

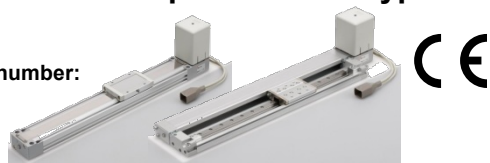


Installation and Maintenance Manual

Electric Actuator / Low profile slider type

Series LEM

Applicable model number:
LEM*T-*



Note: For special models LEY*-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

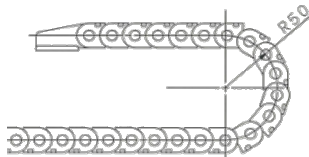
Warning

- **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 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.
- **Select "Robotic type cables" in case of inflecting actuator-cable repeatedly. And do not put cables into a flexible moving tube with a radius smaller than the specified value. (Min. 50mm).**
Risk of electric shock, wire break, contact failure and loss of control for the product can happen if "Standard cables" are used in case of inflecting the cables repeatedly.



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.**

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.**
- **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.**

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.
 - Emergency stop of the total system.

2 General Instructions (continued)

- **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 work other than those performing work.**
- **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.**
- **Operation test should be performed by low speed. Start operation by predefined speed after confirming there are no problems.**

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 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 its 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 its holding force, 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.
- **When the actuator is operated manually (when SVRE output signal is off), supply 24DCV to the [BK RLS] terminal of the power supply connector.**
If the product is operated without releasing the lock, wearing of the lock sliding surface will be accelerated, causing reduction in the holding force and the life of the locking mechanism.
- **Do not supply 24VDC power to the BK-RLS (lock release) during normal operation.**
The 24 VDC supply to the BK-RLS (lock release) is only required for maintenance or installation purposes when the motor is off.
If power is supplied constantly to the BK-RLS (lock release) the lock is released all the time and it cannot be activated in a power cut situation or in a stop circuit, and this can cause the workpiece to drop down.

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

(1) LEMB (Basic type)		LEMB25	LEMB32
Actuator specification	Model	See the "Weight" table below for the applicable strokes.	
	Stroke (mm) ^{Note 1)}	See the "Weight" table below for the applicable strokes.	
	Work load (kg) ^{Note 2)}	Horizontal	6(10) / 11(20)
	Speed (mm/s)	48 to 1,000	
	Max. Acceleration/Deceleration (mm/s ²) ^{Note 10)}	20,000 (Depends on the workload)	
	Positioning repeatability (mm)	±0.08	
	Lost motion [mm] ^{Note 11)}	0.1 or less	
	Lead equivalent (mm)	48	
	Impact resistance/ vibration resistance (m/s ²) ^{Note 3)}	50 / 20	
	Drive method	Belt	
	Guide type	Slide bearing	
Electric specification	Allowable external force (N) ^{Note 9)}	10	20
	Operating temperature range (°C)	5 to 40	
	Operating humidity range (%RH)	90 or less (No condensation)	
	Motor size	□56.4	
	Type of Motor	Step motor (Servo 24VDC)	
	Encoder	Incremental A/B phase (800 pulse/rotation)	
	Rated voltage (VDC)	24 ±10%	
Lock specification	Power consumption (W) ^{Note 4)}	50	52
	Standby power consumption when operating (W) ^{Note 5)}	44	44
	Momentary max. power consumption (W) ^{Note 6)}	123	127
	Type ^{Note 7)}	No excitation operating type	
Lock specification	Holding force (N)	36	
	Power consumption (W) ^{Note 8)}	5	
	Rated voltage (VDC)	24 ±10%	

Weight

Stroke[mm] ^{Note1)}	50	100	150	200	250	300	350
Weight[kg]	LEMB25	1.66	1.75	1.84	1.92	2.01	2.10
	LEMB32	2.02	2.11	2.20	2.29	2.38	2.47
Stroke[mm] ^{Note1)}	400	450	500	550	600	700	800
	Weight[kg]	LEMB25	2.27	2.37	2.45	2.54	2.62
LEMB32		2.64	2.73	2.82	2.91	3.00	3.17
Stroke[mm] ^{Note1)}	900	1000	(1100)	1200	(1300)	(1400)	1500
	Weight[kg]	LEMB25	3.15	3.33	3.50	3.68	3.85
LEMB32		3.53	3.70	3.88	4.06	4.23	4.41
Stroke[mm] ^{Note1)}	(1600)	(1700)	(1800)	(1900)	2000		
	Weight[kg]	LEMB25	4.38	4.55	4.73	4.90	5.08
LEMB32		4.76	4.94	5.12	5.29	5.47	

Additional weight for lock (kg) | 0.6

Note 1) The strokes shown in () are produced upon receipt of order. Consult with SMC as all non-standard and non-made-to-order strokes are produced as special orders. There is the workload limitation when exceeding 1000mm strokes.

Note 2) The speed is dependent on the workload. Check the "Speed-workload graphs (Guide)" in the catalog for the selected model. The workload is changed by the workload mounting condition. Check the "Allowable dynamic moment" graphs in the catalog for the selected model. Also if the cable length exceeds 5m, the speed will be reduced 10% per 5m as the maximum. The workload shown in () are when combined with another guide and the friction coefficient is 0.1 or less.

Note 3) Impact resistance: No malfunction occurred when the actuator was tested with a drop tester in both the stroke direction and perpendicular direction to the stroke. (The test was performed with the actuator in the initial state.) Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz, when the actuator was tested in both the stroke direction and a perpendicular direction to the stroke. (The test was performed with the actuator in the initial state.)

3 Specifications (continued)

Note 4) The "Power consumption" (including the controller) is for when the actuator is operating.

Note 5) The "Standby power consumption when operating" (including the controller) is for when the actuator is stopped in the set position during operation.

Note 6) 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.

Note 7) Only applies to actuators supplied with a lock.

Note 8) For the actuator with lock, please add the power consumption for the lock.

Note 9) The resistance value of the attached equipment should be within the allowable external resistance value.

Note 10) Maximum acceleration is limited by the workload and stroke. Check the "Workload - acceleration graphs (Guide)" in the catalog for the selected model.

Note 11) A reference value for correcting an error in reciprocal operation.

(2) LEMC (Cam follower guide type)

Model		LEMC25	LEMC32
Actuator specification	Stroke (mm) ^{Note 1)}	See the "Weight" table below for the applicable strokes.	
	Work load (kg) ^{Note 2)}	Horizontal	10 / 20
	Speed (mm/s)	48 to 1,000	
	Max. Acceleration/Deceleration (mm/s ²) ^{Note 10)}	20,000 (Depends on the workload)	
	Positioning repeatability (mm)	±0.08	
	Lost motion [mm] ^{Note 11)}	0.1 or less	
	Lead equivalent (mm)	48	
	Impact resistance/ vibration resistance (m/s ²) ^{Note 3)}	50 / 20	
	Drive method	Belt	
	Guide type	Cam follower guide	
	Allowable external force (N) ^{Note 9)}	10	20
Lock specification	Operating temperature range (°C)	5 to 40	
	Operating humidity range (%RH)	90 or less (No condensation)	
	Motor size	□56.4	
Electric specification	Type of Motor	Step motor (Servo 24VDC)	
	Encoder	Incremental A/B phase (800 pulse/rotation)	
	Rated voltage (VDC)	24 ±10%	
	Power consumption (W) ^{Note 4)}	50	52
	Standby power consumption when operating (W) ^{Note 5)}	44	44
	Momentary max. power consumption (W) ^{Note 6)}	123	127
	Type ^{Note 7)}	No excitation operating type	
Lock specification	Holding force (N)	36	
	Power consumption (W) ^{Note 8)}	5	
	Rated voltage (VDC)	24 ±10%	

Actuator specification	Operating humidity range (%RH)	90 or less (No condensation)	
	Motor size	□56.4	
	Type of Motor	Step motor (Servo 24VDC)	
	Encoder	Incremental A/B phase (800 pulse/rotation)	
	Rated voltage (VDC)	24 ±10%	
	Power consumption (W) ^{Note 4)}	50	52
	Standby power consumption when operating (W) ^{Note 5)}	44	44
Lock specification	Momentary max. power consumption (W) ^{Note 6)}	123	127
	Type ^{Note 7)}	No excitation operating type	
	Holding force (N)	36	
	Power consumption (W) ^{Note 8)}	5	
Electric specification	Rated voltage (VDC)	24 ±10%	

Weight

Stroke[mm] ^{Note1)}	50	100	150	200	250	300	350
Weight[kg]	LEMC25	2.04	2.18	2.32	2.46	2.6	2.74
	LEMC32	3.85	4.06	4.27	4.49	4.7	4.91
Stroke[mm] ^{Note1)}	400	450	500	550	600	700	800
	Weight[kg]	LEMC25	3.01	3.15	3.29	3.43	3.57
LEMC32		5.33	5.55	5.76	5.97	6.18	6.61
Stroke[mm] ^{Note1)}	900	1000	(1100)	1200	(1300)	(1400)	1500
	Weight[kg]	LEMC25	4.4	4.68	4.95	5.23	5.51
LEMC32		7.45	7.88	8.3	8.72	9.15	9.57
Stroke[mm] ^{Note1)}	(1600)	(1700)	(1800)	(1900)	2000		
	Weight[kg]	LEMC25	6.34	6.62	6.9	7.17	7.45
LEMC32		10.42	10.84	11.27	11.69	12.11	

Additional weight for lock [kg] | 0.6

Note 1) The strokes shown in () are produced upon receipt of order. Consult with SMC as all non-standard and non-made-to-order strokes are produced as special orders. There is the workload limitation when exceeding 1000mm strokes.

3 Specifications (continued)

Note 2) The speed is dependent on the workload. Check "Speed-workload graphs (Guide)" in the catalog for the selected model. The workload is changed by the workload mounting condition. Check the "Allowable dynamic moment" graphs in the catalog for the selected model. Also if the cable length exceeds 5m, the speed will be reduced 10% per 5m as the maximum.

Note 3) Impact resistance: No malfunction occurred when the actuator was tested with a drop tester in both the stroke direction and perpendicular direction to the stroke. (The test was performed with the actuator in the initial state.) Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz, when the actuator was tested in both the stroke direction and a perpendicular direction to the stroke. (The test was performed with the actuator in the initial state.)

Note 4) The "Power consumption" (including the controller) is for when the actuator is operating.

Note 5) The "Standby power consumption when operating" (including the controller) is for when the actuator is stopped in the set position during operation.

Note 6) 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.

Note 7) Only applies to actuators supplied with a lock.

Note 8) For the actuator with lock, please add the power consumption for the lock.

Note 9) The resistance value of the attached equipment should be within the allowable external resistance value.

Note 10) Maximum acceleration is limited by the workload and stroke. Check the "Workload - acceleration graphs (Guide)" in the catalog for the selected model.

Note 11) A reference value for correcting an error in reciprocal operation.

(3) LEMH (Linear guide single axis type) / LEMHT (Linear guide double axis type)

Model	LEMH25 / LEMHT25	LEMH32 / LEMHT32
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Actuator specification	Stroke (mm) ^{Note 1)}	See the "Weight" table below for the applicable strokes.	
	Work load (kg) ^{Note 2)}	Horizontal	10 / 20
	Speed (mm/s)	48 to 2,000	
	Max. Acceleration/Deceleration (mm/s ²) ^{Note 10)}	20,000 (Depends on the workload)	
	Positioning repeatability (mm)	±0.08	
	Lost motion [mm] ^{Note 11)}	0.1 or less	
	Lead equivalent (mm)	48	
	Impact resistance/ vibration resistance (m/s ²) ^{Note 3)}	50 / 20	
	Drive method	Belt	
	Guide type	Linear guide	
	Allowable external force (N) ^{Note 9)}	10	20
Electric specification	Operating temperature range (°C)	5 to 40	
	Operating humidity range (%RH)	90 or less (No condensation)	
	Motor size	□56.4	
	Type of Motor	Step motor (Servo 24VDC)	
	Encoder	Incremental A/B phase (800 pulse/rotation)	
	Rated voltage (VDC)	24 ±10%	
	Power consumption (W) ^{Note 4)}	50	52
Lock specification	Standby power consumption when operating (W) ^{Note 5)}	44	44
	Momentary max. power consumption (W) ^{Note 6)}	123	127
	Type ^{Note 7)}	No excitation operating type	
	Holding force (N)	36	
Lock specification	Power consumption (W) ^{Note 8)}	5	
	Rated voltage (VDC)	24 ±10%	

3 Specifications (continued)

Weight

Stroke[mm] ^{Note1)}	50	100	150	200	250	300	350
Weight[kg]	LEMH25	1.91	2.05	2.18	2.32	2.46	2.59
	LEMH32	3.47	3.70	3.93	4.17	4.40	4.63
Stroke[mm] ^{Note1)}	400	450	500	550	600	(700)	(800)
	Weight[kg]	LEMH25	2.87	3	3.14	3.28	3.42
LEMH32		5.1	5.33	5.57	5.8	6.03	6.5
Stroke[mm] ^{Note1)}	(900)	(1000)	(1100)	(1200)	(1300)	(1400)	(1500)
	Weight[kg]	LEMH25	4.24	4.51	-	-	-
LEMH32		7.44	7.90	8.37	8.84	9.30	9.77

Additional weight for lock (kg) | 0.6

Weight

Stroke[mm] ^{Note1)}	50	100	150	200	250	300	350
Weight[kg]	LEMH25	2.4	2.61	2.82	3.03	3.24	3.45
	LEMH32	4.82	5.20	5.58	5.97	6.35	6.73
Stroke[mm] ^{Note1)}	400	450	500	550	600	(700)	(800)
	Weight[kg]	LEMH25	3.87	4.08	4.29	4.5	4.71
LEMH32		7.50	7.88	8.27	8.65	9.04	9.8
Stroke[mm] ^{Note1)}	(900)	(1000)	(1100)	(1200)	(1300)	(1400)	(1500)
	Weight[kg]	LEMH25	5.97	6.38	-	-	-
LEMH32		11.34	12.10	12.87	13.64	14.41	15.17

Additional weight for lock (kg) | 0.6

Note 1) The strokes shown in () are produced upon receipt of order. Consult with SMC as all non-standard and non-made-to-order strokes are produced as special orders. There is the workload limitation when exceeding 1000mm strokes.

Note 2) The speed is dependent on the workload. Check the "Speed-workload graphs (Guide)" in the catalog for the selected model. The workload is changed by the workload mounting condition. Check the "Allowable dynamic moment" graphs in the catalog for the selected model. Also if the cable length exceeds 5m, the speed will be reduced 10% per 5m as the maximum.

Note 3) Impact resistance: No malfunction occurred when the actuator was tested with a drop tester in both the stroke direction and perpendicular direction to the stroke. (The test was performed with the actuator in the initial state.) Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz, when the actuator was tested in both the stroke direction and a perpendicular direction to the stroke. (The test was performed with the actuator in the initial state.)

Note 4) The "Power consumption" (including the controller) is for when the actuator is operating.

Note 5) The "Standby power consumption when operating" (including the controller) is for when the actuator is stopped in the set position during operation.

Note 6) 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.

Note 7) Only applies to actuators supplied with a lock.

Note 8) For the actuator with lock, please add the power consumption for the lock.

Note 9) The resistance value of the attached equipment should be within the allowable external resistance value.

Note 10) Maximum acceleration is limited by the workload and stroke. Check the "Workload - acceleration graphs (Guide)" in the catalog for the selected model.

Note 11) A reference value for correcting an error in reciprocal operation.

4 Installation

4.1 Design and selection

Warning

- **Do not apply a load in excess of the actuator specification.**
A product should be selected based on the maximum work load and allowable moment.
If the product is used outside of the operating specification, the eccentric load applied to the guide will become excessive and have adverse effects such as creating play in the guide, reduced accuracy and reduced product life.
- **Do not exceed the speed limit of the actuator specification.**
Select a suitable actuator by the relationship of allowable work load and speed.
Noise or reduction of accuracy may occur if the actuator is operated in excess of its specification and could lead to reduced accuracy and reduced product life.
- **Do not use the product in applications where excessive external force or impact force is applied to it.**
This can lead to premature failure of the product.
- **Do not apply excessive external force or impact force to the motor.**
Miss-alignment of motor may lead signal detection error, increasing internal friction or damage the motor.
- **When external force is applied to the table, it is necessary to add the external force to the workload as the total carried load for the sizing.**
When mounting cable duct and so on in parallel to the actuator, it is necessary to add the friction to the workload as the total carried load for the sizing too.
- **The resistance value of the attached equipment should be within the allowable external resistance value.**

Caution

- **When using actuator with longer stroke, implement an intermediate support.**
When using actuator with longer stroke, implement an intermediate support to prevent frame deflection or deflection caused by vibration or external impacts. See the operating manual for the detail.

4.2 Handling

Caution

- **INP output signal.**
1) **Positioning operation**
When the product comes within the set range by step data [In position], output signal will be turned on. Set to [1] or higher for LEM.
- **Do not change the positioning force from initial setting.**
If the positioning force is changed, it may cause a decrease in performance.
- **Do not operate by fixing the table and moving the actuator body.**
An excessive load will be applied to the table, which could lead to damage to the actuator and reduced accuracy and reduced product life.
- **This actuator cannot be used for vertically mounted applications.**
- **Check the specification for the minimum speed of each actuator.**
- **In the case of the belt driven actuator, vibration may occur during operation at speeds within the actuator specification, this could be caused by the operating conditions. Change the speed setting to a speed that does not cause vibration.**
- **Do not loosen or tighten the hexagon bolt which is on the stroke end side.**
The adjusted belt tension using the hexagon bolt will be changed. It may lead faulty operation.

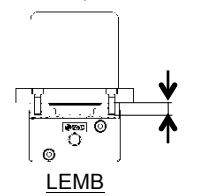
4 Installation (continued)

4.3 Mounting

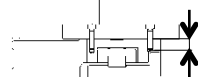
Caution

- **Provide a flat surface for installing the actuator. The degree of surface flatness should be determined by the machine precision requirement, or its corresponding precision.**
The degree of surface flatness for installing the actuator should be 0.1 / 500 mm. The degree of surface flatness for mounting a workpiece should be 0.05 mm (LEMB series), 0.02 mm (LEMC, LEMH, LEMHT series). Insufficient flatness of the work piece or the surface onto which the actuator body is to be mounted can cause play in the guide and increased sliding resistance.
- **When mounting the workpiece or other device to the actuator tighten the fixing screws with adequate torque within the specified torque range.**
Tightening the screws with a higher torque than the maximum may cause malfunction, whilst tightening with a lower torque can cause the displacement of the mounting position or in extreme conditions detaching of the work piece.

Work piece mounting



LEMB



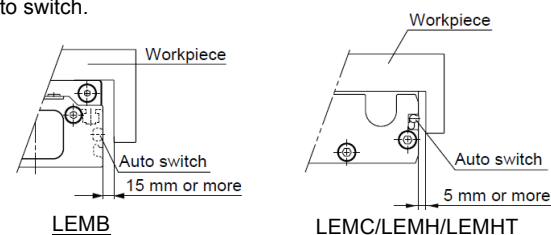
LEMC/LEMH/LEMHT

Model	Bolt size	Maximum tightening torque [Nm]	□ (Maximum thread depth [mm])
LEMB□	M5x0.8	3	8
LEMC25 LEMH25	M4x0.7	1.5	7
LEMC32 LEMH32	M5x0.8	3	9
LEMHT25	M5x0.8	3	9
LEMHT32	M8x1.25	12.5	12

Use screws with adequate length, but with length less than the maximum thread depth.
The use of screws that are too long can touch the body and cause malfunction.

Workpiece mounting.

When mounting a magnetic workpiece, keep a clearance of 5mm or greater between the auto switch and the workpiece. Otherwise, the magnetic force within the actuator may be lost, resulting in malfunction of the auto switch.



LEMB

LEMC/LEMH/LEMHT

- **When mounting the actuator, use screws with adequate length and tighten them with adequate torque. And use all mounting holes to maintain the catalogue performance.**

Tightening the screws with a higher torque than recommended may cause malfunction, whilst the tightening with lower torque can cause the displacement of mounting position or in extreme conditions the actuator could become detached from its mounting position. Use 4 mounting holes on the top of the body or nuts inside 2 T slots on the bottom of the body for installation. Do not clamp the actuator body by using a vice for mounting the actuator.

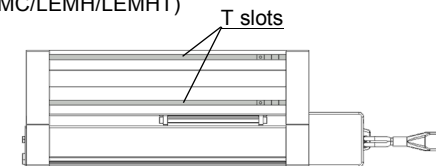
4 Installation (continued)

Installation of actuator (Using the mounting holes from the top)



Model	Bolt size	Maximum tightening torque [Nm]	φ A (mm)	□ (mm)
LEMB□	M5	3	5.5	24.5
LEMC25 LEMH25	M3	0.6	3.4	23.7
LEMC32 LEMH32	M5	3	5.5	30.1
LEMHT25	M5	3	5.5	21.6
LEMHT32	M8	12.5	9	26.9

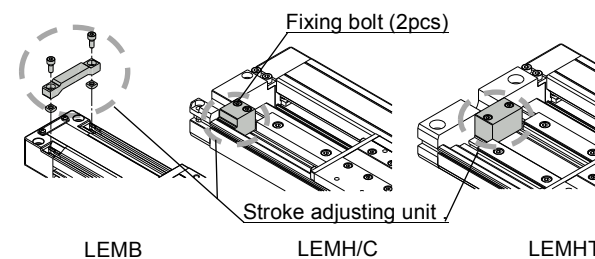
Installation of actuator (Using the nuts from the bottom)
(LEMC/LEMH/LEMHT)



Model	Bolt size	Maximum tightening torque [Nm]	Effective length (mm)
LEMC25 LEMH25	M3	0.6	4~5
LEMC32 LEMH32	M5	3	6~8
LEMHT25	M4	1.5	6~7
LEMHT32	M6	5.2	8~10

Note) If T slots on the bottom are used for installation, select screw which enables only effective length of it to enter from the bottom.

- **When mounting the actuator, leave a gap of 40 mm or more to allow for bending of the actuator cable.**
- **Hold the body when handling**
The actuator could be damaged, resulting in its failure and/or malfunction.
- **Stroke adjustment**
Adjust the stroke of actuating part if necessary. (Stroke adjusting unit for LEMB is optional, please order separately if necessary.)
Loosen fixing bolt, move the unit to the position where required stroke is obtained and fix the unit by the bolt.



LEMB

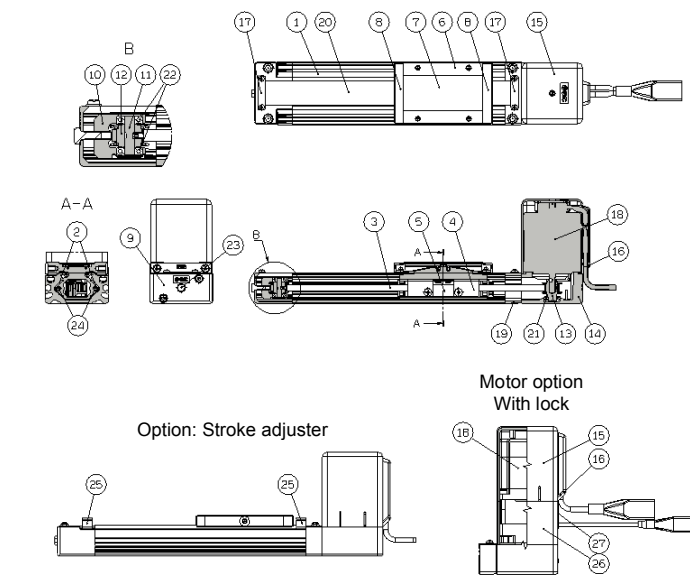
LEMH/C

LEMHT

Model	Bolt size	Recommended tightening torque [Nm]
LEMB□	M4	1.5
LEMC/H/HT25	M3	0.63
LEMC/H/HT32	M4	1.5

5 Names and Functions of Individual Parts

(1) LEMB



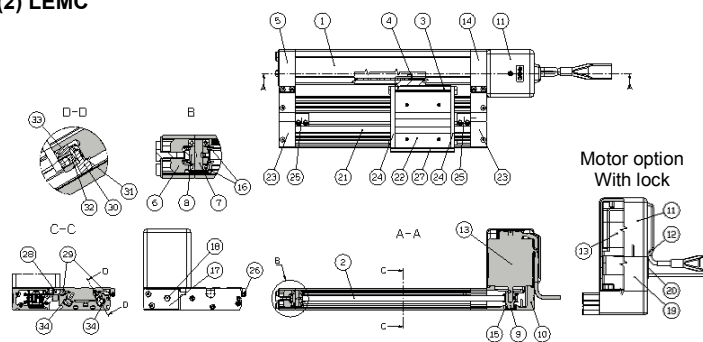
Parts list

No.	Description	Material	Remarks
1	Body	Aluminum alloy	Anodized
2	Guide plate	Synthetic resin	
3	Belt	-	
4	Belt holder	Carbon steel	Chromating
5	Belt stopper	Aluminum alloy	
6	Table	Aluminum alloy	Anodized
7	Blanking plate	Aluminum alloy	Anodized
8	Seal band stopper	Synthetic resin	
9	End brock	Aluminum die-cast	Painting
10	Pulley holder	Aluminum alloy	

11	Pulley shaft	Stainless steel	Heat treatment + special treatment
12	End pulley	Aluminum alloy	Anodized
13	Motor pulley	Aluminum alloy	Anodized
14	Motor mount	Aluminum die-cast	Painting
15	Motor cover	Synthetic resin	
16	Grommet	Synthetic resin	
17	Band stopper	Stainless steel	
18	Motor	-	
19	Motor end brock	Aluminum die-cast	Painting
20	Dust seal band	Stainless steel	
21	Bearing	-	
22	Bearing	-	
23	Hexagon bolt	Carbon steel	Chromating
24	Magnet	-	
25	Stroke adjuster	Aluminum alloy	Anodized (Optional)
26	Motor cover for lock	Aluminum alloy	Anodized Only "with lock"
27	Grommet	CR	Chloroprene rubber Only "with lock"

5 Names and Functions of Individual Parts (continued)

(2) LEMC



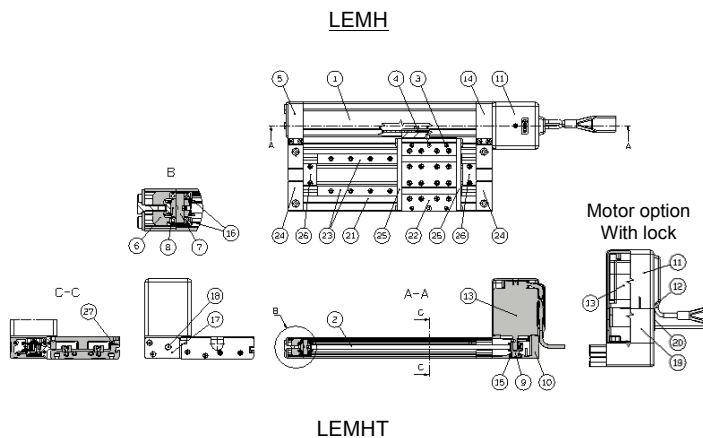
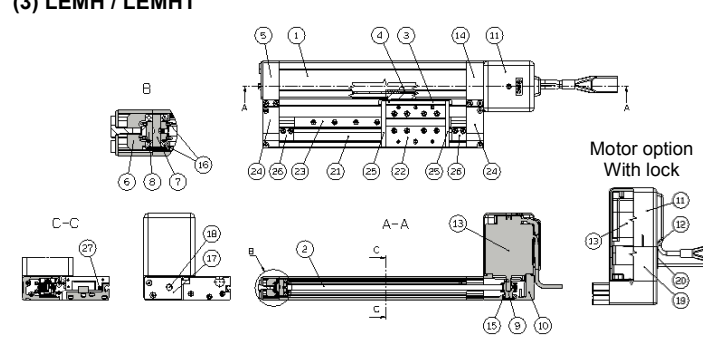
Parts list

No.	Description	Material	Remarks
1	Body	Aluminum alloy	Anodized
2	Belt	-	
3	L shaped bracket	Aluminum alloy	Anodized
4	Belt stopper	Aluminum alloy	
5	End brock	Aluminum alloy	Anodized
6	Pulley holder	Aluminum alloy	
7	Pulley shaft	Stainless steel	Heat treatment + special treatment
8	End pulley	Aluminum alloy	Anodized
9	Motor pulley	Aluminum alloy	Anodized
10	Motor mount	Aluminum die-cast	Painting
11	Motor cover	Synthetic resin	
12	Grommet	Synthetic resin	
13	Motor	-	
14	Motor end brock	Aluminum alloy	Anodized
15	Bearing	-	
16	Bearing	-	

17	Tension plate	Aluminum alloy	Anodized
18	Hexagon bolt	Carbon steel	Chromating
19	Motor cover for lock	Aluminum alloy	Anodized Only "with lock"
20	Grommet	CR	Chloroprene rubber Only "with lock"
21	Guide unit body	Aluminum alloy	Anodized
22	Slide table	Aluminum alloy	Anodized
23	End plate	Aluminum alloy	Anodized
24	Stopper	Carbon steel	Nickel plated
25	Stroke adjuster	Aluminum alloy	Anodized
26	Magnet	-	
27	Side cover	Aluminum alloy	Anodized
28	Cam follower cap	Aluminum alloy	Anodized
29	Cam follower	-	
30	Cam follower	-	
31	Eccentric gear	Stainless steel	
32	Gear fixture	Stainless steel	
33	Adjustment gear	Stainless steel	
34	Rail	Hard steel wire material	

5 Names and Functions of Individual Parts (continued)

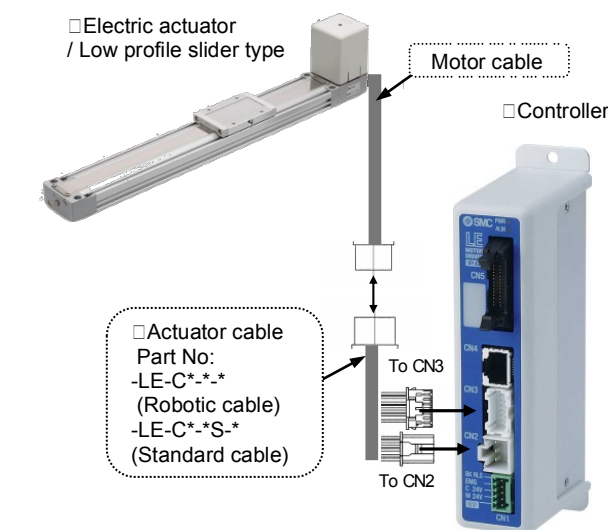
(3) LEMH / LEMHT



Parts list

No.	Description	Material	Remarks
1	Body	Aluminum alloy	Anodized
2	Belt	-	
3	L shaped bracket	Aluminum alloy	Anodized
4	Belt stopper	Aluminum alloy	
5	End brock	Aluminum alloy	Anodized
6	Pulley holder	Aluminum alloy	
7	Pulley shaft	Stainless steel	Heat treatment + special treatment
8	End pulley	Aluminum alloy	Anodized
9	Motor pulley	Aluminum alloy	Anodized
10	Motor mount	Aluminum die-cast	Painting
11	Motor cover	Synthetic resin	
12	Grommet	Synthetic resin	
13	Motor	-	
14	Motor end brock	Aluminum alloy	Anodized
15	Bearing	-	
16	Bearing	-	
17	Tension plate	Aluminum alloy	Anodized
18	Hexagon bolt	Carbon steel	Chromating
19	Motor cover for lock	Aluminum alloy	Anodized Only "with lock"
20	Grommet	CR	Chloroprene rubber Only "with lock"
21	Guide unit body	Aluminum alloy	Anodized
22	Slide table	Aluminum alloy	Anodized
23	Guide	-	
24	End plate	Aluminum alloy	Anodized
25	Stopper	Carbon steel	Nickel plated
26	Stroke adjuster	Aluminum alloy	Anodized
27	Magnet	-	

6 Wiring



Warning

Use only specified cables otherwise there maybe 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.** Electrical shock can result.

Caution

- **Maintenance should be performed according to the procedure indicated in the Operating Manual.** Incorrect handling can cause an injury, damage or malfunction of equipment and machinery.
- **Removal of product.** When 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 machinery is restarted, check that operation is normal with actuators in the correct positions.
- **The product has been lubricated for life at manufacturer, and does not require lubrication in service.** Contact SMC if lubrication will be applied.
- **Maintenance frequency.** Perform maintenance according to the table below. Contact SMC if any abnormality is found.

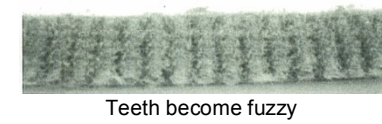
Frequency	Appearance check	Internal check	Belt check
Inspection before daily operation	□	□	□
Inspection every 6 months / 1000 km / 5 million cycles *	□	□	□

- * Whichever occurs first.
- **Items for visual appearance check.** Loose screws. Abnormal dirt. Check of flaws/faults and cable connections. Vibration, noise.
- **Items for internal check** Lubricant condition on moving parts. Loose or mechanical play in fixed parts or fixing screws.

7 Maintenance(continued)

- **Items for belt check** Check the belt regularly as shown in "maintenance frequency". Stop operation immediately and contact SMC when the belt appears to be like the photographs shown below.

- **Tooth shape canvas is worn out** Canvas fibre becomes fuzzy. Rubber is removed and the fibre becomes whitish. Lines of fibres become unclear.

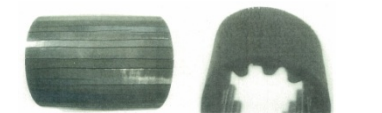


- **Peeling off or wearing of the side of the belt** Belt corner becomes round and frayed threads stick out.



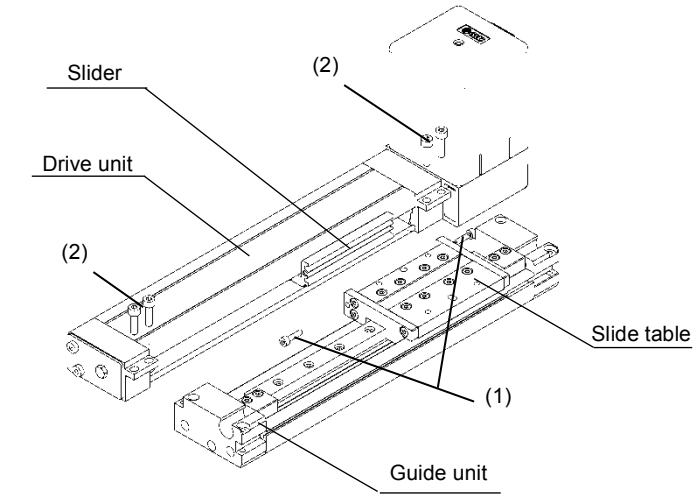
- **Belt partially cut** Belt is partially cut. Foreign matter caught in teeth other than cut part causes flaw.

- **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.**

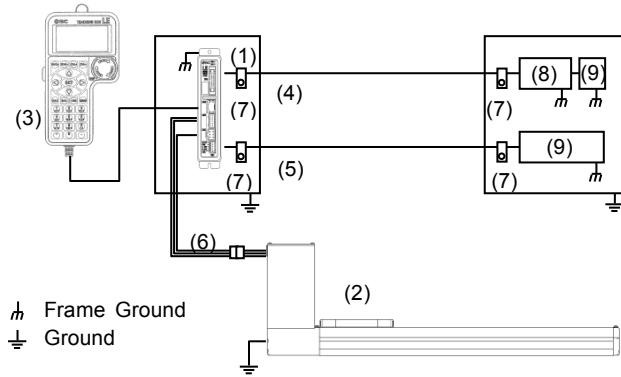
- **Attaching and detaching the drive unit (LEMC / LEMH / LEMHT)** To remove the drive unit, remove the 6 drive unit holding bolts and remove the slider from the guide unit. To install the drive unit, insert its slider into the slide table on the guide unit and tighten 2 bolts of connection part, ((1) shown in the figure below), and then equally tighten the 4 holding bolts, ((1) shown in the figure below). Tighten the holding bolts securely because if they become loose, problems may occur such as damage, malfunction, etc.



Model	Bolt size (Recommended tightening torque [Nm])	
	(1)	(2)
LEM□25	M3x12 (0.63)	M4x12 (1.5)
LEM□32	M4x12 (1.5)	M5x16 (3)

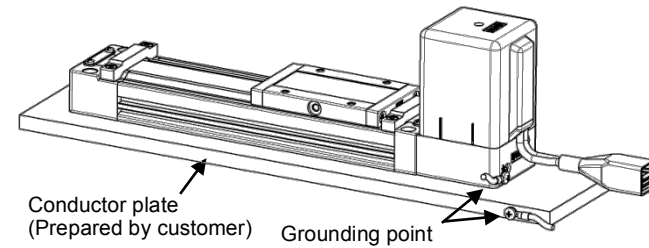
8 CE Directive

The LE series of actuators, motor controllers and teaching box confirm 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.



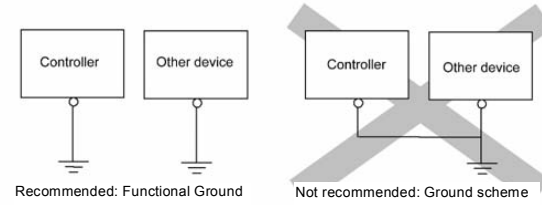
8 CE Directive(continued)

Location of grounding point



Caution

The product should be connected to a ground. The cross-sectional area of this wire shall be a minimum of 2mm². The grounding point should be as near as possible to the actuator to keep the wire length short.



- **Grounding the controller**

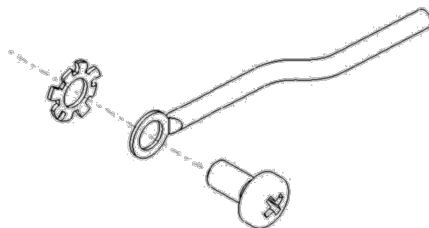
Please refer to the IMM of the LEC being used, for information on grounding the controller.

Machinery parts list

No.	Part name	Part no./Material
1	Motor controller	LECP6 Series
2	Actuator	LE Series
3	Teaching box	LEC-T1 Series
4	I/O cable (with shield)	LEC-CN5-[]
5	Power supply cable (with shield)	5 wire with shield (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 being used for information on the LEC installation procedure.

Grounding the Actuator



The actuator must be bolted to a conductor plate as shown on the "Location of grounding point" drawing.

The conductor plate must then be grounded to shield the actuator from electrical noise; the bolt and plate should be made of conductive material.

The screw, cable with crimping terminal and toothed washer should be obtained separately.

9 Contacts

AUSTRIA	(43) 2262 62280-0	LATVIA	(371) 781 77 00
BELGIUM	(32) 3 355 1464	LITHUANIA	(370) 5 264 8126
BULGARIA	(359) 2 974 4492	NETHERLANDS	(31) 20 531 8888
CZECH REP.	(420) 541 424 611	NORWAY	(47) 67 12 90 20
DENMARK	(45) 7025 2900	POLAND	(48) 22 211 9600
ESTONIA	(372) 651 0370	PORTUGAL	(351) 21 471 1880
FINLAND	(358) 207 513513	ROMANIA	(40) 21 320 5111
FRANCE	(33) 1 6476 1000	SLOVAKIA	(421) 2 444 56725
GERMANY	(49) 6103 4020	SLOVENIA	(386) 73 885 412
GREECE	(30) 210 271 7265	SPAIN	(34) 945 184 100
HUNGARY	(36) 23 511 390	SWEDEN	(46) 8 603 1200
IRELAND	(353) 1 403 9000	SWITZERLAND	(41) 52 396 3131
ITALY	(39) 02 92711	UNITED KINGDOM	(44) 1908 563888

SMC Corporation

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