Installation and Maintenance Manual

Electric Gripper

Series LEH

Applicable model number:
LEHZ(J)*K2-*
LEHF*K2-*
LEHS*K3-*

Note: For special models LEH*-X* please check the appropriate drawing for the dimensions and specifications.

1 Safety Instructions

This manual contains essential information for the protection of users and others from possible injury and/or equipment damage.

- Read this manual before using the product to ensure correct handling and also read the manuals of related apparatus before use.
- Keep this manual in a safe place for future reference.
- These instructions indicate the level of potential hazard by label of “Caution”, “Warning” or “Danger”, followed by important safety information which must be carefully followed.
- To ensure safety of personnel and equipment the safety instructions in this manual and the product catalogue must be observed, along with other relevant safety practices.

⚠ **Caution**	Indicates a hazard with a low level of risk. Which if not avoided, could result in minor or moderate injury.
⚠ **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.

- Electromagnetic compatibility: This product is class A equipment that is intended for use in an industrial environment. There may be potential difficulties in ensuring electromagnetic compatibility in other environments due to conducted as well as radiated disturbances.

⚠ Warning

- **Do not disassemble, modify (including change of printed circuit board) or repair the product.**
  An injury or product failure may result.
- **Do not operate the product beyond the specification range.**
  Fire, malfunction or equipment damage may result.
  Use the product only after confirming the specifications.
- **Do not use the product in the presence of flammable, explosive or corrosive gas.**
  Fire, explosion or corrosion may result.
  This product does not have an explosion proof construction.
- **When using the product as part of an interlocking system:**
  Provide a double interlocking system, for example a mechanical system.
  Check the product regularly to ensure correct operation.
- **Before performing maintenance, be sure of the following:**
  Turn off the power supply.

⚠ Caution

- **Always perform a system check after maintenance.**
  Do not use the product if any error occurs.
  Safety cannot be assured if caused by un-intentional malfunction.
- **Provide grounding to ensure correct operation and to improve noise resistance of the product.**
  This product should be individually grounded using a short cable.
- **Follow the instructions given below when handling the product.**
  Failing to do so may result in product damage.
- **Maintenance space should always be provided around the product.**
- **Do not remove labels from the product.**
- **Do not drop, hit or apply excessive shock to the product.**
- **Unless stated otherwise, follow all specified tightening torques.**
- **Do not bend, apply tensile force, or apply force by placing heavy loads on the cables.**

1 Safety Instructions (continued)

- **Connect wires and cables correctly and do not connect while the power is turned on.**
- **Do not route input/output wires and cables together with power or high-voltage cables.**
- **Check the insulation of wires and cables.**
- **Take appropriate measures against noise, such as noise filters, when the product is incorporated into other equipment or devices.**
- **Take sufficient shielding measures when the product is to be used in the following conditions:**
  • Where noise due to static electricity is generated.
  • Where electro-magnetic field strength is high.
  • Where radioactivity is present.
  • Where power lines are located.
- **Do not use the product in a place where electrical surges are generated.**
- **Use suitable surge protection when a surge generating load such as a solenoid valve is to be directly driven.**
- **Prevent any foreign matter from entering this product.**
- **Do not expose the product to vibration or impact.**
- **Use the product within the specified ambient temperature range.**
- **Do not expose the product to any heat radiation.**
- **Use a precision screwdriver with flat blade to adjust the DIP switch.**
- **Close the cover over the switches before power is turned on.**
  Do not clean the product with chemicals such as benzene or thinners.

2 General Instructions

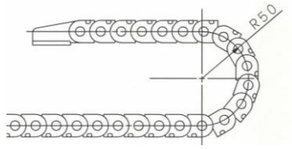
2.1 Wiring

⚠ Warning

- **Adjusting, mounting or wiring change should not be done before disconnecting the power supply to the product.**
  Electrical shock, malfunction and damage can result.
- **Do not disassemble the cables.**
- **Use only specified cables.**
- **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 interference of noise and surge voltage from power and high voltage cables 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 happen.
- **Fix the motor cables protruding from the actuator in place before use.**
  The motor and lock cables are not robotic type cables and can be damaged when moved.
- **The actuator cables connecting the actuator and the controller are robotic type cables. But should not be placed in a flexible moving tube with a radius smaller than the specified value. (Min. 50 mm)**



2 General Instructions (continued)

- **Confirm correct insulation of the product.**
  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.

2.2 Transportation

⚠ Caution

- **Do not carry or swing the product by the cables.**
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2.3 Mounting

⚠ Warning

- **Observe the tightening torque for screws.**
  Unless stated otherwise, tighten the screws to the recommended torque for mounting the product.
- **Do not make any alterations to this product.**
  Alterations made to this product may lead to a loss of durability and damage to the product, which can lead to human injury and damage to other equipment and machinery.
- **When an external guide is used, connect the moving parts of the product and the load in such a way that there is no interference at any point within the stroke.**
  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 you verify 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.
- **When attaching to the work piece, do not apply strong impact or large moment.**
- **If an external force over the allowable moment is applied, it may cause looseness in the guide unit, an increase in sliding resistance or other problems.**
- **Maintenance space**
  Allow sufficient space for maintenance and inspection.

2.4 Handling

⚠ Warning

- **Do not touch the motor while in operation.**
  The surface temperature of the motor can increase to approx. 80°C due to operating conditions.
  Energizing alone may also cause this temperature increase.
  As it may cause burns, do not touch the motor when in operation.
- **If abnormal heating, smoking or fire, etc. occurs in the product, immediately turn off the power supply.**
- **Immediately stop operation if abnormal operation noise or vibration occurs.**
  If abnormal operation noise or vibration occurs, the product may have been mounted incorrectly. Unless operation of the product is stopped for inspection, the product can be seriously damaged.
- **Never touch the rotating part of the motor or the moving part of the actuator while in operation.**
  There is a serious risk of injury.
- **When installing, adjusting, inspecting or performing maintenance on the product, controller and related equipment, be sure to turn off the power supply to each of them. Then, lock it so that no one other than the person working can turn the power on, or implement measures such as a safety plug.**
- **In the case of the actuator that has a servo motor (24VDC), the “motor phase detection step" is done by inputting the servo on signal just after the controller power is turned on.**
  The “motor phase detection step” operates the table/rod to the maximum distance of the lead screw. (The motor rotates in the reverse direction if the table hits an obstacle such as the end stop damper.) Take the “motor phase detection step” into consideration for the installation and operation of this actuator

2 General Instructions (continued)

⚠ Caution

- **Keep the controller and product combined as delivered for use.**
  The product is set in parameters for shipment.
  If it is combined with a different product parameter, failure can result.
- **Check the product for the following points before operation.**
  • Damage to electric driving line and signal lines.
  • Looseness of the connector to each power line and signal line.
  • Looseness of the actuator/cylinder and controller/driver mounting.
  • Abnormal operation.
  • Stop function
- **When more than one person is performing work, decide on the procedures, signals, measures and resolution for abnormal conditions before beginning the work.**
- **Also designate a person to supervise the work, other than those performing the work.**
- **An operation test should be performed at low speed, start the test at a predefined speed, after confirming there are no problems.**
- **Actual speed of the product will be changed by the workload.**
  Before selecting a product, check the catalogue for the instructions regarding selection and specifications.
- **Do not apply a load, impact or resistance in addition to a transferred load during return to origin.**
  In the case of the return to origin by pushing force, additional force will cause displacement of the origin position since it is based on detected motor torque.
- **Do not remove the nameplate.**

2.5 Actuator with lock

⚠ Warning

- **Do not use the lock as a safety lock or a control that requires a locking force.**
  The lock used for the product with a lock is designed to prevent dropping of work piece.
- **For vertical mounting, use the product with a lock.**
  If the product is not equipped with a lock, the product will move and drop the work piece when the power is removed.
- **"Measures against drops,” means preventing a work piece from dropping due to its weight when the product operation is stopped and the power supply is turned off.**
- **Do not apply an impact load or strong vibration while the lock is activated.**
  If an external impact load or strong vibration is applied to the product, the lock will lose it’s holding force and damage to the sliding part of the lock or reduced lifetime can result. The same situation will happen when the lock slips due to a force higher than the max. thrust force of the product, as this will accelerate the wear to the lock.
- **Do not apply liquid, oil or grease to the lock or its surroundings.**
  When liquid, oil or grease is applied to the sliding part of the lock, its holding force will be reduced significantly.
- **Take “measures against drops” and check that safety is assured before mounting, adjustment and inspection of the product.**
  If the lock is released with the product mounted vertically, a work piece can drop due to its weight.

2.6 Please refer to the auto switch references in “Best Pneumatics” when an auto switch is to be used.

2.7 Unpacking

⚠ Caution

- **Check the received product is as ordered.**
  If a different product is installed from the one ordered, injury or damage could result.

3 Specifications

LEHZ series

	Model		10	16	20	25	32	40
Actuator specification	Stroke/both sides (mm)		4	6	10	14	22	30
	Gripping force 40 to 100% (N) Note 1)3)	Standard	6 to 14		16 to 40		52 to 130	84 to 210
		Compact	2 to 6	3 to 8	11 to 28		-	-
	Opening/closing speed (mm/s) Gripping speed (mm/s) Note 2)3)		5 to 80 5 to 50		5 to 100 5 to 50		5 to 120 5 to 50	
	Actuation type		Slide screw and sliding cam					
	Finger guide type		Linear guide (No circulation)					
	Repeated length determination accuracy [mm] Note 4)		± 0.05					
	Finger backlash/ one side[mm] Note 5)		0.25 or less				0.5 or less	
	Repeatability [mm] Note 6)		± 0.02					
	Positioning repeatability/ one side[mm]		± 0.05					
	Lost motion/one side[mm] Note 7)		0.25 or less				0.3 or less	
	Impact resistance/vibration resistance (m/sec^2) Note 8)		150/30					
	Max. operating frequency (c.p.m)		60					
	Operating temperature range ($^\circ$C)		5 to 40					
	Operating humidity range(%RH)		90 or less (No condensation)					
	Weight (g)	Standard	165	220	430	585	1120	1760
		Compact	135	190	365	520	-	-
Electric specification	Motor size		□20		□28		□42	
	Motor		HB type 2-phase stepper motor (Unipolar connection)					
	Encoder (Angular displacement sensor)		Incremental A/B phase (800 pulse/rotation)					
	Power supply		24VDC ± 10%					
	Power consumption/ Standby power consumption when operating (W) Note 9)	Standard	11/7		28/15		34/13	36/13
		Compact	8/7		22/12		-	-
	Max. instantaneous power consumption (W) Note 10)	Standard	19		51		57	61
		Compact	14		42		-	-

LEHZJ series

	Model		10	16	20	25
Actuator specification	Stroke/both sides (mm)		4	6	10	14
	Gripping force (N) Note 1)3)	Standard	6 to 14 (40 to 100%)		16 to 40 (40 to 100%)	
		Compact	3 to 6 (50 to 100%)	4 to 8 (50 to 100%)	11 to 28 (40 to 100%)	
	Opening/closing speed (mm/s) Gripping speed (mm/s) Note 2)3)		5 to 80 5 to 50		5 to 100 5 to 50	
	Actuation type		Slide screw and sliding cam			
	Finger guide type		Linear guide (No circulation)			
	Repeated length determination accuracy [mm] Note 4)		± 0.05			
	Finger backlash/ one side[mm] Note 5)		0.25 or less			
	Repeatability [mm] Note 6)		± 0.02			
	Positioning repeatability/ one side[mm]		± 0.05			
	Lost motion/one side[mm] Note 7)		0.25 or less			
	Impact resistance/vibration resistance (m/sec^2) Note 8)		150/30			
	Max. operating frequency (c.p.m)		60			
	Operating temperature range ($^\circ$C)		5 to 40			
	Operating humidity range(%RH)		90 or less (No condensation)			
	Weight (g)	Standard	170	230	440	610
		Compact	140	200	375	545
Electric specification	Motor size		□20		□28	
	Motor		HB type 2-phase stepper motor (Unipolar connection)			
	Encoder (Angular displacement sensor)		Incremental A/B phase (800 pulse/rotation)			
	Power supply		24VDC ± 10%			
	Power consumption/ Standby power consumption when operating (W) Note 9)	Standard	11/7		28/15	
		Compact	8/7		22/12	
	Max. instantaneous power consumption (W) Note 10)	Standard	19		51	
		Compact	14		42	

3 Specifications (continued)

LEHF series

	Model		10	20	32	40
Actuator specification	Stroke/both sides (mm)	Standard	16	24	32	40
		Long	32	48	64	80
	Gripping force 40 to 100%(N) Note 1)3)		3 to 7	11 to 28	48 to 120	72 to 180
	Opening/closing speed (mm/s) Gripping speed (mm/s) Note 2)3)		5 to 80 5 to 20	5 to 100 5 to 30		
	Actuation type		Sliding screw and belt			
	Finger guide type		Linear guide (No circulation)			
	Repeated length determination accuracy [mm] Note 4)		± 0.05			
	Finger backlash/ one side[mm] Note 5)		0.5 or less			
	Repeatability [mm] Note 6)		± 0.05			
	Positioning repeatability/ one side[mm]		± 0.1			
	Lost motion/one side[mm] Note 7)		0.3 or less			
	Impact resistance/vibration resistance (m/sec^2) Note 8)		150/30			
	Max. operating frequency (c.p.m)		60			
	Operating temperature range ($^\circ$C)		5 to 40			
	Operating humidity range(%RH)		90 or less (No condensation)			
	Weight (g)	Standard	340	610	1625	1980
		Long	370	750	1970	2500
Electric specification	Motor size		□20	□28	□42	
	Motor		HB type 2-phase stepper motor (Unipolar connection)			
	Encoder (Angular displacement sensor)		Incremental A/B phase (800 pulse/rotation)			
	Power supply		24VDC ± 10%			
	Power consumption/ Standby power consumption when operating (W) Note 9)	Standard	11/7	28/15	34/13	36/13
		Compact	8/7	22/12	-	-
	Max. instantaneous power consumption (W) Note 10)	Standard	19	51	57	61
		Compact	14	42	-	-

LEHS series

	Model		10	20	32	40
Actuator specification	Stroke/dia.(mm)		4	6	8	12
	Gripping force (N) 40 to 100% Note 1)3)	Standard	2.2 to 5.5	9 to 22	36 to 90	52 to 130
		Compact	1.4 to 3.5	7 to 17	-	-
	Opening/closing speed (mm/s) Gripping speed (mm/s) Note 2)3)		5 to 70 5 to 50	5 to 80 5 to 50	5 to 100 5 to 50	5 to 120 5 to 50
	Actuation type		Sliding screw and wedge cam			
	Repeated length determination accuracy [mm] Note 4)		± 0.05			
	Finger backlash/ radius[mm] Note 5)		0.25 or less			
	Repeatability [mm] Note 6)		± 0.02			
	Positioning repeatability/ radius[mm]		± 0.05			
	Lost motion/radius[mm] Note 7)		0.25 or less			
	Impact resistance/vibration resistance (m/sec^2) Note 8)		150/30			
	Max. operating frequency (c.p.m)		60			
	Operating temperature range ($^\circ$C)		5 to 40			
	Operating humidity range(%RH)		90 or less (No condensation)			
	Weight (g)	Standard	185	410	975	1265
		Compact	150	345	-	-
Electric specification	Motor size		□20	□28	□42	
	Motor		HB type 2-phase stepper motor (Unipolar connection)			
	Encoder (Angular displacement sensor)		Incremental A/B phase (800 pulse/rotation)			
	Power supply		24VDC ± 10%			
	Power consumption/ Standby power consumption when operating (W) Note 9)	Standard	11/7	28/15	34/13	36/13
		Compact	8/7	22/12	-	-
	Max. instantaneous power consumption (W) Note 10)	Standard	19	51	57	61
		Compact	14	42	-	-

3 Specifications (continued)

Note 1) Gripping force for LEHF & LEHZ(J) products should be from 10 to 20 times the weight of the object to be conveyed and from 7 to 13 times for LEHS products. The force should be 150% when releasing the work piece. Gripping force accuracy should be:
± 30% of max. gripping force for LEHZ(J)10/16, LEHF10 & LEHS10.
± 25% of max. gripping force for LEHZ(J)20/25, LEHF20 & LEHS20.
± 20% of max. gripping force for LEHZ32/40, LEHF32/40 & LEHS32/40.

Note 2) Pushing speed should be set within the range during pushing (gripping) operation. Otherwise, it may cause malfunction. The opening/closing speed and pushing speed are for both fingers. The speed for one finger is half this value.

Note 3) The speed and force may change depending on the cable length, load and mounting conditions. Furthermore, if the cable length exceeds 5 m, then it will decrease by up to 10% for each 5 m. (At 15 m: Reduced by up to 20%)

Note 4) Repeated length measurement accuracy means dispersion (value on the controller monitor) when the workpiece is repeatedly held in the same position.

Note 5) There will be no influence of backlash when gripping. Make the stroke longer for the amount of backlash when opening.

Note 6) Repeatability means the variation of the gripping position (workpiece position) when the gripping operation is repeatedly performed by the same sequence for the same workpiece.

Note 7) A reference value for correcting an error in reciprocal operation.

Note 8) Impact resistance: No malfunction occurred when the gripper was tested with a drop tester in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the gripper in the initial state.) Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. Test was performed in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the gripper in the initial state.)

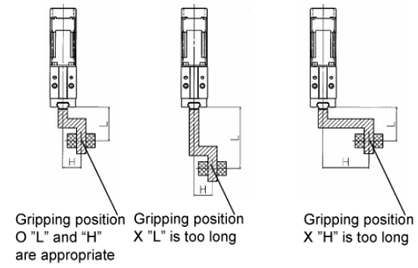
Note 9) The power consumption (including the controller) is for when the gripper is operating. The standby power consumption when operating is for when the gripper is stopped in the set position during operation, including the energy saving mode when gripping.

Note10) The maximum instantaneous power consumption (including the controller) is for when the gripper is operating. This value can be used for the selection of the power supply. The “Momentary max. power consumption” (including the controller) is for when the actuator is operating. This value can be used for the selection of the power supply.

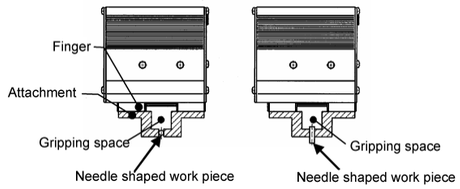
4 Installation

4.1 Design and selection

- **Keep within the specified gripping range.**
  If the specified gripping range is exceeded, excessive moment is applied to the sliding part of the finger, which may have an adverse affect on the life of the product.



- **Design the attachment to be lightweight and of minimum length.**
  A long and heavy attachment will increase inertia force when the product is opened or closed, which causes play at the finger. Even if the gripping point of the attachment is within the specified range, design it to be short and lightweight as possible. For a long or large work piece, select a larger size gripper or use two or more grippers together.
- **Reserve a gripping space for attachment when a work piece is extremely thin.**
  Without a gripping space, the product cannot perform stable gripping and the displacement of a work piece or gripping failure can result.



4 Installation (continued)

- **Select a model that allows for adequate gripping force in relation to the weight of the work piece.**
  The gripping force should be within the range of 10 to 20 times the weight of the object to be conveyed.
  The accuracy of the gripping force is ±20% of the max. gripping force.
  Selection of an incorrect model can cause dropping of the work piece.
- **Select a model that allows for the correct opening and closing width relative to the width of the work piece.**
  Selection of an incorrect model may cause gripping at unexpected positions due to the variable opening and closing width of the product and the width or the diameter of the work piece that the product can handle. It is also necessary to select a larger stroke to overcome the backlash created when the product opens after gripping.
- **Do not use the product in applications where excessive external forces, including vibration or impact force are applied to it.**
  This can lead to premature failure of the product.

4.2 Mounting

⚠ Caution

- **Do not drop, dent, scratch, strike or cause other damage to the gripper body or the gripper fingers.**
  This may lead to deterioration of accuracy and product failure.

- **When mounting attachments to the gripper fingers avoid applying excessive torque to the gripper fingers and use screws with adequate length and tighten them with adequate torque within the specified torque range.**
  Applying excessive torque may lead to play in the fingers and deterioration of the grippers accuracy. Also, tightening the screws with a torque higher than recommended may cause malfunction, whilst tightening with a lower torque can lead to the displacement of the mounting position or in extreme conditions the gripper could become detached from its mounting position.

Torque values for mounting attachments to fingers

LEHZ(J) series

Model	Bolt	Max. Tightening torque (N•m)
LEHZ(J)10(L)K2-4	M2.5 x 0.45	0.3
LEHZ(J)16(L)K2-6	M3 x 0.5	0.9
LEHZ(J)20(L)K2-10	M4 x 0.7	1.4
LEHZ(J)25(L)K2-14	M5 x 0.8	3.0
LEHZ32K2-22	M6 x 1	5.0
LEHZ40K2-30	M8 x 1.25	12.0

LEHF series

Model	Bolt	Max. Tightening torque (N•m)
LEHF10K2-*	M2.5 x 0.45	0.3
LEHF20K2-*	M3 x 0.5	0.9
LEHF32K2-*	M4 x 0.7	1.4
LEHF40K2-*	M4 x 0.7	1.4

LEHS series

Model	Bolt	Max. Tightening torque (N•m)
LEHS10(L)K3-4	M3 x 0.5	0.9
LEHS20(L)K3-6	M3 x 0.5	0.9
LEHS32K3-8	M4 x 0.7	1.4
LEHS40K3-12	M5 x 0.8	3.0

- **When mounting the gripper to other equipment, use screws with adequate length and tighten them with adequate torque within the specified torque range.**
  Tightening the screws with a higher torque than recommended may cause malfunction, whilst tightening with a lower torque can cause the displacement of the mounting position or in extreme conditions the gripper could become detached from its mounting position.

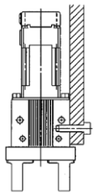
4 Installation (continued)

Torque values for mounting to LEH body

LEHZ(J) Mounting

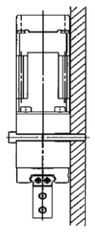
Mounting by screws to the side of the body

Model	Bolt	Max. tightening torque [N•m]	Max. thread depth L [mm]
LEHZ(J)10(L)K2-4	M3×0.5	0.9	6
LEHZ(J)16(L)K2-6	M4×0.7	1.4	6
LEHZ(J)20(L)K2-10	M5×0.8	3.0	8
LEHZ(J)25(L)K2-14	M6×1	5.0	10
LEHZ32K2-22	M6×1	5.0	10
LEHZ40K2-30	M8×1.25	12.0	14



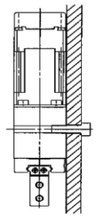
Mounting by screws to a mounting plate

Model	Bolt	Max. tightening torque [N•m]
LEHZ(J)10(L)K2-4	M3×0.5	0.9
LEHZ(J)16(L)K2-6	M3×0.5	0.9
LEHZ(J)20(L)K2-10	M4×0.7	1.4
LEHZ(J)25(L)K2-14	M5×0.8	3.0
LEHZ32K2-22	M5×0.8	3.0
LEHZ40K2-30	M6×1	5.0



Mounting by screws to the back of the body

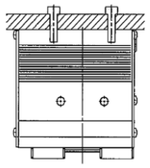
Model	Bolt	Max. tightening torque [N•m]	Max. thread depth L [mm]
LEHZ(J)10(L)K2-4	M4×0.7	1.4	6
LEHZ(J)16(L)K2-6	M4×0.7	1.4	6
LEHZ(J)20(L)K2-10	M5×0.8	3.0	8
LEHZ(J)25(L)K2-14	M6×1	5.0	10
LEHZ32K2-22	M6×1	5.0	10
LEHZ40K2-30	M8×1.25	12.0	14



LEHF Mounting

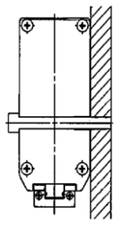
Mounting by screws to the side of the body

Model	Bolt	Max. tightening torque [N•m]	Max. thread depth L [mm]
LEHF10K2-□	M4×0.7	1.4	7
LEHF20K2-□	M5×0.8	3.0	8
LEHF32K2-□	M6×1	5.0	10
LEHF40K2-□	M6×1	5.0	10



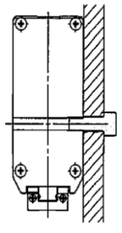
Mounting by screws to the mounting plate

Model	Bolt	Max. tightening torque [N•m]
LEHF10K2-□	M4×0.7	1.4
LEHF20K2-□	M5×0.8	3.0
LEHF32K2-□	M6×1	5.0
LEHF40K2-□	M6×1	5.0



Mounting by screws to the back of the body

Model	Bolt	Max. tightening torque [N•m]	Max. thread depth L [mm]
LEHF10K2-□	M5×0.8	3.0	10
LEHF20K2-□	M6×1	5.0	12
LEHF32K2-□	M8×1.25	12.0	16
LEHF40K2-□	M8×1.25	12.0	16

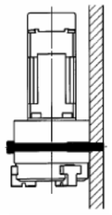


4 Installation (continued)

LEHS Mounting

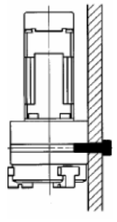
Mounting by screws to the mounting plate

Model	Bolt	Max. tightening torque [N•m]
LEHS10(L)K3-4	M3×0.5	0.9
LEHS20(L)K3-6	M5×0.8	3.0
LEHS32K3-8	M6×1	5.0
LEHS40K3-12	M6×1	5.0



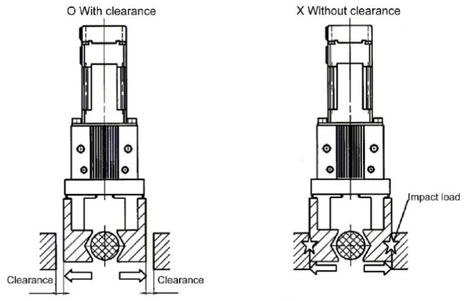
Mounting by screws to the back of the body

Model	Bolt	Max. tightening torque [N•m]	Max. thread depth L [mm]
LEHS10(L)K3-4	M4×0.7	1.4	6
LEHS20(L)K3-6	M6×1	5.0	10
LEHS32K3-8	M8×1.25	12.0	14
LEHS40K3-12	M8×1.25	12.0	14

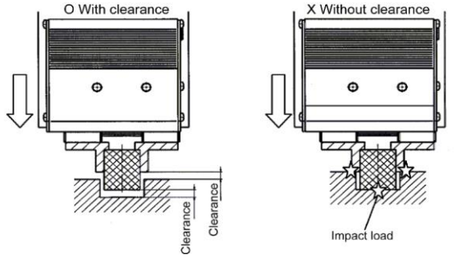


- **The mounting surface has dowel holes and slots for positioning. If required use them for accurate positioning of the gripper.**
- **When the workpiece has to be removed after the power has been switched off, it can be removed by using the manual override or by removing the finger attachments.**
  If the manual override is used to remove the workpiece allow sufficient space to access the manual override screw. Do not apply excessive torque to the manual override that could lead to damage and malfunction of the product.
- **When gripping the work piece leave space in the finger movement direction to prevent the load from being concentrated on one finger and to allow for work piece mis-alignment.**
  For the same reason when aligning the work piece using the gripper finger movement, minimize the frictional resistance created by the movement of the workpiece.
  The finger can be displaced or play or breakage can occur.
- **Perform adjustment and confirmation to ensure there is no external force applied to the finger.**
  If the finger is subject to repetitive lateral load or impact load, it can cause play or breakage and the lead screw can get stuck, which results in operation failure. Allow a clearance to prevent the work piece or the attachment from hitting the gripper product at the end of stroke.

• Stroke end when fingers are open

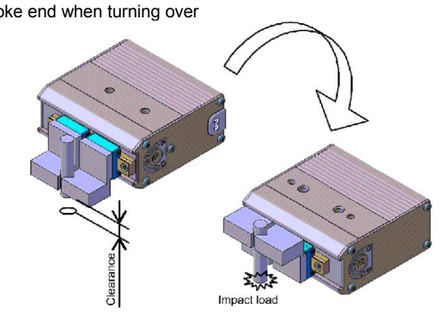


• Stroke end when gripper is moving

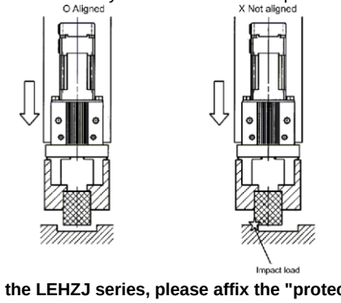


4 Installation (continued)

• Stroke end when turning over



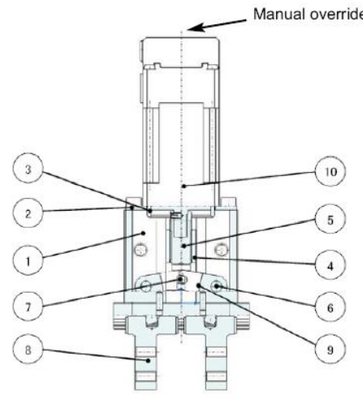
- **When mounting a work piece, align it with the product carefully to prevent excessive force being applied to the finger.**
  In particular, during a trial run, operate the product manually or at a low speed and check that safety is assured without impact.



- **When using the LEHZJ series, please affix the "protection seal to prevent ingress of dust" provided.**
  Otherwise machining chips and fine particles may get into the product from the outside, leading to operation failure.
  This is equivalent to IP50 (dust-proof). Please note that it does not provide a drip-proof function.

5 Names and Functions of Individual Parts

LEHZ series



Parts list for LEHZ:

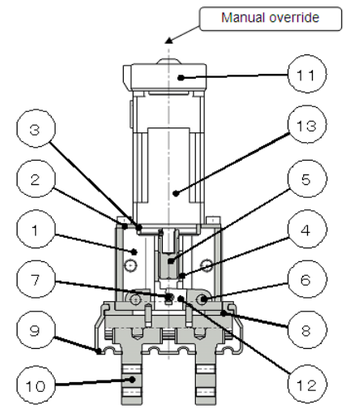
No.	Part	Material	Remarks
1	Body	Aluminium alloy	Anodized
2	Motor plate	Aluminium alloy	Anodized
3	Guide ring	Aluminium alloy	
4	Slide nut	Stainless steel	Heat treated, specially treated
5	Slide bolt	Stainless steel	Heat treated, specially treated
6	Needle roller	High carbon chromium bearing steel	
7	Needle roller	High carbon chromium bearing steel	
8	Finger assembly	-	
9	Lever	Special stainless steel	
10	Step motor (Servo 24 VDC)	-	

5 Names and Functions of Individual Parts (continued)

LEHZ Spare part no.8 Finger assembly:

Size	Basic type	Side tap mounting	With thru hole in open and close direction	Flat finger
	No symbol	A	B	C
10	MHZ-A1002	MHZ-A1002-1	MHZ-A1002-2	MHZ-A1002-3
16	MHZ-A1602	MHZ-A1602-1	MHZ-A1602-2	MHZ-A1602-3
20	MHZ-A2002	MHZ-A2002-1	MHZ-A2002-2	MHZ-A2002-3
25	MHZ-A2502	MHZ-A2502-1	MHZ-A2502-2	MHZ-A2502-3
32	MHZ-A3202	MHZ-A3202-1	MHZ-A3202-2	MHZ-A3202-3
40	MHZ-A4002	MHZ-A4002-1	MHZ-A4002-2	MHZ-A4002-3

LEHZJ series



Parts list for LEHZJ:

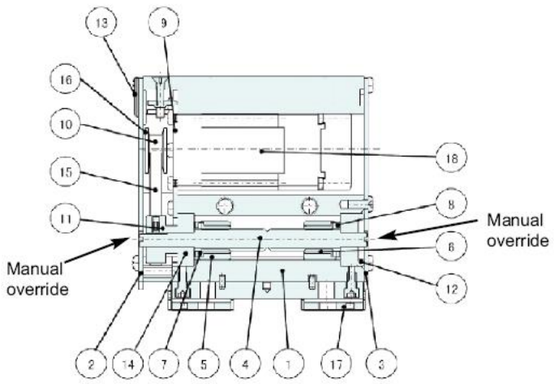
No.	Part	Material	Remarks
1	Body	Aluminium alloy	Anodized
2	Motor plate	Aluminium alloy	Anodized
3	Guide ring	Aluminium alloy	
4	Slide nut	Stainless steel	Heat treated, specially treated
5	Slide bolt	Stainless steel	Heat treated, specially treated
6	Needle roller	High carbon chromium bearing steel	
7	Needle roller	High carbon chromium bearing steel	
8	Body plate	Aluminum alloy	Anodized
9	Dust cover	CR	Chloroprene rubber
		FKM	Fluororubber
		Si	Silicon rubber
10	Finger assembly		
11	Encoder dust cover	Si	Silicon rubber
12	Lever	Special stainless steel	
13	Step motor (Servo/24VDC)		

LEHZJ spare parts:

Size	Part no.9 Dust cover - Material			Part no.10 Finger assembly
	CR	FKM	Si	
10	MHZJ2-J10	MHZJ2-J10F	MHZJ2-J10S	MHZJ-A1002
16	MHZJ2-J16	MHZJ2-J16F	MHZJ2-J16S	MHZJ-A1602
20	MHZJ2-J20	MHZJ2-J20F	MHZJ2-J20S	MHZJ-A2002
25	MHZJ2-J25	MHZJ2-J25F	MHZJ2-J25S	MHZJ-A2502

5 Names and Functions of Individual Parts (continued)

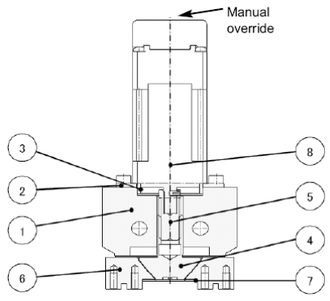
- **LEHF series**



• Parts list

No.	Part	Material	Remarks
1	Body	Aluminium alloy	Anodized
2	Side plate A	Aluminium alloy	Anodized
3	Side plate B	Aluminium alloy	Anodized
4	Slide shaft	Stainless steel	Heat treated, specially treated
5	Slide bush	Stainless steel	
6	Slide nut	Stainless steel	Heat treated, specially treated
7	Slide nut	Stainless steel	Heat treated, specially treated
8	Fixed plate	Stainless steel	
9	Motor plate	Carbon steel	
10	Pulley A	Aluminium alloy	
11	Pulley B	Aluminium alloy	
12	Bearing holder	Aluminium alloy	
13	Rubber bush	NBR	
14	Bearing	–	
15	Belt	–	
16	Flange	–	
17	Finger assembly	–	
18	Step motor (Servo 24 VDC)	–	

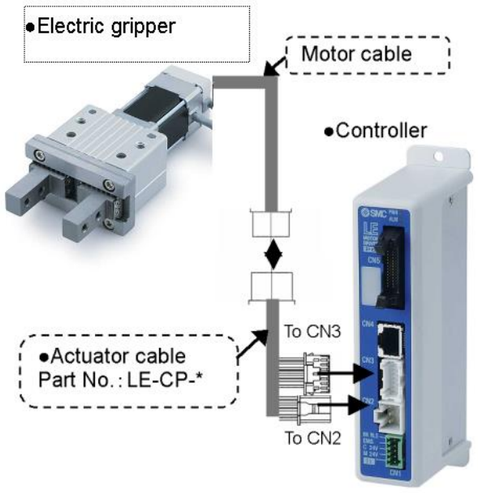
- **LEHS series**



• Parts list

No.	Part	Material	Remarks
1	Body	Aluminium alloy	Anodized
2	Motor plate	Aluminium alloy	Anodized
3	Guide ring	Aluminium alloy	
4	Slide cam	Stainless steel	Heat treated, specially treated
5	Slide bolt	Stainless steel	Heat treated, specially treated
6	Finger	Carbon steel	Heat treated, specially treated
7	End plate	Stainless steel	
8	Step motor (Servo 24 VDC)	–	

6 Wiring



⚠ Warning

Use only specified cables otherwise there may be risk of fire and damage.

7 Maintenance

⚠ Warning

- **Do not disassemble or repair the product.**
  Fire or electric shock can result.
- **Before modifying or checking the wiring, the voltage should be checked with a tester 5 minutes after the power supply is turned off.**
  Electric shock can result.
- **When the product is to be removed, check that it is not gripping a work piece.**
  There is a risk of dropping the work piece.
- **The dust cover on the gripper finger (LEHZJ series only) is a consumable item, replace the dust cover as and when it is necessary.**
  If machining chips, fine particles or oils, etc. are allowed to enter the gripper mechanism from outside, it could lead to the failure of the product. The dust cover on the gripper finger can be damaged if the finger attachment or the workpiece comes into contact with the dust cover during operation.

⚠ Caution

- **Maintenance should be performed according to the procedure indicated in the Operating Manual.**
  Improper handling can cause injury, damage or malfunction of equipment and machinery.
- **Removal of product**
  When the equipment is serviced, first confirm that measures are in place to prevent dropping of work pieces and run-away of equipment, etc, and then turn off the power supply to the system.
  When the machinery is restarted, check that the operation is normal with the gripper in a safe position.

Lubrication

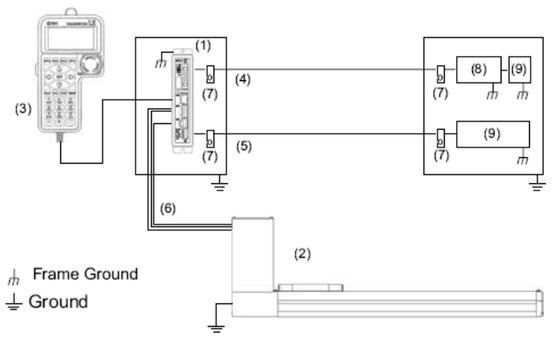
⚠ Caution

- **The product has been lubricated for life at manufacturer, and does not require lubrication in service.**
  When lubrication is required, special grease must be used.
  Please refer to the gripper operation/maintenance manual.

8 CE Directive

The LE series of actuators, motor controllers and teaching box conform to the EU EMC directive, if they are installed in accordance with the following instructions.
These components are intended for incorporation into machinery and assemblies forming part of a larger system.
The CE compliance was achieved when the above three components were connected as shown in the diagram below.

Please note that the EMC changes according to the configuration of the customers control panel and the relationship with other electrical equipment and wiring. Therefore conformity to the EMC directive cannot be certified for SMC components incorporated into the customer's equipment under actual operating conditions. As a result it is necessary for the customer to verify conformity to the EMC directive for the machinery and equipment as a whole.



- **Machinery parts list**

No.	Part name	Part no./Material
1	Motor controller	LECP6 Series
2	Actuator	LE Series
3	Teaching box	LEC-1-T1 Series
4	I/O cable (with shield)	LEC-CN5-[]
5	Power supply cable (with shield)	5 wire with shield Heavy-duty cable (5 m)
6	Actuator cable	LEC-CP-[]
7	P-clip (for shield ground)	Metal
8	Programmable controller	–
9	Switching power supply	–

Please refer to the IMM of the LEC controller being used for information on the LEC installation procedure.

- **Grounding the actuator**

The actuator must be grounded as shown in the diagram below to shield it from electric noise. The screw, cable with crimping terminal and toothed washer should be obtained separately.

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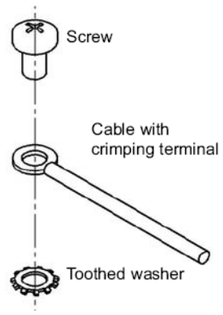
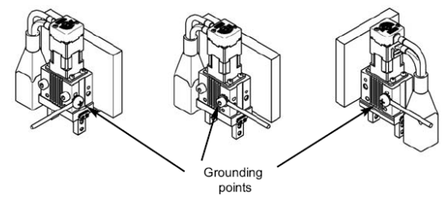
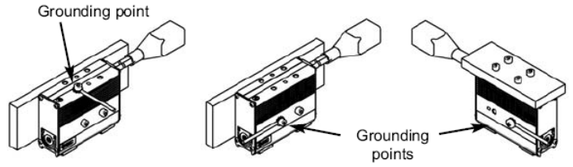


8 CE Directive (continued)

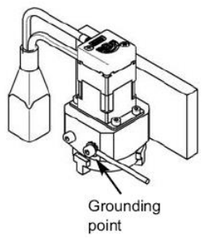
- **Location of grounding points**
  • LEHZ(J) series



• LEHF series

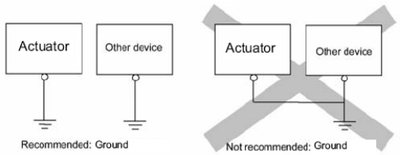


• LEHS series



⚠ Caution

The product should be connected to a ground. The cross-sectional area of this wire shall be a minimum of 2 mm^2. The grounding point should be as near as possible to the actuator to keep the wire length short.



- **Grounding the controller**
  Please refer to the IMM of the LEC being used, for information on controller grounding.

9 Contacts

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BELGIUM	(32) 3 355 1464	**NORWAY**	(47) 67 12 90 20
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DENMARK	(45) 7025 2900	**PORTUGAL**	(351) 21 471 1880
FINLAND	(358) 207 513513	**SLOVAKIA**	(421) 2 444 56725
FRANCE	(33) 1 6476 1000	**SLOVENIA**	(386) 73 885 412
GERMANY	(49) 6103 4020	**SPAIN**	(34) 945 184 100
GREECE	(30) 210 271 7265	**SWEDEN**	(46) 8 603 1200
HUNGARY	(36) 23 511 390	**SWITZERLAND**	(41) 52 396 3131
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