

# ORIGINAL INSTRUCTIONS

# **Instruction Manual Electric Actuator/Slider Type** Series LEF

Motor: Step [servo 24 VDC], Battery-less absolute [Step 24 VDC] High performance [Step 24 VDC] Battery-less absolute High performance [Step 24 VDC]



The intended use of this Electrical Actuator is to convert an electrical input signal into mechanical motion.

# 1 Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of "Caution," "Warning" or "Danger." They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC) \*1), and other safety regulations. \*1) ISO 4414: Pneumatic fluid power - General rules relating to systems. ISO 4413: Hydraulic fluid power - General rules relating to systems. IEC 60204-1: Safety of machinery - Electrical equipment of machines. (Part 1: General requirements)

- ISO 10218-1: Manipulating industrial robots -Safety. etc.
- Refer to the product catalogue, Operation Manual and Handling Precautions for SMC Products for additional information.
- Keep this manual in a safe place for future reference.

	Caution indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
<b>▲</b> Warning	Warning indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
	Danger indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

# **Marning**

• Always ensure compliance with relevant safety laws and standards.

All work must be carried out in a safe manner by a qualified person in compliance with applicable national regulations.

# 2 Specifications

Series LEFS Motor: Step [servo 24VDC]

		Mod	lel		LEF	S16		LEFS25						
	Stroke [mn				50 to			50 to 800						
	Work load	Horizont		CP1 CE□1	14	15	12	25	30					
	[kg] note2)	al		VJXC □ <sup>2</sup> <sub>3</sub>	9	10	10	20	20					
	[9]		Vertical		2	4	0.5	7.5	15					
				to 500	10 to 700	5 to 360	20 to 1100	12 to 750	6 to 400					
				501 to 600	-	-	20 to 900	12 to 540	6 to 270					
	Controller			601 to 700	-	-	20 to 630	12 to 420	6 to 230					
	type:	Speed [mm/e]	Stroke	701 to 800	-	-	20 to 550	12 to 330	6 to 180					
	Controller type: LECP1 JXCE□1  Driver type LECPA JXC□²₃  Max.acceleration Positioning repeation Lost motion[mm] lead [mm] Impact/Vibration Actuation type Guide type Static allowable momnet [Nm] Indication type Static allowable	note2)	range	801 to 900	-	-	-	-	-					
				1001 to		-	-	-						
				1001 to	-	-	-	-	-					
				1200	-	-	-	-	-					
				to 500	10 to 500	5 to 250	20 to 1000	12 to 500	6 to 250					
"				501 to 600	-	-	20 to 900	12 to 500	6 to 250					
tions	Driver	Speed		601 to 700	-	-	20 to 630	12 to 420	6 to 230					
ifica	lype   Speed   Imm's   Imm's	Stroke	701 to 800	-	-	20 to 550	12 to 330	6 to 180						
Actuator specifications			range	801 to 900	-	-	-	-	-					
tor 8	JXC⊓-3			1000 to	-	-	-	-	-					
ctua				11001 to	-	-	-	-	-					
Ą				1200	-	-	-	-	-					
	Max.accele	eration/dec	celeration [	mm/s <sup>2</sup> ]			3000							
		reneeatal	hility [mm]	Basic type	±0.02									
				High precision type			5(Lead H:±0	.02)						
	Lost motion	n[mm] note3	)	Basic type			0.1or less							
		.[]		High precision type			0.05or less							
					10	5	20	12	6					
			stanc [m/s	2] note4)			50 / 20							
					Ball scre		, Ball screw-	+Belt(LEFS	IUL/R)					
	Guide type	!					inear Guide	07						
			Mep(Pitch			0		27 27						
	momnet [N	m] <sup>note5)</sup>	Mey(Yawi	0,		0								
			Mer(Rollin	0,	2	10	5 to 40	52						
	Operating I	-		-		00 or loss	S(No conden	nation)						
	Motor size	iumuity i	ange [/orn	ij	П	28	S(140 CONGEN	-d2						
	Motor type					_	tor(Servo 24							
rical	Encoder						ncremental	. 50,						
Electrical		no []/]					4 VDC±10%							
	Rated voltage [V]  Power consumption [W] notes		note6) n	ote8)	Max		+ VDC±10%	Max. 57						
	Type note7)	sumption	VV		ivida		nagnetizing l							
nuit	Holding for	ce [N]			20	39	47	78	157					
ock unit	Power con		W1 note8)			.9	· · ·	5						
_	Rated volta				_		1 VDC±10%							
		o- r.1												

		Mod	al .			LEFS32		LEFS40					
	0		ei					150 to 1200					
	Stroke [mm	າງວະ.,		CP1		50 to 1000							
	Work load	Horizont al	JXC	E_1	20	45	50	25	55	65			
	[kg] note2)	aı	LECPA	VJXC□ <sup>2</sup> 3	15	40	45	20	50	60			
			Vertical		4	10	20	2	2	23			
				to 500	24 to 1200	16 to 800	8 to 520	30 to 1200	20 to 1000	10 to 300			
				501 to 600	24 to 1200	16 to 800	8 to 400	30 to 1200	20 to 1000	10 to 300			
	Controller	0		601 to 700	24 to 930	16 to 620	8 to 310	30 to 1200	20 to 900	10 to 300			
	type:	Speed [mm/s]	Stroke	701 to 800	24 to 750	16 to 500	8 to 250	30 to 1140	20 to 760	10 to 300			
	LECP1	note2)	range	range	range	range	801 to 900	24 to 610	16 to 410	8 to 200	30 to 930	20 to 620	10 to 300
	JXCE□1			901 to	24 to 500	16 to 340	8 to 170	30 to 780	20 to 520	10 to 250			
				1001 to	-	-	-	30 to 660	20 to 440	10 to 220			
				1100 to	-	-	-	30 to 570	20 to 380	10 to 190			
				to 500	24 to 1200	16 to 500	8 to 250	30 to 500	20 to 500	10 to 250			
				501 to 600	24 to 1200	16 to 500	8 to 250	30 to 500	20 to 500	10 to 250			
ous	Driver			601 to 700	24 to 930	16 to 500	8 to 250	30 to 500	20 to 500	10 to 250			
cat	type	Speed	Stroke	701 to 800	24 to 750	16 to 500	8 to 250	30 to 500	20 to 500	10 to 250			
ecil	LECPA	[mm/s] note2)	range	801 to 900	24 to 610	16 to 410	8 to 200	30 to 500	20 to 500	10 to 250			
r st	JXC□ <sup>2</sup> <sub>3</sub>		_	901 (0	24 to 500	16 to 340	8 to 170	30 to 500	20 to 500	10 to 250			
Actuator specifications				1000 to	-	-	-	30 to 500	20 to 440	10 to 220			
Ac				1109 to	-	_	-	30 to 500	20 to 380	10 to 190			
	Max.accele	ration/dec	eleration [	mm/e <sup>2</sup> 1		3000							
				Basic type			±0	.02					
	Positioning repeeatability [mm] Basic ty				±0.015(Lead H:±0.02)								
		note3	)	Basic type	0.1or less								
	Lost motion	n[mm] "occo	,	High precision type			0.050	r less					
	lead [mm]				24	20	10						
	Impact/Vibi	ration resi	stanc [m/s	2 note4)			50	/ 20					
	Actuation ty	ype			Bal	screw(LE	FS□)、Bal	screw+Be	lt(LEFS□L	/R)			
	Guide type						Linear	Guide					
	Static allow	nhlo	Mep(Pitch	ing)		46			110				
	moment [N		Mey(Yawi	ng)		46			110				
	moment [N	· · · · ·	Mer(Rollin	g)		101			207				
	Operating t	emperatur	e range [°	C]			5 to	40					
	Operating h	numidity ra	ange [%RH			90	or less(No	condensati	on)				
	Motor size						□5	6.4					
_	Motor type					Ste	ep motor(S	ervo 24V D	OC)				
ctrica	Encoder			_			Increi	mental					
E E	Rated voltage [V]						24 VD	C±10%					
	Power consumption [W] note6) note8)					Max. 123			Max. 141				
_	Type note7)						Non-magn	etizing lock					
	Holding for		note8)		72	108	216	75	113	225			
Lock	Power cons		W] 110(80)			5	041:-	0.4004	5				
	Rated volta	ge [V]					24 VD	J±10%					

# 2 Specifications (continued)

Series LEFB Motor: Step [servo 24VDC]

	IVIOC	iei	LEFDIO	LEFB25	LEFB32			
Stroke [mn	n] <sup>note1)</sup>		300, 500, 600, 700, 800, 900, 1000	300, 500, 600, 700, 800, 900, 1000, 1200, 1500, 1800, 2000	300, 500, 600, 800, 900, 1000, 1200, 1500, 1800, 2000			
Work load		LECP1 JXC□1	1	10	19			
[kg] note2)	al	LECPA/JXC□23	1	5	14			
Speed [mn	n/s] note2)		48 to 1100	48 to 1400	48 to 1500			
Max.accele	eration/dec	celeration [mm/s2]		3000				
Positioning	repeeata	bility [mm]		±0.08				
Lost motion	n[mm] <sup>note3</sup>	)		0.1 or less				
Equivalent	lead [mm]		48	48	48			
Impact/Vib	ration resi	stanc [m/s2] note4)		50 / 20				
Actuation t	уре			Belt				
Guide type	9			Linear Guide				
Static allow	mblo	Mep(Pitching)	10	27	46			
		Mey(Yawing)	10	27	46			
moment [iv	#11J	Mer(Rolling)	20	52	101			
Operating	temperatu	re range [°C]		5 to 40				
Operating	humidity r	ange [%RH]	90 0	or less(No condensation	n)			
Motor size			□28	□42	□56.4			
Motor type	!		Ste	p motor(Servo 24V DC	5)			
Encoder	Static allowable Mep(Pitching) Mey(Yawing) Mey(Yawing)  Operating temperature range [°C]  Operating humidity range [%RH]  Motor size  Motor type			Incremental				
Rated volta	ige [V]			24VDC±10%				
Power con		[W] note6) note8)	Max. 51	Max. 60	Max. 127			
Type note7)		<u>-</u>		Non-magnetizing lock				
Holding for	rce [N]		4	19	36			
Power con	sumption	[W] note8)	2.9	5	5			
Rated volta	ige [V]	•		24VDC±10%	•			
			-					

LEFB25 LEFB32

# Series LEFS Motor: Battery-less absolute [Step 24VDC]

		Mod	el		LEFS16 LEFS25								
	Stroke [mn	mate 4)			50~		50~800						
	Work load	9	Horizonta	ıl	14	15	12	25	30				
	[kg] note2)		Vertical		2	4	0.5	7.5	15				
				~500	10~700	5~360	20~1100	12~750	6~400				
				501~600	-	-	20~900	12~540	6~270				
				601~700	-	-	20~630						
		In-line	Stroke	701~800	-	-	20~550	12~330	6~180				
		III-IIIIe	range	801~900	-	-		-	-				
				901~1000	-	-	ı	-	-				
				1001~110	-	-		-	-				
	Speed [mm/s]			101120	-	-	-	-	-				
	note2)			~500	10~700	5~360	20~900	12~600	6~300				
				501~600	-	-	20~900	12~540	6~270				
S				601~700	-	-	20~630	12~420	6~230				
Actuator specifications			Stroke	701~800	-	-	20~550	12~330	6~180				
ifica		Parallel	range	801~900	-	-	-	-	-				
pec				901~1000	-	-	-	-	-				
to.				1001~110	-	-	-	-	-				
ctua				101120	-	-	-	-	-				
Ā	Max.accele	eration/dec	eleration [	mm/s <sup>2</sup> 1	3000								
				Basic type		±0.02							
	Positioning	repeeatal	oility [mm]	High precision type		±0.01	5(Lead H:	±0.02)					
				Basic type			0.1or less						
	Lost motion	n[mm] <sup>note3</sup>	)	High precision type			0.05or less						
	lead [mm]				10	5	20	12	6				
	Impact/Vib	ration reci	etane [m/e²	2 <sub>1</sub> note4)	50 / 20								
			staric [iii/s	1		Ball scr	ew(LEFSI	□). Ball					
	Actuation t	ype					Belt(LEFS						
	Guide type					L	inear Guic	le					
	Static allow	rable.	Mep(Pitch	ing)	1	0		27					
	moment [N		Mey(Yawi	ng)	1	0		27					
	moment [N	iiig -	Mer(Rollin	g)	2	0		52					
	Operating 1	temperatur	e range [°	C]			5 to 40						
	Operating I	humidity ra	ange [%RH	·[]		90 or les	s(No cond	lensation)					
	Motor size					28		□42					
_	Motor type				Ba	ttery-less	absolute(S	Step 24VD	C)				
trica	Encoder					Batte	ry-less ab	solute					
Electrical	Rated volta	ge [V]				24	VDC±10	%					
	Power con	sumption [	W1 note6) no	ote8)	Max	. 51		Max. 57					
	Type note7)			Non-r	nagnetizin	g lock							
mi	Holding for		20	39	47	78	157						
ock unit	Power con		W1 note8)		2.			5					
۲	Rated volta		***				VDC±10						
		a - r.1											

# 2 Specifications (continued)

		Mod	iel			LEFS32			LEFS40				
	Stroke [mr	n] note1)				50~1000			150~1200	)			
	Work load		Horizonta	ıl	20	45	50	25	55	65			
	[kg] note2)		Vertical		4	10	20	2	2	23			
				~500	24~1200	16~800	8~400	30~1200	20~850	10~300			
				501~600	24~1200	16~800	8~400	30~1200	20~850	10~300			
				601~700	24~930	16~620	8~310	30~1200	20~850	10~300			
		In-line	Stroke	701~800	24~750	16~500	8~250	30~1140	20~760	10~300			
		III-IIIIe	range	801~900	24~610	16~410	8~200	30~930	20~620	10~300			
						İ	901~1000	24~500	16~340	8~170	30~780	20~520	10~250
				1001~1100	-	-	-	30~660	20~440	10~220			
				1011~1200	-	-	-	30~570	20~380	10~190			
	note2)			~500	24~800	16~650	8~325	30~750	20~550	10~300			
				501~600	24~800	16~650	8~325	30~750	20~550	10~300			
ons				601~700	24~800	16~620	8~310	30~750	20~550	10~300			
cati	Parallel  Max.acceleration/d  Positioning repeat  Lost motion[mm] not lead [mm] Impact/Vibration re Actuation type Guide type  Static allowable moment [Nm] note5) Operating temperat Operating humidity Motor size	Parallal	Stroke	701~800	24~750	16~500	8~250	30~750	20~550	10~300			
ecif		1 arailei	range	801~900	24~610	16~410	8~200	30~750	20~550	10~300			
r S F				901~1000	24~500	16~340	8~170	30~750	20~520	10~250			
Actuator specifications				1001~1100	-	-	-	30~660	20~440	10~220			
Ac				1011~1200	-	-	-	30~570	20~380	10~190			
	Max.accele	eration/dec	celeration [	mm/s <sup>2</sup> ]			30	00					
	Positioning	ı reneeata	hility [mm]	Basic type				.02					
	. 00.00	, opeodia	y []	High precision type		±	0.015(Lea	ad H:±0.02	2)				
	Lost motion	n[mm] note3	3)	Basic type				r less					
		·[·······]		High precision type				r less	ı				
					24	16	8	30	20	10			
			istanc [m/s	2 note4)	_			20					
		• • • • • • • • • • • • • • • • • • • •			Ball s	screw(LEF	-		elt(LEFSC	JL/R)			
	Guide type	)	I :-:				Linear	Guide					
			Mep(Pitch	-		46			110				
			Mey(Yawi			46			110				
			Mer(Rollin			101			207				
				-			5 to						
		numidity r	ange [%RH	1]		90 c		condensa	tion)				
						Dotto		6.4	241/DC)				
<u></u>	Motor type	1				Battery-	iess abso	lute(Step 2	24VDC)				
Electrical	Encoder						Battery-les	ss absolute	9				
凿	Rated volta	ige [V]					24 VD	C±10%					
	Power con	sumption	[W] note6) no	ote8)		Max. 123			Max. 141				
_	Type note7)					1	Non-magn	etizing loc	k				
i	Holding for				72	108	216	75	113	225			
Lock	Power con	sumption	[W] note8)			5			5				
Ľ	Rated volta	ige [V]					24 VD	DC±10%					
Se	eries I F	FB Mo	tor: Bat	tery-less	absoli	ıte [Ste	en 24V	DCI					
00	,,,C3 LL	ייייי בי	ioi. Dai	cory icos	abson		7 Z T V	ردد					

	Mod	del	LEFB16	LEFB25	LEFB32
	Stroke [mm] note1)		300, 500, 600, 700, 800, 900, 1000	300, 500, 600, 700, 800, 900, 1000, 1200, 1500, 1800, 2000	300, 500, 600, 700, 800, 900, 1000, 1200, 1500, 1800, 2000
	Work load [kg] note2)	Horizontal	1	10	19
	Speed [mm/s] note2)	•	48~1100	48 to 1400	48 to 1500
S	Max.acceleration/de	celeration [mm/s2]		3000	•
atio	Positioning repeeata	bility [mm]		±0.08	
iffo	Lost motion[mm] notes	3)		0.1 or less	
sbec	Equivalent lead [mm]		48	48	48
Actuator specifications	Impact/Vibration res	istanc [m/s2] note4)		50 / 20	
ctri	Actuation type			Belt	
•	Guide type			Linear Guide	
	Static allowable	Mep(Pitching)	10	27	46
	moment [Nm] note5)	Mey(Yawing)	10	27	46
	moment [Ninj	Mer(Rolling)	20	52	101
	Operating temperatu	re range [°C]		5 to 40	•
	Operating humidity r	ange [%RH]	90 c	or less(No condensa	tion)
	Motor size		□28	□42	□56.4
	Motor type		Battery	less absolute(Step a	24VDC)
Electrical	Encoder			Battery-less absolute	Э
ä	Rated voltage [V]			24VDC±10%	
	Power consumption	[W] note6) note8)	Max. 51	Max. 60	Max. 127
	Type note7)		1	Non-magnetizing loc	k
ock unit	Holding force [N]		4	19	36
Lock	Power consumption	[W] note8)	2.9	5	5
	Rated voltage [V]			24VDC±10%	
		•	•	•	·

# 2 Specifications (continued)

Series LEFS, Motor: High performance [Step 24VDC]

		Мо		LEF	S16	_	LEFS25						
	Stroke	[mm] <sup>1</sup>	note1)	50 to	500		50 to 800						
	Work I	oad	Horizontal	14	20	16	28 *	40					
	[kg] <sup>not</sup>	e9)	Vertical	3	6	3	7.5	15					
			Up to 400	10 to 800	5 to 400	20 to 1500	12 to 900	6 to 500					
			401 to 500	10 to 700	5 to 360	20 to 1100	12 to 750	6 to 400					
			501 to 600	-			12 to 540	6 to 270					
	Speed	Strok	601 to 700	-	-	20 to 630	12 to 420	6 to 230					
	[mm/s	е	701 to 800	-	-	20 to 550	12 to 330	6 to 180					
	]	range	801 to 900	-	-	-	-	-					
			901 to 1000	-	-	-	-	-					
			1001 to 1100	-	-	-	-	-					
			1101 to 1200	-	-	-	-	-					
Actuator specifications	Max. accele		Horizontal			10000							
pecific	decele [mm/s <sup>2</sup>	21	Vertical	5000									
tor s	Positio		Basic type			±0.02							
Actua	repeata [mm]	ability	High precision		±0.0	15(Lead H:±0	0.02)						
_	Lost motion [mm] note3)		Basic type	0.1 or less									
			High precision			0.05 or less							
	Lead [r			10	5	20	12	6					
	[m/s <sup>2</sup> ]		ion resistance			50 / 20							
	Actuat	ion typ	е	Ball screw									
	Guide	type		Linear guide									
	Static allowab	ماد	Mep(Pitching)	10 27									
	momer		Mey(Yawing)	1	27								
	[Nm] n	ote5)	Mer(Rolling)	2	0		52						
	Operat 1°C1	ing ten	perature range			5 to 40							
	Operat [%RH]	ing hur	nidity range		90 or le	ss(No conde	nsation)						
	Motor:	size		□2	28		□42						
Electrical	Motor	type			Step n	notor(Servo 2	4VDC)						
ect	Encode	er				Incremental							
Ш		Voltage				24VDC ±10%	•						
	note8)		nption [vv]	Max.	. 102		Max. 132						
	Type no	ote7)			Non	magnetizing	lock						
ock nut		g force		20	39	47	78	157					
Š	Power	consu	nption [W] note8)	2.9 5									
		voltage				24VDC ±10%	, o						

		Mo	del		LEFS32			LEFS40						
	Stroke	[mm]	note1)		50 to 1000		150 to 1200							
	Work I		Horizontal	40	50	68	26	60 *	75					
	[kg] <sup>no</sup>	te9)	Vertical	4	12	18	4.5	4.5	25					
			Up to 400	24 to 1300	16 to 1000	8 to 520	30 to 1200	20 to 1000	10 to 500					
			401 to 500	24 to 1300	16 to 950	8 to 520	30 to 1200	20 to 1000	10 to 500					
			501 to 600	24 to 1200	16 to 800	8 to 400	30 to 1200	20 to 1000	10 to 50					
	Speed	Strok	601 to 700	24 to 930	16 to 620	8 to 310	30 to 1200	20 to 900	10 to 44					
	[mm/s	е	701 to 800	24 to 750	16 to 500	8 to 250	30 to 1140	20 to 760	10 to 35					
	]	range	801 to 900	24 to 610	16 to 410	8 to 200	30 to 930	20 to 620	10 to 28					
			901 to 1000	24 to 500	16 to 340	8 to 170	30 to 780	20 to 520	10 to 250					
			1001 to 1100	-	-	-	30 to 660	20 to 440	10 to 220					
suo			1101 to 1200	-	-	-	30 to 570	20 to 380	10 to 190					
ilicati	Max. accele	ration/	Horizontal			10	000							
sbec.	decele		Vertical 5000											
Actuator specifications	Positio	oning	Basic type	±0.02										
	repeat	ability	High precision			±0.015(Lea	ad H:±0.02)							
	Lost m		Basic type			0.1 o	r less							
	[mm] <sup>r</sup>	note3)	High precision			0.05	or less							
	Lead [	-		24	16	8	30	20	10					
	[m/s <sup>2</sup> ]	t/Vibrat note4)	ion resistance			50	/ 20							
	Actuat	ion typ	е		Ball screw									
	Guide	type		Linear guide										
	Static		Mep(Pitching)		46		110							
	allowa mome	nt	Mey(Yawing)		46		110							
	[Nm] <sup>n</sup>	ote5)	Mer(Rolling)		101		207							
	Operat	ting ten	perature range			5 to	40							
	Operat		midity range		90	or less(No	condensatio	n)						
	Motor					□5	6.4							
_	Motor	type				Step motor(S	Servo 24VDC	·)						
ectrical	Encod	er				Increr	nental							
ŭ	Rated	Voltage	e [V]			24VDC	±10%							
	Power	consu	mption [W] notes)		Max. 158			Max. 202						
	Type <sup>n</sup>	ote7)				Non magne	etizing lock							
Ē	Holdin	g force	[N]	72	108	216	75	113	225					
Š	Power	consu	mption [W] note8)		5			5	1					
	Rated	voltage	[V]	24VDC ±10%										

# 2 Specifications (continued)

Series LEFS

Motor: Battery-less absolute High performance [Step 24VDC]

		Mo		Jg pc		o [Grob =	1							
	Chualia			LEF 50 to			LEFS25 50 to 800							
			Horizontal	6	15	15	28	40						
	[kal not	e9)	Vertical	3	6	3	7.5	15						
	[ivg]	ı	Up to 400	10 to 800	5 to 400	20 to 1500	7.5 12 to 900	6 to 500						
			401 to 450	10 to 700	5 to 360	20 to 1300	12 to 900	6 to 400						
	Speed [mm/s ]  Max. acceler deceler [mm/s²]  Lost m [mm] n  Lead [r Impact. Impact. Im/s²]		451 to 500	10 to 600	5 to 300	20 to 1100	12 to 750	6 to 400						
			501 to 600	10 10 000	3 10 300	20 to 1100	12 to 540	6 to 270						
	Speed	Strok	601 to 700		-	20 to 630	12 to 420	6 to 230						
			701 to 800	_		20 to 550	12 to 330	6 to 180						
	]	range	801 to 900	-	-	20 10 550	12 10 330	0 10 100						
			901 to 1000	_		_								
	Stroke [m Work load [kg] note() Speed St. [mm/s] rar  Max. acceleratic deceleratic deceleratic deceleratic finms] Lost motic [mm] note() [mm] note() Lead [mm] mapact/Vit [m/s²] note() Actuation Guide type Static allowable moment [LM] note() Static allowable moment [LM] note() Static allowable moment [Scalar allowable moment of the content of the con		1001 to 1100	_	-	_								
m	Max. accelerated decelerated d		1101 to 1200	-		-	-	-						
mm/s   e   rank   max.   acceleratio   deceleratio   mm/s   Positioning repeatabilit   mm]   Lost motio   mm]   mpacti/Vib   m/s²   note4   Actuation t   Guide type   Statio   allowable   moment   Nm]   note5   moment   note	l		-	-		-	-							
fica	Stroke [mm] Work load [kg] note()  Speed   Strok [mm/s   range    Acceleration/ deceleration/ deceleration/ mm]   Total   mm/s   mote()   Positioning repeatability [mm]   Lead [mm]   mote()   Actuation tyl   Guide type   Static allowable   moment   mm]   mote()   Guide type   mote()   mote()   mm]   mote()	ration/	Horizontal			10000								
speci			Vertical			5000								
ator			Basic type			±0.02								
otri		ability	High precision		±0.015(Lead H:±0.02)									
•			type Posis type	0.1 or less										
			Basic type High precision											
	[mm] <sup>n</sup>	iote3)	type			0.05 or less								
				10	5	20	12	6						
			ion resistance	50 / 20										
	Actuat	ion typ	е	Ball screw(LEFS□), Ball screw+Belt(LEFS□L/R)										
		type		Linear guide										
		ala	Mep(Pitching)	1	0		27							
			Mey(Yawing)	1	0		27							
	[Nm] no	ote5)	Mer(Rolling)	2	0		52							
		-				5 to 40								
	Operat 1%BH1	ing nur	maity range		90 or le	ss(No conde	nsation)							
	Motor	size		□2 <b>2</b>	28		□42							
ical	Motor t	type			Battery-les	s absolute(S	tep 24VDC)							
ectrical	Encode	er			Batt	ery-less abso	olute							
⊞	Rated	Voltage	∋ [V]			24VDC ±10%								
	note8)		ription [vv]	Max	. 116		Max. 126							
	Type no	ote7)			Non	magnetizing	lock							
nut			[N]	20	39	47	78	157						
ock nut	Power	consu	mption [W] note8)	2.	.9		5	•						
	Rated	voltage	[V]			24VDC ±10%	,							
				·										

		Мо	del		LEFS32			LEFS40					
	Stroke				50 to 1000			150 to 1200					
	Work I		Horizontal	40	50	68	26	60	75				
	[kg] not	e9)	Vertical	4	10	18	4.5	4.5	25				
	. 51		Up to 400	24 to 1300	16 to 1000	8 to 500	30 to 1200	20 to 1000	10 to 500				
			401 to 500	24 to 1300	16 to 950	8 to 500	30 to 1200	20 to 1000	10 to 500				
			501 to 600	24 to 1200	16 to 800	8 to 400	30 to 1200	20 to 1000	10 to 500				
			601 to 700	24 to 930	16 to 620	8 to 310	30 to 1200	20 to 900	10 to 440				
	Speed [mm/s	Strok	701 to 800	24 to 750	16 to 500	8 to 250	30 to 1200	20 to 760	10 to 440				
	1	range	801 to 900	24 to 730	16 to 410	8 to 200	30 to 930	20 to 760 20 to 620	10 to 330				
	,		901 to 1000	24 to 500	16 to 340	8 to 170	30 to 780	20 to 520	10 to 250				
				24 (0 500	16 10 340	8 10 170	30 to 660						
			1001 to 1100	-	-	-		20 to 440	10 to 220				
JS	Max.		1101 to 1200	-	-	•	30 to 570	20 to 380	10 to 190				
Actuator specifications	accele		Horizontal			10	000						
pecifi	decelei [mm/s²		Vertical			50	000						
tor s	Positio repeata		Basic type			±0	.02						
Actua	[mm]		High precision			±0.015(Lea	ad H:±0.02)						
_	[mm] note3)	Basic type			0.1 o	r less							
		High precision			0.05	or less							
	Lead [r			24	16	8	30	20	10				
	[m/s <sup>2</sup> ]		ion resistance	50 / 20									
	Actuati	ion typ	е	Ball screw(LEFS□), Ball screw+Belt(LEFS□L/R)									
	Guide t	type				Linear	guide						
	Static		Mep(Pitching)		46		110						
	allowat momer		Mey(Yawing)		46			110					
	[Nm] no		Mer(Rolling)		101			207					
			perature range			5 to	40						
	Operat [%RH]		midity range		90	or less(No	condensatio	n)					
	Motor s					□5	6.4						
<u>8</u>	Motor t	ype			Batte	ry-less abso	lute(Step 24	VDC)					
Electrical	Encoder					Battery-les	s absolute						
E	Rated '					24VDC	±10%						
	note8)	consu	ription [vv]		Max. 222			Max. 222					
	Type no	ite7)				Non magn	etizing lock						
nct	Holding		[N]	72	108	216	75	113	245				
ock nut	Power	consu	mption [W] note8)		5			5					
_	Rated	voltage	[V]			24VD0	±10%						
				•	24VDC ±10%								

# 2 Specifications (continued)

note1) Please consult with SMC for non-standard strokes produced to special order. note2) Speed changes according to the work load. Check "Speed-Work Load Graph (Guide)" in the catalogue. Furthermore, if the cable length exceeds 5m, then it will decrease by up to 10% for each 5m.

note3) A reference value for correcting an error in reciprocal operation.

note4) Impact resistance: No malfunction occurred when the actuator was tested with a drop tester in both axial and perpendicular direction to the lead screw (the test was performed with the actuator in the initialized state).

Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz, when the actuator was tested in both an axial and perpendicular direction to the lead screw. (The test was performed with the actuator in the initialized state)

note5) Static allowable moment is static moment when the actuator is stopped.

When impact is applied or repeated load is applied, please use the actuator with sufficient safety.

note(6) It is max.power consumption (including the controller) when the actuator is operating. This value can be used for the power supply selection.

note7) For models including lock only.

note8) For an actuator with lock, add the power consumption for the lock.

note9) Maximum work load at 3000 mm/s² acceleration and deceleration speed. (Values with \* indicate the maximum work load at 1000 mm/s² acceleration and deceleration speed). The work load varies depending on the speed and acceleration. Check the "Speed-Work Load Graph (Guide)" in the catalogue. Furthermore, if the cable length exceeds 5 m then the speed and work load may decrease by up to 10% for each 5 m (at 15 m it is reduced by up to 20%).

#### 3 Installation

#### 3.1 Installation

# **Marning**

- Do not install the product unless the safety instructions have been read and understood.
- Do not use the product in excess of its allowable specification.
- When installing, inspecting or performing maintenance on the product, be sure to turn off the power supplies. Then, lock it so it cannot be tampered with while work is happening.

Keep the flatness of the mounting surface to 0.1 mm maximum per 500mm. Insufficient flatness of a work piece or actuator mounting surface can cause play in the guide and increased sliding resistance. In the case of overhang mounting (including cantilever), use a support plate or support guide to avoid deflection of the actuator body.

• When mounting the actuator, use all mounting holes.

If all mounting holes are not used, this will not maintain the specified performance. e.g. the amount of displacement of the table will increase.

- When mounting the actuator leave a space of 40 mm or more to allow for bending of the actuator cable.
- When mounting the actuator, use screws with adequate length and tighten them with adequate torque.

Tightening the screws with a torque higher than recommended may cause malfunction, whilst tightening with a torque lower than recommended can cause displacement of the mounting position, or the actuator could become detached from its mounting position.

#### Actuator weight

Series LEF (without Series LEFS Motor: High performance [Step 24VDC], Battery-less absolute High performance [Step 24VDC])

Model					LEF	S16													
Stroke(mm)	50	100	150	200	250	300	350	400	450	500									
Weight(kg)	0.83	0.9	0.98	1.05	1.13	1.2	1.28	1.35	1.43	1.5									
Additional weight for lock(kg)					0.	12											_		
Model								LEF	S25										
Stroke(mm)	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	]		
Weight(kg)	1.70	1.84	1.98	2.12	2.26	2.40	2.54	2.68	2.82	2.96	3.10	3.24	3.38	3.52	3.66	3.80			
Additional weight for lock(kg)								0.3	26								1		
Model											LEFS3	2							
Stroke(mm)	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950
Weight(kg)	3.15	3.35	3.55	3.75	3.95	4.15	4.35	4.55	4.75	4.95	5.15	5.35	5.55	5.75	5.95	6.15	6.35	6.55	6.75
Additional weight for lock(kg)											0.53								
Model											LEFS4								
Stroke(mm)	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1100
Weight(kg)	5.37	5.65	5.93	6.21	6.49	6.77	7.15	7.33	7.61	7.89	8.17	8.45	8.73	9.01	9.29	9.57	9.85	10.13	10.69
Additional weight for lock(kg)											0.53								
Model				LEFB16															
Stroke(mm)	300	500	600	700	800	900	1000												
Weight(kg)	1.19	1.45	1.58	1.71	1.84	1.97	2.10												
Additional weight for loc				0.12								_							
Model						LEFB25						4							
Stroke(mm)	300	500	600	700	800	900	1000	1200	1500	1800	2000	4							
Weight(kg)	2.39	2.85	3.08	3.31	3.54	3.77	4.00	4.46	5.15	5.84	6.30	4							
Additional weight for loc	_					0.26						4							
Model				_		LEFB32		_				4							
Stroke(mm)	300	500	600	700	800	900	1000	1200	1500	1800	2000	4							
Weight(kg)	4.12	4.80	5.14	5.48	5.82	6.16	6.50	7.18	8.20	9.22	9.90	4							
Additional weight for loc	1					0.53													

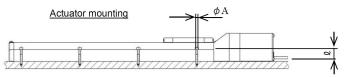
Series LEFS Motor: High performance [Step 24VDC],
Battery-less absolute High performance [Step 24VDC]



# **Marning**

For special products, which include a suffix of "-X#", "-D#", then please refer to the customer drawing of that specific product.

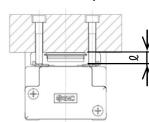
### **Actuator Mounting**



Model	Screw size	Max. tightening torque [N • m]	Ø A [mm]	L [mm]
LEF□16	M3	0.6	3.5	20
LEF□25	M4	1.5	4.5	24
LEF□32	M5	3.0	5.5	30
LEF□40	M6	5.2	6.6	31

#### **Work piece Mounting**

• In order to prevent the work piece fixing screws from damaging the table, use screws at least 0.5 mm shorter than the maximum thread depth. Longer screws can hit the body and cause operation failure.



Model	Screw size	Max. tightening torque [N · m]	L Max. thread depth[mm]
LEF□16	M4 x 0.7	1.5	6
LEF□25	M5 x 0.8	3.0	8
LEF□32	M6 x 1.0	5.2	9
LEF□40	M8 x 1.25	12.5	14

# 3 Installation (continued)

#### 3.2 Environment

#### **Marning**

- Do not use in an environment where corrosive gases, chemicals, salt water or steam are present.
- Do not use in an explosive atmosphere.
- Do not expose to direct sunlight. Use a suitable protective cover.
- Do not install in a location subject to vibration or impact in excess of the product's specifications.
- Do not mount in a location exposed to radiant heat that would result in temperatures in excess of the product's specifications.
- Prevent foreign particles from entering the product.

#### 3.3 Mounting

#### **M** Warning

- Observe the required tightening torque for screws.
- Unless stated otherwise, tighten the screws to the recommended torque for mounting the product.
- Do not make any alterations to the product.
- Alterations made to this product may lead to a loss of durability and damage to the product, which can lead to injury and damage to other equipment and machinery.
- Do not scratch or dent the sliding parts of the table or mounting face etc., by striking or holding them with other objects. The components are manufactured to precise tolerances, so that even a slight deformation may cause faulty operation or seizure.
- Do not use the product until it has been verified that the equipment can be operated correctly.
- After mounting or repair, connect the power supply to the product and perform appropriate functional inspections to check it is mounted correctly.
- Do not use the product until it has been verified that the equipment can be operated correctly.
- After mounting or repair, connect the power supply to the product and perform appropriate functional inspections to check it is mounted correctly.
- Allow sufficient space for maintenance and inspection.

# 3.4 Lubrication

# **↑** Caution

- SMC products have been lubricated for life at manufacture, and do not require lubrication in service.
- If a lubricant is used in the system, refer to catalogue for details.
- The recommended grease is lithium grade No.2

Applied Region	Grease Pack Number	Weight [g]
Ball screw	GR-S-010	10
Guide Dust seal band	GR-S-020	20

• For standard products which include a prefix of "25A-",the

econfinenced grease is the low condensation grease.				
Applied Region	Grease Pack Number	Weight [g]		
Ball screw Guide Dust seal band	GR-D-010	10		

#### 3 Installation (continued)

#### 3.5 Wirng

#### **A** Warning

- Adjustment, mounting or wiring changes should not be carried out before disconnecting the power supply to the product.
   Electric shock, malfunction and damage can result.
- Do not disassemble the cables.
- Use only specified cables.
- Use only specified cables otherwise there may be risk of fire and damage.
- Do not connect or disconnect the wires, cables and connectors when the power is turned on.

#### ▲ Caution

- Wire the connector correctly and securely.
- Check the connector for polarity and do not apply any voltage to the terminals other than those specified in the Operation Manual.
- Take appropriate measures against noise.
- Noise in a signal line may cause malfunction. As a countermeasure separate the high voltage and low voltage cables, and shorten the wiring lengths, etc.
- Do not route input/output wires and cables together with power or high voltage cables.
- The product can malfunction due to noise interference and surge voltage from power and high voltage cables close to the signal line. Route the wires of the product separately from power or high voltage cables.
- Take care that actuator movement does not catch cables.
- Operate with all wires and cables secured.
- Avoid bending cables at sharp angles where they enter the product.
- Avoid twisting, folding, rotating or applying an external force to the cable
- Risk of electric shock, wire breakage, contact failure and loss of control of the product can result.
- Select "Robotic cables" in applications where cables are moving repeatedly (encoder/ motor/ lock).

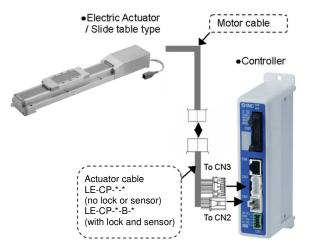
Refer to the relevant operation manual for the bending life of the cable.

- · Confirm correct insulation.
- Poor insulation of wires, cables, connectors, terminals etc. can cause interference with other circuits. Also there is the possibility that excessive voltage or current may be applied to the product causing damage.
- Refer to the auto switch references in "Best Pneumatics" when an auto switch is to be used

#### 3.6 Actuator Ground connection

 The Actuator must be connected to ground to shield the actuator from electrical noise. The screw and cable with crimping terminal and toothed washer should be prepared separately by the user.

#### Wiring of Actuator to Controller



#### 4 How to Order

 For standard products, refer to the catalogue on the SMC website (URL: <a href="https://www.smcworld.com">https://www.smcworld.com</a>) for the how to order information.

#### **5 Outline Dimensions**

• For standard products, refer to the catalogue on the SMC website (URL: https://www.smcworld.com) for outline dimensions.

# **6 Maintenance**

#### 6.1 General Maintenance

# ↑ Caution

- Not following proper maintenance procedures could cause the product to malfunction and lead to equipment damage.
- If handled improperly electricity and compressed air can be dangerous.
- Maintenance of electromechanical and pneumatic systems should be performed only by qualified personnel.
- Before performing maintenance, turn off the power supply and be sure to cut off the supply pressure. Confirm that the power has been discharged and the air is released to atmosphere.
- After installation and maintenance, apply operating pressure and power to the equipment and perform appropriate functional and leakage tests to make sure the equipment is installed correctly.
- If any electrical or pneumatic connections are disturbed during maintenance, ensure they are reconnected correctly and safety checks are carried out as required to ensure continued compliance with applicable national regulations.
- Do not make any modification to the product.
- Do not disassemble the product, unless required by installation or maintenance instructions.
- Incorrect handling can cause an injury, damage or malfunction of the equipment and machinery, so ensure that the procedure for the task is followed.
- Always allow sufficient space around the product to complete any maintenance and inspection.

#### 6.2 Periodical Maintenance

• Maintenance should be performed according to the table below:

	Appearance Check	Belt Check
Inspection before daily operation	✓	
Inspection every six months*	✓	✓
Inspection every 1000 km*	✓	✓
Inspection every 5 million cycles*	✓	✓

\*whichever of these occurs first.

 Following any maintenance, always perform a system check. Do not use the product if any error occurs, as safety cannot be assured if caused by any un-intentional malfunction.

#### 6.3 Appearance Check

- The following items should be visually monitored to ensure that the actuator remains in good condition and there are no concerns flagged;
  - · Loose Screws
  - · Abnormal level of dust or dirt.
  - · Visual flaws / faults,
  - · Cable connections,
  - Abnormal noises or vibrations.

#### 6 Maintenance (continued)

#### 6.4 Belt Check

- If one of the 6 conditions below are seen, do not continue operating the actuator, contact SMC immediately.
- · Tooth shaped canvas is worn out.

Canvas fibre becomes "fuzzy", rubber is removed, and the fibre gains a white colour. The lines of fibre become very unclear.

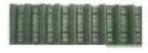


· Peeling off or wearing of the side of the belt.

The corner of the belt becomes round and frayed, with threads beginning to stick out.

#### Belt is partially cut.

Belt is partially cut. Foreign matter could be caught in the teeth and cause flaws.



· Vertical line of belt teeth.

Flaw which is made when the belt runs on the flange.

- · Rubber back of the belt is softened and sticky.
- · Crack on the back of the belt.





## 7 Limitations of Use

- 7.1 Limited warranty and disclaimer/compliance requirements
- Refer to Handling Precautions for SMC Products.

# 8 Product disposal

This product should not be disposed of as municipal waste. Check your local regulations and guidelines to dispose of this product correctly, in order to reduce the impact on human health and the environment.

#### **Contacts**

Refer to www.smcworld.com or www.smc.eu for your local distributor / importer.

# **SMC** Corporation

URL: http://www.smcworld.com (Global) http://www.smceu.com (Europe) 'SMC Corporation, 4-14-1, Sotokanda, Chiyoda-ku, Tokyo 101-0021, Japan Specifications are subject to change without prior notice from the manufacturer. © 2021 SMC Corporation All Rights Reserved.

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