

Variable frequency vibrator controls SE611/612 Operating instruction

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1. Identification

Products: Vibrator control
Marking: VIBRATOR CONTROL SE611 / SE612
Serial Nr.: 0860...

2. EU Certificate of Conformity

We declare on our sole responsibility that the vibrator controls SE611 and SE612, to which this declaration applies, comply with the current stipulations of the EC Machinery Guidelines 2006/42/EG.

Furthermore, these products also comply with the following standards and rules:

- Electrical equipment for industrial machines EN60204-1,
- RoHS Directive 2002/96/EG,
- IP protection classes in accordance with EN 60529, IEC 529, VDE 0470, DIN 40050,
- EMC Directive 2004/108/EC, EN 55011, product family standard for radiation, group 1, class B, EN 61000-6-2, generic standard interference suppression in industrial environments.

3. Safety information

To exclude hazards due to live parts and to avoid interruptions of operation, installation, putting into operation and adjustments should on principle only be performed by qualified persons. These persons must have these instructions at their disposal at all times. According to VDE 105 or IEC 364 qualified persons are those who, from their training and knowledge of the standards, stipulations and rules, as well as operating conditions, have been authorized by the persons responsible for safety in the installation to perform these duties.

The controls described herein often carry dangerous voltages when operating. Opening the casing is therefore prohibited. Before interfering with connectors, cables, sensors, valves and vibrators, they must first be disconnected from the controls. Mere switching off by the rocker switch is insufficient.

The most important functions and switching conditions of the controls are indicated by means of in part two-coloured LEDs on the simply and clearly designed front panels. Mains switch and all settings are easily accessible on the front panels. All electrical connexions required and the fuseholder are made by plugging into the rear panel.

To assure the functional safety of the control units described, all repairs, including minor ones, must on principle be undertaken by the manufacturer. The liability of the manufac-

turer or claims under guarantee are rendered invalid in the event of intervention by third parties.

Protection must be afforded by time-lag (T) fuses rated 4A. If fuses with a different current rating or characteristic are used, all claims under guarantee will be declined.

The controls described contain mains suppression filters, which enables the utilisation not only in an industrial environment, but also in a domestic environment, in business and trade areas as well as in small enterprises.

Vibrators must only be connected to variable frequency controls with screened cables. If cables without screening are utilised or the screening, male cable connector HAN3A and cable glands are not correctly installed, then the electromagnetic compatibility standards (radiation) are not anymore complied with. For any damage resulting from this, the manufacturer declines all liability.

The protection class IP40 is reached only, if all connectors are plugged, and the unused fixing threads at the sides are locked with the corresponding screws or covers. Otherwise the protection class IP20 counts.

This documentation was examined with scrupulous care. But no assurance of freedom from errors can be given. We reserve the right to make technical modifications as thought fit.

4. Use for the intended purpose

The control units described are devices for installation in mains-operated industrial systems. They exclusively serve for the controlling of electro-magnetically powered vibrating bowl feeders, vibrating linear feeders or vibration hoppers.

Use for any other purpose is regarded as not for the intended purpose. The manufacturer declines to bear any responsibility for damage resulting therefrom.

5. Description of the product

Vibrator control SE611

Employment: Controlling of an electro-magnetically powered vibrating bowl feeder or of a vibration hopper, which is monitored by a sensor with respect to blockage and fill level.

Features: The vibration frequency of 20.0...159.9 Hz can be selected. The discharge rate is infinitely variable within variable limits. Fluctuations of the mains voltage are effectively corrected.

With the internal voltage supply it is possible to connect nearly all commercially obtainable sensors with PNP, NPN and NAMUR output. The separately adjustable time-lags for switching on and off are equipped with a quartz-crystal time-

base and are thus independent of mains frequency and temperature.

The vibrator is switched on with adjustable smooth start, but is switched off instantaneously.

Available for the user is a valve output (AIR) which is activated together with the vibrator. The valve is switched off after a time-lag, in order to compensate for the overtravel of the vibrator.

The connexions INTERFACE allow the locking or enabling of several control units SE6XX mutually as well as through a higher-order control system (PLC). For monitoring purposes, in addition the sensor and blockage conditions are transmitted to the PLC.

Vibrator control SE612

Employment: Controlling of an electro-magnetically powered vibrating bowl feeder or of a vibration linear feeder, which conveys continuously or whose state is monitored by a higher-order control system (PLC).

Features: The vibration frequency of 20.0 ... 159.9 Hz can be selected. The discharge rate is infinitely variable within variable limits. Fluctuations of the mains voltage are effectively corrected.

6. Technical data

Input mains voltage	115 or 230V, ±10%, 50/60 Hz
Fuses	5 x 20 mm, 4A time lag (T 4A)
Vibrator frequency	20.0...159.9 Hz (vibrations per second)
Output current to vibrator	max. 4A, electronic fused
Output voltage to vibrator	10...105 or 10...220V, (maximum: mains voltage -10V)
Smooth start vibrator	0.1...1 s adjustable
Input SENSOR (only SE611)	PNP 5 mA; NPN 5 mA; NAMUR <2 mA / >3 mA
Supply to sensor (only SE611)	24V DC / max. 100 mA, short-circuit proof
Output valve (AIR, only SE611)	PNP 24V DC / max. 100 mA, short-circuit proof
Output lock / enable (INTERFACE LOCK, only SE611)	PNP 24V DC / max. 100 mA, short-circuit proof
Output operating condition (INTERFACE L>, only SE611)	PNP 24V DC / max. 100 mA, short-circuit proof
Output sensor (INTERFACE S>, only SE611)	PNP 24V DC / max. 100 mA, short-circuit proof
Total consumption Sensor and outputs (only SE611)	max. 150mA
Input lock / enable (INTERFACE LOCK)	PNP, 24 V / 10mA
Time range ON (only SE611)	0...7.5 s or 0...15 s, switchable
Time range OFF (only SE611)	0...7.5 s or 0...15 s, switchable
Ambient temperature	0...+40°C in service, -25...+70° during transport
Protection classes	IP20 or IP40, see safety information

The vibrator is switched on with adjustable smooth start, but is switched off instantaneously.

The connexions INTERFACE allow the locking or enabling by a vibrator control SE6XX as well as through a higher-order control system (PLC).

7. Operating and indicating elements (front panel)

SUPPLY section

Rocker switch	switches supply voltage
LED SUPPLY	alight supply in order flashes (only SE611) overload on supply 24V out mains voltage missing

VIBRATOR section

LED VIBRATOR	red vibrator switched off green vibrator conveying
Potentiometer 0...9	control range of vibrator
Trimmer +	maximum control range of vibrator
Trimmer -	minimum control range of vibrator
Trimmer /	smooth start of vibrator
Push switch f (Hz)	vibrator frequency 20.0...159.9 Hz (vibrations per second) steps 0.1/1/10 Hz The push-buttons are recessed in order to prevent any inadvertent actuation. Suitable objects for actuating the push-buttons are, e.g., pencils, ball-point pens, toothpicks, etc.
LED > max.	out vibrator current below 4A flashes vibrator current exceeds 4A Power output is reduced, periodic switching-on again.
LED > T max.	out Maximum temperature in the housing SE61X not reached. flashes Maximum temperature in the housing exceeded. Vibrator will be switched off, switching-on again after cooling down.

LOCK section (locking or enabling)

LED LOCK	alight red external lock active (switch in position LOCK) alight green external enable active (switch in position ENABLE) out external lock or enable not active
Sliding switch LOCK / ENABLE	LOCK vibrator locked with active input LOCK ENABLE vibrator conveys with active input LOCK

SENSOR section (only SE611)

LED SENSOR	red sensor inactive green sensor active orange sensor unstable
Sliding switch IN / IN INVERSE	IN vibrator conveys with active sensor IN INVERSE vibrator locked with active sensor

ON/OFF sections (only SE611)

Rotary switch ON / OFF time	steps 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
Sliding switch time ranges	x1s steps 1s, range 0...15s x0.5s steps 0.5s, range 0...7.5s

8. Plug connexions (rear panel)

Male receptacle 230V IN	mains voltage 115 or 230V, type IEC320, EN60320/C14
Fuse holder FUSES	protect vibrator control, use only fuses 4A time-lag
Female receptacle VIBRATOR OUT	vibrator output, type HAN A, 3 pin + PE
Female receptacle SENSOR (only SE611)	input / supply voltage sensor, Amphenol C91B, 4 pin 1 0V supply voltage 0V / NAMUR - 2 PNP PNP input 3 NPN NPN input / NAMUR + 4 +24V supply voltage +24V
Female receptacle AIR (only SE611)	valve output, Amphenol C91B, 3 pin 1 VAL- valve - 2 PE protection earth valve 3 VAL+ valve +
Male receptacle INTERFACE SE611	interface of subordinate SE6XX, Amphenol C91B, 6 pin 1 0V supply voltage 0V 2 LOCK output lock / enable 5 → 3 transit sensor condition of replenishing device 6 → 4 transit operating condition of replenishing device.
Female receptacle INTERFACE SE611	interface PLC or higher-order SE6XX, Amphenol C91B, 6 pin 1 0V supply voltage 0V 2 LOCK input lock / enable external 3 output transit sensor condition replenishing device 4 output operating condition of replenishing device 5 S > output sensor, active = log. 1, 6 L > output operating condition of vibrator
Male / female receptacle INTERFACE SE612	interface PLC or higher-order SE6XX, Amphenol C91B, 6 pin 1 0V supply voltage 0V 2 LOCK lock / enable external 3 ---- 3 transit sensor condition of replenishing device 4 ---- 4 transit operating condition of replenishing device 5 ---- 5 transit sensor condition vibrating bowl feeder 6 ---- 6 transit operating condition of vibrating bowl feeder
Interface cable SE692	side SE6XX: male connector Amphenol C91B, 6 pin / side PLC: stripped 1 white WH supply voltage 0V 2 brown BN lock / enable external 3 green GN sensor condition of replenishing device 4 yellow YE operating condition of replenishing device 5 grey GY sensor condition vibrating bowl feeder 6 pink PK operating condition of vibrating bowl feeder

The suitable **plugging sequence** of the **INTERFACE-connexions** determines the correct locking of a replenishing device or a linear feeder through the vibrating bowl feeder, (see applications). The correct connecting is simplified, if the individual controls are fixed already in the right sequence. This sequence corresponds to the flow direction of the parts to be conveyed:

Replenishing device → vibrating bowl feeder → linear feeder (→ PLC).

Excepted: linear feeder is locked through the vibrating bowl feeder, (possibly necessary only at 2 or 3 linear feeders in file):

Replenishing device → lockable linear feeder(s) → vibrating bowl feeder → linear feeder(s) which conveys continuously (→ PLC).

9. Installation, mechanical mounting

The control units SE6XX can be used as free-standing separate components. Fixing of one or more controls is simplified by using our mounting brackets SE681 and connecting plates SE682 incl. the corresponding washers and screws. The attachment of one or more control units to an assembly installation can be standing on a baseplate or suspended underneath the baseplate. In either case make sure there is adequate air circulation, so as to prevent overheating. See Casing and accessories.

10. Putting into operation

The vibrator controls are commissioned in the following order:

- Putting together of the required combination from the control systems SE6XX.** The present operating instructions are only applicable for the variable frequency vibrator controls SE611/612. The commissioning of the vibrator- and motor controls SE601/602/605/606/621 possibly present in the combination is described in their operating instructions "Feed system controls SE6XX".
- Wiring the mains supply.** The mains voltage has to be fed to each control unit via a mains distributor, (see accessories). Each control can be switched on or off separately with the rocker switch. A cascading, such as in the case of the controls SE601/602/605/606/ 621 is not possible.
Functioning of the voltage supplies is indicated by the LEDs SUPPLY.
- Connexion of a blow-off valve (AIR, only SE611), if provided,** 24V DC, max. 100mA.
- Connexion of the sensors:** Carry out a functional test on the sensor with the LED SENSOR. With the sliding switch IN / IN INVERSE the sensor signal is inverted.
- Connexions INTERFACE with other SE6XX,** if provided. See applications.
- Connexion to a PLC,** if provided. See applications.
- Adjust the switches LOCK / ENABLE:** At all with interface cables SE691 mutually connected control units SE6XX the slide switches LOCK / ENABLE must be brought in them equal position.
 - No PLC connected: all switches only at position LOCK.
 - Locking of the controls through an active PLC-output: all switches at position LOCK.
 - Enabling of the controls through an active PLC-output: all switches at position ENABLE.

>> Before carrying out the following steps, switch off the mains voltage with the rocker switch(es)!

- 8. Potentiometer and trimmers:** Set trimmers for control range (+/-), trimmer for smooth start (/) and potentiometer (0...9) against the stop in the counter clockwise direction.
- 9. Fuse in the vibrator.** A fuse possibly incorporated in the vibrator has to be adapted to the maximum permissible current demand of the vibrator coils. With this, an overheating and a failure of the coils in case of a wrong frequency input or following a change of the air gap (broken spring) is prevented.
- The two fuses present in the fuse holder on the rear panel (FUSE 2x T 4A) only protect the vibrator control and must not be replaced with fuses with a different triggering current or switching characteristic.
- 10. Setting the vibration frequency.** Adapt the vibration frequency to the respective vibrator with the push-buttons (refer to data sheet Vibrator). A wrong vibration frequency can have the effect of resulting in a too great current demand or in an insufficient feeding performance. If the vibration frequency of the vibrator is not known, then it has to be established in accordance with point 13 Establishment of the optimum vibration frequency. Frequency inputs below 20 Hz are ignored.
- 11. Connection of the vibrator (VIBRATOR OUT).** Refer to Accessories for the designations of the male cable connector, cable glands and cables.

The vibrator must only be connected to a variable frequency control with a screened cable (electro-magnetic compatibility). This cable (e.g., 3x0.75 mm², screened) must correspond to the regulations and prescriptions of the respective country. The screening must not be used as a protective ground conductor. The installation of this cable, of the cable connector and of the cable glands to the cable connector and vibrator must only be carried out by appropriately qualified persons, refer to the Safety Information.

Correct connecting of the cable in the cable gland:

- Tighten the cable gland in the connector housing as well as in the vibrator housing, nuts remain loose.
- Pass the screened cable through both cable glands.
- Remove insulation from the outer jacket of the cable without damaging the screen, (circular cut).
- Cut back the screen on both ends up to approx. 10 mm in front of the end of the outer jacket. Remove screen remains.
- Remove the inner jacket up to approx. 10 mm in front of the end of the screen without damaging the insulation. of the 3 conductors.
- Pull cable back until the connection to the screen is made by the contact spring.
- Tighten the nuts of the cable glands.
- The cable gland, the vibrator base and all parts of the vibrator housing have to be conductively connected with one another as well as with the yellow - green conductor (PE). A safety test has to be carried out.

12. Switch on mains voltage.

- 13. Establishment of the optimum vibration frequency:** The LED VIBRATOR must be alight green. If necessary, free sensor of parts or correct the setting of the sliding switch IN / IN INVERSE (SE611). A lock, if provided, must not be active, (LED LOCK out, sliding switch position LOCK), or an ENABLE signal must be active, (LED LOCK alight green, sliding switch position ENABLE). If the input LOCK is not connected, the sliding switch LOCK / ENABLE must be found in position LOCK.

- Potentiometer 0...9: turn clockwise as far as the stop (pos. 9).
- Trimmer + : Turn in clockwise direction, until a weak vibration can be detected. The establishment of the vibration frequency now to follow must only be carried out at minimum power.
- Push-button f (Hz): Increase the frequency by pushing the corresponding recessed push-buttons with a pencil or with something similar until the resonance frequency of the vibrator has been identified.

>> Resonance frequency: The resonance frequency has been reached, when the vibration amplitude is at a maximum and the current demand of the vibrator is simultaneously at a minimum. The current demand is measured with an actual current measuring instrument in circuit in the line to the vibrator (moving iron or TRUE RMS instrument). A vibrator can have several different resonance frequencies. If the resonance frequency of a vibrator suddenly changes, then in any case a mechanical failure (broken spring, loosened screws, etc.) can be concluded as having happened, which under no circumstances must be compensated by changing the frequency of the vibrator control system.

>> Vibration frequency: At the resonance frequency a stable operation is not possible. The optimum operating frequency of a vibrator is dependent on its design and in most cases is 1...2 Hz upper or lower than the resonance frequency. It has to be determined by the person responsible for the commissioning.

- Push-button f (Hz): Set the optimum vibration frequency.

14. Setting the vibrator control range:

- Trimmer + : turn clockwise until the maximum discharge rate is reached. The current must not exceed the permissible maximum current of the vibrator coils.
- Potentiometer 0...9 : turn counter clockwise as far as the stop (pos. 0).
- Trimmer - : turn clockwise until the minimum discharge rate is reached.
- Potentiometer 0...9 : adjust to normal discharge rate, somewhere round the middle of the scale.

- 15. Adjusting smooth start.** This is effective every time the vibrator is switched on by the sensor or an external lock / enabling, as well as when the mains voltage is switched on. The vibrator is switched off instantaneously and cannot be adjusted.

- 16. Setting the ON and OFF times (only SE611).** Preselect the time ranges (in steps of 1 s or 0,5 s). The ON and OFF time ranges may have different settings. ON and OFF times are adjusted with the rotary switches.

11. Maintenance

To prevent the controls from overheating, especially when driving heavy loads, make sure there is sufficient air circulation in the region of the control units. True maintenance is unnecessary.

12. Disturbances

- | ⊗ Disturbance | ↻ Observe | ☞ Causes | ⊗ Elimination | ⚠ Danger | ☎ External |
|--|---|---|--|---|--|
| ⊗ Vibrator is not conveying | | | | | |
| ↻ LED SUPPLY not alight. | ☞ Rocker switch off. | ⊙ Close rocker switch. | ☞ Current demand more than 4 Amp, wrong frequency set. | ⊙ Establish resonance frequency, set the correct vibration frequency and measure the maximum permissible current demand of the vibrator, refer to Putting into operation. | ⚠ Intervention only by qualified experts, see Safety! |
| ☞ Fuse blown. | ⊙ Replace fuse. | | ☞ Current demand more than 4 Amp, air gap too big. | ⊙ Pull out the connector of the vibrator, replace defective springs. Check the air gap and measure the maximum permissible current demand of the vibrator. | ⚠ Intervention only by qualified experts, see Safety! |
| ☞ Mains cable missing, loose or broken. | ⊙ Plug in mains cable correctly or replace it. | | ↻ LED SUPPLY is lit, LED > T max. is blinking. | ☞ Over-temperature in the vibrator control. | |
| ↻ LED SUPPLY alight, LED LOCK alight red. | ☞ INTERFACE connected to preceding control SE6XX. | ⊙ Activate preceding control SE6XX.. | ⊙ Ensure an adequate air circulation. Place the vibrator control at a distance from other sources of heat (motors, lamps, sunlight). | | |
| ☞ INTERFACE connected to a PLC. | ☎ External cause, rectify by PLC experts. | (Question: Locking or enabling by the PLC? If an enabling signal on input LOCK is active, the sliding switch must be brought in position ENABLE). | ⊗ Vibrator conveys continuously, cannot be locked | | |
| ↻ LED SUPPLY alight, LED LOCK out, sliding switch in position ENABLE. | ☞ INTERFACE not connected. | ⊙ Correct the sliding switch in position LOCK. | ↻ LED VIBRATOR green, (only SE611). | ☞ Sensor function disturbed, check LED SENSOR change of state. | |
| ☞ INTERFACE only connected to preceding control SE6XX. | ⊙ Correct the sliding switch in position LOCK. | | ☞ LED SENSOR does not change or orange. | ☞ Sensor cable missing, broken or loose. | ⊙ Plug in cable correctly or replace. |
| ☞ INTERFACE connected to a PLC. | ☞ INTERFACE connected to a PLC. | ☎ External cause, rectify by PLC experts. | ☞ Sensor wrongly set or defective. | ⊙ Correct setting sensor or replace. | |
| ↻ LED SUPPLY alight, LED LOCK out, sliding switch in position LOCK, or LED LOCK alight green (only SE611). | ☞ INTERFACE connected to a PLC. | (Question: Locking or enabling by the PLC? If a lock signal on input LOCK is not active, the sliding switch must be brought in position LOCK). | ☞ Control unit defective. | ⊙ Replace control unit. | |
| ☞ Sensor function disturbed, check LED SENSOR for change of state. | ☞ INTERFACE connected to a PLC. | | ↻ LED SENSOR changes, vibrator or motor is switched off by free sensor, (wait for OFF time!). | ☞ Sensor function inverted. | ⊙ Invert sensor function (invert sensor or sliding switch IN / INVERSE). |
| ↻ LED SENSOR does not change or orange. | ☞ INTERFACE connected to a PLC. | | ☞ Sensor wrongly set or defective. | ⊙ Correct setting sensor or replace. | |
| ☞ Sensor cable missing, broken or loose. | ☞ INTERFACE connected to a PLC. | | ⊙ Correct setting sensor or replace. | | |
| ⊙ Plug in sensor cable correctly or replace. | ☞ INTERFACE connected to a PLC. | | ☞ Control unit defective. | ⊙ Replace control unit. | |
| ☞ Sensor wrongly set or defective. | ☞ INTERFACE connected to a PLC. | | ↻ LED LOCK alight red. | ☞ Control unit defective. | ⊙ Replace control unit. |
| ⊙ Correct setting sensor or replace. | ☞ INTERFACE connected to a PLC. | | ☞ Control unit defective. | | |
| ☞ Control unit defective. | ☞ INTERFACE connected to a PLC. | | ↻ LED VIBRATOR green, LED LOCK out, sliding switch in position LOCK. | ☞ No PLC connected. | ⊙ Switch off preceding control unit SE6XX through the sensor. |
| ⊙ Replace control unit. | ☞ INTERFACE connected to a PLC. | | ☞ No PLC connected. | ⊙ Switch off preceding control unit SE6XX through the sensor, or | ☎ External cause, rectify by PLC experts. |
| ↻ LED SENSOR changes, vibrator switched on when sensor recognizes parts, (wait for ON time!). | ☞ INTERFACE connected to a PLC. | | ☞ No PLC connected. | ☎ External cause, rectify by PLC experts. | (Question: Locking or enabling by the PLC? If the enable signal on input LOCK is not active, the sliding switch must be brought in position ENABLE). |
| ☞ Sensor function inverted. | ☞ INTERFACE connected to a PLC. | | ⊙ Switch off preceding control unit SE6XX through the sensor. | | |
| ⊙ Invert sensor function (sensor or sliding switch IN / INVERSE). | ☞ INTERFACE connected to a PLC. | | ☞ INTERFACE connected to a PLC. | ⊙ Switch off preceding control unit SE6XX through the sensor, or | ☎ External cause, rectify by PLC experts. |
| ↻ LED SENSOR changes, vibrator remains switched off, LED VIBRATOR remains red (wait for ON time!). | ☞ INTERFACE connected to a PLC. | | ☞ INTERFACE connected to a PLC. | ⊙ Switch off preceding control unit SE6XX through the sensor, or | ☎ External cause, rectify by PLC experts. |
| ☞ Control unit defective. | ☞ INTERFACE connected to a PLC. | | ☞ INTERFACE connected to a PLC. | ☎ External cause, rectify by PLC experts. | (Question: Locking or enabling by the PLC? If the enable signal on input LOCK is not active, the sliding switch must be brought in position ENABLE). |
| ⊙ Replace control unit. | ☞ INTERFACE connected to a PLC. | | ☞ INTERFACE connected to a PLC. | ☎ External cause, rectify by PLC experts. | (Question: Locking or enabling by the PLC? If the enable signal on input LOCK is not active, the sliding switch must be brought in position ENABLE). |
| ↻ LED SUPPLY alight, LED VIBRATOR green. | ☞ INTERFACE connected to a PLC. | | ☞ INTERFACE connected to a PLC. | ☎ External cause, rectify by PLC experts. | (Question: Locking or enabling by the PLC? If the enable signal on input LOCK is not active, the sliding switch must be brought in position ENABLE). |
| ☞ Fuse in vibrator defective. | ☞ INTERFACE connected to a PLC. | | ☞ INTERFACE connected to a PLC. | ☎ External cause, rectify by PLC experts. | (Question: Locking or enabling by the PLC? If the enable signal on input LOCK is not active, the sliding switch must be brought in position ENABLE). |
| ⊙ Replace fuse. | ☞ INTERFACE connected to a PLC. | | ☞ INTERFACE connected to a PLC. | ☎ External cause, rectify by PLC experts. | (Question: Locking or enabling by the PLC? If the enable signal on input LOCK is not active, the sliding switch must be brought in position ENABLE). |
| ☞ Vibrator cable defective, missing or loose. | ☞ INTERFACE connected to a PLC. | | ☞ INTERFACE connected to a PLC. | ☎ External cause, rectify by PLC experts. | (Question: Locking or enabling by the PLC? If the enable signal on input LOCK is not active, the sliding switch must be brought in position ENABLE). |
| ⊙ Plug in cable correctly or replace. | ☞ INTERFACE connected to a PLC. | | ☞ INTERFACE connected to a PLC. | ☎ External cause, rectify by PLC experts. | (Question: Locking or enabling by the PLC? If the enable signal on input LOCK is not active, the sliding switch must be brought in position ENABLE). |
| ☞ Vibrator defective. | ☞ INTERFACE connected to a PLC. | | ☞ INTERFACE connected to a PLC. | ☎ External cause, rectify by PLC experts. | (Question: Locking or enabling by the PLC? If the enable signal on input LOCK is not active, the sliding switch must be brought in position ENABLE). |
| ⊙ Replace vibrator. | ☞ INTERFACE connected to a PLC. | | ☞ INTERFACE connected to a PLC. | ☎ External cause, rectify by PLC experts. | (Question: Locking or enabling by the PLC? If the enable signal on input LOCK is not active, the sliding switch must be brought in position ENABLE). |
| ↻ LED SUPPLY is lit, LED > I max. is blinking irregularly. | ☞ INTERFACE connected to a PLC. | | ☞ INTERFACE connected to a PLC. | ☎ External cause, rectify by PLC experts. | (Question: Locking or enabling by the PLC? If the enable signal on input LOCK is not active, the sliding switch must be brought in position ENABLE). |
| ☞ Short-circuit in the vibrator connection cable. | ☞ INTERFACE connected to a PLC. | | ☞ INTERFACE connected to a PLC. | ☎ External cause, rectify by PLC experts. | (Question: Locking or enabling by the PLC? If the enable signal on input LOCK is not active, the sliding switch must be brought in position ENABLE). |
| ⊙ Check connection cable and male cable connector. | ☞ INTERFACE connected to a PLC. | | ☞ INTERFACE connected to a PLC. | ☎ External cause, rectify by PLC experts. | (Question: Locking or enabling by the PLC? If the enable signal on input LOCK is not active, the sliding switch must be brought in position ENABLE). |
| ⚠ Intervention only by qualified experts, see Safety! | ☞ INTERFACE connected to a PLC. | | ☞ INTERFACE connected to a PLC. | ☎ External cause, rectify by PLC experts. | (Question: Locking or enabling by the PLC? If the enable signal on input LOCK is not active, the sliding switch must be brought in position ENABLE). |
| ☞ Short-circuit in the magnetizing coil. | ☞ INTERFACE connected to a PLC. | | ☞ INTERFACE connected to a PLC. | ☎ External cause, rectify by PLC experts. | (Question: Locking or enabling by the PLC? If the enable signal on input LOCK is not active, the sliding switch must be brought in position ENABLE). |
| ⊙ Pull out the connector of the vibrator. Measure the resistance of the individual coils and replace the defective coil. | ☞ INTERFACE connected to a PLC. | | ☞ INTERFACE connected to a PLC. | ☎ External cause, rectify by PLC experts. | (Question: Locking or enabling by the PLC? If the enable signal on input LOCK is not active, the sliding switch must be brought in position ENABLE). |
| ⚠ Intervention only by qualified experts, see Safety! | ☞ INTERFACE connected to a PLC. | | ☞ INTERFACE connected to a PLC. | ☎ External cause, rectify by PLC experts. | (Question: Locking or enabling by the PLC? If the enable signal on input LOCK is not active, the sliding switch must be brought in position ENABLE). |

⊗ **Vibrator conveys continuously, feed rate cannot be controlled**

- ↪ LED VIBRATOR green.
 - ☞ Control range wrongly set.
 - ⊙ Correct the setting of the control range, see Putting into operation.

⊗ **Feed rate of vibrator insufficient**

- ↪ LED VIBRATOR green.
 - ☞ Potentiometer 0...9 wrongly set.
 - ⊙ Increase feed rate by turning clockwise.
 - ☞ Control range wrongly set.
 - ⊙ Correct setting of control range, see Putting into operation.
 - ☞ Vibration frequency wrongly set.
 - ⊙ Correct frequency to comply with vibrator data-sheet.
 - ⚠ Do not determine the vibration frequency experimentally. A wrong frequency causes extremely high current consumption and can lead to failure of the magnet coils..

☞ Magnet coils in vibrator defective.

- ⊙ Pull out vibrator plug. Measure the resistance of the individual coils. Replace any defective coil..
 - ⚠ Intervention only by qualified experts, see Safety!
- ☞ Broken spring in vibrator.
 - ⊙ Pull out the vibrator plug. Replace defective spring. Check the air-gap.
 - ⚠ Mechanical damage to the vibrator, such as broken spring, have to be remedied and must under no circumstance be compensated for by changing the frequency!
 - ⚠ If the air-gap is too large, it can cause an extremely high current consumption and lead to failure of the magnet coils!
 - ⚠ Intervention only by qualified experts, see Safety!

13. Replacement parts

Part	Value, type	SE No.	Manufacturer, standard
Fuse	5x20mm, time lag 4A	T4A	Standard IEC127
Fuse holder	type KM01, Nr. 4301.1403	KM01E	Schurter AG, CH-6002 Lucerne
Corner profiles	Nr. 9551.10	EP9547	Jaeger AG, CH-3001 Bern
Knob, black	Nr. 021-3425	KN614BMS	Elma AG, CH-8620 Schöneich
Cover for knob	Nr. 040-3025	D14BM	Elma AG, CH-8620 Schöneich

The use of different replacement parts is prohibited and their installation may only be carried out by the manufacturer as stated in the information on safety.

14. Accessories

Part	Value, country, type	SE No.	Manufacturer
Supplied with SE6XX:			
Mains female cable connector, or Cable SE61X-mains distributor, 0.5m	Standards IEC320, EN60320-1/C13	KD113	
Mains cable concerned	Standards IEC320, EN60320-1/C13, cable plug as per standards of the country CH (SEV)	SE693	
	A, B, D, F, N, NL, S, SF (Schuko)	NK12113	
		NKCE7113	
Not included:			
Mains distributor	Standards IEC320, EN60320-1/C13	VL4X113	Schurter
Male cable connector incl. cable gland	HAN A, 3-pole + PE	KSHAN3AKV	Harting, Contact
Cable gland (vibrator)	PG11, EMC-tight	KVEPG11	Contact
Screened cable	3x0.75mm ² , screened (Kroschu 222103)	3X6S (+ length)	Kromberg+Schubert
Male cable connector AIR	C91B 3-pole, Type T 3274 501	KSC91E3	Amphenol
Male cable connector SENSOR	C91B 4-pole, Type T 3324 501	KSC91E4	Amphenol
Male cable connector INTERFACE, or Interface cable SE6XX - PLC	C91B 6-pole, Type T 3424 501	KSC91E6	Amphenol
Interface cable SE6XX - SE6XX	length 3 or 5m, 1 male / 1 end stripped	SE692-3 (3m) or SE692-5 (5m)	
	length 450mm, 1 male / 1 female	SE691	
Mounting bracket		SE681	
Connecting plate		SE682	
Self-tapping csk screws	M3x8 DIN7500M	GFSPM3X8	
Washers for csk screws	M3 SN213912	USSM3	
Front cover transparent		SE683	

15. Disposal

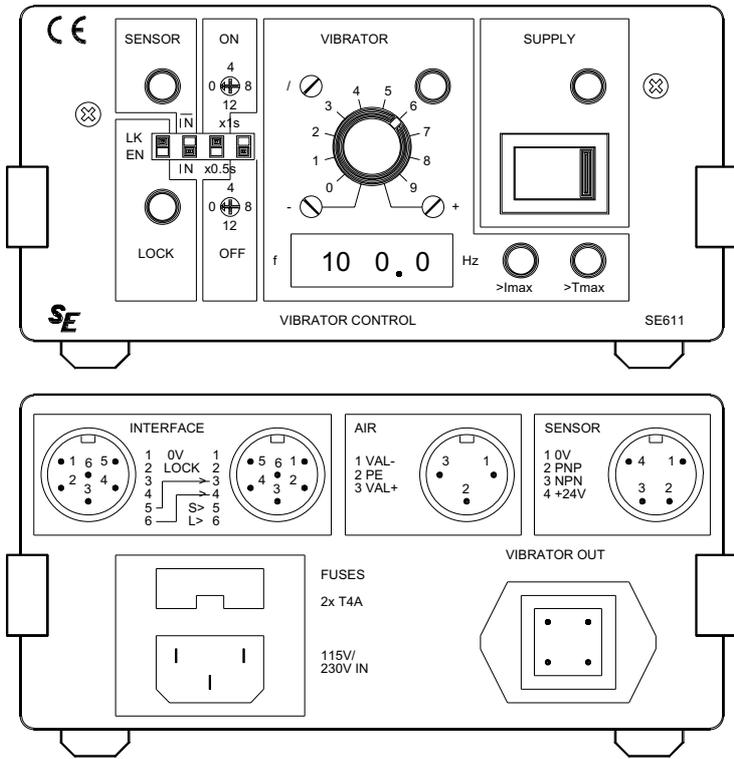
The large number of possible applications of the control units SE6XX allows them to be re-used in other installations if their original use becomes superfluous. Control units no longer required should not be disposed of as complete units

but dismantled into their components by a qualified firm, according to the type of material contained, or according to the regulations of the country in question.

16. Copyright

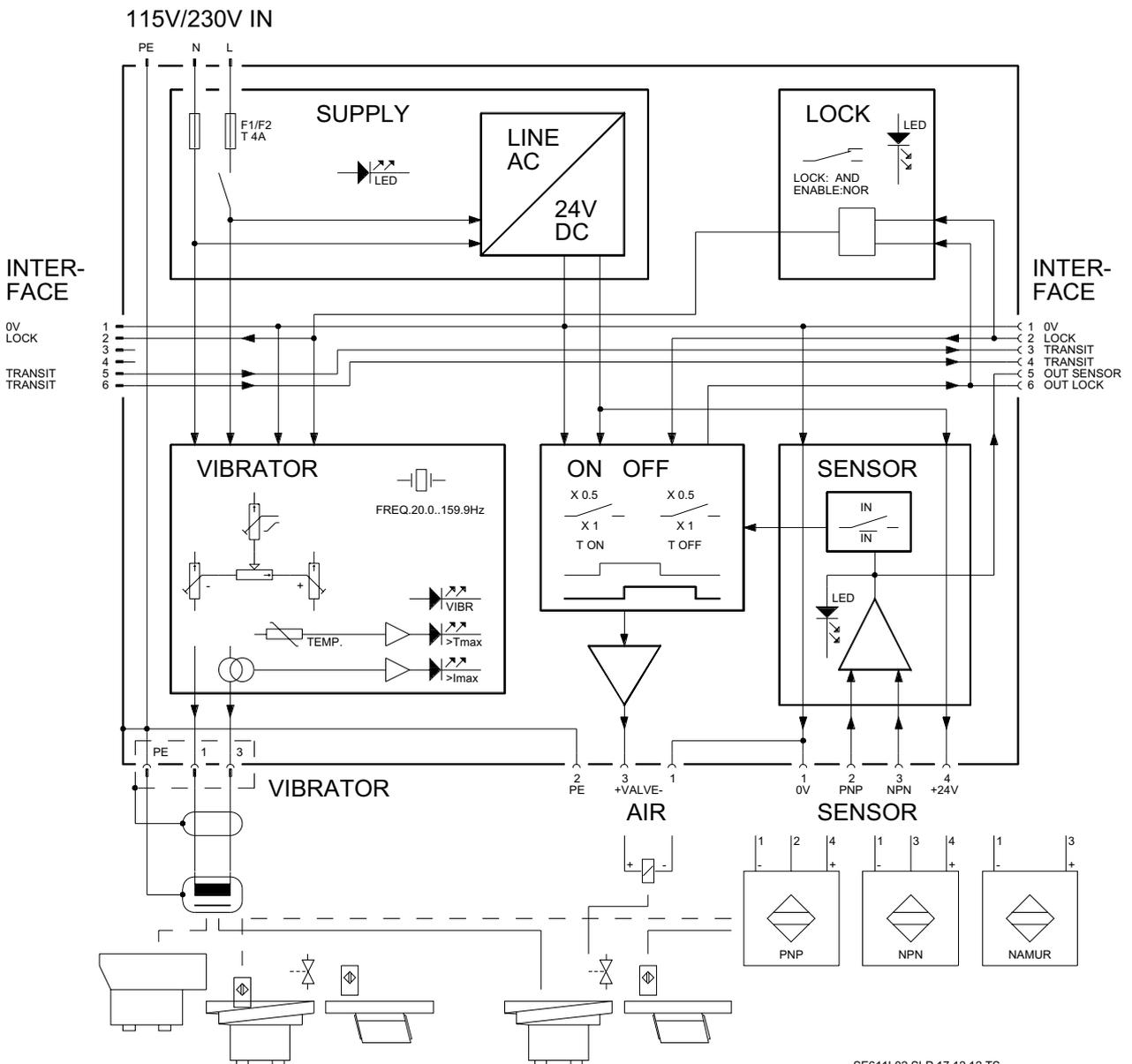
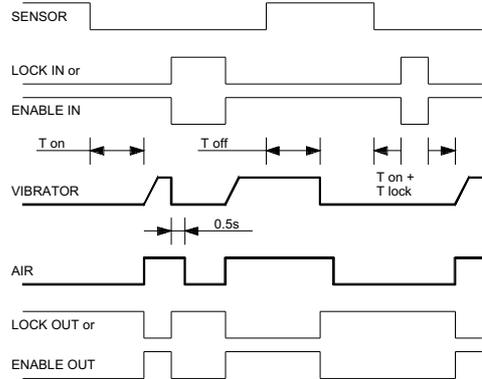
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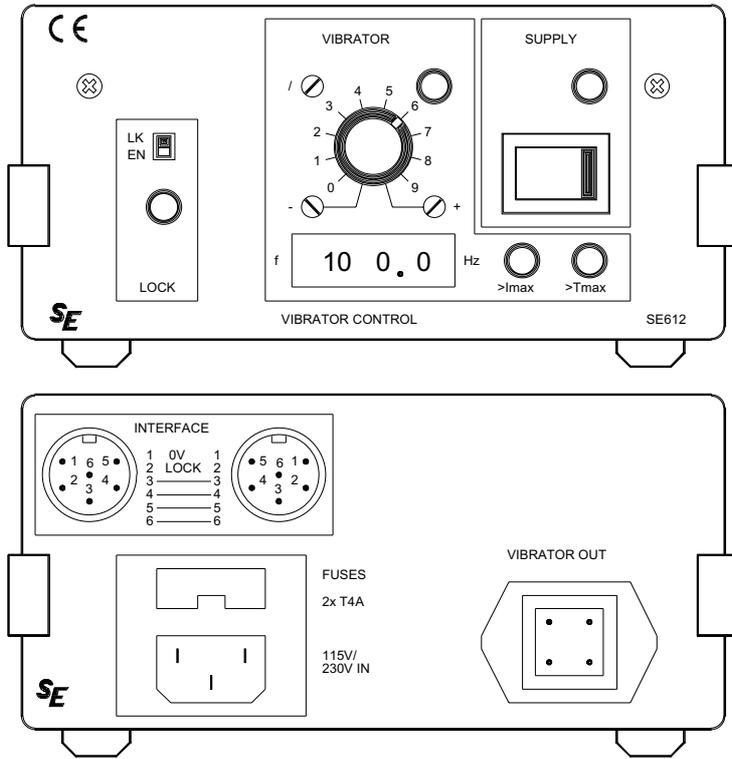
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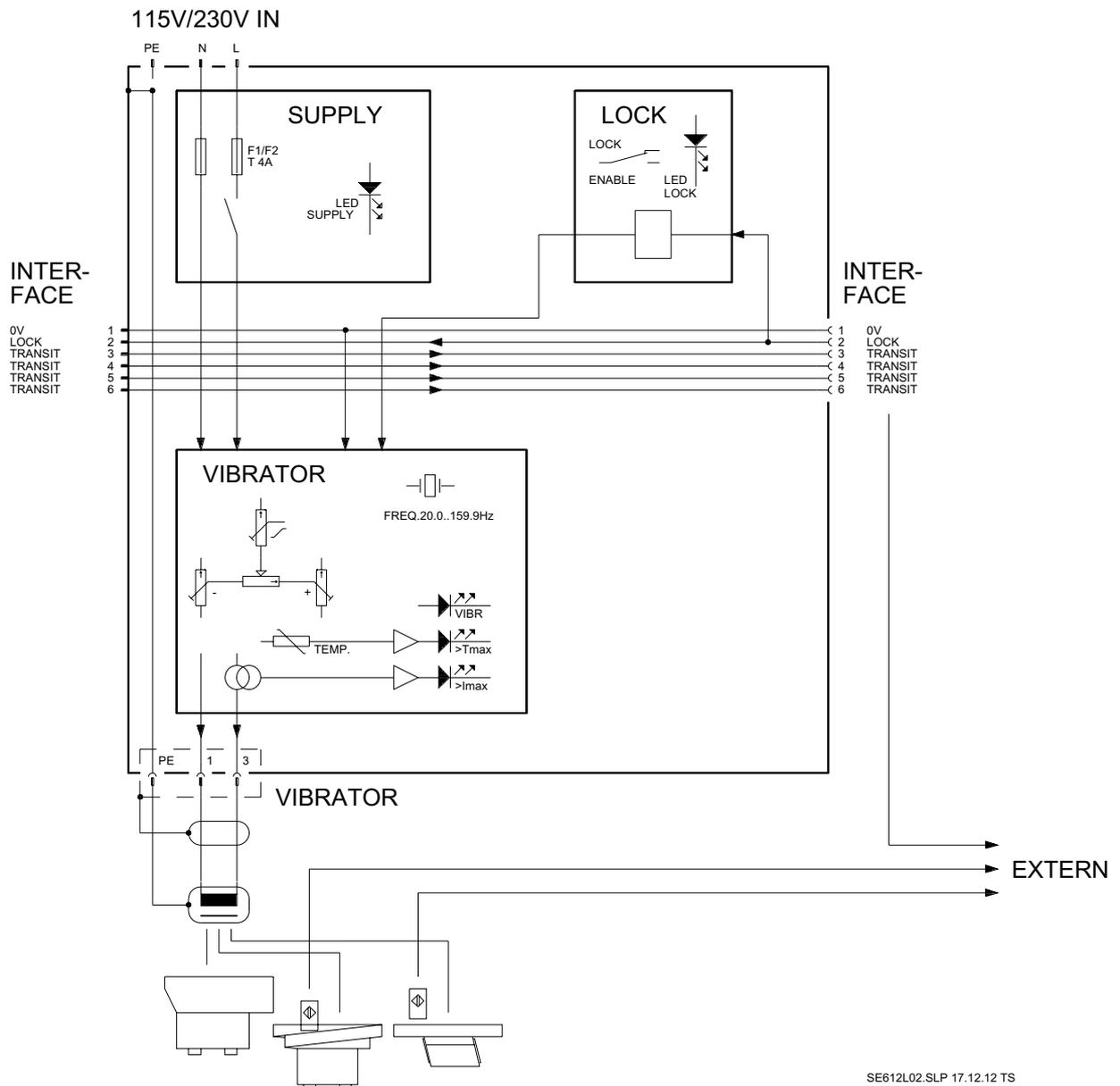
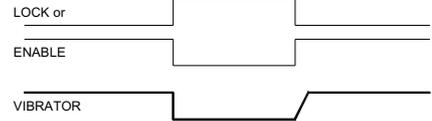
17.

VIBRATOR CONTROL SE611



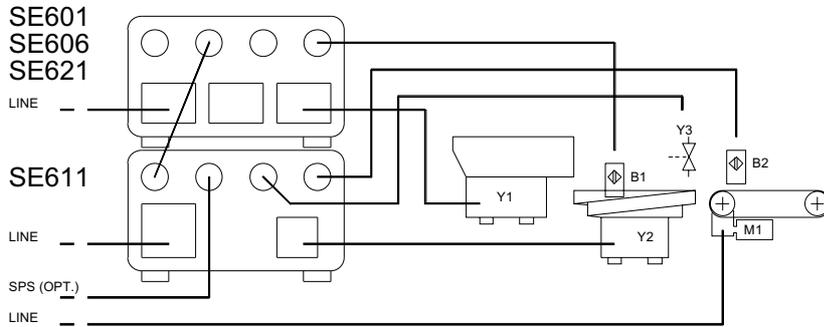
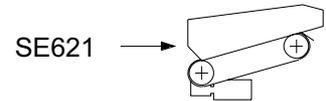
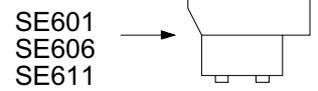
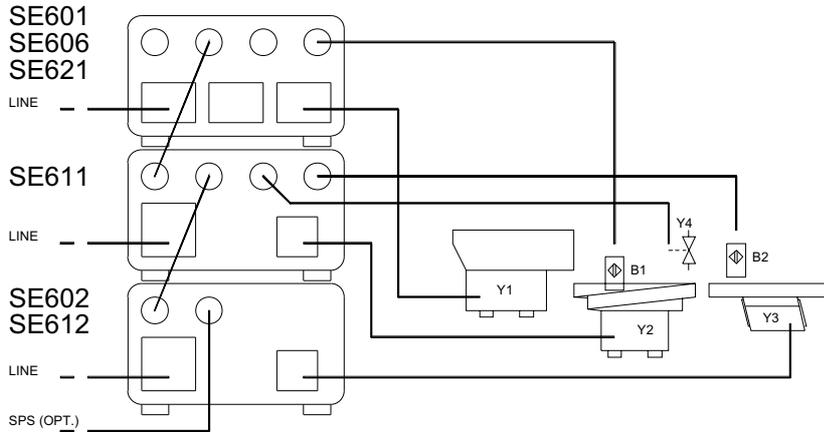
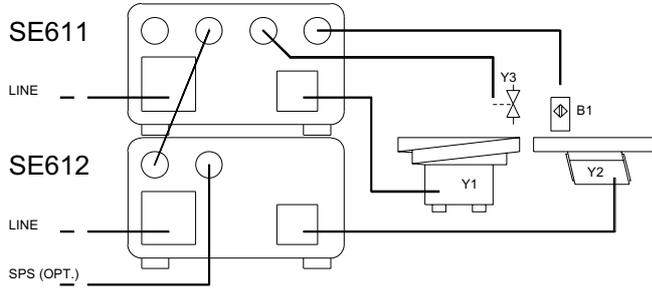
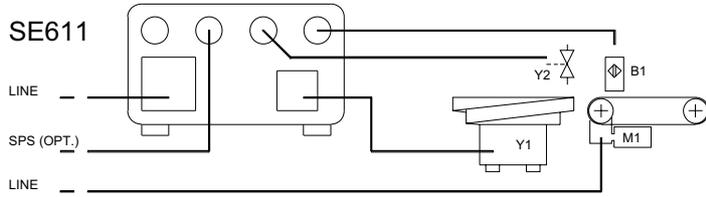


18.
VIBRATOR CONTROL SE612

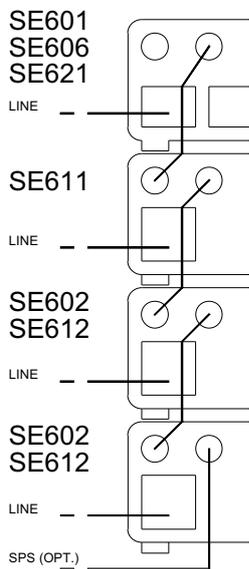


19.

DE: ANWENDUNGEN
 EN: APPLICATIONS
 FR: APPLICATIONS
 IT: APPLICAZIONI
 SP: APLICACIONES



LOCK Y1 << Y2



LOCK Y1 << Y2 >> LOCK Y3

