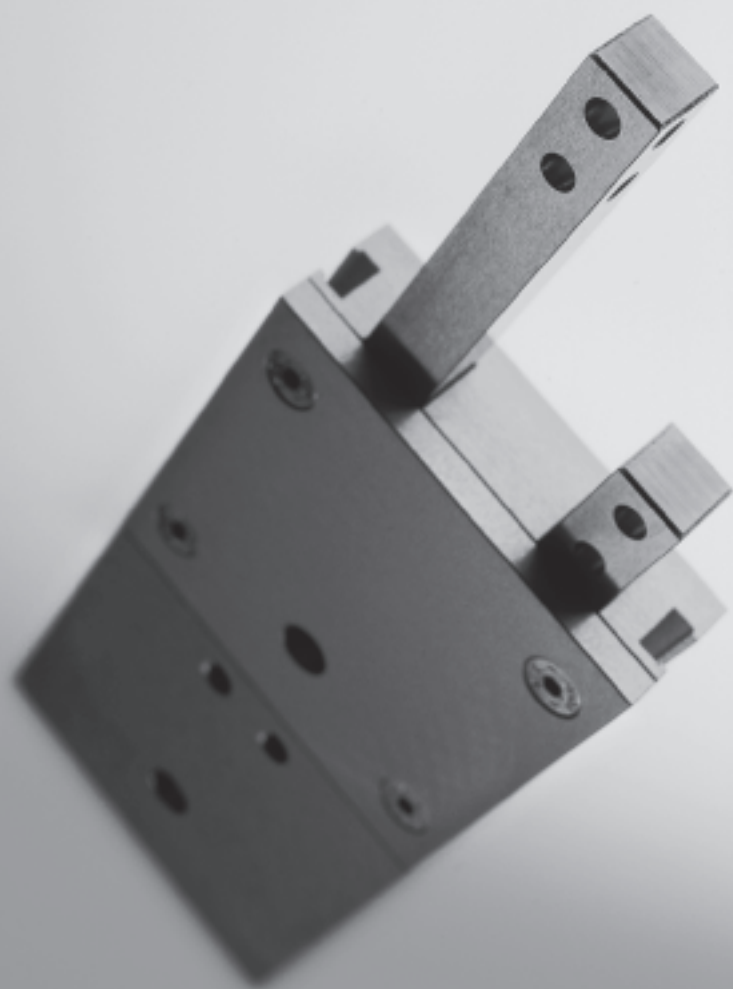




- Complete control unit
- Precision mounting options
- Proximity sensors can be integrated

Feed separators HPV

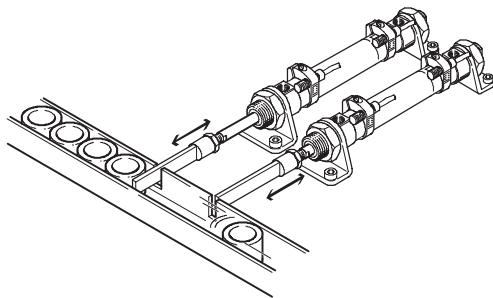
Key features at a glance

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Separation of workpieces in the supply process

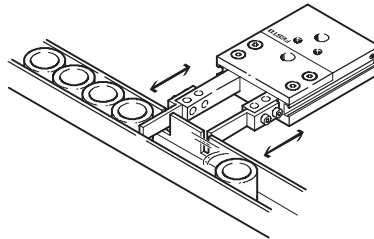
Previously

- Required at least 2 drives, 2 valves and 4 proximity sensors
- Extensive programming required



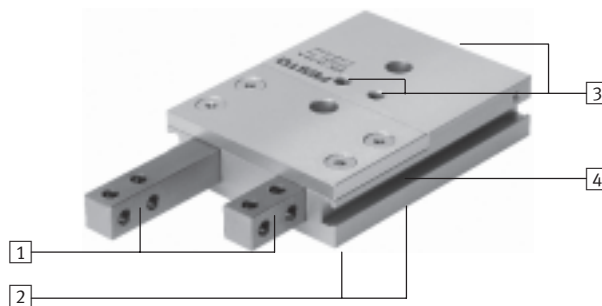
Today

- One unit (1 drive, 1 valve and 2 proximity sensors)
- More cost-effective
- Reliable
- No programming required



High functionality

- 1 Corrosion-resistant thanks to stainless steel plungers
- 2 Optimum and precise adaption possibilities using centring sleeves
- 3 Supply ports optionally at top or rear
- 4 Proximity sensors can be integrated in the housing (SME/SMT-8)

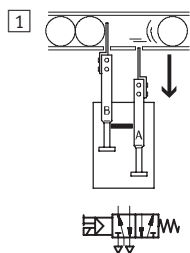


Note

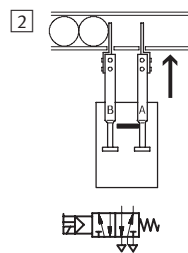
An integrated mechanical locking mechanism between the two plungers ensures that one piston cannot retract until the other has advanced. Both plungers are briefly extended upon changeover and the part to be separated is surrounded.

Function principle

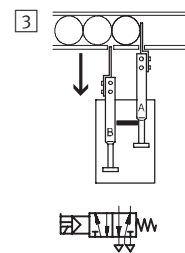
Plunger A is retracted. The locking mechanism locks plunger B.



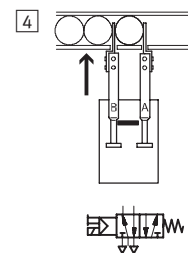
Plunger A advances.



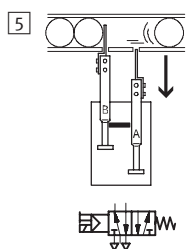
Plunger B cannot retract from the locking mechanism until plunger A is fully advanced.



Plunger B advances.



Plunger A cannot retract from the locking mechanism until plunger B is fully advanced.

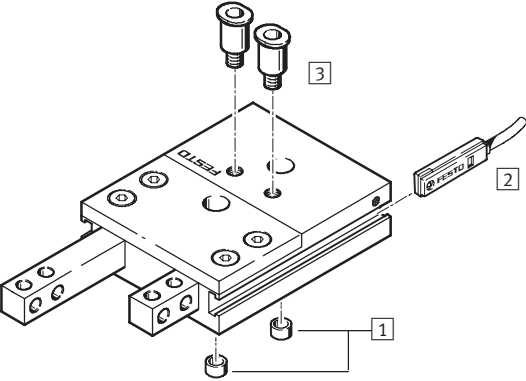


Feed separators HPV

Peripherals overview and type code



Peripherals overview



Accessories		
Type	Brief description	→ Page
1 Centring sleeve	For centring when mounting	1 / 7.3-9
2 Proximity sensor	For position sensing. Can be integrated in sensor slot	1 / 7.3-9
3 QS push-in fitting	For connecting compressed air tubing with standard external diameters	Volume 3

Type codes

		HPV	–	14	–	20	–	A
Type								
Double-acting								
HPV	Feed separator							
Size [mm]								
Stroke [mm]								
Position sensing								
A	For proximity sensing							

Feed separators HPV

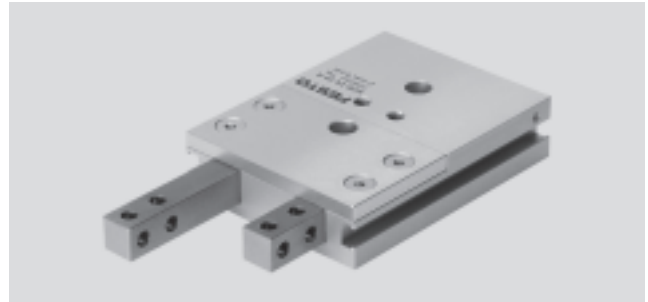
Technical data

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Function



- Ø - Size
14 and 22
- I - Stroke length
20 ... 60 mm



General technical data	
Pneumatic connection	M5
Mode of operation	Double-acting
Operating medium	Filtered compressed air, lubricated or unlubricated
Constructional design	Twin pistons
	Piston rod
	Locking mechanism
	Non-rotating
Protection against rotation/guide	Square
Cushioning	None
Position sensing	For proximity sensor
Type of mounting	Via through-hole
	With female thread
Mounting position	Any

Operating and environmental conditions		
Operating pressure	[bar]	3 ... 8
Ambient temperature	[°C]	+5 ... +60
Corrosion resistance class CRC ¹⁾		2

- 1) Corrosion resistance class 2 according to Festo standard 940 070
Components subject to moderate corrosion stress. 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

Forces [N]		
Size	14	22
Theoretical force at 6 bar advancing	92	228
Theoretical force at 6 bar retracting	75	180

Retracting and advancing times [ms] without add-on plunger fingers at 6 bar (unrestricted)				
Size	HPV-14-20-A	HPV-14-40-A	HPV-22-30-A	HPV-22-60-A
Retracting time	22	43	95	192
Advancing time	21	42	83	162
Cycle time	42	83	189	380

Feed separators HPV

Technical data

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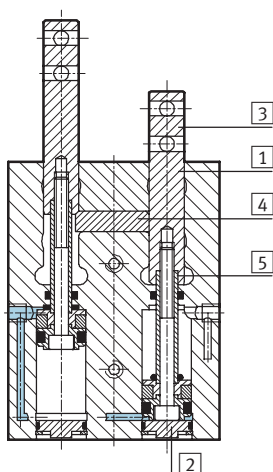
Weights [g]				
Size	HPV-14-20-A	HPV-14-40-A	HPV-22-30-A	HPV-22-60-A
Product weight	290	460	950	1,500

Max. permissible weight [g] of add-on plunger separators for unrestricted operation				
Size	HPV-14-20-A	HPV-14-40-A	HPV-22-30-A	HPV-22-60-A
Add-on plunger separators ¹⁾	150	150	395	395

1) If the max. permissible weights of the add-on plunger separators are exceeded, the retracting and advancing times must be adapted in accordance with the table below using one-way flow control valves. Failure to do so may result in components of the feed separator being damaged

Materials

Sectional view



Feed separator		
1	Body	Wrought aluminium alloy (with CompCoat)
2	End cover	High-alloy steel
3	Plunger	High-alloy steel
4	Locking mechanism	Case-hardened steel
5	Piston rod	High-alloy steel
–	Seals	Nitrile rubber
Material note		Copper, PTFE and silicone-free

Retracting and advancing times [s] with add-on plunger separators as a function of the applied load [N] of the separators					
Size		HPV-14-20-A	HPV-14-40-A	HPV-22-30-A	HPV-22-60-A
Applied load	2 N	0.03	0.05	–	–
	3 N	0.04	0.08	–	–
	4 N	0.05	0.11	0.24	0.48
	5 N	0.07	0.13	0.3	0.6
	6 N	–	–	0.36	0.72
	7 N	–	–	0.42	0.84
	8 N	–	–	0.48	0.96

 Note

The slideway of the plungers in the housing is established by fit and cannot be adjusted. The necessary basic lubrication is performed during

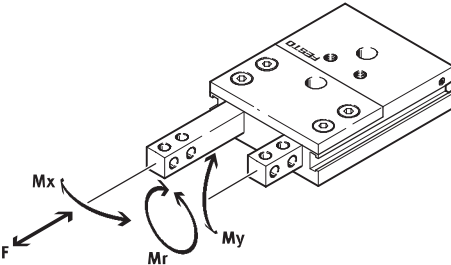
assembly. We recommend that the feed separator be re-lubricated after 2 million cycles.

Feed separators HPV

Technical data

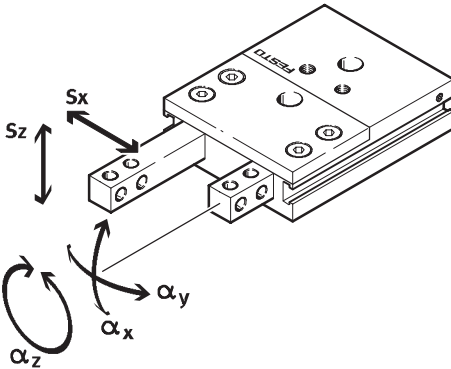
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Permissible characteristic static load values at the plungers



Size		HPV-14-20-A	HPV-14-40-A	HPV-22-30-A	HPV-22-60-A
Force F	[N]	75	75	180	180
Torque Mx	[Nm]	5	5	9	9
Torque My	[Nm]	5	5	9	9
Torque Mr	[Nm]	5	5	9	9

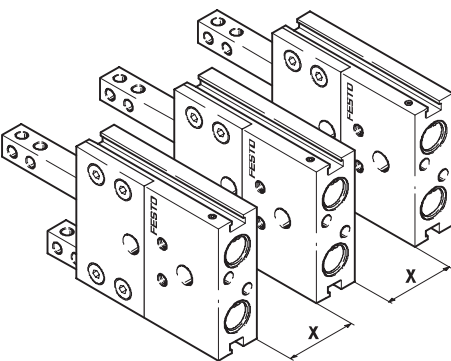
Plunger backlash



Size		HPV-14-20-A	HPV-14-40-A	HPV-22-30-A	HPV-22-60-A
S _x	[mm]	0.05	0.05	0.05	0.05
S _z	[mm]	0.03	0.03	0.03	0.03
α _x	[°]	0.12	0.07	0.06	0.04
α _y	[°]	0.2	0.12	0.11	0.07
α _z	[°]	0.175	0.175	0.12	0.12

Minimum clearances

To prevent malfunctioning of the proximity sensors, the feed separators must comply with the minimum clearances specified in the table.



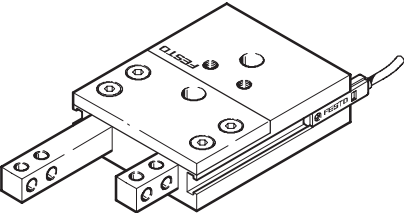
Size		14	22
For SME-8-...	[mm]	59	73
For SMT-8-...-B	[mm]	54	69

Feed separators HPV

Technical data

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Projection of proximity sensors

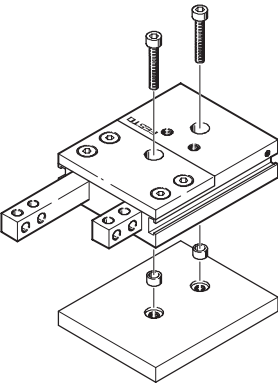


Size		14	22
For SME-8-...	[mm]	9	9
For SMT-8-...	[mm]	13	14
For SMT-8-...-B	[mm]	16	16

Mounting options

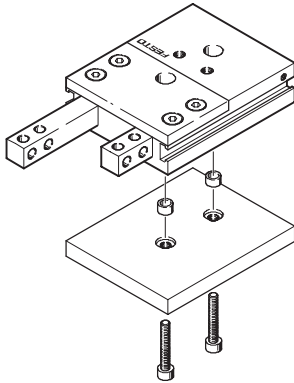
Only the mounting surface on the underside (opposite the supply ports) may be used.

From above via through-holes



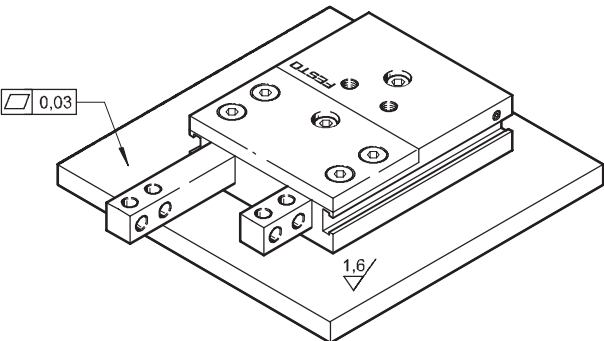
Size	14	22
Screw	M4	M6
Permitted tightening torque [Nm]	2.9	9.9

From below via female threads



Size	14	22
Screw	M5	M8
Permitted tightening torque [Nm]	5.9	24

Geometrical and positional accuracy of bearing surface



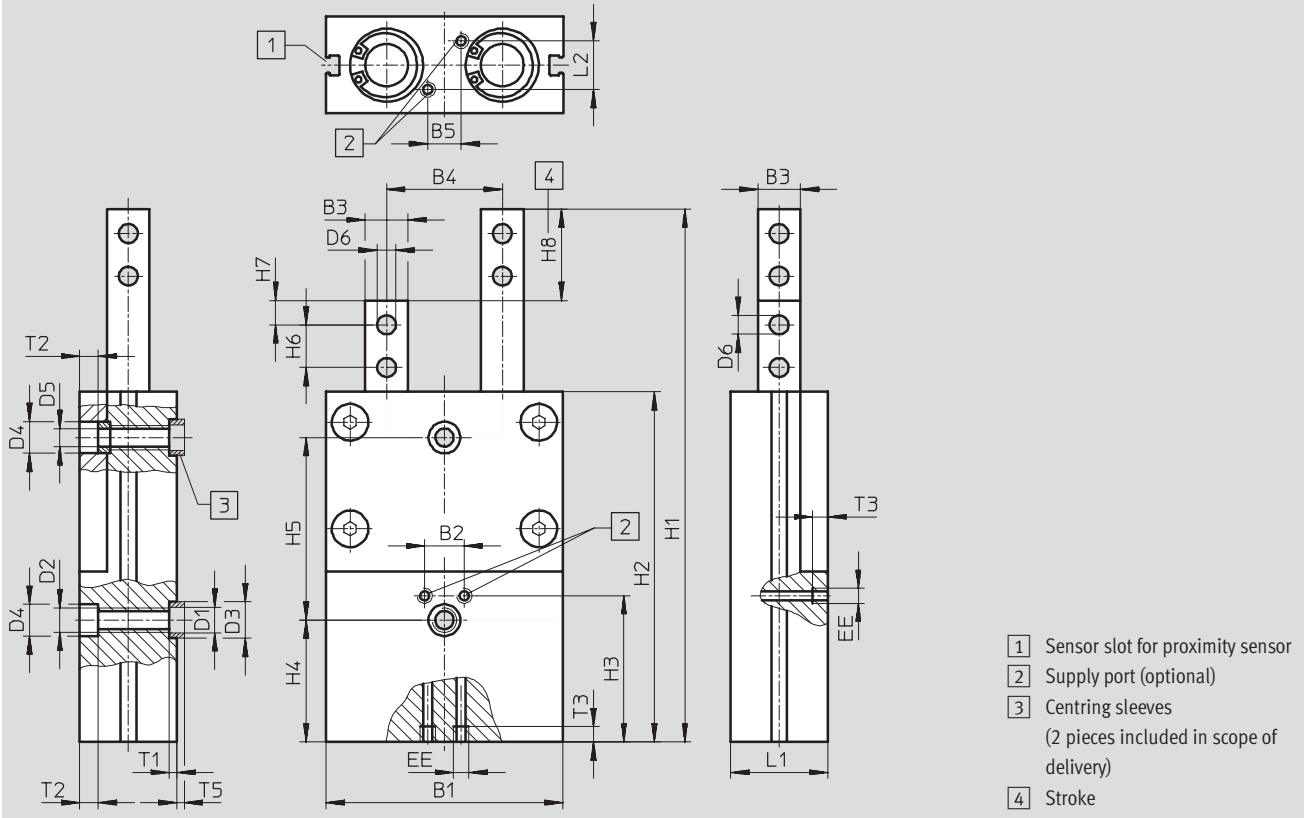
Feed separators HPV

Technical data

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Dimensions

Download CAD data → www.festo.com/en/engineering



Type	B1	B2	B3	B4	B5	D1	D2	D3	D4	D5	D6	EE	H1
			±0.02	±0.05		Ø		H8/h7 Ø	H13 Ø	H13 Ø	H13 Ø		
HPV-14-20-A	60	12	10	30	10	5.3	M5	7	7.4	–	4.2	M5	119
HPV-14-40-A	60	12	10	30	10	5.3	M5	7	7.4	–	4.2	M5	189
HPV-22-30-A	78	13	14	38	11	8.4	M8	12	10.4	6.2	6.2	M5	175
HPV-22-60-A	78	13	14	38	11	8.4	M8	12	10.4	6.2	6.2	M5	280

Type	H2	H3	H4	H5 ¹⁾	H6	H7	H8	L1	L2	T1	T2	T3	T5
			±0.1		±0.2	±0.1	±0.5			+0.1		min.	–0.3
HPV-14-20-A	79	36	20	30	10	5	20	19	7	1.6	4.6	5	1.4
HPV-14-40-A	129	56	20	60	10	5	40	19	7	1.6	4.6	5	1.4
HPV-22-30-A	115	48	40	60	14	8	30	32	16	2.6	6.1	5	2.4
HPV-22-60-A	190	78	40	120	14	8	60	32	16	2.6	6.1	5	2.4

1) Tolerance for centring hole +0.02.
Tolerance for thread and through-hole ±0.1

Ordering data

Size	Stroke [mm]	Part No.	Type
14	20	529 351	HPV-14-20-A
	40	529 352	HPV-14-40-A
22	30	529 353	HPV-22-30-A
	60	529 354	HPV-22-60-A

Feed separators HPV

Accessories

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Ordering data – Centring sleeves				Technical data → 1 / 10.1-3	
	For size	Part No.	Type	PU ¹⁾	
	14	186 717	ZBH-7	10	
	22	189 653	ZBH-12	10	

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	Plug M8	Plug M12			
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	Plug M8				
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	

Feed separators HPV

Accessories

FESTO

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

Ordering data – Slot covers					
	Assembly	Length [m]		Part No.	Type
	Insertable from above	2 x 0.5		151 680	ABP-5-S

Ordering data – One-way flow control valves				Technical data → Volume 2	
	Connection		Material	Part No.	Type
	Thread	For tubing O.D.			
	M5	3	Metal design	193 137	GRLA-M5-QS-3-D
		4		193 138	GRLA-M5-QS-4-D
		6		193 139	GRLA-M5-QS-6-D