

TC 180

SECOND

HALF

TC 180

MAINTENANCE

TC 180 MAINTENANCE

The most important program on the maintenance of the Flaker machines is the cleaning/sanitizing to be done on regular base as detailed here below:

- **Sanitizing:** **Every month**
- **Cleaning:** **Every six**

On next slides will be shown the procedure for sanitizing and cleaning.

TC 180 MAINTENANCE

TOOLS REQUIRED

- Medium Phillips Screwdriver
- Medium Flat Screwdriver
- Pair of safety gloves
- Bucket
- Different types of brush
- Approved Cleaner/Sanitiser



TC 180 MAINTENANCE

Remove the top....



....left side and



TC 180 MAINTENANCE

....and front panel.



TC 180 MAINTENANCE

Switch OFF the machine at
main power switch....

.....and close the water tap
on water inlet line.



TC 180 MAINTENANCE

Scoop out all
ice stored into
the bin so to
prevent its
contamination.



TC 180 MAINTENANCE

Remove the metal clamp and
disconnect the water tube from
the outlet of the water
reservoir.

Collect....



TC 180 MAINTENANCE

....the water into a rag

then.....



TC 180 MAINTENANCE


....place
again the
tube on the
outlet port.



TC 180 MAINTENANCE

Prepare the cleaning solution by diluting in a plastic bucket lukewarm water (max 40°C) with **SCOTSMAN Ice Machine Cleaner** as per the following quantities:





**TC 180
MAINTENANCE**

**1,5 LITER WATER
WITH 150 CC
CLEANER**

TC 180 MAINTENANCE

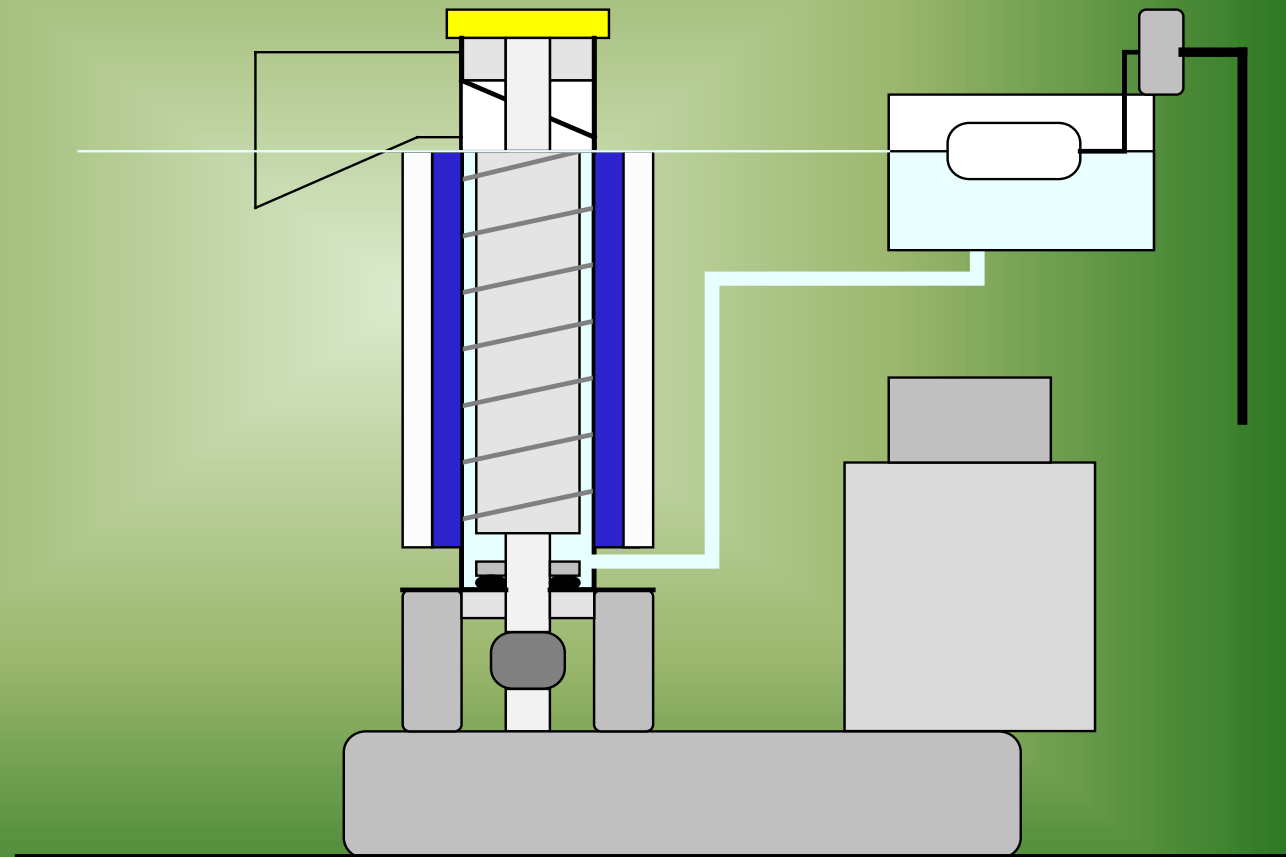
Remove the water reservoir cover then....

....slowly pour onto the water reservoir the cleaning solution.



TC 180 MAINTENANCE

Leave the machine in **OFF mode** for approximately 20 minutes so to have the cleaning solution melting the scale into the entire water system.



TC 180 MAINTENANCE

With the help of a brush dissolve the most resistant and remote scale deposits into the plastic tube connecting the water reservoir to the bottom of the freezer.



TC 180 MAINTENANCE

After 20
minutes move
the master
switch to ON
position first
then....



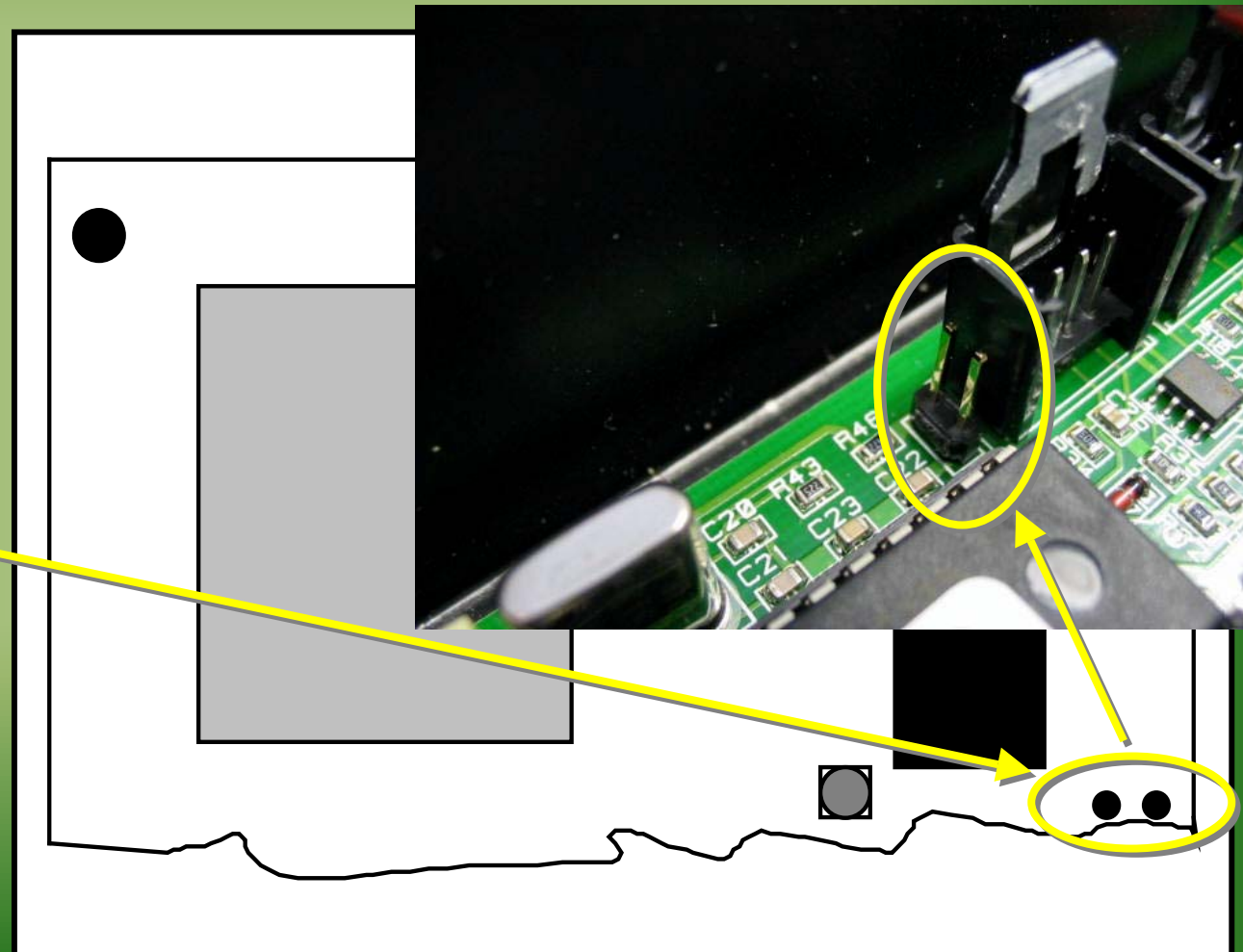
TC 180 MAINTENANCE

....jump with a
wire the two metal
pins of the water
level sensor.



TC 180 MAINTENANCE

Jump with a screwdriver the two contacts located close to the microprocessor to start up immediately the operation of the machine.



TC 180 MAINTENANCE

Few minutes later the machine start up to produce and discharge ice (slash) into the storage bin.



TC 180 MAINTENANCE

As soon as the level of the water into the water reservoir is going down, slowly pour the remaining cleaning solution till empty the bucket



TC 180 MAINTENANCE

Once empty the bucket open the water tap so to allow new fresh water into the water reservoir and leave the machine running for approximately 10 minutes.



TC 180 MAINTENANCE

When sure that no more trace of cleaning solution is left into the water system pour 1 cc of Scotsman sanitizer directly into the water reservoir then....



TC 180 MAINTENANCE

....place again the
water reservoir
cover paying
attention to remove
the jumper between
the two metal pins.



TC 180 MAINTENANCE

Scoop out the
flake ice
produced
with cleaning
sanitizing
solution.



TC 180 MAINTENANCE

Wash the inside of the storage bin with sanitizing solution (1 cc sanitizer per liter of water) so to be sure no more trace of de-scaling/cleaning solution remains into the sump.



TC 180

**SERVICE
ANALYSIS**

TC 180

SERVICE ANALYSIS

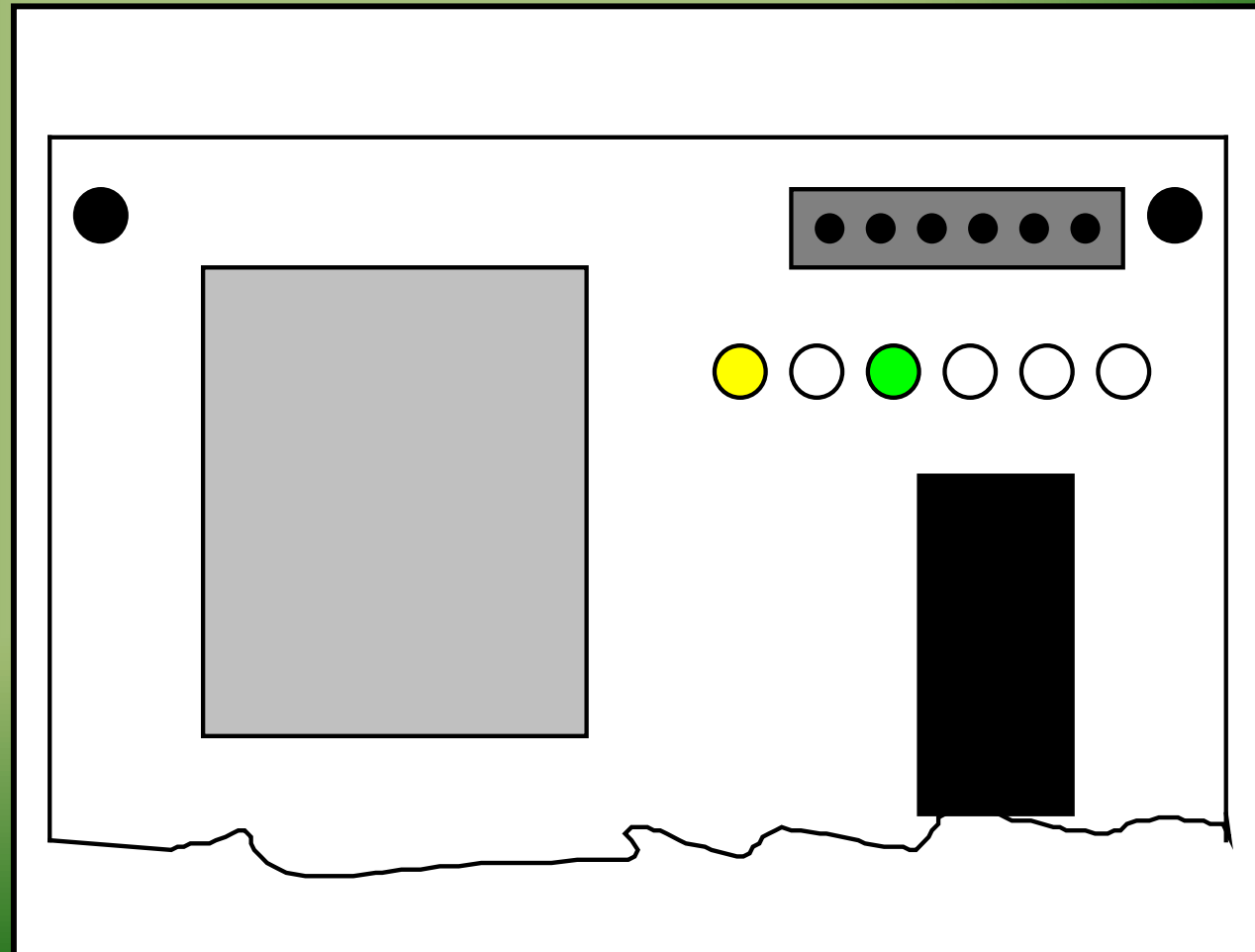
Bin Full

situation:

Green and

Yellow

LED ON.



TC 180

SERVICE ANALYSIS

If no ice into the storage bin or just a little quantity check for the correct operation of the Optical Ice Level control located on the upper outside part of the spout.



TC 180

SERVICE ANALYSIS

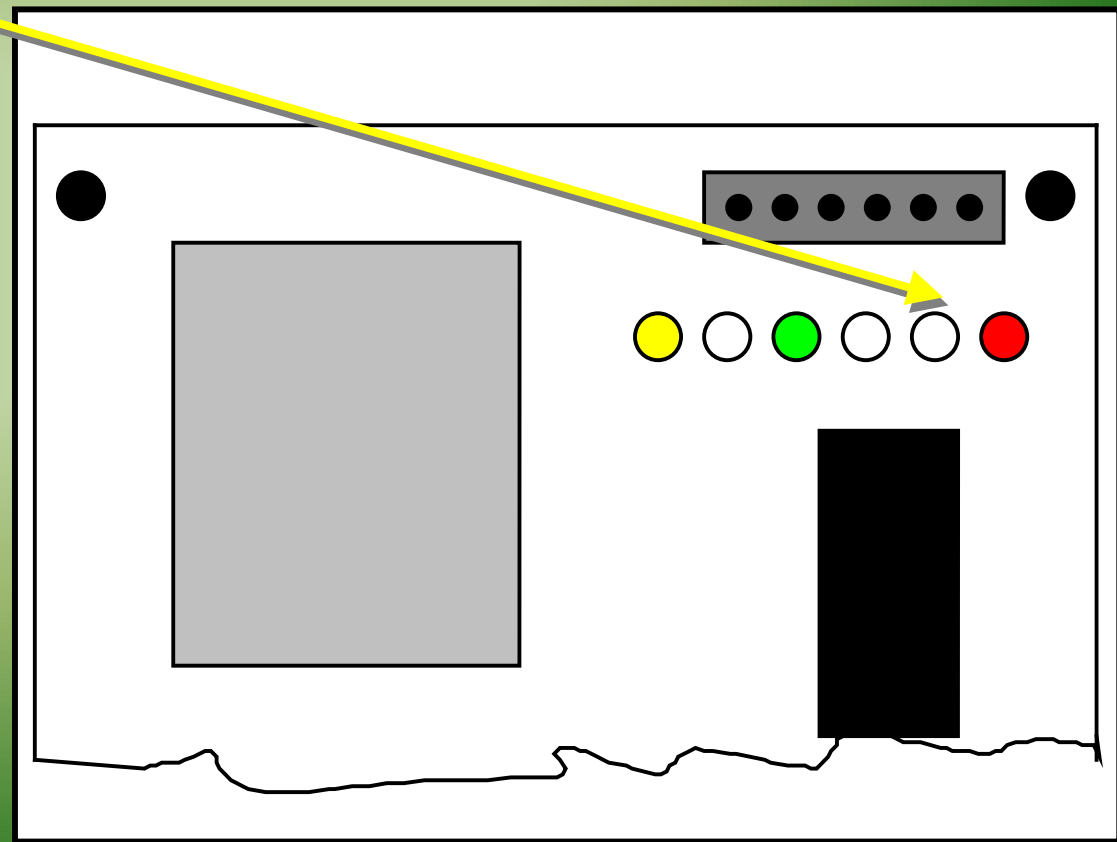
The two eyes placed on the opposite side of the plastic bracket must be perfectly clean with no dust and/or scale.



TC 180

SERVICE ANALYSIS

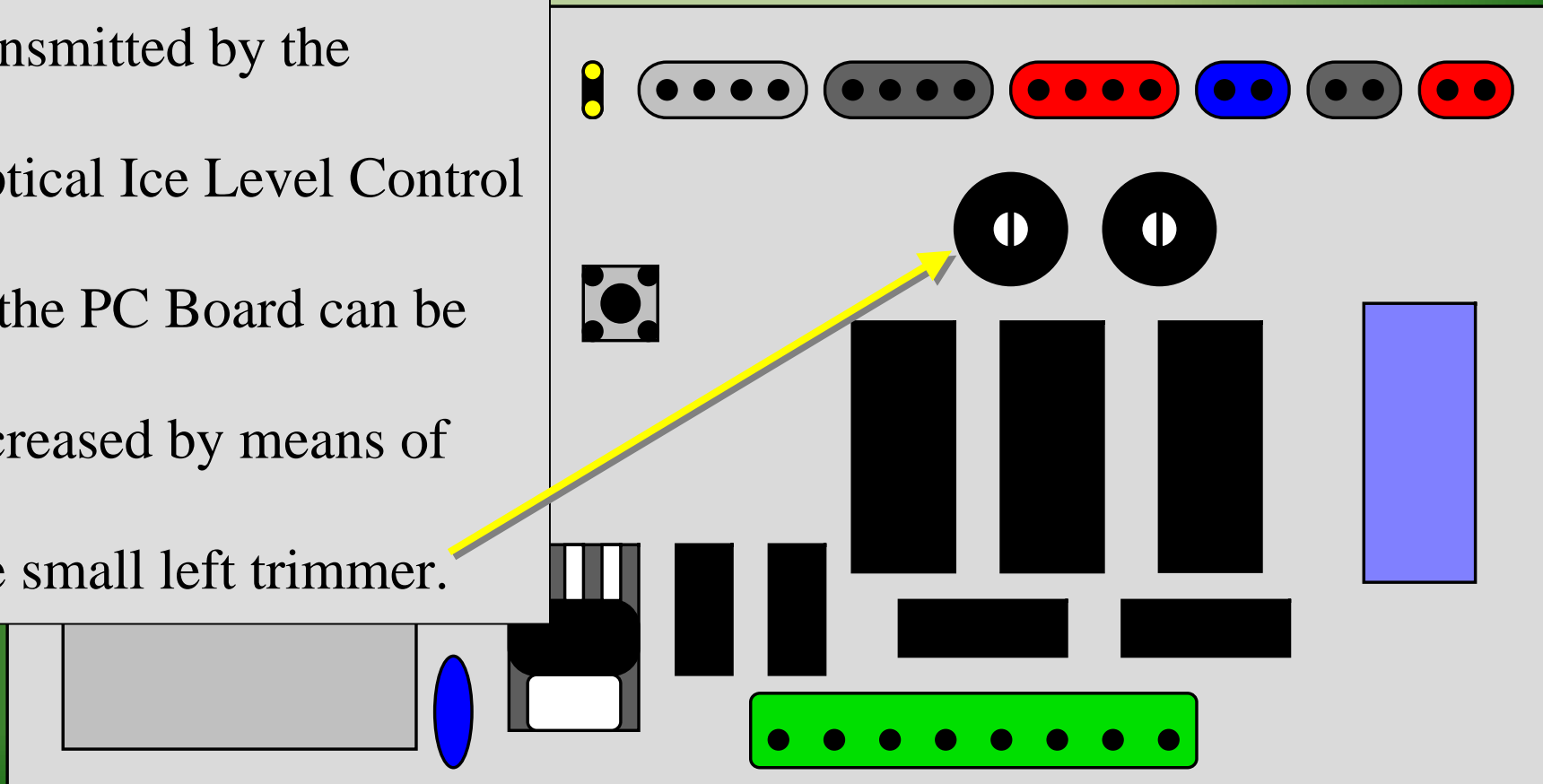
When so the **Red LED** located on the right side of the LEDs row must be **ON**. If not Optical Ice Level Control or PC Board need to be replaced.



TC 180

SERVICE ANALYSIS

The power signal transmitted by the Optical Ice Level Control to the PC Board can be increased by means of the small left trimmer.



TC 180

SERVICE ANALYSIS

If re-adjusted, be sure first of the correct tripping OFF at
Optical Ice Level Control **using ICE (no the hand)**.

TC 180

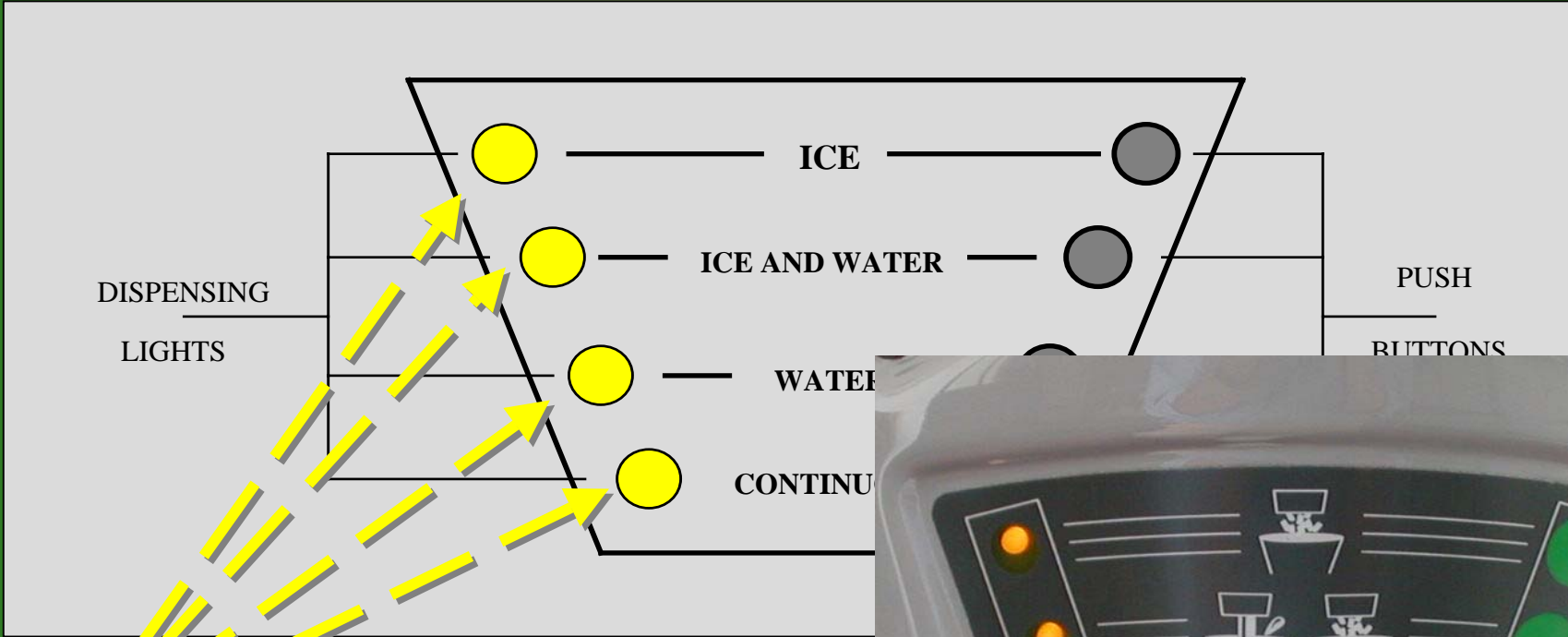
SERVICE ANALYSIS

ALARM

CONDITIONS

TC 180

SERVICE ANALYSIS



BLINKING ALL TOGETHER

TC 180

SERVICE ANALYSIS

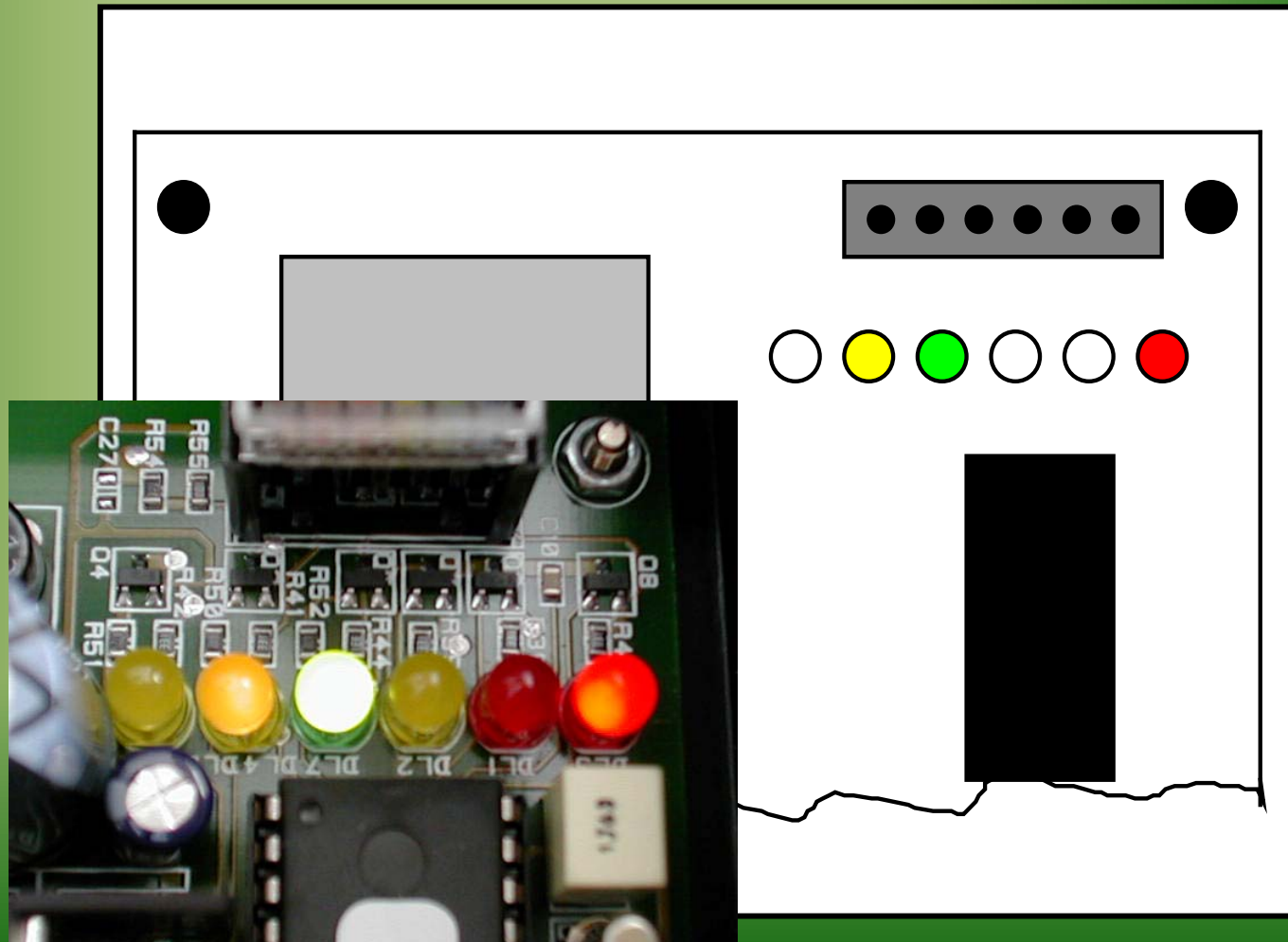
No water

situation:

Green and

Yellow

LED ON.



TC 180

SERVICE ANALYSIS

Check first for
the water tap on
the water supply
line



TC 180

SERVICE ANALYSIS

.....for the water filter

located on the water inlet

line.....



TC 180

SERVICE ANALYSIS

.....for the water strainer

located inside the water

inlet fitting.....



TC 180

SERVICE ANALYSIS

.....for the correct
cleaning of the
orifice of the water
reservoir.

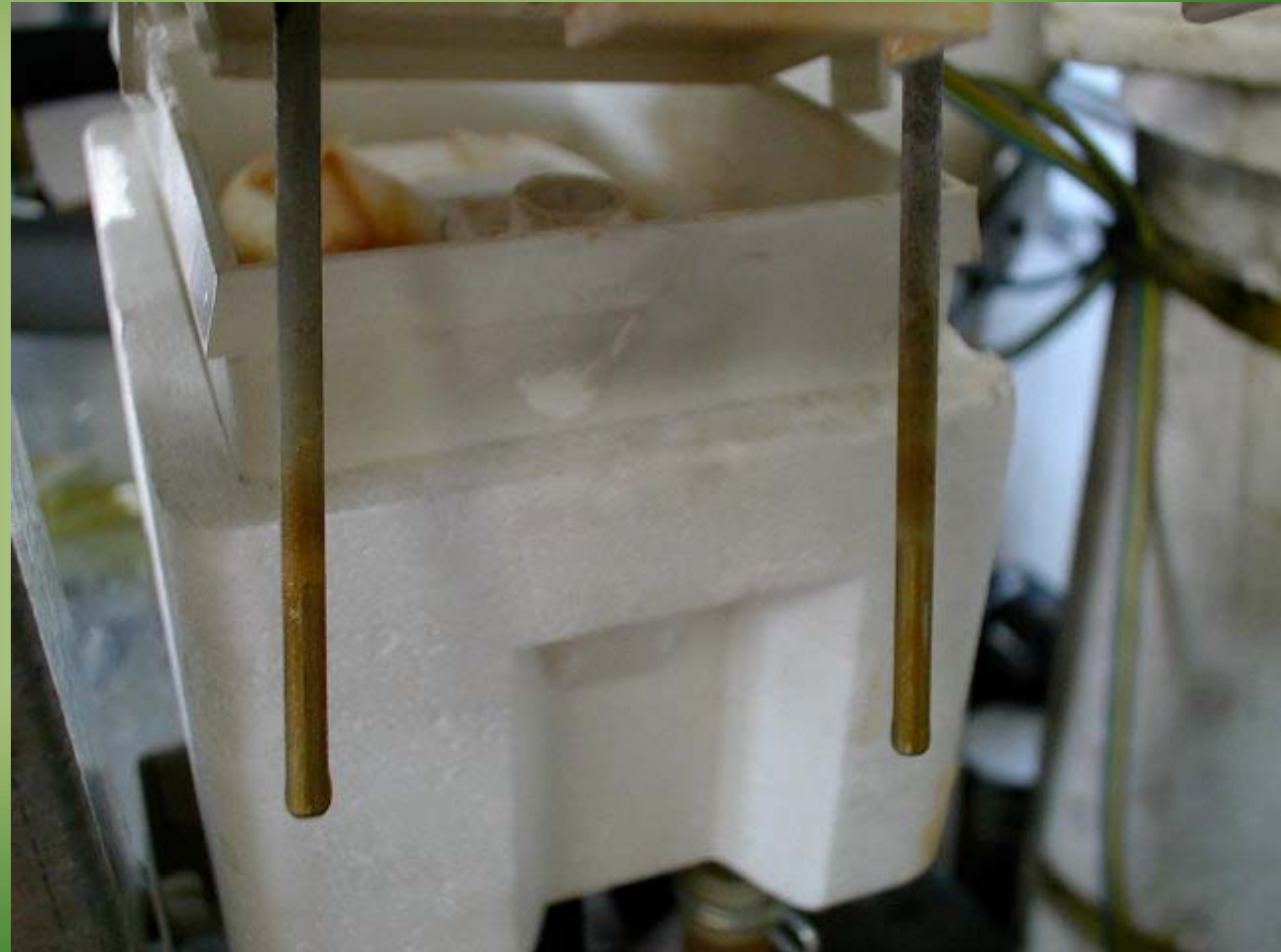
If not clean it with a
small metal pin.



TC 180

SERVICE ANALYSIS

In case of water
into the water
reservoir check
for any scale
deposit onto the
two metal pins
of the water
level sensor.....

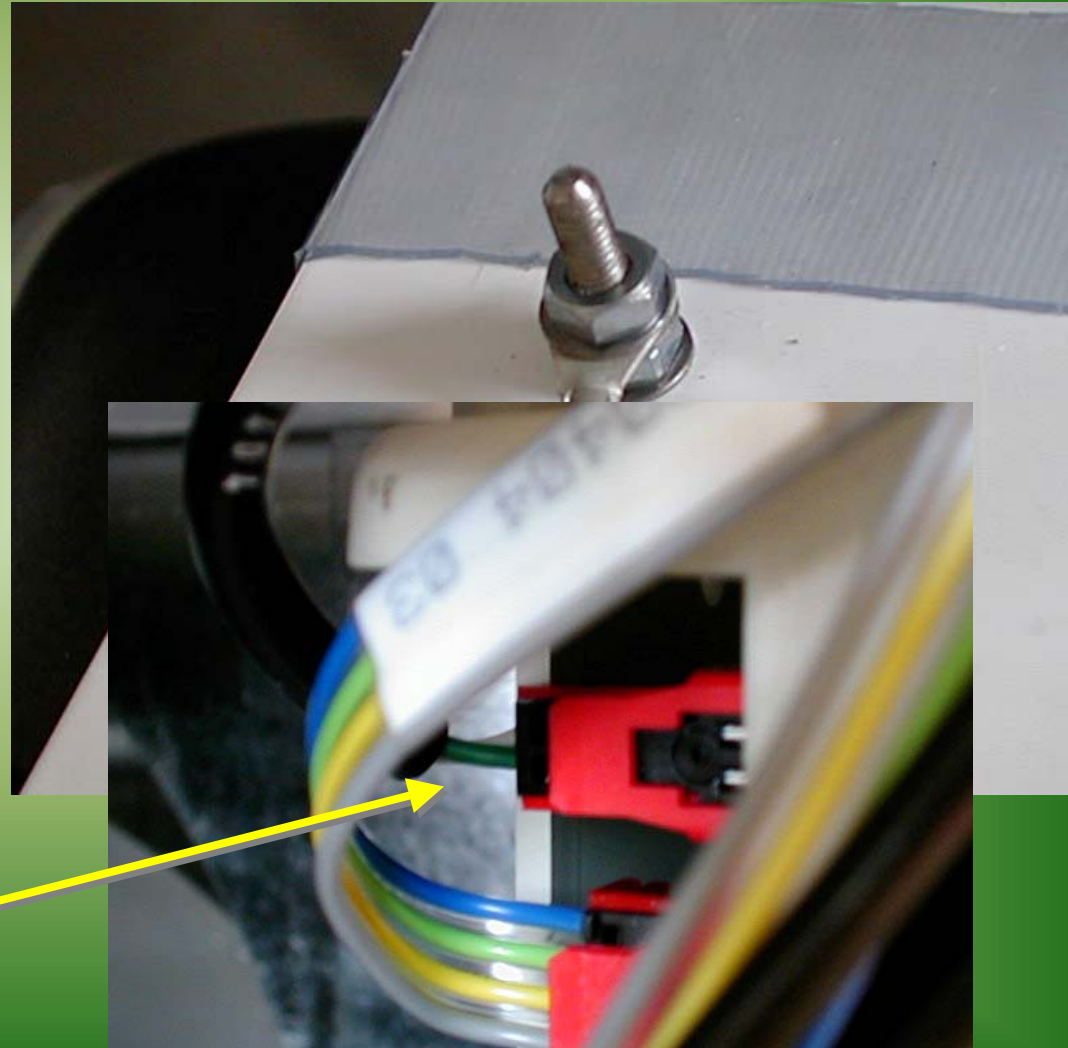


TC 180

SERVICE ANALYSIS

.....or for any loosing wire
between the two metal pins
and.....

.....the PC Board
connector (red color two
pins connector).



TC 180

SERVICE ANALYSIS

ATTENTION. The water level sensor operate by transmitting a low voltage current through the water. If water is very soft, with a very low content of mineral salts, no current is transmitting back to the PC Board tripping OFF the machine at NO WATER LED.

A minimum of 30uS electrical conductivity water is required for correct operation of the machine.

TC 180

SERVICE ANALYSIS

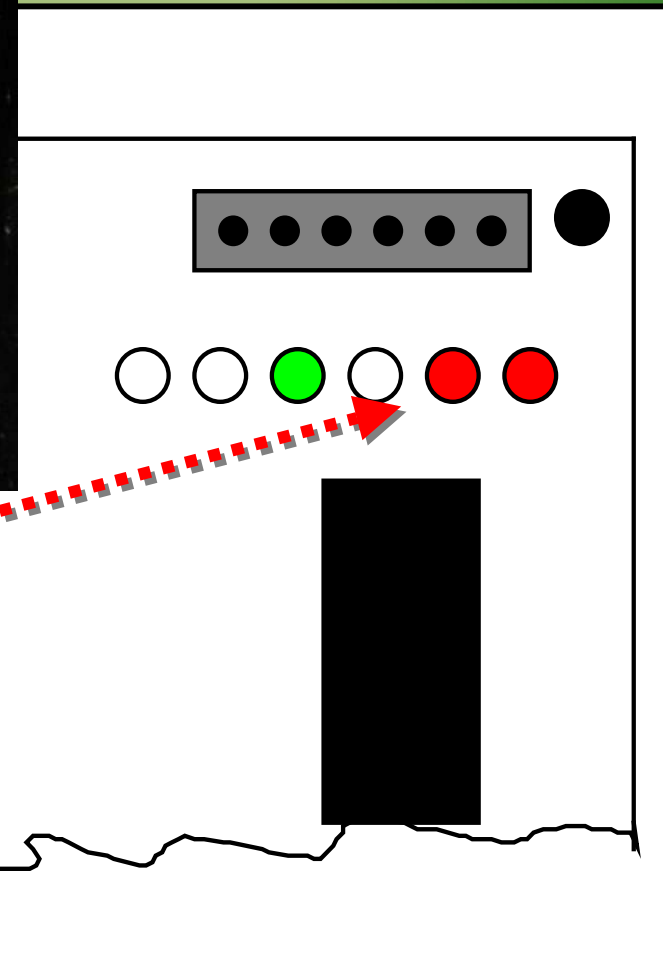
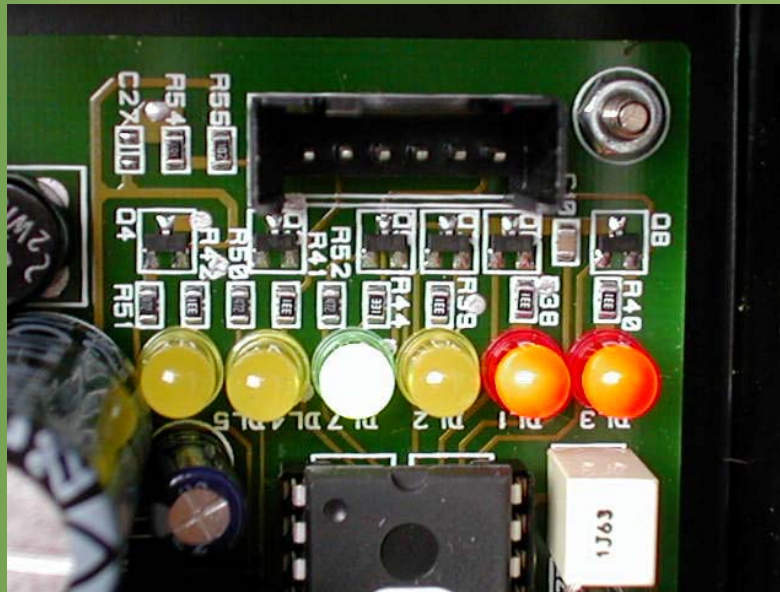
3'
waiting
time:

Green

LED ON

Red LED

blinking

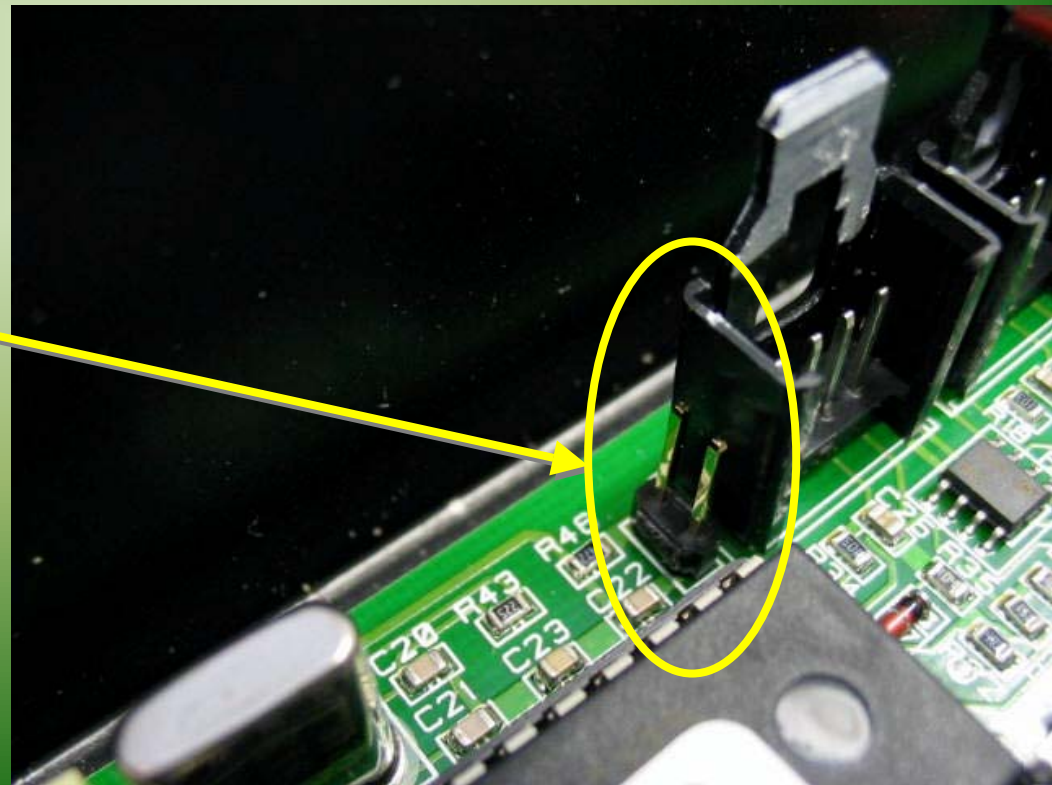


TC 180

SERVICE ANALYSIS

It is a **normal situation** at every machine start up after any tripping off (Bin Full, No Water, Etc.).

When needed the 3' **waiting time can be by-passed** by shorting/jump the two small metal pins with a screw driver.



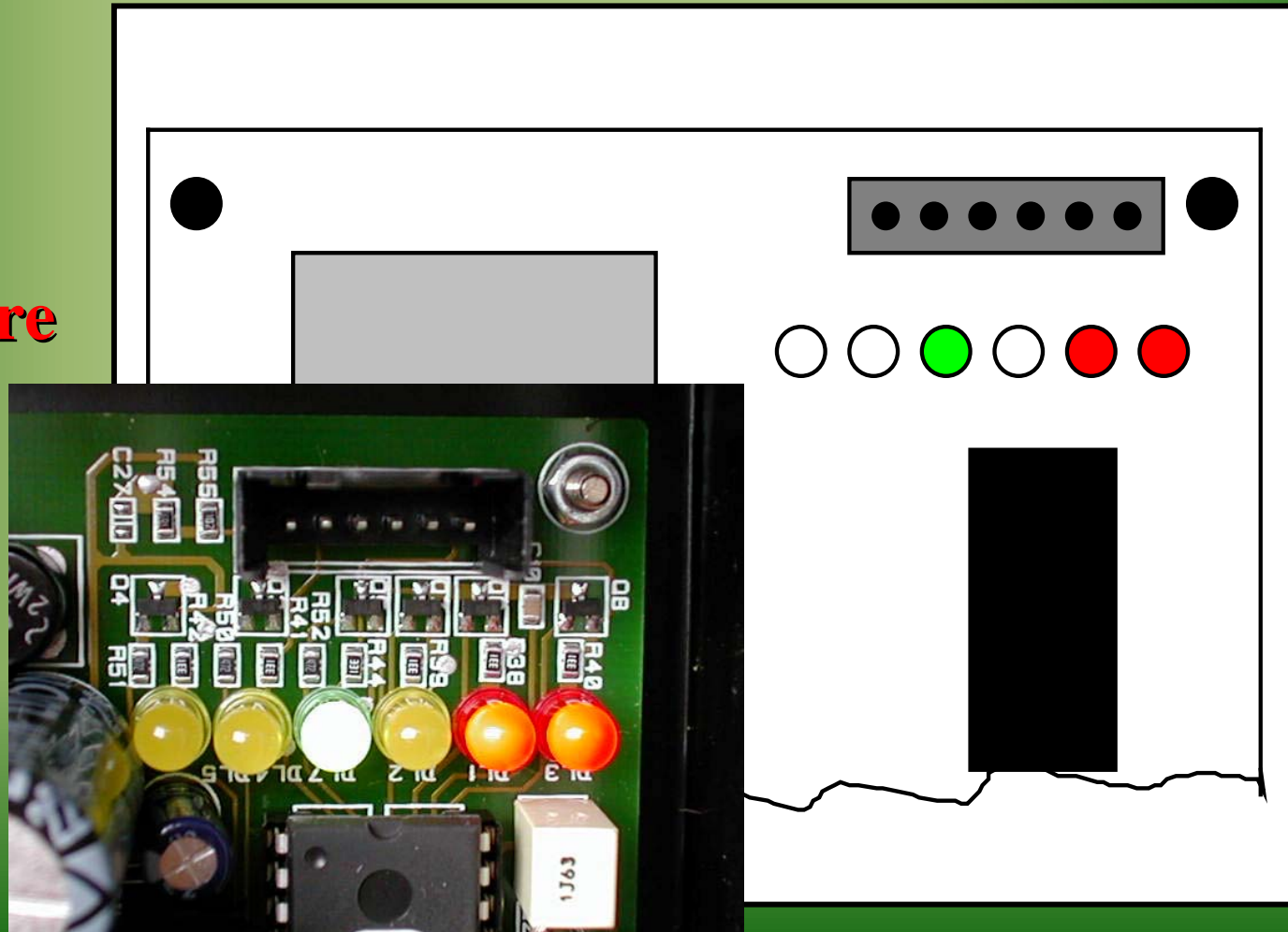
TC 180

SERVICE ANALYSIS

**Too low
ambient
temperature**

(<+3°C)

**Green and
Red LED
ON.**

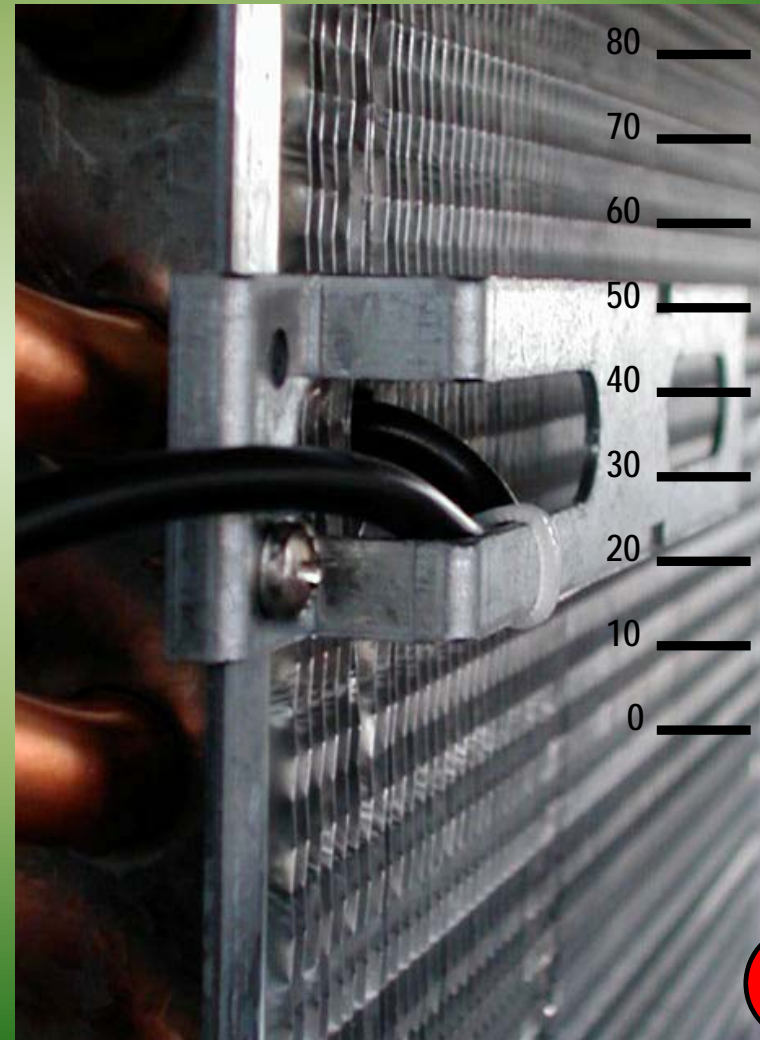


TC 180

SERVICE ANALYSIS

It is a typical **winter situation**.

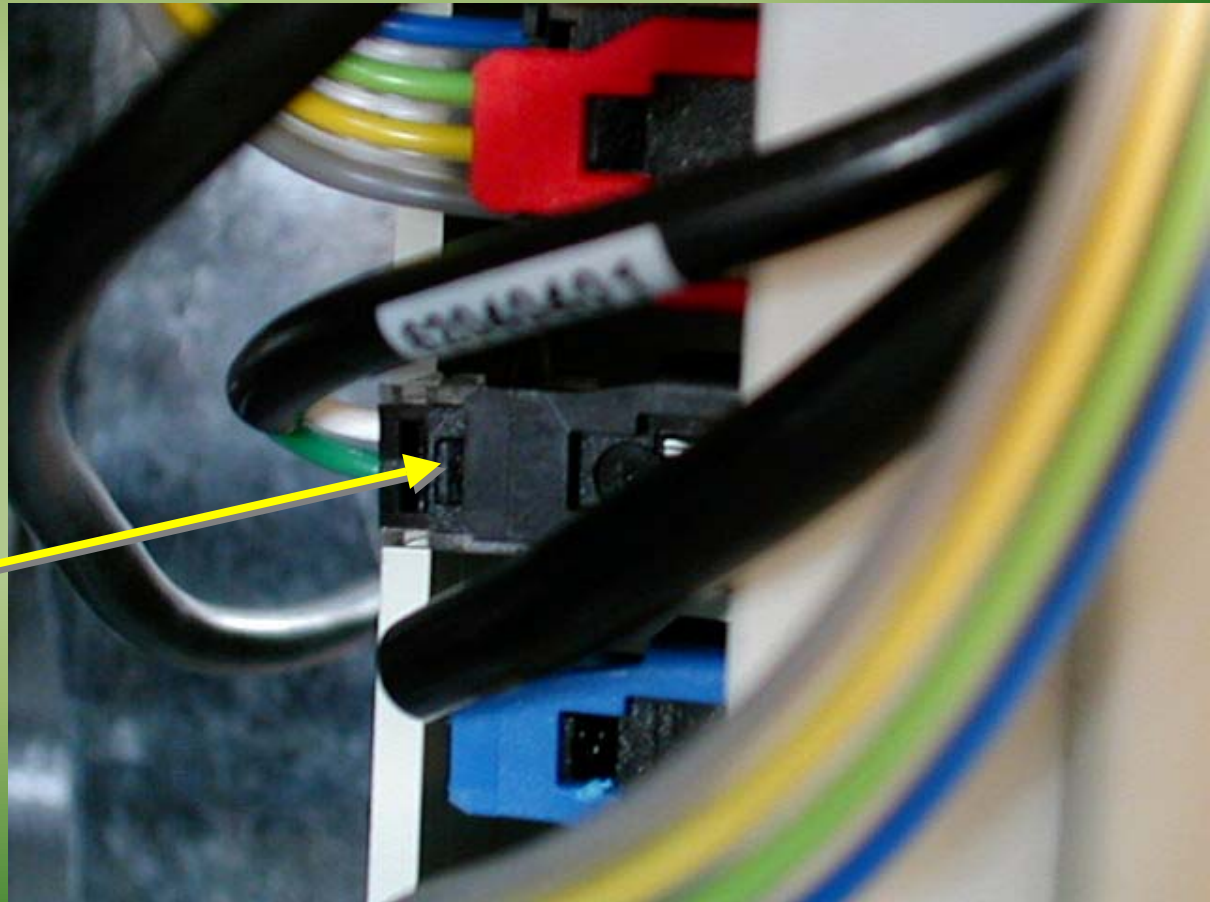
When the machine is located in a **very cold room ($<+3^{\circ}\text{C}$)** the condenser sensor keep the machine OFF till the temperature rise up to more then $+5^{\circ}\text{C}$.



TC 180

SERVICE ANALYSIS

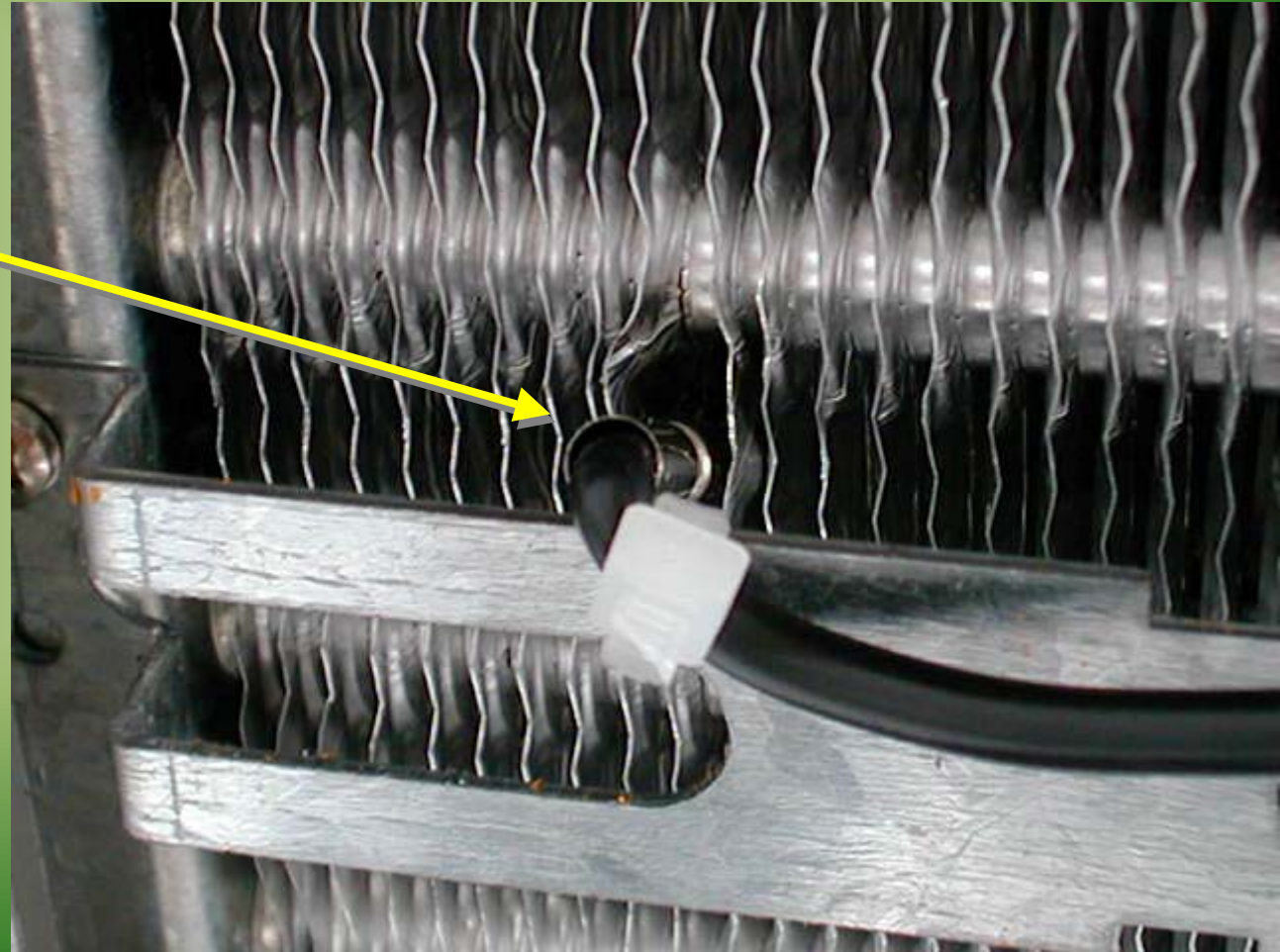
In case the room temperature is higher than 5°C and the machine is not able to start up (RED LED always ON) check first for the correct plug in of condenser sensor to PC Board (two pins black connector).



TC 180

SERVICE ANALYSIS

If so the
condenser
sensor may
need to be
replaced (no
signal back to
PC Board).

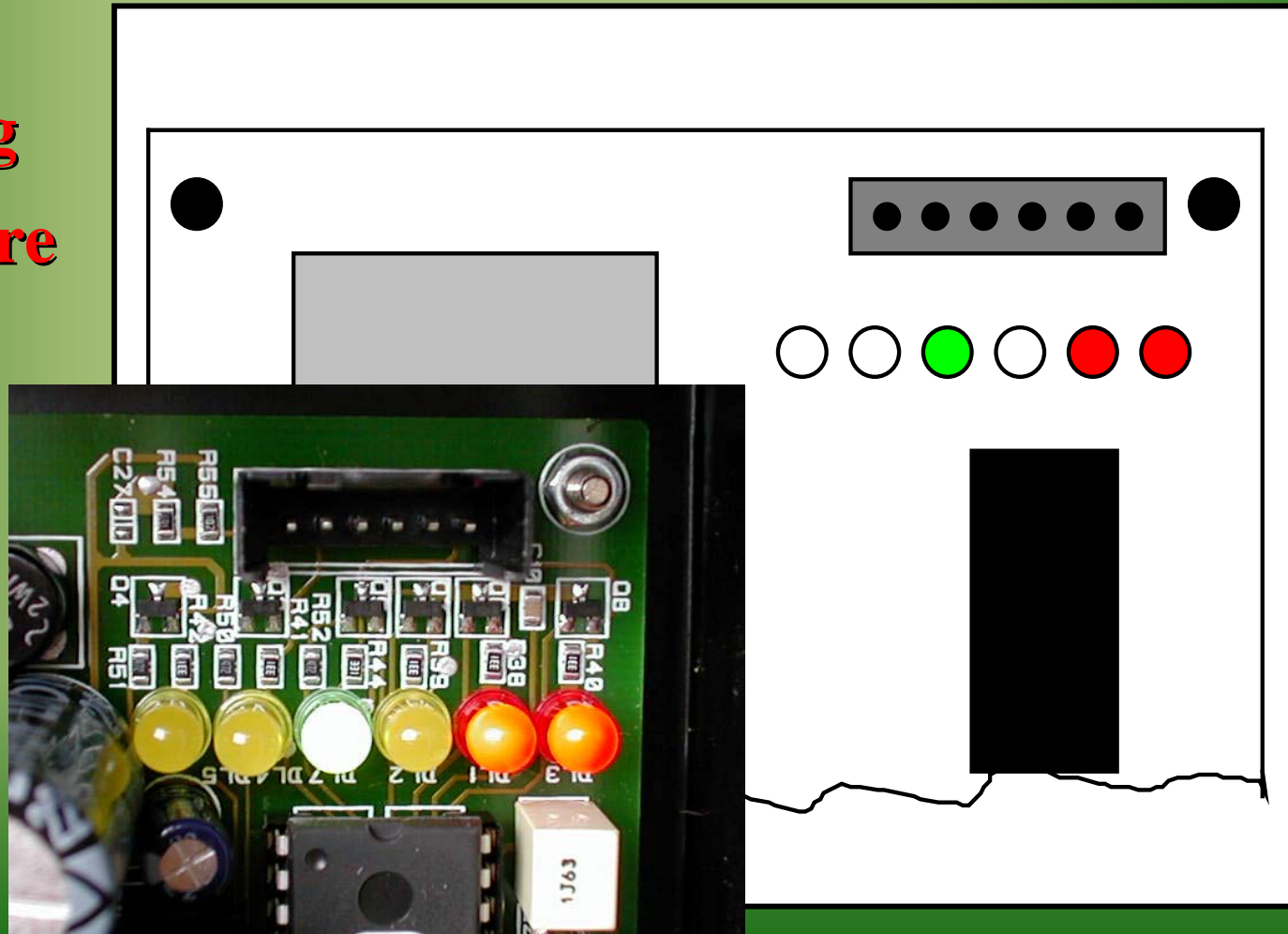


TC 180

SERVICE ANALYSIS

**Too high
condensing
temperature
($>62^{\circ}\text{C}$ or
 $>70^{\circ}\text{C}$)**

**Green and
Red LED
ON.**



TC 180

SERVICE ANALYSIS

On Air Cooled Version

check first for the correct operation of the fan motor

i.e.:

- Power to the motor



TC 180

SERVICE ANALYSIS

On Air Cooled Version

check first for the correct operation of the fan motor

i.e.:

- Power to the motor
- Open winding of the motor



TC 180

SERVICE ANALYSIS

On Air Cooled Version

check first for the correct
operation of the fan motor

i.e.:

- Power to the motor
- Open winding of the motor
- Fan blade loose on fan motor shaft

TC 180

SERVICE ANALYSIS

Check also for any possibility of **fan motor overheating** that can happen after a certain time from the start up of the machine.



TC 180

SERVICE ANALYSIS

One more possibility
(very rare) it is a faulty
PC Board (TRIAC) that
can keep energized the
fan motor during the OFF
period with a low voltage
but higher than the
minimum one need for
tripping OFF the motor.

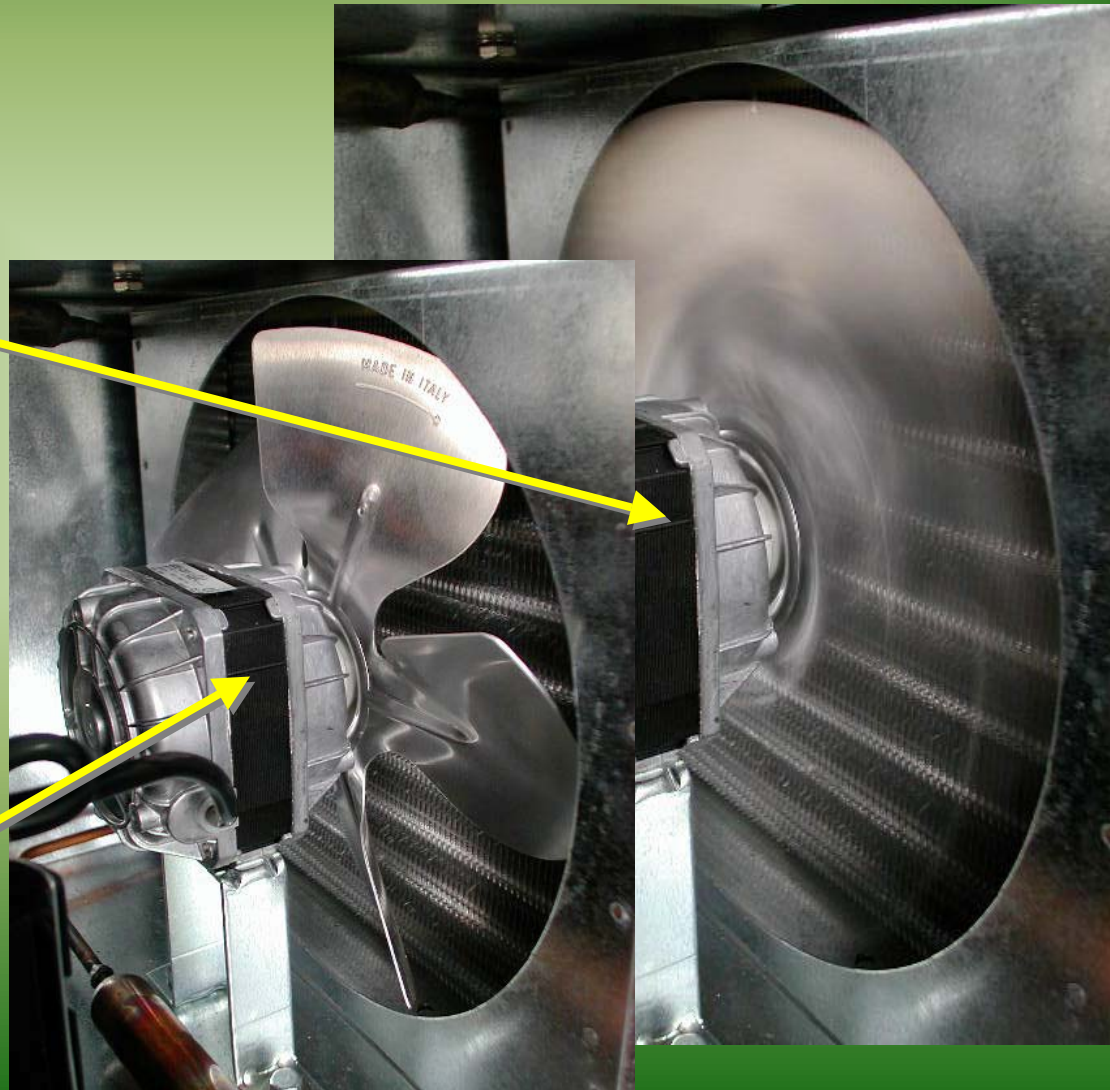


TC 180

SERVICE ANALYSIS

During normal operation mode the fan motor is energized at **230 V** during its **ON** mode and.....

.....is **not energized** at all during its **OFF** mode.



TC 180

SERVICE ANALYSIS

In case the power during the OFF mode is between 140 and 170 V the fan motor is keeping running but at lower speed that can cause an overheat of the same.



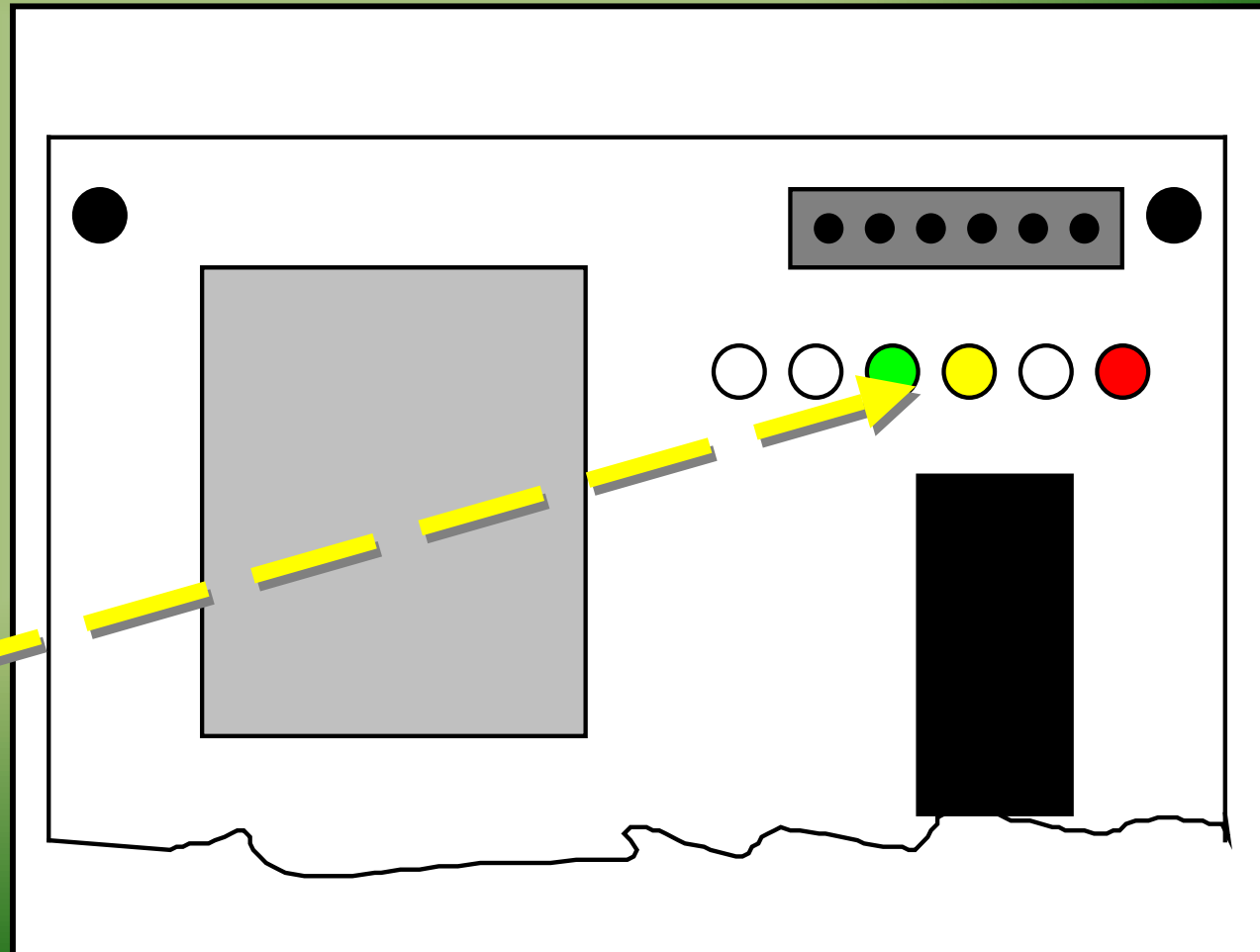
TC 180

SERVICE ANALYSIS

**Too high
evaporating
temperature
after 10'
operation**

Green LED ON

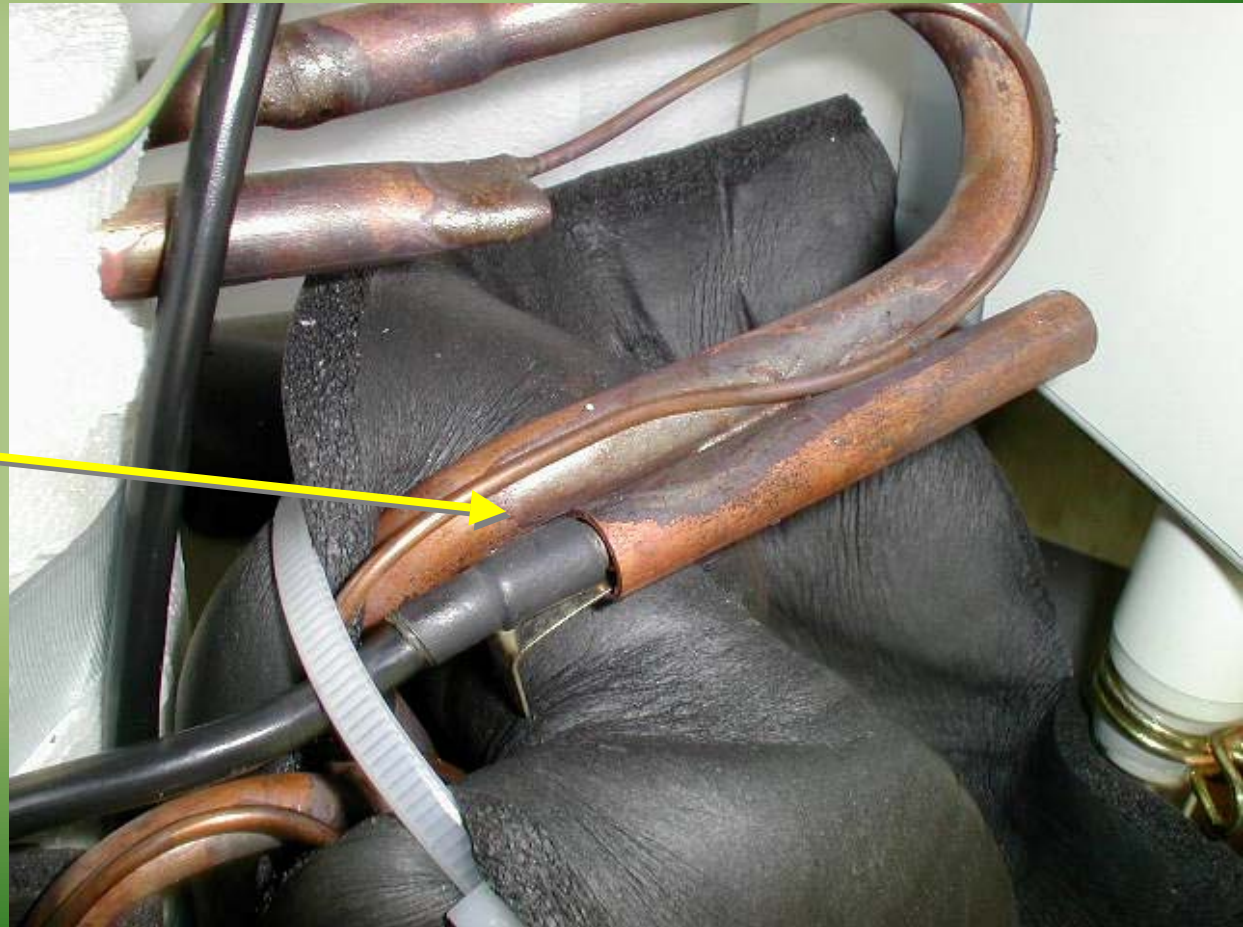
Yellow LED
blinking



TC 180

SERVICE ANALYSIS

Check if ice is produced during the first ten minutes of operation; if so, the evaporator sensor is defective and must be replaced (not able to transmit the right current back to the PC Board).

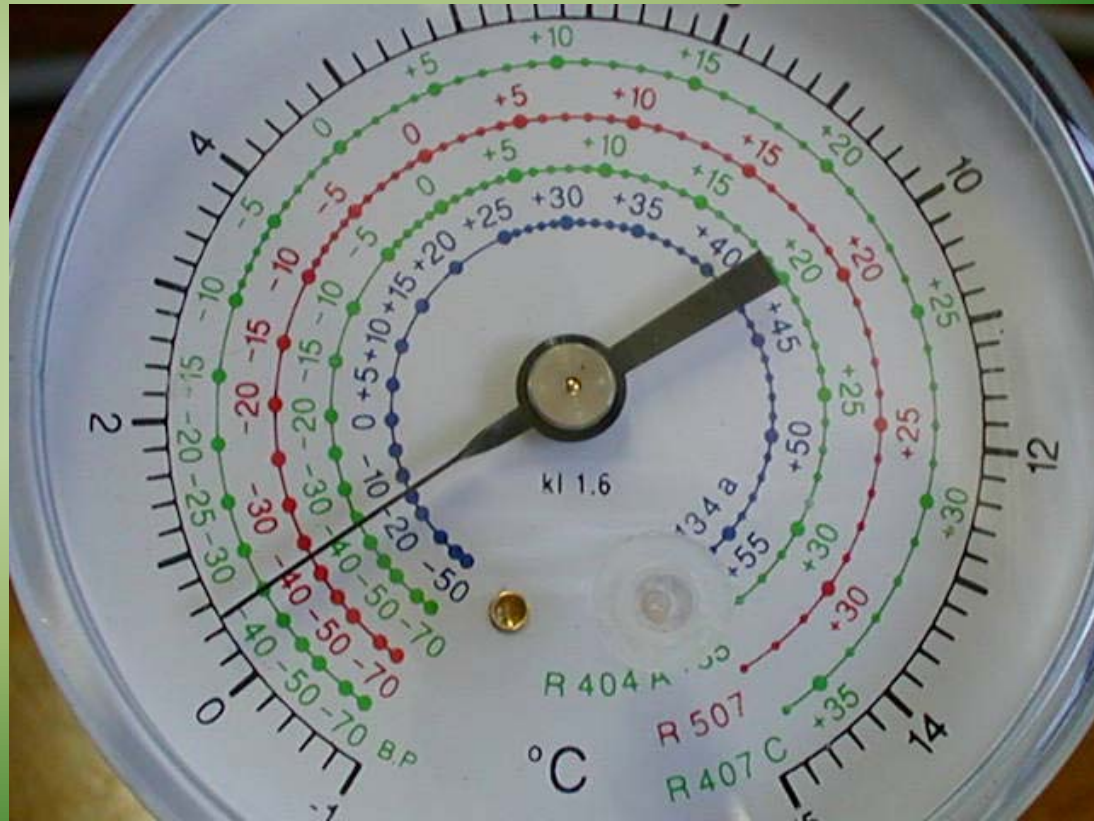


TC 180

SERVICE ANALYSIS

If no ice is produced
check for:

- Refrigerant charge
(suction pressure
must be 0.5 bar)



TC 180

SERVICE ANALYSIS

If no ice is produced
check for:

- Refrigerant charge
- Operation of
Compressor



TC 180

SERVICE ANALYSIS

If no ice is produced
check for:

- Refrigerant charge
- Operation of
Compressor
- Power out on the
contacts 1 and 8
of the PC Board

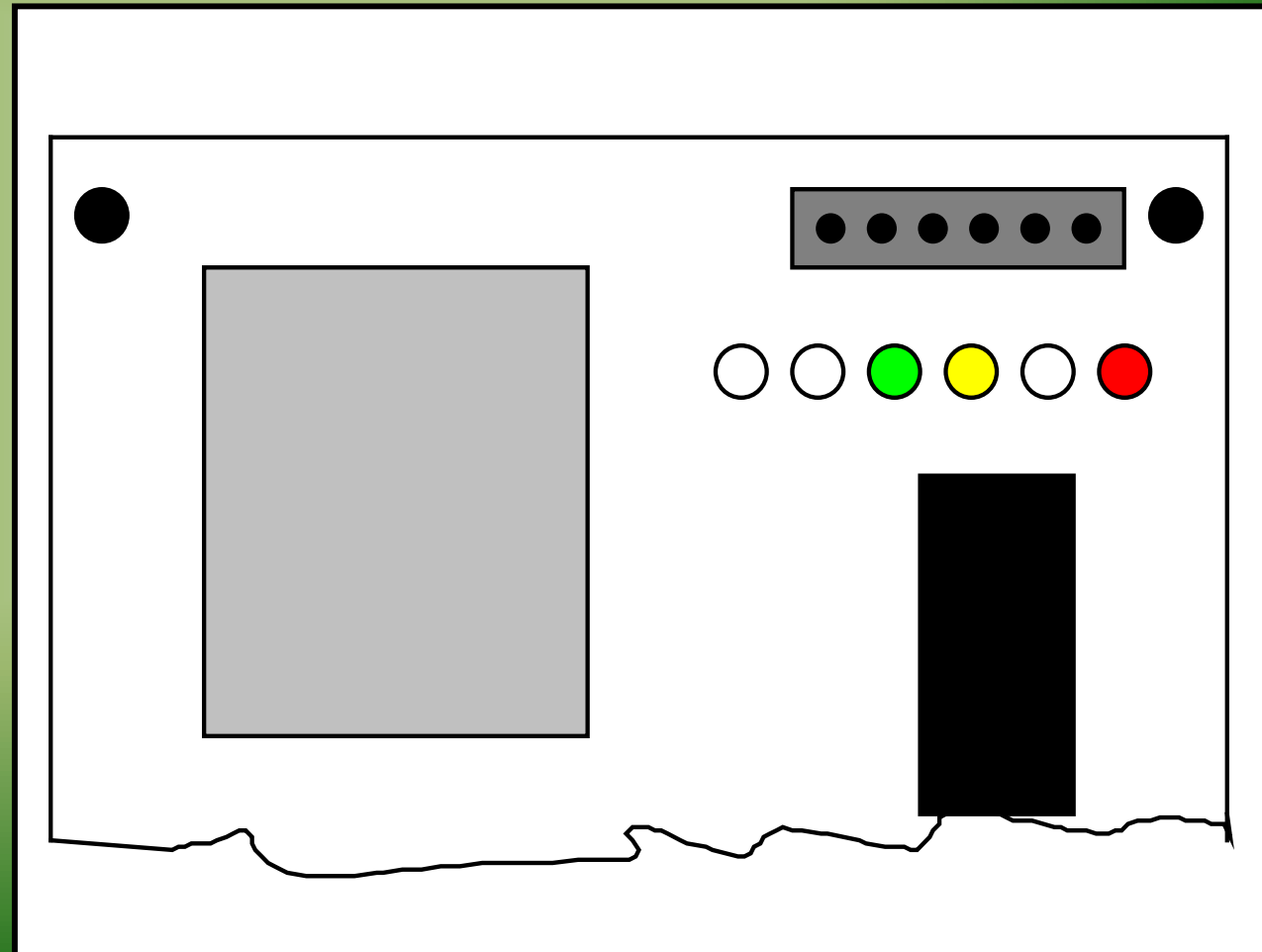


TC 180

SERVICE ANALYSIS

No
rotation of
drive
motor

Green and
Yellow
LED ON.

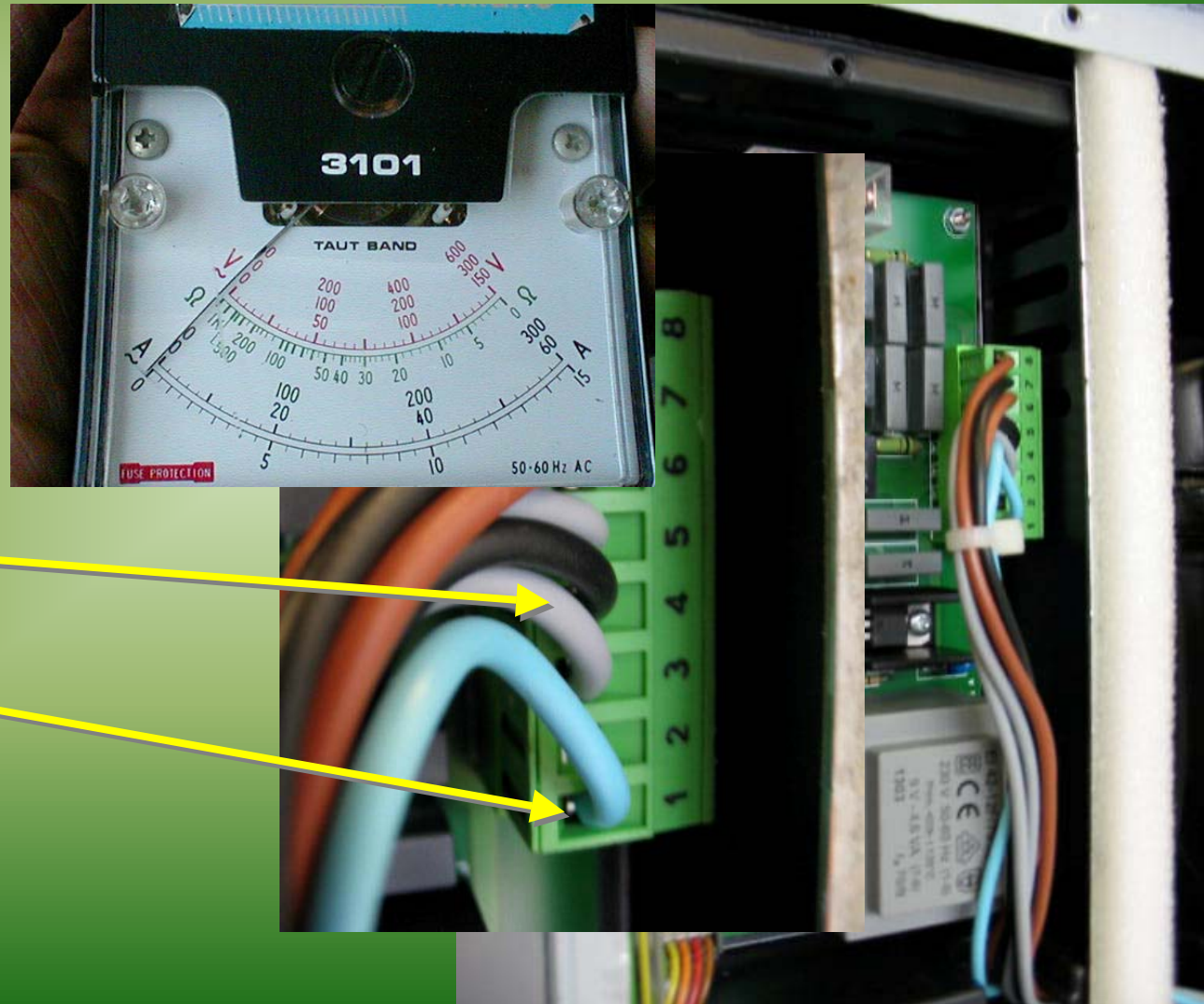


TC 180

SERVICE ANALYSIS

If the drive motor doesn't turn check for:

- Power out on the contacts 1 and 4 of the PC Board



TC 180

SERVICE ANALYSIS

If the drive motor doesn't turn check for:

- Power out on the contacts 1 and 4 of the PC Board
- Drive motor with open winding



TC 180

SERVICE ANALYSIS

If the drive motor doesn't turn check for:

- Power out on the contacts 1 and 4 of the PC Board
- Drive motor with open winding
- Drive motor capacitor worn-out



TC 180

SERVICE ANALYSIS

If the drive motor doesn't
turn check for:

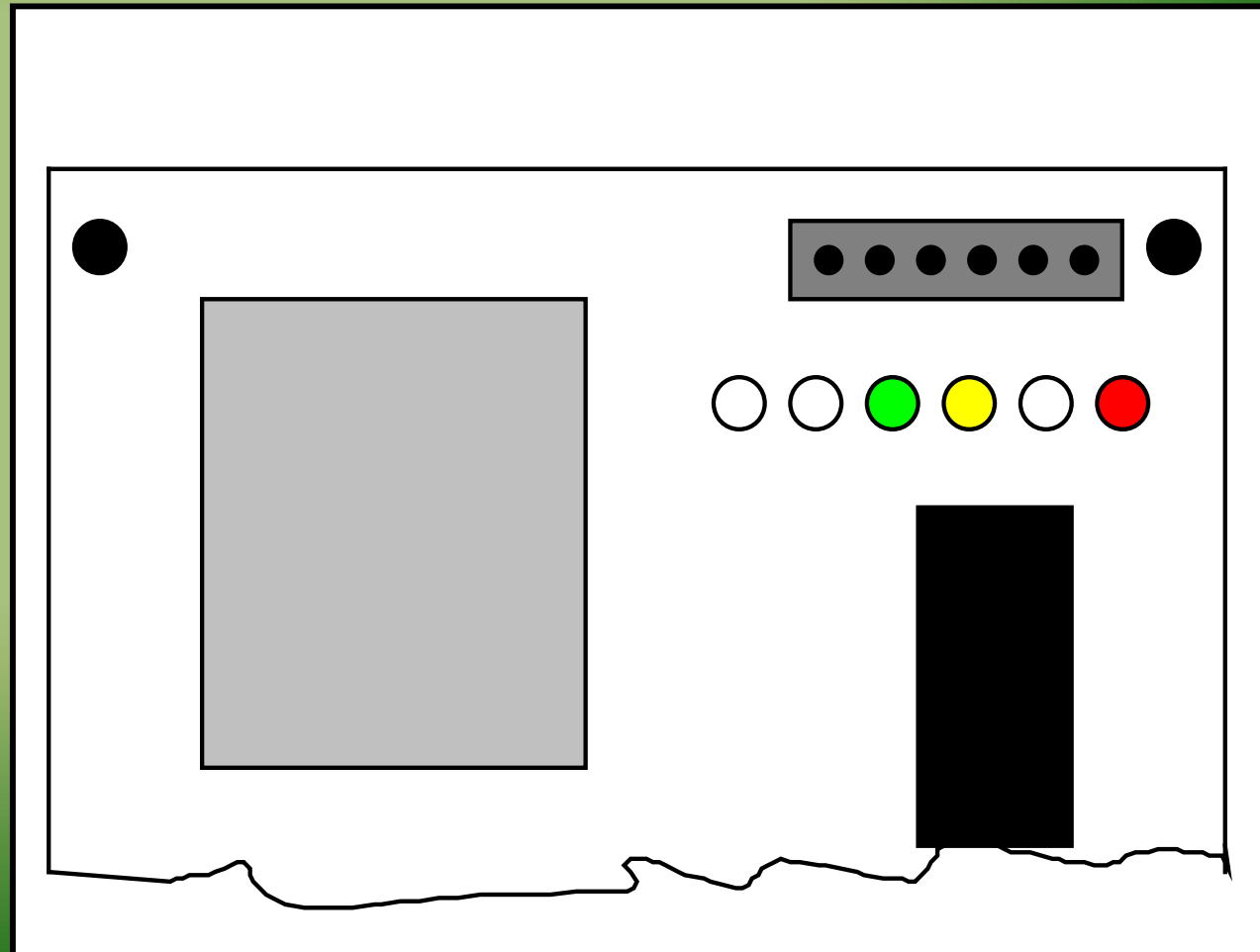
- Power out on the contacts
1 and 4 of the PC Board
- Drive motor with open
winding
- Drive motor capacitor
worn-out
- Looked rotor

TC 180

SERVICE ANALYSIS

**Slow
rotation of
drive
motor
(<1200
g/min)**

**Green and
Yellow
LED ON.**

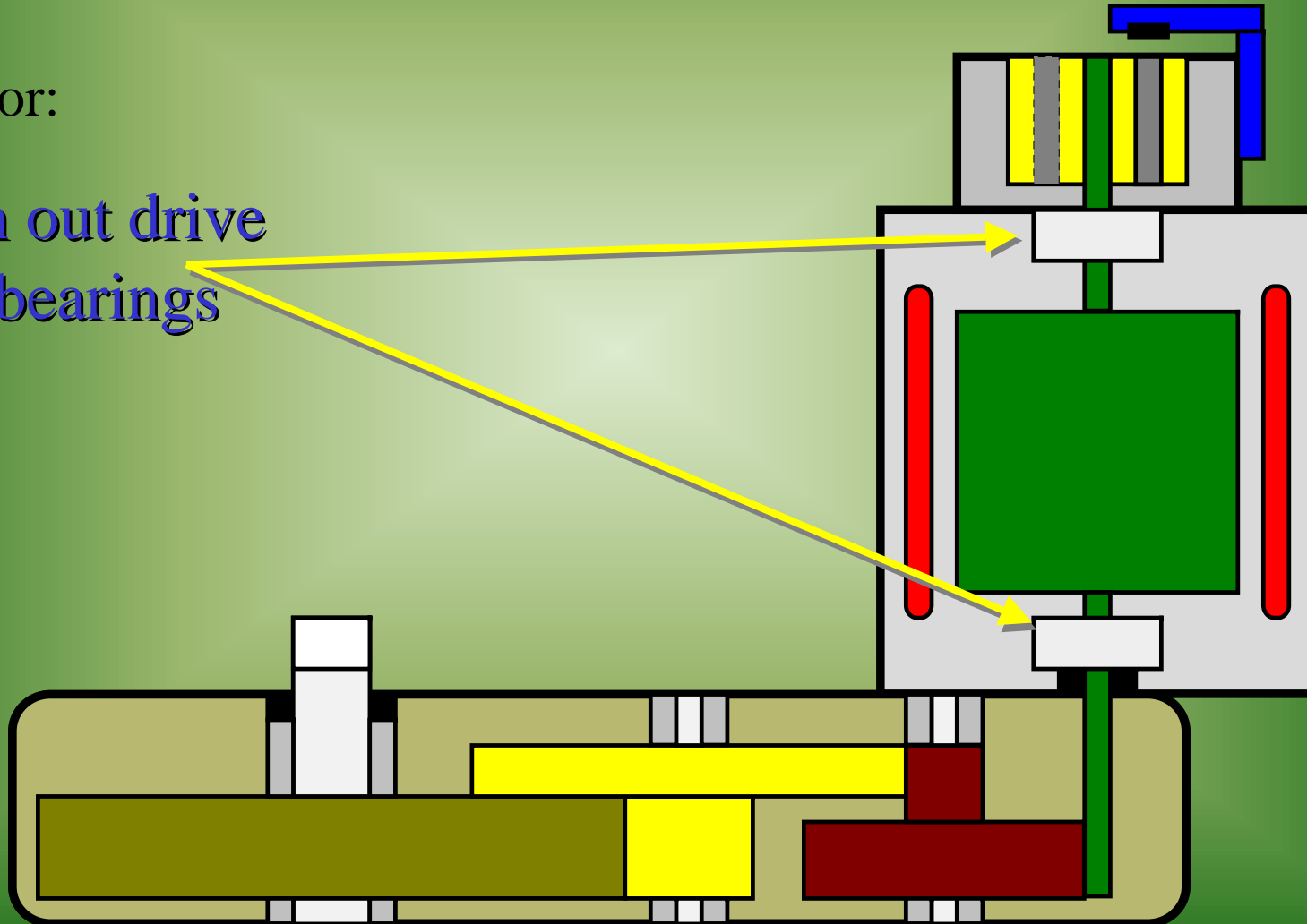


TC 180

SERVICE ANALYSIS

Check for:

- Worn out drive motor bearings

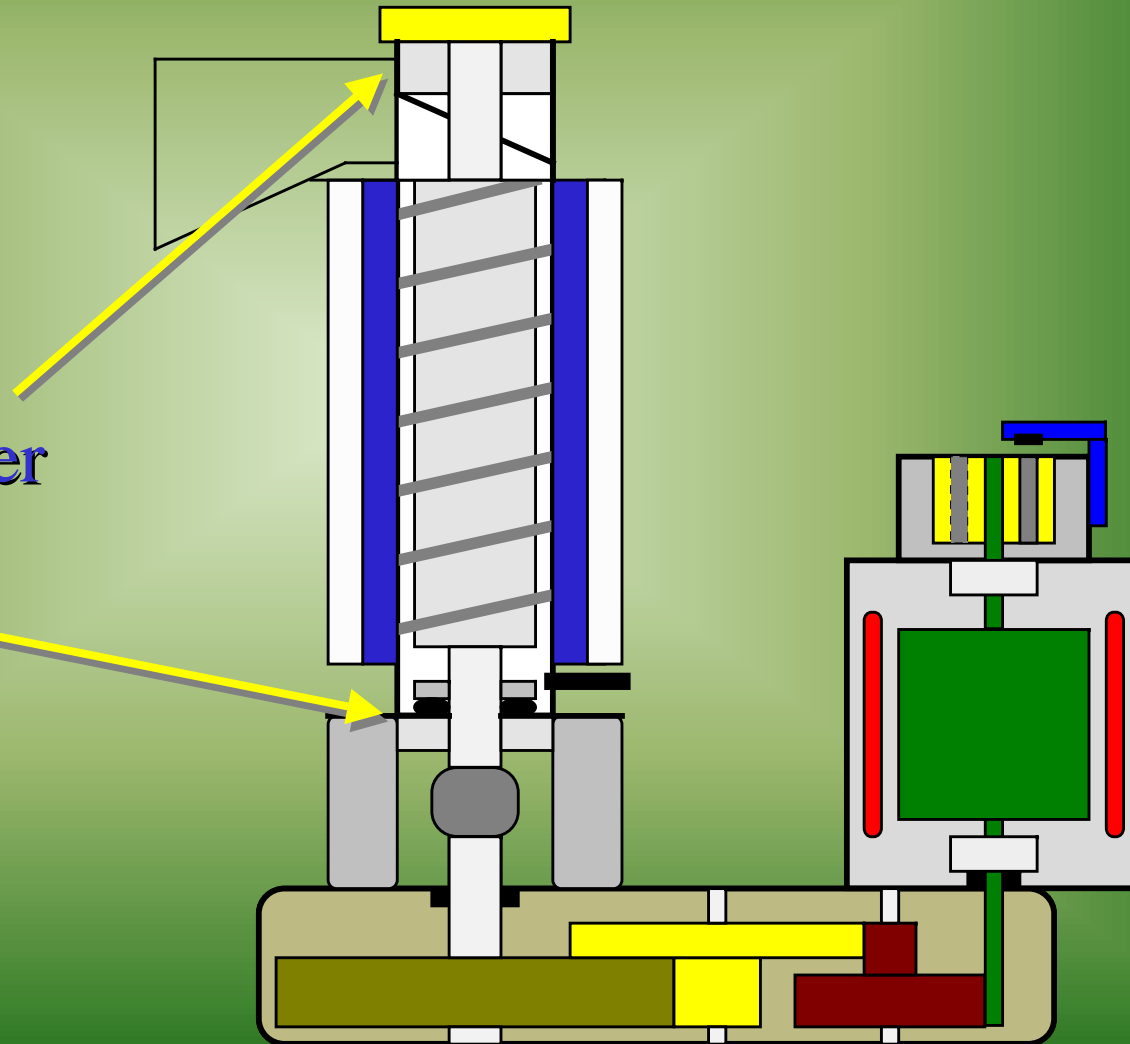


TC 180

SERVICE ANALYSIS

Check for:

- Worn out drive motor bearings
- Worn out freezer top or bottom bearings

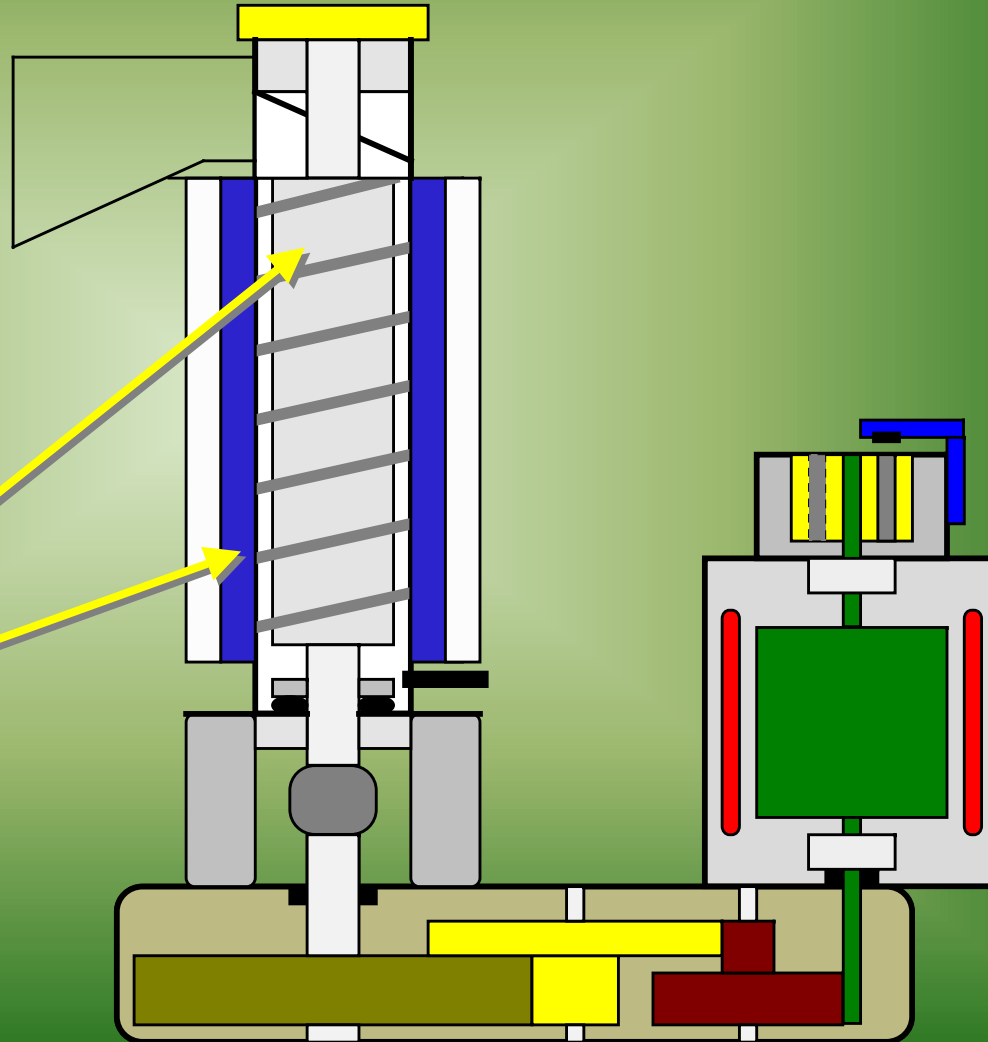


TC 180

SERVICE ANALYSIS

Check for:

- Worn out drive motor bearings
- Worn out freezer top or bottom bearings
- Worn out auger/freezer



TC 180

SERVICE ANALYSIS

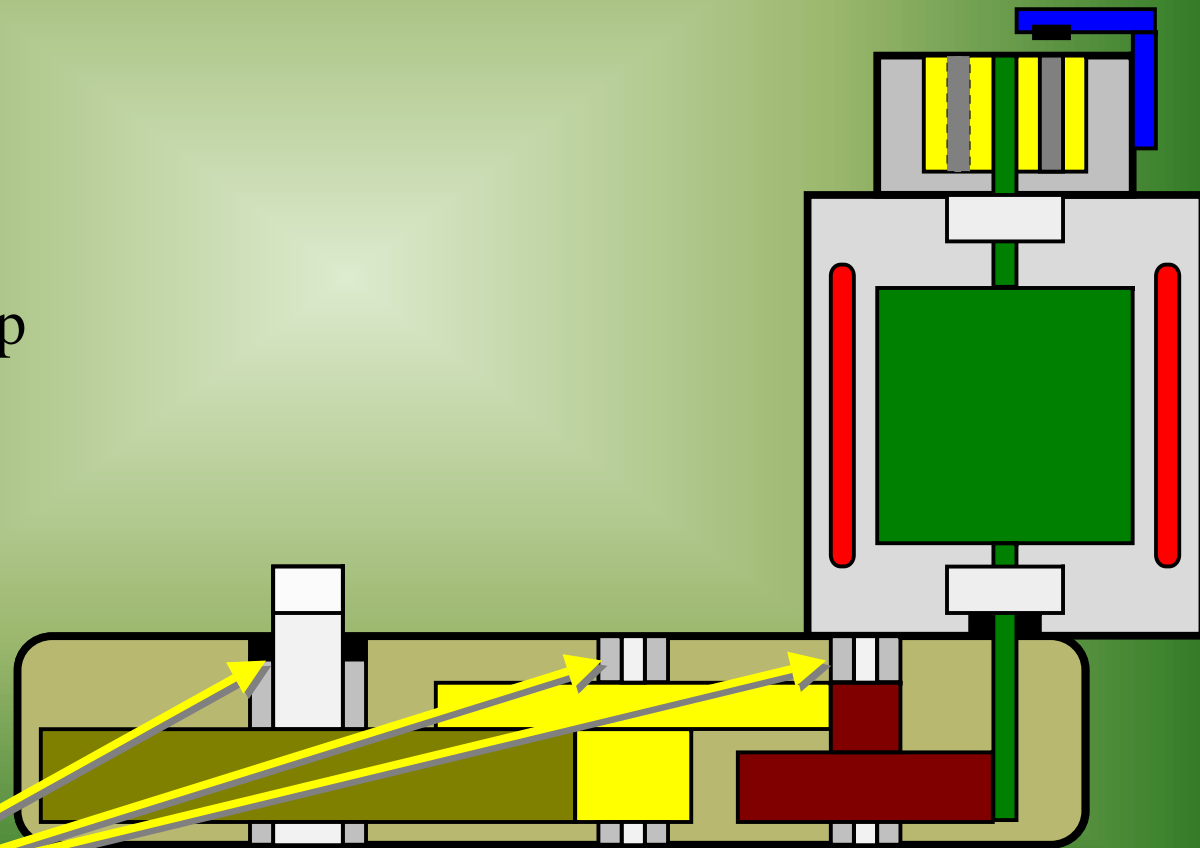


TC 180

SERVICE ANALYSIS

Check for:

- Worn out drive motor bearings
- Worn out freezer top or bottom bearings
- Worn out auger/freezer
- Worn out gear box bearing/gears

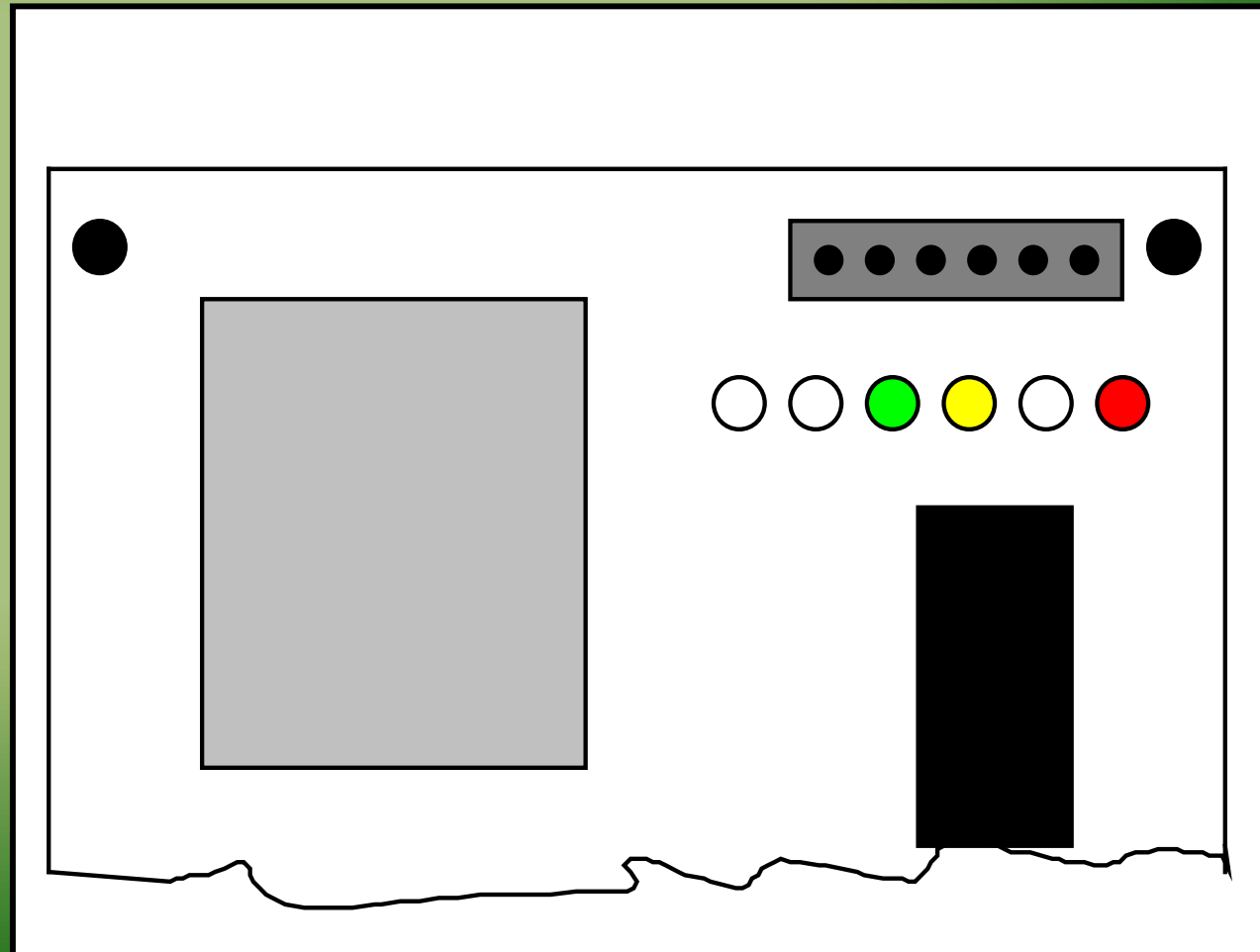


TC 180

SERVICE ANALYSIS

**Wrong
rotation of
drive
motor
(opposite
direction)**

Green and
Yellow
LED ON.



TC 180

SERVICE ANALYSIS

Check for:

- Correct wiring connection to the drive motor capacitor



TC 180

SERVICE ANALYSIS

Check for:

- Correct wiring connection to the drive motor capacitor
- Drive motor capacitor worn-out



TC 180

SERVICE ANALYSIS

Check for:

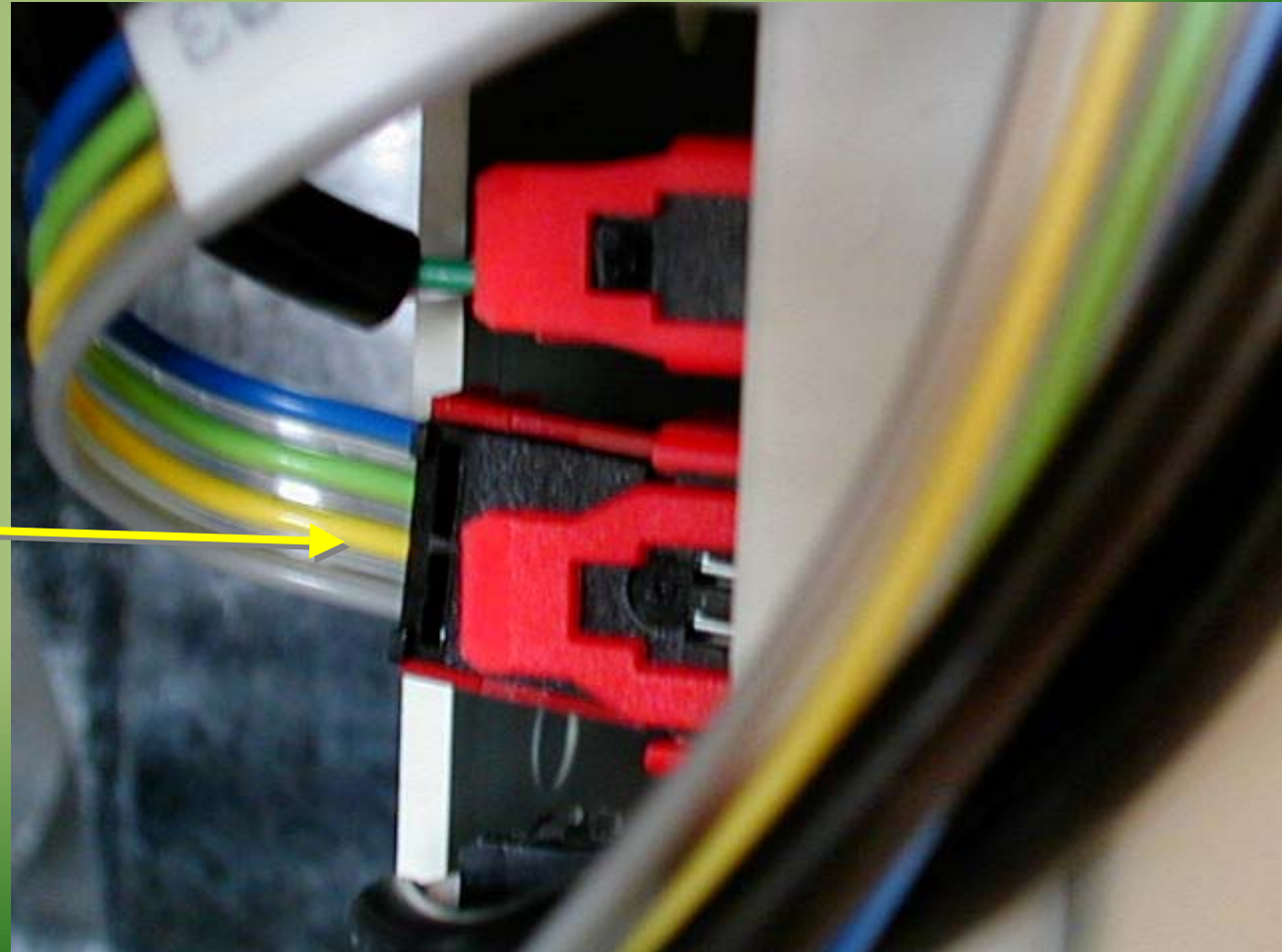
- Correct wiring connection to the drive motor capacitor
- Drive motor capacitor unloaded
- Freeze up of the evaporator

TC 180

SERVICE ANALYSIS

Additional reasons for the tripping **OFF** at **Rotation Error** are:

- Magnetic sensor unplugged



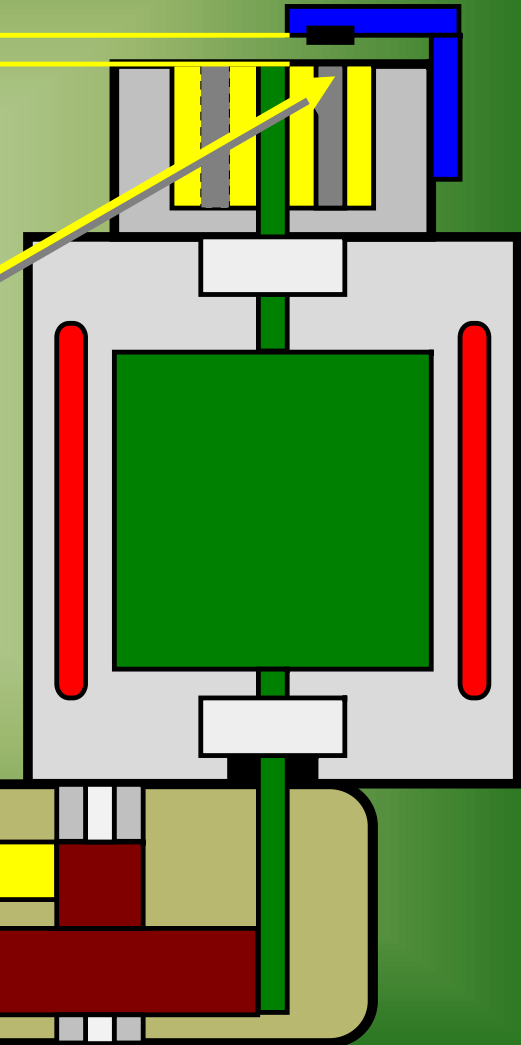
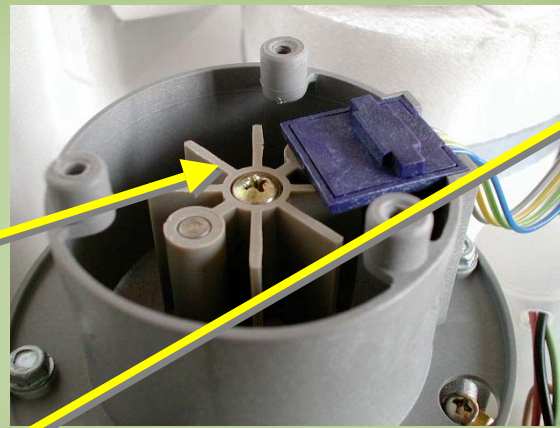
TC 180

SERVICE ANALYSIS

Additional reasons for the tripping OFF at Rotation Error are:

- Magnetic sensor unplugged
- Magnetic sensor too far from the rotating magnetic cylinder

0.5÷1 mm

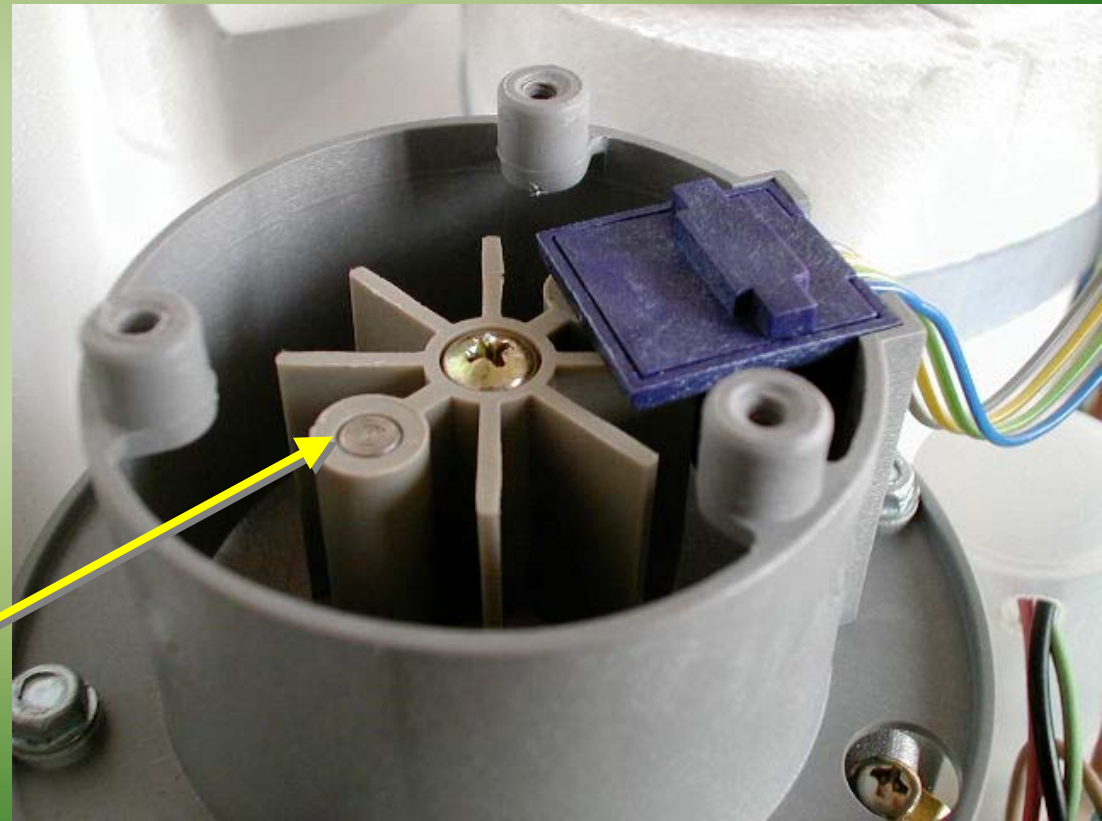


TC 180

SERVICE ANALYSIS

Additional reasons for the tripping OFF at Rotation Error are:

- Magnetic sensor unplugged
- Magnetic sensor too far from the rotating magnetic cylinder
- Magnetic cylinder partially or fully demagnetized



TC 180

SERVICE ANALYSIS

**Automatic
reset mode**



- **Bin Full**
- **No Water**
- **Too Low Room Temperature**

**Manual
reset mode**



- **Too Hi Condensing Temperature**
- **Too Hi Evaporating Temperature**
- **No Rotation**
- **Wrong Rotation**
- **Slow Rotation**

TC 180

**REPLACEMENT
OF THE AUGER,
WATER SEAL
AND BEARINGS**

TC 180

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS



Remove first the top and

rear panel

then



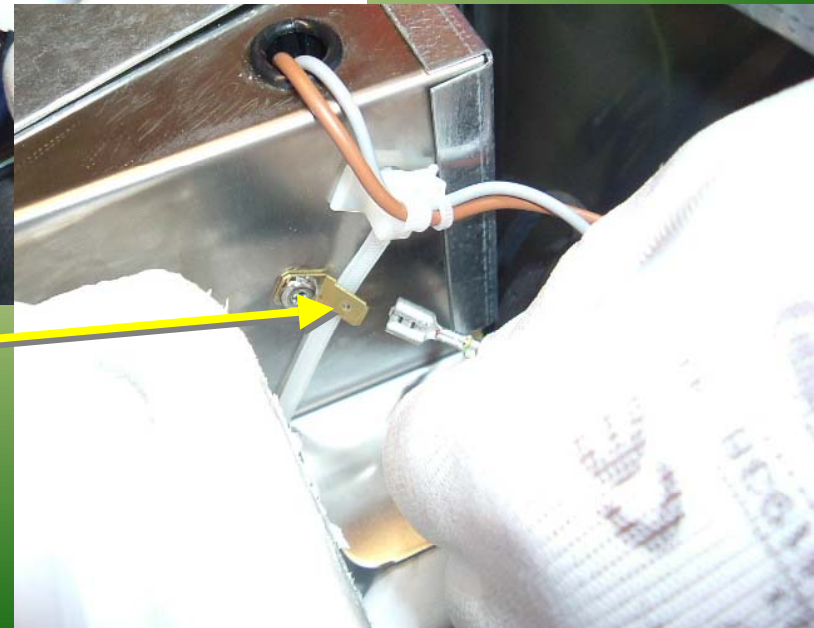
TC 180

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

.....
disconnect
the drive
motor
electrical
cable



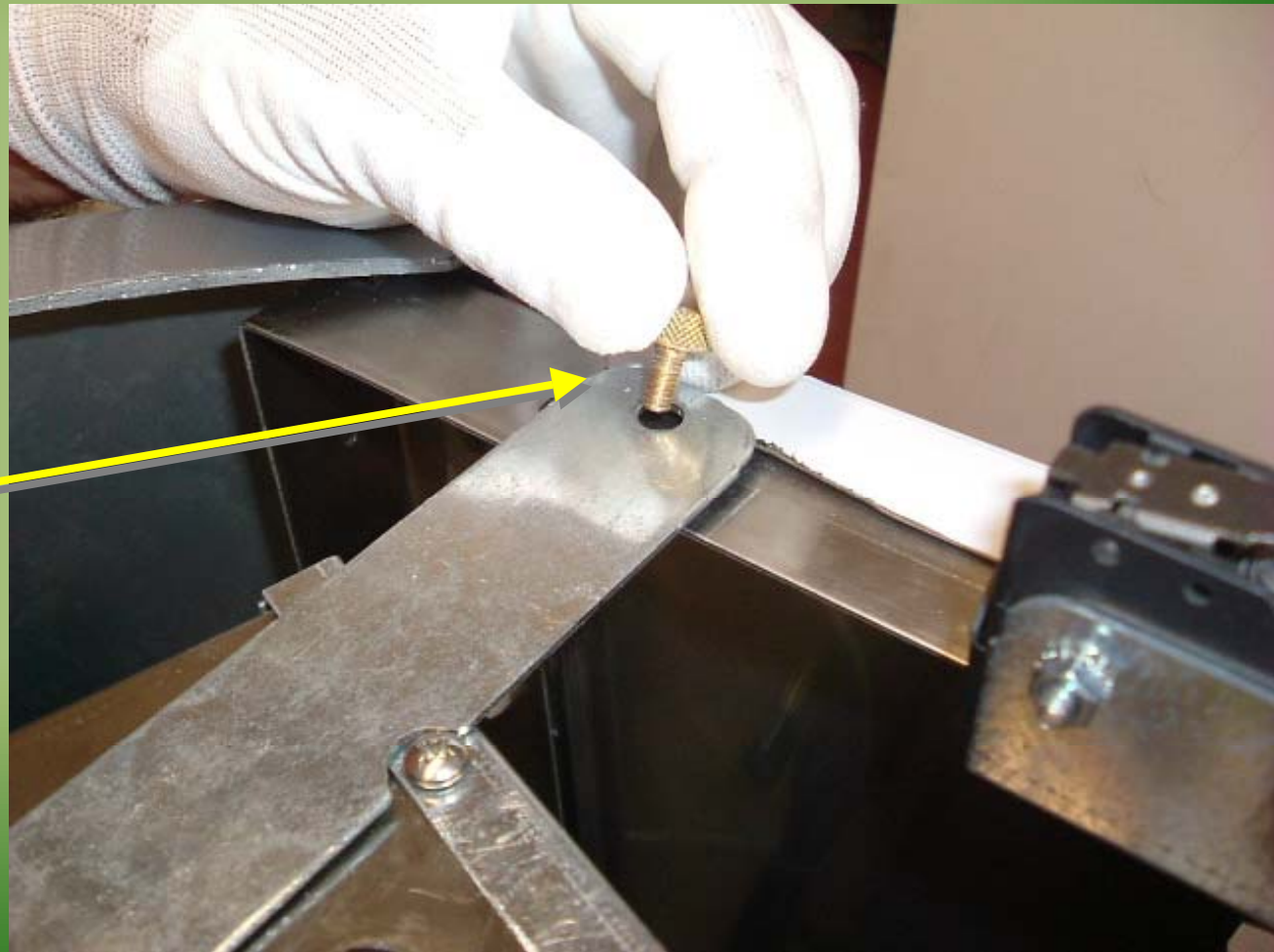
.....as well as
the ground
wire.



TC 180

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

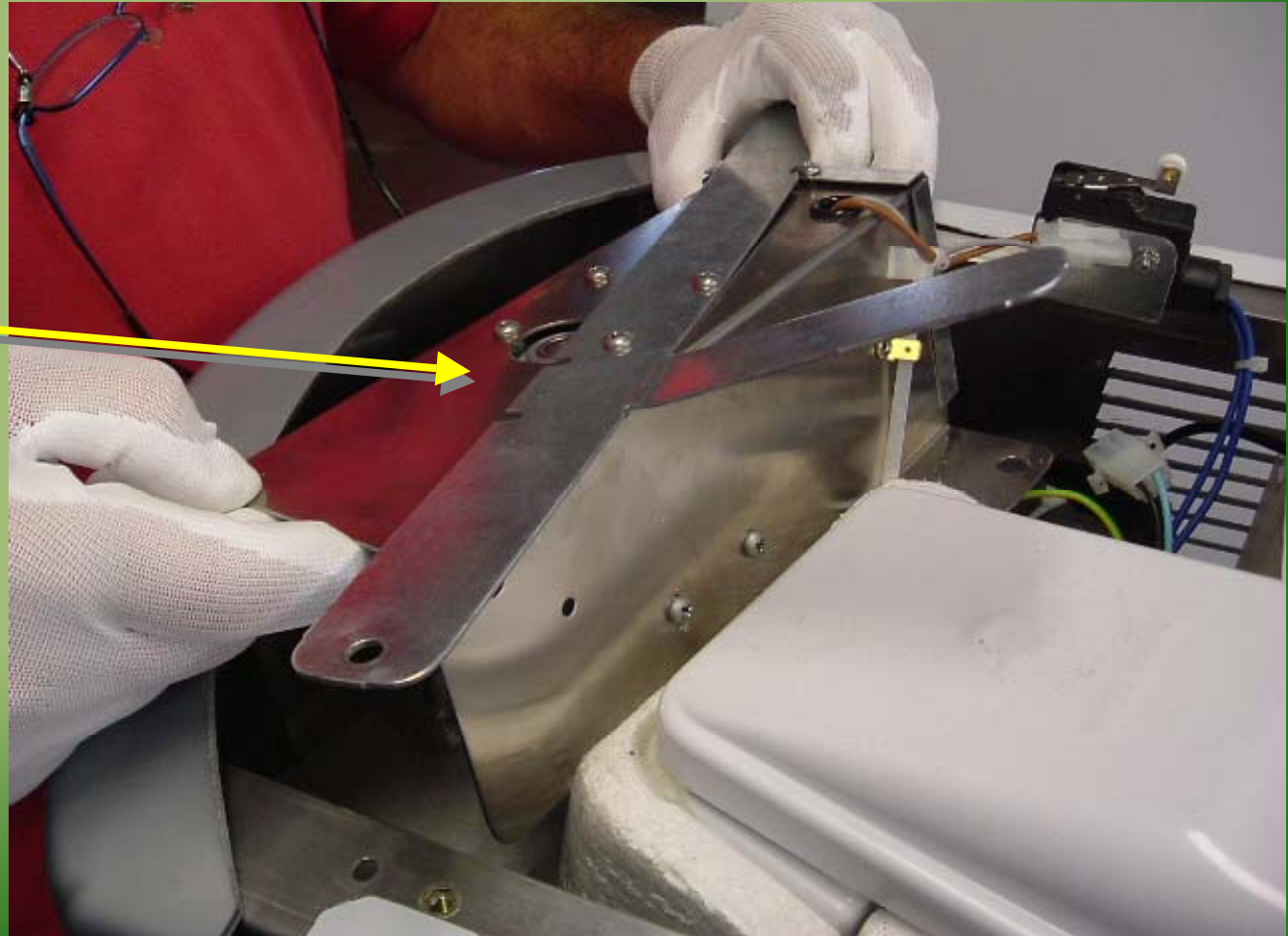
Unloose the two screws securing the drive motor upper bracket to the side panels then.....



TC 180

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

.....remove
the entire
drive motor
assembly by
lifting it up.



TC 180

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

Remove the
plastic spout
cover then

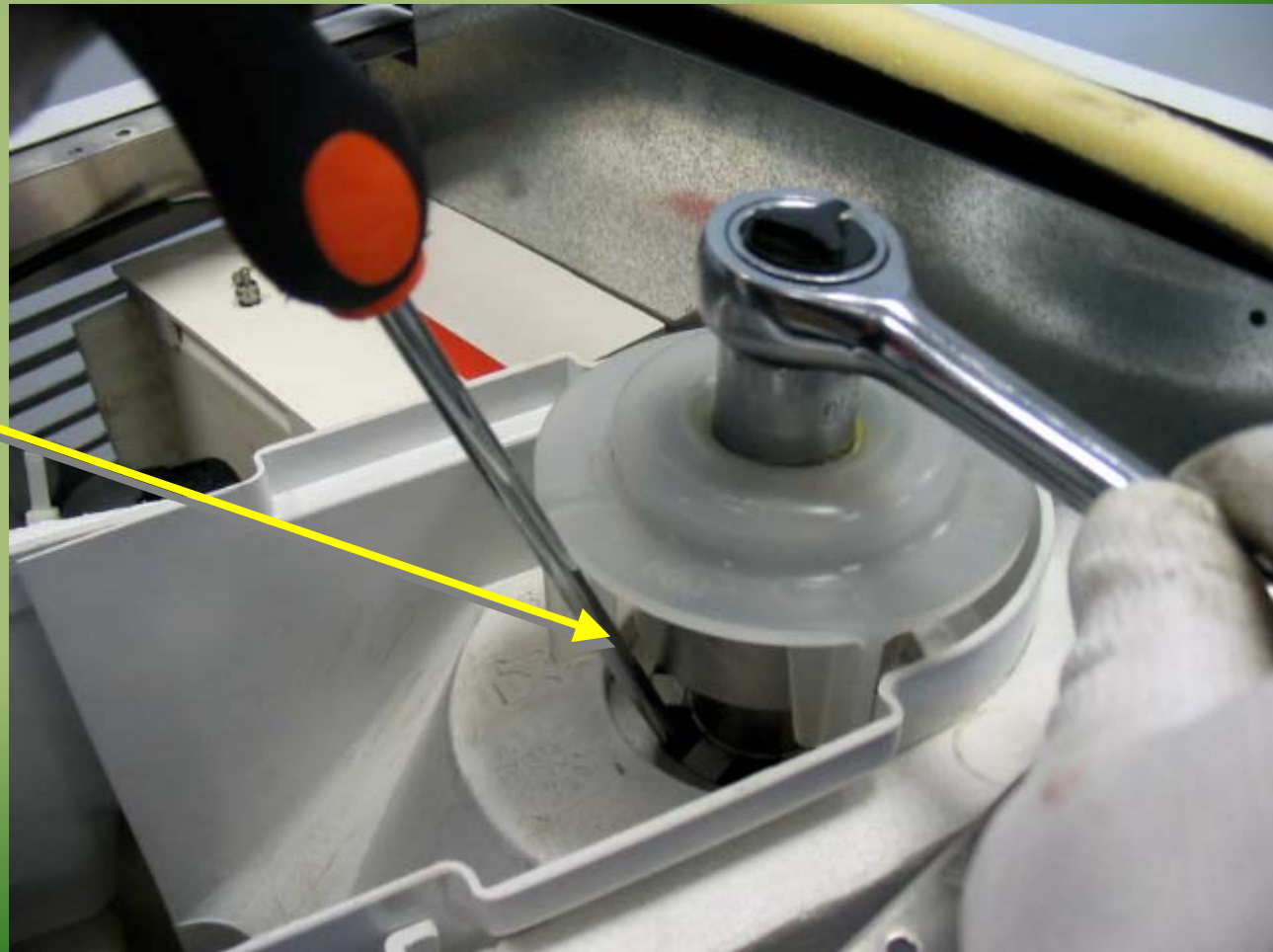
.....



TC 180

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

.....insert a screw driver inside one opening of the ice breaker so to hold the auger.



TC 180

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

Unloose the upper screw securing the ice sweep then.....



TC 180

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

.....remove it
as well as.....



TC 180

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

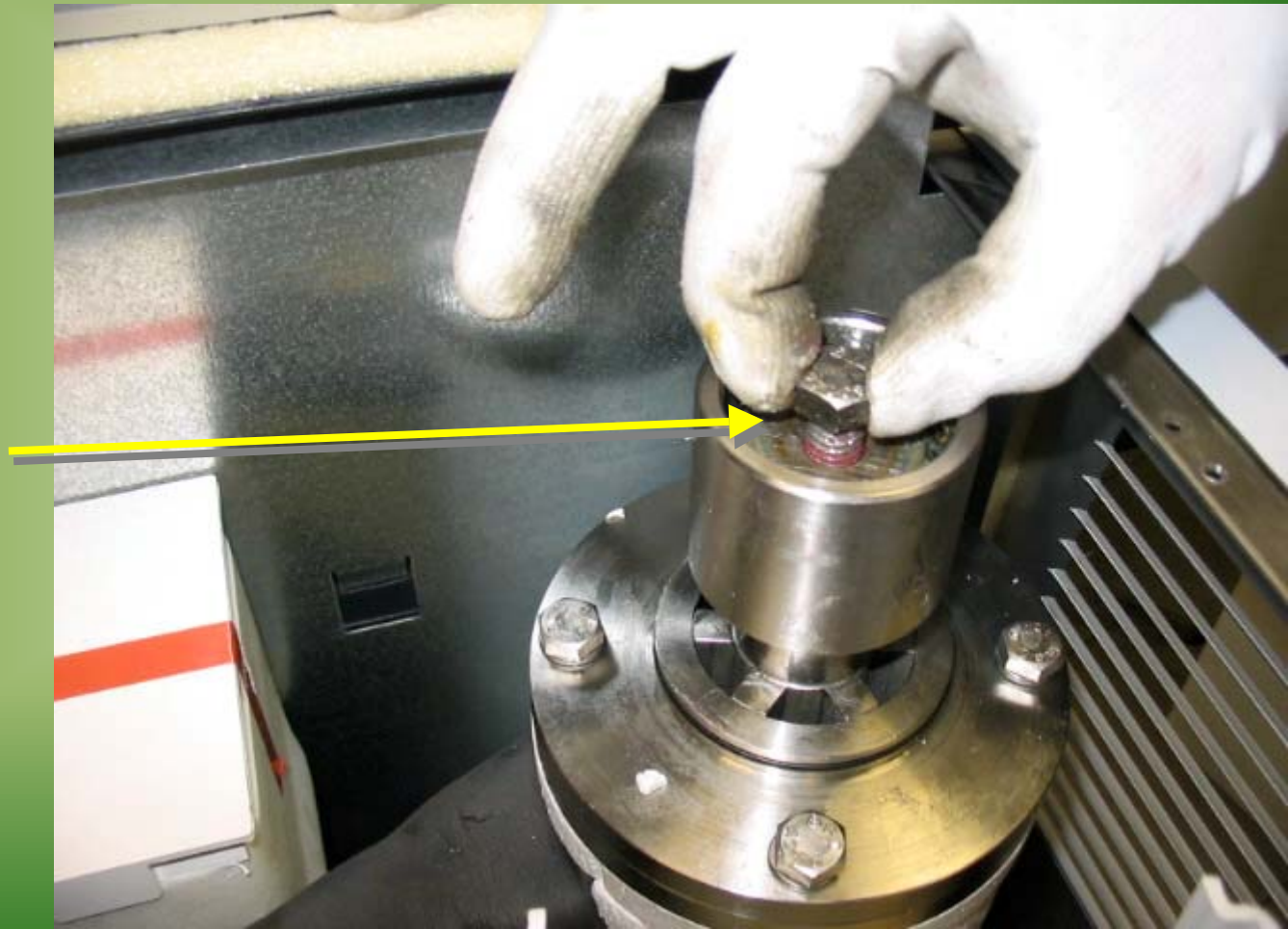
.....the plastic
ice spout.



TC 180

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

Screw in again a little bit the upper screw so to hold the ice breaker to the auger then



TC 180

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

....unloose the four screws securing the S.S. ice breaker to the upper flange of the worm tube.



TC 180

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

Grasp the ice breaker
and auger and pull them
out from the top of the
evaporator.



TC 180

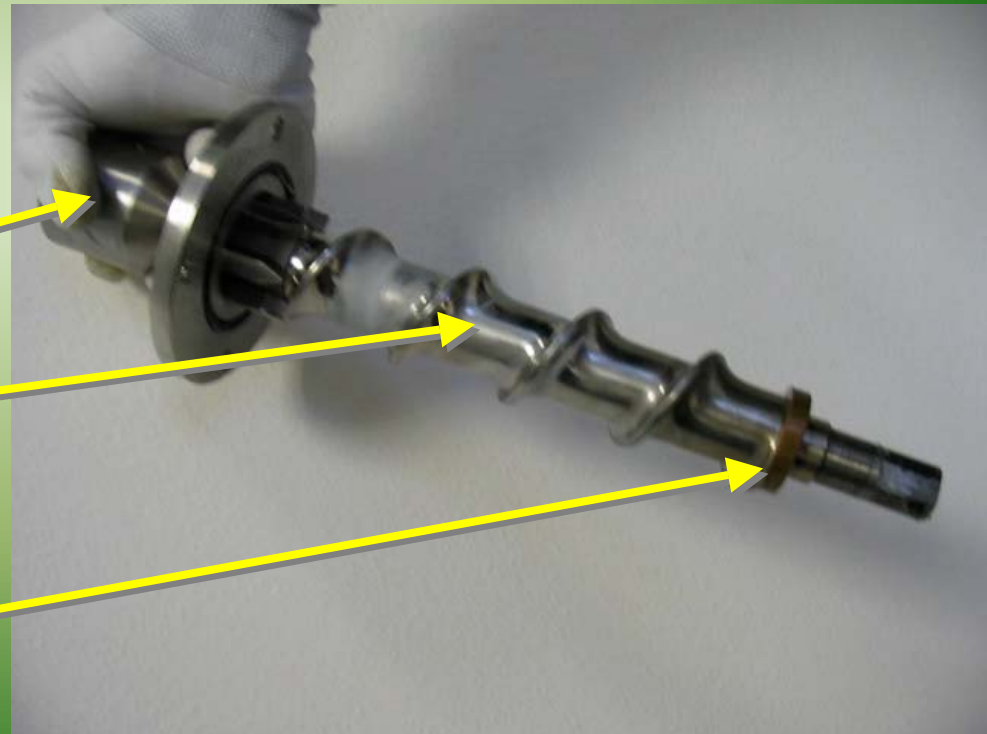
REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

Parts pulled out from the
top of the
evaporator/worm tube are:

icebreaker

auger

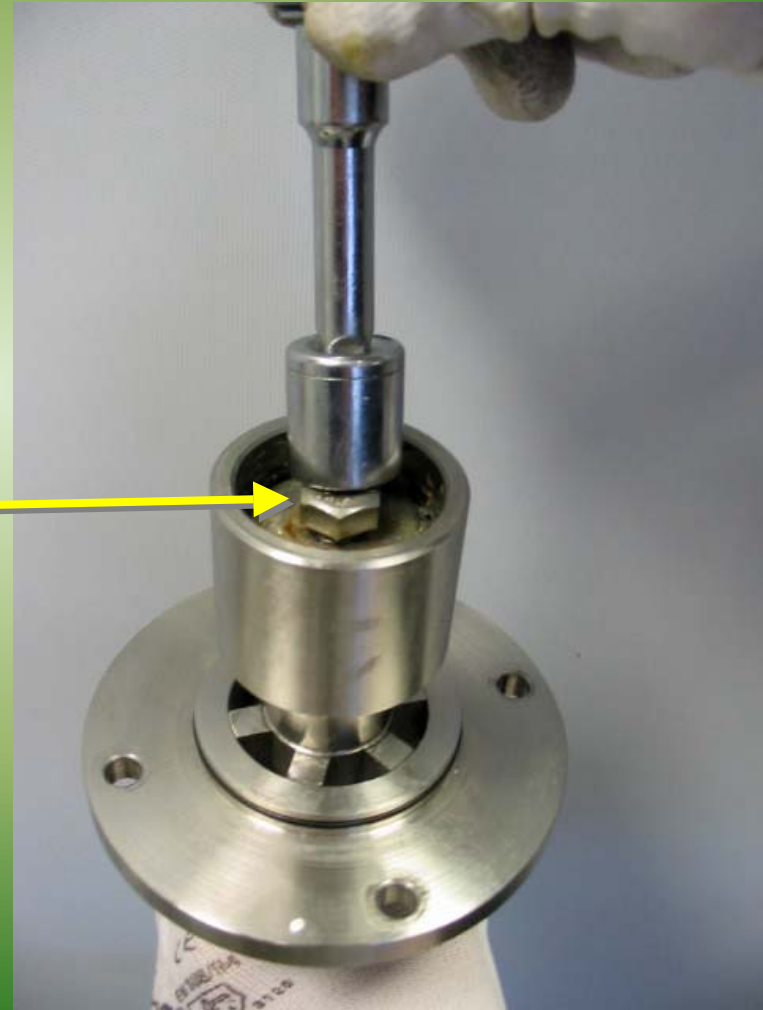
top half of the water seal



TC 180

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

Unloose and
remove the
screw holding
the ice
breaker to the
auger and....



TC 180

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

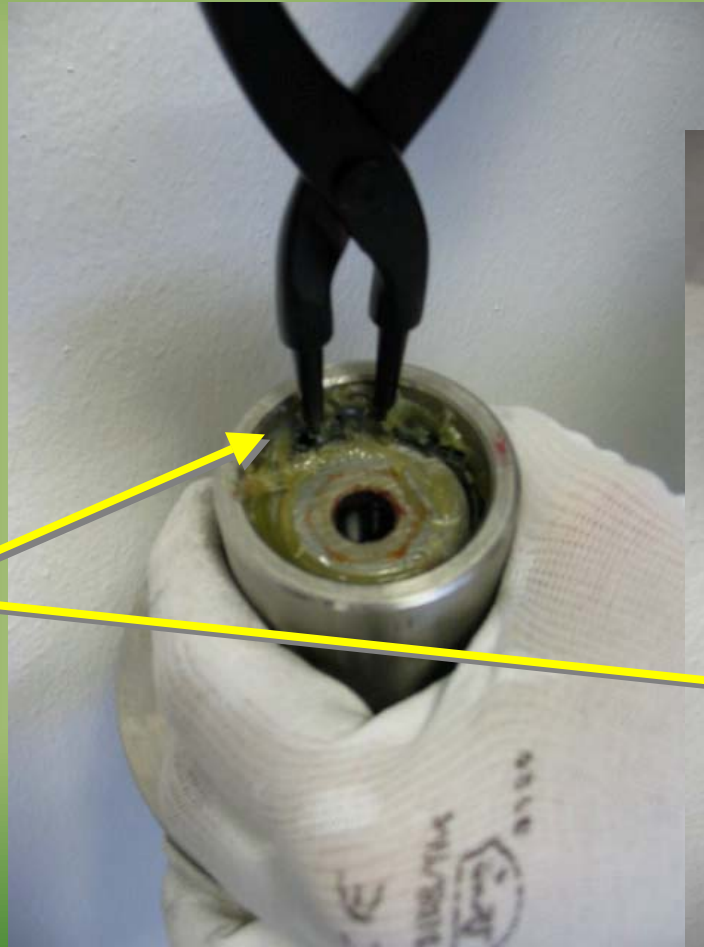
....remove the
ice breaker from
the auger.



TC 180

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

With a clip
ring pliers
remove the
retaining
ring.



TC 180

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

Clean away
the old grease
from the
interior of the
ice breaker and
inspect the
conditions of
the top bearing

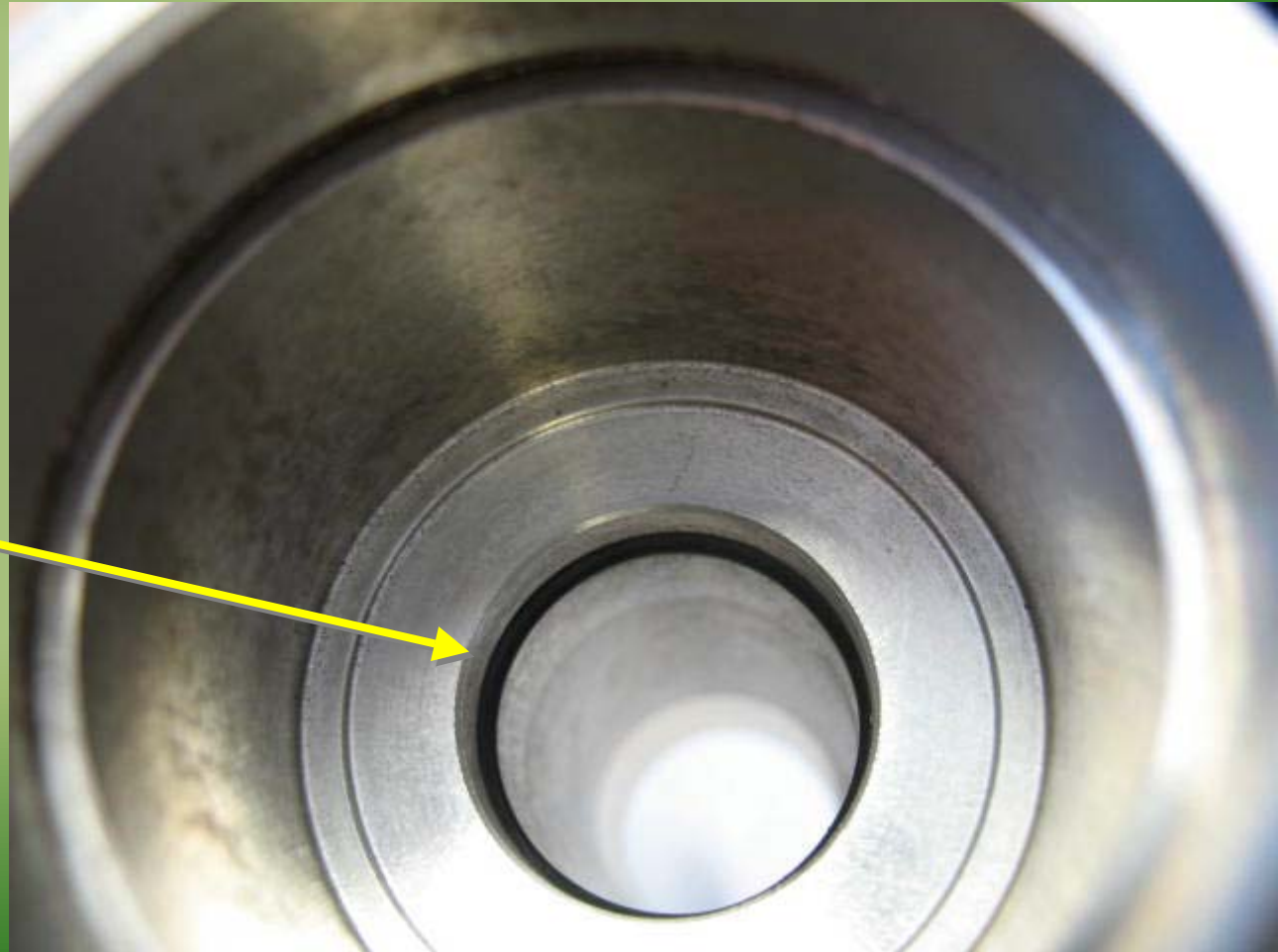
.....



TC 180

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

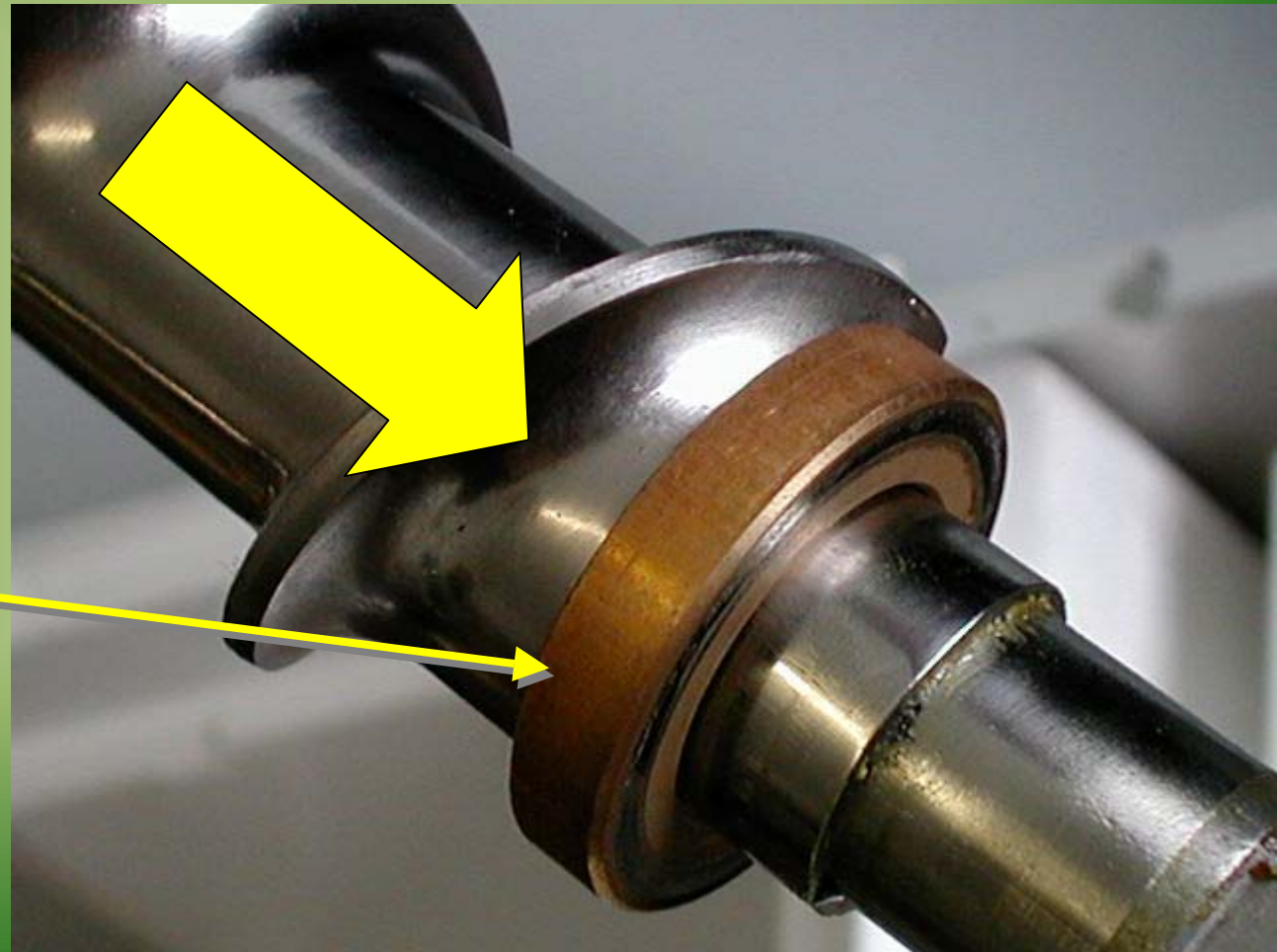
..... as well as
the condition
of the O ring.



TC 180

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

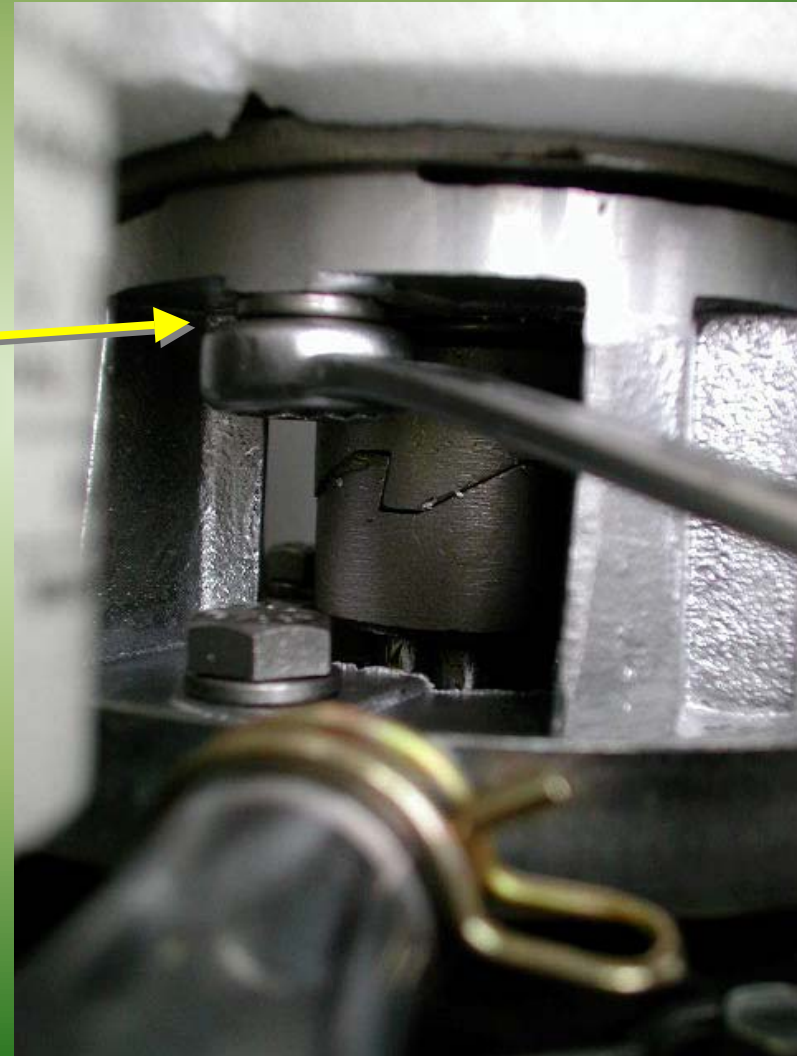
Slide off from
the bottom of
the auger the
upper half of
the water seal.



TC 180

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

Unloose and remove the three bolts and lock-washers holding the freezer assembly to the aluminum adapter then



TC 180

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

..... raise the freezer assembly off the adapter and move it out so to have enough room to work.

Using a suitable wooden dowel inserted through the top of the freezer.....

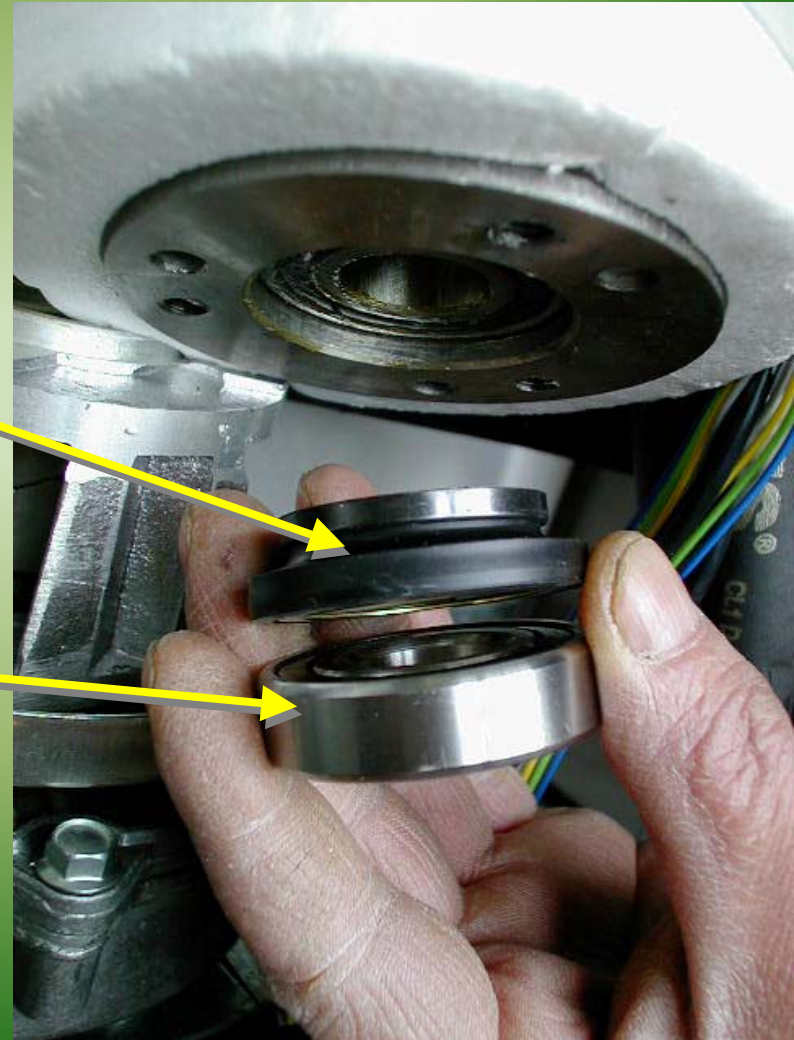


TC 180

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

.....tap the lower half
of the water seal

.....and the lower
bearing out the bottom of
the freezer.



TC 180

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

It is good practice to replace the **water seal assembly, the two top and bottom bearings and the O ring** any time the auger is removed.

A **Kit is available** for this purpose containing a **can of waterproof special grease**.





TTC 180

END

A SCOTSMAN EUROPE presentation

Author: R. Ceriani