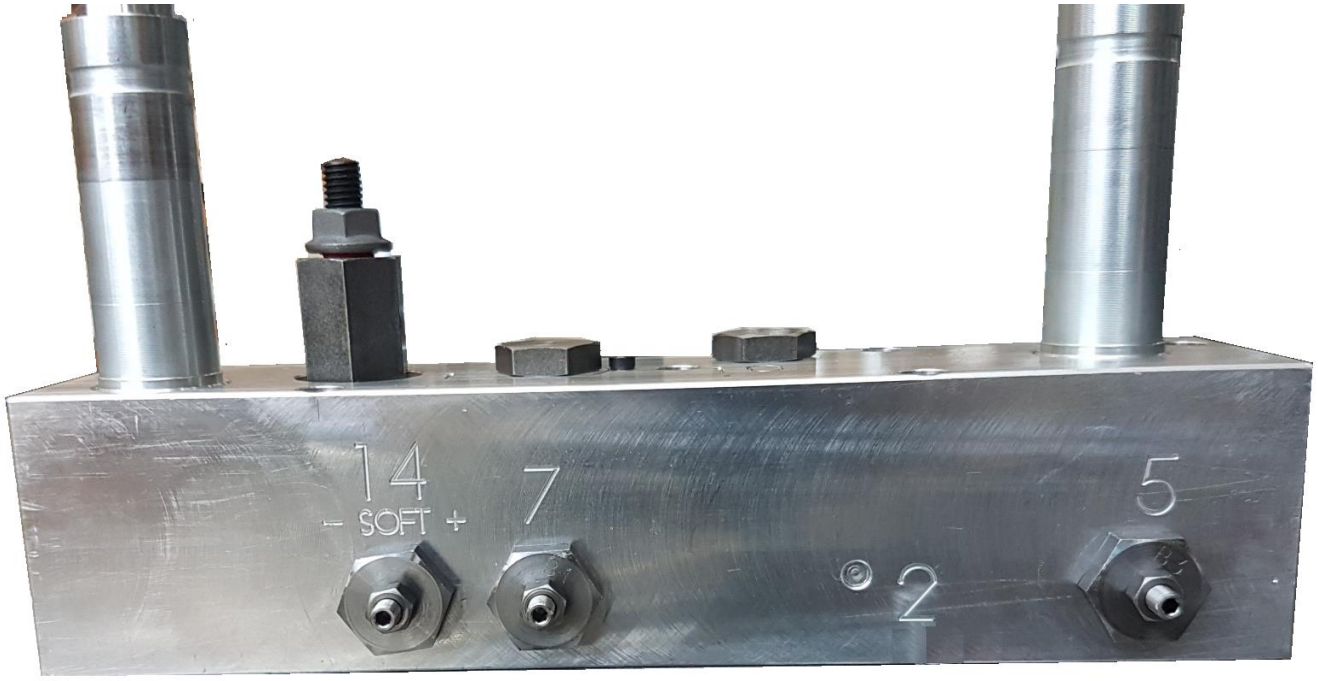
Soft Stop device

Operating Instructions



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1 General information

1.1 Description

The Soft Stop device has to be installed, adjusted and maintained only by competent and trained staff.
OMARLIFT does not take responsibility for any kind of damage caused by improper use, or use different from the one hereby explained, lack of experience, carelessness by people assigned to the assembling, adjusting or repairing operations of the device and its respective components.
OMARLIFT guarantee is not valid any more if components or spare parts different from the original ones are installed, and if modification or repair operations ore carried out by non-authorized or non-qualified staff.

1.2 Safety measures

Symbols. These operating instructions report some symbols, which correspond to important safety measure:

Danger: high risk of injury to persons. It must always be observed.


Warning: information which, if not observed, can lead to injury to persons or extensive damage to property.


Caution: information containing important instructions for use. Failure to observe the instructions can lead to damage or danger.
Installers and maintenance staff are fully responsible for their safety while working.
All the safety measures in force have to be carefully observed to prevent competent staff or any possible non-competent person or object, from damages or accidents during installation or maintenance works.


In case of works on the hydraulic installation, it is necessary to:

- make sure that the lift cannot be put into service unintentionally by blocking the main switch;
- close the main tap
- get the oil pressure to zero before opening any part of the hydraulic circuit, removing caps or unscrewing fittings;

1.3 Clearing and anti-pollution measures

Cinders and dirt inside the hydraulic installation cause malfunctions and precocious wear.
All the installation components which are disassembled to be controlled or repaired, as well as pipes and fittings, have to be perfectly cleaned before being reassembled.
Possible spilled oil from the circuit during repair operations has not to be spread in the environment.


Oil contaminated waste has to be put in proper containers to prevent pollution of the environment.

Waste oil has to be carefully collected in proper containers to be then disposed of by specialized companies, according to the regulations in force in the country of operation.

2 Device

2.1 Description

In option, the OMARLIFT NL main valve can receive a specific device, named Soft Stop, in order to assure a softer landing to the floor, without any modification of the other standard functions.

2.2 Working principles

The Soft Stop device is principally made up by an aluminum body, an hydraulic dedicated circuit, a coil and a regulation screw.
The free section of the valve passage is determined according to the regulation screw on the valve body. This regulate the behavior of the valve during the landing to the floor starting from the low speed.
The device is in Normally Open (NO) execution, so that if the coil is not energized, the elevator doesn't start it travel.
If the regulation is correctly done, with the cabin moving at low speed, when the coil is de-energized, the cabin has to stop slowly e softly in a distance of about 10mm.

2.3 Overview

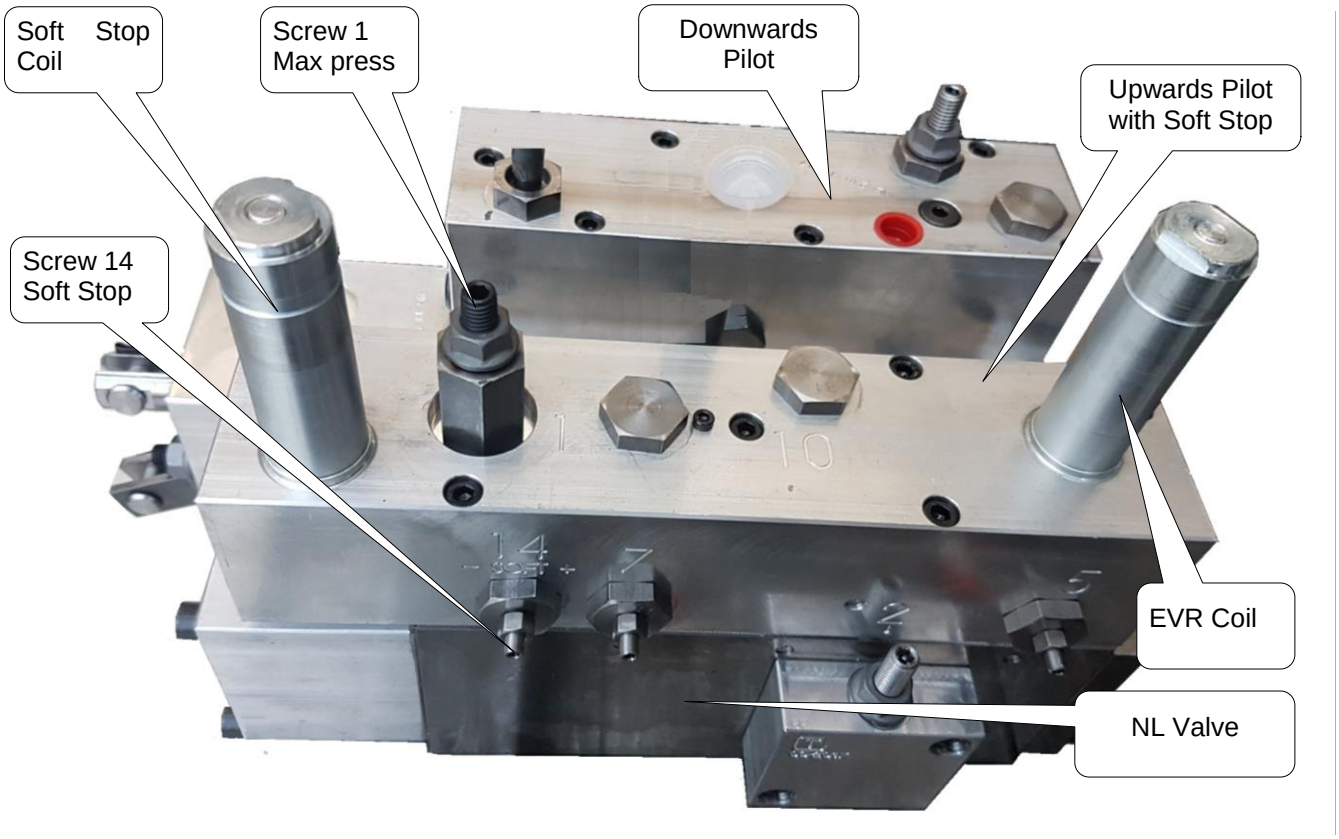


Figure 1 - Main Valve NL type with Soft Stop

3 Connections

3.1 Assembling

In case of replacement of the Soft Stop pilot, or the NL valve modification in order to install the Soft Stop pilot, it has to be installed in place of the downwards pilot command (see Figure 1), because the standard functions for the management of the elevator are integrated.

⚠ There are two different configuration of the pilot command: the first is only for NL600 valve, the second is for all other smaller valves (rated flow). The difference consists in an O-ring seal for the NL600, instead of a threaded plug, in order to guarantee the assembling procedure.

⚠ With the Soft Stop pilot, the position of the screw nr.1 for the maximum pressure adjusting, is modified in respect to the standard NL valve. The screw is in any case identified by a number on the pilot body.

3.2 Electrical wiring

The correct function of Soft Stop system requires mandatorily a longer running of the electric motor for about 0,5-1s after the stop signal related to the landing to the floor, in order to assure a smooth stop managed by the valve tripping and not by the motor-running stop.

⚠ In lack of the running time extension after the landing floor signal, it is impossible to guarantee the softness during the car stop, and a standard stop will be performed.

⚠ Specific configurations of pump, cylinder, floor-sensors distance, etc. may require an additional extension of the running time, over than 1s standard value

⚠ In lack of Soft Stop coil energization, the start of upward travel cannot be guaranteed.

In Figure 2 is shown the time diagram of the Soft Stop coil and motor activation, traced in respect to the cabin speed.

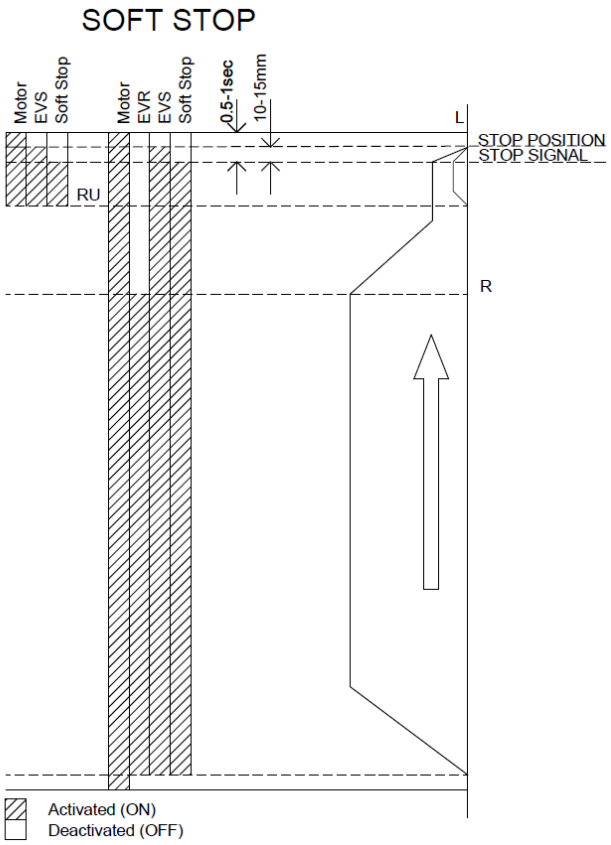
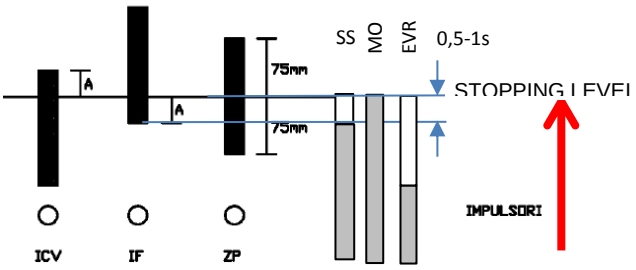


Figure 2 - Signals activation diagram for upward travel and re-levelling

In Figure 3 is shown an example of time diagram for Soft Stop coil and motor activation, applied to a main switch board, which use a 3-sensors system in order to manage the elevator.



SS= Soft Stop coil
MO= Motor
EVR= High speed coil
ZP= Floor zone Sensor
ICV= Upwards slowing down magnet and downwards stop
IF= Downwards slowing down magnet and upwards stop
A= Stop zone (20mm)

Figure 3 - Signal activation in case of elevator management system with 3 sensors

4 Soft Stop valve adjusting

The Soft Stop valve adjusting operation consists of establishing the minimum valve passage which allows the stop of the elevator in a space of about 10-15mm in respect to the floor landing sensor position (STOP SIGNAL).
Please note that, on the base of the EN81-20/50 normative, the elevator must be always in a position of +/-20mm in respect to the floor. If the position is outside this range, the re-levelling system will be activated and the position restored.

The length of the stopping distance depends from the distance of the stopping sensor to the floor itself and from the regulation of the low speed.

The Soft Stop device is adjusted in the factory. Since the installation conditions and oil viscosity can influence the adjusting value, a test has to be made after the unit installation, in order to verify:

- The stopping position in upward direction
- The comfort during the stopping

The Soft Stop valve regulation is performed by screw nr.14 .
By rotating the screw clockwise, the stopping become more soft and sweet; anti-clockwise you obtain a sudden and sharp braking.
Please rotate the screw step by step, not exceeding ¼ turn for each time in the desired direction and after redo the stopping test to check the behavior.

4.1 Adjusting procedure

In order to obtain a different regulation of the Soft Stop, starting from the actual condition, operate as follows to adjust the valve (see also Figure 1):

1. Disconnect the EVR coil, so the elevator will move at low speed.
2. Verify the low speed regulation: the correct value is 5cm/s. If it is different, regulate the speed by acting on the screw nr.2 (screwing, the speed will decrease)
3. Modify the regulation by rotate the screw nr.14 in the desired direction step by step, indicatively ¼ turn for each time. Clockwise rotation increase the softness, anti-clockwise the sharpness.
4. Perform an upwards travel with Soft Stop coil energized
5. If you have the possibility to look at the elevator movement with open doors: disconnect the Soft Stop coil during the travel, and verify the stopping distance.

 The maneuver with open doors is dangerous.  Danger of falling and crushing! Only skilled people informed on the risks and procedures can perform this maneuver!

Alternatively, perform an upwards travel with Soft Stop coil managed by the main switchboard and verify the stopping distance to the floor.

6. The elevator will stop in a variable distance, depending from the regulation
7. Visually verify the stopping distance: generally a value of 10-15mm is a right value.
8. Only if you have performed the test with open doors, reconnecting the Soft Stop coil the elevator start moving again in upward direction and it is possible to repeat the regulation starting from point 3, till you obtain the desired comfort. Otherwise you have to redo a complete travel in upward direction.
9. You should repeat the test at empty and at full load conditions, in order to obtain the better regulation.
10. When the regulation is terminated, block the screw nr.14 with the nut and connect definitely the coils.

 If the stopping phase is too much soft and long, you sould not accomplish to the EN81-20/50 normative's requirements in terms of landing precision. It is also possible that the behavior in case of cold and hot conditions or in different load conditions will be not repeatable or satisfactory.

4.2 Reset procedure

If after many test you need to come back to the initial factory regulation, operate as follow:

1. Completely screw the screw nr.14
2. Unscrew it of 2 complete turns
3. Repeat the instructions as per paragraph 4.1

4.3 Motor delay calculation

Generally a motor running delay of 0,5-1sec is enough for a stopping distance of 10-15mm.
In case an increased stopping distance is required and more braking softness in respect to the standard regulation, remember that you need also an increased motor running time delay, that you could exstimate according to this approximate formula:

MOTOR ON DELAY(s) =0,07*STOPPING DISTANCE(mm)

Example: You want to stop the elevator, starting from the low speed, in 25mm:
MOTOR ON DELAY(s) =0,07*25=1.75s

 If the stopping phase is too much soft and long, you sould not accomplish to the EN81-20/50 normative's requirements in terms of landing precision. It is also possible that the behavior in case of cold and hot conditions or in different load conditions will be not repeatable or satisfactory.

5 Problems and solutions

	Problem	Effect	Intervention
1	*STOP OVER THE FLOOR*	*- the car stops very softly or in any case over the floor;* *- re-levelling in downward direction after the stop to the floor*	*-Verify the low speed: if it exceed 5cm/s regulate it by screw nr.2* *-Rotate the screw nr.14 anti-clockwise (-) in order to increase the braking sharpness* *-Move away from the floor the floor-sensor* *-Reduce the slow speed*
2	*STOP UNDER THE FLOOR*	*- the car stops very sharply or in any case before the floor;* *- re-levelling in upward direction after the stop to the floor*	*-Verify the low speed: if it exceed 5cm/s regulate it by screw nr.2* *-Rotate the screw nr.14 clockwise (+) in order to increase the braking softness* *-Approach to the floor the floor-sensor* *-Increase the slow speed*
3	*RE-LEVELLING*	*- After the stop the cabin is repositioned by the re-levelling system*	*-See points 1 or 2*
4	*THE ELEVATOR DOESN'T MOVE*	*- With a call in upward direction, the elevator doesn't move but the motor is turned on*	*-Verify if the Soft Stop coil is connected, energized, or if it is broken down*
5	*THE ELEVATOR STOPS SHARPLY*	*-The elevator stops sharply independently from the screw nr.14 regulation*	*-The motor stops when the elevator arrive to the floor. The stop is performed by the motor and not by the valve. Check if the running delay for the motor of 0,5-1mm is activated.* *-Increase the motor delay (see chapter 4)* *-The screw nr.14 is too much screwed, try to perform the regulation procedure (see chapter 4)*

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