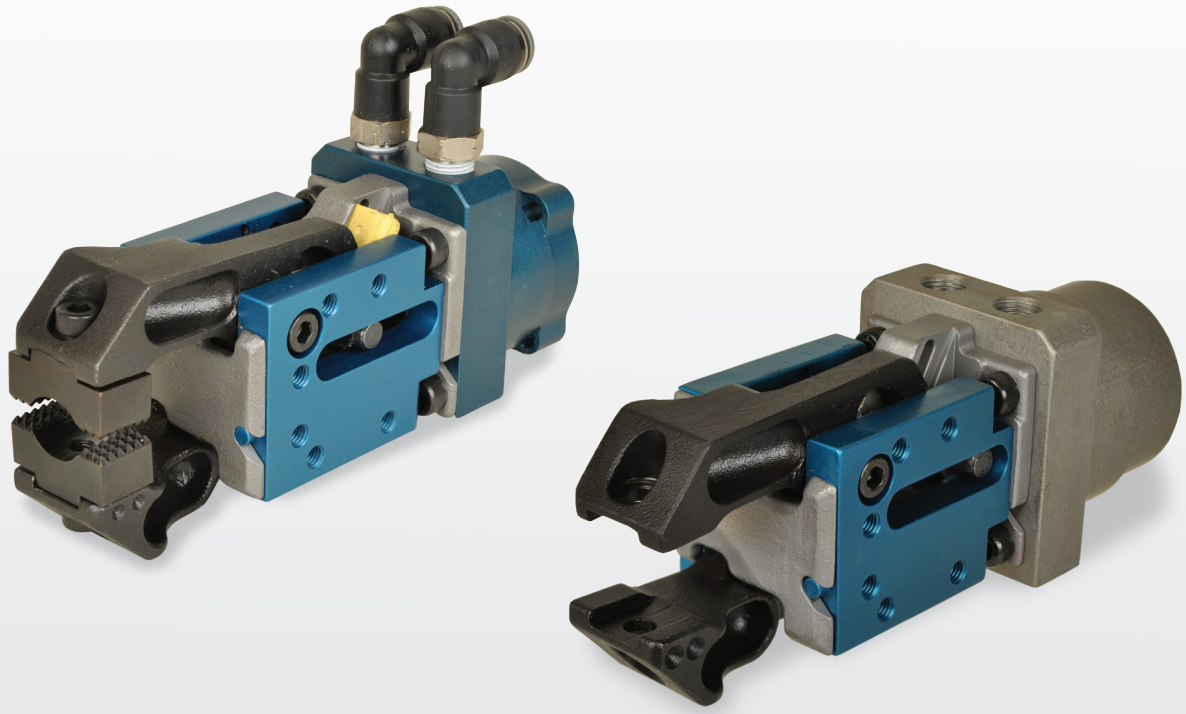
IMI NORGREN

Auto In-plant

# PGS10 and PGS11 Series Grippers
## User instructions



Engineering GREAT Solutions

IMI Precision Engineering

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## For internal use only

### Revisions record

| Revisions | ECN. NO. | BY | DATE |
|---|---|---|---|
| REL | 25455 | MGF | 11/21/07 |
| 001 | 25455 | MS | 6/12/08 |
| 002 | 25779 | MGF | 02/19/09 |
| 003 | 25881 | RRH | 09/25/09 |
| 004 | 26054 | MGF | 11/27/12 |

| DRAWN | DATE |
|---|---|
| MFG | 11/02/07 |
| **CHECKED** | **DATE** |
| RRH | 10/05/09 |
| **DES ENG** | **DATE** |
| JJA | 11/02/07 |
| **APPR,** | **DATE** |
| DAM | 10/05/09 |
| **DES ENG** | **DATE** |
| JJA | 11/27/12 |
| **DES ENG** | **DATE** |
| RRH | 11/27/12 |

## I. Reference:
001POL Quality Policy

## II. Purpose:
This document instructs the operator how to use the PGS10 & 11 Grippers

## III. Scope:
This work instruction covers Port Size and Operation, Unlocking of Jaws & Setting Open Jaw Angle.

## IV. Safety:
Safety glasses or approved eye protection must be worn at all times. Steps involving chemical bonding require the use of proper ventilation and skin protection in accordance with manufacturer's MSDS.

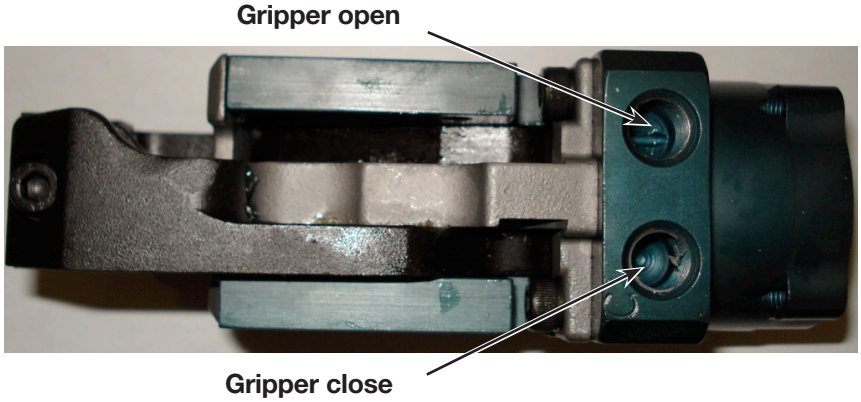
## V. Applicable Documents:
15559SP - PGS10 Catalog

## VI. Equipment Required:
Standard Bench Tools

## VII. Procedures

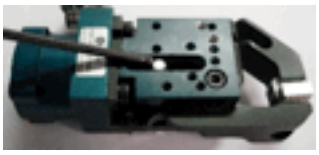
### A. Port Size and Operation

1. Ports are available in 1/8" NPS or 1/8 Rc.



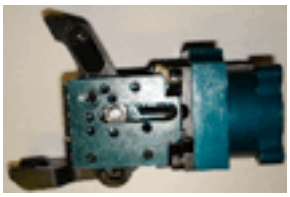
## B. Gripper Unlock

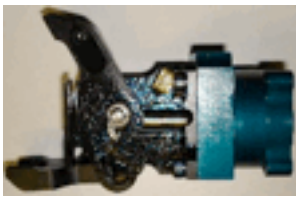
1. Release jaw by using a hex key or flat screwdriver and pushing on drive pin through slot in side plate


## C. Jaw Removal

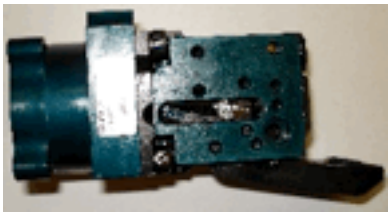
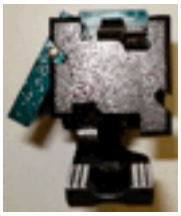
1. Unlock gripper as shown in step B and remove pad(s) from existing jaws. Set a side for re-assembly.
2. Top jaw should always be removed first. Remove SHCS from side plate or indirect sensor. Rotate side plate/sensor up to about 45° and remove side plate/sensor from gripper. Set SHCS and Side Plate/Sensor aside for re-assembly. Remove bumper from gripper.





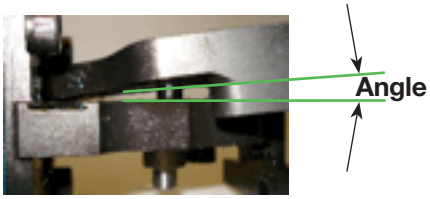

3. Remove jaw from gripper and flip gripper over to remove other jaw


4. Remove SHCS from side plate/sensor. Rotate side plate/sensor up to about 45° angle and remove from gripper. Set SHCS and Side Plate/Sensor aside for re-assembly.


### C. Jaw Removal continued

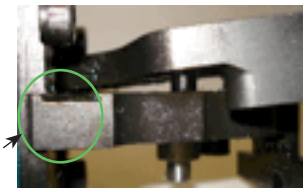
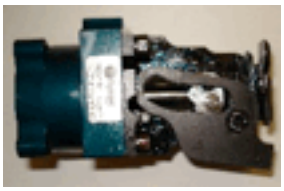
5. Remove bushing from lower jaw using a small flat screwdriver or hex key and set aside for re-assembly. Lower jaw should be rotated completely down before removal. Lift up on front of jaw by pad so there is an angle between jaw and frame. Remove lower jaw from gripper.

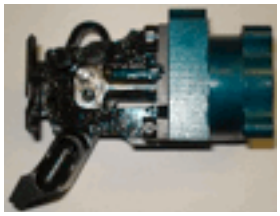
### D. Jaw Replacement

1. For lower jaws **(10151,11105,11105-01, 11105-02, 11106, 11106-01, 11106-02,11103,12978,12978-01, 12978-02, 12985, 12985-01, 12985-02):** Apply grease to cam and inside of jaw. Angle new jaw so that tail of jaw goes in pocket of frame. Align pivot hole with boss and drive pin with the bottom side of the cam slot. Carefully slide jaw over boss and onto gripper. Replace bushing over pin and into cam. Apply grease to outside of jaw.

**Tail of jaw in pocket**


2. Refer to step F for installing a Side Plate or Indirect Sensor.
3. Flip gripper over for top jaw installation



4. **For upper jaws:** Apply grease to cam and inside of jaw. Replace bushing over drive pin and onto gripper. Align hole in jaw with boss on frame and cam with bushing. Slide jaw over boss and drive pin so that jaw rests on gripper. Apply grease to outside of jaw.


5. Refer to step E-2 to set bumper position. Refer to step B for installing a Side Plate or Indirect Sensor.

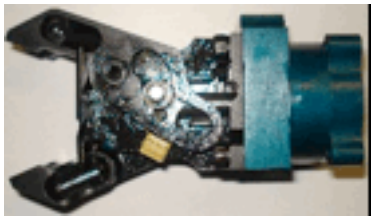
## E. Setting Jaw Open Angle

1. Look for bumper which should be on the upper jaw side. Remove M5X12mm SHCS from side plate. If indirect sensor is in place of side plate remove M5X30mm from indirect sensor. Rotate side plate/sensor up to about a 45° and remove from gripper. Set SHCS and Side Plate/Sensor aside for re-assembly. Remove bumper from gripper.



2. Insert bumper into new position, based on required open jaw angle. Bumpers should only be on the top jaw side of gripper. Jaws do not need to be removed to change bumper position. Insert bumper into frame and insure bumper is seated properly.

**22° Open Jaw Angle**

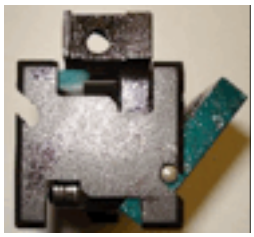


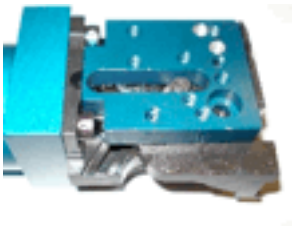
**45° Open Jaw Angle**

**70° Open Jaw Angle**

## F. Installing a Side Plate or Indirect Sensor

1. With the **Side Plate** at 45°,align pins of side plate with slots of frame. Slide pins into slot. When pins are fully seated, rotate side plate and slide down onto frame.

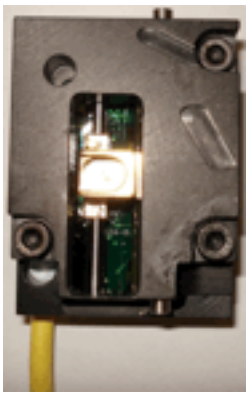
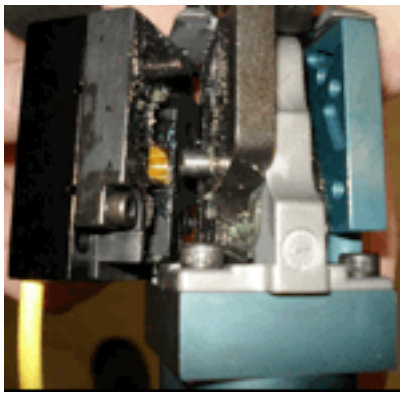




## F. Installing a Side Plate or Indirect Sensor continued

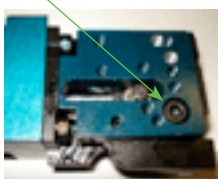
2. If an **Indirect Sensor** is to be installed, move brass bushing in sensor to align with drive pin in gripper. This must be done to correctly install sensor. Align dowel pins with slots of frame. Once pins are fully into slots, rotate sensor down onto frame. As rotation begins **make sure bushing and drive pin are still aligned**.

**Note:** Whenever any part of the gripper is replaced including pads the sensor will need to be recalibrated, see step J.


3. Clean and apply Loctite 262 or equivalent to M5 X 12mm SHCS for side plate or M5 X 30mm SHCS for sensor. Insert through side plate/sensor and into frame. Tighten M5 SHCS to **72in-lb**.

**Side Plate**

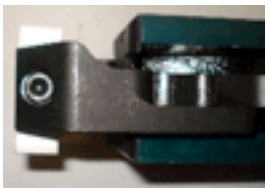
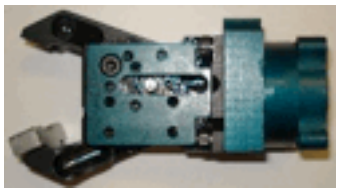



**Indirect Sensor**

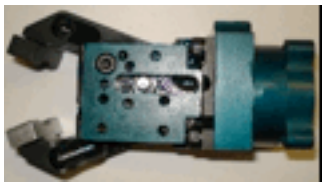

## G. Pad Replacement

1. Unlock jaws on gripper & open jaws to get access to pads. Side plates/sensor **DO NOT** need to be removed. Refer to Gripper Unlock section B.

2. Remove M5X8mm SHCS from jaw.

3. 


3. Apply Loctite 262 to M5 X 8mm SHCS and insert into one of the jaws. Take replacement pads and insert it into the opposite side of the jaw with SHCS sticking out. Thread SHCS into pad and tighten to **72in-lb.** Repeat step for other jaw. Chisel jaws only require one pad

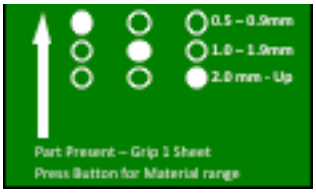


## H. Calibrating In-Direct Sensor

Sensor must be calibrated whenever any part of the gripper is replaced including pads.

1. Part Present

a. To program the sensor for a particular material thickness, apply air to the gripper and grip on the material thickness which is to be used for the particular job. With an object such as a small Allen wrench, press the button until the Red LED corresponding to the material range of the job lights as shown on the label.



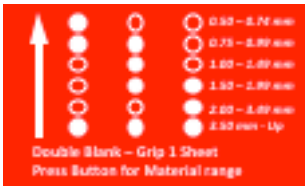

b) Verify calibration:

**(1)** Close the gripper with no material between the pads. The LED should be off.

**(2)** Close the gripper on a single blank of material. The Red LED corresponding to your material range should be on.

2. Double Blank

a) To program the sensor for a particular material thickness, apply air to the gripper and grip on the material thickness which is to be used for the particular job. With an object such as a small Allen wrench, press the button until the Red LED(s) corresponding to the material range of the job lights as shown on the label.



## H. Calibrating In-Direct Sensor continued

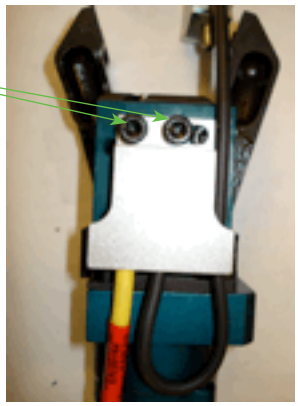
b) Verify calibration:

**(1)** Close the gripper with no material between the pads. The LED(s) should be off.

**(2)** Close the gripper on a single blank of material. The Red LED(s) corresponding to you material range should be on.

## I. Installing an In-Pad Sensor

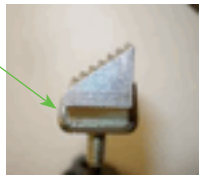
1. If an **In-Pad Sensor** is to be installed, it goes on top of the side plate assembly. Wrap sensor cable through holder and align holes on side plate. Clean and apply Red Loctite 262 or equivalent to 2X M5 X 10mm SHCS and thread thru sensor into side plate. Tighten both SHCS to **36in-lb**.



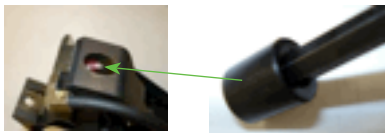
2. Shim is **only** used for part numbers listed. If a shim is to be used on an angle pad, smaller tabs go on the narrow side of the pads.

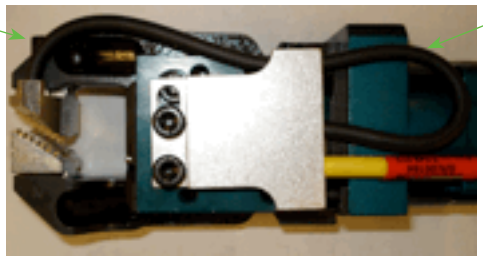
**PGS10RXXXXX1XXX**
**PGS10FXXXXX1XXX**
**PGS10CXXXXX1XXX**
**PGS10DXXXXX4XXX**
**PGS10EXXXXX7XXX**
**PGS10SXXXXX1XXX**
**PGS10TXXXXX4XXX**
**PGS10UXXXXX7XXX**
**PGS10VXXXXX1XXX**
**PGS10WXXXXX4XXX**
**PGS10YXXXXX7XXX**

**Small Tabs**



3. Apply Red Loctite 262 or equivalent to sensor stud, place thru jaw and tighten sensor nut to **72in-lb**.





**Cable should follow the contour of the gripper jaw**

**Cable storage loop can be adjusted with a push/pull motion to provide more or less cable slack in gripper jaw area**

## VIII. Cleaning and Maintenance:

A) Remove excess grease from outer surfaces of gripper.
B) No required maintenance.

## IX. Quality Assurance Requirements:

A) Verify that jaws shall open freely. Look for any irregular movement, binding, or interference.

## X. Specifications:

| Gripper | Throat Depth Inch (mm) | Flange Height Inch (mm) | Working Pressure | Double Sided Grip Force Up To | Actuation Time |
|---|---|---|---|---|---|
| **PGS10C** | .76 19.3 | 1.27 (32.3) | 60 psi (413kPa) Min. – 100 psi (689 kPa) Max. | 450lbs (200kgf) @ 80 psi (551kPa) | .050±.010 sec close / <.090 sec open |
| **PGS10D** | .76 19.3 | 1.27 (32.3) | 60 psi (413kPa) Min. – 100 psi (689 kPa) Max. | 450lbs (200kgf) @ 80 psi (551kPa) | .050±.010 sec close / <.090 sec open |
| **PGS10E** | .76 19.3 | 1.27 (32.3) | 60 psi (413kPa) Min. – 100 psi (689 kPa) Max. | 450lbs (200kgf) @ 80 psi (551kPa)) | .050±.010 sec close / <.090 sec open |
| **PGS10F** | .92 23.4 | 1.21 (30.6mm) | 60 psi (413kPa) Min. – 100 psi (689 kPa) Max. | 450lbs (200kgf) @ 80 psi (551kPa) | .050±.010 sec close / <.090 sec open |
| **PGS10R** | .75 19 | 1.03 (26.3mm) | 60 psi (413kPa) Min. – 100 psi (689 kPa) Max. | 450lbs (200kgf) @ 80 psi (551kPa) | .050±.010 sec close / <.090 sec open |
| **PGS10S** | .76 19.3 | 1.27 (32.3) | 60 psi (413kPa) Min. – 100 psi (689 kPa) Max. | 450lbs (200kgf) @ 80 psi (551kPa) | 050±.010 sec close / <.090 sec open |
| **PGS10T** | .76 19.3 | 1.27 (32.3) | 60 psi (413kPa) Min. – 100 psi (689 kPa) Max. | 450lbs (200kgf) @ 80 psi (551kPa) | .050±.010 sec close / <.090 sec open |
| **PGS10U** | .76 19.3 | 1.27 (32.3) | 60 psi (413kPa) Min. – 100 psi (689 kPa) Max. | 450lbs (200kgf) @ 80 psi (551kPa) | .050±.010 sec close / <.090 sec open |
| **PGS10V** | .76 19.3 | 1.27 (32.3) | 60 psi (413kPa) Min. – 100 psi (689 kPa) Max. | 450lbs (200kgf) @ 80 psi (551kPa) | .050±.010 sec close / <.090 sec open |
| **PGS10W** | .76 19.3 | 1.27 (32.3) | 60 psi (413kPa) Min. – 100 psi (689 kPa) Max. | 450lbs (200kgf) @ 80 psi (551kPa) | .050±.010 sec close / <.090 sec open |
| **PGS10Y** | .76 19.3 | 1.27 (32.3) | 60 psi (413kPa) Min. – 100 psi (689 kPa) Max. | 450lbs (200kgf) @ 80 psi (551kPa) | .050±.010 sec close / <.090 sec open |

| | Chisel jaw / shovel | | Regular / flange jaw | |
|---|---|---|---|---|
| **Single blank thickness** | **Movable jaw pad color** | **Opposing fixed jaw color** | **Moveable jaw pad color** | **Opposing jaw pad color** |
| 0.50mm to 2.0mm | Black (note 1) | Black | Black | Black |
| 2.01mm to 3.5mm | Silver | Black | Silver | Silver |
| 3.51mm to 5.0mm | Black (note 1) | Silver | Gold | Silver |
| 5.01mm to 6.5mm | Silver | Silver | n/a | n/a |
| 6.51mm to 8.0mm | Black (note 1) | Gold | n/a | n/a |
| 8.01mm to 9.5mm | Silver | Gold | n/a | n/a |

**Note 1:** A shim is required under a black pad when it is installed on a chisel jaw gripper. This shim is included in all black replacement pad kits for the chisel jaw gripper.

**Warning**
Improper selection, misuse, age or malfunction of components used in systems can cause failure in various modes. The system designer is warned to consider the failure modes of all component parts and to provide adequate safeguards to prevent personal injury or damage to equipment or property in the event of such failure modes. System designers and end users are cautioned to consult instruction sheets and specifications available from the factory. The system designer/end user is responsible for verifying that all requirements for the application are met.

**Proposition 65:** These products may contain chemicals known to the state of California to cause cancer, or birth defects, or other reproductive harm.

**Warranty**
The products described herein are warranted subject to seller's Standard Terms and Condition of Sale, available at seller's website.