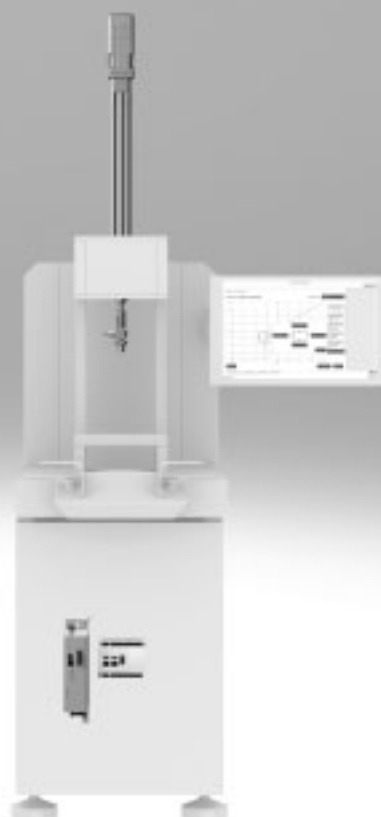


Servo press kits YJKP

FESTO



Servo press kits YJKP

Key features

FESTO

At a glance

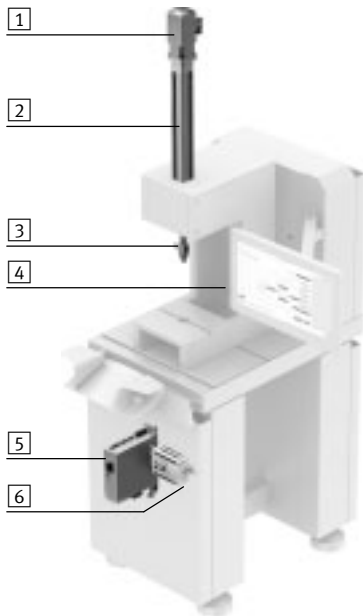
The servo press kit and its associated software can be used to respond quickly to a range of press processes. It offers the ideal alternative to complex and often oversized presses.

The software can be used to monitor parameters such as force, displacement and torque or angles during joining, press-fitting, swivelling and rotation processes in real time.

Advantages:

- Pressing forces of up to 17 kN
- Very high positioning and repetition accuracy
- Ideal price/performance ratio
- Easy integration into any application

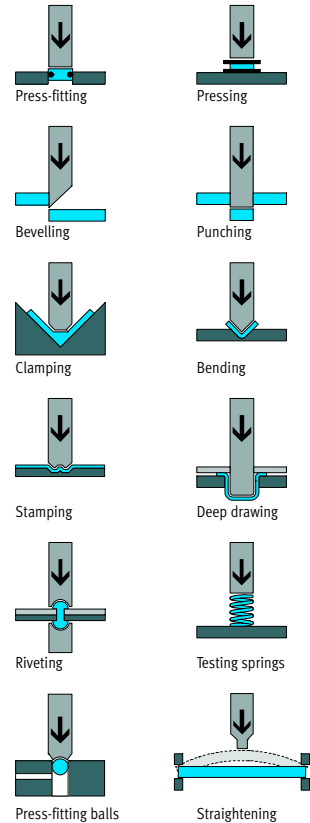
Example pressing device



Individual components:

- 1 Servo motor
- 2 Electric cylinder
- 3 Force sensor
- 4 Software package
- 5 Motor controller
- 6 Controller

Connecting cables included in the scope of delivery.



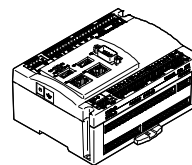
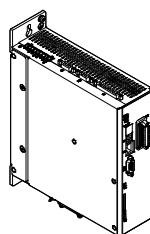
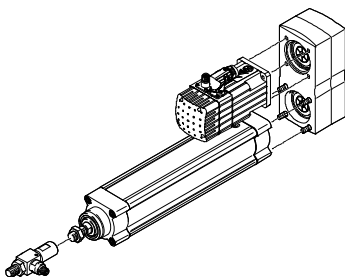
Everything from a single source

Electric cylinder with force sensor, connecting cable for control, and with either axial or parallel motor mounting¹⁾

Motor controller¹⁾

Controller with special software and connecting cable to the motor controller¹⁾

Memory card¹⁾



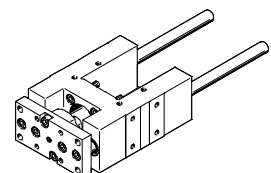
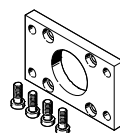
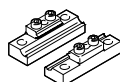
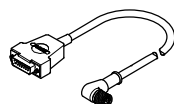
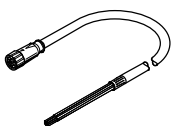
Motor cable¹⁾

Encoder cable¹⁾

Profile mounting

Flange mounting

Guide unit

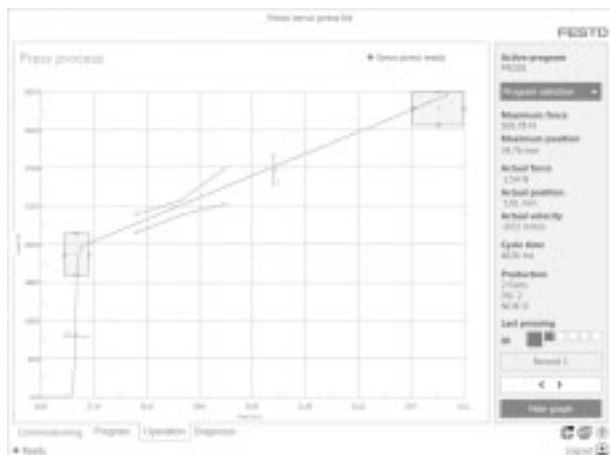


¹⁾ Included in the scope of delivery of the servo press kit.

Servo press kits YJKP

Key features

Modular software for configuration, operation and visualisation



The application is controlled via a WebVisu, which is also used for programming the application-specific functions. The pre-installed, ready-to-use software on the controller means that users do not need any knowledge of programming. Intuitive operation ensures user-friendly parameterisation of the press application. The modular press software is based on libraries which reflect state-of-the-art software architecture. A non-platform-specific software display allows visualisation on all kinds of human-machine interfaces (HMIs) with a web browser function, such as touchscreens, PCs, iPads, mobile phones, etc. The application is controlled by variables, e.g. by the higher-order controller. All recorded process data can be interchanged individually with the host system.

Software functions

1 Commissioning

All kinds of functions can be used during "Commissioning", e.g. hardware configuration, carrying out homing, calibrating the force sensor, moving the press manually by "jogging", carrying out logging configuration or entering basic system settings.

2 Writing a program

Program management is carried out using the "Program" function. This is also where the press sequence is defined and parameterised or configured by the sequencer; reference curves are recorded/loaded; the evaluation processes "Threshold values", "Envelope curves" and "Window technique" are configured; and individual variables are managed.

3 Operation

The function "Operation" allows the user to select a stored press program, record and display reference curves, evaluate pressed parts as "OK" or defective and carry out logging. The "Interfaces" enable the GUI (graphical user interface), the PLC and the host to be selected and defined.

4 Diagnostics

With the "Diagnostic" function, users/installation technicians can carry out process diagnostics, interrogate various system parameters, system statuses and statistical values and manage error handling. "User management" allows the user to make various individual settings.

Servo press kits YJKP

Type codes

FESTO

		YJKP	-	4	-	100	-	PX	-	M		B	-	5
Pressing														
YJKP	Servo press kit													
Pressing force														
0.8	Up to 0.8 kN													
1.5	Up to 1.5 kN													
4	Up to 4 kN													
7	Up to 7 kN													
12	Up to 12 kN													
17	Up to 17 kN													
Stroke														
100	100 mm													
200	200 mm													
300	300 mm													
400	400 mm													
Motor attachment position														
AX	Axial													
PX	Parallel													
Measuring unit														
M	Absolute encoder, multi-turn													
S	Absolute encoder, single-turn													
Brake														
-	None													
B	With brake													
Line length														
5	5 m													
10	10 m													
15	15 m													

Servo press kits YJKP

Technical data

Fieldbus interfaces



General technical data							
Type	YJKP-						
	0.8	1.5	4	7	12	17	
Protection against torsion/guide	With plain-bearing guide						
Working stroke	[mm]	100, 200, 300, 400					
Pressing force	[kN]	0.8	1.5	4	7	12	17
Max. working load ¹⁾	[kg]	19.5	19.5	48	48	95	95
Max. feed speed	[mm/s]	250				160	
Acceleration							
For positioning operation	[m/s ²]	2					
For cushioning phase	[m/s ²]	2					
Repetition accuracy	[mm]	±0.01			±0.015	±0.01	
Scanning frequency of force sensor	[Hz]	1000					
Accuracy FS of the force measurement ²⁾	[%]	±0.25					
Parameterisation interface	Ethernet						
Fieldbus interface	Modbus TCP						
	EtherNet/IP						
	Ethernet TCP/IP						
Configuration via visualisation system	Force/displacement diagrams						
	Default for good/bad parts						
	Visualisation						
Evaluation method	Threshold value						
	Envelope curves						
	Window technique						
Visualisation	At the customer's premises via a web browser						
Mounting position	Any						

1) Caused by tool weight for example

2) Related to the pressing force of the complete system. Example for YJKP-0.8: 0.25% x 800 N

Servo press kits YJKP

Technical data

FESTO

Technical data – Force sensor							
Type		YJKP-					
		0.8	1.5	4	7	12	17
Force measuring range of software	[kN]	–0.2 ... 1	–0.2 ... 2	–0.5 ... 4.5	–0.5 ... 7.5	–1 ... 13	–1 ... 18
Max. overload	[kN]	1.5	3.75	11.25	15	30	37.5
Analogue output	[mA]	4 ... 20					

 Note The accuracy of the force measurement is influenced by the following properties of the force sensor:		• Accuracy • Calibration range • Nominal signal range • Overload range		Lateral forces on the force sensor should be avoided as they may lead to false measurement results or damage the sensor.	
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Electrical data							
Type		YJKP-					
		0.8	1.5	4	7	12	17
Motor controller							
Input voltage range	[V AC]	230			3x 230		
Max. nominal input current	[A]	3		6	5.5		11
Nominal power	[VA]	500		1000	3000		6000
Controller							
Operating voltage	[V DC]	24					
Current consumption	[mA]	100					
Force sensor							
Operating voltage range	[V DC]	10 ... 30					

Safety data of motor controller	
Safety function to EN 61800-5-2	Safe torque off (STO)
Performance Level (PL) to EN ISO 13849-1	Category 4, Performance Level e
Safety integrity level (SIL) to EN 61800-5-2, EN 62061, EN 61508	SIL 3
Certificate issuing authority	TÜV 01/205/5262.01/14
Proof test interval	20a
Diagnostic coverage	[%] 97
Safe failure fraction (SFF)	[%] 99.2
Hardware fault tolerance	1

Servo press kits YJKP

Technical data

Operating and environmental conditions		
Ambient temperature	[°C]	0 ... 40
Storage temperature	[°C]	-10 ... +60
Relative air humidity	[%]	0 ... 90
Degree of protection		IP20
Duty cycle	[%]	100
Note on materials	Contains paint-wetting impairment substances	
	RoHS compliant	

Weight [kg]						
Type	YJKP-					
	0.8	1.5	4	7	12	17
Electric cylinders						
Basic weight with 0 mm stroke	0.78	1.24	1.98	3.16	7.39	7.39
Additional weight per 100 mm stroke	0.33	0.47	0.65	0.87	1.55	1.55
Kit						
Parallel kit	1.05	2.45	4.99	4.95	11.9	11.8
Axial kit	0.26	0.41	1.14	1.17	2.92	3.46
Motor						
Basic weight	1.6	2.1	4.8	6.9	16.2	16.2
Additional weight of brake	0.1	0.2	0.5	0.6	0.8	0.8
Force sensor						
Product weight	0.2	0.2	0.3	0.3	0.7	0.7
Motor controller						
Product weight	2.1	2.1	2.2	3.8	3.8	3.8
Controller						
Product weight	0.4	0.4	0.4	0.4	0.4	0.4

Servo press kits YJKP

Technical data

FESTO

Service life

The service life of the servo press kit depends to a large extent on the lead screw of the cylinder.

To ensure that the balls of the ball screw can reliably realign, a stroke of at least 12.5 mm must be carried out at regular intervals (typically during the retracting phase, ideally after each pressing process).

The service life ends after 10 million switching cycles or when the maximum running performance (L) is reached.

The specifications for running performance (L) are based on experimentally determined and theoretically calculated data (at room temperature).

The running performance that can be achieved in practice can deviate considerably from the specified curves under different parameters (e.g. dirt, temperature).

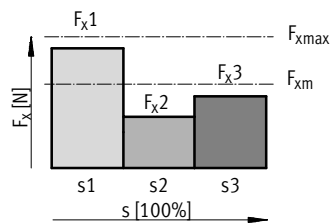
Calculation of the mean feed force F_{xm}

$$F_{xm} = \sqrt[3]{\frac{F_{x1}^3 \times s_1 + \dots + F_{xn}^3 \times s_n}{s_1 + \dots + s_n}}$$

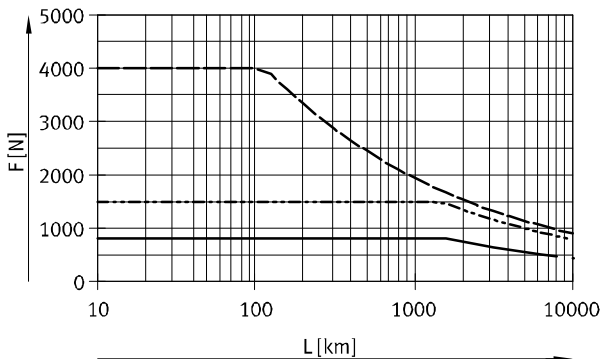
F_{xm} = Mean feed force

$F_{x1/n}$ = Feed force of section

$s_{1/n}$ = Share of motion cycle that is travel

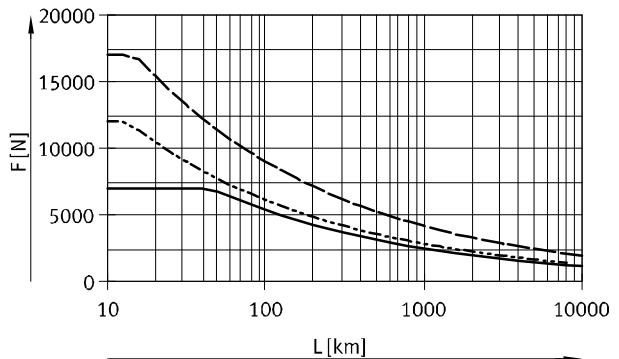


Mean feed force F_{xm} as a function of running performance L and room temperature YJKP-0.8 / YJKP-1.5 / YJKP-4

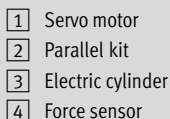


— YJKP-0.8
- - - YJKP-1.5
- · - YJKP-4

YJKP-7 / YJKP-12 / YJKP-17



— YJKP-7
- - - YJKP-12
- · - YJKP-17



Type	L3	M	ML	RT	SL	SR	TG	⊖C1
YJKP-0.8	5	M10x1.25	22	M6	78	60	32.5	6
YJKP-1.5	5	M12x1.25	24	M6	81	60	38	6
YJKP-4	5	M16x1.5	32	M8	107	100	46.5	8
YJKP-7	5	M16x1.5	32	M8	107	100	56.5±0.5	8
YJKP-12	5	M20x1.5	40	M10	140.5	150	72±0.5	6
YJKP-17	5	M20x1.5	40	M10	140.5	150	89±0.5	6

9

Servo press kits YJKP

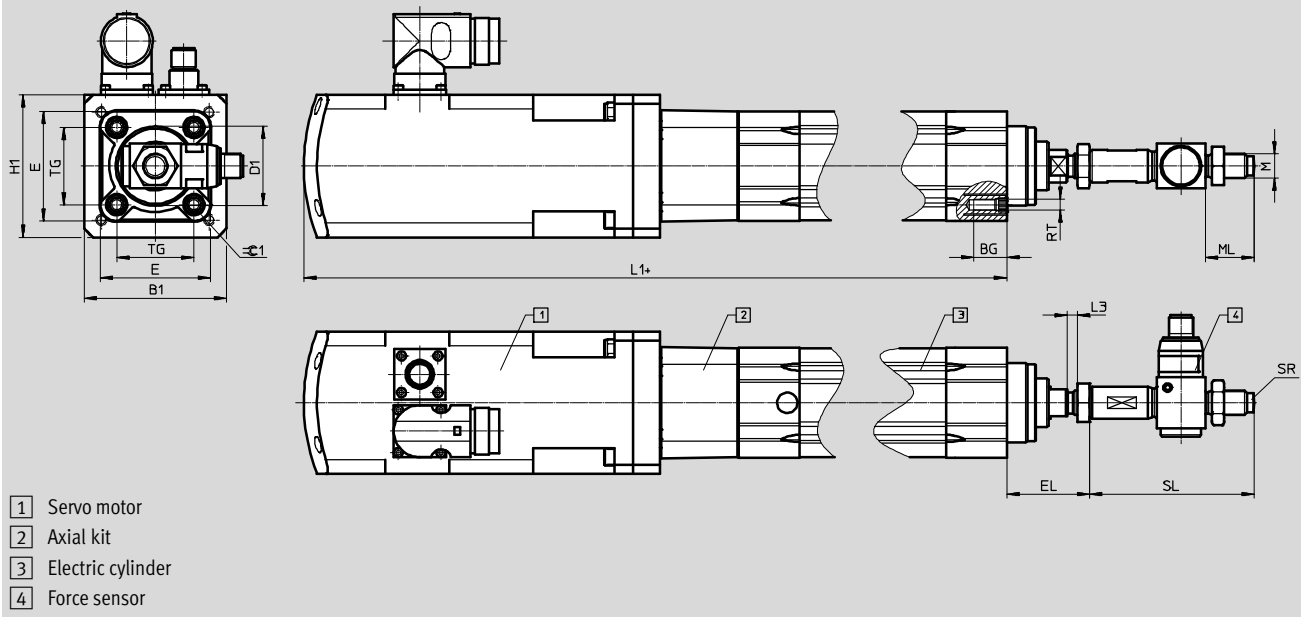
Technical data

FESTO

Dimensions

Download CAD data → www.festo.com

With axial kit



Type	B1	BG Min.	D1 Ø	E	EL ¹⁾	H1	L1
YJKP-0.8	55	16	34	45 ^{+0.5}	35.5	55	336.1
YJKP-1.5	70	16	39	54 ^{+0.5}	40.5	70	357.8
YJKP-4	100	17	45	64 ^{+0.5}	49.5	100	439.3
YJKP-7	100	17	52	75 ^{+0.5/-0.1}	50	100	492.5
YJKP-12	140	17	60	93 ^{+0.5/-0.1}	61	140	581.5
YJKP-17	140	17	70	110 ^{+0.5/-0.1}	66	140	619

Type	L3	M	ML	RT	SL	SR	TG	⌀1
YJKP-0.8	5	M10x1.25	22	M6	78	60	32.5	6
YJKP-1.5	5	M12x1.25	24	M6	81	60	38	6
YJKP-4	5	M16x1.5	32	M8	107	100	46.5	8
YJKP-7	5	M16x1.5	32	M8	107	100	56.5±0.5	8
YJKP-12	5	M20x1.5	40	M10	140.5	150	72±0.5	6
YJKP-17	5	M20x1.5	40	M10	140.5	150	89±0.5	6

1) With a spacing of 5 mm to the lock nut (in the retracted state)

Servo press kits YJKP

Ordering data – Modular product system

Ordering table				
		Condi- tions	Code	Entry code
[M]	Module no.	8058596		
	Pressing	YJKP	YJKP	YJKP
	Pressing force	Up to 0.8 kN	-0.8	
		Up to 1.5 kN	-1.5	
		Up to 4 kN	-4	
		Up to 7 kN	-7	
		Up to 12 kN	-12	
		Up to 17 kN	-17	
	Stroke	100 mm	-100	
		200 mm	-200	
		300 mm	-300	
		400 mm	-400	
	Motor attachment position	Axial	-AX	
		Parallel	-PX	
	Measuring unit	Absolute encoder, multi-turn	-M	
		Absolute encoder, single-turn	-S	
[O]	Brake	None		
		With brake	B	
[M]	Cable length	5 m	-5	
		10 m	-10	
		15 m	-15	

[M] Mandatory data

[O] Options

Transfer order code

	YJKP	-		-		-		-			-	
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Servo press kits YJKP

Accessories

FESTO

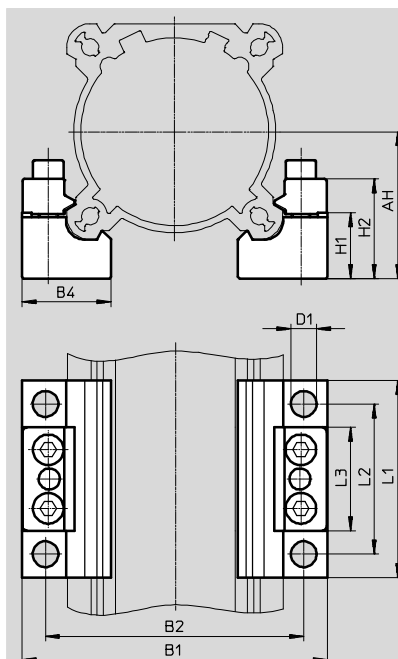
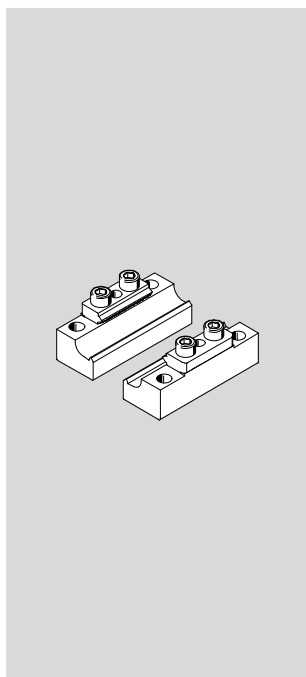
Profile mounting EAHF for electric cylinder

Materials:

Plate: Anodised aluminium

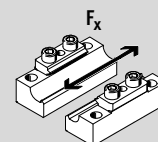
Clamping piece: Coated steel

RoHS compliant



 **Note**

Several profile mountings may have to be used depending on the pressing force.



Dimensions and ordering data										
For type	AH	B1	B2	B4	D1 Ø	H1	H2	L1	L2	L3
YJKP-0.8	32	76	60	26	9	16	23.6	80	60	34
YJKP-1.5	36	84.5	68	26	9	16	23.6	80	60	34
YJKP-4	44.5	94	81	30	9	22.8	30.4	80	60	41
YJKP-7	50	105	92	30	9	22.8	30.4	80	60	41
YJKP-12	62.5	130	110	38	11	28.1	42.5	84	64	44
YJKP-17	71	147	127	38	11	28.1	42.5	84	64	44

For type	Transferable axial force F_x [kN]	Weight [g]	Part No.	Type
YJKP-0.8, YJKP-1.5	1.6	218	2838839	EAHF-V2-32/40-P
YJKP-4, YJKP-7	3.6	340	1547781	EAHF-V2-50/63-P
YJKP-12, YJKP-17	4.0	570	1547780	EAHF-V2-80/100-P

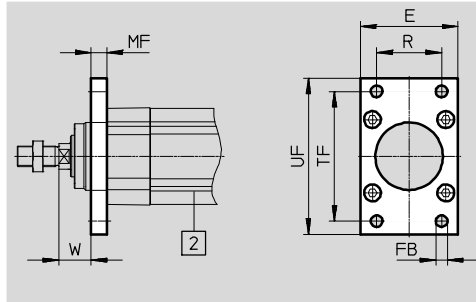
Servo press kits YJKP

Accessories

Flange mounting EAHH

Materials:
High-alloy stainless steel

RoHS compliant
Free of copper and PTFE



Dimensions and ordering data							
For type	E	FB Ø	MF	R	TF	UF	W
[mm]		H13	js14			±1	
YJKP-0.8	45	7	10	32	64	80	15.5
YJKP-1.5	54	9	10	36	72	90	19.5
YJKP-4	64	9	12	45	90	110	24.5
YJKP-7	75	9	12	50	100	120	25
YJKP-12	93	12	16	63	126	150	30
YJKP-17	110	14	16	75	150	175	35

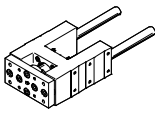
For type	Max. load carrying ability	ESBF-...-R3			
		CRC ¹⁾	Weight	Part No.	Type
[mm]	[kN]		[g]		
YJKP-0.8	1	4	206	2827587	EAHH-V2-32-R1
YJKP-1.5	3	4	275	2827588	EAHH-V2-40-R1
YJKP-4	5	4	496	2827589	EAHH-V2-50-R1
YJKP-7	7	4	633	1502305	EAHH-V2-63-R1
YJKP-12	12	4	1360	1502306	EAHH-V2-80-R1
YJKP-17	17	4	1880	1502307	EAHH-V2-100-R1

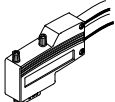
1) Corrosion resistance class CRC 4 to Festo standard FN 940070
Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, for instance in the chemical or food industries. These applications may need to be supported by special tests (➔ also FN 940082) using appropriate media.

Servo press kits YJKP

Accessories

FESTO

Ordering data – Guide units				Technical data → Internet: eagf		
	Stroke [mm]	Part No.	Type		Part No.	Type
	For YJKP-0.8			For YJKP-1.5		
	10 ... 100	2782679	EAGF-V2-KF-32-100	10 ... 100	2782939	EAGF-V2-KF-40-100
	10 ... 200	2782818	EAGF-V2-KF-32-200	10 ... 200	2782976	EAGF-V2-KF-40-200
	10 ... 320	2782885	EAGF-V2-KF-32-320	10 ... 320	2783047	EAGF-V2-KF-40-320
	10 ... 400	2782923	EAGF-V2-KF-32-400	10 ... 400	2783080	EAGF-V2-KF-40-400
	1 ... 500	3038083	EAGF-V2-KF-32-	1 ... 500	3038089	EAGF-V2-KF-40-
	For YJKP-4			For YJKP-7		
	10 ... 100	2783639	EAGF-V2-KF-50-100	10 ... 100	1725842	EAGF-V2-KF-63-100
	10 ... 200	2784152	EAGF-V2-KF-50-200	10 ... 200	1725843	EAGF-V2-KF-63-200
	10 ... 320	2784164	EAGF-V2-KF-50-320	10 ... 320	1725844	EAGF-V2-KF-63-320
	10 ... 400	2784184	EAGF-V2-KF-50-400	10 ... 400	1725845	EAGF-V2-KF-63-400
	1 ... 500	3038094	EAGF-V2-KF-50-	1 ... 500	2608521	EAGF-V2-KF-63-
	For YJKP-12			For YJKP-17		
	10 ... 100	1725846	EAGF-V2-KF-80-100	10 ... 100	1725850	EAGF-V2-KF-100-100
	10 ... 200	1725847	EAGF-V2-KF-80-200	10 ... 200	1725851	EAGF-V2-KF-100-200
	10 ... 320	1725848	EAGF-V2-KF-80-320	10 ... 320	1725852	EAGF-V2-KF-100-320
	10 ... 400	1725849	EAGF-V2-KF-80-400	10 ... 400	1725853	EAGF-V2-KF-100-400
	1 ... 500	2608528	EAGF-V2-KF-80-	1 ... 500	2608532	EAGF-V2-KF-100-

Ordering data			
	Description	Part No.	Type
Plug connector			
	For CANopen interface	533783	FBS-SUB-9-WS-CO-K