

# EV 100

## Quick adjustment procedure (empty car)



S1/2

### SOLENOID COILS

During adjustment of the EV 100 valve, instead of making a full floor to floor travel to check operation much time can be saved by removing the securing nuts of the coil and switching to deceleration or to acceleration by lifting or replacing the appropriate coil by hand, allowing several adjustment corrections during one car travel between floors.

Once removed from the solenoid tube the energised coil may begin to overheat after about 10 secs.

if the coil becomes too hot to hold, it should be replaced, back over the solenoid tube and any further adjustment carried out with the elevator making normal floor to floor runs.

## UP TRAVEL

PRE-SETTINGS	EV 100 ¾"	EV 100 1½" - EV 100 2½"	
Adjustment No. 1 level with flange face			5 mm Socket key
Adjustment No. 2 all the way 'in'	then 1,5 turns 'out'	then 2 turns 'out'	3 mm Socket key
Adjustment No. 4 level with flange face			5 mm Socket key
Adjustment No. 3 all the way 'in'	then 1,5 turns 'out'	then 2,5 turns 'out'	3 mm Socket key
Adjustment No. 5 all the way 'in'	then 1,5 turns 'out'	then 2,5 turns 'out'	3 mm Socket key
Adjustment No. S all the way 'in'	then 1,5 turns 'out'	then 1,5 turns 'out'	3 mm Socket key

### Adjustment No. 1 Pilot pressure setting

Disconnect coil **A**. Energise Motor (pump).

If the car moves upwards turn No. 1 'out' until the car stops. If the car does not move, turn No. 1 'in' until the car begins to move, then turn No. 1 'out' until the car stops.

**DO NOT UP-LEVEL WITH THIS ADJUSTMENT !**

### Adjustment No. 2 Up acceleration

Reconnect coil **A**. Energise Motor and **A** and **B** coils (normal 'up' call).

Observe the up acceleration. If it is too quick, turn No. 2 'in' ½ turn. If it is too long, turn No. 2 'out' ½ turn. Repeat until acceleration is satisfactory.

### Adjustment No. 4 Up levelling

Disconnect coil **B**. Energise Motor and coil **A** (normal 'up-level' call).

With adjustment No. 4 level with the face of the flange the car will up level. If the levelling speed is too fast, turn No. 4 'in' until the speed is as required. If the speed is too slow turn No. 4 'out'.

### Adjustment No. 3 Up deceleration

With coil **B** still disconnected. Energise Motor and coil **A** (normal 'up-level' call).

The car will travel upwards at levelling speed. Turn No. 3 'in' until the car starts to up level faster, then turn No. 3 'out' until the original levelling speed is observed. Reconnect coil **B** and place a normal up call.

Observe the deceleration of the car. If it is too long, turn No. 3 'out' ¼ turn; if it is too short, turn No. 3 'in' ¼ turn. Repeat until deceleration is satisfactory.

### Adjustment No. 5 Up soft stop

Disconnect coil **A**. Energise Motor.

The car should not move. Turn No. 5 'in' until the car starts upwards then turn No. 5 'out' until the car stops. Reconnect coil **A**. Energise Pump-Motor and **A**. The car will travel upwards at levelling speed.

Lift **A** coil by hand briefly and observe the stopping of the car. If the stop is too hard turn No. 5 'in' ¼ turn. If the stop is too soft, turn No. 5 'out', ¼ turn. Repeat until the stop is satisfactory.

### S Pressure relief valve

Turn **S** screw 'out' until about 2 mm of the screw head is showing. Close the ball valve in the cylinder line and open the manual lowering **H** to lower valve pressure down to zero. Place an up call, energising motor and coils **A** and **B**. The relief pressure will show on the pressure gauge. To increase the relief valve setting, turn **S** 'in'.

To decrease the relief valve setting, turn **S** 'out', then open the manual lowering for ½ second with the pump still running to release locked in pressure, before observing the pressure gauge reading.

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GmbH

Designer and Manufacturer of the highest quality control valves & safety components for hydraulic elevators

# EV 100

## Quick adjustment procedure (empty car)



S2/2

### DOWN TRAVEL

#### PRE-SETTINGS

Adjustment No. 8	all the way 'in'	then 1 turns 'out'	then 1,5 turns 'out'	3 mm Socket key
Adjustment No. 6	all the way 'in'	then 1,5 turns 'out'	then 1,5 turns 'out'	3 mm Socket key
Adjustment No. 7	3 mm under the flange face			5 mm Socket key
Adjustment No. 9	level with flange face			5 mm Socket key

#### Adjustment No. 8 Down deceleration

Place down call (coils **C** and **D** energised).

As the car approaches full speed, remove coil **C** by hand briefly from the solenoid and observe the deceleration of the car. If the deceleration is too long, turn No. 8 'out' ¼ turn; if it is too short, turn No. 8 'in' ¼ turn.

Repeat until deceleration is satisfactory.

#### Adjustment No. 6 Down acceleration

Turn No. 6 all the way 'in'. Place down call (coils **C** and **D** energised).

The car will not move. Turn No. 6 'out' slowly until the car accelerates downwards.

If the acceleration is too long, turn No. 6 'out' ¼ turn. If it is too short, turn No. 6 'in' ¼ turn.

#### Adjustment No. 7 Down full speed

Place down call (coils **C** and **D** energised).

Observe full down speed. Turn No. 7 'in' for slower, 'out' for faster speed.


#### Adjustment No. 9 Down levelling speed










Disconnect coil **C**. Place down call (**D** energised).

Observe down levelling speed. Turn No. 9 'in' for slower, 'out' for a fast down levelling speed.

Note: The manually operated down speed and the **D** coil operated down levelling speed are the same.

Much time can be saved by removing the appropriate coil from time to time during the adjustment procedure rather than allowing the car to move between two floors while adjusting individual controls. By doing this one can make several adjustments & corrections.

**Warning:** If the coil is removed from the solenoid valve, it overheats after approximately 10 seconds. The maximally permitted temperature of the coil amounts to 120°C (see  down).

-  Firstly, place the appropriate allen key in the adjustment that needs to be changed.
-  Put the elevator into operation.
-  Raise the appropriate coil by hand and observe the reaction of the elevator.
-  Make the adjustment accordingly.
-  Place the coil back over the solenoid tube, until the elevator has again reached its speed.
-  Raise the coil again in order to test how the elevator functions with the new adjustment.
-  Repeat this process as long as it is necessary. Normally, this process can be repeated 2 to 5 times during one car travel between floors. When the coil is energized, it should be held in the hand. Energized coils shouldn't be left to one side, otherwise its overheating may not be felt.
-  If the coil becomes too hot to hold, it must be replaced back over the solenoid tube and any further adjustment carried out with the elevator making normal floor to floor runs.
-  Place a steel bolt, approximately 14-17 mm in diameter and 50 mm in length, or a tool through the coil to slow the rate of heating.

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**Warning:** Only qualified personell should adjust or service valves. Unauthorised manipulation may result in injury, loss of life or damage to equipment. Prior to servicing internal parts, ensure that the electrical power is switched off and residual pressure in the valve is reduced to zero.



## Adjustments UP

**Valves are already adjusted and tested.** Check electrical operation before changing valve settings.

Test that the correct solenoid is energised, by removing nut and raising solenoid slightly to feel pull.

**Nominal Settings:** Adjustments **1 & 4** approx. level with flange faces. Up to two turns in either direction may then be necessary. Adjustments **2, 3 & 5** all the way 'in' (clockwise) then **2 & 5** two turns 'out' (c-clockwise), **3** three turns out. A small final adjustment may be necessary.

### EV 0

**1. By Pass:** When the pump is started, the unloaded car should remain stationary at the floor for a period of 1 to 2 seconds before starting upwards. The length of this delay is determined by the setting of adjustment **1**. 'In' (clockwise) shortens the delay, 'out' (c-clockwise) lengthens the delay.

**2. Up Acceleration:** With the pump running, the car will accelerate according to the setting of adjustment **2**. 'In' (clockwise) provides a softer acceleration, 'out' (c-clockwise) a quicker acceleration.

**Up Stop:** The pump-motor is de-energised. There is no adjustment.

**Alternative Up Stop with Over-travel:** The motor is de-energised at floor level. Through the flywheelaction of the pump-motor drive the car will travel to just above floor level. In overtravelling the floor, down levelling solenoid **D** is energised, lowering the car smoothly back down to floor level where **D** is de-energised.

**S Relief Valve:** 'In' (clockwise) produces a higher, 'out' (c-clockwise) a lower maximum pressure setting. After turning 'out', open manual lowering **H** for an instant.

**Important: When testing relief valve, do not close ball valve sharply.**

### EV 1

**1. By Pass:** When the pump is started and solenoid **A** energised, the unloaded car should remain stationary at the floor for a period of 1 to 2 seconds before starting upwards. The length of this delay is determined by the setting of adjustment **1**. 'In' (clockwise) shortens the delay, 'out' (c-clockwise) lengthens the delay.

**2. Up Acceleration:** With the pump running and solenoid **A** energised as in **1**, the car will accelerate according to the setting of adjustment **2**. 'In' (clockwise) provides a softer acceleration, 'out' (c-clockwise) a quicker acceleration.

**5. Up Stop:** At floor level, solenoid **A** is de-energised. Through a time relay the pump should run approx. ½ second longer to allow the car to stop smoothly by valve operation according to the setting of adjustment **5**. 'In' (clockwise) provides a softer stop, 'out' (c-clockwise) a quicker stop.

**Alternative Up Stop:** At relatively higher speeds, the car will travel to just above floor level. In overtravelling the floor, down levelling solenoid **D** is energised, lowering the car smoothly back down to floor level where **D** is de-energised.

**S Relief Valve:** 'In' (clockwise) produces a higher, 'out' (c-clockwise) a lower maximum pressure setting. After turning 'out', open manual lowering **H** for an instant.

**Important: When testing relief valve, do not close ball valve sharply.**

### EV 10

**1. By Pass:** When the pump is started and solenoid **B** energised, the unloaded car should remain stationary at the floor for a period of 1 to 2 seconds before starting upwards. The length of this delay is determined by the setting of adjustment **1**. 'In' (clockwise) shortens the delay, 'out' (c-clockwise) lengthens the delay.

**2. Up Acceleration:** With the pump running and solenoid **B** energised as in **1**, the car will accelerate according to the setting of adjustment **2**. 'In' (clockwise) provides a softer acceleration, 'out' (c-clockwise) a quicker acceleration.

**3. Up Deceleration:** When solenoid **B** is de-energised, the car will decelerate according to the setting of adjustment **3**. 'In' (clockwise) provides a softer deceleration, 'out' (c-clockwise) a quicker deceleration.

**4. Up Levelling:** With solenoid **B** de-energised as in **3**, the car will proceed at its levelling speed according to the setting of adjustment **4**. 'In' (clockwise) provides a slower, 'out' (c-clockwise) a faster up levelling.

**Up stop:** The pump-motor is de-energised. There is no adjustment.

**S Relief Valve:** 'In' (clockwise) produces a higher, 'out' (c-clockwise) a lower maximum pressure setting. After turning 'out', open manual lowering **H** for an instant.

**Important: When testing relief valve, do not close ball valve sharply.**

### EV 100

**1. By Pass:** When the pump is started, and solenoids **A** and **B** energised, the unloaded car should remain stationary at the floor for a period of 1 to 2 seconds before starting upwards. The length of this delay is determined by the setting of adjustment **1**. 'In' (clockwise) shortens the delay, 'out' (c-clockwise) lengthens the delay.

**2. Up Acceleration:** With the pump running and solenoids **A** and **B** energised as in **1**, the car will accelerate according to the setting of adjustment **2**. 'In' (clockwise) provides a softer acceleration, 'out' (c-clockwise) a quicker acceleration.

**3. Up Deceleration:** When solenoid **B** is de-energised, whilst solenoid **A** remains energised, the car will decelerate according to the setting of adjustment **3**. 'In' (clockwise) provides a softer deceleration, 'out' (c-clockwise) a quicker deceleration.

**4. Up Levelling:** With solenoid **A** energised and solenoid **B** de-energised as in **3**, the car will proceed at its levelling speed according to the setting of adjustment **4**. 'In' (clockwise) provides a slower, 'out' (c-clockwise) a faster up levelling.

**5. Up Stop:** At floor level, solenoid **A** is de-energised with solenoid **B** remaining de-energised. Through a time relay the pump should run approx. ½ second longer to allow the car to stop smoothly by valve operation according to the setting of adjustment **5**. 'In' (clockwise) provides a softer stop, 'out' (c-clockwise) a quicker stop.

**S Relief Valve:** 'In' (clockwise) produces a higher, 'out' (c-clockwise) a lower maximum pressure setting. After turning 'out', open manual lowering **H** for an instant.

**Important: When testing relief valve, do not close ball valve sharply.**

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**Warning:** Only qualified personnel should adjust or service valves. Unauthorised manipulation may result in injury, loss of life or damage to equipment. Prior to servicing internal parts, ensure that the electrical controller is switched off and residual pressure in the valve is reduced to zero.



## Adjustments DOWN

**Valves are already adjusted and tested.** Check electrical operation before changing valve settings. Test that the correct solenoid is energised, by removing nut and raising solenoid slightly to feel pull.

**Nominal Settings:** Adjustments **7 & 9** approx. level with flange face. Two turns in either direction may then be necessary. Adjustments **6 & 8** turn all the way 'in' (clockwise), then three turns 'out' (c-clockwise). One final turn in either direction may be necessary.

**6. Down Acceleration:** When solenoids **C** and **D** are energised, the car will accelerate downwards according to the setting of adjustment **6**. 'In' (clockwise) provides a softer down acceleration, 'out' (c-clockwise) a quicker acceleration.

**7. Down Speed:** With solenoids **C** and **D** energised as in **6** above, the full down speed of the car is according to the setting of adjustment **7**. 'In' (clockwise) provides a slower down speed, 'out' (c-clockwise) a faster down speed.

**8. Down Deceleration:** When solenoid **C** is de-energised whilst solenoid **D** remains energised, the car will decelerate according to the setting of adjustment **8**. 'In' (clockwise) provides a softer deceleration, 'out' (c-clockwise) a quicker deceleration. **Attention: Do not close all the way in! Closing adjustment 8 completely (clockwise) may cause the car to fall on the buffers.**

**9. Down Levelling:** With solenoid **C** de-energised and solenoid **D** energised as in **8** above, the car will proceed at its down levelling speed according to the setting of adjustment **9**. 'In' (clockwise) provides a slower, 'out' (c-clockwise) a faster down levelling speed.

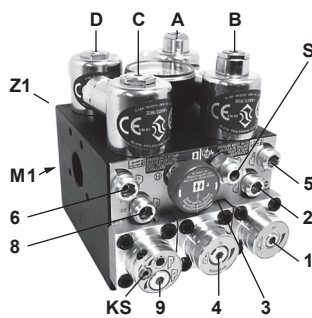
**Down Stop:** When solenoid **D** is de-energised with solenoid **C** remaining de-energised, the car will stop according to the setting of adjustment **8** and no further adjustment will be required.

**KS Slack Rope Valve:** Solenoids **C** and **D** must be de-energised! The KS is adjusted with a 3 mm Allan Key by turning the screw **K** 'in' for higher pressure and 'out' for lower pressure. With **K** turned all the way 'in', then half a turn back out, the unloaded car should descend when Manual Lowering **H** is opened. Should the car not descend, **K** must be backed off until the car just begins to descend, then backed off a further half turn to ensure that with cold oil, the car can be lowered as required.

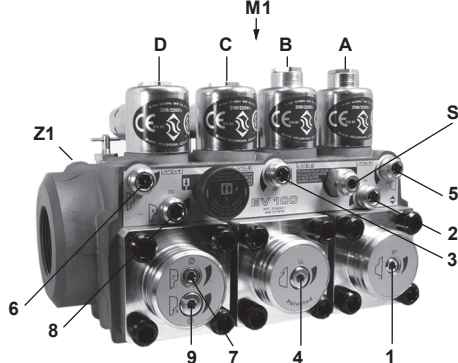
### Positions of Adjustments



**Important:** Length of 3/4" thread on pump connections should not be longer than 17 mm!



M1 Second pressure gauge connection, 1/2"  
Z1 Pressure switch connection, 1/4"



#### Adjustments UP

- 1 By Pass
- 2 Up Acceleration
- 3 Up Deceleration
- 4 Up Levelling Speed
- 5 Up Stop

#### Adjustments DOWN

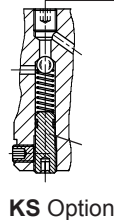
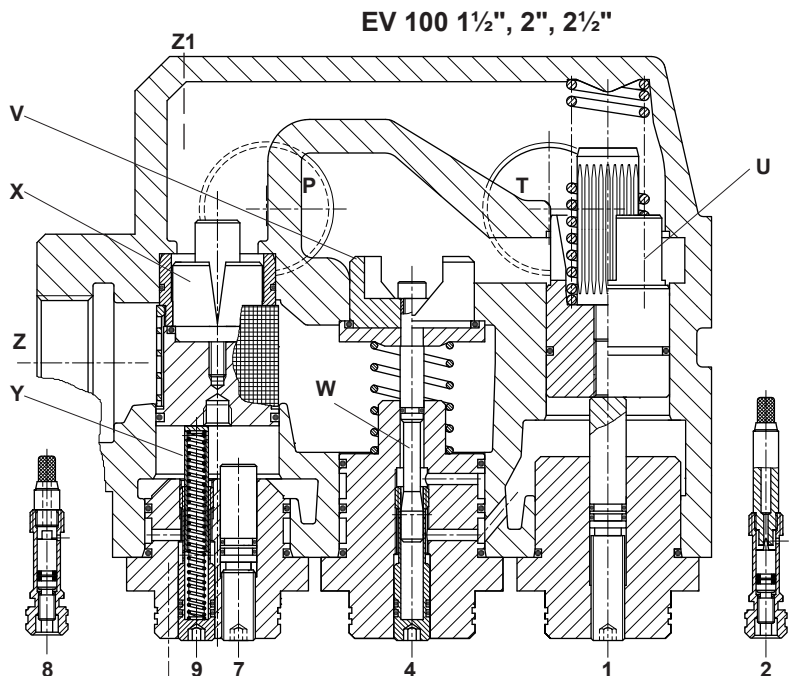
- 6 Down Acceleration
- 7 Down Full Speed
- 8 Down Deceleration
- 9 Down Levelling Speed

**Valve Types**  
EV 0  
EV 1  
EV 10  
EV 100

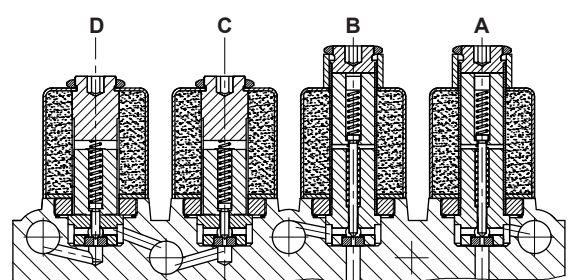
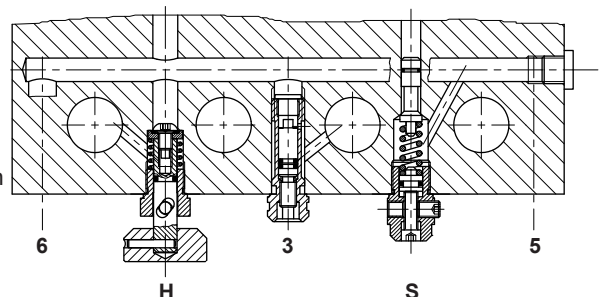
**Elements Omitted**  
A, B, W, 3, 4 & 5  
B, W, 3 & 4  
A & 5  
as shown

#### Control Elements

- A Solenoid (Up Stop)
- B Solenoid (Up Deceleration)
- C Solenoid (Down Deceleration)
- D Solenoid (Down Stop)
- H Manual Lowering
- S Relief Valve
- U By Pass Valve
- V Check Valve
- W Levelling Valve (Up)
- X Full Speed Valve (Down)
- Y Levelling Valve (Down)



#### Horizontal Sections



#### Vertical Section