Ecotec 937 Actostor fault finder

Carry out basic checks. i.e. Electrical safety, Polarity, Gas Working pressure. Etc.
Check for installation defects.
Gain information in order to replicate fault.
Make sure that the NTC's and other components are securely fitted in the correct position.
Check D.S.N. and all other factory settings.

Note:
If a fault has been identified and corrected, you MUST perform a final 10 minute test of the Actostor recharge procedure to Verify correct operation.

Press - and i simultaneously and record fault history.

(F91) = Fault on Actostor (accompanied with fault listed below)

F81 | F80 | F90 | F12 | F13 | F02 | F03

Any other Fault codes → Refer to Manual

F12 Short circuit on storage tank NTC
F13 Short circuit on storage tank NTC
F02 Open circuit on storage tank NTC
F03 Open circuit on storage tank NTC

F02 DHW flow NTC not connected (Left)
F03 DHW Warmstart NTC not connected (Middle)
F12 DHW flow NTC short circuit (Left)
F13 DHW Warmstart NTC Short circuit (Middle)
Rectify faults before continuing

F90 → Communication has been interrupted Between BMU and Actostor.
→ Check Actostor wiring harness for Damage. (Refer to fig2)
Check Actostor wiring harness voltages. (Refer to fig 2)
Check Actostor PCB communication signal. (D92)
Replace if Necessary.

F80 → Fault on Storage load inlet NTC. (Right hand side)
→ Check NTC Resistance (Right) Fig 1
Check Actostor harness (Refer to fig 2)
Replace Inlet NTC

F81 → Actostor recharge time has exceeded 10 minute timeout after the hot water tap has been shut off.

A full DHW test is required to establish cause of fault and

Open a hot tap
Check Diagnostic code D36=L/min flow.
Does this register?

No → Check hot and cold installation configuration.
Check Aquasensor (Refer to fig 2)
Check wiring harness (Refer to fig 2)

Yes

Does DHW reach required temp?
D6= DHW target temp
D3= DHW Actual temp

No → Check Diverter valve position. **D35**
Check Diverter valve Position setting. **D70**
Check voltage to Diverter valve.
Check Plate heat exchanger. Use **D40** and **D41** Delta tee
Check Shiftload pump **(D12: 100=Pump energised)**
Check Actostor PCB and harness (Refer to fig2)

Continue with Fault procedure when corrected

Yes

With tap still running, return to **D12** to view shiftload pump status.
(Should display 100 = shiftload pump is energised)

Get a stopwatch ready.
Turn the hot tap **OFF**, and time a period for up to 10 minutes.

Does D12 return to (0 not energised) within 10 minutes?

Yes → Appliance is working correctly at time of visit..
Check date stamp on Shiftload pump should be **(07/27)** or later. Replace if necessary.
If all above checks have proved inconclusive, Replace Tank module pcb. **Ensure replacement pcb is labelled 158**

No

Does Inlet pipe get hot? Refer to fig 1

No → Check Actostor harness for short circuit or damage. (Fig 2)
Check Shiftload pump harness for damage.
Check shiftload Pump voltage at X12 (240 VDC)
Check Voltage at Actostor pcb. (Refer to fig2)

Replace Shiftload pump

Yes

Check Inlet NTC for good surface contact. (Fig 1)
Check Inlet NTC resistance at Actostor pcb. (Fig 2)
Check Date stamp on Shift load pump should be **(07/27)** or later.
Replace if necessary.

If all above checks have proved inconclusive, Replace Tank module pcb. **Ensure replacement pcb is labelled 158**

Note:
If a fault has been identified and corrected, you MUST perform a final 10 minute test of the Actostor recharge procedure to Verify correct operation.

Ecotec 937 actostor code guide

METHOD OF HOT WATER OPERATION WITH WARMSTART ON

When a hot tap is opened the aqua sensor puts the appliance into hot water demand mode. The diverter valve is driven into HW position, the shiftload pump is energised and ignition sequence starts. Incoming mains water is heated at the plate heat exchanger and transferred to the Actostor for hot water usage via the Shiftload pump. Hot water temperature is controlled from the left NTC measured at **(D3)**.
When the hot water tap is closed the burner will stay lit and the shift load pump continues to circulate the water from the plate heat exchanger, through the Actostor and back, until the actostor target temperature **(D6)** is achieved at the Right hand NTC **(No D code)**.
From the point at which the tap is closed and the aquasensor records no DHW flow **(D36)** this signals the start of a 10min time period for the actostor to reach target temperature. If this temperature is not reached the appliance goes into a fault status of **F81/91**.

This method is controlled by 3 thermistors on the actostor, the shifload pump and the Actostor PCB. See figure 1.
The clip-on thermistor on the left is the DHW flow temperature **(D3)**.
The clip-on thermistor on the right is the inlet temperature **(No D code)**.
There is also a NTC situated at the centre of the Actostor, Tank temp **(D4)**.

Status codes

Provide information concerning the current operating status of the appliance.
Press the "I" button and the display will show a status code eg S.24 if the burner is lit during DHW Reheat mode. (Consult installation manual for full list)
Press "I" again to return to the normal display.

Components

The actostor unit consists of the following electronic components
Aqua sensor **D36**
Actostor pcb (see photo Left)
Tank charging thermistor (ntc) **D3**
Inlet sensor (ntc) **No D Code**
Storage tank sensor(ntc) **D4**
Shift load pump **D12**
Wiring harness
The majority of faults can be dealt with using the diagnostics and a multimeter.
The only logic link from the actostor pcb to the main pcb is plug **X31** with 3 pins
The shift load pump takes 240vdc supply direct from plug **X12** on the main pcb

Diagnostic Levels

Diagnostic codes are used to display information such as sensor readings, component settings and parameters. Some are read only and others can be altered. There are 2 diagnostic levels.

Level 1 Diagnostics

To access the 1st level press the "i" and "+" buttons simultaneously then the display shows "d.00". Using +or- move to the required diagnostic number, then by pressing the "i" button the set value will be displayed (display flashing) If necessary this can be changed by using the "+" or "-" then hold down the "i" button for approximately 5 seconds until the display stops flashing. To come out of the diagnostic mode press the "i" and "+" buttons simultaneously which takes you to the normal display.

Level 2 Diagnostics

To access the 2nd level diagnostics you enter the first level and go to d.97 then press the "i" button, then change the value to 17 and push the "i" button. You will now be in the second level, which will also include the information from the first level. The same procedure is used to view/change values or leave this level. If you come back into the diagnostics within 4 minutes you will go directly to the 2nd level. A list of all codes will be in the appliance manual

D codes relavent to this fault finding guide

1st level diagnostic
D3=DHW Actual Flow temp. (situated on right hand side of Actostor)
D4=DHW storage temp (situated in middle of Actostor)
D6=DHW Target temp set point
D7=Warmstart/Storage target set point
D12=Shift load pump energised (100=energised 0=not energised)
D35= diverter valve position (read only) 0 = CH, 1 = DHW, 2 = Mid-position frost protection
D36=L/min flow
D76=dsn =8 (read only)

2nd level diagnostic
D70=setting the diverter valve (position0 = normal (factory setting), 1 = centre position, 2 = permanent heating)
D92=recognition of shift load storage tank(read only)
D93=dsn=8 used to change
A list of all codes are in the appliance manual

Fig 1

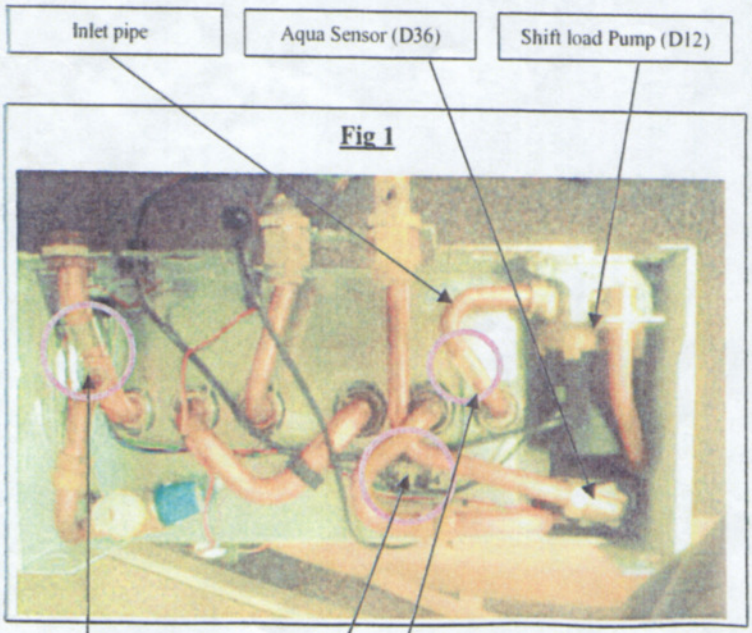
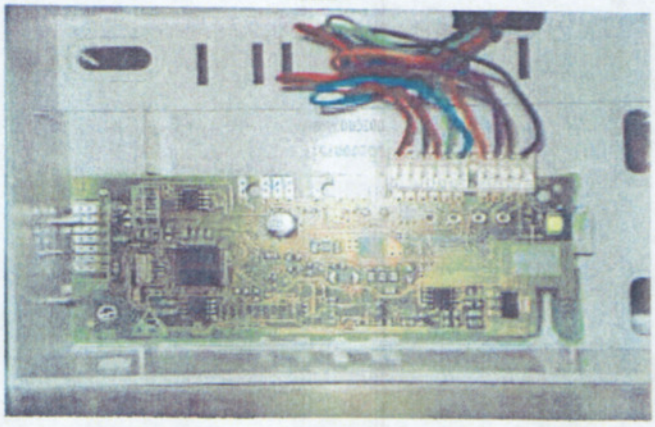


Fig 2



Tank module PCB Wiring connections

1 → **Neutral**
2 → 22VDC Shiftload pump dropping to 0VDC Average = 17VDC
3 → DHW Flow NTC 3.7 VDC Dropping on temp rise (Left hand side)
4 → Storage Tank NTC 3.7 VDC Dropping on temp rise (Middle)
5 →
6 → Inlet sensor NTC 3.7 VDC (Right hand side)
7 → Aquasensor 4.6 VDC Stationary, 2.4 VDC Spinning
8 → 4.6 VDC supply to aquasensor
9 → 5 VDC connection from main PCB X31
10 → 22.5 VDC connection from main PCB X31