PGL-plus-P

Universal 2-finger parallel gripper with a large jaw stroke, integrated sensor system and high payload due to use of a multi-tooth guidance

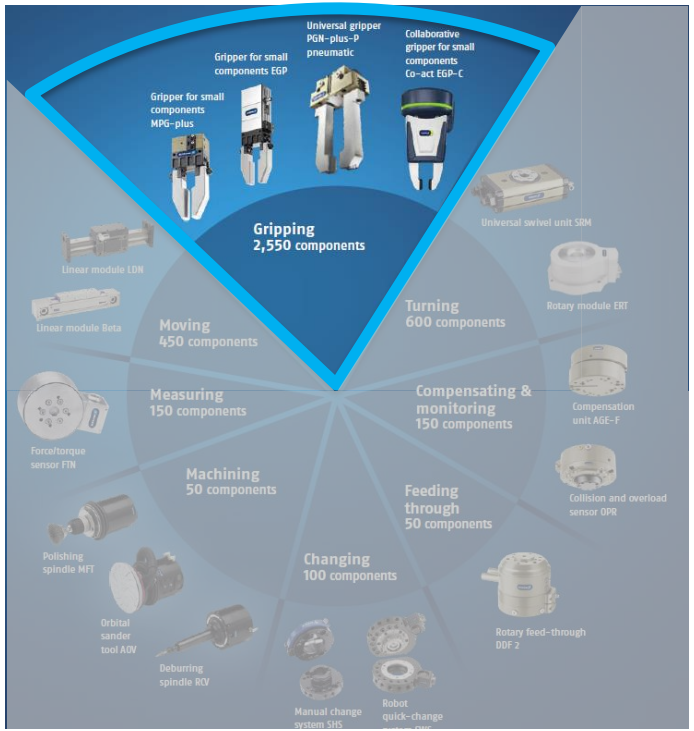
For internal use only!

Agenda | PGL-plus-P product training

1. Classification in the SCHUNK product portfolio
2. Competitive comparison
3. Product presentation
3. Advantages/ benefits and USPs

PGL-plus-P | Classification in the product portfolio

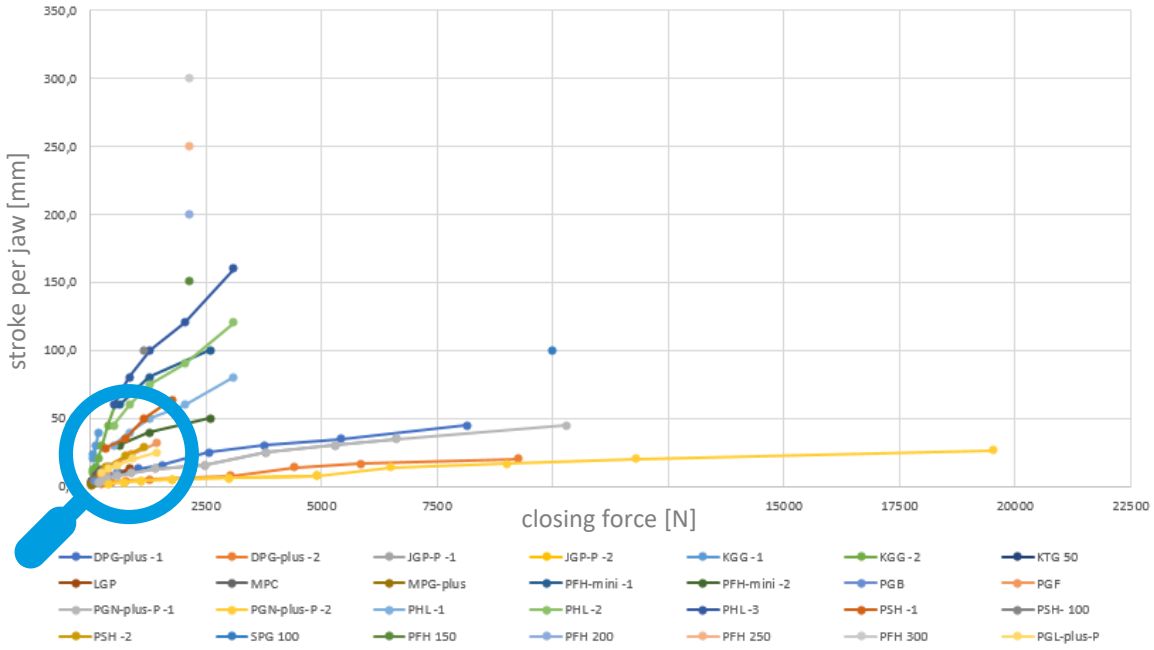
Classification in the product portfolio



Gripping

Classification in the product portfolio

pneumatic parallel grippers

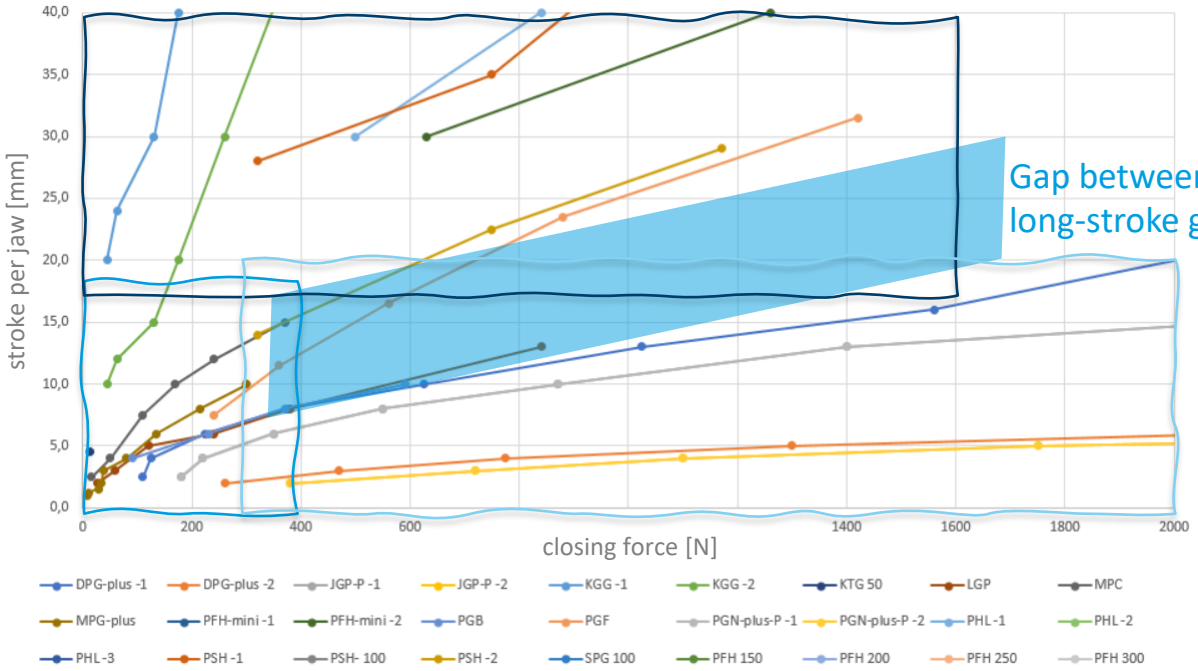


Classification in the product portfolio

pneumatic parallel grippers

Long-stroke gripper

Gripper for small components



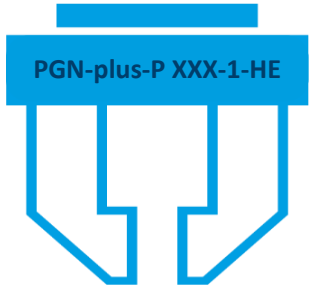
Gap between universal and long-stroke grippers

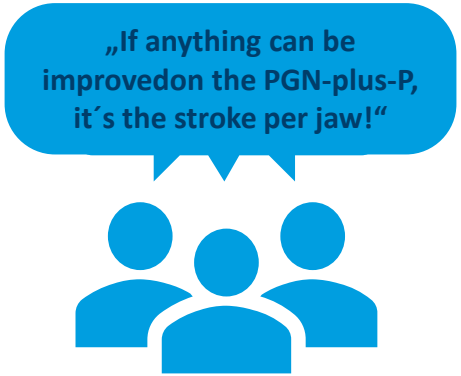
Universal gripper

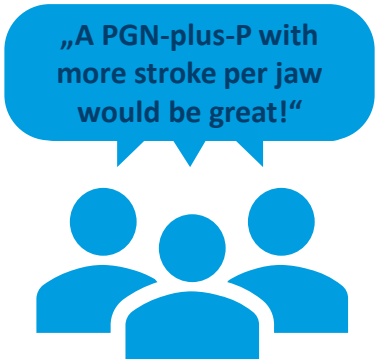
Classification in the product portfolio

"**Gripper selection** is **often based on** required **stroke/jaw** and not necessarily on the gripping force."

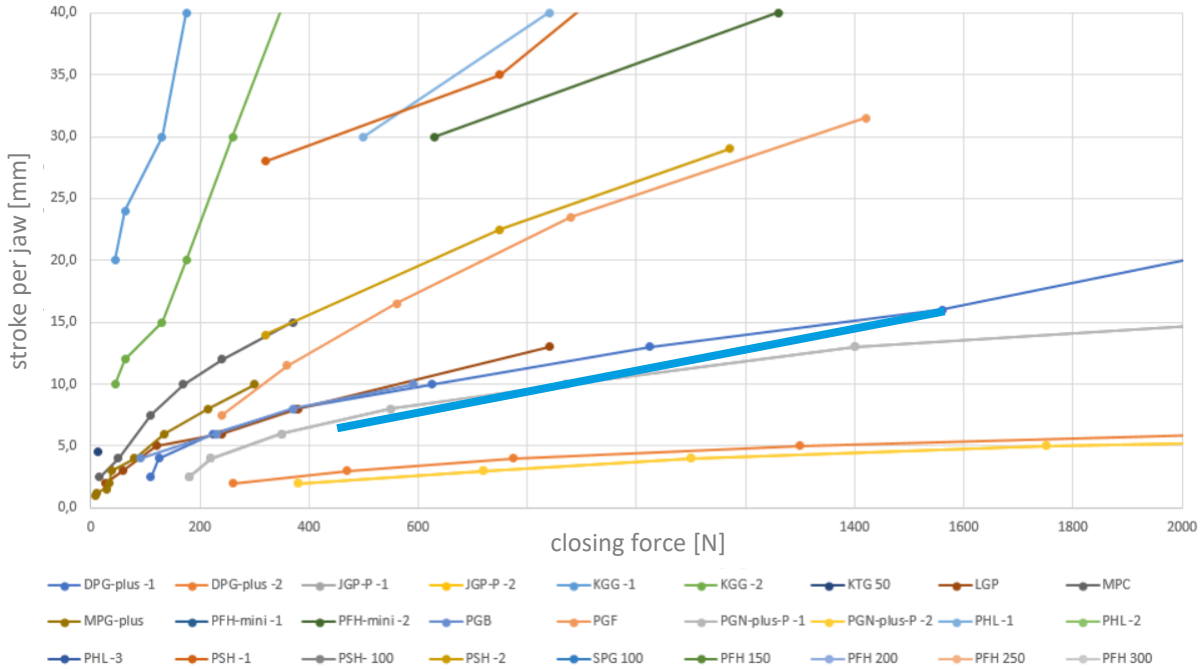
This often leads to the **fact that grippers** are **oversized** due to the required stroke/jaw!



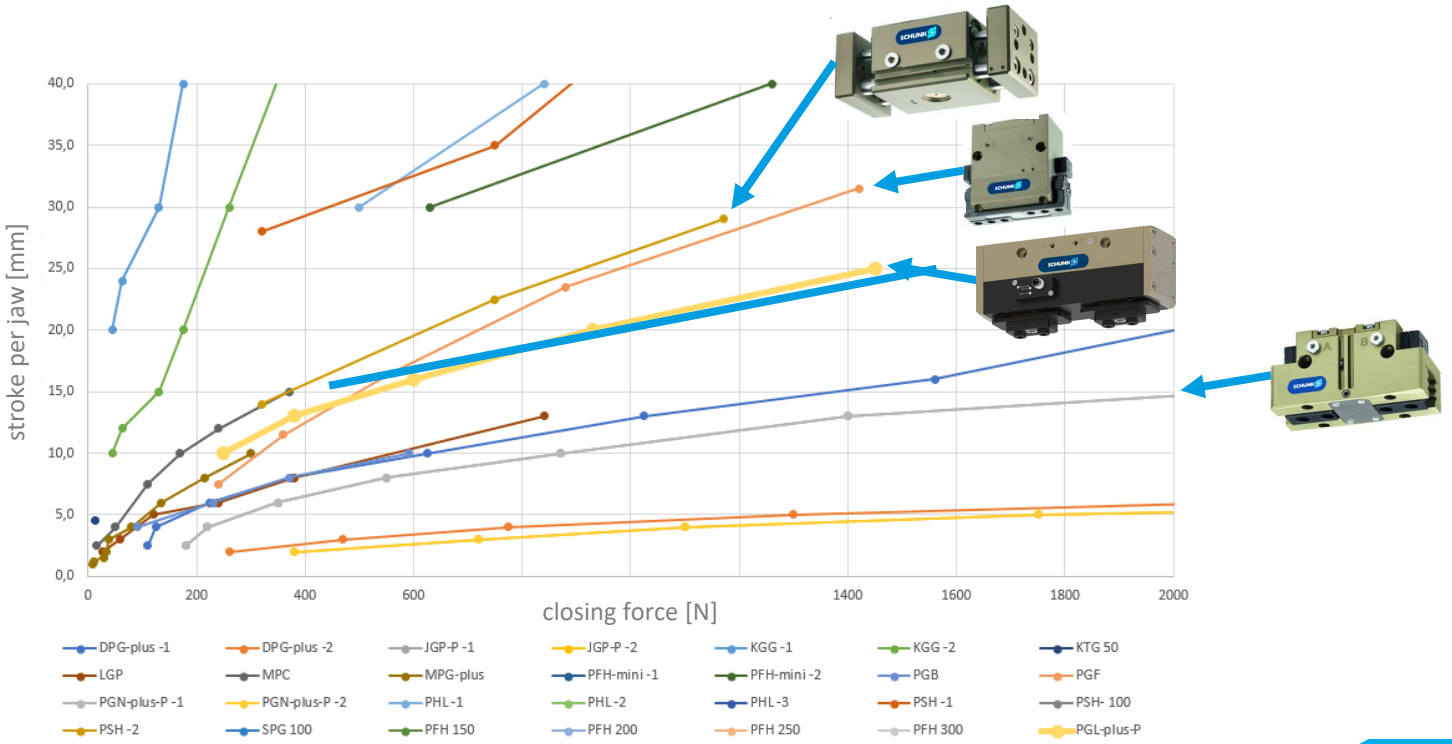




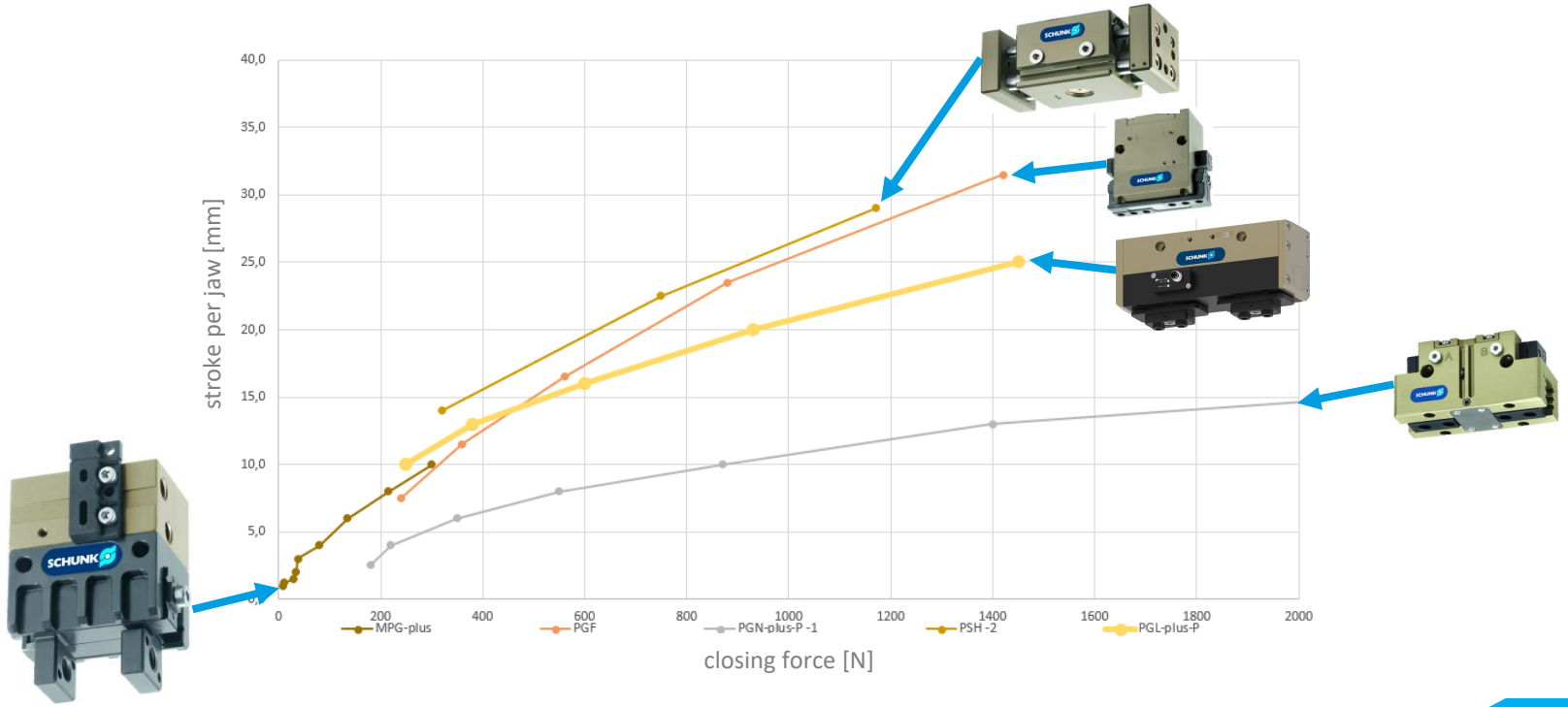
Classification in the product portfolio



Classification in the product portfolio



Classification in the product portfolio



PGL-plus-P – Compare with which grippers?

- PGN-plus-P …-1

- PGF

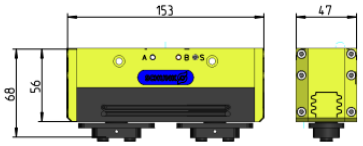
- PSH …-2

Come closest to the PGL-plus-P in the portfolio

PGL-plus-P – What to compare?

Example

PGL-plus-P 16



gripping force	550 N
stroke per jaw	16 mm
finger length	160 mm
weight	1,39 kg
IP	64

comparable with PGN-plus-P 80-1

gripping force	550 N
stroke per jaw	8 mm
finger length	125 mm
weight	0,51 kg
IP	40

comparable with PGN-plus-P 160-1

gripping force	2.500 N
stroke per jaw	16 mm
finger length	245 mm
weight	3 kg
IP	40

comparable with PGN-plus-P 100-1

gripping force	870 N
stroke per jaw	10 mm
finger length	160 mm
weight	0,9 kg
IP	40

- ✓ with the same gripping force → **double stroke per jaw**
- ✓ with the same stroke/ jaw → **half weight**
- ✓ with the same finger length → **60% larger stroke per jaw**

PGL-plus-P – What to compare?

- gripping force [N]
- stroke per jaw [mm]
- finger length [mm]
- weight [kg]
- dimensions [mm]
- ...

It must always be checked in detail with which property to compare.

A general comparison is not possible!

The PGL-plus-P has
- the **IP**-protection class **64** (dust-tight version)
- H1-grease (H1G-version)

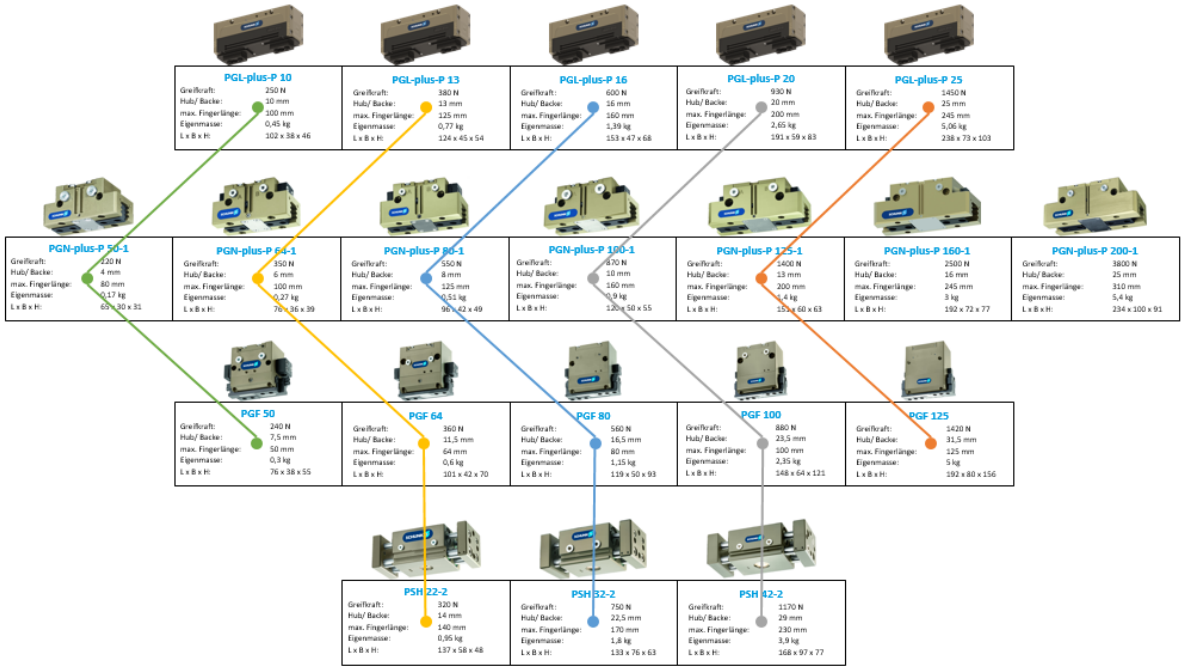
integrated in the standard.

PGL-plus-P – Comparison via gripping force

+/-240 N

PGL-plus-P		PGN-plus-P		PGF		PSH	
size	gripping force	size	gripping force	size	gripping force	size	gripping force
10	220 N	50-1	220 N	50	240 N	-	
13	350 N	64-1	350 N	64	360 N	22-2	320 N
16	550 N	80-1	550 N	80	560 N	32-2	750 N
20	870 N	100-1	870 N	100	880 N	42-2	1170 N
25	1300 N	125-1	1400 N	125	1420 N	-	

PGL-plus-P – Comparison via gripping force

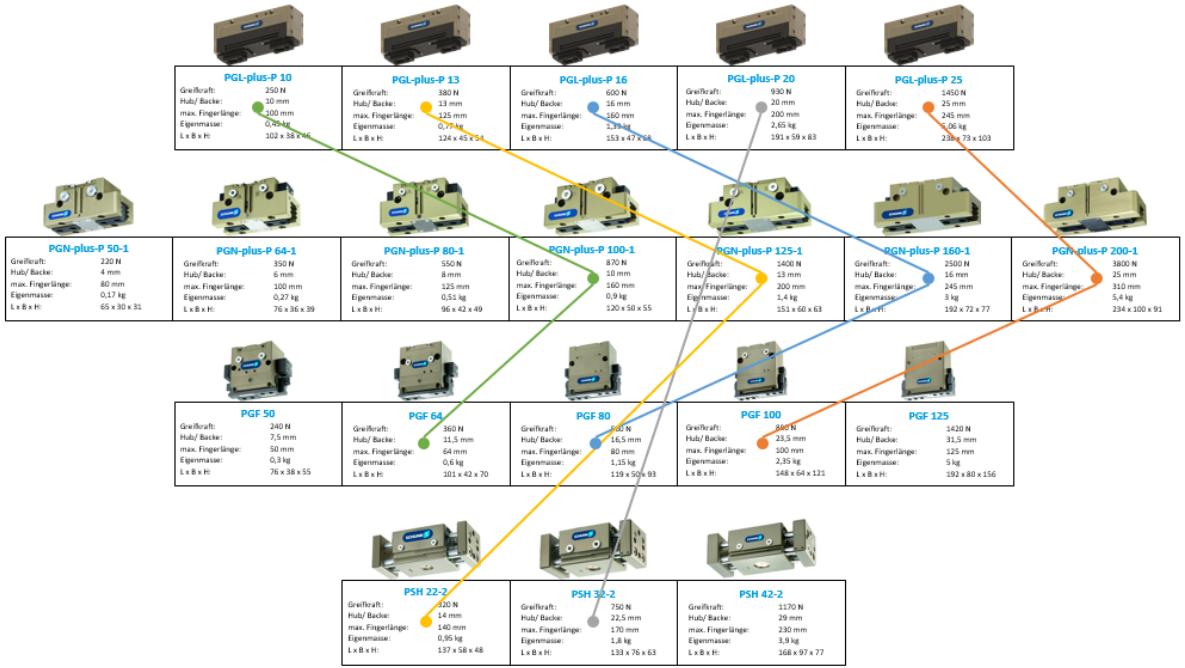


PGL-plus-P – Comparison via stroke per jaw

+/-2,5 mm

PGL-plus-P		PGN-plus-P		PGF		PSH	
size	stroke/ jaw	size	stroke/ jaw	size	stroke/ jaw	size	stroke/ jaw
10	10 mm	100-1	10 mm	64	11,5 mm	-	
13	13 mm	125-1	13 mm	-		22-2	14 mm
16	16 mm	160-1	16 mm	80	16,5 mm	-	
20	20 mm			-		32-2	22,5 mm
25	25 mm	200-1	25 mm	100	23,5 mm	-	

PGL-plus-P – Comparison via stroke per jaw

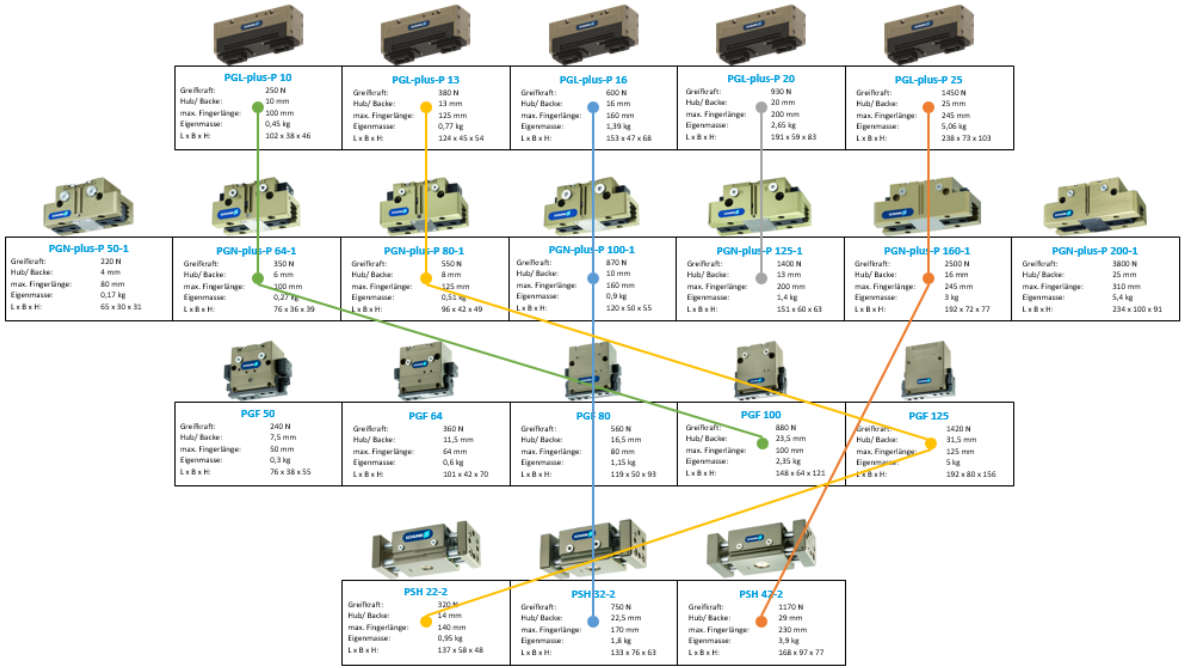


PGL-plus-P – Comparison via finger length

+/-15 mm

PGL-plus-P		PGN-plus-P		PGF		PSH	
size	finger length	size	finger length	size	finger length	size	finger length
10	100 mm	64-1	100 mm	100	100 mm	-	
13	125 mm	80-1	125 mm	125	125 mm	22-2	140 mm
16	160 mm	100-1	160 mm	-		32-2	170 mm
20	200 mm	125-1	200 mm	-		-	
25	245 mm	160-1	245 mm	-		42-2	230 mm

PGL-plus-P – Comparison via finger length

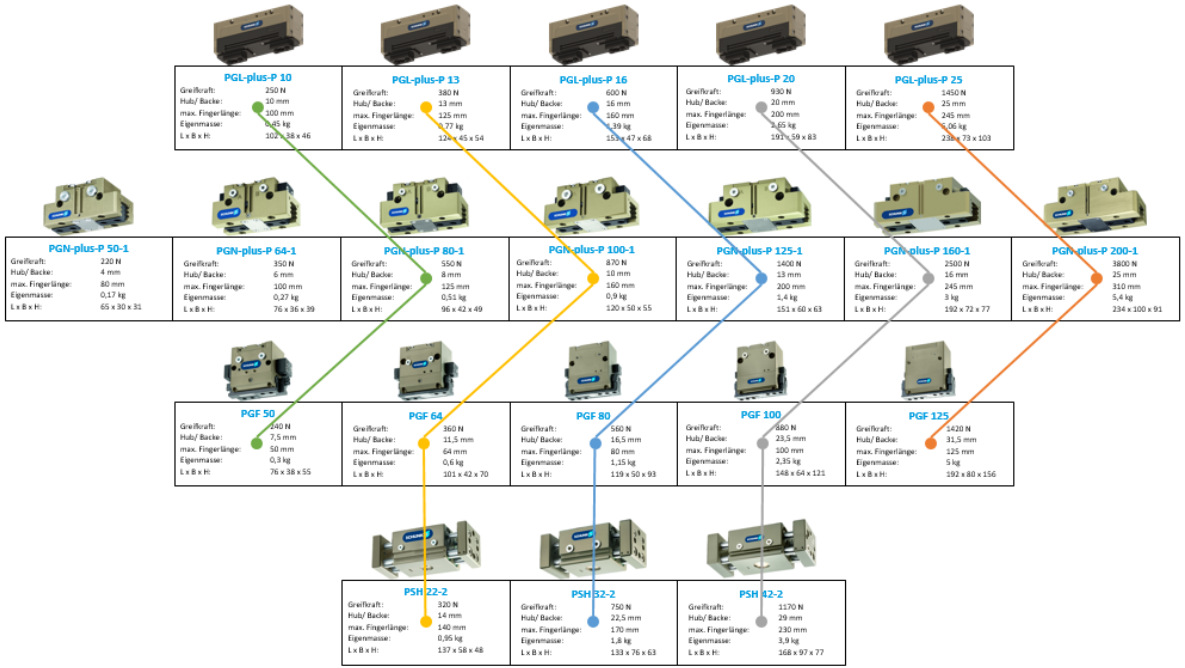


PGL-plus-P – Comparison via weight

+/-1,25 kg

PGL-plus-P		PGN-plus-P		PGF		PSH	
size	weight	size	weight	size	weight	size	weight
10	0,45	80	0,51	50	0,3	-	
13	0,77	100	0,9	64	0,6	22-2	0,95
16	1,39	125	1,4	80	1,15	32-2	1,8
20	2,65	160	3	100	2,35	42-2	3,9
25	5,06	200	5,4	125	5	-	

PGL-plus-P – Comparison via weight

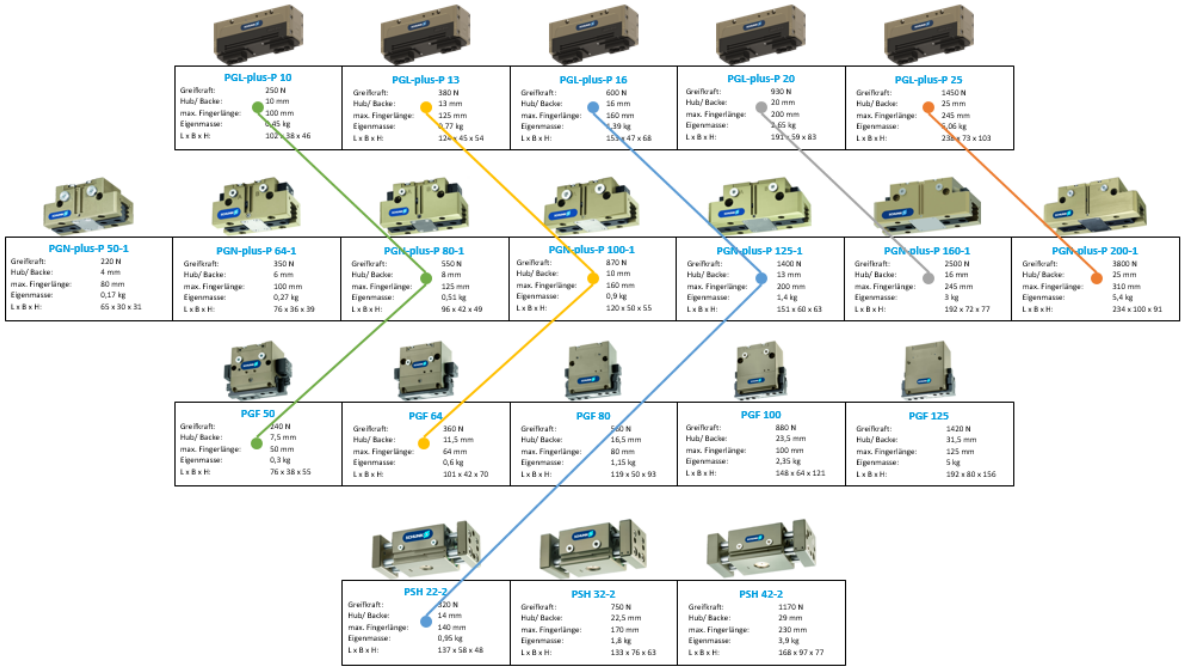


PGL-plus-P – Comparison via dimensions

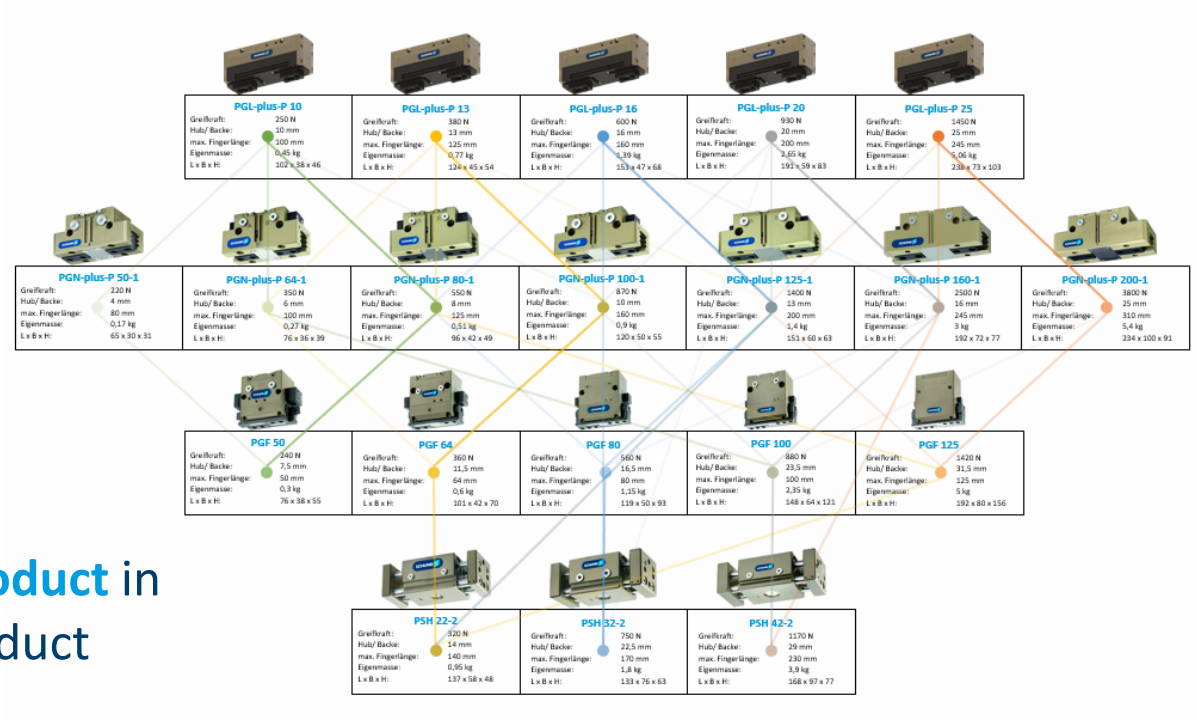
+/-30 mm

PGL-plus-P				PGN-plus-P				PGF				PSH			
size	L	W	H	size	L	W	H	size	L	W	H	size	L	W	H
10	102	38	46	80-1	96	42	49	50	76	38	55	-			
13	124	45	54	100-1	120	50	55	64	101	42	70	-			
16	153	47	68	125-1	151	60	63	-				22-1	137	58	48
20	191	59	83	160-1	192	72	77	-				-			
25	238	73	103	200-1	234	100	91	-				-			

PGL-plus-P – Comparison via dimensions



PGL-plus-P – Classification in the product portfolio



There is **no 1:1 comparable product** in our current product portfolio!

PGL-plus-P – Classification in the product portfolio

Does the PGL-plus-P replace one of the grippers closest to it?

PGN-plus-P

No, the PGN-plus-P has established itself as the "gripper standard". PGL-plus-P is not compatible and completes the portfolio with regard to more jaw stroke, among other things.

PGF

No, the grippers are different from their characteristics.

PSH

No, because the PSH serves other areas of application due to its circular .

PGL-plus-P vs. PGF

The technical data

- gripping force
- weight
- stroke per jaw

are similar, in

- **dimensions** (Design)
- **finger length**

the grippers are **completely different** and therefore not compatible.

gripping force
weight

PGL-plus-P 10		PGL-plus-P 13		PGL-plus-P 16		PGL-plus-P 20		PGL-plus-P 25	
Greifkraft:	250 N	Greifkraft:	380 N	Greifkraft:	600 N	Greifkraft:	930 N	Greifkraft:	1450 N
Hub/ Backe:	10 mm	Hub/ Backe:	13 mm	Hub/ Backe:	16 mm	Hub/ Backe:	20 mm	Hub/ Backe:	25 mm
max. Fingerlänge:	100 mm	max. Fingerlänge:	125 mm	max. Fingerlänge:	160 mm	max. Fingerlänge:	200 mm	max. Fingerlänge:	245 mm
Eigenmasse:	0,45 kg	Eigenmasse:	0,77 kg	Eigenmasse:	1,39 kg	Eigenmasse:	2,65 kg	Eigenmasse:	5,06 kg
L x B x H:	102 x 38 x 46	L x B x H:	124 x 45 x 54	L x B x H:	153 x 47 x 68	L x B x H:	191 x 59 x 83	L x B x H:	238 x 73 x 103

PGF 50		PGF 64		PGF 80		PGF 100		PGF 125	
Greifkraft:	240 N	Greifkraft:	360 N	Greifkraft:	560 N	Greifkraft:	880 N	Greifkraft:	1420 N
Hub/ Backe:	7,5 mm	Hub/ Backe:	11,5 mm	Hub/ Backe:	16,5 mm	Hub/ Backe:	23,5 mm	Hub/ Backe:	31,5 mm
max. Fingerlänge:	50 mm	max. Fingerlänge:	64 mm	max. Fingerlänge:	80 mm	max. Fingerlänge:	100 mm	max. Fingerlänge:	125 mm
Eigenmasse:	0,3 kg	Eigenmasse:	0,6 kg	Eigenmasse:	1,15 kg	Eigenmasse:	2,35 kg	Eigenmasse:	5 kg
L x B x H:	76 x 38 x 55	L x B x H:	101 x 42 x 70	L x B x H:	119 x 50 x 93	L x B x H:	148 x 64 x 121	L x B x H:	192 x 80 x 156

Stroke/ jaw

PGF 64		PGF 80		PGF 100	
Greifkraft:	360 N	Greifkraft:	560 N	Greifkraft:	880 N
Hub/ Backe:	11,5 mm	Hub/ Backe:	16,5 mm	Hub/ Backe:	23,5 mm
max. Fingerlänge:	64 mm	max. Fingerlänge:	80 mm	max. Fingerlänge:	100 mm
Eigenmasse:	0,6 kg	Eigenmasse:	1,15 kg	Eigenmasse:	2,35 kg
L x B x H:	101 x 42 x 70	L x B x H:	119 x 50 x 93	L x B x H:	148 x 64 x 121

dimensions

PGF 50		PGF 64	
Greifkraft:	240 N	Greifkraft:	360 N
Hub/ Backe:	7,5 mm	Hub/ Backe:	11,5 mm
max. Fingerlänge:	50 mm	max. Fingerlänge:	64 mm
Eigenmasse:	0,3 kg	Eigenmasse:	0,6 kg
L x B x H:	76 x 38 x 55	L x B x H:	101 x 42 x 70

Finger length

PGF 100		PGF 125	
Greifkraft:	880 N	Greifkraft:	1420 N
Hub/ Backe:	23,5 mm	Hub/ Backe:	31,5 mm
max. Fingerlänge:	100 mm	max. Fingerlänge:	125 mm
Eigenmasse:	2,35 kg	Eigenmasse:	5 kg
L x B x H:	148 x 64 x 121	L x B x H:	192 x 80 x 156

PGL-plus-P vs. PGF

The **sales numbers** of the **PGF** are currently still at a **high level**.

Due to the differences to the PGL-plus-P and the sales figures of the PGF, phasing out the PGF does not make sense at the moment.

PGL-plus-P – Classification in the product portfolio

- There is **no 1:1 comparable product** in our current SCHUNK gripper product portfolio
- The **PGL-plus-P does not replace an existing product**
- The **PGL-plus-P is the perfect addition to** the SCHUNK gripper **product portfolio**.
- The **PGL-plus-P positions** itself **between universal and long-stroke grippers**

PGL-plus-P – Classification in the product portfolio

NEW

PGL-plus-P | Competitive comparison

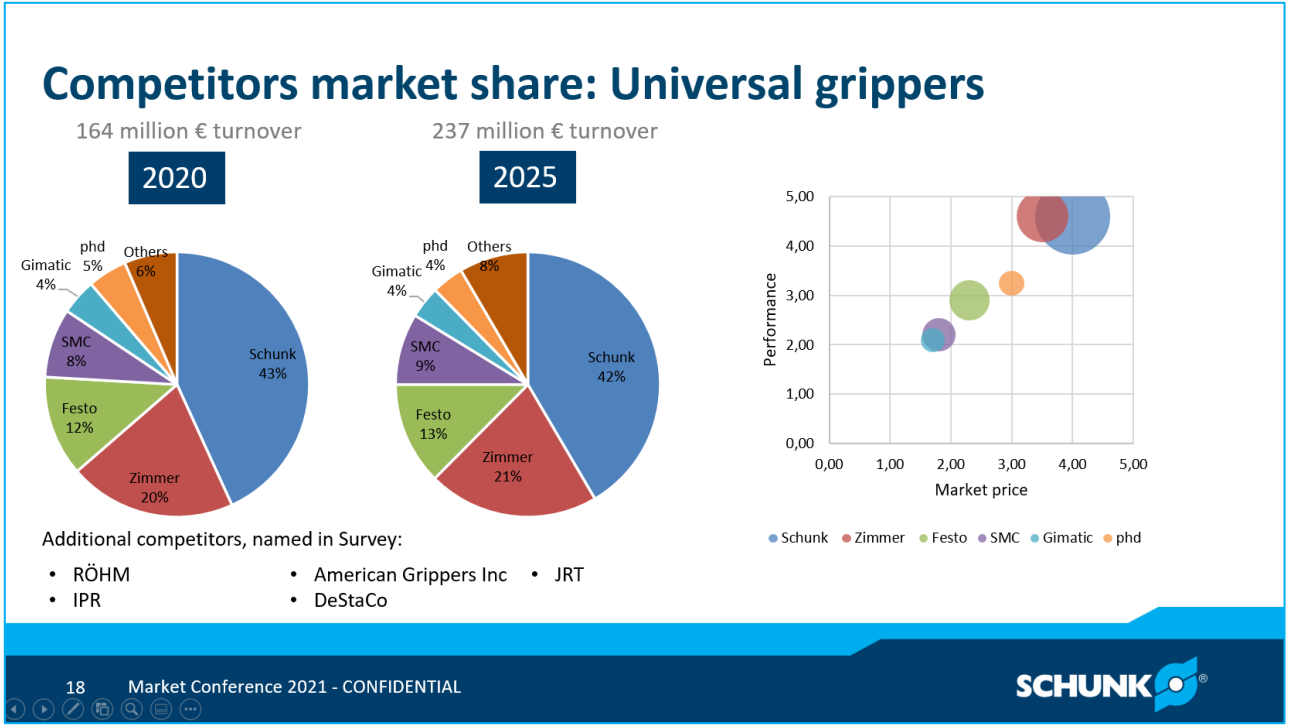
Competitive environment

Pneumatic universal grippers

Competitive environment

Main Competitors - According to the market segmentation in the environment of universal pneumatic grippers.

[SCHUNK Market Conference 2021]



PGL-plus-P – Compare with which competitor?

- phd
- GIMATIC
- SMC
- FESTO
- ZIMMER group

4% market share

21% market share

PGL-plus-P – PHD

13 pneumatic 2-finger parallel grippers


GRA


GRD


GRK


190/191


GRF


GRC


GRR


GRS


GRH


GRL


5300


GRW


OGZ

PGL-plus-P – PHD

13 pneumatic 2-finger parallel grippers

Kleinteilegreifer


GRA


GRF


OGZ


190/191


GRD


GRS


GRK

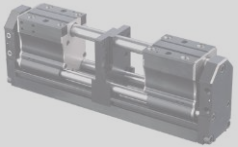

GRL


5300


GRW

Großhubgreifer


GRC


GRR


GRH

PGL-plus-P – Gimatic

GIMATIC 16 pneumatic 2-finger parallel grippers


SX


XP


PQ


DH


JP


SP


SGP-S


PE


GM


HS


SZ


GS


MGX


MG


S

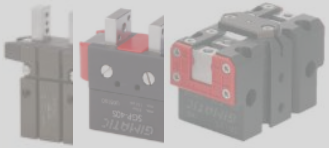

SH

PGL-plus-P – Gimatic

16 pneumatic 2-finger parallel grippers

Kleinteilegreifer

SZ XP S



GS SGP-S SP

PE

PQ

SX

GM

MG

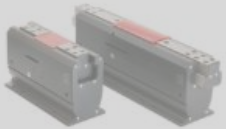
JP

HS

DH

MGX

Großhubgreifer



SH

PGL-plus-P – SMC

7 pneumatic 2-finger parallel grippers

MHZ

JMHZ2

MHF

MHR

MHL

MHS

MHK

PGL-plus-P – SMC

7 pneumatic 2-finger parallel grippers

Kleinteilegreifer

MHF

JMHZ2

MHZ

MHK

MHR

MHL

MHS

PGL-plus-P – Festo

FESTO 8 pneumatic 2-finger parallel grippers

DHPC

HGPM

DHPS

HGPL

HGPP

HGP

HGPT

HGPD

SCHUNK

PGL-plus-P – Festo

FESTO 8 pneumatic 2-finger parallel grippers

Kleinteilegreifer

HGP

HGPM

DHPC

HGPP

DHPS

HGPT

HGPD

Großhubgreifer

HGPL

SCHUNK

PGL-plus-P – Zimmer

10 pneumatic 2-finger parallel grippers

GPP5000

GP

MGP800

MGH8000

GH7000

GPH8000

GP200

GH6000

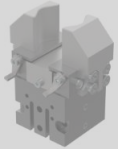
GHK6000

GP400

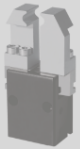
PGL-plus-P – Zimmer

10 pneumatic 2-finger parallel grippers

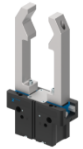
Kleinteilegreifer



GP



MGP800



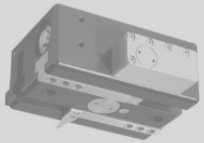
GPP5000

GP400

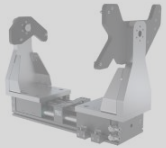
MGH8000

GP200

Großhubgreifer



GHK6000



GPH8000

GH6000

GH7000

PGL-plus-P – Competitive comparison

Main competitors for the PGL-plus-P

6 pneum. parallel grippers

phd

9 pneum. parallel grippers

GIMATIC

2 pneum. parallel grippers

SMC

MHL

MHS

2 pneum. parallel grippers

FESTO

HGPT

HGPD

4 pneum. parallel grippers

ZIMMER group

GPP5000

GP400

MGH8000

GP200

SCHUNK

PGL-plus-P – Competitive comparison

A close comparison with the PGL-plus-P is recommended

SMC

MHL

MHS

FESTO

HGPT

HGPD

ZIMMER group

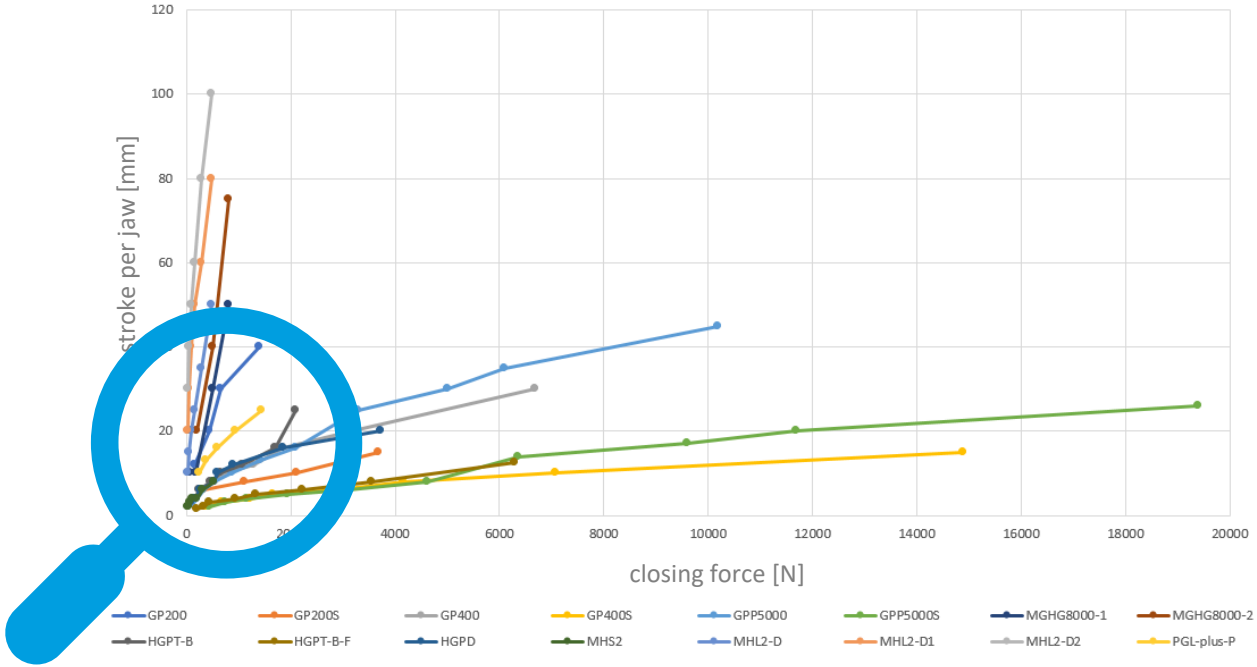
GPP5000

GP400

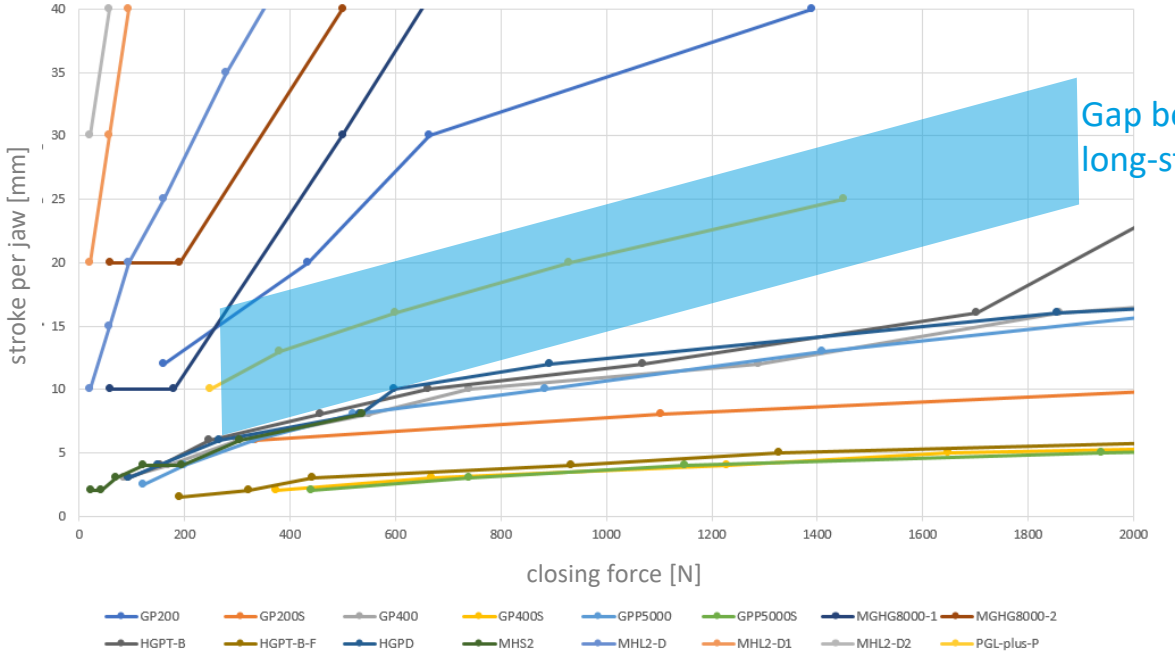
MGH8000

GP200

PGL-plus-P – Competitive comparison

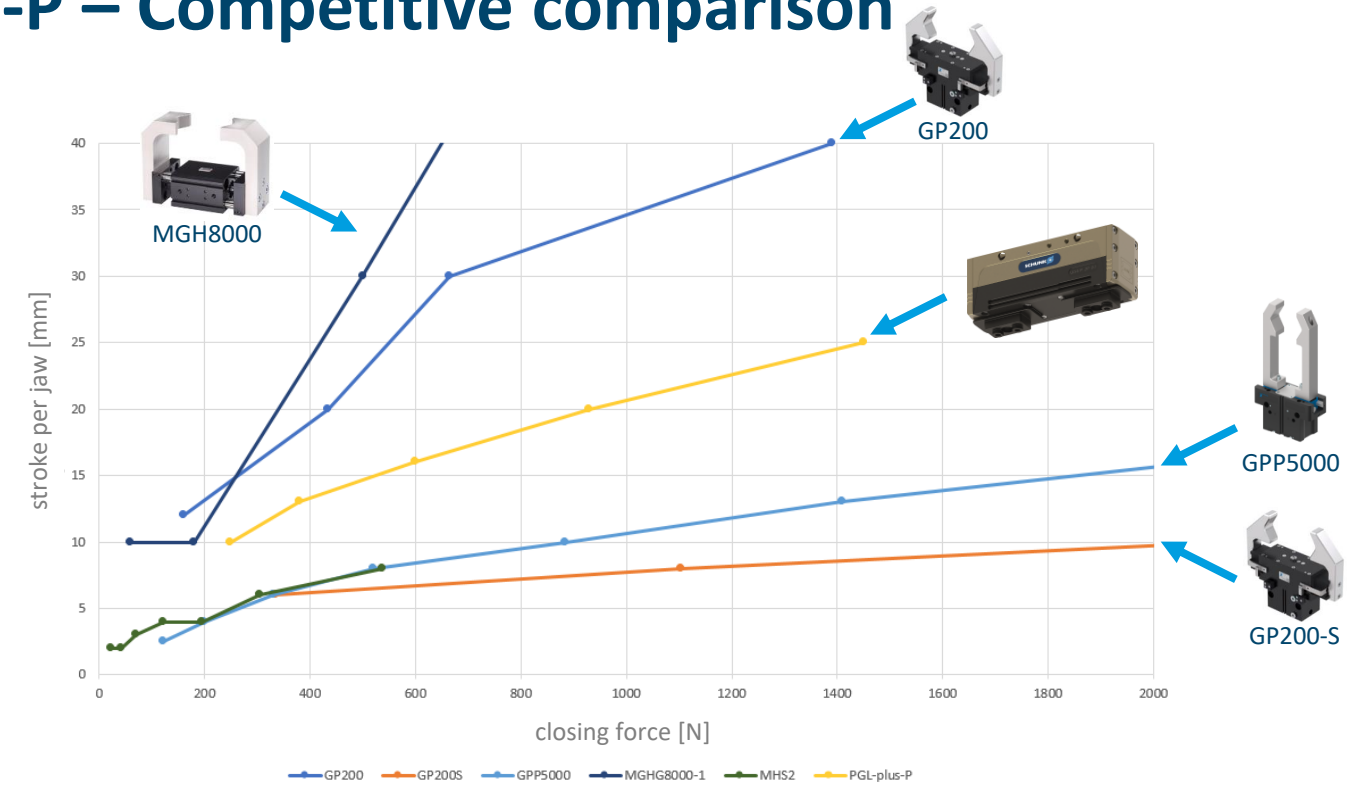


PGL-plus-P – Competitive comparison



Gap between universal and long-stroke grippers

PGL-plus-P – Competitive comparison



PGL-plus-P – Competitive comparison

The following competitive products come closest to the PGL-plus-P

- all similar grippers to the PGN-plus-P
- all similar grippers to PSH
- Zimmer GPP200

PGL-plus-P – Competitive comparison

There is no 1:1 comparable product from our competitors.

Is a comparison about the state of the art useful?

PGL-plus-P – Comparison via state of the art

	PGL-plus-P	PGN-plus-P	PGF	PSH
gripping force	AS / IS	AS / IS	AS / IS	-
	ASC / ISC	-	-	-
	SDV-P	SDV-P	SDV-P	SDV-P
Sensors	MMS	MMS / -A/ -IO-Link	-	MMS
	IN	IN	IN	IN
	-	APS	-	-
	-	-	FPS	-
	IO-Link integrated	-	-	--

PGL-plus-P | product presentation

PGL-plus-P – product presentation

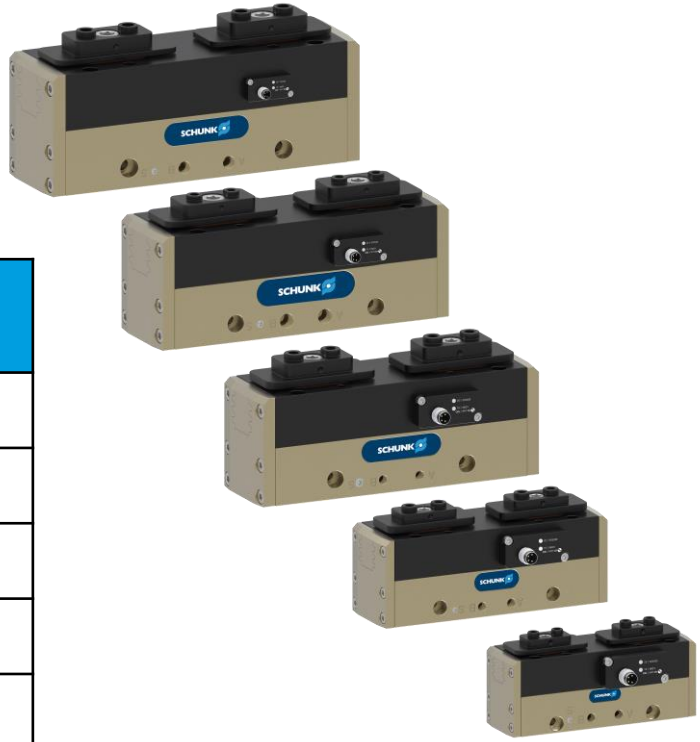
PGL-plus-P – The world's first pneumatic gripper with certified safe gripping force maintenance

- Overview of sizes
- Functional description
- Variants

PGL-plus-P – Overview of sizes

5 sizes

size	stroke/ jaw	gripping force	finger length
PGL-plus-P **10**	**10** mm	220 N	100 mm
PGL-plus-P **13**	**13** mm	350 N	125 mm
PGL-plus-P **16**	**16** mm	550 N	160 mm
PGL-plus-P **20**	**20** mm	870 N	200 mm
PGL-plus-P **25**	**25** mm	1300 N	245 mm

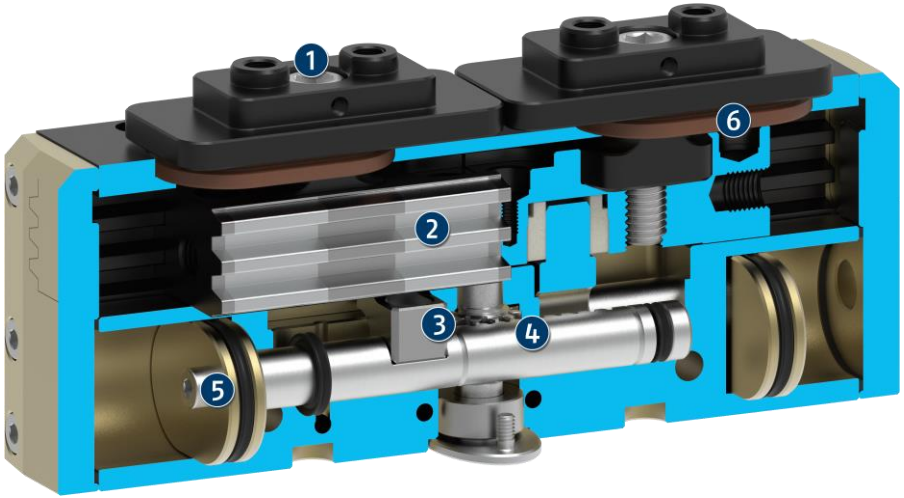


PGL-plus-P – Functional description

1. Base jaw
with standardized screw-on mounting pattern for adapting the workpiece-specific gripper fingers. Loss-proof centering sleeves cannot be lost when the fingers are changed.

2. multi-tooth guidance
Maximum service life due to lubricant pockets in the robust multi-tooth guidance, and absorption of high forces and torques by means of the large guidance support

3. Drive connection
Direct power transmission of the piston to the gripper fingers via a robust driver connection.



4. Kinematics
The pinion-rack kinematics synchronize the base jaws and ensures centric gripping

5. Drive
Maximum force generation by two oval pneumatic pistons

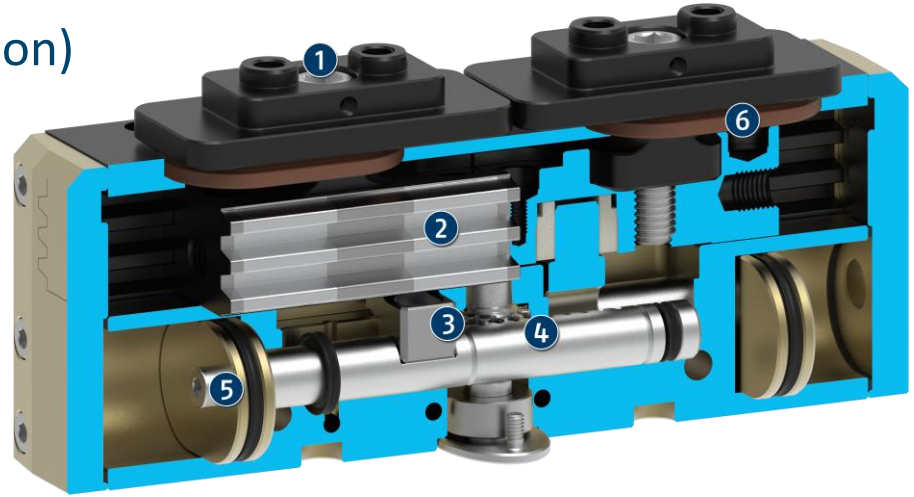
6. Dust cover
The whole gripper is metal-encapsulated all around and additionally sealed with a lip seal at the base jaws, so that it can be used universally, even in dirty environments.

PGL-plus-P – IP protection class

NEW, in the basic version

Protection class IP 64 (dust-tight version)

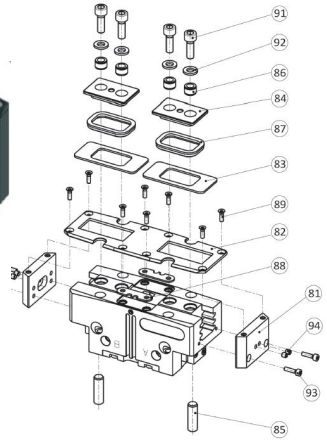
- Metal cover
  with additional sealing
- with **sealed air IP67**

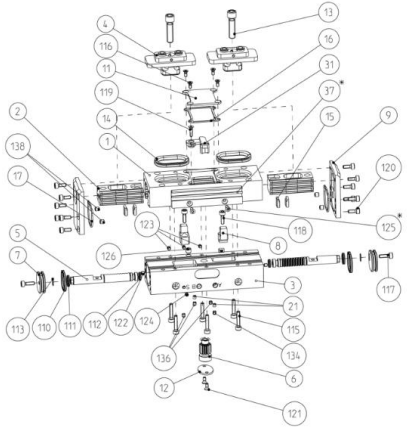


PGL-plus-P – IP protection class

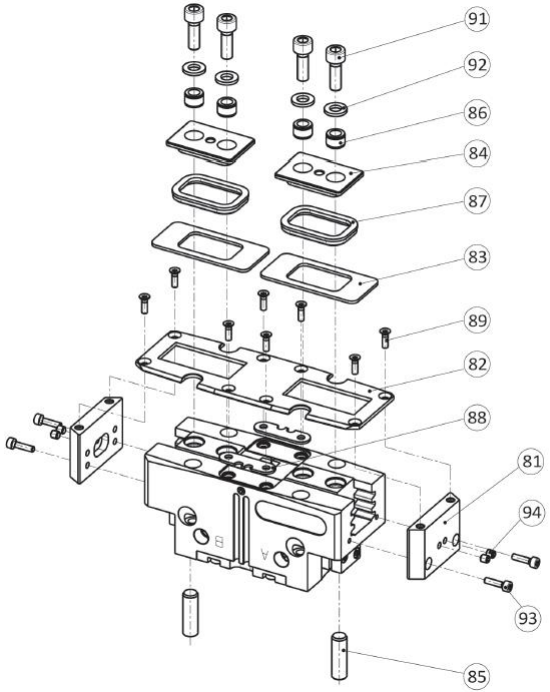
NEW, in the basic version

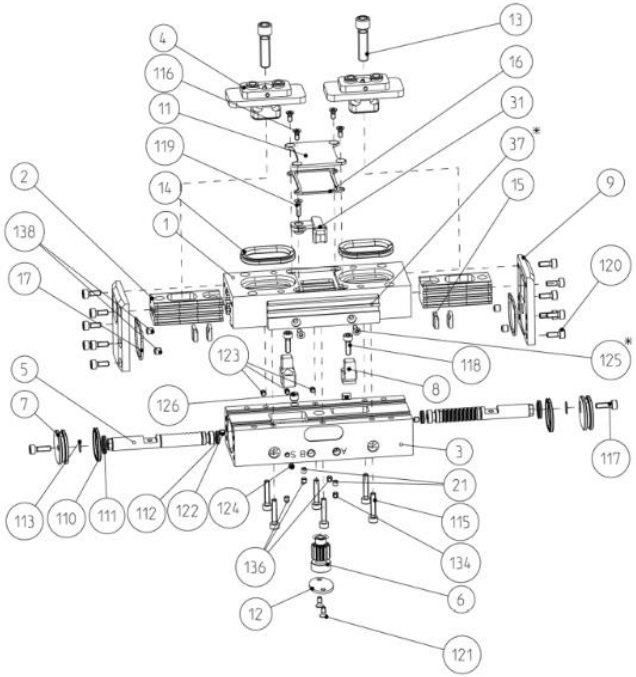
Protection class IP 64 (dust-tight version)





PGL-plus-P – IP protection class





PGL-plus-P – Lubrication

NEW, in the basic version

H1-grease (Food grade lubrication)

Lowers the barrier to entry in MedTech, Lab Automation, Pharma and the Food Industry

PGL-plus-P – Air connections

NEW, in the basic version

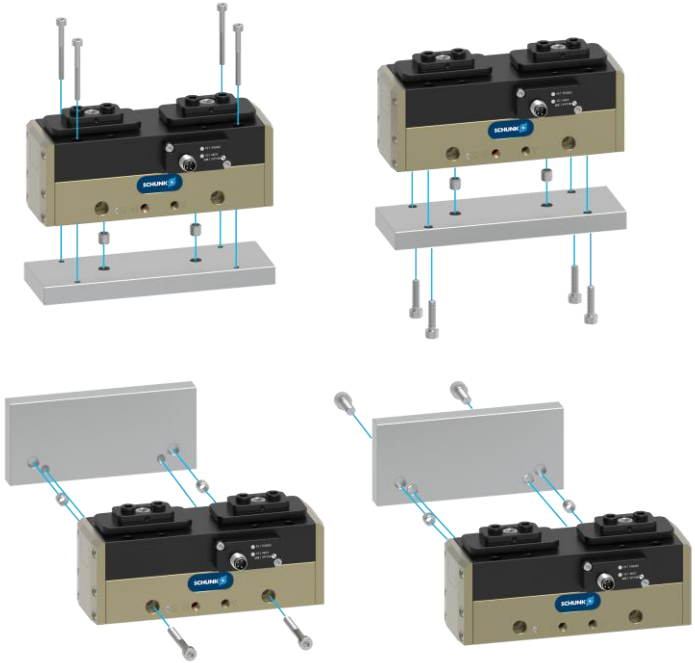
Sealed air also on the bottom side

- Integrated sealed air connection: impedes the ingress of dirt into the inside of the gripper
- In combination with sealed air, the protection class of the gripper increases from IP 64 to IP 67

PGL-plus-P – Centering and mounting option

NEW, in the basic version

Mounting of the gripper on two gripper sides from four screwing directions



PGL-plus-P – centering sleeves

NEW, in the basic version

Loss-proof centering sleeves

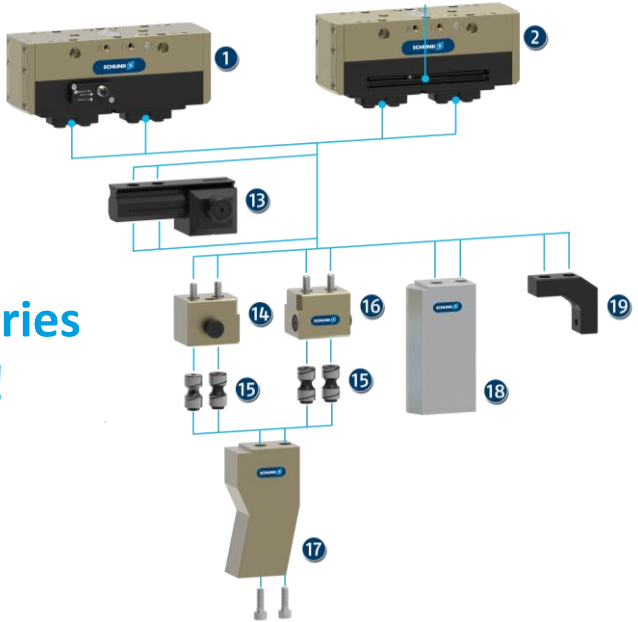
PGL-plus-P – Finger connection

PGL-plus-P has the same finger connection as the PGN-plus-P.

PGL-plus-P – Finger connection

PGL-plus-P **10**	PGN-plus-P **64**
PGL-plus-P **13**	PGN-plus-P **80**
PGL-plus-P **16**	PGN-plus-P **100**
PGL-plus-P **20**	PGN-plus-P **125**
PGL-plus-P **25**	PGN-plus-P **160**

Existing accessories can be used!



PGL-plus-P – Optional mounting possibility

Four threads in the housing

for customer-specific additional structure

PGL-plus-P – Variants

- External sensors – magnetic switches
- External sensors – Inductive proximity switches
- **integrated sensor – IO-Link**
- Conventional gripping force maintenance
- **Certified safe gripping force maintenance**
- Precision version
- High temperature version

PGL-plus-P – Variants

PGL-plus-P 13 - AS - V - P - IOL

Bezeichnung
PGL-plus-P

Baugröße
10 = 10 mm Hub pro Backe
13 = 13 mm Hub pro Backe
16 = 16 mm Hub pro Backe
20 = 20 mm Hub pro Backe
25 = 25 mm Hub pro Backe

Greifkrafterhaltung
ohne Greifkrafterhaltung
AS = Außensichernd mit Feder
IS = Innensichernd mit Feder
ASC4
ISC4
ASC6
ISC6

Temperaturbereich
0-90°C (IOL max. 70°C)
V = Hochtemperatur-Version 0-130°C

Präzision
Standard
P = Präzisions-Version

Kommunikationsschnittstelle / Sensorabfrage
ohne Sensoren (vorbereitet für MMS)
IN = ohne Sensoren (montierter Anbausatz für IN 80)
IOL = IO-Link Kommunikation (mit integrierter Sensorik)

External sensors – magnetic switches

size 10/13

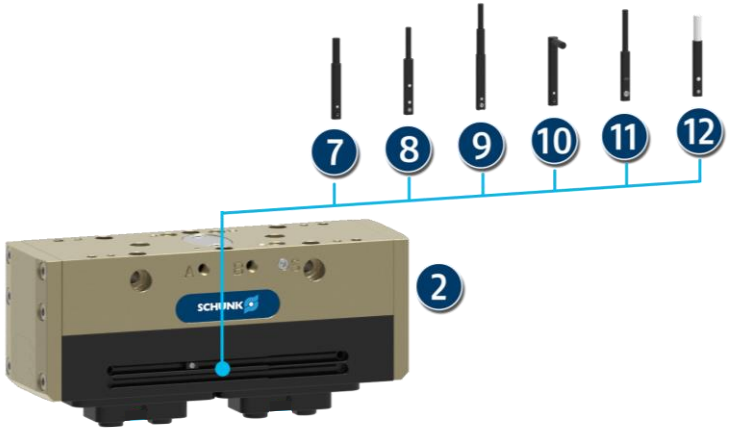
Separate bracket for magnetic switch

size 16/20/25

C-slot for magnetic switch integrated in housing

External sensors – magnetic switches

Existing MMS sensors can still be used.



External sensors - inductive proximity switches

PGL-plus-P 13-**IN**

+

2x IN 80-S-M8

=

using inductive proximity switches

PGL-plus-P 13

+

AS-IN80-PGL-plus-P 13

+

2x IN 80-S-M8

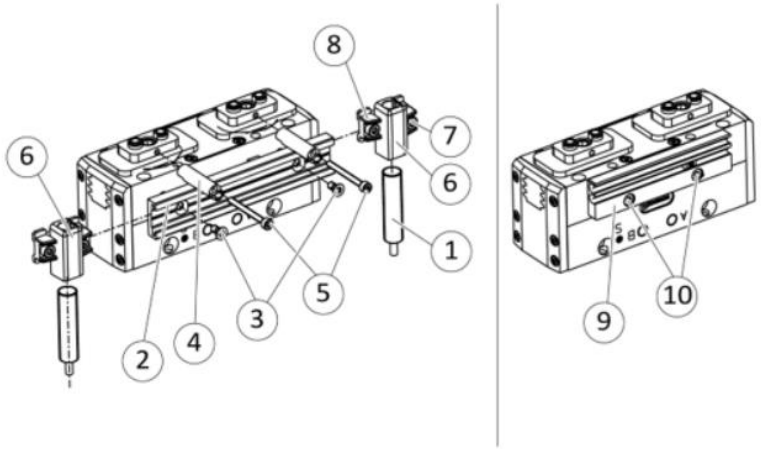
=

upgrade inductive proximity switches

External sensors - inductive proximity switches

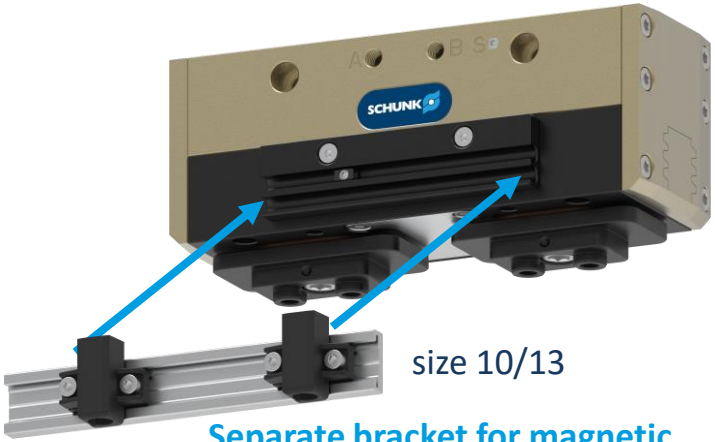
Scope of delivery Mounting kit for inductive proximity switches

- ✓ 2x Switch cam
- ✓ 1x Sensor bar
- ✓ 2x Sensor bracket
- ✓ Mounting screws



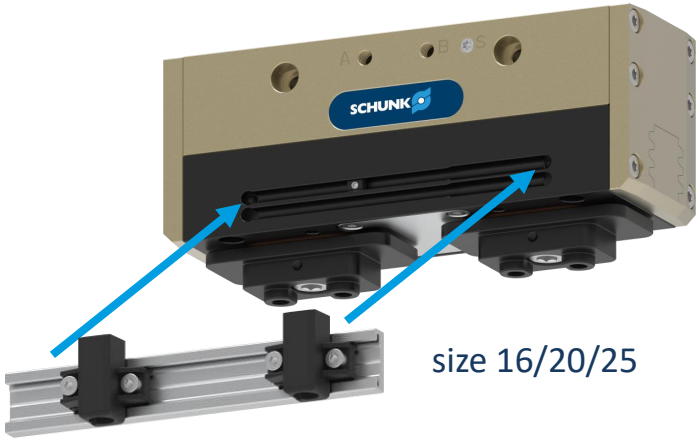
External sensors - inductive proximity switches

Assembly of the mounting kit for inductive proximity switches



size 10/13

Separate bracket for magnetic switches must be removed. The threads are behind the MMS bracket.



size 16/20/25

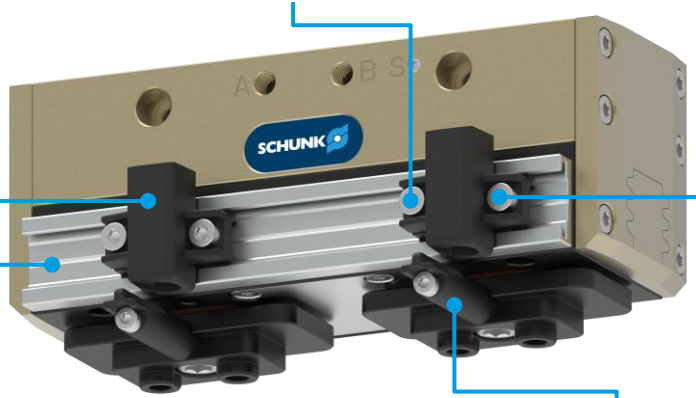
Threads are in the C-slot.

External sensors - inductive proximity switches

Screw 2

Clamp sensor in sensor bracket

Sensor bracket



Screw 1

Clamp sensor bracket on sensor rail

Sensor bar

Switch cam

External sensors - inductive proximity switches

Using two mounting kits per gripper

AS-IN80-PGL-plus-P 13

+

PGL-plus-P 13-**IN**

1x PGL-plus-P 13-**IN**
1x AS-IN80-PGL-plus-P 13

AS-IN80-PGL-plus-P 13

+

PGL-plus-P 13

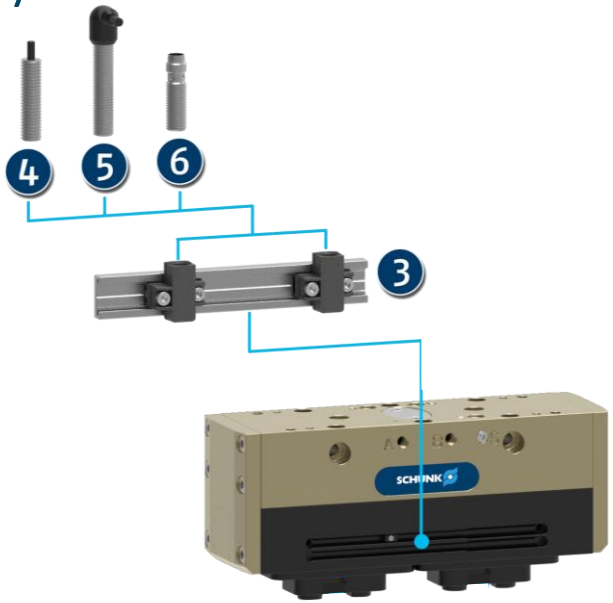
+

AS-IN80-PGL-plus-P 13

1x PGL-plus-P 13
2x AS-IN80-PGL-plus-P 13

External sensors - inductive proximity switches

Existing inductive proximity switches can still be used.

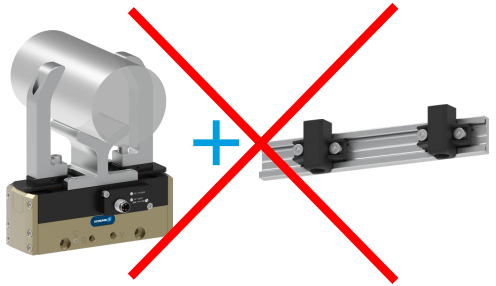


External sensors - inductive proximity switches

Attention:

If inductive proximity switches are used, the threads to mount the customer-specific additional structure cannot be used!

→ switch cam covers the threads



Integrated sensor – IO-Link

The **IO-Link version** of the PGL-plus-P **becomes the representative** of the series.

Integrated sensor – IO-Link

Advantages compared to external sensors

- Higher **accuracy**
- **Preassembled unit**
  - Simplified parts procurement and management, only one article required
  - Sensor does not need to be mounted, is already pre-mounted
  - Sensor does not have to be teached at the gripper, it is already set by default
- **No manual (mechanical) adjustment** of the sensor position **possible**
- **Less dirt-sensitive** and **less prone to failure**
- **Easy integration** and **flexible use**

Integrated sensor – IO-Link

Operating modes

SIO – Mode → **digital Mode**

- „Gripping Point“ – Mode
- „Gripping Range“ – Mode

SDCI – Mode → **IO-Link Mode**

- „Gripping Point“ – Mode
- „Gripping Range“ – Mode

The **integrated sensor** is used as a **conventional sensor** (without IO-Link Master)

The **integrated sensor** is used as **IO-Link – sensor** (with IO-Link Master)

Integrated sensor – IO-Link

SIO – Mode | „Gripping Point“ – Mode

- **Default setting in delivery status**
- 2 digital outputs (comparable to 2x IN 80 or 1x MMS 22-PI2)
  - **S1 → Preset switching point "Gripper closed”**
  - **S2 → Preset switching point "Gripper open”**
- Change of switching points possible via IO-Link or magnetic teach-in tool

Gripper can be operated without IO-Link, the magnetic teach-in tool is sufficient for programming the switching points!

Integrated sensor – IO-Link

SIO – Mode | „Gripping Range“ – Mode

- **Change** from "Gripping Point" mode to "Gripping Range" mode must be made via **IO-Link**
- 2 switching ranges comparable to the FPS
- Only the two range limits have to be teached, in between there is a digital signal
- Programming of range limits possible via IO-Link or magnetic teach-in tool

Integrated sensor – IO-Link

SDCI – Mode (IO-Link – Modus):

All known **advantages of IO-Link** can be used, for example:

- automatic teach-in
- Full parameterization
- Electronic type plate (article number of the gripper used, information about the gripper variant such as: Gripping force, stroke, weight, information about the sensor (supply voltage, current)).
- Current process data (current temperature of the sensor, status: error, warning, ...)…

Integrated sensor – IO-Link

SDCI – Mode | „Gripping Point“ – Mode and „Gripping Range“ – Mode

- Position value of the complete stroke per jaw via IO-Link
- **8 Switching points**
  - One switching point is preset to the "Gripper closed" position as a " Gripping Point".

    (Can be reprogrammed if necessary)
  - One switching point is preset to the "Gripper open" position as a " Gripping Point".

    (Can be reprogrammed if necessary)
  - A further six switching points can be programmed for specific workpieces

  → The **switching points** can also be **changed in switching ranges**

Integrated sensor – IO-Link

Operating modes

SIO – Mode → **digital Mode**

- „Gripping Point“ – Mode
- „Gripping Range“ – Mode

2 switching points or **2 switching ranges**

SDCI – Mode → **IO-Link Mode**

- „Gripping Point“ – Mode
- „Gripping Range“ – Mode

8 switching points or **8 switching ranges**

- the current jaw position
- All IO-Link advantages

Difference external/ integrated sensors

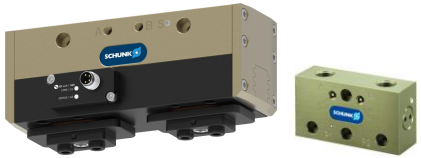
External sensors	Integrated sensor
Customer must decide on a sensor right at the start (magnetic, inductive, digital, analog, ...).	Sensor is integrated in the gripper. The customer does not have to decide which sensor function he wants to use until commissioning. A later change is possible without any problems.
Several articles have to be ordered and managed, which means increased effort and additional costs.	No extra order positions, the sensor is integrated in the gripper, so no additional effort.
Sensors and, if necessary, additional mounting kit must be mounted on the gripper by the customer.	Sensor technology integrated in the gripper, no customer-side assembly required.
Usually 2 cables, since 2 sensors. (By using an additional sensor distributor, it is possible to bundle to 1 cable).	1 cable
Partly complex mechanical adjustment of the switching points via switch cam.	No adjustment necessary, switching points are teached or programmed.
A sensor failure during operation can usually be traced back to a cable break, but it still means a complete sensor replacement (cable molded to the sensor).	A sensor failure during operation can usually be traced back to a cable break, replacing the cable is sufficient.

Conventional gripping force maintenance

Conventional gripping force maintenance

State of the art

- Gripper with SDV-P



Pressure loss over time!

In the event of a pressure loss, stored energy is in the system, which brings a certain risk.

- Gripper with conventional gripping force maintenance

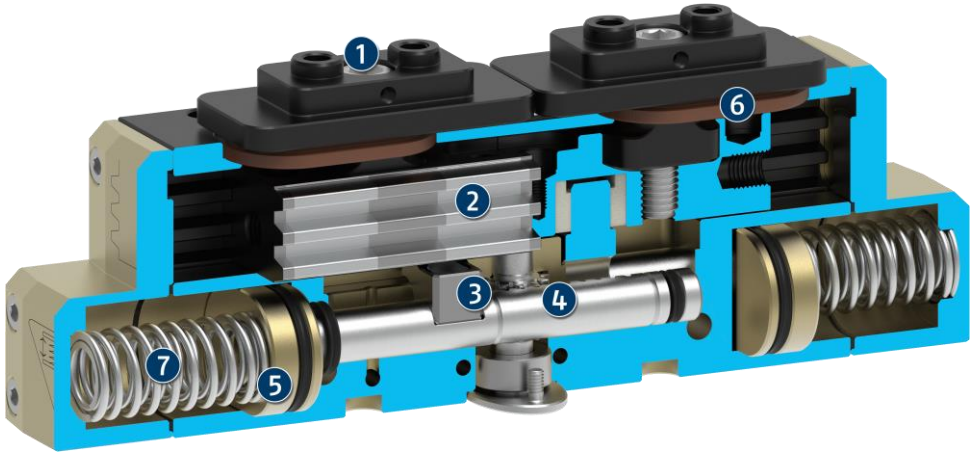
Can the spring be considered safe as a "proven component"?

Conventional gripping force maintenance

1. Base jaw
with standardized screw-on mounting pattern for adapting the workpiece-specific gripper fingers. Loss-proof centering sleeves cannot be lost when the fingers are changed.

2. multi-tooth guidance
Maximum service life due to lubricant pockets in the robust multi-tooth guidance, and absorption of high forces and torques by means of the large guidance support

3. Drive connection
Direct power transmission of the piston to the gripper fingers via a robust driver connection.



7. Gripping force maintenance via spring
The conventional gripping force maintenance via spring ensures a minimum gripping force even in the case of pressure loss.

4. Kinematics
The pinion-rack kinematics synchronize the base jaws and ensures centric gripping

5. Drive
Maximum force generation by two oval pneumatic pistons

6. Dust cover
The whole gripper is metal-encapsulated all around and additionally sealed with a lip seal at the base jaws, so that it can be used universally, even in dirty environments.

Certified safe gripping force maintenance

World's first

SCHUNK FS GripGuard

PGL-plus-P – The world's first pneumatic gripper with
certified safe gripping force maintenance

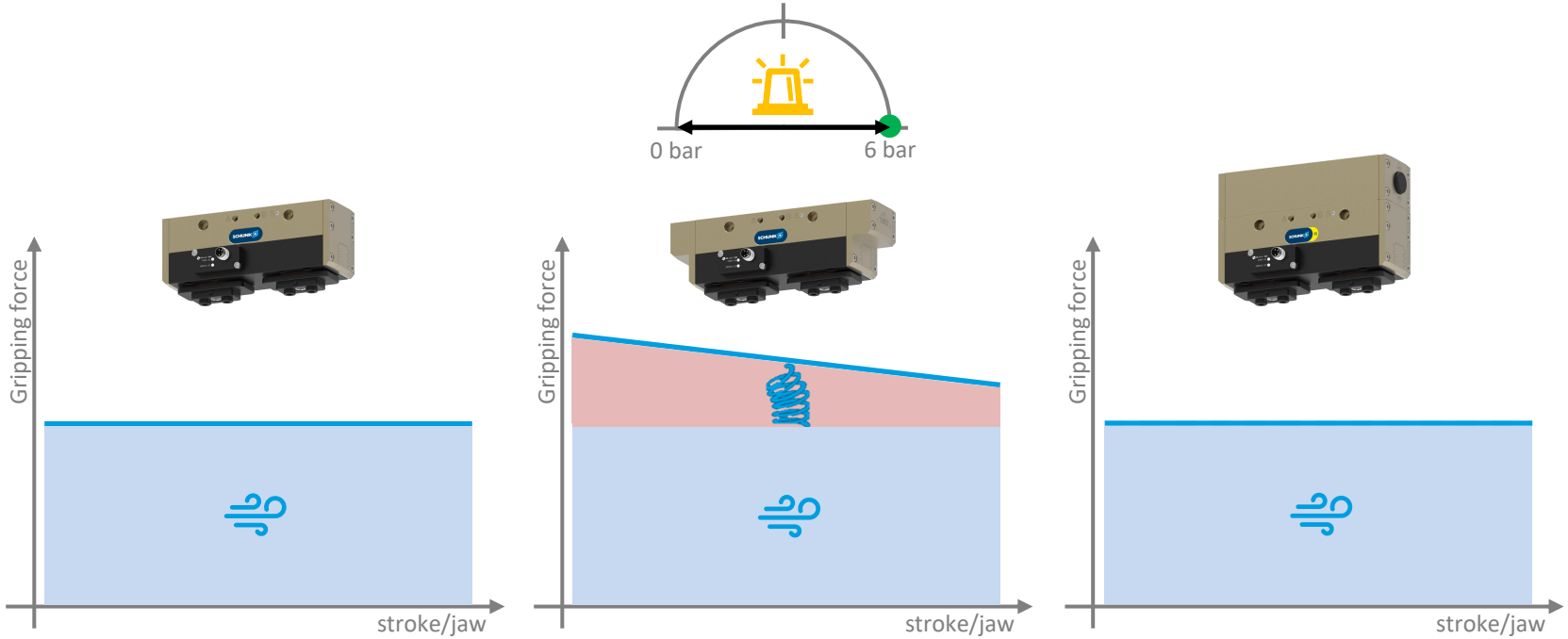
Certified safe gripping force maintenance

PGL-plus-P 13-IOL

PGL-plus-P 13-**AS**-IOL

PGL-plus-P 13-**ASC**-IOL

Certified safe gripping force maintenance



Certified safe gripping force maintenance

7. Pinion shaft

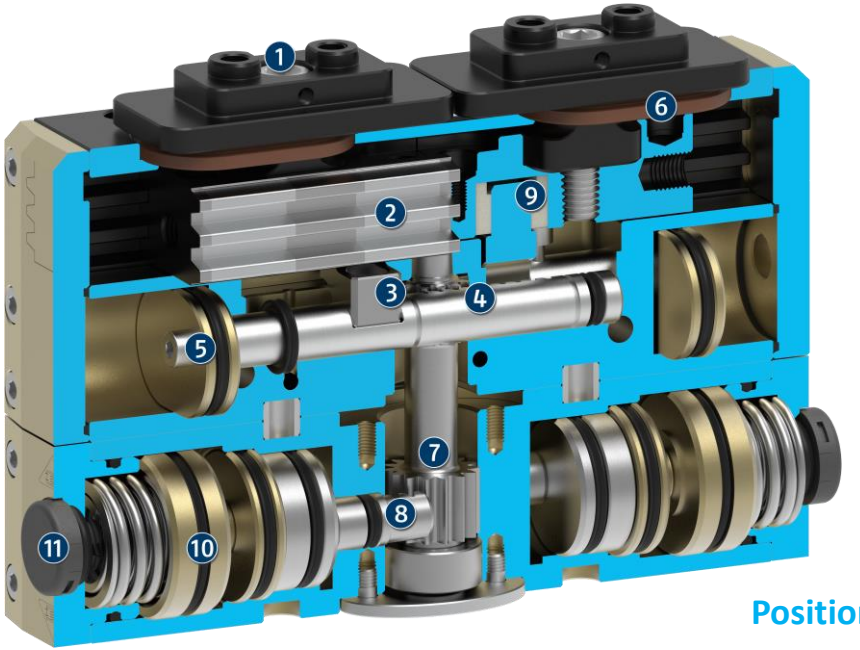
The one-piece pinion shaft connects the pinion with the mechanics of the safe gripping force maintenance.

8. Clamping element

In the case of a pressure loss without a gripped workpiece, the clamping element prevents the pinion from rotating. This prevents potentially dangerous movement of the gripper fingers.

9. Elastomer

In the event of a pressure loss with a gripped workpiece, the gripping force stored in the elastomer (energy storage) grips the workpiece securely. The clamping element prevents the gripper fingers from opening.



10. Spring-loaded pneumatic piston

During normal operation of the gripper, the pneumatic piston is always supplied with compressed air. No separate air supply is required for this. In case of a failure, a pressure air loss, the piston is pushed back via the spring assembly and the clamping element blocks the pinion shaft, so that a movement of the gripper fingers is no longer possible.

11. Pressure compensation valve

The pressure compensation valve allows the pressure, that has built up inside, to escape to the outside. At the same time, it prevents dirt or liquids from getting inside the gripper.

Position 1 – 6

identical to the basic gripper

Certified safe gripping force maintenance

4 Variants per size

	ASC	ISC	Spring
4 Bar	ASC4 **O.D.** gripping Operating pressure 3,5/**4**/6,5 Bar	ISC4 **I.D.** gripping Operating pressure 3,5/**4**/6,5 Bar	**Secure 80% of the gripping force of 4 bar!**
6 Bar	ASC6 **O.D.** gripping Operating pressure 5,5/**6**/6,5 Bar	ISC6 **I.D.** gripping Operating pressure 5,5/**6**/6,5 Bar	**Secure 80% of the gripping force of 6 bar!**

Certified safe gripping force maintenance

Unique selling points

- Certified and safe
- No uncontrolled jaw movement
- High residual gripping force of at least 80%
- Constant gripping force over the whole stroke

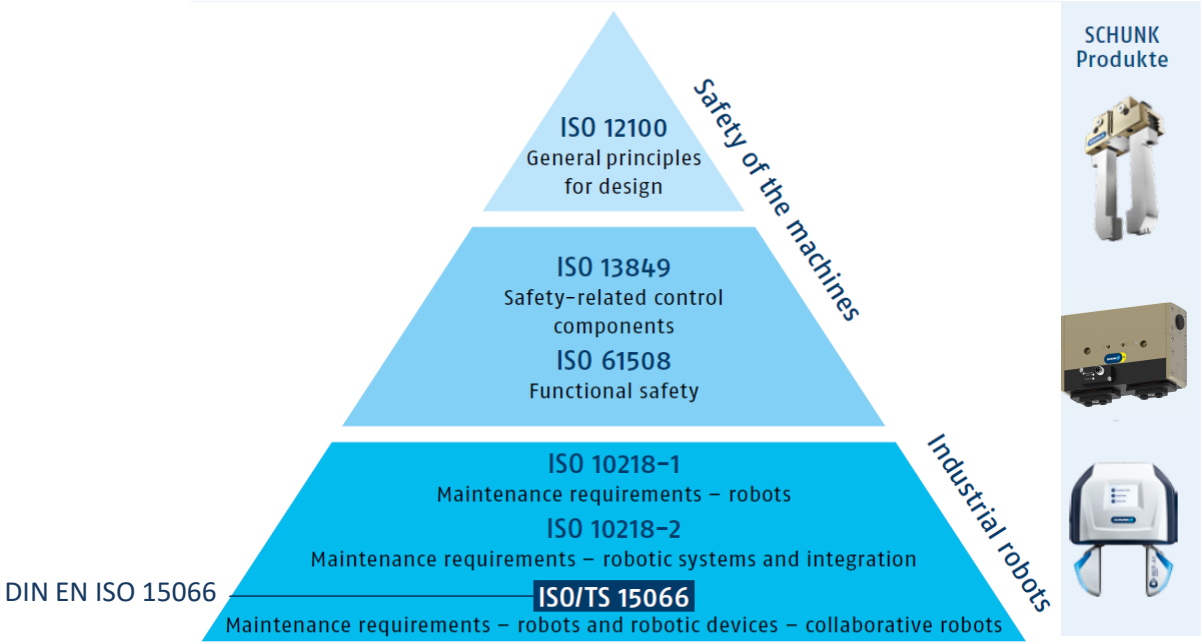
Certified safe gripping force maintenance

Certified and safe

- **Certificate of the DGUV** (Deutsche gesetzliche Unfallversicherung)
- Time and cost savings for the CE Declaration of Conformity according to the Machinery Directive, **because the safe gripping function is already certified**.
- Certified for the Performance Level : **PL-d, Kat. 03**
- Field of application up to cooperation.

Application example (see expert training)

Certified safe gripping force maintenance



SCHUNK Produkte

Previous pneumatic components

PGL-plus-P with certified safe gripping force maintenance

Co-act EGP-C

Certified safe gripping force maintenance

No uncontrolled jaw movement

- Danger reduction
- Low overtravel in the case of workpiece or pressure loss in the system
- No risk of injury from unexpected jaw movement during parts removal in the event of a failure
- No additional SDV-P necessary to fulfill this function (IMPORTANT: ASC/ISC cannot be used in combination with a pressure maintenance valve, otherwise the function is not given)

Certified safe gripping force maintenance

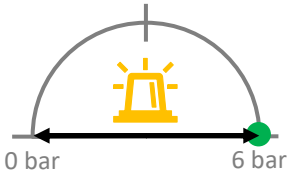
High residual gripping force of at least 80%

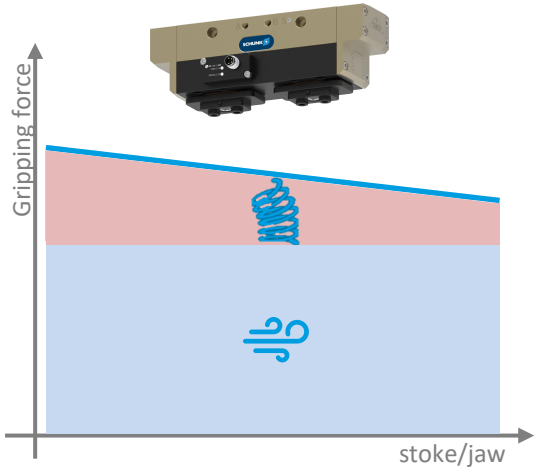
- In case of pressure supply failure e.g. emergency stop situation, slow leakage
- Almost the complete gripping force is retained in the event of pressure loss; with conventional AS/IS grippers, the available residual gripping force is considerably lower due to the spring
- If gripping force maintenance is the selection requirement, a smaller gripper size can be selected

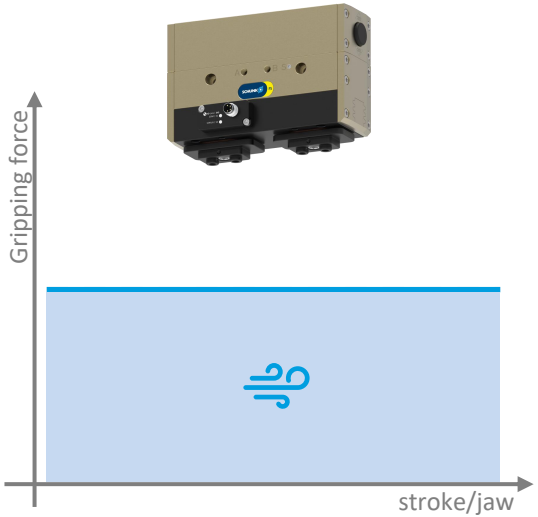
Application example (see expert training)

Certified safe gripping force maintenance

Constant gripping force over the whole stroke







Präzisions-Version

Precision version

Precision version **P**: for highest accuracy

Reworking the finger connection on the fully assembled gripper

High temperature version

High temperature version

PGN-plus-P 16-**IOL**

5°C - 70°C

No high temperature version possible!

PGN-plus-P 16

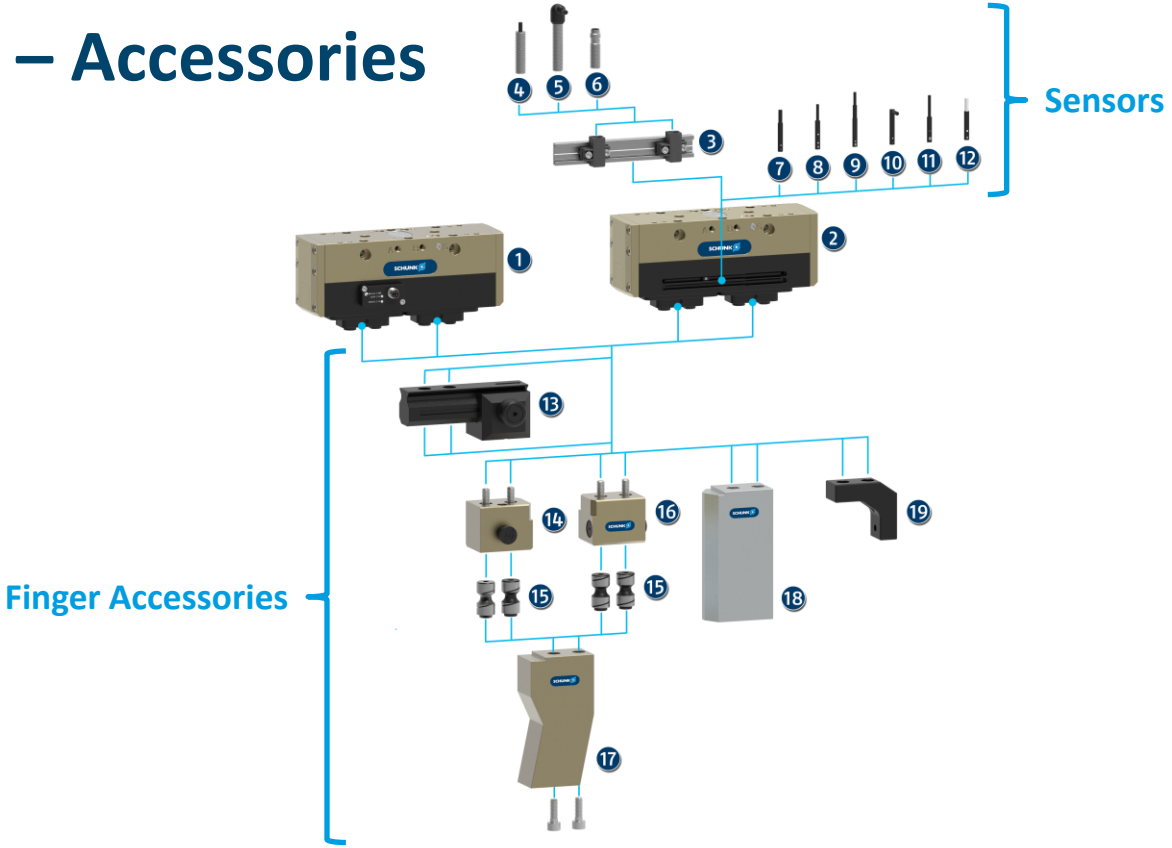
5°C - 90°C

PGN-plus-P 16-**V**

5°C - 130°C

High temperature version

PGL-plus-P – Accessories



PGL-plus-P | Advantages/ benefits and USPs

PGL-plus-P – Advantages/ benefits and USPs

- **Certified, safe gripping force maintenance**
- **integrated sensor – IO-Link**
- **Large jaw stroke/ jaw** combined with performance data and dimensions
- **IP** protection class **64** in the **basic version** (IP67 with sealing air)

Superior Clamping and Gripping

schunk.com