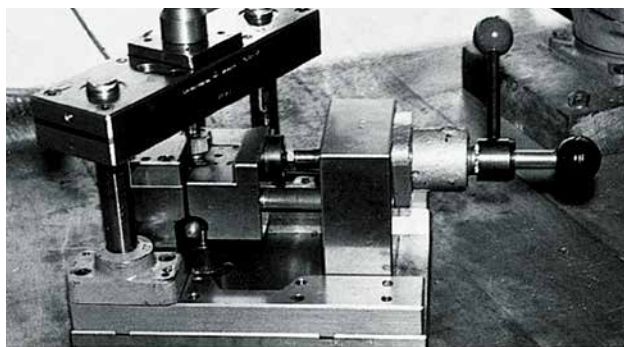


FO, FL, G SERIES

Variable Stroke Straight Line Action Clamps | Technical Information



Model FO-161/60 on a milling machine



Model FL-160 with plunger 16/100 on a punching fixture

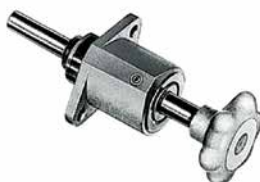
Different Designs



FO Series

Mounting type: flange base foot mount

Operating method: one-hand or two-hand operation



FL Series

Mounting type: front flange mount











Operating method: one-hand or two-hand operation



G Series

Mounting type: through hole mount

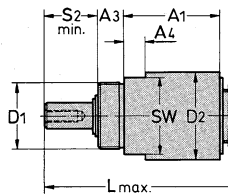
Operating method: one-hand or two-hand operation

Operating method				Model	Max. holding capacity	Clamping force F _s with an operating force F _B	Rapid stroke	Max. clamping stroke	Weight –		
Mounting type	Two-hand operation	One-hand operation	One-hand operation								
											
	Plunger and hand lever	Hand lever	Hand wheel								
				1) Plunger order separately; see page MC-VSG-5	[lbs.] N	FB [lbs.] N	FS [lbs.] N	S [mm]	S1 [mm]	[lbs] Kg	
				•	FO-082-40	[335] 1500	[22] 100	[100] 450	40	2,5	[0.72] 0,325
		•			FO-120 ¹⁾	[675] 3000		[425] 1900	100, 200, 300	3	[1.19] 0,540
				•	FO-121-45	[675] 3000		[425] 1900	45	3	[1.47] 0,665
				•	FO-122-45	[675] 3000		[100] 450	40	3	[1.34] 0,610
		•			FO-160 ¹⁾	[2020] 9000		[560] 2500	100, 200, 300	4	[2.73] 1,240
				•	FO-161-60	[2020] 9000		[560] 2500	60	4	[3.40] 1,540
				•	FO-162-60	[2020] 9000		[190] 850	60	4	[3.15] 1,430
		•			FO-220 ¹⁾	[4045] 18000		[675] 3000	100, 200, 300	4	[5.85] 2,655
			•	FO-221-80	[4045] 18000	[675] 3000		80	4	[7.46] 3,385	
		•			FL-120 ¹⁾	[675] 3000		[425] 1900	100, 200, 300	3	[1.07] 0,485
				•	FL-121-45	[675] 3000		[425] 1900	45	3	[1.34] 0,610
				•	FL-122-45	[675] 3000		[100] 450	40	3	[1.21] 0,550
		•			FL-160 ¹⁾	[2020] 9000		[560] 2500	100, 200, 300	4	[2.49] 1,130
			•	FL-161-60	[2020] 9000	[560] 2500		60	4	[3.15] 1,430	
			•	FL-162-60	[2020] 9000	[190] 850		60	4	[2.92] 1,325	
				•	G-082-40	[335] 1500		[100] 450	40	2,5	[0.66] 0,300
•				G-120 ¹⁾	[675] 3000	[425] 1900		100, 200, 300	3	[1.01] 0,470	
			•	G-121-45	[675] 3000	[425] 1900		45	3	[1.31] 0,595	
			•	G-122-45	[675] 3000	[100] 450		40	3	[1.18] 0,335	

Variable Stroke Straight Line Action Clamps | Technical Information | Dimensions

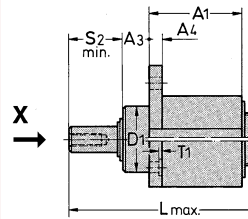
Two-hand operation (the plunger and the hand lever are operated separately)

Through hole mount

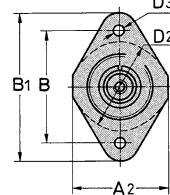


Part no. G-121/45

Flange mount

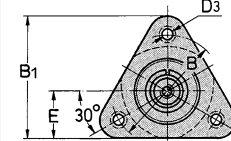


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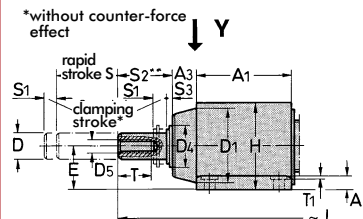
Part no. FL-120/--

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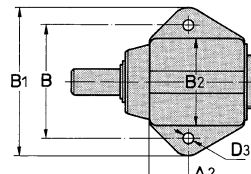


Part no. FL-160/--

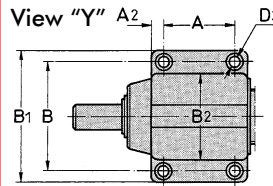
Foot mount



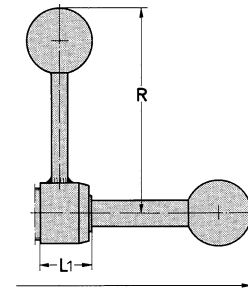
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Part no. FO-120/--



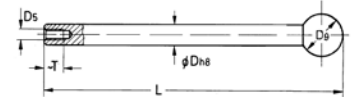
Part no. FO-160/--
FO-220/--



Accessories

(order separately)

Plunger



Part no. Ø length	For rapid stroke S	Weight ~ [lbs.] kg	For clamps
12/100	100	[0.30] 0,135	FO-120
12/200	200	[0.62] 0,280	FL-120
12/300	300	[0.82] 0,370	G-120
16/100	100	[0.88] 0,400	FO-160
16/200	200	[1.10] 0,500	FL-160
16/300*	300	[1.54] 0,700	
22/100	100	[2.20] 1,000	
22/200	200	[2.40] 1,090	FO-220
22/300	300	[3.06] 1,390	

*400 and 500 mm lengths available upon request.

Important
The Straight Line clamps are designed only for **axial load**. In case of side load, we recommend an additional radial support of the plunger.

Mounting type	Part no. without plunger	Available rapid strokes S (order plunger separately)	A	A1	A2	A3	A4	A8	B	B1	B2	Dh8	D1	D2	D3	D4
Foot mount	FO-120	100, 200, 300	-	44	19	12	6,3	8,5	52	68	40	12	35	-	6,5	20
	FO-160	100, 200, 300	40	62	11	12	12	10	70	90	52	16	46	-	9	25
	FO-220	100, 200, 300	50	75	13	20	15	12	90	115	69	22	60	-	11	36
Flange mount	FL-120	100, 200, 300	-	44	44	12	6	8,5	52	68	-	12	30f7	40	6,5	20
	FL-160	100, 200, 300	-	60	-	14	14	10	68	73	-	16	40f7	52	9	25
Through hole mount	G-120	100, 200, 300	-	44	-	12	10	8.5	-	-	-	12	M30 x1,5	40	-	20

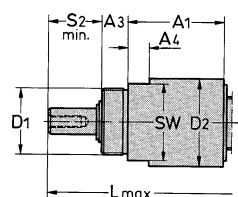
Mounting type	Part no. without plunger	D5	D6	E	E1	H	L with rapid strokes: ~ 100 200 300			L1	R	S2	S3	SW	SW1	T	T1	T3
Foot mount	FO-120	M6	30	20	12,5	42	228	328	428	24	95	2,5	2,5	-	11	12	-	10
	FO-160	M8	35	30	14,8	58	280	380	480	33	130	3	3	-	13	15	1	14
	FO-220	M12	40	35	19,5	71	295	395	495	35	197	3	3	-	17	25	1	18
Flange mount	FL-120	M6	30	-	12,5	-	228	328	428	24	95	2,5	2,5	-	11	12	-	10
	FL-160	M8	35	28	14,8	-	280	380	480	33	130	3	3	-	13	15	1	14
Through hole mount	G-120	M6	30	-	12,5	-	228	328	428	24	95	2,5	2,5	35	11	12	-	12

FO, FL, G SERIES

Variable Stroke Straight Line Action Clamps | Technical Information | Dimensions

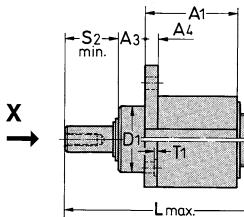
One-hand operation (the plunger and the hand wheel are operated simultaneously)

Through hole mount

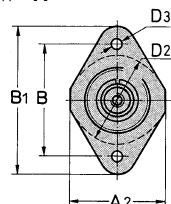


Part no. G-082/40
G-122/45

Flange mount

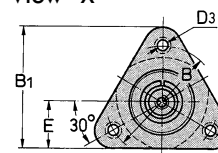


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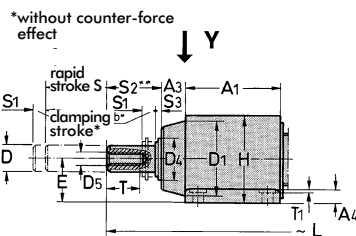
Part no. FL-122/45

View "X"

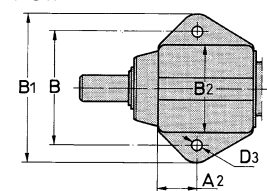


Part no. FL-162/60

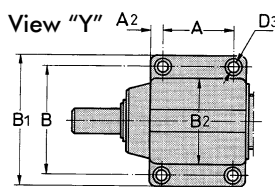
Foot mount



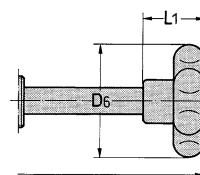
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Part no. FO-082/40
FO-122/45



Part no. FO-162/60



Important
The Straight Line clamps are designed only for **axial load**. In case of side load, we recommend an additional radial support of the plunger.

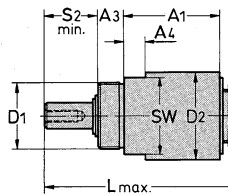
Mounting type	Part no. with plunger	A	A1	A2	A3	A4	A5	B	B1	B2	Dh8	D1	D2	D3	D4
	FO-082-40	-	37	15,3	10	5	6	44	56	35	8	30	-	4,5	16
	FO-122-45	-	44	19	12	6,3	8,5	52	68	40	12	35	-	6,5	20
	FO-162-60	40	62	11	12	12	10	70	90	52	16	46	-	9	25
	FL-122-45	-	44	44	12	6	85	52	68	-	12	30f7	40	6,5	20
	FL-162-60	-	60	-	14	14	10	68	73	-	16	40f7	52	9	25
	G-082-40	-	37	-	10	8	6	-	-	-	8	M24x1,5	35	-	16
	G-122-45	-	44	-	12	10	8,5	-	-	-	12	M30x1,5	40	-	20

Mounting type	Part no. with plunger	D5	D6	E	E1	H	L	L1	S2	S3	SW	SW1	T	T1	T3
	FO-082-40	M5	40	18	9,2	36	128	26	9	2,5	-	8	8	-	8
	FO-122-45	M6	75	20	12,5	42	153	27	15	2,5	-	11	12	-	10
	FO-162-60	M8	75	30	14,8	58	196	35	18	3	-	13	15	1	14
	FL-122-45	M6	52	-	12,5	-	153	27	15	2,5	-	11	12	-	10
	FL-162-60	M8	75	28	14,8	-	196	35	18	3	-	13	15	1	14
	G-082-40	M5	40	-	9,2	-	128	26	9	2,5	30	8	12	-	8
	G-122-45	M6	52	-	12,5	-	153	27	15	2,5	35	11	12	-	10

Variable Stroke Straight Line Action Clamps | Technical Information | Dimensions

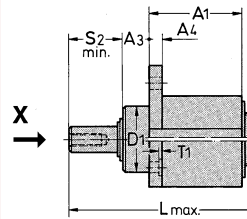
One-hand operation (the plunger and the hand lever are operated simultaneously)

Through hole mount

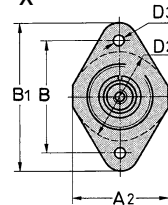


Part no. G-121/45

Flange mount

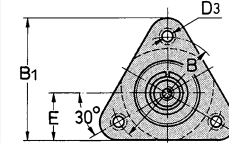


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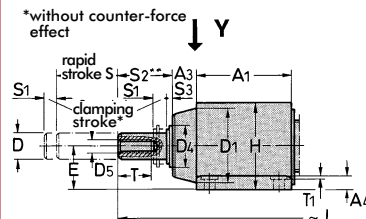
Part no. FL-121/45

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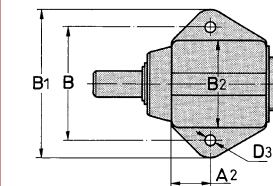


Part no. FL-161/60

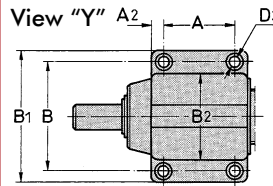
Foot mount



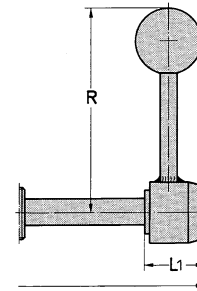
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Part no. FO-121/45



Part no. FO-161/60
FO-221/80



Important

The Straight Line clamps are designed only for **axial load**. In case of side load, we recommend an additional radial support of the plunger.

Mounting type	Part no. with plunger	A	A ₁	A ₂	A ₃	A ₄	A ₅	B	B ₁	B ₂	D _{h8}	D ₁	D ₂	D ₃	D ₄
Foot mount	FO-121-45	–	44	19	12	6,3	8,5	52	68	40	12	35	–	6,5	20
	FO-161-60	40	62	11	12	12	10	70	90	52	16	46	–	9	25
	FO-221-80	50	75	13	20	15	12	90	115	69	22	60	–	11	36
Flange mount	FL-121-45	–	44	44	12	6	8,5	52	68	–	12	30f7	40	6,5	20
	FL-161-60	–	60	–	14	14	10	68	73	–	16	40f7	52	9	25
Through hole mount	G-121-45	–	44	–	12	10	8,5	–	–	–	12	M30x1,5	40	–	20

Mounting type	Part no. with plunger	D ₅	E	E ₁	H	L	L ₁	R	S ₂	S ₃	SW	SW ₁	T	T ₁	T ₃
Foot mount	FO-121-45	M6	20	12,5	42	153	27	95	15	2,5	–	11	12	–	10
	FO-161-60	M8	30	14,8	58	196	35	130	18	3	–	13	15	1	14
	FO-221-80	M12	35	19,5	71	245	40	197	20	3	–	17	25	1	18
Flange mount	FL-121-45	M6	–	12,5	–	153	27	95	15	2,5	–	11	12	–	10
	FL-161-60	M8	28	14,8	–	196	35	130	18	3	–	13	15	1	14
Through hole mount	G-121-45	M6	–	12,5	–	153	27	95	15	2,5	35	11	12	–	10