

# EECO VALVE TROUBLESHOOTING GUIDE

## Forward

The information presented herein is intended for use by persons having skill and experience in hydraulic elevator or lift servicing, and used at their own risk. We believe the information to be reliable, and assume no liability or expense due to injury, sickness, or death sustained by any person, or damage or destruction of property arising from information hereunder. Please read our Equipment Warranty.

## Troubleshooting

Before changing any adjustments, or removing any operating section of a valve, be sure that the electrical controller is supplying the proper information, in the correct sequence, to the valve solenoids (coils).

For a normal Up run, both **U1** & **U2** solenoids must be energized.

For an Anti-Creep or slow up run, only the **U2** solenoid must be energized.

When the elevator is making a normal Up run, and is approaching a floor for which it has been programmed to stop, the **U1** solenoid must be de-energized, by some means, at a certain distance below the floor, allowing the valve enough time to respond to the signal so as to smoothly effect a transition from high speed to low speed and to be at a stabilized leveling speed for a distance of 3 - 4 inches before the car reaches the floor. The **U2** solenoid must remain energized until the approximate floor level is reached and the motor must be allowed to run for 1 to 1 1/2 seconds after **U2** is de-energized so as to obtain the desired soft stop.

For a normal Down run, both **D1** and **D2** solenoids must be energized to obtain full down speed. For a slow or leveling speed Down run, only the **D2** solenoid must be energized.

When the elevator is making a normal Down run, and is approaching a floor for which it has been programmed to stop, the **D1** solenoid must be de-energized, by some means, at a certain distance above the floor, allowing the valve enough time to respond to the signal so as to smoothly effect a transition from high speed to low speed and to be stabilized leveling speed for a distance of 3-4 inches before the car reaches the floor. The **D2** solenoid must remain energized until the approximate floor level is reached.

In the following instructions, the terms CW & CCW are abbreviations for clockwise and counterclockwise. CW means turn to the right. CCW means turn to the left.

## Caution

Be absolutely certain that the pressure has been shut off from the valve section of the system before removing or disassembling any part of the valve. Either lower the elevator car down to the pit supports and/or close the main line gate valves and tank valves. Disconnect the main electrical power switch. Always open the manual lowering valve before you close the tank shut-off.

**IMPORTANT:** After a valve is adjusted according to instructions, if the transition and/or leveling zones are either too long or too short, **DO NOT** readjust the valve! Move the appropriate switches or vanes/cams.

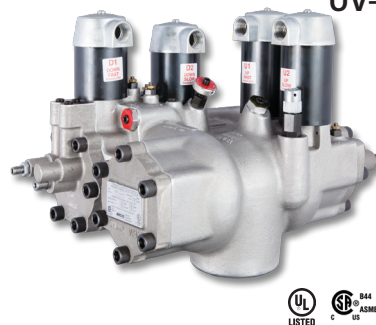
UV-4R



UV-5AT



UV-7B



# EECO VALVE TROUBLESHOOTING GUIDE (continued)

**NOTE:** References to 'down piston seal disc' refer to UV-5A valves manufactured before November 2005. The seal disc was replaced with an O-ring Seal on valves manufactured after November 2005.

## UP SECTION

1. **MAKES HAMMERING NOISE (PUMP RUNNING)**
  - (a) Check oil level in tank. Check suction tank shutoff, rotation of motor.
2. **CAR WILL NOT MOVE OR GO INTO FULL SPEED (PUMP RUNNING)**
  - (a) Check voltage at disconnect switch, controller, and valve coils. Check solenoids to see if they correspond with control voltage.
  - (b) Check main line shutoff to cylinder.
  - \* (c) Check belt tension. If belts are too hot, they are slipping.
  - (d) Check relief valve setting with gauge.
  - (e) Turn **UA** adjuster CCW. See adjustment procedure on inside of valve cover (**UV-5AT**).
  - (f) Worn pump.
  - (g) Check down valve to see if piston is stuck in open position. Turn **DM** CW to stop and turn **DC** CCW to stop, then return **DM** CCW to 5 turns.
  - \* (h) Check plunger assembly, plunger enclosure, and needle orifice.
3. **UP START SLOW**
  - (a) Check **BP** adjuster to see if it is set properly. See adjustment procedure.
  - \* (b) Check **UA** adjuster screen to see if it is filled with debris. **UV-7B** has a separate screen.
  - (c) Check **U1** and **U2** solenoids. Both must be energized.
  - \* (d) Inspect **U1** and **U2** needle orifice.
  - \* (e) Check belts on pump motor for proper tension and that they are not slipping. (If belts are hot, they are slipping).
4. **UP START ROUGH**
  - (a) Check **BP** to see that it is set properly. See adjustment procedure.
  - (b) Check **UA** adjuster to see that it is set properly. See adjustment procedure.
  - \* (c) Close **UA** adjuster. If car starts up readily, check o-rings on **UA** adjuster, **BP** piston, and **UL** stem. One of these is leaking.
  - (d) Check jack assembly packing to see if it is adjusted properly.
  - (e) Check guide shoe adjustment and rails.
  - (f) Check car speed (fpm) and static pressure (PSI) with empty car to see if valve is proper size. (If valve is too small, you will get a rough start and car will not stall).
  - \* (g) Inspect bypass piston spring to see if it might be broken or on the wrong side of the piston. The spring goes in first.
  - \* (h) Bypass piston stuck in closed position.
5. **UP SPEED SLOW**
  - \* (a) Check belts on pump and motor to see if they have proper tension and are not slipping.
  - (b) Be sure **U1** and **U2** coils are energized
  - (c) Check relief valve to see that it is set properly.
  - (d) Check jack packing to see that it is not too tight on the piston.
  - (e) Check suction to pump to see that it is not being restricted. Pump will be noisy.
  - (f) Check oil level. If low, pump will be noisy.
  - \* (g) Check **UA** screen to see that it is not filled with debris. **UV-7B** has separate screen.
  - \* (h) Clean valve of all foreign material.
  - (i) Check motor horsepower and line voltage drop.
  - (j) Be sure adjustments are made with oil at normal operating temperature and not when oil is cold. Normal temperature is approximately 80° to 100° F.
6. **TRANSITION FROM UP SPEED TO LEVELING SPEED TOO SMOOTH CAUSING DRIFTING UP THROUGH FLOOR LEVEL**
  - (a) Turn **UT** CCW. Remember **UT** must be opened more than **UA**. If up start is too abrupt, see (b) of section 4.

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Also see (a) of section 11.

- \* (b) Inspect solenoid, needle orifice, needle assembly, and plunger enclosure for dents or debris.
  - (c) Check controller and hatch switches to see if they are properly set; 2" per 10 fpm speed.
- 7. TRANSITION FROM UP SPEED TO UP LEVELING SPEED TOO ROUGH OR QUICK**
- (a) Turn **UT** adjuster CW. See adjustment procedure.
- 8. CAR STALLS AS CAR ENTERS LEVELING ZONE FROM HIGH SPEED OR WILL NOT ANTI-CREEP**
- (a) Be sure **U1** and **U2** coils are not reversed.
  - (b) Check **UL** adjustment. See adjustment procedure.
  - (c) Check **UL** assembly. (Note: To check **UL** assembly, lower car to lowest floor. Disconnect **U1** coil. Start pump and slowly turn **UL** adjuster CCW (CW for **UV-7B & BC**) from the closed position until car pulls out of stall).
  - \* (d) Examine **UA** screen for debris.
  - \* (e) Inspect middle O-ring on check valve closure (**UV-5A & UV-4R** only).
  - (f) Check up level switch, check all electrical circuits pertaining to up leveling.
- 9. CAR STALLS WITH CAPACITY LOAD**
- (a) Check relief valve adjustment. See adjustment procedure.
  - \* (b) Check belts on pump and motor to see if they have proper tension and are not slipping.
- 10. HARD STOP AT FLOOR LEVEL**
- (a) Turn **US** CW. See adjustment procedure.
  - (b) Check to see that pump continues to run electrically for about one second after car stops at the floor level.
  - (c) Broken check valve spring. Car will settle very hard after a stop.
- 11. CAR CONTINUES TO LEVEL THROUGH FLOOR IN LEVELING SPEED**
- (a) Turn **US** adjuster CCW. See adjustment procedure.
  - \* (b) **U2** needle orifice plugged with debris.
  - \* (c) **US** adjuster plugged with debris.
- 12. CAR WILL NOT STALL. PUMP RUNNING - UA Adjuster TURNED OFF.**
- (a) Check **UA** adjuster to make sure it is turned off. Turn CW until stopped position is reached).
  - (b) Turn **BP** flow control screw to open position CCW until stopped). 14 turns open maximum on **UV-5AT & UV-4R**.
  - \* (c) If car will not stall, install larger bypass piston. Note: On **UV-7B**, piston area may be increased (or decreased) by rotation of port ring after (removing snap ring, if existing) and loosening bolts holding port shield. Re-tighten bolts (replace snap ring) & reset **BP**. See adjustment procedure.
  - \* (d) Inspect **BP** piston spring position. Spring goes in first.
- 13. CAR WILL NOT "HOLD" POSITION AFTER UP RUN, BUT LOWERS IMMEDIATELY TO PIT**
- \* (a) Check valve stuck open.
  - \* (b) Down valve stuck open.
  - \* (c) Manual lowering open.

\* DISCONNECT ELECTRICALLY FOR YOUR SAFETY

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## DOWN SECTION

- 1. CAR WILL NOT LOWER (DOWN MAIN)**
- (a) Check voltage supply and coils on valve for proper voltage and/or open circuits.
  - (b) Turn **DM** CCW.
  - (c) Turn **DA** CCW.
  - (d) Turn **DC** CW slowly - remember that **DA** must be open more than **DC**. Closing **DC** too much may cause the car to lower into the pit at full speed!
  - (e) Open pit or tank valve, if closed.
  - (f) Check guide shoe adjustment.
  - (g) Check jack packing adjustment.
  - \* (h) Inspect needle orifice for debris.
  - \* (i) Inspect **DA** adjuster cavity for debris.
  - \* (j) Inspect down piston O-ring or piston ring for size.
- 2. CAR WILL NOT LOWER (DOWN LEVEL ONLY)**

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- \* (a) Inspect down level spool on end of piston - if broken - replace. **UV-7B** has spring loaded needle.
- 3. **SLOW DOWN START (BOUNCY)**
  - (a) Bleed jack of air.
  - (b) Check jack packing adjustment.
  - (c) Check guide shoe adjustment.
  - (d) Check piston O-ring for size. An oversize or swollen ring can prevent a valve from opening or closing in a smooth manner. **Note: UV-7B** down piston O-ring is oversized on valves up to S/N C802. Do not change to smaller size unless you order a complete new down piston assembly.
- 4. **SUDDEN DOWN START**
  - (a) Check jack packing adjustment (too tight).
  - (b) Check **DA** adjustment to see if it is set properly. See adjustment procedure.
- 5. **VALVE WILL NOT CLOSE**
  - (a) Check **DT** adjustment. Turn CW to stop on **UV-7B**. Turn CW until flush with nut on **UV-5AT & UV-4R**.
  - \* (b) Check filter screen in **DC** adjuster to see if it is full of debris. When checking this screen, do not change the adjustment. Clean screen first. If minor adjustments are required, do so after cleaning screen. **UV-7B** has a separate screen.
  - \* (c) Check solenoid plunger tubes for damage. Plunger should slide freely in all positions.
  - \* (d) Check solenoid needle and seat for damage. If damaged (leaking), replace.
  - (e) Check hatch switches, relays, or other electrical devices which could hold solenoid in open (energized) position.
  - \* (f) Clean valve of all solid debris.
  - \* (g) Inspect 'V' guide. Piston and 'V' guide should move freely in bore.
  - \* (h) Inspect piston O-ring for size. A badly oversized or swollen ring may prevent a valve from closing. See note 3 (d) (in Down Section).
- 6. **DOWN STOP ROUGH (QUICK)**
  - (a) Turn down valve **DC** closing adjuster CW. See adjusting sheet.
  - (b) Check main piston O-ring to see if it has shrunk.
- 7. **DOWN STOP SLOW OR BOUNCY**
  - (a) Bleed jack of air.
  - (b) Turn **DC** adjuster CCW. Disconnect **D1** coil when checking.
  - \* (c) Check filter screen in **DC** adjustment. When checking this screen, be sure not to change adjuster until after you have cleaned screen). The **UV-7B** has separate screen.
  - (d) Check guide shoe adjustment.
- 8. **DOWN TRANSITION ROUGH (WITHOUT DT ADJUSTER)**
  - (a) Turn **DC** CW. (Check stop after making **DC** adjustment, hatch switch adjustment might have to be made). See adjustment procedure.
  - \* (b) Check down piston O-ring to see if it has shrunk.
- 9. **DOWN TRANSITION ROUGH (WITH DT ADJUSTER)**
  - \* (a) Check **DT** adjuster to see if it is plugged with debris. (See adjusting sheets for **UV-5A, UV-5AT, UV-5ATC & UV-4R**).
- 10. **DOWN LEAK**
  - (a) Check jack packing and fittings.
  - (b) Close manual lowering valve.
  - \* (c) Inspect down valve seal disc\*\* or o-ring seal and seat area.
  - \* (d) Inspect check valve seal and seat area.
  - \* (e) Inspect both down solenoid needle orifices and needles for sealing.
  - \* (f) Inspect innermost O-rings on **UL** stem and check flange, **UV-5A & UV-4R** only.

\* DISCONNECT ELECTRICAL FOR YOUR SAFETY

\*\* Down piston seal disc in **UV-5A** valve replaced with an o-ring seal after November 2005. Seal Disc no Longer Available

For EECO Valve Technical Support please call:

**(888) 577-EECO**

Between 8:00 AM Eastern and 4:30 PM Pacific time, Monday through Friday.