Angle grippers HGW

FESTO

- Economical and versatile
- Self-centring

Angle grippers HGW

Key features

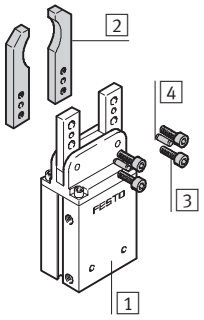
At a glance

- 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
- 40° 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

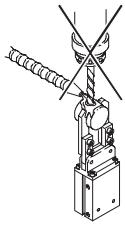
Mounting options for external gripper fingers (customer-specific)

1 Angle gripper
2 External gripper fingers
3 Mounting screws
4 Centring pins

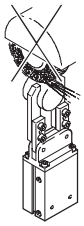


Note

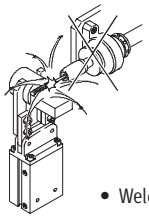
Grippers should always be used with exhaust air flow control. They are not suitable for the following, or for similar applications:



- Machining
- Aggressive media



- Grinding dust



- Welding spatter

Angle grippers HGW

Peripherals overview and type codes

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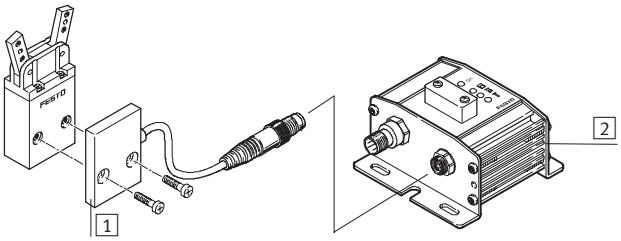
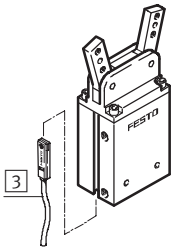
Peripherals overview

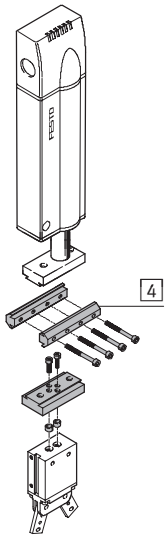
HGW-10



HGW-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 / 7.5-11
2	Evaluation unit SMH-AE1	For position sensor SMH-S1	1 / 7.5-11
3	Proximity sensor SME/SMT-8	For sensing the piston position	1 / 7.5-11
4	–	Drive/gripper connections	Volume 5

Type codes

HGW	–	16	–	A

Type

HGW	Angle gripper

Size

Position sensing

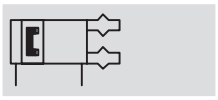
A	For proximity sensing

Angle grippers HGW

Technical data

FESTO

Function
Double-acting



Size
10 ... 40 mm

www.festo.com/en/
Spare_parts_service

Wearing parts kits
➔ 1 / 7.5-10

General technical data						
Size		10	16	25	32	40
Design		Lever mechanism				
Mode of operation		Double-acting				
Gripper function		Angle				
Number of gripper jaws		2				
Opening angle	[°]	40				
Pneumatic connection		M3		M5	G1⁄8	
Repetition accuracy[1]	[mm]	≤ 0.04				
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

Weights [g]						
Size		10	16	25	32	40
HGW		39	100	250	420	720

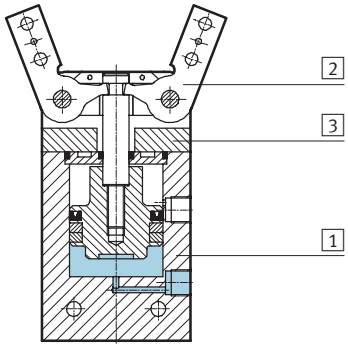
Angle grippers HGW

Technical data

FESTO

Materials

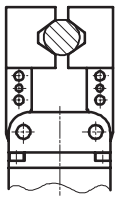
Sectional view



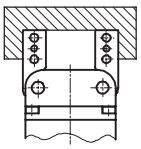
Angle gripper		
1	Body	Hard anodised aluminium
2	Gripper jaw	Nickel-plated tool steel
3	Cover cap	Polyacetate
–	Note on materials	Copper, PTFE and silicone-free

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

External gripping

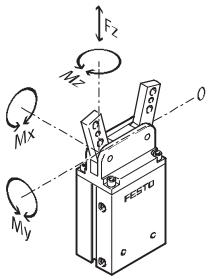


Internal gripping



Size	10	16	25	32	40
Total gripping torque					
Opening	25	120	360	680	965
Closing	22	106	320	600	880

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]	16	31	54	74	124
Max. permissible torque M_X	[Nm]	0.3	0.9	1.7	3	5.7
Max. permissible torque M_Y	[Nm]	0.1	0.3	0.6	1	2.2
Max. permissible torque M_Z	[Nm]	0.2	0.5	1.1	1.8	3.6

Angle grippers HGW

Technical data

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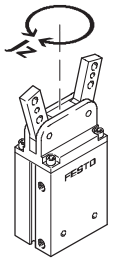
Mass moment of inertia [kgm²x10⁻⁴]

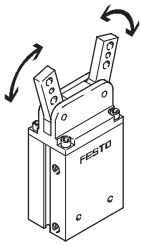


Mass moment of inertia [kgm²x10⁻⁴] for angle grippers in relation to the central axis, without external gripper fingers, without load.

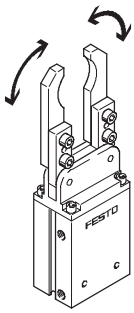
Size	10	16	25	32	40
HGW	0.03	0.13	0.60	1.48	3.54

Opening and closing times [ms] at 6 bar

Without external gripper fingers



With external gripper fingers



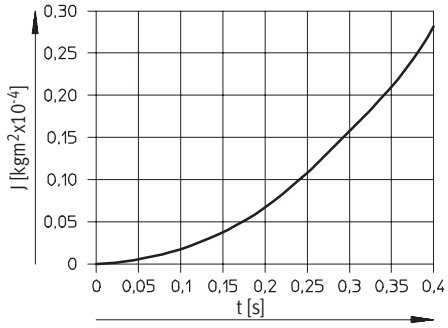
The indicated opening and closing times [ms] have been measured at room temperature and 6 bar operating pressure without external gripper fingers.

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

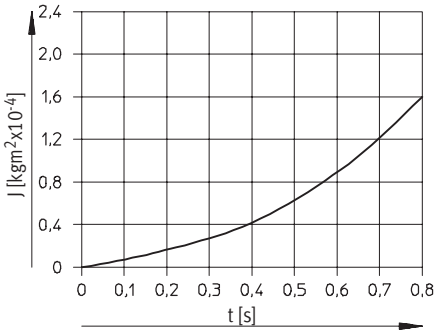
Size		10	16	25	32	40
Without external gripper fingers						
HGW	Opening	5	25	50	50	60
	Closing	5	30	40	40	50
With external gripper fingers ➔ 1 / 7.5-7						

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

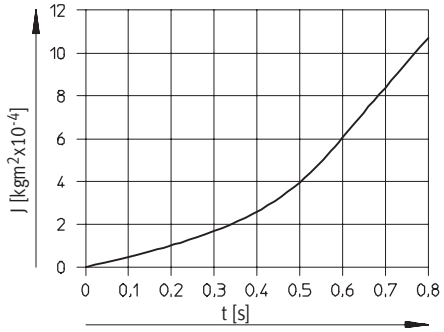
HGW-10-A



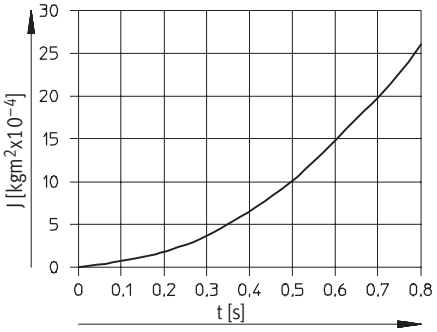
HGW-16-A



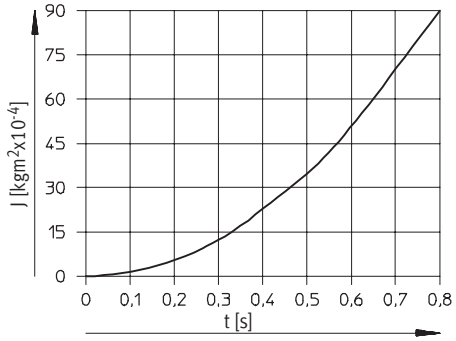
HGW-25-A



HGW-32-A

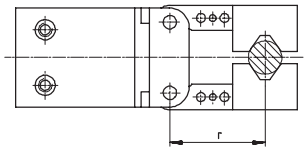


HGW-40-A



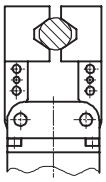
Gripping force F per gripper as a function of operating pressure and the lever arm r

Gripping forces

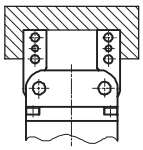


Gripping forces can be determined with the following diagrams for the various sizes in relation to operating pressure and lever arm (distance from the zero co-ordinate line shown opposite to the pressure point at which the external fingers grip the workpiece).

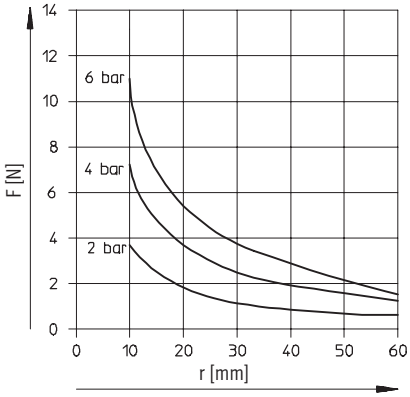
External gripping (closing)

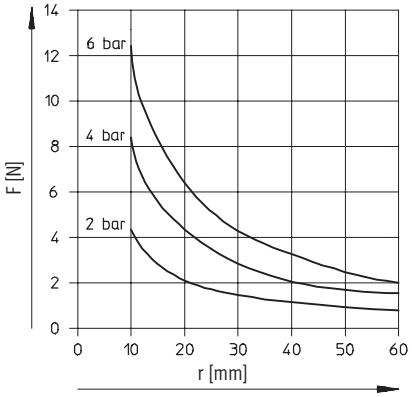


Internal gripping (opening)

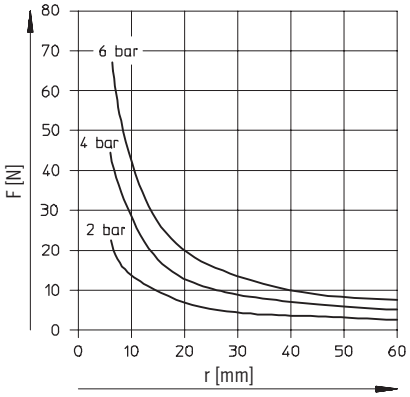


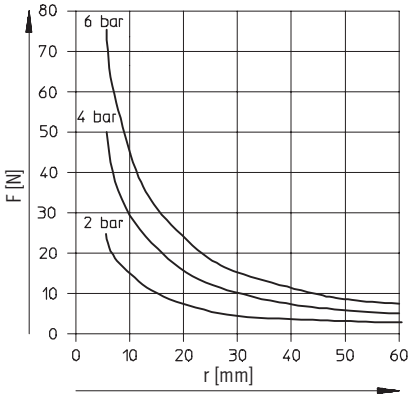
HGW-10-A





HGW-16-A





Angle grippers HGW

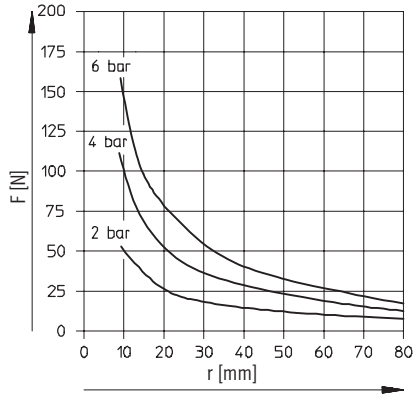
Technical data

FESTO

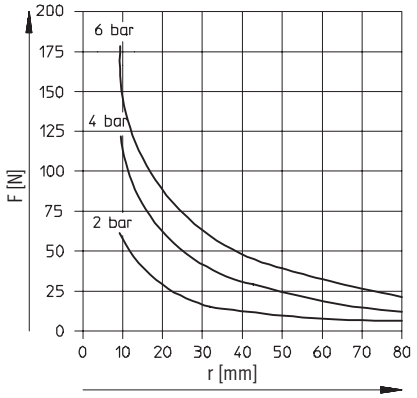
Gripping force F per gripper as a function of operating pressure and the lever arm r

External gripping (closing)

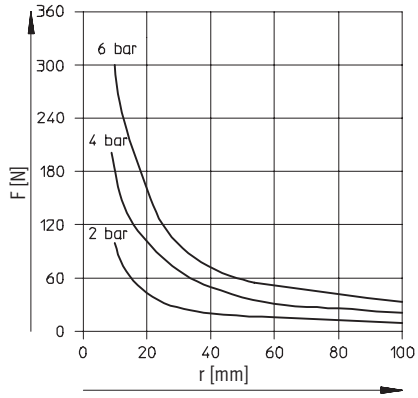
HGW-25-A

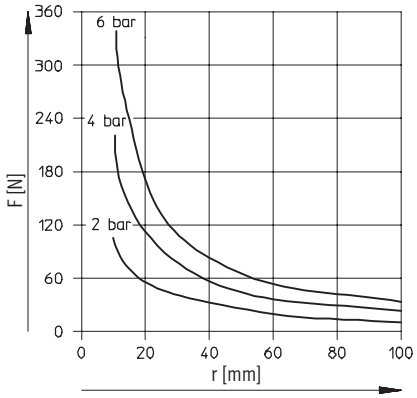


Internal gripping (opening)

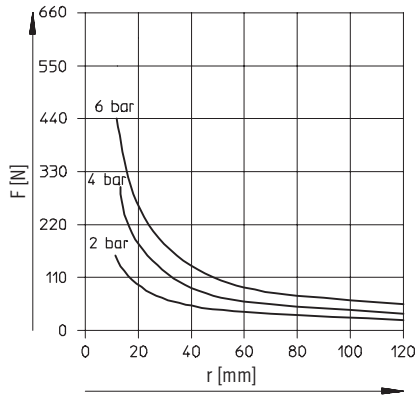


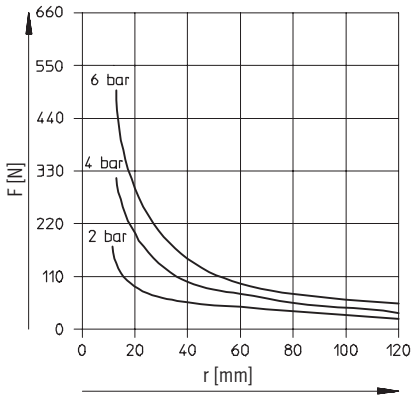
HGW-32A





HGW-40A



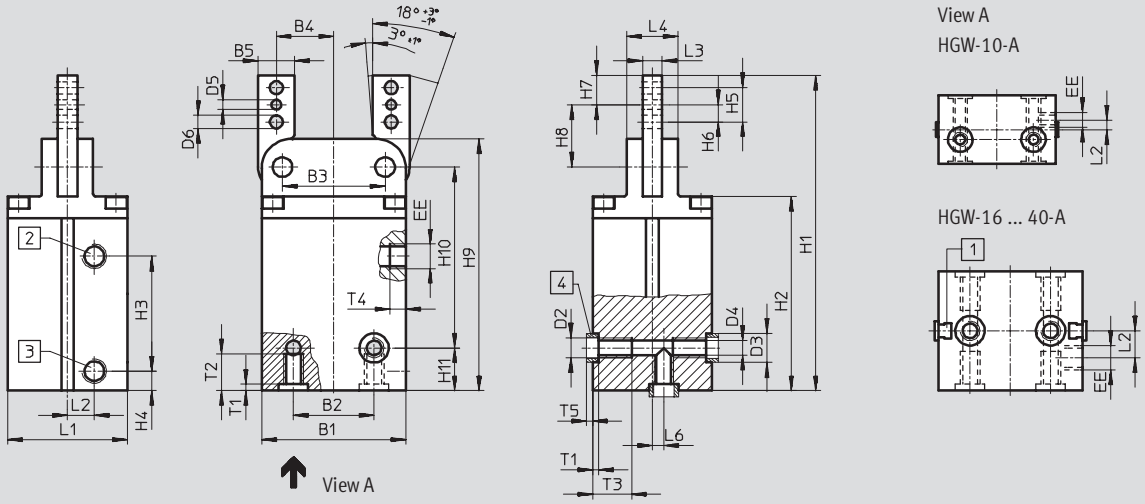


Angle grippers HGW

Technical data

Dimensions

Download CAD data ➔ **www.festo.com/en/engineering**



1 Sensor slot for proximity sensor SME/SMT-8 (not with HGW-10-A)

2 Compressed air connection, closing

3 Compressed air connection, opening

4 Centring sleeves ZBH (2 included in scope of delivery)

Size [mm]	B1	B2 ±0.02	B3 ±0.02	B4	B5 −0.02/−0.05	D2	D3 ∅ H8/h7	D4 ∅ +0.1	D5 ∅ H8	D6 ∅	EE	H1	H2	H3	H4	H5
10	24	15	17	9.75	5.5	M3	5	2.5	2	2.2	M3	56.3	34.5	16	8.8	7
16	33.4	16	24	13	8	M3	5	2.5	2.5	3.2	M3	81	53.2	23	12.25	9
25	44	25	32	18	10	M4	7	3.3	3	3.2	M5	100	63.5	24.7	14.3	11
32	51	29	37	20.5	12	M6	9	5.1	3	4.3	G1/8	116	73	25	20	13
40	59	33	42	23.5	15	M8	12	6.4	4	5.3	G1/8	129	79.5	47	8	14

Size [mm]	H6	H7	H8 ±0.05	H9	H10	H11 −0.05	L1	L2	L3 −0.01/−0.02	L4	L6 ±0.02	T1 +0.1	T2	T3 +1	T4 +0.5	T5
10	3.5	5.75	10.75	44.8	27.5	12.3	14	2	3	7	2	1.2	12.3	–	3.5	1.2
16	4.5	7.5	13.7	65.5	52.3	7.5	19	5.5	4	10	–	1.2	7	7	4.5	1.2
25	5.5	8.8	18.7	80.7	65	7.5	29.5	8.75	5	14	–	1.6	7	8	6.5	1.4
32	6.5	11	22	92.5	72	11	38	9.5	6	17	–	2.1	10	15	6.5	1.9
40	7	12	25.5	103	74	17.5	49	11	8	21	–	2.6	15	16	6.5	2.4

Ordering data

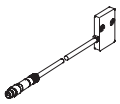
Size [mm]	Double-acting Part No.	Type
10	**174 818**	**HGW-10-A**
16	**161 833**	**HGW-16-A**
25	**161 834**	**HGW-25-A**
32	**161 835**	**HGW-32-A**
40	**161 836**	**HGW-40-A**

Ordering data – Wearing parts kits

Size [mm]	Part No.	Type
10	**378 527**	**HGW-10-A**
16	**125 680**	**HGW-16-A**
25	**125 681**	**HGW-25-A**
32	**125 682**	**HGW-32-A**
40	**125 683**	**HGW-40-A**

Angle grippers HGW

Accessories

Ordering data					
Type	For size	Weight [g]	Part No.	Type	PU[1]
Position sensor SMH-S1				Technical data ➔ 1 / 10.2-107	
	10	20	**175 711**	**SMH-S1-HGW10**	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**

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**