

Superior Clamping and Gripping



Sales Manual

PGN-plus

11/2010





High-tech family craftsmanship

When it comes to damping technology and gripping systems, we're second to none. SCHUNK is the No. 1 manufacturer in the world – from the smallest parallel gripper to the largest range of chuck jaws.

SCHUNK customers have bought 2 000 000 precision toolholders, 1 000 000 gripping modules, and 100 000 lathe chucks or stationary workholding systems so far. When precision, reliability, and longevity are of top concern, manufacturers choose SCHUNK! This makes us proud and spurs us on to attain new top performances.

More than 1800 employees have invested their ideas, know-how and experience in our innovative family-owned company. Results have been convincing: year after year, SCHUNK launches more than 60 benchmark products into the market, setting new standards worldwide. They all pursue one single goal – the success of our customers.

The Schunk family wishes you improved end results and satisfaction with our quality products.

A stylized, handwritten signature in white ink, appearing to read 'H. Schunk'.

Heinz-Dieter Schunk

A stylized, handwritten signature in white ink, appearing to read 'K. Schunk'.

Kristina I. Schunk

A stylized, handwritten signature in white ink, appearing to read 'H. Schunk'.

Henrik A. Schunk

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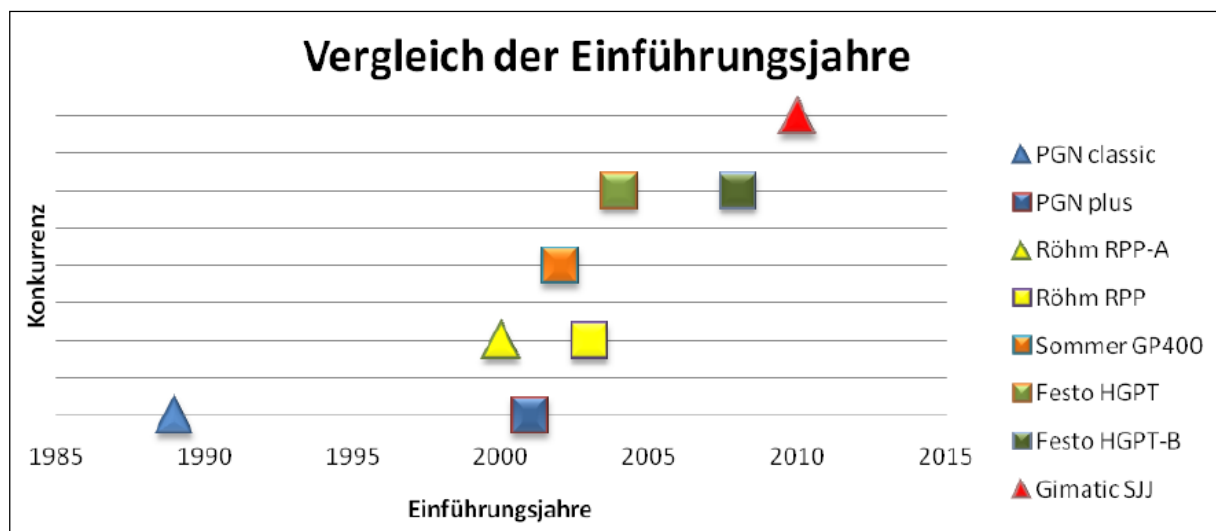
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1 General information on the product

A competitive situation is developing in the production of parallel grippers owing to the competitors currently operating in the market. This is why it is both helpful and essential for the Sales team member in particular to be equipped with all information on the PGN-plus product in a brief and at-a-glance overview. The objective here is also to provide the Sales team member with support and a line of argument when calling on clients.

1.1 Market launch

The following illustration shows that the PGN-plus has been on the market since 2002. Competitors' products are marked with a square.



The SCHUNK PGN-Classic was a trailblazer among the 2-finger parallel grippers. From 1989 to 2000 there were no competitors' products in this category that could be taken seriously. The RPP-A, HGPT and GP400 grippers are all reproductions of the PGN-Classic. The RPP and the HGPT-B are superior to this basic competitive environment. It is true to say that the Röhms RPP-A was also introduced in the year 2000 but was not actually available until 2002. Festo's HGPT-B was first introduced at exhibitions in 2008 and has been available since 2009.

1.2 Available documentation on the product

Print	Intranet	Media
Gripper catalog	SCHUNK Global Product	Short presentation
		
Flyer	Animation	Detailed presentation
		
Operating manual		
		

1.3 Product description / positioning

The PGN-plus represents efficiency and precision in handling. It sets the technological standards in gripping technology. The versatile options for special application cases, neatly stepped sizes and large gripping forces make it an ideal solution for many individual applications. It is characterized by numerous improvements which have set it apart from the PGN-Classic gripper. In concrete terms, an improvement in performance and payload was achieved through the multi-tooth guide. The base jaws are guided over the entire length of the housing. In terms of price and performance, the PGN-plus is a premium segment product. The price range for 11 available sizes is between **487 €** and **2,879 €**. You can confidently call it the “Mercedes” among grippers as it sets the benchmark in a closely fought market with many competitors.

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1.4 Brief overview of technical data



Baugrößen
40 ... 380



Eigenmasse
0.08 kg ... 39.5 kg



Greifkraft
123 N ... 21150 N



Hub pro Backe
2 mm ... 45 mm

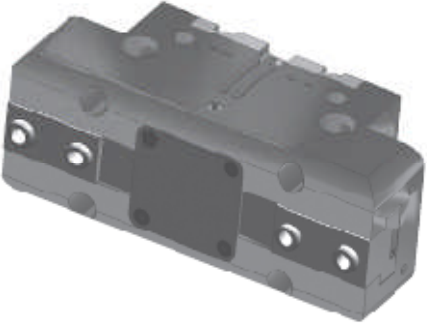


Werkstückgewicht
0.62 kg ... 80.5 kg

2 Competitive situation

2.1 Brief overview of competitors' products

After an intensive analysis, the following four products were identified as the key competitors. In the following, they are directly compared with the PGN-plus.

Festo HGPT	Röhm RPP
	
Sommer GP 400-X	PHD GRK
	

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2.2 Competitor Comparison

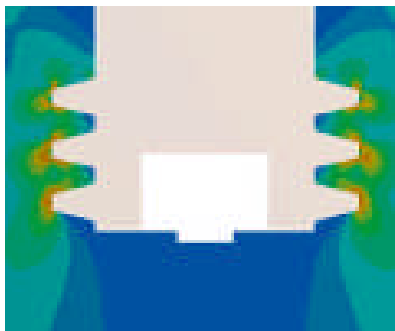
	PGN+	RPP	GP400-X	HGPT	GRK
PRODUCT SPECIFIC					
Field of Application	Many fields of application, from clean to slightly dirty environments, additional versions for dirty environments	Many fields of application, from clean to slightly dirty environments	Many fields of application, from clean to slightly dirty environments	Many fields of application, from clean to slightly dirty environments	Many fields of application, from clean to slightly dirty environments
	+++	+	+	+	+
Guidance	Multi-tooth guidance, base jaws are guided along the whole housing length -> high moment payload	T-slot guides, base jaws are guided along the whole housing - average to high moment payload	T-slot guides, base jaws are guided along the whole housing -> average to high moment load depending to size Round or oval piston -> partly low performance	T-slot guides, base jaws are guided along the whole housing -> average to high moment load depending to size Round or oval piston -> partly low performance	new and so far unknown guidance --> Performance and lifetime are not yet known; Oval piston -> higher performance
	+++	++	++	++	++
Scope of Delivery	Bracket for prox. switch, centering bushings, O-rings for direct connection, Assembly and Operating Manual with EC Declaration of Incorporation	Centering bushing, Plug for direct connection	Centering bushings, clamping block	Centering bushing, dummy plug	
	++	+	+	+	
Warranty	36 Months + Longlife Warranty free of charge	24 Months	24 Months	24 Months	No information yet
	+++	+	+	+	-
Lifetime	Sizes 40-80: 10 millions, Sizes 100-125: 8 millions, as of size 160: 4 millions	5 million cycles at normal use; 10 million cycles at preventive maintenance	Up to 10 million cycles maintenance-free	Relubrication after 5 million cycles	
	+++	+	+++	++	
Sizes	11 Sizes	8 Sizes	9 sizes	8 Sizes	4 sizes
	+++	++	+++	++	+
Age Distribution of the Products	Market launch in 2001	RPP introduction in 2003 RPP-A introduction in 2000	GP400 introduction in 2002	HGPT introduction in 2004 HGPT-B introduction in 2008	GRK introduction in 2009
	++	+	+	+	-

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3 Unique Selling Points PGN-plus

The multi-tooth guidance is one of the most noticeable and important unique selling point of the PGN-plus. Other SCHUNK grippers can be also recognized from this (e.g. PZN-plus).



(1) Multi-tooth guidance

The payload of a multi-tooth guidance is distributed onto several shoulders. Compared with the conventional T-slot guide with 2 load-bearing shoulders, the PGN-plus has 6 shoulders. Therefore the total supporting surface increases, and the gripper can bear a higher payload.



(2) Space

The multi-tooth guidance requires a less deep slot as for a conventional T-slot guidance. The large space of the remaining area between the teeth therefore allows for a particularly strong diagonal pull, which assures maximum and gentle power development of the powerful oval piston.



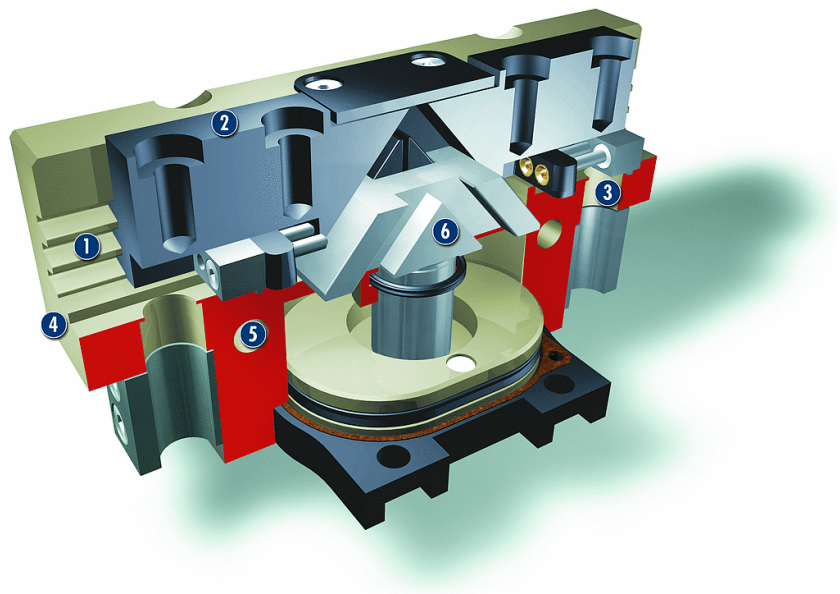
(3) Longlife Warranty

Beside the 36-Months Warranty, we grant a 30-Years Functional Warranty all over Europe.

4 Other product features

- The base jaws are manually ground. This ensures the optimum fitting accuracy of the components. Efficiency and life span are many times higher than normal.
- Oval piston drive for maximum gripping force.
- Power supply via hose-free direct connection or connected with screws.
- Robustness enables universal application in various ambient conditions.
- Maximum flexibility, finger length 50 % greater than comparable standard products.

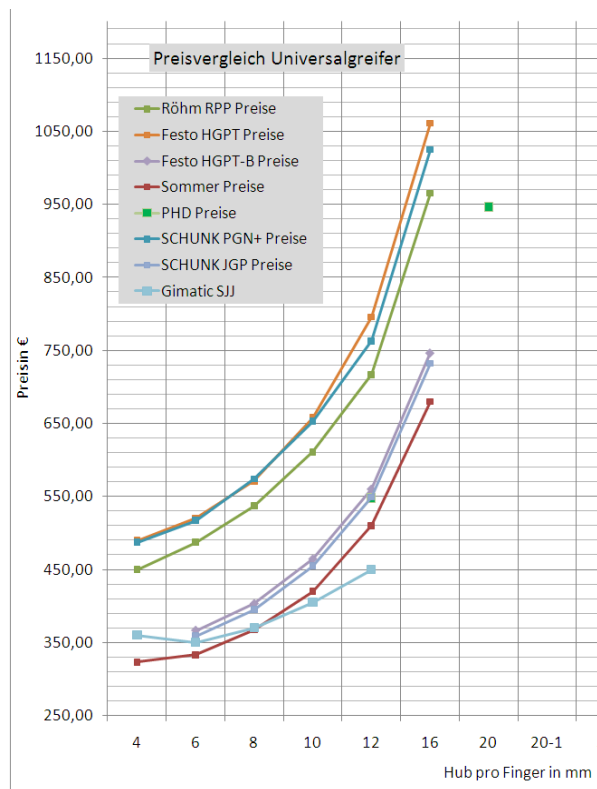
4.1 Functional description of PGN-plus



- (1) Multi-tooth guide: base jaw guide for long finger lengths; with high load capacity and minimal play.
- (2) Base jaws for adaptation of the workpiece-specific gripper fingers.
- (3) Sensor systems: brackets for proximity switches and adjustable control cams in the housing.
- (4) Housing: weight-reduced thanks to the hard-anodized, high-strength aluminum alloy.
- (5) Centering and mounting options for universal assembly of the gripper.
- (6) Kinematics: wedge-hook design for high force transmission and synchronized gripping.

5 Price positioning

In the diagram below, it is clear to see that the PGN-plus is in a different category to the other grippers in terms of price. However, the reason for this lies in the technical specifications and variations in which the PGN-plus is available. Competitor's products in a similar category, e.g. Röhme's RPP or Festo's HGPT, are not, however, available in as many different stroke lengths and have almost the same prices for small strokes. The PGN-Classic is intentionally expensive, because it is a SCHUNK end-of-line product and no longer available in the catalog. In order to achieve a market replacement, the prices have already been raised several times for the Classic, thus encouraging the transition from the PGN-Classic to the PGN-plus for our clients.



Price comparison of universal grippers

On average, the PGN-plus is approx. 6-7 % more expensive than a gripper from the competition. The differences are less where smaller strokes are concerned.

Overview of the price range

	PGN-plus	RPP	GP-400-X	HGPT	GRK
Prices	487.00 €	450.00 €	439.70 €	459.00 €	\$ 584.00
Date: 2010	- 2879.00 €	- 1566.00 €	- 1218.00 €	- 1061.00 €	- \$ 946.50

The utility values for the grippers were calculated within the framework of a comparison with the competition. Both auxiliary uses and additional benefits were calculated. The following index values apply:

Utility values	PGN-plus	RPP	GP-400-X	HGPT	GRK
Tot.	747.75	569.50	621.5	797.0	565.5

The calculation of the utility value index provides a basis for the price/performance ratio.

$$\text{Price/performance ratio} = \frac{\text{Product utility value index}}{\text{Price}}$$

The following values are provided for the calculation of the price/performance ratio and relate to the smallest size at the current price level:

	PGN-plus	RPP	GP-400-X	HGPT	GRK
Price/performance ratio	1.535	1.265	1.413	1.736	1.326

Note on the price/performance ratio factors:

The factors are co-determined by benefit values such as accessories, sizes; Service, Webshop, among others.

6 Complementary products/accessories

The PGN-plus not only impresses with its technical properties but also very strongly both with the options available in regard of accessories and its adaptation options. Wide ranging module diversity covers almost all application requirements in customer use in regard of the stroke variants and gripping forces needed.

6.1 PGN-plus accessories

RSS wireless monitoring system	BSWS quick-change jaw system	UZZ universal intermediate jaw	MV microvalves
			
Wireless sensor system for monitoring the signals and states of sensors and processes.	Enables the quick changing of gripper fingers and thus quick re-equipping for other workpieces.	Enables rapid adjustment of the stroke position, without tools, thanks to the grid system and the tool-free clamping device.	Simple to integrate – fitted directly to the actuator. Advantages in energy consumption and shorter cycle times with minimum installation work.
Protective cover	High-temperature version of protective cover	TCU compensation unit	Modular assembly automation
			
Soft plastic cover for long-lasting protection of the gripper against fluid and dust.	For reliable use in hot environments.	The TCU can be moved in the X, Y, Z directions, which enables it to correct angle errors.	Versatile, standardized combinations of the modular designs are possible, e.g. gripper with linear unit.
Spindle interface	Shank interface	Explosion protection version	Clean room
			
Specifically for automatic machine operation to increase the productivity.	Shank interface for tool holder for a fully automated changing system.	Explosion protection version is supplied with ATEX certification as standard.	The PGN-plus is certified as standard. ISO 2, ISO 5 and EN ISO 14644.

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6.2 Overview Accessories for PGN-plus in Comparison to the competitors

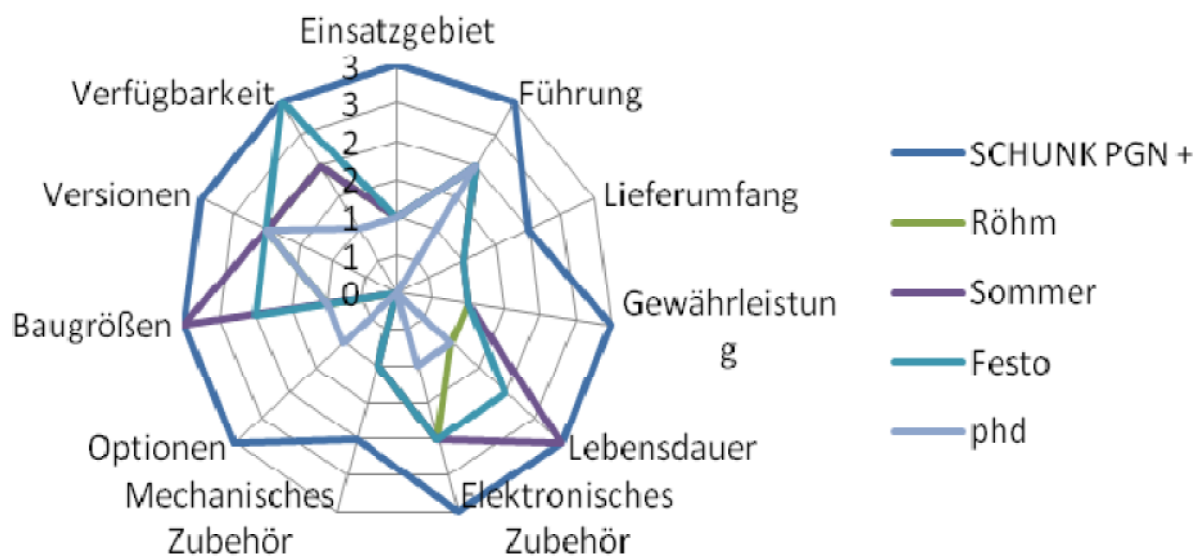
		SCHUNK Sensor Systems										SCHUNK Accessories										Röhm Path Measuring System	Quick Air Relief Valve
		Programmable Magnetic Switch MMS-P	Analog Positioning Sensor APS	Flexible Positioning Sensor FPS	Pneumatic Monitoring PA3	Reed switch RMS	Radio controlled Sensor RSS	Force-measuring Jaw FMS	Inductive Proximity Switch	Magnetic Switch	Screw Connection	Universal Intermediate Jaws	Compensation Unit	Tolerance Adjustment Unit	Sensor Distributor	Finger Blanks	Jaw Quick-Change System	Pressure Maintenance Valve	Protection Cover	Attachment Valve Micro			
SCHUNK PGN+ Serie	PGN+ 040	✓	✗	✗	✓	✗	✗	✗	✗	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓	✗	✗		
	PGN+ 050	✓	✗	✗	✓	✗	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✗		
	PGN+ 064	✓	✓	✓	✓	✗	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✗		
	PGN+ 080	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
	PGN+ 100	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
	PGN+ 125	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
	PGN+ 160	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
	PGN+ 200	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✗		
	PGN+ 240	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓	✗	✗	✗	✓	✓	✓	✓	✗	✗	✗		
	PGN+ 300	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✗	✗	✓	✗	✓	✓	✗	✗	✗		
PGN+ 380	✗	✓	✓	✓	✓	✓	✗	✓	✓	✓	✗	✗	✗	✓	✗	✗	✓	✗	✗	✗			
Röhm RPP Serie	RPP 050	✗	✗	✗	✗	✗	✗	?	✓	✗	✗	✗	✗	✗	✓	✗	✗	✗	✗	✓	✗		
	RPP 050	✗	✗	✗	✗	✗	✗	✓	✓	✗	✗	✗	✗	✗	✓	✗	✗	✗	✗	✓	✗		
	RPP 064	✗	✗	✗	✗	✗	✗	✓	✓	✗	✗	✗	✗	✗	✓	✗	✗	✗	✗	✓	✗		
	RPP 080	✗	✗	✗	✗	✗	✗	✓	✓	✗	✗	✗	✗	✗	✓	✗	✗	✗	✗	✓	✗		
	RPP 100	✗	✗	✗	✗	✗	✗	✓	✓	✗	✗	✗	✗	✗	✓	✗	✗	✗	✗	✓	✗		
	RPP 125	✗	✗	✗	✗	✗	✗	✓	✓	✗	✗	✗	✗	✗	✓	✗	✗	✗	✗	✓	✗		
	RPP 160	✗	✗	✗	✗	✗	✗	✓	✓	✗	✗	✗	✗	✗	✓	✗	✗	✗	✗	✓	✗		
	RPP 200	✗	✗	✗	✗	✗	✗	✓	✓	✗	✗	✗	✗	✗	✓	✗	✗	✗	✗	✓	✗		
RPP 300	✗	✗	✗	✗	✗	✗	✓	✓	✗	✗	✗	✗	✗	✓	✗	✗	✗	✗	✓	✗			
Festo HGPT-B	HGPT 16	✗	✗	✗	✗	✗	✗	✓	✗	✓	✗	✗	✗	✗	✓	✗	✗	✗	✗	✗	✗		
	HGPT 20	✗	✗	✗	✗	✗	✗	✓	✗	✓	✗	✗	✗	✗	✓	✗	✗	✗	✗	✗	✗		
	HGPT 25	✗	✗	✗	✗	✗	✗	✓	✗	✓	✗	✗	✗	✗	✓	✗	✗	✗	✗	✗	✗		
	HGPT 35	✗	✗	✗	✗	✗	✗	✓	✗	✓	✗	✗	✗	✗	✓	✗	✗	✗	✗	✗	✗		
	HGPT 40	✗	✗	✗	✗	✗	✗	✓	✗	✓	✗	✗	✗	✗	✓	✗	✗	✗	✗	✗	✗		
	HGPT 50	✗	✗	✗	✗	✗	✗	✓	✗	✓	✗	✗	✗	✗	✓	✗	✗	✗	✗	✗	✗		
	HGPT 63	✗	✗	✗	✗	✗	✗	✓	✓	✓	✗	✗	✗	✗	✓	✗	✗	✗	✗	✗	✗		
	HGPT 80	✗	✗	✗	✗	✗	✗	✓	✓	✓	✗	✗	✗	✗	✓	✗	✗	✗	✗	✗	✗		
Sommer GP400	GP 403	✗	✗	✗	✗	✗	✗	✓	✓	✓	✗	✗	✗	✗	✓	✗	✓	✗	✗	✗	✓		
	GP 404	✗	✗	✗	✗	✗	✗	✓	✓	✓	✗	✗	✗	✗	✓	✗	✓	✗	✗	✗	✓		
	GP 406	✗	✗	✗	✗	✗	✗	✓	✓	✓	✗	✗	✗	✗	✓	✗	✓	✗	✗	✗	✓		
	GP 408	✗	✗	✗	✗	✗	✗	✓	✓	✓	✗	✗	✗	✗	✓	✗	✓	✗	✗	✗	✓		
	GP 410	✗	✗	✗	✗	✗	✗	✓	✓	✓	✗	✗	✗	✗	✓	✗	✓	✗	✗	✗	✓		
	GP 412	✗	✗	✗	✗	✗	✗	✓	✓	✓	✗	✗	✗	✗	✓	✗	✓	✗	✗	✗	✓		
	GP 416	✗	✗	✗	✗	✗	✗	✓	✓	✓	✗	✗	✗	✗	✓	✗	✓	✗	✗	✗	✓		
	GP 420	✗	✗	✗	✗	✗	✗	✓	✓	✓	✗	✗	✗	✗	✓	✗	✓	✗	✗	✗	✓		
	GP 430	✗	✗	✗	✗	✗	✗	✓	✓	✓	✗	✗	✗	✗	✓	✗	✓	✗	✗	✗	✓		
PHD GRK	GRK 35	✓	✗	✗	✗	✗	✗	✓	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗		
	GRK 46	✓	✗	✗	✗	✗	✗	✓	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗		
	GRK 58	✓	✗	✗	✗	✗	✗	✓	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗		
	GRK 75	✓	✗	✗	✗	✗	✗	✓	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗		
✓	Can be used as an accessory																						
✗	Cannot be used as an accessory																						

6.3 Other benefit-comparison features

	SCHUNK PGN-plus	Röhmm RPP	Sommer GP400-X	FESTO HGPT	PHD GRK
Electronic accessories	Magnetic switch, programmable MMS-P magnetic switches, inductive proximity switches, sensor cable, sensor distributor, analog position sensor, flexible position sensor, RMS reed switch, RSS radio sensor system, (PA3) pneumatic monitoring, FMS	Magnetic field sensor, inductive proximity switch, stroke measuring system	Magnetic field sensor, proximity switch, 3-pin plug	Proximity switch, sockets	Inductive proximity switch, magnetic sensor (either or)
	+++	++	++	+	-
Mechanical accessories	Centering sleeves, screw fittings, finger blanks, pressure maintenance valve, quick-change jaw system, protective cover	Centering sleeves, screw fittings, finger blanks, pressure maintenance valve, protective cover	Compressed air fittings, pressure safety valve, universal jaw set	Jaw blanks	No details
	+++	++	++	+	-
Options	Spring safety device, dust protection, corrosion protection, high-temperature, force amplification, precision version, Atex design	Spring safety device, dust protection, air purge connection possible	Dust protection, spring safety device	Spring safety device, air purge	Spring safety device
	+++	++	+	+	+
Versions	Tot. of 6 versions for each size	Tot. of 6 versions for each size	Tot. of 6 versions for each size	Tot. of 6 versions for each size	4 versions for each size (AS/IS)
	+++	++	++	++	+
Compatibility	Compatible with JGP	100% compatible with PGN-plus and JGP.	Not compatible either with JGP or PGN-plus, distance between the screws in the jaws also differs	Festo does not have centering sleeves for lateral mounting, but rather a pin on the base. Mounting of centering sleeves but often not compatible with JGP and PGN+	Not compatible, different dimensions in the base plate and also completely different jaws
	+++	+++	-	+	-
Service availability	24-hour service line, service brochures, training programs			24h-365 service and extra service agreements poss.	Service technicians for the USA
	+++			+++	+
Availability of CAD data	Free of charge to download	Free of charge to download	Request free of charge	Free of charge to download	Free of charge to download
	+++	+++	+++	+++	+++
Availability of software selection	Selection program available on the Internet	Could not be found on the homepage	Selection program available on the Internet	Could not be found on the homepage	Contact for Sales on the homepage, sizing software
	+++	-	+++	-	++

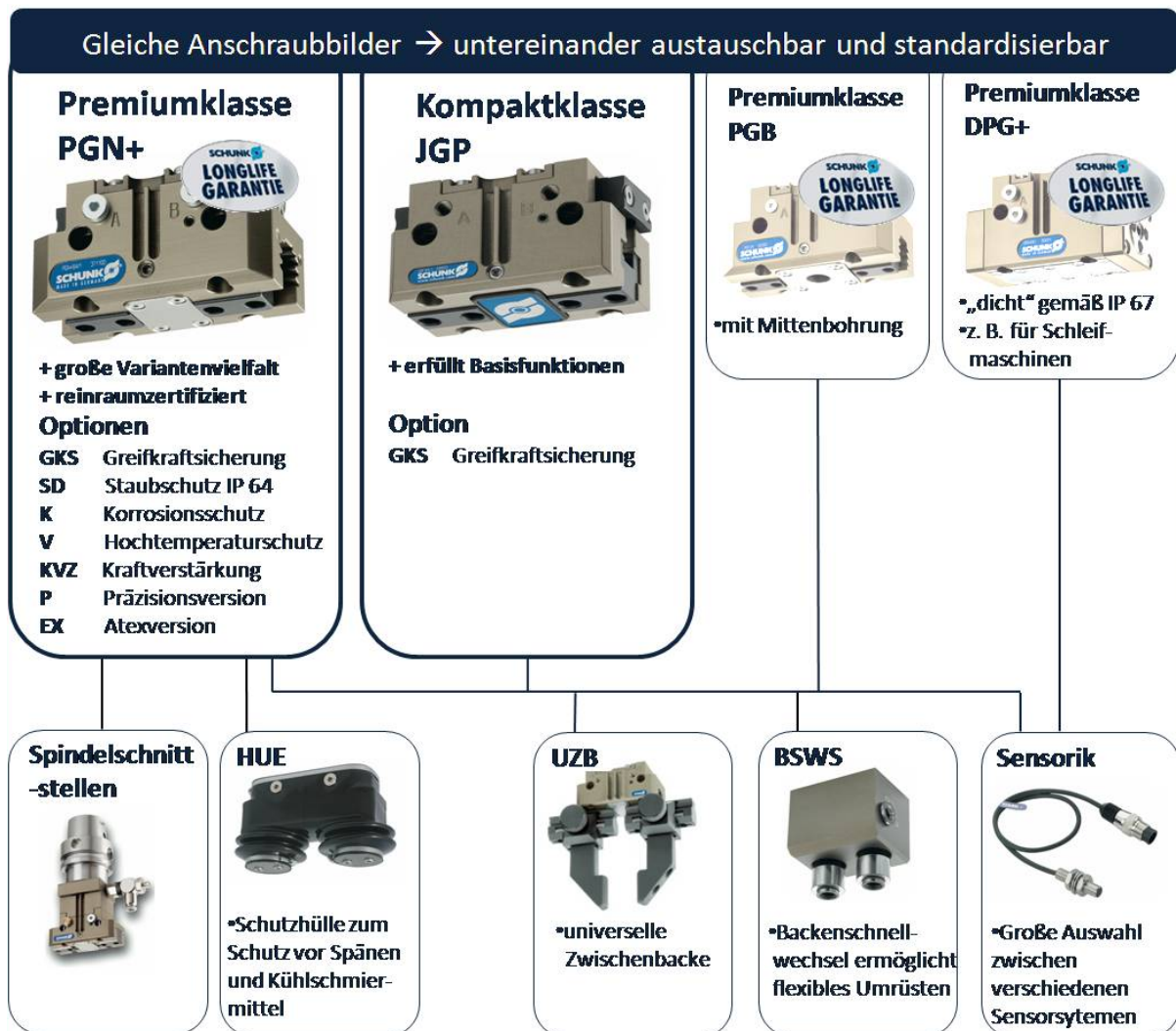
7 Uses and listing of arguments and guidelines

The graphical evaluation of the competitor comparison once again clearly shows at a glance that the PGN-plus has, in all points considered, been able to secure that crucial competitive edge over its rivals.



Cost effectiveness / Customer benefits	Line of argument
- Robust multi-tooth guide, means maximum process reliability ("automotive proven"). - Above-average gripping force, means smaller gripper size is possible. - High payload, permits use of longer gripper fingers. - Compact design, permits optimized system design. - Complementary sensor accessories, permit synchronous function monitoring. - Maximum repeat accuracy, and therefore reliable processes. - Various screw-mounting options, permit maximum flexibility of process and system design. Long-life warranty ensures low total cost of ownership – lower costs over the entire service life.	- Speak to the customer specifically about system downtimes, repair times, and storage costs for spare parts. The robust multi-tooth guide guarantees significantly longer running times and therefore less system downtime and higher productivity. - Explicitly point out to the customer our manifold variants and options. None of the competitors can match that! Every customer gets the perfect PGN-plus for his application! - Promote the long-life warranty, it is the only one of its kind on the market. Lower total cost of ownership!

8 Overview of the module options for the PGN-plus



9 Limitations of the PGN-plus

Strengths Combination of multi-tooth guide and oval piston, large number of variants, many different sizes, wide range of accessories, high level of standardization, great performance	Weaknesses High price, very expensive in comparison, great many accessories and different variants, thus expensive in the production and storage
Opportunities The competition has almost no variants and mainly simple universal solutions, mostly at a low price; no competition when it comes to large strokes	Threads Many competitors, often compatible with PGN-plus; all have lower prices

The **strengths** of PGN-plus lie in the combination of multi-tooth guide and oval piston, which up to now are still a **unique selling point** in the market and fundamentally influence the performance and lifespan of the product. Moreover, the product has a very high number of different variants, sizes and accessories, which enables major potential for standardization (26 variants are available as standard). The price/performance ratio is very good for special applications (ATEX, clean room applications) particularly.

Clients rate the **price**, which varies as a result of the accessories and variants, as a weakness. The costs involved in the production and storage of the parts increase considerably as a result of the variants and the accessories.

The **prospects** for the PGN- plus are based on the lack of variants offered by the competition and their simple universal solutions. Moreover, the PGN-plus offers very large strokes that are not available from the competition.

A **threat** to the product is also posed by the many competitors in the market and their lower prices. Furthermore, many of the competitors' products are compatible with the PGN-plus.

10 Contact person for the product

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