

Linear actuators BSA Series

2.2 TECHNICAL DATA - ball screw linear actuators BSA Series

2

BSA 50	BSA 63	BSA 80	BSA 100	BSA 125	SIZE
50	60	90	110	150	Push rod diameter [mm]
70	90	115	160	200	Outer tube diameter [mm]
30	35	40	60	80	Front attachment diameter [mm]
30	35	40	60	80	Rear attachment diameter [mm]
19	24	28	32	38	Input solid shaft diameter [mm]
63 B5 - 71 B5	80 B5	80 B5 - 90 B5	100 - 112 B5	—	Attachment for IEC standard motor (flange and hollow shaft)
80 B5 - 90 B5 80 B14 - 90 B14	90 B5 - 100 B5 90 B14 - 100 B14	100 - 112 B5 100 - 112 B14	132 B5	132 B5 160 B5	Attachment for IEC standard motor (flange adapter + coupling)
25 000	50 000	80 000	108 000	123 000	Max. dynamic load [N]
25 000	50 000	80 000	200 000	350 000	pull ————— Max. static load [N]
25 000	50 000	100 000	200 000	350 000	push
—	—	—	—	—	RH
1 : 6 (4 : 24)	1 : 7 (4 : 28)	1 : 8 (4 : 32)	1 : 8 (4 : 32)	3 : 32	RV
1 : 18 (2 : 36)	1 : 14 (2 : 28)	1 : 24	1 : 24	1 : 16 (2 : 32)	RN Ratio
1 : 24	1 : 28	1 : 32	1 : 32	1 : 32	RL
1 : 44	1 : 40	—	—	—	RXL
32×10	40×10	63×10	80×16	100×16	Diameter × Lead
6.35 (1/4 ")	6.35 (1/4 ")	7.144 (9/32 ")	9.525 (3/8 ")	9.525 (3/8 ")	[mm] Ball
4	5	6	5	5	N° of circuits
41 800	60 000	112 000	149 000	170 000	[N] Dynamic load C _a
73 000	123 000	313 000	393 000	523 000	[N] Static load C _{0a}
—	—	—	—	—	RH1
1.67	1.43	1.25	2	1.5	RV1
0.56	0.71	0.42	0.67	1	RN1 Ratio
0.42	0.36	0.31	0.5	0.5	RL1
0.23	0.25	—	—	—	RXL1
30	50	95	200	400	Mass (actuator 100 mm stroke length, without motor, with lubricant) [kg]
2	3	5.5	12.5	19	Extra-mass for each additional 100 mm stroke length [kg]

ON REQUEST

32×20	40×20	63×20	80×20	100×20	Ball screw (Diameter × Lead)
6.35 (1/4 ")	6.35 (1/4 ")	9.525 (3/8 ")	12.7 (1/2 ")	12.7 (1/2 ")	[mm] Ball
3	3	4	4	4	N° of circuits
32 200	38 500	101 000	213 000	239 000	[N] Dynamic load C _a
53 000	74 000	220 000	516 000	687 000	[N] Static load C _{0a}

NOTE: When these ball screws are used, the actuator length will be increased.
Please, contact SERVOMECH to get information about the exact length.

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BALL SCREW LINEAR ACTUATORS BSA Series with AC 3-PHASE MOTOR
PERFORMANCE with: Duty Cycle $F_i = 100\%$ at ambient temperature $25\text{ }^\circ\text{C}$

LINEAR SPEED [mm/s]	DYNAMIC LOAD [kN]	RATIO	MOTOR: POWER [kW] – N° of POLES SPEED [rpm]	SELF-LOCKING COEFFICIENT
BSA 50				
78	14 ²⁾	RV1	1.5 kW 2-pole 2800	0.56
40	17 ²⁾	RV1	1.1 kW 4-pole 1400	0.56
25	20 ²⁾	RN1	1.1 kW 2-pole 2800	0.43
20	22 ²⁾	RL1	1.1 kW 2-pole 2800	0.37
13	25 ^{2) 3)}	RN1	0.75 kW 4-pole 1400	0.43
10	25 ³⁾	RL1	0.75 kW 4-pole 1400	0.37
5.3	25 ³⁾	RXL1	0.37 kW 4-pole 1400	0.31
BSA 63				
66	21 ²⁾	RV1	2.2 kW 2-pole 2800	0.56
33	25 ¹⁾	RV1	1.5 kW 4-pole 1400	0.56
17	31 ¹⁾	RN1	0.75 kW 4-pole 1400	0.46
8	41 ²⁾	RL1	0.75 kW 4-pole 1400	0.35
5.8	47 ²⁾	RXL1	0.75 kW 4-pole 1400	0.34
BSA 80				
58	39 ¹⁾	RV1	3 kW 2-pole 2800	0.56
29	51 ²⁾	RV1	2.2 kW 4-pole 1400	0.56
19	59 ²⁾	RN1	2.2 kW 2-pole 2800	0.38
15	65 ²⁾	RL1	1.5 kW 2-pole 2800	0.35
10	73 ¹⁾	RN1	1.1 kW 4-pole 1400	0.38
7	81 ²⁾	RL1	1.1 kW 4-pole 1400	0.35
BSA 100				
93	54 ²⁾	RV1	7.5 kW 2-pole 2800	0.60
47	68 ²⁾	RV1	5.2 kW 4-pole 1400	0.60
31	78 ²⁾	RN1	4 kW 2-pole 2800	0.42
23	86 ^{2) 3)}	RL1	3 kW 2-pole 2800	0.39
16	98 ²⁾	RN1	3 kW 4-pole 1400	0.42
12	108 ²⁾	RL1	2.2 kW 4-pole 1400	0.39
BSA 125				
70	68 ²⁾	RV1	7.5 kW 2-pole 2800	0.58
47	78 ²⁾	RN1	5.5 kW 2-pole 2800	0.52
35	85 ²⁾	RV1	4 kW 4-pole 1400	0.58
23	98 ²⁾	RN1	5.5 kW 4-pole 1400	0.52
12	123 ²⁾	RL1	5.5 kW 4-pole 1400	0.40

1) value limited by electric motor power; ball screw lifetime $L_{10h} > 1000$ hours (see diagrams on pages 35 ... 38)

The total dynamic efficiency (η) of BSA Series actuators, used to determine the DYNAMIC LOAD is calculated as follows:

$$\eta = \eta_1 \times \eta_2 \times \eta_3$$

where:

η_1 – wormgear dynamic efficiency, calculated according to BS 721 : Part 2 : 1983

$\eta_2 = 0.9$ – ball screw - nut efficiency

$\eta_3 = 0.9$ – bearings and sealing elements "efficiency"

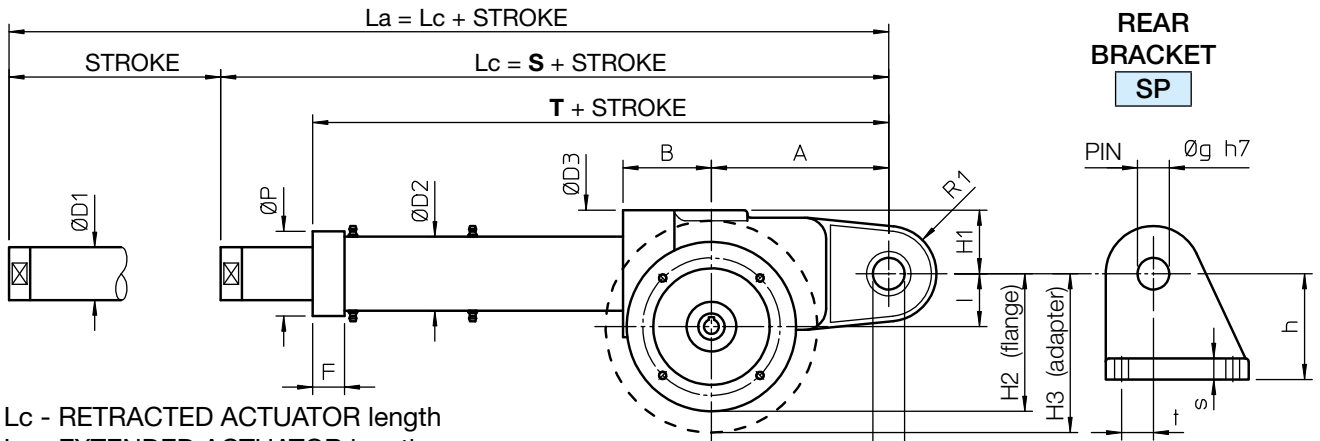
2) value related to the ball screw lifetime $L_{10h} = 1000$ h, with constant load, without load vibrations nor shocks; for different lifetime refer to diagrams on pages 35 ... 38

3) limit value of linear actuator dynamic load capacity (see page 45)

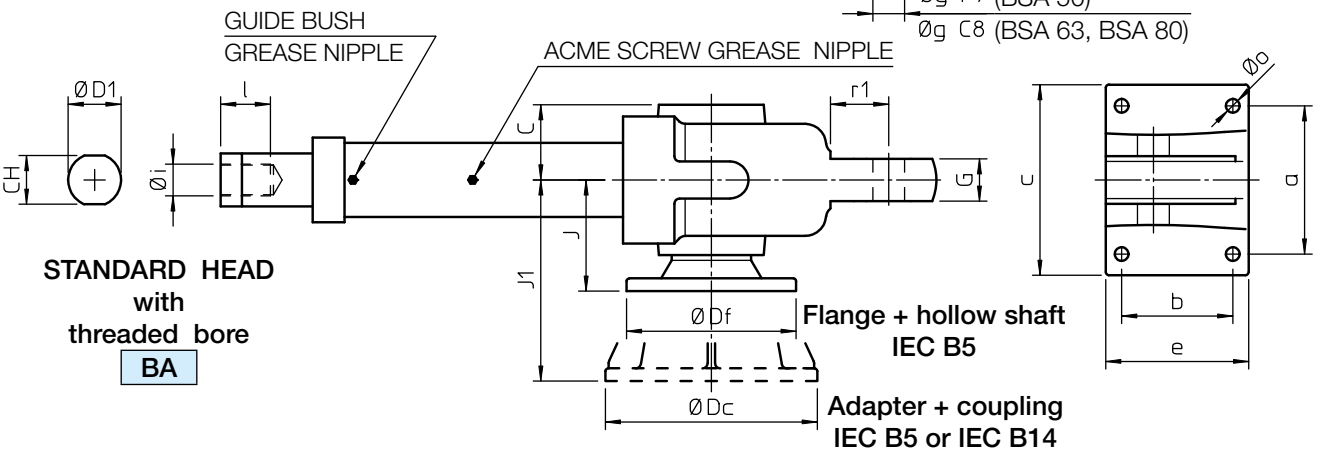
Linear actuators BSA Series

BALL SCREW LINEAR ACTUATORS BSA Series, size 50 – 63 – 80
AC 3-phase MOTOR – with Electric Stroke Limit Device FCE

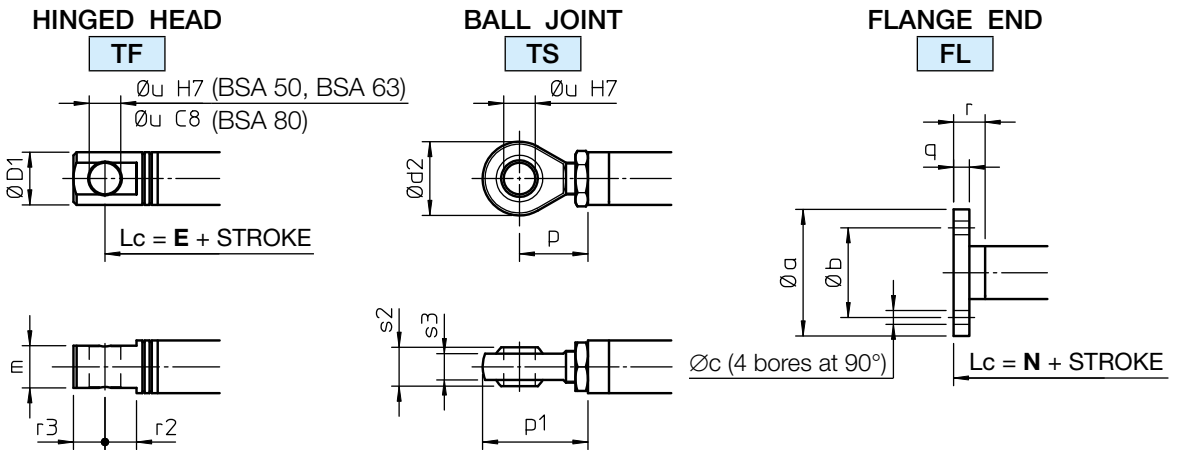
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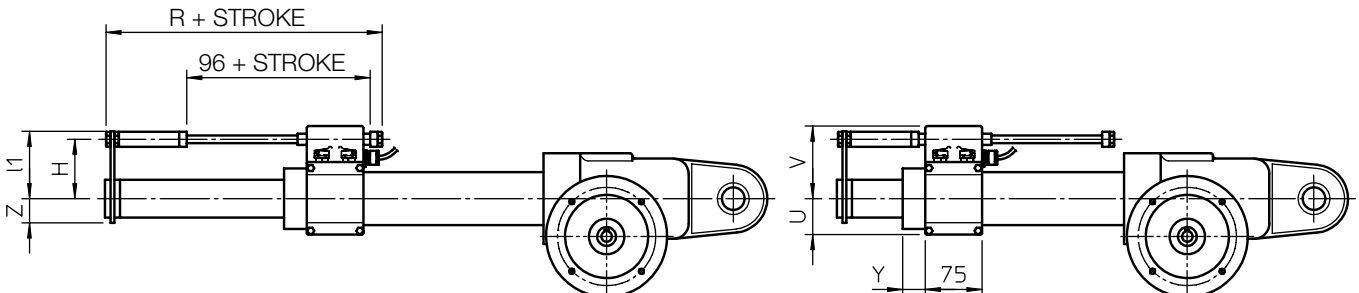
L_c - RETRACTED ACTUATOR length
 L_a - EXTENDED ACTUATOR length



FRONT ATTACHMENTS



ELECTRIC STROKE LIMIT DEVICE FCE



Linear actuators BSA Series

BALL SCREW LINEAR ACTUATORS BSA Series, size 50 – 63 – 80
AC 3-phase MOTOR – with Electric Stroke Limit Device FCE

STANDARD STROKE LENGTHS

	STROKE CODE	C100	C200	C300	C400	C500	C600	C700	C800	S	T	E	N
BSA 50										481	394	511	491
BSA 63	STROKE [mm]	100	200	300	400	500	600	700	800	571	467	601	581
BSA 80										673	576	708	693

NOTE: Different stroke lengths available on request. $L_a = L_c + \text{STROKE}$

For stroke lengths longer than 800 mm it is necessary to increase the guided length between push rod and outer tube to avoid axial backlash. Dimensions **S**, **T**, **E** and **N** shall be considered increased by 200 mm for stroke lengths up to 1500 mm.

For stroke lengths longer than 1500 mm, please, contact SERVOMECH.

	A	B	C	CH	∅ D1	∅ D2	∅ D3	F	G	H1	I	∅ P	R1
BSA 50	168	94	68	79	50	70	120	—	40	63	50	—	45
BSA 63	206	96	83	—	60	90	140	37	50	70	63	95	50
BSA 80	240	119	103	—	90	115	160	40	60	90	80	125	60

	a	b	c	e	∅ g	h	∅ i	l	∅ o	r1	s	t
BSA 50	140	105	185	143	30	100	M30×2	45	13	55	20	30
BSA 63	180	120	228	160	35	120	M36×2	55	17	58	30	30
BSA 80	210	122	278	180	40	130	M42×2	65	21	62	35	32

	Flange IEC	∅ Df	H2	J	Adapter IEC	∅ Dc	H3	J1
BSA 50	63 B5	140	120	102	80 B14 – 80 B5	120 – 200	110 – 150	176 – 182
	71 B5	160	130	102	90 B14 – 90 B5	140 – 200	120 – 150	182
BSA 63	80 B5	200	163	100	90 B14 – 90 B5	140 – 200	133 – 163	200
					100 B14 – 100 B5	160 – 250	143 – 188	220
BSA 80	80 B5; 90 B5	200	180	119	112 B14 – 112 B5	160 – 250	160 – 205	240

FRONT ATTACHMENT Dimensions

	∅ a	∅ b	∅ c	∅ D1	∅ d2	m	p
BSA 50	120	85	13	50	70	40	65
BSA 63	140	100	17	60	80	50	86
BSA 80	170	130	21	90	90	50	85

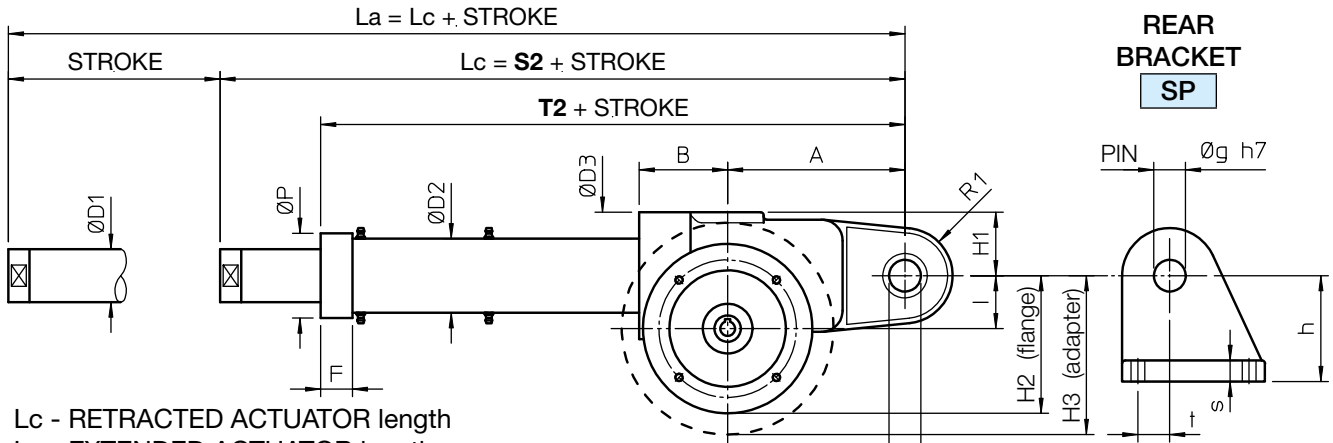
	p1	q	r	r2	r3	s2	s3	∅ u
BSA 50	100	15	30	30	30	37	25	30
BSA 63	126	15	30	30	35	43	28	35
BSA 80	130	20	40	35	45	49	33	40

ELECTRIC STROKE LIMIT DEVICE FCE Dimensions

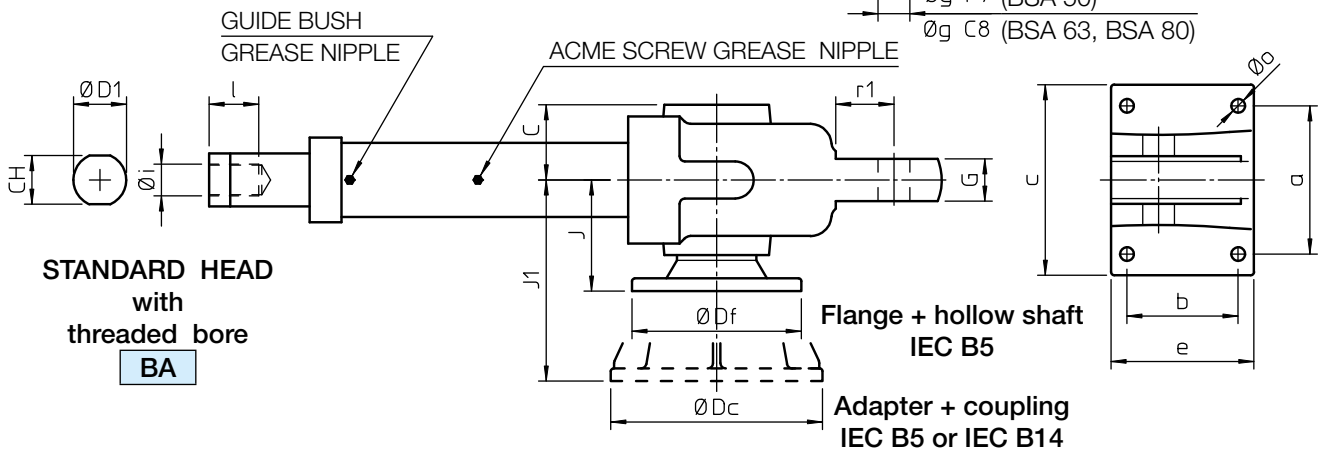
	H	R	U	V	Y	Z	l1
BSA 50	79	188	50	97	5	32	89
BSA 63	89	237	60	107	37	37	100
BSA 80	101	237	73	119	40	55	113

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BALL SCREW LINEAR ACTUATORS BSA Series, size 50 – 63 – 80
AC 3-phase MOTOR – Proximity Stroke Limit Switches FCP

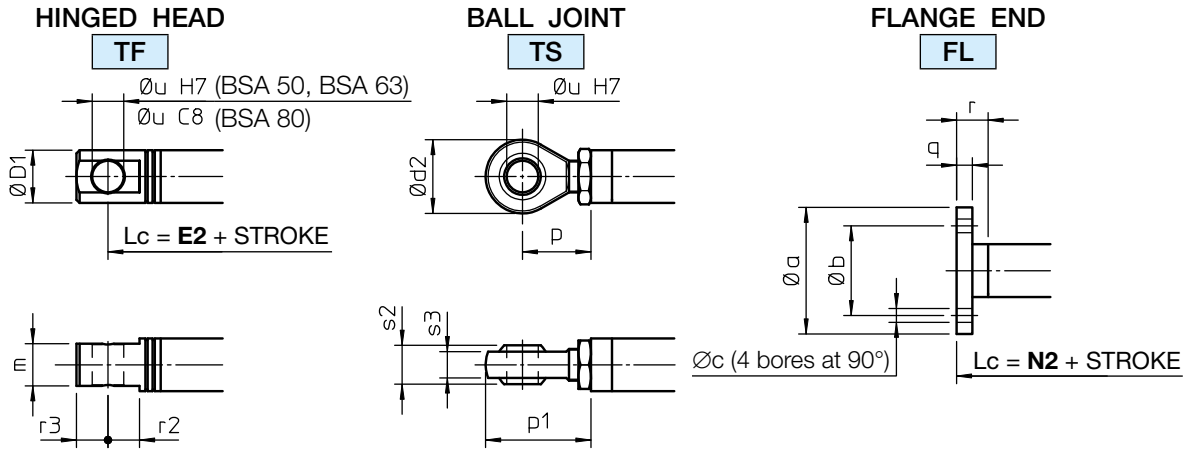


Lc - RETRACTED ACTUATOR length
La - EXTENDED ACTUATOR length



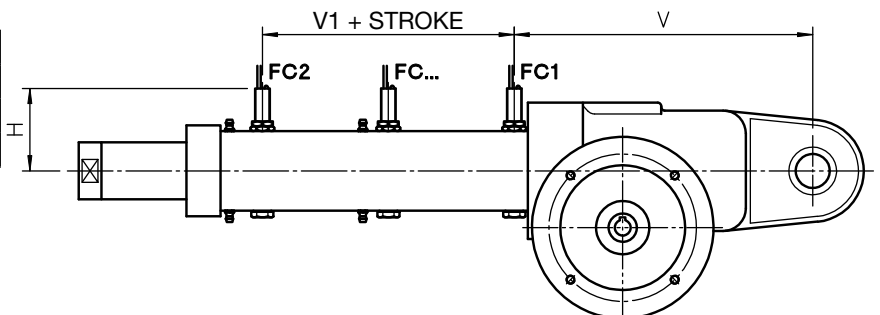
STANDARD HEAD with threaded bore
BA

FRONT ATTACHMENTS



PROXIMITY STROKE LIMIT SWITCHES FCP Dimensions

	H	V	V1
BSA 50	79.5	263	70
BSA 63	86.5	314	71
BSA 80	99	371	10



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BALL SCREW LINEAR ACTUATORS BSA Series, size 50 – 63 – 80 AC 3-phase MOTOR – Proximity Stroke Limit Switches FCP STANDARD STROKE LENGTHS

	STROKE CODE	C100	C200	C300	C400	C500	C600	C700	C800	S2	T2	E2	N2
BSA 50	STROKE [mm]	100	200	300	400	500	600	700	800	497	402	527	507
BSA 63										579	471	609	589
BSA 80										673	576	708	693

NOTE: Different stroke lengths available on request. $L_a = L_c + \text{STROKE}$

For stroke lengths longer than 800 mm it is necessary to increase the guided length between push rod and outer tube to avoid axial backlash. Dimensions **S2**, **T2**, **E2** and **N2** shall be considered increased by 200 mm for stroke lengths up to 1500 mm.

For stroke lengths longer than 1500 mm, please, contact SERVOMECH.

	A	B	C	CH	∅ D1	∅ D2	∅ D3	F	G	H1	I	∅ P	R1
BSA 50	168	94	68	79	50	70	120	—	40	63	50	—	45
BSA 63	206	96	83	—	60	90	140	37	50	70	63	95	50
BSA 80	240	119	103	—	90	115	160	40	60	90	80	125	60

	a	b	c	e	∅ g	h	∅ i	l	∅ o	r1	s	t
BSA 50	140	105	185	143	30	100	M30×2	45	13	55	20	30
BSA 63	180	120	228	160	35	120	M36×2	55	17	58	30	30
BSA 80	210	122	278	180	40	130	M42×2	65	21	62	35	32

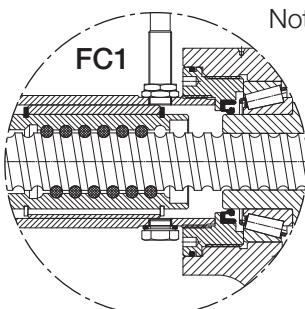
	Flange IEC	∅ Df	H2	J	Adapter IEC	∅ Dc	H3	J1
BSA 50	63 B5	140	120	102	80 B14 – 80 B5	120 – 200	110 – 150	176 – 182
	71 B5	160	130	102	90 B14 – 90 B5	140 – 200	120 – 150	182
BSA 63	80 B5	200	163	100	90 B14 – 90 B5	140 – 200	133 – 163	200
					100 B14 – 100 B5	160 – 250	143 – 188	220
BSA 80	80 B5; 90 B5	200	180	119	112 B14 – 112 B5	160 – 250	160 – 205	240

FRONT ATTACHMENT Dimensions

	∅ a	∅ b	∅ c	∅ D1	∅ d2	m	p
BSA 50	120	85	13	50	70	40	65
BSA 63	140	100	17	60	80	50	86
BSA 80	170	130	21	90	90	50	85

	p1	q	r	r2	r3	s2	s3	∅ u
BSA 50	100	15	30	30	30	37	25	30
BSA 63	126	15	30	30	35	43	28	35
BSA 80	130	20	40	35	45	49	33	40

PROXIMITY STROKE LIMIT SWITCHES FCP Technical features



- Note: - The PROXIMITY SWITCH FC1, when activated, gives a signal to stop the motor by means of electric relays before the actuator reaches its minimal retracted length. The RETRACTED ACTUATOR LENGTH (L_c) and EXTENDED ACTUATOR LENGTH (L_a) of the actuator equipped with PROXIMITY SWITCHES FCP are longer than L_a and L_c of the actuator with electric stroke limit device FCE or without stroke end switches.
- Additional PROXIMITY SWITCHES are available for intermediate positions.
 - The minimum distance between the PROXIMITY SWITCHES must be of at least 25 mm.