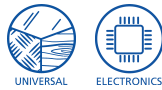
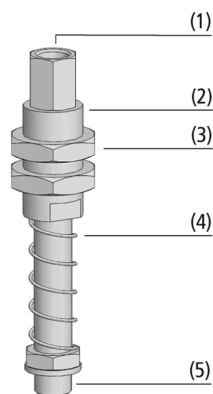


## Spring Plungers FSTE

Stroke from 5 mm to 90 mm



Spring Plungers FSTE



System Design Spring Plungers FSTE



Mounting example spring plungers FSTE

### Suitability for Industry Specific Applications

#### Applications

- Spring plunger for handling of workpieces with differing heights, such as curved metal sheets, etc.
- Handling of sensitive workpieces (such as sheets of glass) without additional control functions to prevent damage, since the plunger ensures soft placement

#### Design

- Spring plunger consisting of a high strength rod made of galvanized steel, guide sleeve (2) and lower damping springs (4)
- Plunger rod with integrated vacuum feed, always female connection thread (1)
- Always female connection thread for suction cups (5) up to size M5, otherwise male thread
- Two lock nuts (3) for attachment

#### Product Highlights

- With lower damping spring optimised for sensitive workpieces; very good height compensation
- Large range of connection threads and lifting heights enables use for a wide variety of applications and suction cups
- Optionally in non-rotating version for oval suction cups

# Spring Plungers FSTE

Stroke from 5 mm to 90 mm

## Designation Code Spring Plungers FSTE

<b>FSTE</b>	-	<b>M3-IG</b>	-	<b>5</b>	-	<b>VG</b>
1		2		3		4

### 1 – Abbreviated designation

Code	Version
FSTE	FSTE

### 2 – Suction cup connection

Code	Connection
M3-IG	M3-IG (IG = female (F))
M5-IG	M5-IG
G1/8-AG	G1/8-AG (AG = male (M))
G1/4-AG	G1/4-AG
G1/2-AG	G1/2-AG

### 3 – Plunger stroke











Code	Plunger stroke in mm
5...90	5 to 90

### 4 – Product addition

Code	Type
VG	With anti-rotation guard












Spring plunger FSTE is delivered as a ready-to-connect product.

## Ordering Data Spring Plungers FSTE

Type*			Plunger stroke in mm: **			
			5	10	15	20
FSTE	M3-IG	-	10.01.02.00613 	-	-	-
FSTE	M3-IG	VG	10.01.02.00614 	-	-	-
FSTE	M5-IG	-	10.01.02.00607 	10.01.02.00608 	-	10.01.02.00609 
FSTE	M5-IG	VG	10.01.02.00610 	10.01.02.00611 	-	10.01.02.00612 
FSTE	G1/8-AG	-	-	-	10.01.02.00602 	-
FSTE	G1/8-AG	VG	-	-	10.01.02.00605 	-

\*VG = Version with anti-rotation guard for repeatably accurate positioning of suction cups

\*\*Recommendation: To raise the lifetime in continuous operation, prevent the maximal slide stroke

Type*			Plunger stroke in mm [mm]: **			
			25	50	75	90
FSTE	G1/8-AG	-	10.01.02.00603 	10.01.02.00604 	-	-
FSTE	G1/8-AG	VG	-	10.01.02.00606 	-	-
FSTE	G1/4-AG	-	10.01.02.00567 	10.01.02.00568 	10.01.02.00569 	-
FSTE	G1/4-AG	VG	10.01.02.00570 	-	10.01.02.00571 	-
FSTE	G1/2-AG	-	10.01.02.00574 	-	10.01.02.00575 	10.01.02.00576 

\*VG = Version with anti-rotation guard for repeatably accurate positioning of suction cups

\*\*Recommendation: To raise the lifetime in continuous operation, prevent the maximal slide stroke

## Spring Plungers FSTE

Stroke from 5 mm to 90 mm

### Technical Data Spring Plungers FSTE

Type	Spring rate [N/mm]	Spring pretension [N]	Spring force center [N]*	Vertical load [N]**	Horizontal load [N]***	Anzugsdrehmoment (max) [Nm]	Weight [g]	Operating temperature [°C]
FSTE M3-IG 5	0.596	1.49	2.98	550	47	10	9	0 ... 80 °C
FSTE M3-IG 5 VG	0.596	1.49	2.98	550	47	-	9	0 ... 80 °C
FSTE M5-IG 5	0.508	3.30	4.57	1,500	132	8	16	0 ... 80 °C
FSTE M5-IG 5 VG	0.508	3.30	4.57	1,500	132	8	16	0 ... 80 °C
FSTE M5-IG 10	0.323	2.75	4.37	1,500	97	8	19	0 ... 80 °C
FSTE M5-IG 10 VG	0.323	2.75	4.37	1,500	97	8	19	0 ... 80 °C
FSTE M5-IG 20	0.209	1.78	3.87	1,500	63	8	25	0 ... 80 °C
FSTE M5-IG 20 VG	0.209	1.78	3.87	1,500	63	8	25	0 ... 80 °C
FSTE G1/8-AG 15	0.221	3.53	5.19	3,700	385	40	80	0 ... 80 °C
FSTE G1/8-AG 15 VG	0.221	3.53	5.19	3,700	385	40	80	0 ... 80 °C
FSTE G1/8-AG 25	0.143	3.57	5.36	3,700	283	40	90	0 ... 80 °C
FSTE G1/8-AG 50	0.097	2.92	5.34	3,700	173	40	110	0 ... 80 °C
FSTE G1/8-AG 50 VG	0.097	2.92	5.34	3,700	173	40	110	0 ... 80 °C
FSTE G1/4-AG 25	0.711	6.47	15.36	2,400	747	40	145	0 ... 80 °C
FSTE G1/4-AG 25 VG	0.711	6.47	15.36	2,400	747	40	144	0 ... 80 °C
FSTE G1/4-AG 50	0.452	1.40	12.70	2,400	466	40	175	0 ... 80 °C
FSTE G1/4-AG 75	0.262	5.38	15.20	2,400	340	40	190	0 ... 80 °C
FSTE G1/4-AG 75 VG	0.262	5.38	15.20	2,400	340	40	202	0 ... 80 °C
FSTE G1/2-AG 25	3.829	25.64	73.50	4,900	1,870	50	400	0 ... 80 °C
FSTE G1/2-AG 75	1.072	37.21	77.41	4,900	800	50	530	0 ... 80 °C
FSTE G1/2-AG 90	1.072	24.38	75.30	4,900	730	50	544	0 ... 80 °C

\*Referred to 50 % of operating stroke

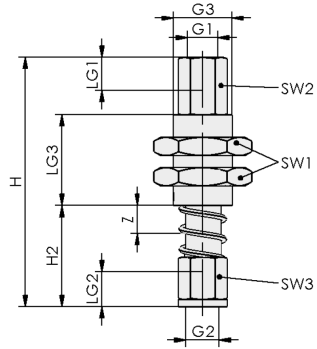
\*\*Maximum static loading

\*\*\*The specification of the horizontal load refers to the lower edge of the plunger with extended spring. It is a maximum static stress and it impairs the spring compression and extension in horizontal position.

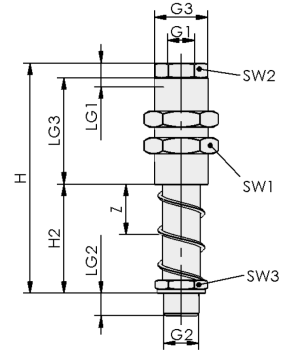
# Spring Plungers FSTE

Stroke from 5 mm to 90 mm

## Design Data Spring Plungers FSTE



FSTE M3 - M5 (VG)



FSTE G1/8 - G1/2 (VG)

# Spring Plungers FSTE

Stroke from 5 mm to 90 mm

## Design Data Spring Plungers FSTE

Type	G1	G2	G3	H [mm]	H2 [mm]	LG1 [mm]	LG2 [mm]	LG3 [mm]	SW1 [mm]	SW2 [mm]	SW3 [mm]	Z (Stroke) [mm]
FSTE M3-IG 5	M3-F	M3-F	M6x0.75-M	33.5	15.0	3.8	6.0	10	10	5	7	5
FSTE M3-IG 5 VG	M3-F	M3-F	M6x0.75-M	33.5	15.0	3.8	6.0	10	10	5	7	5
FSTE M5-IG 5	M5-F	M5-F	G1/8"-M	41.2	17.0	5.5	6.2	15	14	7	7	5
FSTE M5-IG 5 VG	M5-F	M5-F	G1/8"-M	41.2	17.0	5.5	6.2	12	14	7	7	5
FSTE M5-IG 10	M5-F	M5-F	G1/8"-M	47.2	23.0	5.5	6.2	15	14	7	7	10
FSTE M5-IG 10 VG	M5-F	M5-F	G1/8"-M	47.2	23.0	5.5	6.2	12	14	7	7	10
FSTE M5-IG 20	M5-F	M5-F	G1/8"-M	59.2	35.0	5.5	6.2	15	14	7	7	20
FSTE M5-IG 20 VG	M5-F	M5-F	G1/8"-M	59.2	35.0	5.5	6.2	12	14	7	7	20
FSTE G1/8-AG 15	G1/8"-F	G1/8"-M	M16x1-M	73.5	29.5	8.0	6.5	30	22	12	14	15
FSTE G1/8-AG 15 VG	G1/8"-F	G1/8"-M	M16x1-M	72.5	28.5	8.0	7.5	30	22	12	14	15
FSTE G1/8-AG 25	G1/8"-F	G1/8"-M	M16x1-M	86.5	42.5	8.0	6.5	30	22	12	14	25
FSTE G1/8-AG 50	G1/8"-F	G1/8"-M	M16x1-M	117.5	73.5	8.0	6.5	30	22	12	14	50
FSTE G1/8-AG 50 VG	G1/8"-F	G1/8"-M	M16x1-M	117.5	72.5	8.0	6.5	30	22	12	14	50
FSTE G1/4-AG 25	G1/8"-F	G1/4"-M	M20x1.5-M	86.0	40.5	13.0	8.5	40	24	17	17	25
FSTE G1/4-AG 25 VG	G1/8"-F	G1/4"-M	M20x1.5-M	86.0	40.5	13.0	8.5	40	24	17	17	25
FSTE G1/4-AG 50	G1/8"-F	G1/4"-M	M20x1.5-M	115.5	70.0	13.0	8.5	40	24	17	17	50
FSTE G1/4-AG 75	G1/8"-F	G1/4"-M	M20x1.5-M	145.0	99.5	13.0	8.5	40	24	17	17	75
FSTE G1/4-AG 75 VG	G1/8"-F	G1/4"-M	M20x1.5-M	145.0	99.5	13.0	8.5	40	24	17	17	75
FSTE G1/2-AG 25	G3/8"-F	G1/2"-M	M30x1.5-M	105.5	42.5	13.0	10.5	55	36	24	24	25
FSTE G1/2-AG 75	G3/8"-F	G1/2"-M	M30x1.5-M	176.5	113.5	13.0	10.5	55	36	24	24	75
FSTE G1/2-AG 90	G3/8"-F	G1/2"-M	M30x1.5-M	188.5	125.5	13.0	10.5	55	36	24	24	90