LEF#-TF2Y013EN-A

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

⚠ Warning

- **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]

Model					LEFS16		LEFS25		
Actuator specifications	Stroke [mm] note1)				50 to 500		50 to 800		
	Work load [kg] note2)	Horizontal	LECP1 JXCE□1		14	15	12	25	30
			LECPA/JXC□2 3		9	10	10	20	20
		Vertical			2	4	0.5	7.5	15
	Controller type: LECP1 JXCE□1	Speed [mm/s] note2)	Stroke range	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
				601 to 700	-	-	20 to 630	12 to 420	6 to 230
				701 to 800	-	-	20 to 550	12 to 330	6 to 180
				801 to 900	-	-	-	-	-
				901 to 1000	-	-	-	-	-
				1001 to 1100	-	-	-	-	-
				1101 to 1200	-	-	-	-	-
	Driver type LECPA JXC□2 3	Speed [mm/s] note2)	Stroke range	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
				601 to 700	-	-	20 to 630	12 to 420	6 to 230
				701 to 800	-	-	20 to 550	12 to 330	6 to 180
				801 to 900	-	-	-	-	-
				901 to 1000	-	-	-	-	-
				1001 to 1100	-	-	-	-	-
				1101 to 1200	-	-	-	-	-
	Max.acceleration/deceleration [mm/s2]				3000				
	Positioning repeeatability [mm]			Basic type	±0.02				
				High precision type	±0.015(Lead H:±0.02)				
	Lost motion[mm] note3)			Basic type	0.1or less				
				High precision type	0.05or less				
	lead [mm]				10	5	20	12	6
	Impact/Vibration resistanc [m/s2] note4)				50 / 20				
	Actuation type				Ball screw(LEFS□), Ball screw+Belt(LEFS□L/R)				
	Guide type				Linear Guide				
	Static allowable momnet [Nm] note5)		Mep(Pitching)		10		27		
			Mey(Yawing)		10		27		
			Mer(Rolling)		20		52		
	Operating temperature range [℃]				5 to 40				
	Operating humidity range [%RH]				90 or less(No condensation)				
Electrical	Motor size				□28		□42		
	Motor type				Step motor(Servo 24V DC)				
	Encoder				Incremental				
	Rated voltage [V]				24 VDC±10%				
	Power consumption [W] note6) note8)				Max. 51		Max. 57		
Lock unit	Type note7)				Non-magnetizing lock				
	Holding force [N]				20	39	47	78	157
	Power consumption [W] note8)				2.9		5		
	Rated voltage [V]				24 VDC±10%				

Model					LEFS32			LEFS40		
Actuator specifications	Stroke [mm] note1)				50 to 1000			150 to 1200		
	Work load [kg] note2)	Horizontal	LECP1 JXCE□1		20	45	50	25	55	65
			LECPA/JXC□2 3		15	40	45	20	50	60
		Vertical			4	10	20	2	2	23
	Controller type: LECP1 JXCE□1	Speed [mm/s] note2)	Stroke range	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
				601 to 700	24 to 930	16 to 620	8 to 310	30 to 1200	20 to 900	10 to 300
				701 to 800	24 to 750	16 to 500	8 to 250	30 to 1140	20 to 760	10 to 300
				801 to 900	24 to 610	16 to 410	8 to 200	30 to 930	20 to 620	10 to 300
				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
				1101 to 1200	-	-	-	30 to 570	20 to 380	10 to 190
	Driver type LECPA JXC□2 3	Speed [mm/s] note2)	Stroke range	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
				601 to 700	24 to 930	16 to 500	8 to 250	30 to 500	20 to 500	10 to 250
				701 to 800	24 to 750	16 to 500	8 to 250	30 to 500	20 to 500	10 to 250
				801 to 900	24 to 610	16 to 410	8 to 200	30 to 500	20 to 500	10 to 250
				901 to 1000	24 to 500	16 to 340	8 to 170	30 to 500	20 to 500	10 to 250
				1001 to 1100	-	-	-	30 to 500	20 to 440	10 to 220
				1101 to 1200	-	-	-	30 to 500	20 to 380	10 to 190
	Max.acceleration/deceleration [mm/s2]				3000					
	Positioning repeeatability [mm]			Basic type	±0.02					
				High precision type	±0.015(Lead H:±0.02)					
	Lost motion[mm] note3)			Basic type	0.1or less					
				High precision type	0.05or less					
	lead [mm]				24	16	8	30	20	10
	Impact/Vibration resistanc [m/s2] note4)				50 / 20					
	Actuation type				Ball screw(LEFS□), Ball screw+Belt(LEFS□L/R)					
	Guide type				Linear Guide					
	Static allowable moment [Nm] note5)		Mep(Pitching)		46			110		
			Mey(Yawing)		46			110		
			Mer(Rolling)		101			207		
	Operating temperature range [℃]				5 to 40					
	Operating humidity range [%RH]				90 or less(No condensation)					
Electrical	Motor size				□56.4					
	Motor type				Step motor(Servo 24V DC)					
	Encoder				Incremental					
	Rated voltage [V]				24 VDC±10%					
	Power consumption [W] note6) note8)				Max. 123			Max. 141		
Lock unit	Type note7)				Non-magnetizing lock					
	Holding force [N]				72	108	216	75	113	225
	Power consumption [W] note8)				5			5		
	Rated voltage [V]				24 VDC±10%					

2 Specifications (continued)

Series LEFB Motor: Step [servo 24VDC]

Model				LEFB16	LEFB25	LEFB32
Actuator specifications	Stroke [mm] note1)			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 [kg] note2)	Horizontal	LECP1 JXC□1	1	10	19
			LECPA/JXC□23	1	5	14
	Speed [mm/s] note2)			48 to 1100	48 to 1400	48 to 1500
	Max.acceleration/deceleration [mm/s2]			3000		
	Positioning repeeatability [mm]			±0.08		
	Lost motion[mm] note3)			0.1 or less		
	Equivalent lead [mm]			48	48	48
	Impact/Vibration resistanc [m/s2] note4)			50 / 20		
	Actuation type			Belt		
	Guide type			Linear Guide		
	Static allowable moment [Nm] note5)		Mep(Pitching)	10	27	46
			Mey(Yawing)	10	27	46
			Mer(Rolling)	20	52	101
	Operating temperature range [℃]			5 to 40		
	Operating humidity range [%RH]			90 or less(No condensation)		
Electrical	Motor size			□28	□42	□56.4
	Motor type			Step motor(Servo 24V DC)		
	Encoder			Incremental		
	Rated voltage [V]			24VDC±10%		
	Power consumption [W] note6) note8)			Max. 51	Max. 60	Max. 127
Lock unit	Type note7)			Non-magnetizing lock		
	Holding force [N]			4	19	36
	Power consumption [W] note8)			2.9	5	5
	Rated voltage [V]			24VDC±10%		

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

Model					LEFS16		LEFS25		
Actuator specifications	Stroke [mm] note1)				50～500		50～800		
	Work load [kg] note2)	Horizontal			14	15	12	25	30
		Vertical			2	4	0.5	7.5	15
	Speed [mm/s] note2)	In-line	Stroke range	～500	10～700	5～360	20～1100	12～750	6～400
				501～600	-	-	20～900	12～540	6～270
				601～700	-	-	20～630	12～420	6～230
				701～800	-	-	20～550	12～330	6～180
				801～900	-	-	-	-	-
				901～1000	-	-	-	-	-
				1001～1100	-	-	-	-	-
				1101～1200	-	-	-	-	-
		Parallel	Stroke range	～500	10～700	5～360	20～900	12～600	6～300
				501～600	-	-	20～900	12～540	6～270
				601～700	-	-	20～630	12～420	6～230
				701～800	-	-	20～550	12～330	6～180
				801～900	-	-	-	-	-
				901～1000	-	-	-	-	-
				1001～1100	-	-	-	-	-
				1101～1200	-	-	-	-	-
	Max.acceleration/deceleration [mm/s2]				3000				
	Positioning repeeatability [mm]			Basic type	±0.02				
				High precision type	±0.015(Lead H:±0.02)				
	Lost motion[mm] note3)			Basic type	0.1or less				
				High precision type	0.05or less				
	lead [mm]				10	5	20	12	6
	Impact/Vibration resistanc [m/s2] note4)				50 / 20				
	Actuation type				Ball screw(LEFS□), Ball screw+Belt(LEFS□L/R)				
	Guide type				Linear Guide				
	Static allowable moment [Nm] note5)		Mep(Pitching)		10		27		
			Mey(Yawing)		10		27		
			Mer(Rolling)		20		52		
	Operating temperature range [℃]				5 to 40				
	Operating humidity range [%RH]				90 or less(No condensation)				
Electrical	Motor size				□28		□42		
	Motor type				Battery-less absolute(Step 24VDC)				
	Encoder				Battery-less absolute				
	Rated voltage [V]				24 VDC±10%				
	Power consumption [W] note6) note8)				Max. 51		Max. 57		
Lock unit	Type note7)				Non-magnetizing lock				
	Holding force [N]				20	39	47	78	157
	Power consumption [W] note8)				2.9		5		
	Rated voltage [V]				24 VDC±10%				

2 Specifications (continued)

Model					LEFS32			LEFS40		
Actuator specifications	Stroke [mm] note1)				50～1000			150～1200		
	Work load [kg] note2)	Horizontal			20	45	50	25	55	65
		Vertical			4	10	20	2	2	23
	Speed [mm/s] note2)	In-line	Stroke range	～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
				701～800	24～750	16～500	8～250	30～1140	20～760	10～300
				801～900	24～610	16～410	8～200	30～930	20～620	10～300
				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
		Parallel	Stroke range	～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
				601～700	24～800	16～620	8～310	30～750	20～550	10～300
				701～800	24～750	16～500	8～250	30～750	20～550	10～300
				801～900	24～610	16～410	8～200	30～750	20～550	10～300
				901～1000	24～500	16～340	8～170	30～750	20～520	10～250
				1001～1100	-	-	-	30～660	20～440	10～220
				1011～1200	-	-	-	30～570	20～380	10～190
	Max.acceleration/deceleration [mm/s2]				3000					
	Positioning repeeatability [mm]			Basic type	±0.02					
				High precision type	±0.015(Lead H:±0.02)					
	Lost motion[mm] note3)			Basic type	0.1or less					
				High precision type	0.05or less					
	lead [mm]				24	16	8	30	20	10
	Impact/Vibration resistanc [m/s2] note4)				50 / 20					
	Actuation type				Ball screw(LEFS□), Ball screw+Belt(LEFS□L/R)					
	Guide type				Linear Guide					
	Static allowable moment [Nm] note5)		Mep(Pitching)		46			110		
			Mey(Yawing)		46			110		
			Mer(Rolling)		101			207		
	Operating temperature range [℃]				5 to 40					
	Operating humidity range [%RH]				90 or less(No condensation)					
Electrical	Motor size				□56.4					
	Motor type				Battery-less absolute(Step 24VDC)					
	Encoder				Battery-less absolute					
	Rated voltage [V]				24 VDC±10%					
	Power consumption [W] note6) note8)				Max. 123			Max. 141		
Lock unit	Type note7)				Non-magnetizing lock					
	Holding force [N]				72	108	216	75	113	225
	Power consumption [W] note8)				5			5		
	Rated voltage [V]				24 VDC±10%					

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

Model				LEFB16	LEFB25	LEFB32
Actuator specifications	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
	Max.acceleration/deceleration [mm/s2]			3000		
	Positioning repeeatability [mm]			±0.08		
	Lost motion[mm] note3)			0.1 or less		
	Equivalent lead [mm]			48	48	48
	Impact/Vibration resistanc [m/s2] note4)			50 / 20		
	Actuation type			Belt		
	Guide type			Linear Guide		
	Static allowable moment [Nm] note5)		Mep(Pitching)	10	27	46
			Mey(Yawing)	10	27	46
			Mer(Rolling)	20	52	101
	Operating temperature range [℃]			5 to 40		
	Operating humidity range [%RH]			90 or less(No condensation)		
Electrical	Motor size			□28	□42	□56.4
	Motor type			Battery-less absolute(Step 24VDC)		
	Encoder			Battery-less absolute		
	Rated voltage [V]			24VDC±10%		
	Power consumption [W] note6) note8)			Max. 51	Max. 60	Max. 127
Lock unit	Type note7)			Non-magnetizing lock		
	Holding force [N]			4	19	36
	Power consumption [W] note8)			2.9	5	5
	Rated voltage [V]			24VDC±10%		

2 Specifications (continued)

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

Model			LEFS16		LEFS25		
Actuator specifications	Stroke [mm] note1)		50 to 500		50 to 800		
	Work load [kg] note9)	Horizontal	14	20	16	28 *	40
		Vertical	3	6	3	7.5	15
	Speed [mm/s] / Stroke range	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	-	-	20 to 900	12 to 540	6 to 270
		601 to 700	-	-	20 to 630	12 to 420	6 to 230
		701 to 800	-	-	20 to 550	12 to 330	6 to 180
		801 to 900	-	-	-	-	-
		901 to 1000	-	-	-	-	-
		1001 to 1100	-	-	-	-	-
		1101 to 1200	-	-	-	-	-
	Max. acceleration/ deceleration [mm/s^2]	Horizontal	10000				
		Vertical	5000				
	Positioning repeatability [mm]	Basic type	±0.02				
		High precision	±0.015(Lead H:±0.02)				
	Lost motion [mm] note3)	Basic type	0.1 or less				
		High precision	0.05 or less				
	Lead [mm]		10	5	20	12	6
	Impact/Vibration resistance [m/s^2] note4)		50 / 20				
	Actuation type		Ball screw				
	Guide type		Linear guide				
	Static allowable moment [Nm] note5)	Mep(Pitching)	10		27		
		Mey(Yawing)	10		27		
		Mer(Rolling)	20		52		
	Operating temperature range [°C]		5 to 40				
	Operating humidity range [%RH]		90 or less(No condensation)				
Electrical	Motor size		□28		□42		
	Motor type		Step motor(Servo 24VDC)				
	Encoder		Incremental				
	Rated Voltage [V]		24VDC ±10%				
	Power consumption [W] note6) note8)		Max. 102		Max. 132		
Lock nut	Type note7)		Non magnetizing lock				
	Holding force [N]		20	39	47	78	157
	Power consumption [W] note8)		2.9		5		
	Rated voltage [V]		24VDC ±10%				

Model			LEFS32			LEFS40		
Actuator specifications	Stroke [mm] note1)		50 to 1000			150 to 1200		
	Work load [kg] note9)	Horizontal	40	50	68	26	60 *	75
		Vertical	4	12	18	4.5	4.5	25
	Speed [mm/s] / Stroke range	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 500
		601 to 700	24 to 930	16 to 620	8 to 310	30 to 1200	20 to 900	10 to 440
		701 to 800	24 to 750	16 to 500	8 to 250	30 to 1140	20 to 760	10 to 350
		801 to 900	24 to 610	16 to 410	8 to 200	30 to 930	20 to 620	10 to 280
		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
		1101 to 1200	-	-	-	30 to 570	20 to 380	10 to 190
	Max. acceleration/ deceleration [mm/s^2]	Horizontal	10000					
		Vertical	5000					
	Positioning repeatability [mm]	Basic type	±0.02					
		High precision	±0.015(Lead H:±0.02)					
	Lost motion [mm] note3)	Basic type	0.1 or less					
		High precision	0.05 or less					
	Lead [mm]		24	16	8	30	20	10
	Impact/Vibration resistance [m/s^2] note4)		50 / 20					
	Actuation type		Ball screw					
	Guide type		Linear guide					
	Static allowable moment [Nm] note5)	Mep(Pitching)	46			110		
		Mey(Yawing)	46			110		
		Mer(Rolling)	101			207		
	Operating temperature range [°C]		5 to 40					
	Operating humidity range [%RH]		90 or less(No condensation)					
Electrical	Motor size		□56.4					
	Motor type		Step motor(Servo 24VDC)					
	Encoder		Incremental					
	Rated Voltage [V]		24VDC ±10%					
	Power consumption [W] note6) note8)		Max. 158			Max. 202		
Lock nut	Type note7)		Non magnetizing lock					
	Holding force [N]		72	108	216	75	113	225
	Power consumption [W] note8)		5			5		
	Rated voltage [V]		24VDC ±10%					

2 Specifications (continued)

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

Model			LEFS16		LEFS25		
Actuator specifications	Stroke [mm] note1)		50 to 500		50 to 800		
	Work load [kg] note9)	Horizontal	6	15	15	28	40
		Vertical	3	6	3	7.5	15
	Speed [mm/s] / Stroke range	Up to 400	10 to 800	5 to 400	20 to 1500	12 to 900	6 to 500
		401 to 450	10 to 700	5 to 360	20 to 1100	12 to 750	6 to 400
		451 to 500	10 to 600	5 to 300	20 to 1100	12 to 750	6 to 400
		501 to 600	-	-	20 to 900	12 to 540	6 to 270
		601 to 700	-	-	20 to 630	12 to 420	6 to 230
		701 to 800	-	-	20 to 550	12 to 330	6 to 180
		801 to 900	-	-	-	-	-
		901 to 1000	-	-	-	-	-
		1001 to 1100	-	-	-	-	-
		1101 to 1200	-	-	-	-	-
	Max. acceleration/ deceleration [mm/s^2]	Horizontal	10000				
		Vertical	5000				
	Positioning repeatability [mm]	Basic type	±0.02				
		High precision type	±0.015(Lead H:±0.02)				
	Lost motion [mm] note3)	Basic type	0.1 or less				
		High precision type	0.05 or less				
	Lead [mm]		10	5	20	12	6
	Impact/Vibration resistance [m/s^2] note4)		50 / 20				
	Actuation type		Ball screw(LEFS□), Ball screw+Belt(LEFS□L/R)				
	Guide type		Linear guide				
	Static allowable moment [Nm] note5)	Mep(Pitching)	10		27		
		Mey(Yawing)	10		27		
		Mer(Rolling)	20		52		
	Operating temperature range [°C]		5 to 40				
	Operating humidity range [%RH]		90 or less(No condensation)				
Electrical	Motor size		□28		□42		
	Motor type		Battery-less absolute(Step 24VDC)				
	Encoder		Battery-less absolute				
	Rated Voltage [V]		24VDC ±10%				
	Power consumption [W] note6) note8)		Max. 116		Max. 126		
Lock nut	Type note7)		Non magnetizing lock				
	Holding force [N]		20	39	47	78	157
	Power consumption [W] note8)		2.9		5		
	Rated voltage [V]		24VDC ±10%				

Model			LEFS32			LEFS40		
Actuator specifications	Stroke [mm] note1)		50 to 1000			150 to 1200		
	Work load [kg] note9)	Horizontal	40	50	68	26	60	75
		Vertical	4	10	18	4.5	4.5	25
	Speed [mm/s] / Stroke range	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
		701 to 800	24 to 750	16 to 500	8 to 250	30 to 1140	20 to 760	10 to 350
		801 to 900	24 to 610	16 to 410	8 to 200	30 to 930	20 to 620	10 to 280
		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
		1101 to 1200	-	-	-	30 to 570	20 to 380	10 to 190
	Max. acceleration/ deceleration [mm/s^2]	Horizontal	10000					
		Vertical	5000					
	Positioning repeatability [mm]	Basic type	±0.02					
		High precision	±0.015(Lead H:±0.02)					
	Lost motion [mm] note3)	Basic type	0.1 or less					
		High precision	0.05 or less					
	Lead [mm]		24	16	8	30	20	10
	Impact/Vibration resistance [m/s^2] note4)		50 / 20					
	Actuation type		Ball screw(LEFS□), Ball screw+Belt(LEFS□L/R)					
	Guide type		Linear guide					
	Static allowable moment [Nm] note5)	Mep(Pitching)	46			110		
		Mey(Yawing)	46			110		
		Mer(Rolling)	101			207		
	Operating temperature range [°C]		5 to 40					
	Operating humidity range [%RH]		90 or less(No condensation)					
Electrical	Motor size		□56.4					
	Motor type		Battery-less absolute(Step 24VDC)					
	Encoder		Battery-less absolute					
	Rated Voltage [V]		24VDC ±10%					
	Power consumption [W] note6) note8)		Max. 222			Max. 222		
Lock nut	Type note7)		Non magnetizing lock					
	Holding force [N]		72	108	216	75	113	245
	Power consumption [W] note8)		5			5		
	Rated voltage [V]		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.
note6) 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/s^2 acceleration and deceleration speed. (Values with * indicate the maximum work load at 1000 mm/s^2 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%).

Actuator weight

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

Model	LEFS16									
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	LEFS25												
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]	0.26															

Model	LEFS32																			
Stroke[mm]	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
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	6.95
Additional weight for lock[kg]	0.53																			

Model	LEFS40																			
Stroke[mm]	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1100	1200
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	11.25
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 lock[kg]	0.12						

Model	LEFB25									
Stroke[mm]	300	500	600	700	800	900	1000	1200	1500	1800	2000
Weight[kg]	2.39	2.85	3.08	3.31	3.54	3.77	4.00	4.46	5.15	5.84	6.30
Additional weight for lock[kg]	0.26										

Model	LEFB32									
Stroke[mm]	300	500	600	700	800	900	1000	1200	1500	1800	2000
Weight[kg]	4.12	4.80	5.14	5.48	5.82	6.16	6.50	7.18	8.20	9.22	9.90
Additional weight for lock[kg]	0.53										

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

Model	LEFS16									
Stroke[mm]	50	100	150	200	250	300	350	400	450	500
Weight[kg]	0.85	0.92	1	1.07	1.15	1.22	1.3	1.37	1.45	1.52
Additional weight for lock[kg]	0.12									

Model	LEFS25																			
Stroke[mm]	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
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]	0.26																			

Model	LEFS32																			
Stroke[mm]	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
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	6.95
Additional weight for lock[kg]	0.53																			

Model	LEFS40																			
Stroke[mm]	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1100	1200
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	11.25
Additional weight for lock[kg]	0.53																			

Warning

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

3 Installation

3.1 Installation

Warning

- 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.

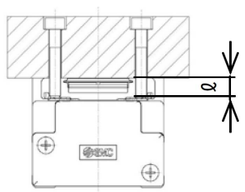
Actuator Mounting

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

⚠ Warning

- 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

⚠ 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 Guide Dust seal band	GR-S-010	10
	GR-S-020	20

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

⚠ 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.

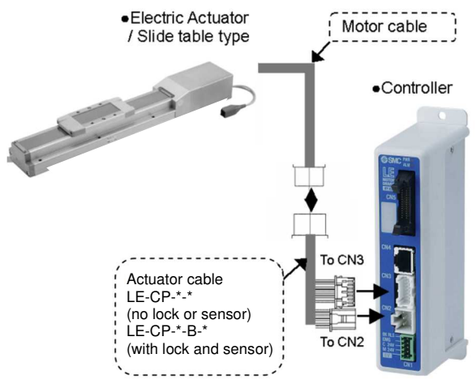
⚠ Caution

- 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: https://www.smcworld.com) 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.

9 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)
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