START:

The turbine can only start if the magnet activates the stop sensor (or
stop sensors), this is indicated by a marker in the display.
When the start key is pressed, the bypass valve closes (the turbine
starts), and then the main valve opens.

If the stop sensor is not activated by the magnet, it is only the main
valve that opens, and closes right away.

This is used if the pressure should be released before disconnecting the
hose at the hydrant.

STOP:
When the magnet is removed from the stop sensor the marker in the display
disappears, the turbine stops and the main valve closes (opens at low
pressure stop).

If post-irrigation is chosen, the turbine stops and after the post
irrigation time, the main valve closes.
If the key " STOP " is pressed the turbine stops and the main valve
closes, regardless of postirrigation.

SUPERVISION:
The CONSTANT RAIN has a built in system for supervision.
The supervision starts to work, if for some reason the machine irrigates
at the same place longer than a specified time.
This time is factory adjusted to 20 minutes, see programming for changing
this time.

DISTANCE:
By pressing the key " DISTANCE/TIME " once, the display shows the lenght
of the hose that is rolled out. After 1 minute the displays shows the
speed.

TIME:
By pressing the key " DISTANCE/TIME " twice, the display shows the time
for the irrigation, inclusive pre- and post-irrigation.
After 1 minute, or by pressing the key " DISTANCE/TIME " the displays
shows the speed.
If the speed is adjusted with the arrow keys the total irrigation time
changes immediately.

SPEED:
The speed is adjusted with the arrow keys, the speed first changes by
steps of 0.1 m/h, then after 10 steps it changes by 1.0 m/h. The speed
can be changed at any time, even whilst the machine is running.
If the time is checked it shows the new time for the remaining
irrigation.
The speed cannot be changed whilst any of the motors are running.
The motors run for a max. of 6 sec.

PRE-IRRIGATION:

Pre-irrigation can be activated by pressing the key " PREIRRIGATION ".
The time for pre-irrigation is shown in the display for 2 seconds, and
the marker for pre-irrigation is on.

The time for pre-irrigation is calculated by the CONSTANT RAIN as 8 x the
time for running 1 metre at the actual speed.
The constant " 8 " may be changed, see programming.
If the pre-irrigation is on, the machine starts and run ½ metre, then it
stops for the pre-irrigation time. The marker for pre-irrigation is
flashing when the pre-irrigation counts down.

By pressing the key " START, RESET " the pre-irrigation is cancelled.
The magnet at the stop sensor should be in place, before activating the
pre-irrigation.

POST-IRRIGATION:
Post-irrigation can be activated by pressing the key " POST-IRRIGATION ".
The time for post-irrigation is shown in the display for 2 seconds, and
the marker for post-irrigation is on.
The time for post-irrigation is calculated by the CONSTANT RAIN as 8 x
the time for running 1 metre at the actual speed.
The constant " 8 " may be changed, see programming.
The post-irrigation starts to count down when the magnet is removed from
the stop sensor . The marker for post-irrigation is flashing when the
post-irrigation counts down.
By pressing the key " START, RESET " the post-irrigation is cancelled.
The magnet at the stop sensor should be in place, before activating the
post-irrigation.

POWER ON:
If the magnet is removed from the stop sensor and the machine does not
pre- or post-irrigate, the power is turned off, after 6 minutes. This is
shown in the display by " OFF ".

The CONSTANT RAIN turns back to run mode by pressing any key, or when the
roll is turned, or the magnet is placed at the stop sensor.

PROGRAMMING:
Constants, that can be changed by the user.

Constant 0   Pre-irrigation, factory adjusted to 8 steps = the
                      time for irrigation of 8 metres.

Constant 1   Post-irrigation, factory adjusted to 8 steps = the
                      time for irrigation of 8 metres.

Constant 2   Supervision time, factory adjusted to 20 minutes.
                      Zero indicates no supervision.

Constant 3   First pulse to the shutdown valve,
                      factory adjusted to 3 seconds.

Constant 4   Subsequent short pulses to the shutdown valve,
                      factory adjusted to 160 milliseconds = 0.16 second.

Constant 5   Time between short pulses to the shutdown valve,
                      factory adjusted to 2 seconds.

Constant 6   The number of short pulses to the shutdown valve,
                      factory adjusted to 100 pulses.

Constant 7   Electrical or mechanical shutdown.
                      " A " electrical shutdown.
                      " b " mechanical shutdown.
                      " c " electrical shutdown, stop motor (motor 2)
                      will not close when the pressure goes low.
                      factory adjusted to " A ".

Constant 8   Pressure switch.
                      " A " Pressure switch connected.
                      " b " Pressure switch not connected.
                      factory adjusted to " b ".

Constant 9   Direction of stop motor (motor 2).
                      " A " Forvard: used when stopping by high pressure.
                      " b " Reverse: used when stopping by low pressure.
                      " c " Motor disconneted.
                      factory adjusted to " A ".

Constant A   Code for changing the step lenght.
                      The code should be 111 for reaching the constant b.

Constant b   Step lenght: the number of mm the machine runs, for
                      each pulse from the speed sensor.
                      e.g. roller circumference 250 mm, 4 pulses for each
                      turn = 63 mm step lenght.
                      factory adjusted to 63.

Programming procedure:

Press rapidly the " PROGRAM " key 3 times to gain access to change the
constants. The constant no. will be flashing and the constant value will
be steady. By subsequently pressing on the " PROGRAM " key the flashing
constant no. will step forward.
With the arrow keys the constant value can be changed.
The CONSTANT RAIN goes back to normal, if the key " DISTANCE " is
pressed, or if the keyboard is not touched for one minute.
The constants are saved, even if the battery is disconnected for a longer
period.

Constant no. (Flashing digit)	Possible adjustment	Factory adjustment
0: Pre-irrigation	0 - 15 steps	8
1: Post-irrigation	0 - 15 steps	8
2: Supervision time Zero indicates no supervision.	0 - 99 min.	20
3: First pulse to the main valve.	0 - 45 sec.	3
4: Short pulses to the main valve.	0 - 300 millisec.	160
5: Time between short pulses	1 - 5 sec.	2
6: The number of short pulses	0 - 255	100
7: Shutdown system	" A ", " b ", " c "	A
8: Pressure switch	" A ", " b "	b
9: Direction of stop motor	" A ", " b ", " c "	A
A: Code	0 - 255	100
b: Step lenght	40 - 160	63

TEST:
ROLL TEST:
The marker in the display flashes when the roll is turning.

STOP SWITCH:
The marker is on when the magnet is near the sensor.
The stop switch has 3 purposes:
1: To reset the distance counter.
2: Post-irrigation
3: Blocking of the start pulses to the regulator motor, if the stop
    sensor is not activated.

PRESSURE SWITCH:
There is a marker between roll test and motor 1 stop, which is on when
the pressure is high.
The machine can only work when the pressure is high.
If the pressure turns low the main valve closes and the regulator valve
opens. If constant no. 7 is set to " c " the main valve is staying at the
same position, independent of the pressure switch. The supervision and
preirrigation is standby, when the pressure is low.
The input can also be used as stop for different mechanical problems, as
it will not reset the distance counter.
It can also be used to stop the machine if it starts to rain, by
connecting a rain gauge.

MOTOR STOP:
The two marker in the display " MOTOR 1 STOP " and " MOTOR 2 STOP " shows
that the motors have reached their mechanical stop. If the markings are
flashing it indicates that the motor is running. If the markings are on
when the motors are not at their end position, there is a blocking inside
the valve (maybe a stone or similar).

LOW. BAT.
If the voltage on the battery drops below 11.8 volt, it is indicated in
the display by a flashing " Lo ".

If the voltage drops below 11.2 volt, it is indicated in the display by a
steady " Lo ", the turbine stops and the main valve stops the machine.