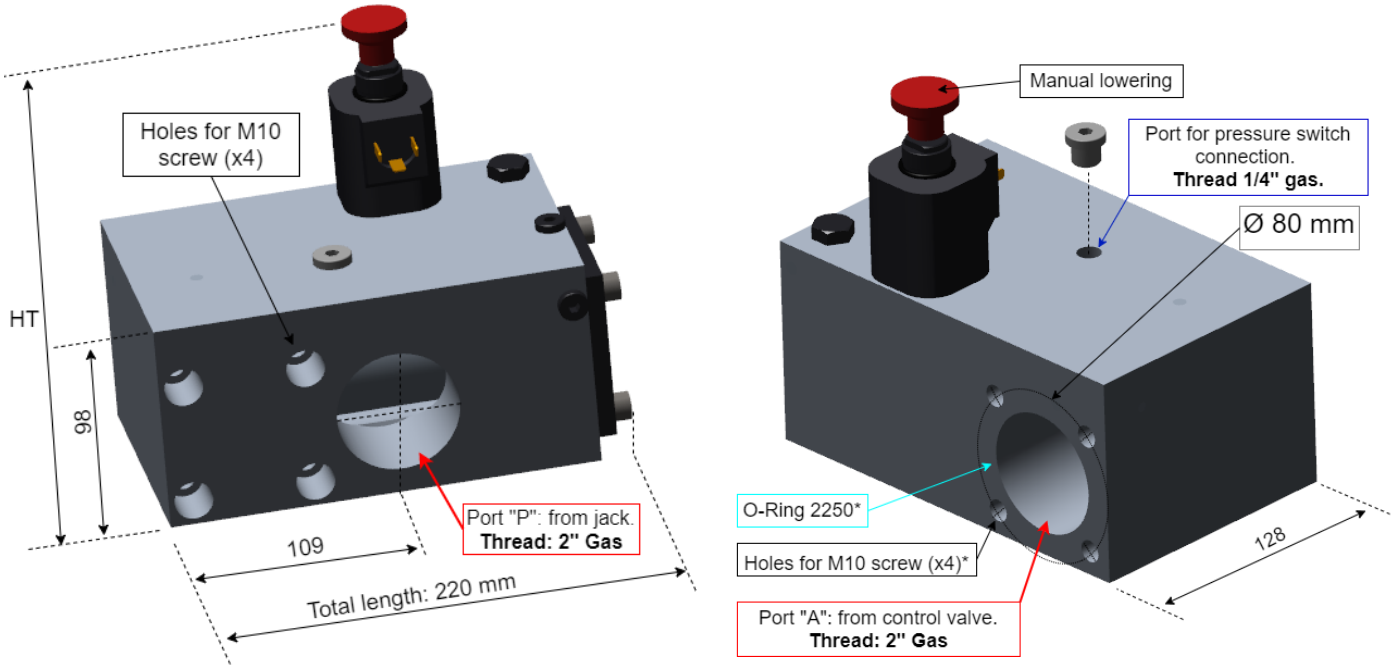
User manual – UCM/A3 door lock valve – HSV 650

1. CHARACTERISTICS AND RANGE OF USE

Model	Flow rate max tripping	Flow rate nominal range	Working static pressure range	Working oil temperature	Hydraulic oil type and viscosity range	
	[l/min]	[l/min]	[bar]	°C		
HSV 650	650	330 ÷ 650	10 ÷ 45	5 ÷ 60	20 ÷ 470 cSt	ISO VG 46 - 68

2. DIMENSIONS



**4 holes for M10 screw (UNI 5931) can be used for fixing the safety valve from control valve or on flange adapter.*
The length of the hole (unthreaded) is 103 mm.
For hydraulic seal you can use a O-ring 2250 between parts.

	Valve with **single solenoid.**	Valve with **double solenoid.**
HT height	187 mm	228 mm

Ports type

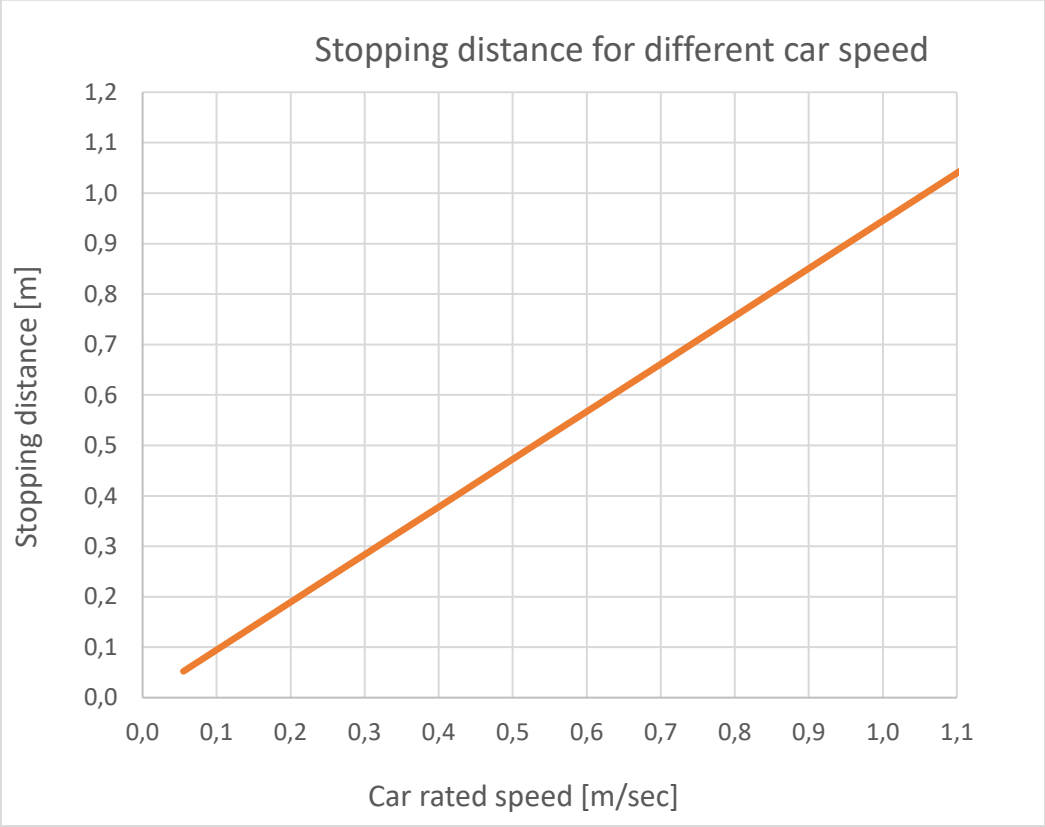
Port from control valve	A	2” Gas female thread
Port to jack	P	2” Gas female thread

Excitation voltage

Main excitation voltage:	12, 24, 48 Vdc	90, 110, 220 Vac
Emergency excitation voltage (only double solenoid):	12, 24 Vdc	

3. PERFORMANCE/ STOPPING DISTANCE/STOPPING TIME

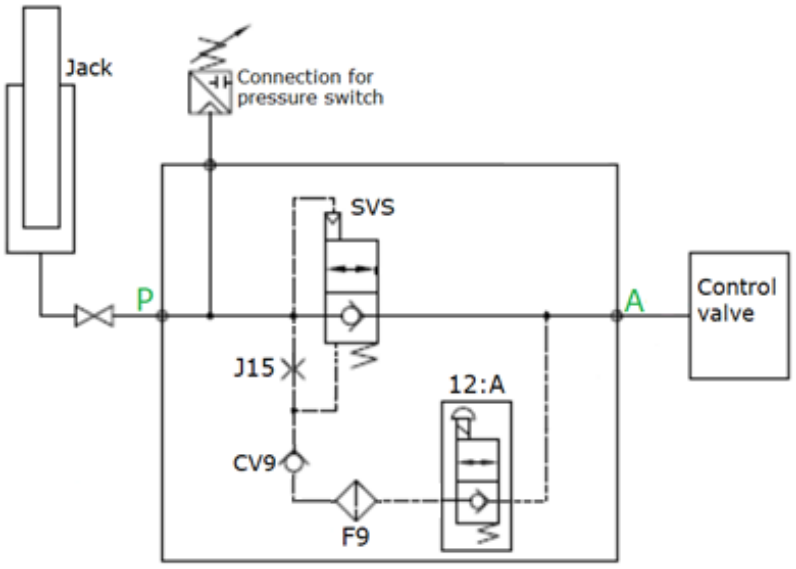
Valve is according to EN 81.20 and EN 81.50.
*For lift speed up to 1 m/sec, **max stopping distance** is reported on following graphic.*



The stopping time is relative to the time that elapses between solenoid deactivation and car stop.

Stopping time	**1,0 sec**

4. HYDRAULIC SCHEME / CONNECTION



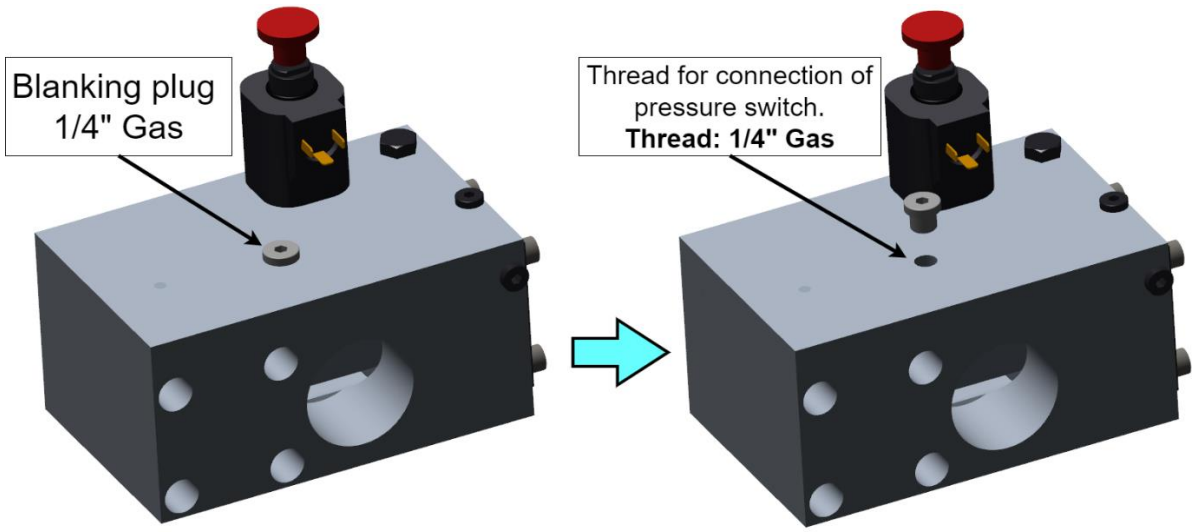
Name	Description
A	From the power unit
P	To the cylinder / jack
SVS	Main spool
J15	Nozzle
F9	Pilot filter
CV9	Non-return
12:A	Pilot valve

5. CONNECTION FOR PRESSURE SWITCH

Safety valve is suitable for fixing a pressure switch to measure the oil pressure from jack.
For connection, remove the plug ¼" Gas and fix the pressure switch, see lateral figure.

If the pressure switch is not used, the specific plug shall be used to avoid oil leakage and uncontrollable down of elevator.

Hydronic lift can supplied a specific hydraulic orientable adapter to fix more than 1 pressure switch, until max 5 pressure switch.
Contact Hydronic lift for more details.



ATTENTION: USING THE PRESSURE SWITCH ON THE MAIN VALVE IS NOT EFFECTIVE IF THE HSV-650 IS PRESENT.
Pressure switch shall be fix on the HSV-650.

6. WORKING DESCRIPTION

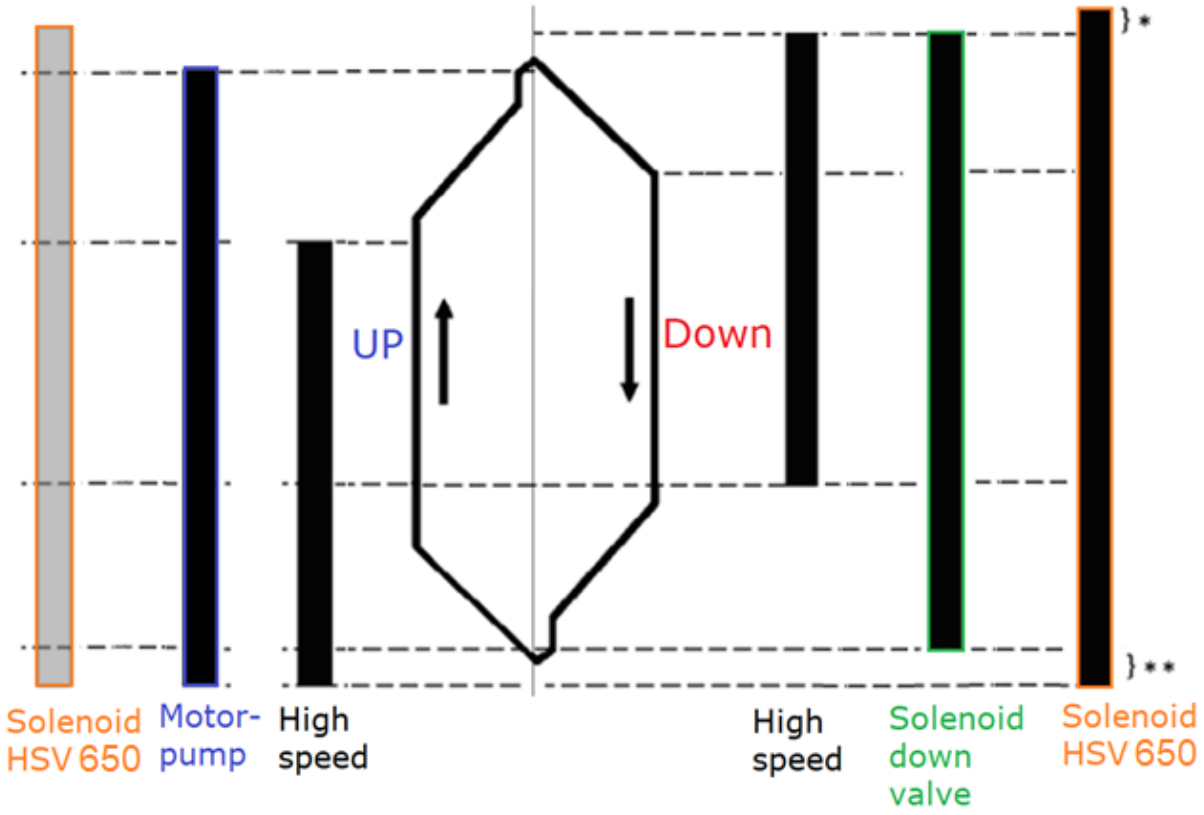
The Safety Valve HSV is an electrically pilot operated check valve for hydraulic lifts. Installed between the cylinder and the lift valve it enables the oil flow from the lift valve A to the cylinder P during travel UP, and doesn't allow the flow in opposite direction, from P to A (DOWN direction), until the pilot valve 12:A is energized.

HSV 650 is certificated according to European standard EN81-20 and EN81-50.
Valve can be used also for door lock valve, valve is normally closed by spring.

6.1. State of safety valve's solenoid vs State of the lift

State of the lift	State of the solenoid valve			Remark
	Must be energised (ON)	Must be de-energised (OFF)	Arbitrary	
Travel UP with door closed			**X**	No influence of the Safety Valve during travel UP
Travel DOWN with door closed	**X**			
Standstill with door open	**X**			For load pressure sensing and relevelling
Standstill with door closed, travel DOWN to start immediately	**X**			The Safety Valve must be energised at least 300 ms before travel starts, else the travel control of the lift valve can be affected adversely
Longer standstill period with door closed		**X**		For increase Energy Saving
Unintended travel UP with door open			**X**	No influence of the Safety Valve during travel UP, lift must be stopped by disconnection of the motors contactors
Unintended travel DOWN with door open		**X**		Interruption of the current to the solenoid of the Safety Valve when the unlocking zone is left(emergency stop); notes on the positioning of the shaft switches d_{max} (see chapter 2.3.1.3)
Hand pump operation			**X**	No influence of the Safety Valve during the travel UP
Emergency lowering, electrical	**X**			By means of the optionally available emergency power winding of the Safety Valve
Emergency lowering, manual			**X**	By means of manual release of the Safety Valve

6.2. Sequence of signals at normal operation with general control valve



LEGEND

Color		Mean
	Black	Power ON / Activation
	Grey	Arbitrary (ON or OFF is not different)

Symbol	Mean
*	300 ms (0.3 sec) before activation of down control valve
**	1.5 sec after deactivation of down control valve

NOTE: with this configuration the Safety Valve HSV does not work as a redundant safety device, therefore does not require monitoring.

7. MANUAL LOWERING

For manual lowering you should act on the manual lowering of main control valve and on the manual lowering of HSV650 at the same time (see figure in page 1 for HSV 650 manual lowering).

8. MAINTENANCE

The mandatory maintenance interval are:

- First time at the start-up
- After 3 months.
- Every 6 months.

The principal maintenance tasks are:

- Leakage test
- Functional test / stopping test
- You should clean the pilot filter and the nozzle when there are the following conditions/problems:
    - Functional problems in UP or DOWN direction.
    - Stopping distance of HSV650 valve is more than 1 meter.
    - High pressure drop.
    - Dirty oil, old oil.
    - Dirt in the main valve or in the tank.

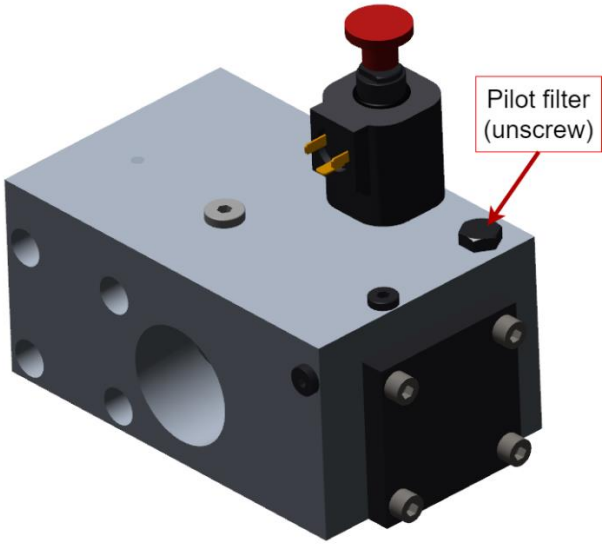
8.1. Pilot filter and nozzle cleaning

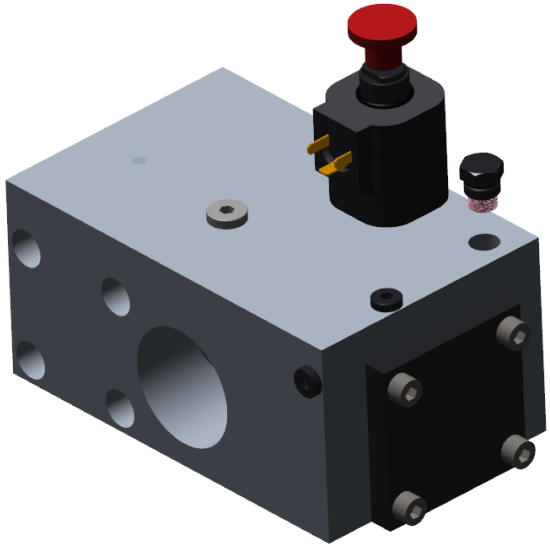
For filter cleaning follow the sequence.

1. Close the ball valve.
2. Relieve the internal pressure: push the manual lowering on HSV650 and on control valve at the same time for some seconds, then check the pressure gauge, it shall be 0 bar.
3. Unscrew the screw reported on following figure.

Beware of oil leakage

Pay attention to O-ring: on pilot filter screw there are 2 O-ring.

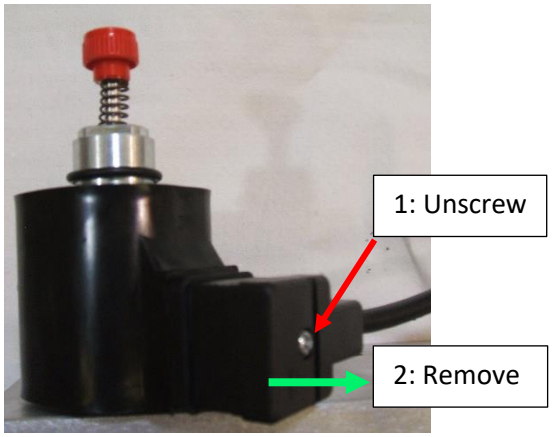


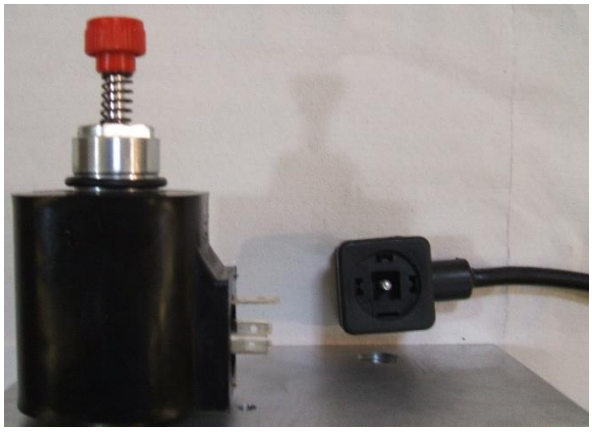


4. Remove the mesh filter and clean it.

8.2. Leakage test

1. Observe the instructions in the lift, or in the lift valve documentation, for the operation of the manual emergency lowering valve.
2. Make sure that the lift is stopped at the place at which the position of the car can be determined with sufficient accuracy
3. Wait 5 seconds to verify that the cabin remains at the floor
4. Make sure that the solenoid of safety valve is **NOT energised,** in case, remove the electrical connector.





5. Energize the down solenoid valve or the manual lowering of the main control valve, ensuring that the solenoid of the HSV valve is **NOT** energized.

6. Must check:
    a. the indication on the manometer of the lift valve drops to zero
    b. after that the car doesn't move in a visible manner any more

7. When no visible movement of the car has been determined:
    a. De-energize the down solenoid valve of the main control valve.
    b. Make sure that the electrical connector of the HSV valve is properly connected to the lift control and to HSV coil again.

If the procedure is done correctly and the cabin does not move, the leakage test has been passed successfully.

When the car moves in a visible manner:
- Withdraw the lift from service.
- Contact Hydronic Lift.

8.3. Simplified functional test

1. Execute a travel DOWN at nominal speed.
2. Disconnect the power supply to the main coil winding of the solenoid of the Safety Valve HSV650 during travel.
3. Cabin shall stop within about 1 second. If you can not see the cabin, look the pressure gauge of main control valve, it shall drop to zero pressure within about **1 second.**
4. Check the stopping distance, it shall not be more than value reported on chapter 3 and not more than **1 meter**.

5. Make sure that the main coil windings and the emergency power winding (optional) of the solenoid of the Safety Valve are properly connected to the lift control again.

If the stopping time or the stopping distance are more than the indicated values, please contact Hydronic Lift.