</td>
<td>5.1 lbs</td>
</tr>
<tr>
<td>SPG600LS</td>
<td>13.7 lbs</td>
<td>5.1 lbs</td>
</tr>
<tr>
<td>SPG600HF</td>
<td>13.3 lbs</td>
<td>5.1 lbs</td>
</tr>
<tr>
<td>SPG600LSHF</td>
<td>20.3 lbs</td>
<td>5.1 lbs</td>
</tr>
</tbody>
</table>
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 "overtotal" 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).
The unique grippers offering an extensive choice of sensors!

<table>
<thead>
<tr>
<th>Sensing Options E20–E30</th>
</tr>
</thead>
<tbody>
<tr>
<td>S11 – S20</td>
</tr>
<tr>
<td>SPG100</td>
</tr>
<tr>
<td>SPG200</td>
</tr>
<tr>
<td>SPG300 &amp; SPG300HF</td>
</tr>
<tr>
<td>SPG600 &amp; SPG600HF</td>
</tr>
<tr>
<td>SPG600LS &amp; SPG600LSHF</td>
</tr>
</tbody>
</table>

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.
The family of grippers offering the widest choice of options!

"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 ±.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

**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.

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.
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.

<table>
<thead>
<tr>
<th>Model</th>
<th>Spring Force @ Full Open</th>
<th>Spring Force @ Full Close</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPG200</td>
<td>3.8 lbs</td>
<td>4.9 lbs</td>
</tr>
<tr>
<td>SPG300</td>
<td>7.4 lbs</td>
<td>12.0 lbs</td>
</tr>
<tr>
<td>SPG600</td>
<td>35.0 lbs</td>
<td>70.0 lbs</td>
</tr>
</tbody>
</table>

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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.

<table>
<thead>
<tr>
<th>Model</th>
<th>Spring Force Per Jaw To Open (Option P)</th>
<th>Spring Force Per Jaw To Close (Option G)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Spring Force @ Full Close</td>
<td>Spring Force @ Full Close</td>
</tr>
<tr>
<td>SPG200</td>
<td>3.5 lbs</td>
<td>5.3 lbs</td>
</tr>
<tr>
<td>SPG300</td>
<td>7.1 lbs</td>
<td>12.0 lbs</td>
</tr>
<tr>
<td>SPG600</td>
<td>33.0 lbs</td>
<td>63.0 lbs</td>
</tr>
</tbody>
</table>

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.