

- Complete control of separation processes
- Precision mounting options
- Proximity sensors can be integrated

Feed separator HPV

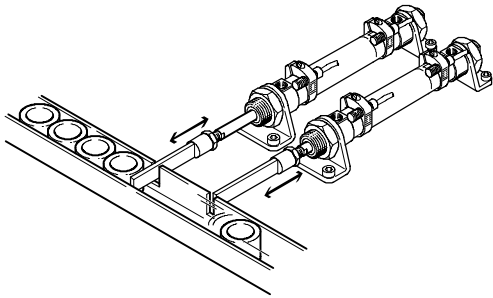
Key features at a glance



Separation of workpieces in the supply process

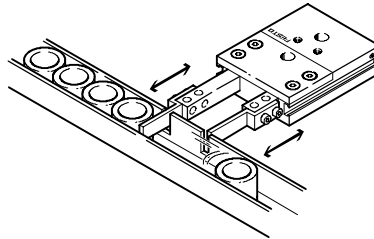
Previously

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



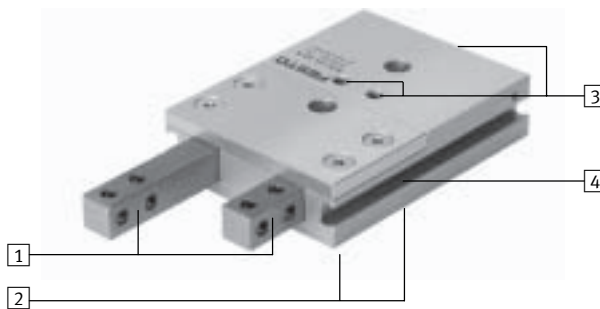
Today

- One unit (1 drive, 1 valve and 2 proximity sensors)
- Low-cost
- Process reliability
- No programming required



High functionality

- 1 Corrosion-resistant thanks to stainless steel plungers
- 2 Optimum, accurate combination options with centring sleeves
- 3 Supply ports optionally at top or rear
- 4 Supports proximity sensors that can be integrated in the housing (SME-/SMT-8)

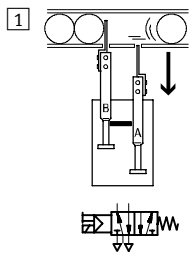


Note

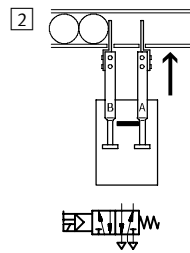
An integrated mechanical locking mechanism ensures that the one piston cannot retract until the other has advanced. Both plungers are briefly extended upon changeover and the part to be separated is surrounded.

Function principle

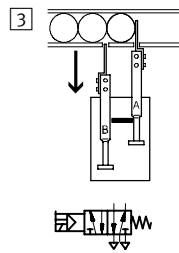
Plunger A is retracted. The stopper locks plunger B.



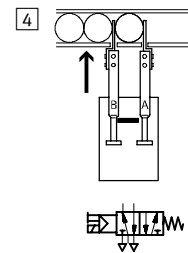
Plunger A advances.



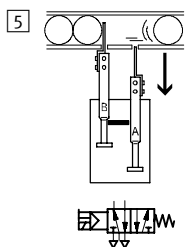
Plunger B cannot retract from the locking mechanism until plunger A is fully advanced.



Plunger B advances.



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

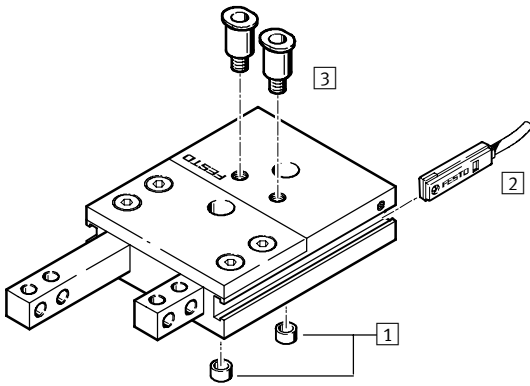


Feed separator HPV

Product range overview, peripherals overview and type codes

Product range overview			
Function	Size [mm]	Stroke [mm]	→ Page
Double-acting	14	20, 40	1 / 7.3-4
	22	30, 60	1 / 7.3-4

Peripherals overview



Accessories			
Size	14	22	→ Page
1 Centring sleeve (2 pieces included in scope of delivery)	ZBH-7	ZBH-12	1 / 7.3-10
2 Proximity sensor	SME-/ SMT-8-...		1 / 7.3-10
3 QS push-in fitting	QSM-/QSML-M5-...		Band 3

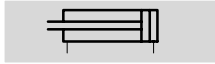
Type codes



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

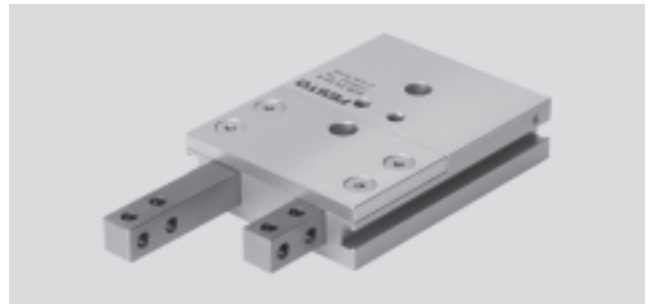
Feed separator HPV

Technical data

Function



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



Design	
Size	14 22
Pneumatic connection	M5
Mode of operation	Double-acting
Operating medium	Compressed air, filtered, lubricated or unlubricated
Constructional design	Twin piston
	Piston rod
	Stopper
	Non-rotating
Protection against torsion/guide	Square plunger
Cushioning	None
Position sensing	With proximity sensor
Type of mounting	Via through holes
	With female thread
Mounting position	Any

Operating and environmental conditions	
Size	14 22
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 requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a surrounding industrial atmosphere or media such as cooling or lubricating agents.

Forces [N]	
Size	14 22
Theoretical force at 6 bar advancing	92.4 228.1
Theoretical force at 6 bar retracting	75.4 180.9

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 separator HPV


Technical data

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

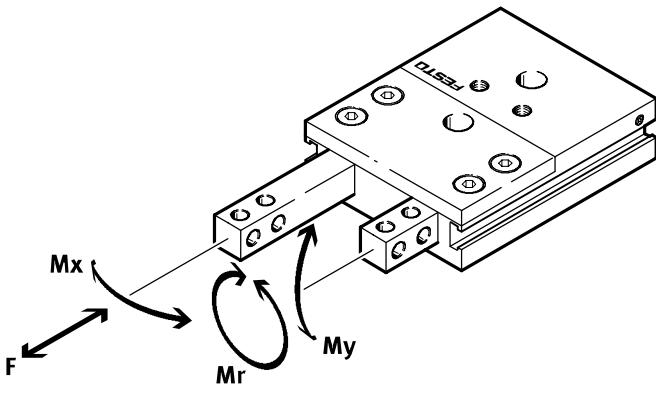
Max. permissible weight [g] of add-on plunger fingers for unrestricted operation				
Size	HPV-14-20-A	HPV-14-40-A	HPV-22-30-A	HPV-22-60-A
Add-on plunger fingers ¹⁾	150	150	395	395

1) If the max. permissible weights of the add-on plunger fingers 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.

Retracting and advancing times [s] with add-on plunger fingers as a function of applied load [N] of the fingers					
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.

Permissible static characteristic load values at the plungers

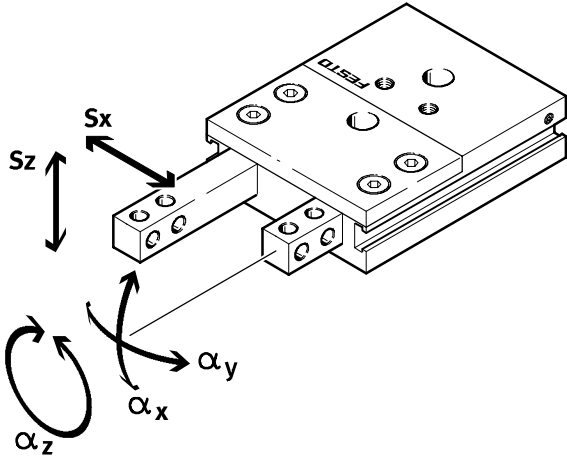


Static characteristic load values					
Size		HPV-14-20-A	HPV-14-40-A	HPV-22-30-A	HPV-22-60-A
Force F	[N]	100	100	180	180
Torque M _x	[Nm]	5	5	9	9
Torque M _y	[Nm]	5	5	9	9
Torque M _r	[Nm]	5	5	9	9

Feed separator HPV

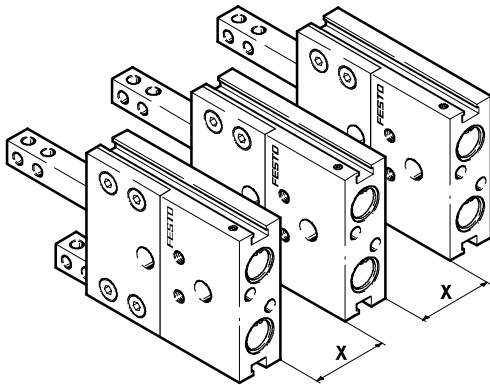
Technical data


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



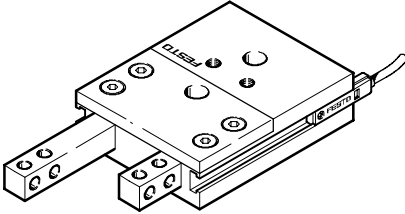
 Note
To prevent interference between the proximity sensors, the feed separators must comply with the clearances specified in the table as a minimum.

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

Feed separator HPV

Technical data

Projection of proximity sensors



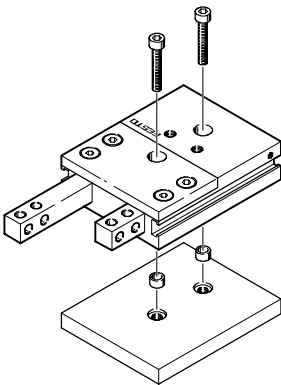
- Note

Following adjustment of the switching point, the proximity sensor protrudes beyond the housing of the feed separator.

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

Mounting options

From above via through-holes

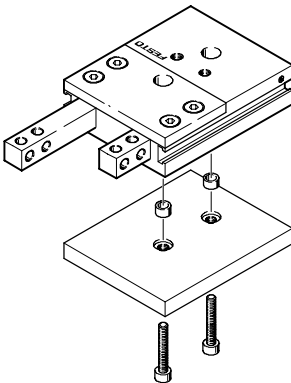


- Note

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

Size		14	22
Screw		M4	M6
Max. permissible tightening torque	[Nm]	2.9	9.9

From below via female threads



- Note

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

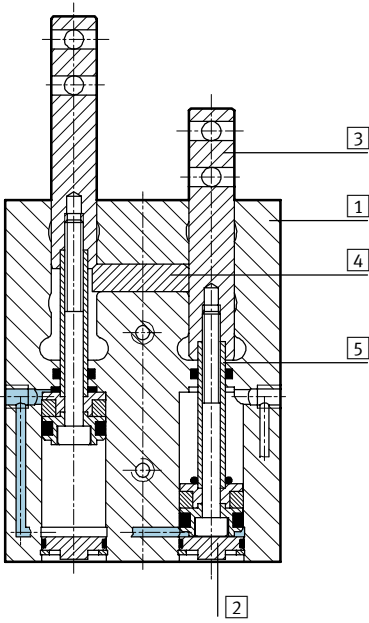
Size		14	22
Screw		M5	M8
Max. permissible tightening torque	[Nm]	5.9	24

Feed separator HPV

Technical data

Materials

Sectional view

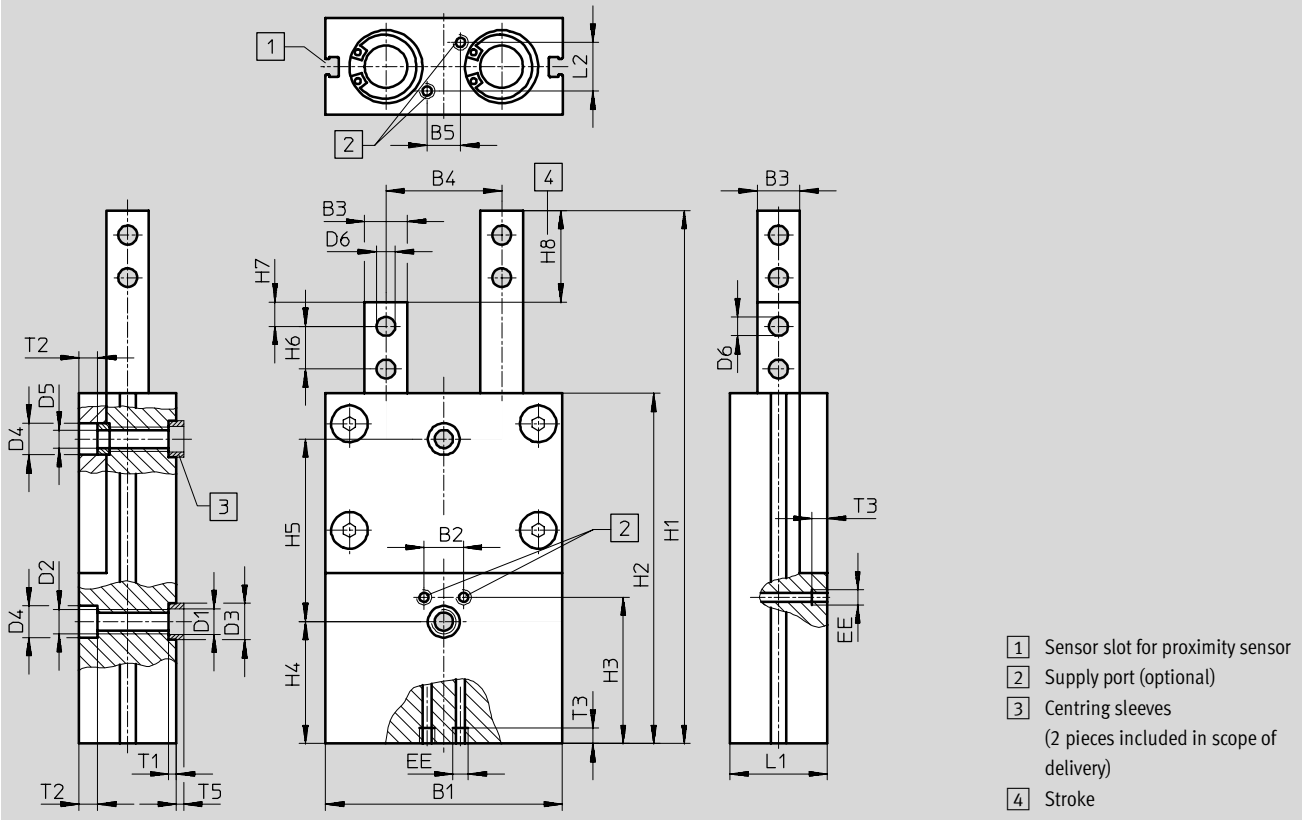


Feed separator		
1	Housing	Wrought aluminium alloy (with CompCoat)
2	End cover	High-alloy steel
3	Plunger	High-alloy steel
4	Stopper	Case-hardened steel
5	Piston rod	High-alloy steel
-	Seals	NBR
Note on materials		Copper-, PTFE and silicone-free

Feed separator HPV

Technical data

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		∅		H8/h7 ∅	H13 ∅	H13 ∅	H13 ∅		
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 threaded and through-holes ±0.1

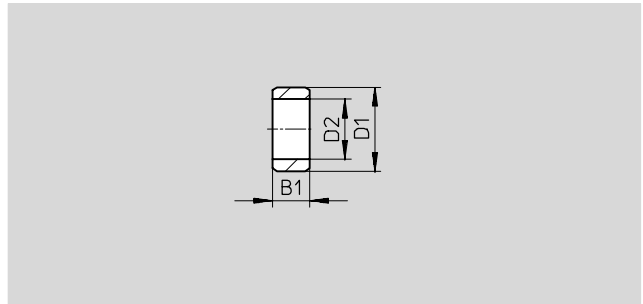
Feed separator HPV

Ordering data and accessories

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










Centring sleeve ZBH

Material:
Stainless steel



Dimensions and ordering data							
For size	B1	D1	D2	Weight	Part No.	Type	Qty ¹⁾
	-0.2	∅ h7	∅	[g]			
14	3	7	5.3	1	186 717	ZBH-7	10
22	5	12	8.4	1	189 653	ZBH-12	10








1) Packaging unit quantity





Ordering data – Proximity sensor for slot type 8, magneto-resistive							Technical data → 1 / 10.2-13	
	Mounting	Switch output	Electrical connection			Cable length [m]	Part No.	Type
			Cable	M8 plug	M12 plug			
NO contact								
	Insertable from above	PNP	3-wire	–	–	2.5	525 898	SMT-8F-PS-24V-K2,5-OE 
		NPN	–	–	–	2.5	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	–	–	–	0.3	525 910	SMT-8F-NS-24V-K0,3-M8D 
	Insertable, 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
NC contact								
	Insertable from above	PNP	3-wire	–	–	7.5	525 911	SMT-8F-PO-24V-K7,5-OE 

 Core Range


Feed separator HPV

Accessories

Ordering data – Proximity sensor for slot type 8, magnetic reed					Technical data → 1 / 10.2-16	
	Mounting	Electrical connection		Cable length [m]	Part No.	Type
		Cable	M8 plug			
NO 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
	Insertable, flush with the cylinder profile	3-wire	-	2.5	150 855	SME-8-K-LED-24
			-	3-pin	0.3	150 857
NC contact						
	Insertable from above	3-wire	-	7.5	525 906	SME-8F-DO-24V-K7,5-OE 

Ordering data – Plug sockets					Technical data → 1 / 10.2-100		
	Mounting	Switch output		Connection	Cable length [m]	Part No.	Type
		PNP	NPN				
Straight socket							
	M8 union nut	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	3-pin	2.5	159 420	SIM-M8-3GD-2,5-PU
					5	159 421	SIM-M8-3GD-5-PU
	M12 union nut	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	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	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	3-pin	2.5	159 422	SIM-M8-3WD-2,5-PU
					5	159 423	SIM-M8-3WD-5-PU
	M12 union nut	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	3-pin	2.5	159 430	SIM-M12-3WD-2,5-PU
					5	159 431	SIM-M12-3WD-5-PU

Ordering data – Slot cover				Part No.	Type
	Mounting	Length [m]			
	From the top	2 x 0.5		151 680	ABP-5-S

Ordering data – One-way flow control valves				Data sheets → Band 2	
	Connection		Material	Part No.	Type
	Thread	For tubing OD			
	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

 Core Range

