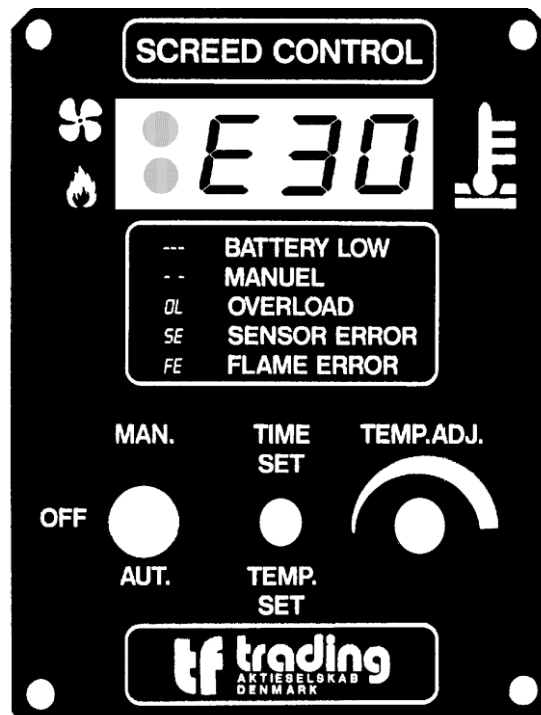


SC-5-96 SCREED CONTROL



tf TECHNOLOGIES
PAVING INNOVATION

User Manual

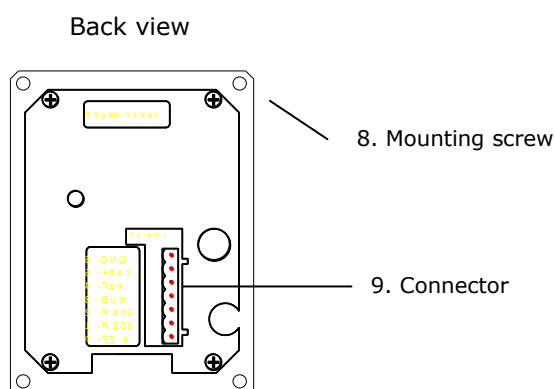
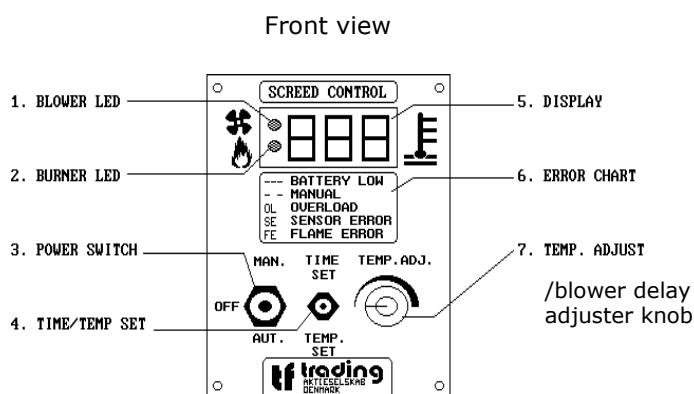
v. G702901

Introduction

The SC-5-96 is a thermostatically controlled Screed Heating Controller, with a manual override and features an automatic "Reset" to auto mode after operating 25 minutes in the **Manual** mode.

This feature prevents sole plate and tamper/vibrator bearing damage due to excessive heat built up.

The system has a built in automatic "Restart" feature, should the burner flame be extinguished or not light on, the initial system start up, ignition will re-start on a continuous 3 minute time cycle, until the burner in question re-lights or the "OFF" button is operated.



Description

1 **Blower LED**

This LED (Light Emitting Diode) indicates that the "BLOWER"-output is driven to ground.

2 **Burner LED**

This LED indicates that the "BURNER"-output is driven to ground.

3 **Power switch**

The power-switch has three positions. In the upper position (MANUAL) the two outputs (BLOWER and BURNER) will be constantly active regardless of the settings of other switches and the control knob. In this position both the LEDs 1. and 2. will light, and the display 5. will flash the two bars as indicated by the error-chart 6.

In the middle position (OFF), power is turned off, and no outputs are active.

In the lower position (AUTOMATIC), power is on, and outputs are controlled by the electronics.

4 **Time/temperature set**

This switch determines what information is displayed. When in the uppermost position (TIME SET), the time between the gas valve closing and the blowers turning off (blower-delay-time) is displayed in minutes and seconds.

In the middle position, the screed-temperature is displayed.

In the lower position (TEMP SET), the selected temperature is displayed.

5 **Display**

This is a 3-digit 7-segment High-efficiency LED-display, which is used to show temperature, time and various error-codes.

6 **Error chart**

This is just a printed error-chart, which shows possible error-codes. All error-codes will flash at the display to attract attention. (See trouble – shooting section for full explanation).

7 **Temp/blower delay**

This knob adjusts the selected temperature within a range of 50° C - 160° C on standard modules, and also the blower delay period within a range of 0 seconds – 5 minutes. It is used in conjunction with the TIME/TEMP switch (4).

8 **Mounting screws**

All mounting screws are 3 x 8 mm. metric.

9 **Connector**

This is the Screed-controls only international connector. The pin assignment is as follows:

0. Flame error input.
1. Sensor input.
2. Sensor input.
3. Burner output.
4. Blower output.
5. + 12 Volts DC.
6. 0 Volts (Ground)

10 **Metal Shield**

This reduces electrical interference.

Description of “automatic mode” operation

When in automatic mode the control module operation is as follows:

With power “ON” and the control switch in “AUT” position the display will read 8.8.8. for approximately one second, then 5.97 followed by 1.05 (or similar digits). The current screed temperature will then be displayed.

The state of the burner and blower outputs is indicated by the blower and burner led’s (1 + 2) in the display. When the preset temperature is reached, the module (Micro Processor) will deactivate burner output and after a further preset time period, deactivate the blower outputs.

It is possible to view both the preset **temperature** setting and the preset **blower delay period**, at any time by activating the TIME/TEMP set switch (4) on the front of the module.

Adjustment

The system is designed for simple operation, and only **two** adjustments are required, the **temperature cut out** setting and the **blower delay period**.

Note: Disregard blower delay adjustment if blowers are not fitted.

Temperature preset (cut out temperature).

The temperature adjustment range is from 50° C - 160° C (on standard modules). To adjust the temperature, ensure power supply is “on” and operate module control switch (3) to “AUT” position. **Hold** the TIME/TEMP switch (4) down in the “TEMP” position and turn “TEMP ADJ” knob to desired “Cut out” temperature, then release time/temp switch. The system will now operate in automatic mode and burners will deactivate at the **new** preset temperature. Burners will reactivate when the temperature has dropped 2° C below the preset setting.

Blower delay time adjustment

The blower delay range is from 0 seconds – 5 minute. To adjust the time period, ensure power supply is “ON” and operate module control switch (3) to “AUT” position. **Hold** the “TIME/TEMP” switch (4) up in the “TIME” position and wait 3 seconds, turn “TEMP ADJ” knob to desired blower time delay, then release the “TIME/TEMP” switch.

When the burners deactivate, the blowers will continue to run on for the new time setting.

Manual operation

WARNING

Prolonged use of the system in manual mode, can result in screed overheating, this may damage screed frame/sole plates, tamper bearing and electrical components etc.

Trouble-shooting

- 1 Instrument fails to display when power is turned on**
 - Check for sufficient voltage at the connector. If this is OK, then the module is probably damaged.
 - 2 LED output-indicators shows correct operation, but burner and/or blower fail to operate**
 - Check system wiring and all connectors for correct connections.
 - 3 Instrument shows erratic display but stable temperature**
 - Incorrect sensor type used. Replace sensor with proper PT-100 type.
 - If displayed temperature is higher than actual temperature, some unwanted resistance is connected in series with the sensor. This could be the use of very thin cables or bad connections on the sensor cable. Recommended cables should be no less than 0.75 mm²
 - 4 Instrument shows unstable temperature**
 - Check sensor connectors, if all connection found OK, replace sensor.
 - 5 Display shows error-code "---"**
 - This is no real error-code, but simply indicates that the instrument is currently operating in MANUAL mode. Note **however, that the instrument should not be operated in this mode for a long period of time, as electrical components and screed plates may be damaged.**
 - 6 Display shows error-code "- -"**
 - This indicates low supply voltage. Check the battery voltage. This should be above 11 Volts.
 - Low voltage can also be caused by two loads sharing the same small cable. (High resistance). Generally this instrument should be directly connected to the battery to avoid electrical interference and voltage drop.
 - 7 Display shows error-code "OL"**
 - This indicates that the actual temperature is higher than 200 degrees. That might happen if the screed-control is operated in the manual mode, and someone has forgotten to turn it off, or:
 - The sensor is defective
 - 8 Display shows error-code "SE"**
 - Sensor is defective, short-circuit
 - Sensor is defective, open
 - Sensor cable failure
 - 9 Display shows error-code "FE"**
 - This flame-error code indicates that the screed-control has received error-input on connector-pin 0. (Probably because one of the connected ignition-boxes cannot detect any flame).
 - Check the ignition system
- NOTE that the screed-control will deactivate burner- and blower-outputs and must be reset (turned off and on) prior to further operation.
- 10 Display shows error-code "F97, F98 or F99"**
 - This indicates over current in the output of the burners, blowers or both.

11 Display is disturbed when one or more outputs changes state

- This is probably because the screed-control and one or more of the blowers/gas-valves that it controls share a common power supply cable. As mentioned earlier the screed-control should have its own large cables directly connected to the battery.

12 Instrument repeatedly resets (shows "8.8.8.")

This indicates some sort of electrical interference, or incorrect wiring.

13 On initial start up in automatic mode the system shuts down after 7 seconds

- This is the most common problem experienced with the system, and in general is caused by condensation build up on the "HT" leads, after an overnight machine shut down. The problem can be rectified by wiping the "HT" leads or running the system on **manual** operation for a few minutes before switching back to automatic mode.

If the fault persists check the following:

Run the system in **manual** mode and observe the **yellow** led indicators on the FCA-12/24Volt ignition boxes.

The indicators should be on and "STEADY", if one or more of the **yellow** indicators are flickering it indicates a possible problem in the area of that specific burner, check the following:

1. Gas pressure (As per machine manufactures specifications)
2. Spark plug gap (Approx. 3-4mm)
3. Spark plug electrode position (Earth electrode must face flame direction)
4. Air to gas ratio

NOTE: Ignition boxes (FCA 12/24V) must be fitted away from heat source.

Specifications

Electrical

Accuracy	± 1° C
Hysteresis	± 2° C
Adjustment range	20 – 200° C
Supply Voltage	+12 or +24 Volts DC (10.5 – 14.5 or 21 – 29 Volts)
Current consumption	0.7 Amps
Output current	5 (8) Amps max.
Operating temperature range	0 – 60° C

Mechanical

Weight	239 g
Height	121 mm
Width	90 mm
Depth	45 mm