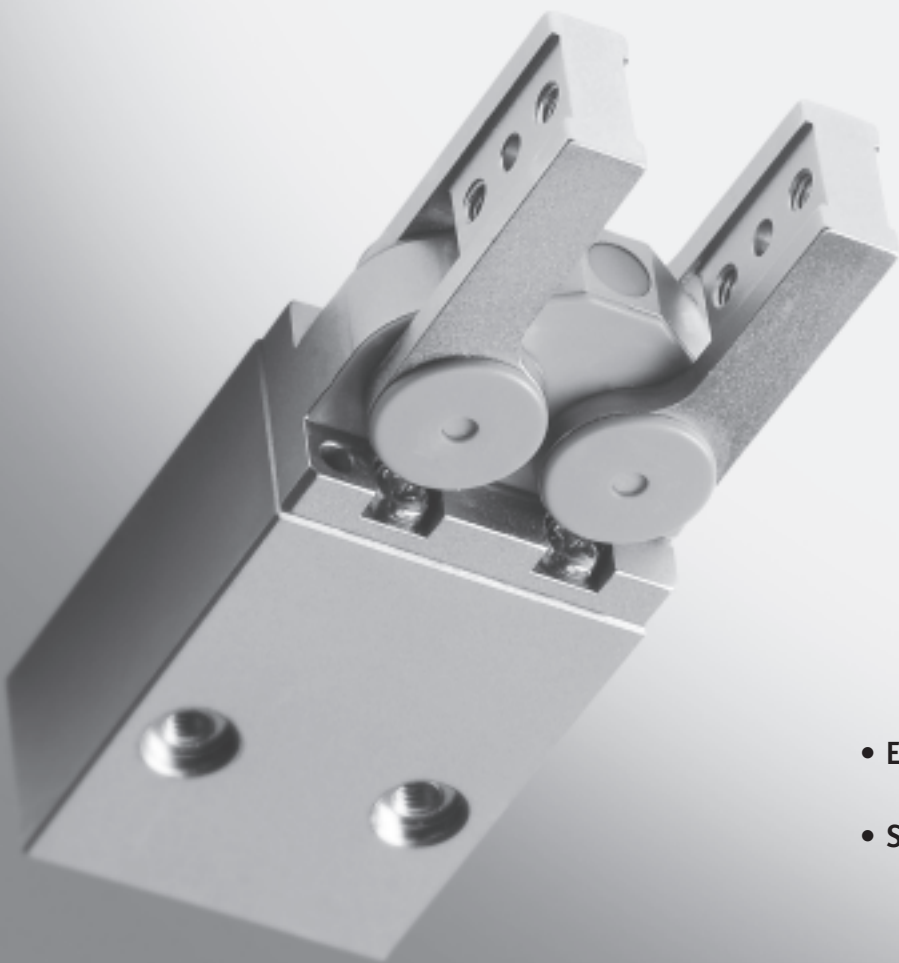




- Economical and versatile
- Self-centring

Radial grippers HGR

Key features

FESTO



At a glance

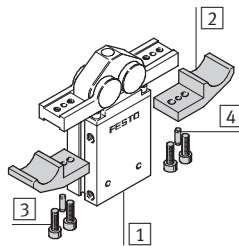
- Double-acting piston drive
- Self-centring
- Variable gripping action:
 - External/internal gripping
- Versatility thanks to externally adaptable gripper fingers
- Wide range of options for mounting on drive units
- Constant gripping torque over the entire angle range
- 180° opening angle
- Internal fixed flow control
- Sensor technology:
 - Adaptable proximity sensors on the small grippers
 - Integral proximity sensors for medium and large grippers



Gripper selection software
www.festo.com/en/engineering

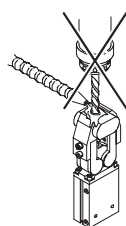
Mounting options for external gripper fingers (customer-specific)

- 1 Radial gripper
- 2 External gripper finger
- 3 Mounting screws
- 4 Centring pins



- - Note

grippers should always be used with G exhaust air flow control. They are not suitable for the following, or for similar applications:

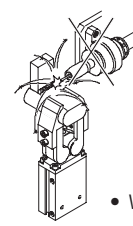


• Machining

• Aggressive media



• Grinding dust



• Welding spatter

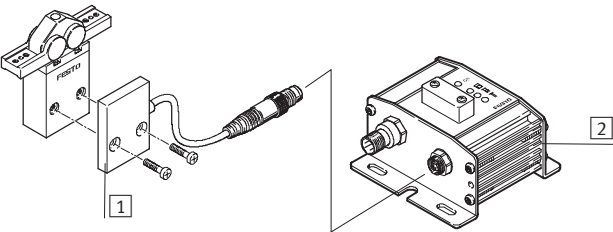
Radial grippers HGR

Peripherals overview and type codes

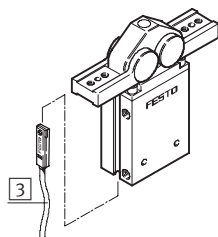


Peripherals overview

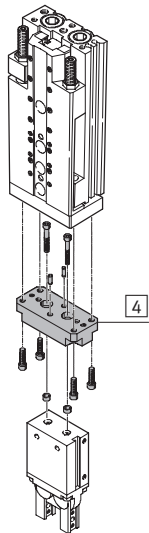
HGP-10



HGP-16 ... 40



System product for handling and assembly technology



Accessories			
Type	Brief description		→ Page
1	Position sensor SMH-S1	Adaptable and integratable sensor technology, for sensing the piston position	1 / 7.5-37
2	Evaluation unit SMH-AE1	For position sensor SMH-S1	1 / 7.5-37
3	Proximity sensor SME/SMT-8	For sensing the piston position	1 / 7.5-37
4	–	Drive/gripper connections	Volume 5

Type codes

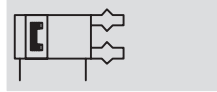
		HGR	–	16	–	A
Type						
HGR	Radial gripper					
Size						
Position sensing						
A	For proximity sensing					

Radial grippers HGR

Technical data

FESTO

Function
Double-acting



[www.festo.com/en/
Spare_parts_service](http://www.festo.com/en/Spare_parts_service)

Wearing parts kits
→ 1 / 7.5-36

Size
10 ... 40 mm



General technical data					
Size	10	16	25	32	40
Design	Rack and pinion				
Mode of operation	Double-acting				
Gripper function	Radial				
Number of gripper jaws	2				
Opening angle [°]	180				
Pneumatic connection	M3		M5	G1/8	
Repetition accuracy ¹⁾ [mm]	≤ 0.1				
Max. interchangeability [mm]	0.2				
Max. operating frequency [Hz]	4				
Position sensing	For proximity sensing				
Type of mounting	With female thread and centring hole				

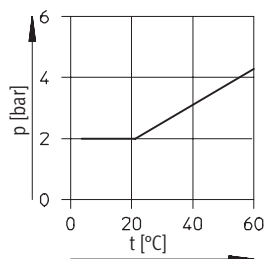
1) End position drift under constant conditions of use with 100 consecutive strokes in the direction of movement of the gripper jaws

Operating and environmental conditions		
Min. operating pressure [bar]	2	
Max. operating pressure [bar]	8	
Operating medium	Filtered compressed air, lubricated or unlubricated	
Ambient temperature [°C]	+5 ... +60	
Corrosion resistance class CRC ¹⁾	2	

1) Corrosion resistance class 2 according to Festo standard 940 070
Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents

Min. operating pressure p as a function of temperature range t

The required minimum operating pressure may vary depending on the temperature range of the device



Weights [g]					
Size	10	16	25	32	40
HGR	39	110	250	420	710

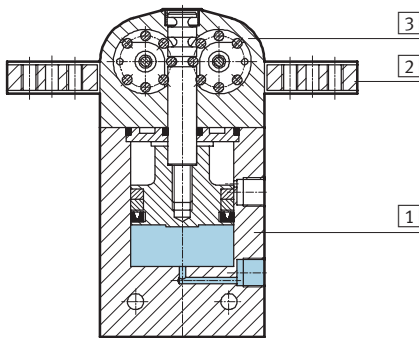
Radial grippers HGR

Technical data

FESTO

Materials

Sectional view



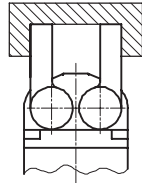
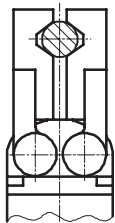
Radial gripper

1	Body	Hard anodised aluminium
2	Gripper jaw	Hard anodised aluminium
3	Cover cap	Polyacetate
–	Note on materials	Copper, PTFE and silicone-free

Total gripping torque [Ncm] at 6 bar, with external gripper fingers

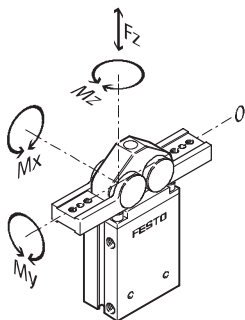
External gripping

Internal gripping



Size	10	16	25	32	40
Total gripping torque					
Opening	15	56	195	360	600
Closing	13	50	160	300	500

Characteristic load values at the gripper jaws



The indicated permissible forces and torques apply to a single gripper jaw. Static forces and torques relate to additional applied loads caused by

the workpiece or external gripper fingers, as well as forces which occur during handling. The zero co-ordinate

line (gripper jaws point of rotation) must be taken into consideration for the calculation of torques.

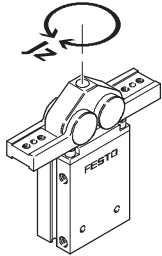
Size	10	16	25	32	40
Max. permissible force F_z [N]	14	25	39	55	83
Max. permissible torque M_x [Nm]	0.1	0.3	0.6	1	1.9
Max. permissible torque M_y [Nm]	0.5	1.5	3	4.7	9.9
Max. permissible torque M_z [Nm]	0.4	1	2	3.2	6.7

Radial grippers HGR

Technical data

FESTO

Mass moment of inertia [kgm²x10⁻⁴]



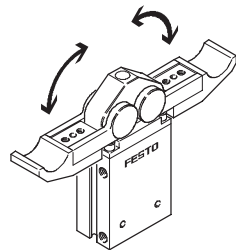
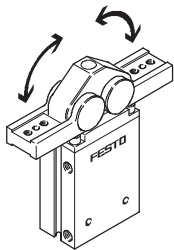
Mass moment of inertia [kgm²x10⁻⁴]
for radial grippers in relation to the
central axis, without external gripper
fingers, without load.

Size	10	16	25	32	40
HGR	0.03	0.14	0.62	1.45	3.58

Opening and closing times [ms] at 6 bar

Without external gripper fingers

With external gripper fingers



The indicated opening and closing
times [ms] have been measured at
room temperature and 6 bar operating
pressure without external gripper
fingers.

The grippers must be throttled for
greater applied loads. Opening and
closing times must then be adjusted
accordingly.

Size		10	16	25	32	40
Without external gripper fingers						
HGR	Opening	5	40	95	85	105
	Closing	5	45	80	75	100
With external gripper fingers → 1 / 7.5-33						

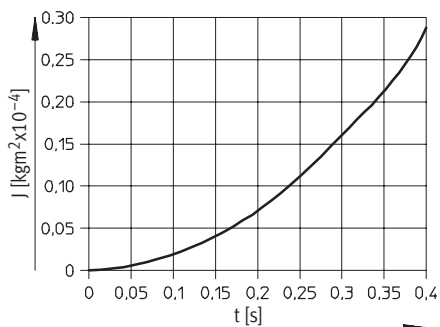
Radial grippers HGR

Technical data

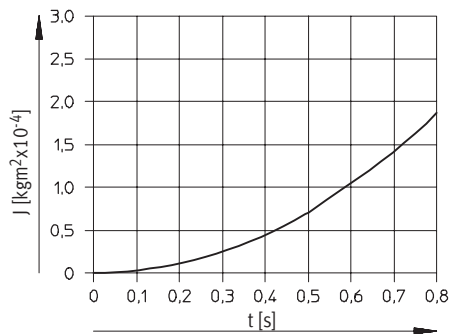
FESTO

Opening and closing times t as a function of gripper finger mass moment of inertia J

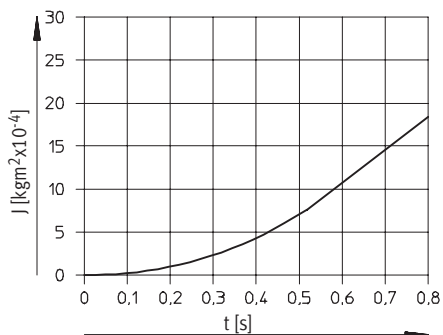
HGR-10-A



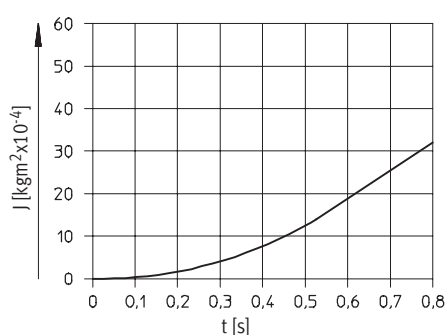
HGR-16-A



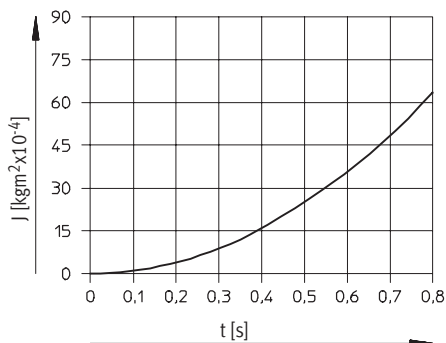
HGR-25-A



HGR-32-A



HGR-40-A



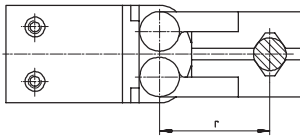
Radial grippers HGR

Technical data

FESTO

Gripping force F per gripper as a function of operating pressure and the lever arm r

Gripping forces

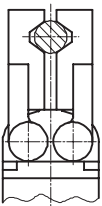


Gripping forces can be determined with the following diagrams for the various sizes in relation to operating

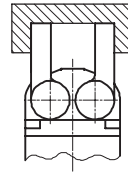
pressure and lever arm (distance from the zero co-ordinate line shown oppo-

site to the pressure point at which the external fingers grip the workpiece).

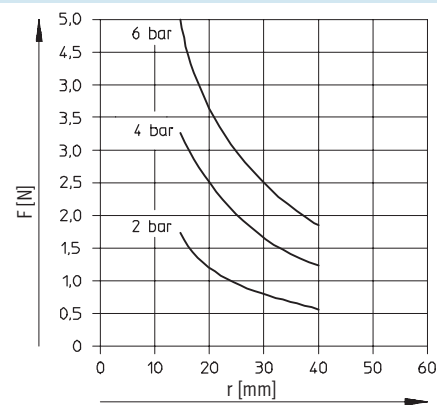
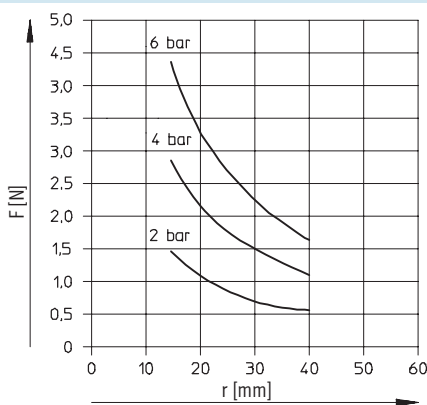
External gripping (closing)



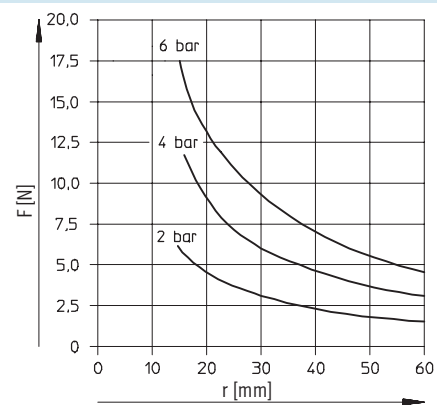
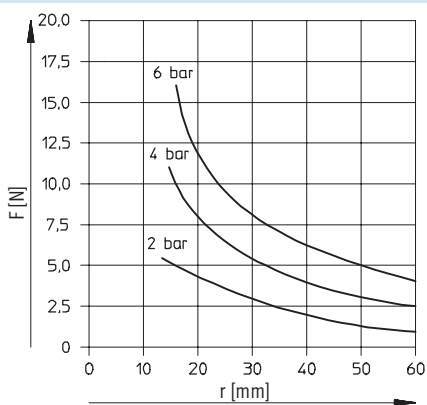
Internal gripping (opening)



HGR-10-A



HGR-16-A



Radial grippers HGR

Technical data

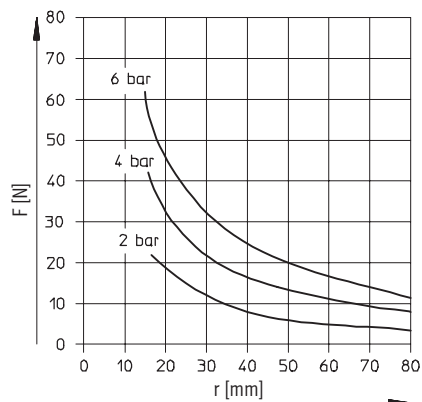
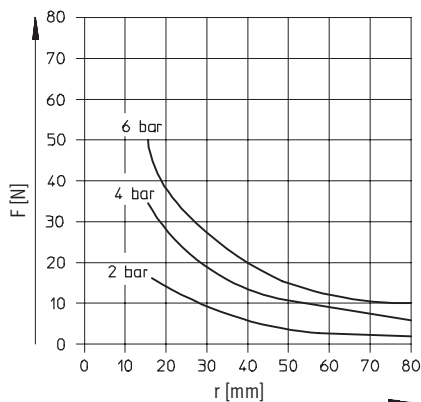
FESTO

Gripping force F per gripper as a function of operating pressure and the lever arm r

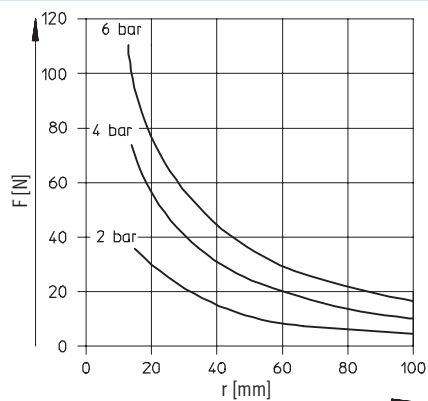
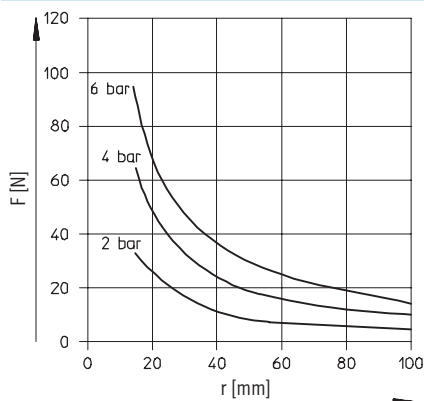
External gripping (closing)

Internal gripping (opening)

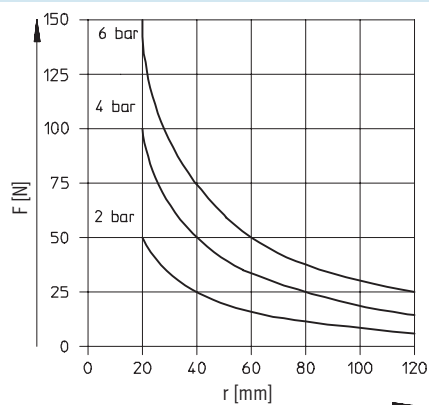
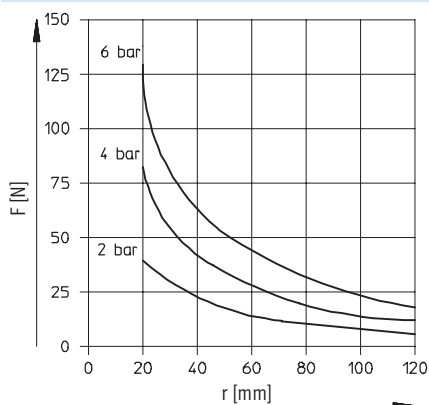
HGR-25-A



HGR-32-A



HGR-40-A



Technical data

Dimensions

Technical drawings of the HGR-10-A and HGR-16...40-A sensors, showing dimensions and component labels.

View A
HGR-10-A

View A
HGR-16 ... 40-A

Legend:

- 1 Sensor slot for proximity sensor SME/SMT-8 (not with HGR-10-A)
- 2 Compressed air connection, closing
- 3 Compressed air connection, opening
- 4 Centring sleeves ZBH (2 included in scope of delivery)

Handling units
Radial grippers

7.5

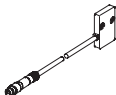
Ordering data		
Size	Double-acting	
[mm]	Part No.	Type
10	174 817	HGR-10-A
16	161 829	HGR-16-A
25	161 830	HGR-25-A
32	161 831	HGR-32-A
40	161 832	HGR-40-A

Ordering data – Wearing parts kits		
Size		
[mm]	Part No.	Type
10	378 522	HGR-10-A
16	125 668	HGR-16-A
25	125 669	HGR-25-A
32	125 670	HGR-32-A
40	125 671	HGR-40-A

Radial grippers HGR

Accessories

FESTO

Ordering data						
Type	For size	Weight [g]	Part No.	Type	PU ¹⁾	
Position sensor SMH-S1			Technical data ➔ 1 / 10.2-107			
	10	20	175 712	SMH-S1-HGR10	1	
Evaluation unit SMH-AE1			Technical data ➔ 1 / 10.2-110			
	10	170	175 708	SMH-AE1-PS3-M12	1	
			175 709	SMH-AE1-NS3-M12		
Centring sleeve ZBH			Technical data ➔ 1 / 10.1-3			
	10, 16	1	189 652	ZBH-5	10	
	25		186 717	ZBH-7		
	32		150 927	ZBH-9		
	40		189 653	ZBH-12		

1) Packaging unit quantity

Ordering data – Proximity sensors for T-slot, magneto-resistive							Technical data➔ 1 / 10.2-13	
	Assembly	Switch output	Electrical connection			Cable length [m]	Part No.	Type
			Cable	M8 plug	M12 plug			
N/O contact								
	Insertable from above	PNP	3-wire	–	–	2.5	525 898	SMT-8F-PS-24V-K2,5-OE
		NPN					525 909	SMT-8F-NS-24V-K2,5-OE
		–	2-wire	–	–	2.5	525 908	SMT-8F-ZS-24V-K2,5-OE
		PNP	–	3-pin	–	0.3	525 899	SMT-8F-PS-24V-K0,3-M8D
		NPN					525 910	SMT-8F-NS-24V-K0,3-M8D
		PNP	–	–	3-pin	0.3	525 900	SMT-8F-PS-24V-K0,3-M12
	Insertable from end, flush with the cylinder profile	PNP	3-wire	–	–	2.5	175 436	SMT-8-PS-K-LED-24-B
			–	3-pin	–	0.3	175 484	SMT-8-PS-S-LED-24-B
N/C contact								
	Insertable from above	PNP	3-wire	–	–	7.5	525 911	SMT-8F-PO-24V-K7,5-OE

Handling units
Radial grippers

7.5

Radial grippers HGR

Accessories

FESTO

Ordering data – Proximity sensors for T-slot, magnetic reed					Technical data➔ 1 / 10.2-18	
	Assembly	Electrical connection		Cable length [m]	Part No.	Type
		Cable	M8 plug			
N/O contact						
	Insertable from above	3-wire	–	2.5	525 895	SME-8F-DS-24V-K2,5-OE
				5.0	525 897	SME-8F-DS-24V-K5,0-OE
		2-wire	–	2.5	525 907	SME-8F-ZS-24V-K2,5-OE
		–	3-pin	0.3	525 896	SME-8F-DS-24V-K0,3-M8D
	Insertable from end, flush with the cylinder profile	3-wire	–	2.5	150 855	SME-8-K-LED-24
		–	3-pin	0.3	150 857	SME-8-S-LED-24
N/C contact						
	Insertable from end, flush with the cylinder profile	3-wire	–	7.5	160 251	SME-8-O-K-LED-24

Ordering data – Plug sockets with cable						Technical data➔ 1 / 10.2-114	
	Assembly	Switch output		Connection	Cable length [m]	Part No.	Type
		PNP	NPN				
Straight plug socket							
	M8 union nut			3-pin	2.5	159 420	SIM-M8-3GD-2,5-PU
					5	159 421	SIM-M8-3GD-5-PU
	M12 union nut			3-pin	2.5	159 428	SIM-M12-3GD-2,5-PU
					5	159 429	SIM-M12-3GD-5-PU
Angled plug socket							
	M8 union nut			3-pin	2.5	159 422	SIM-M8-3WD-2,5-PU
					5	159 423	SIM-M8-3WD-5-PU
	M12 union nut			3-pin	2.5	159 430	SIM-M12-3WD-2,5-PU
					5	159 431	SIM-M12-3WD-5-PU