MF SERIES

SECOND HALF

MF SERIES

MAINTENANCE

MF SERIES
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.

MF SERIES
MAINTENANCE

TOOLS REQUIRED

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

MF SERIES
MAINTENANCE

Remove the front/top panel.

MF SERIES
MAINTENANCE

Switch OFF the machine at main power switch….

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

MF SERIES
MAINTENANCE

Scoop out all

ice stored into

the bin so to

prevent its

contamination.

MF SERIES
MAINTENANCE

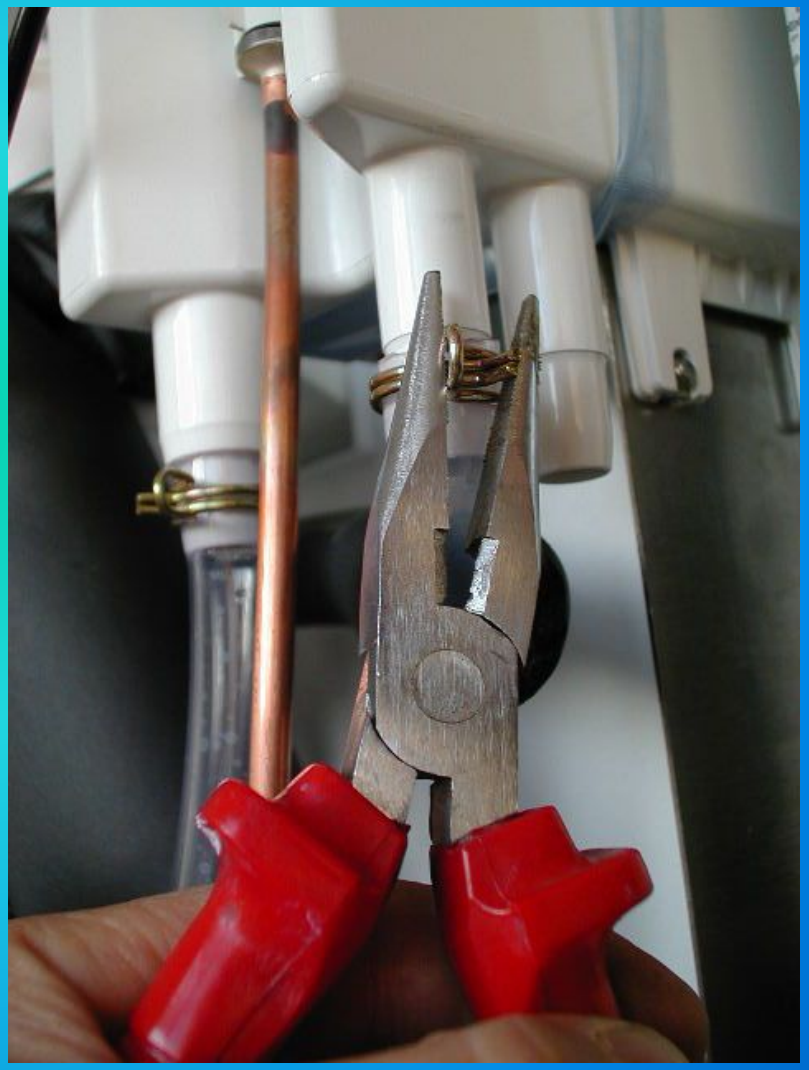
Remove the metal clamp and

disconnect the water tube from

the outlet of the water

reservoir.

Collect….



MF SERIES
MAINTENANCE

….the water into a rag

then.....

MF SERIES
MAINTENANCE

….place

again the

tube on the

outlet port.

MF SERIES
MAINTENANCE

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

MF SERIES
MAINTENANCE

MF 22: 1,5 LITER WATER WITH 150 CC CLEANER

MF 30: 2 LITERS WATER WITH 200 CC CLEANER

MF 41/51: 4 LITERS WATER WITH 400 CC CLEANER

MF 61: 4 LITERS WATER WITH 400 CC CLEANER

PER EVAPORATOR

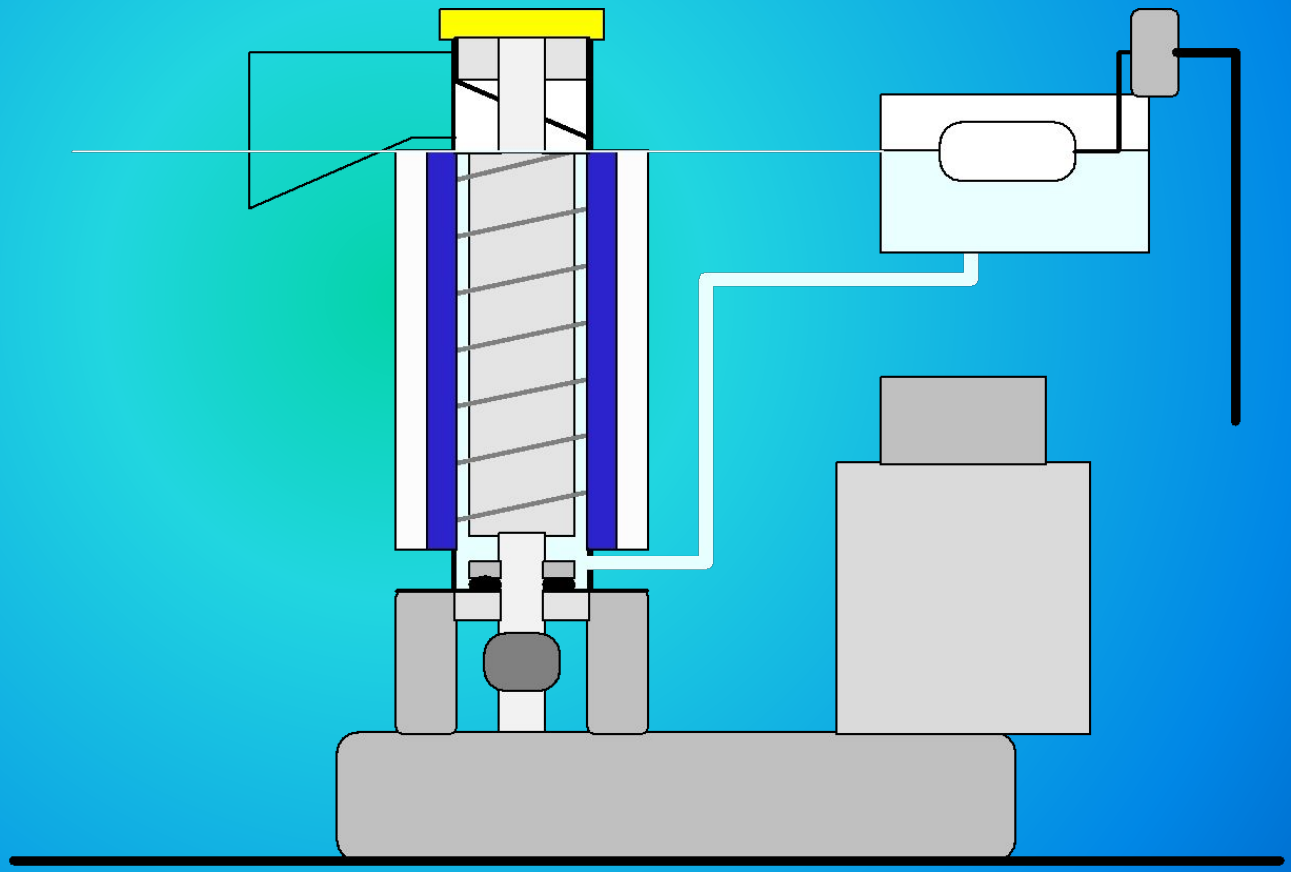
MF SERIES
MAINTENANCE

Remove the water reservoir cover then….

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

MF SERIES
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.



MF SERIES
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.

MF SERIES
MAINTENANCE

Jump with a wire

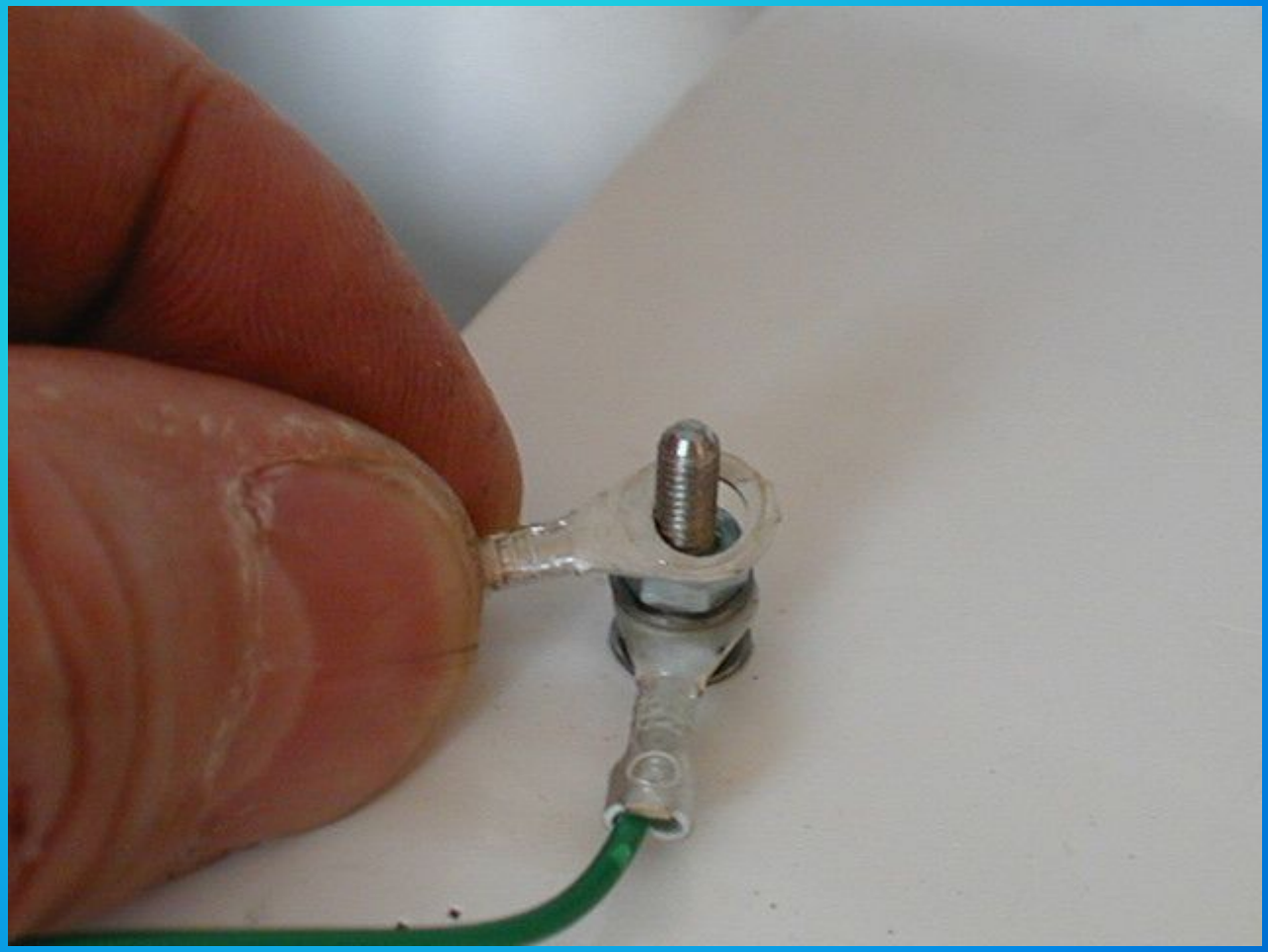
or connect

together the two

metal pins of the

water level sensor

then….



MF SERIES
MAINTENANCE

… move the master switch to ON position.

MF SERIES
MAINTENANCE

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

MF SERIES
MAINTENANCE

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

MF SERIES
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.

MF SERIES
MAINTENANCE

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

MF SERIES
MAINTENANCE

….place again the

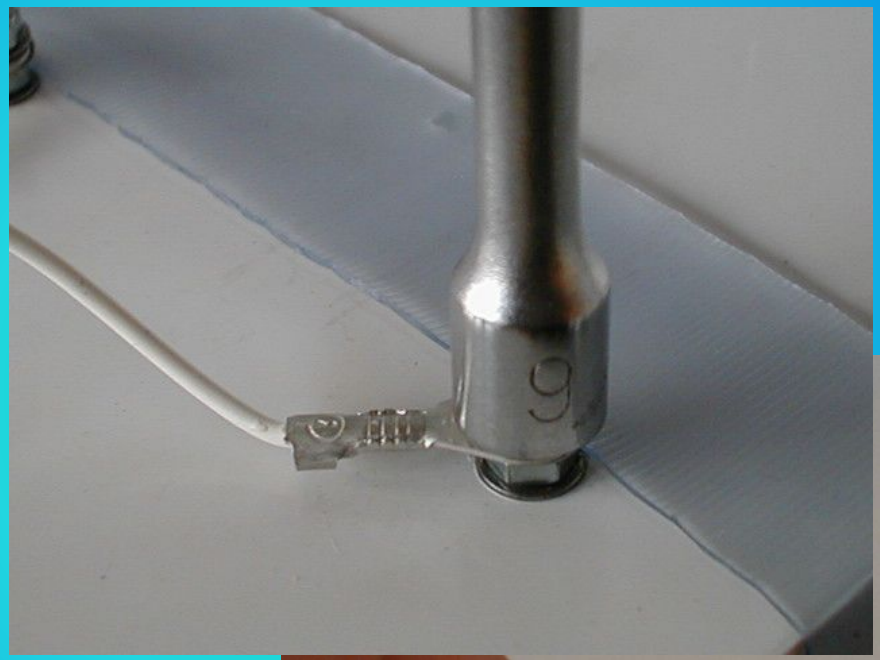
water reservoir

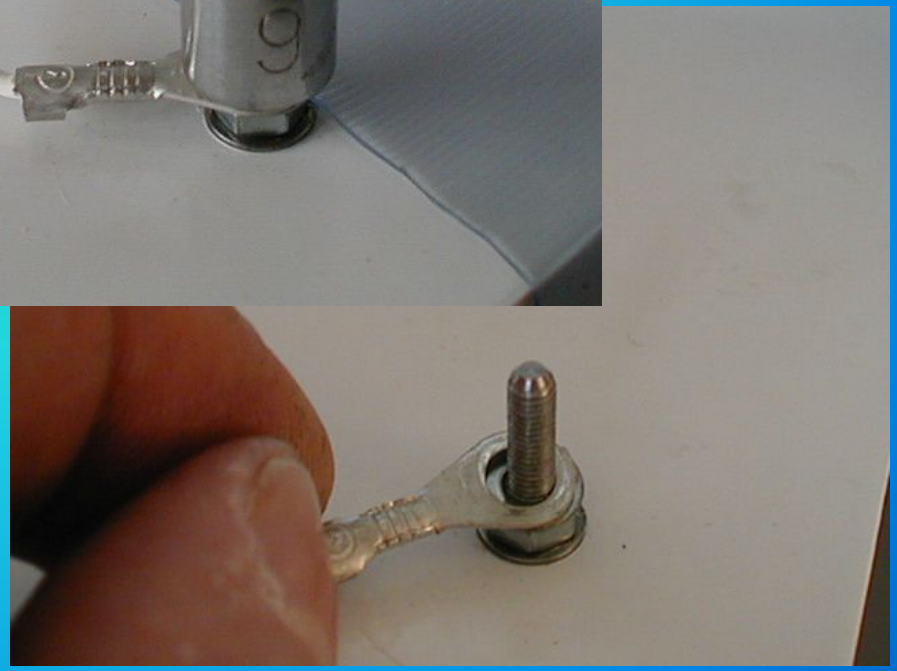
cover paying

attention to remove

the jumper between

the two metal pins.





MF SERIES
MAINTENANCE

Scoop out the flake ice produced with cleaning/sanitizing solution.

MF SERIES
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.

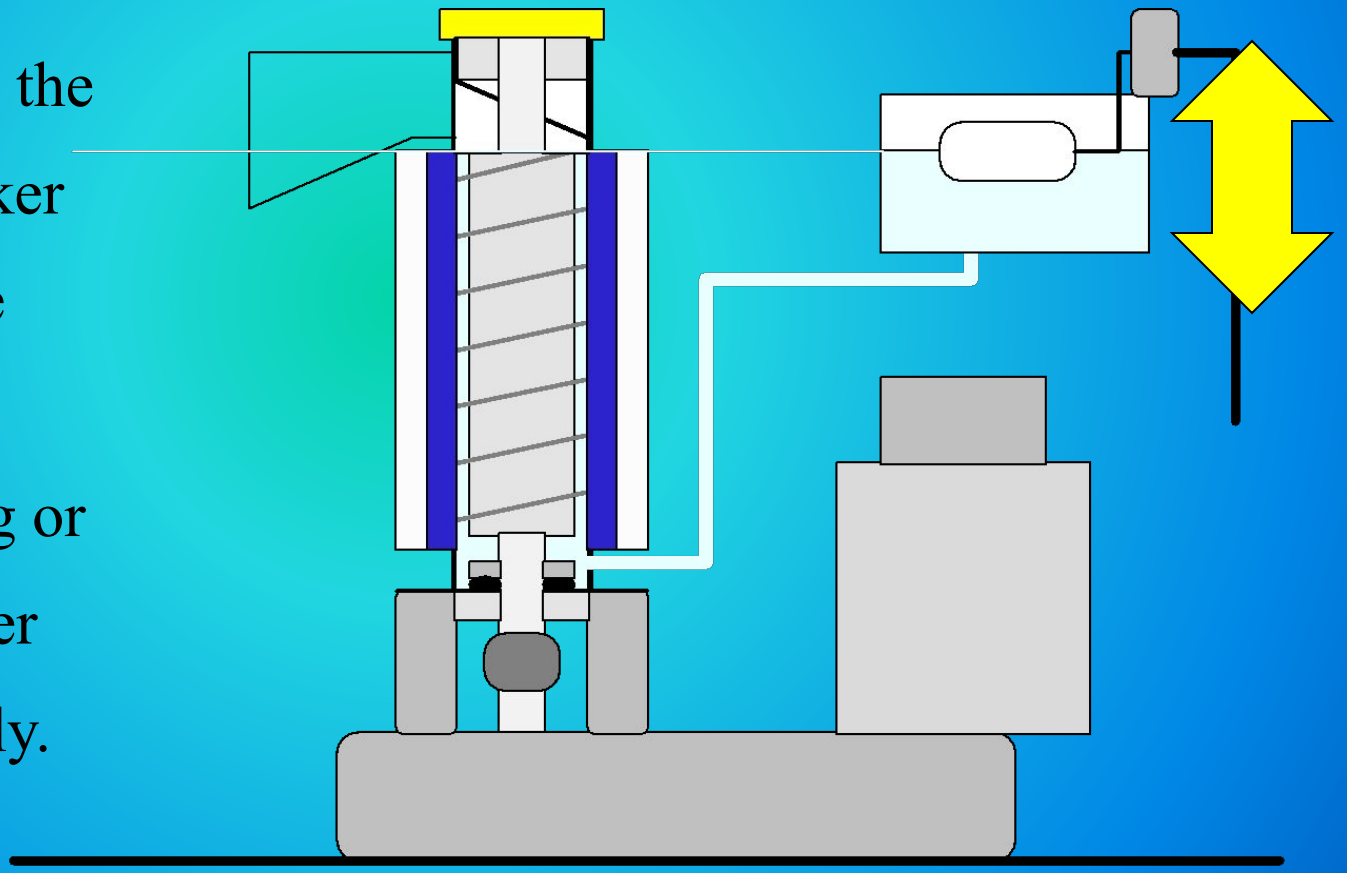
MF SERIES

MAINTENANCE

REMEMBER. To prevent the accumulation of undesirable bacteria it is necessary to sanitize the interior of the storage bin with a sanitizing solution every week.

MF SERIES
MAINTENANCE

It is possible to change a little bit the quality of the flaker or superflaker ice produced by the machine by rising or lowering the water reservoir assembly.



MF SERIES
MAINTENANCE

The unit frame is equipped by five series of holes so to secure at different level the water reservoir.

Higher level is for wetter ice while lower level for drier ice.

MF SERIES

SERVICE ANALYSIS

MF SERIES
SERVICE ANALYSIS

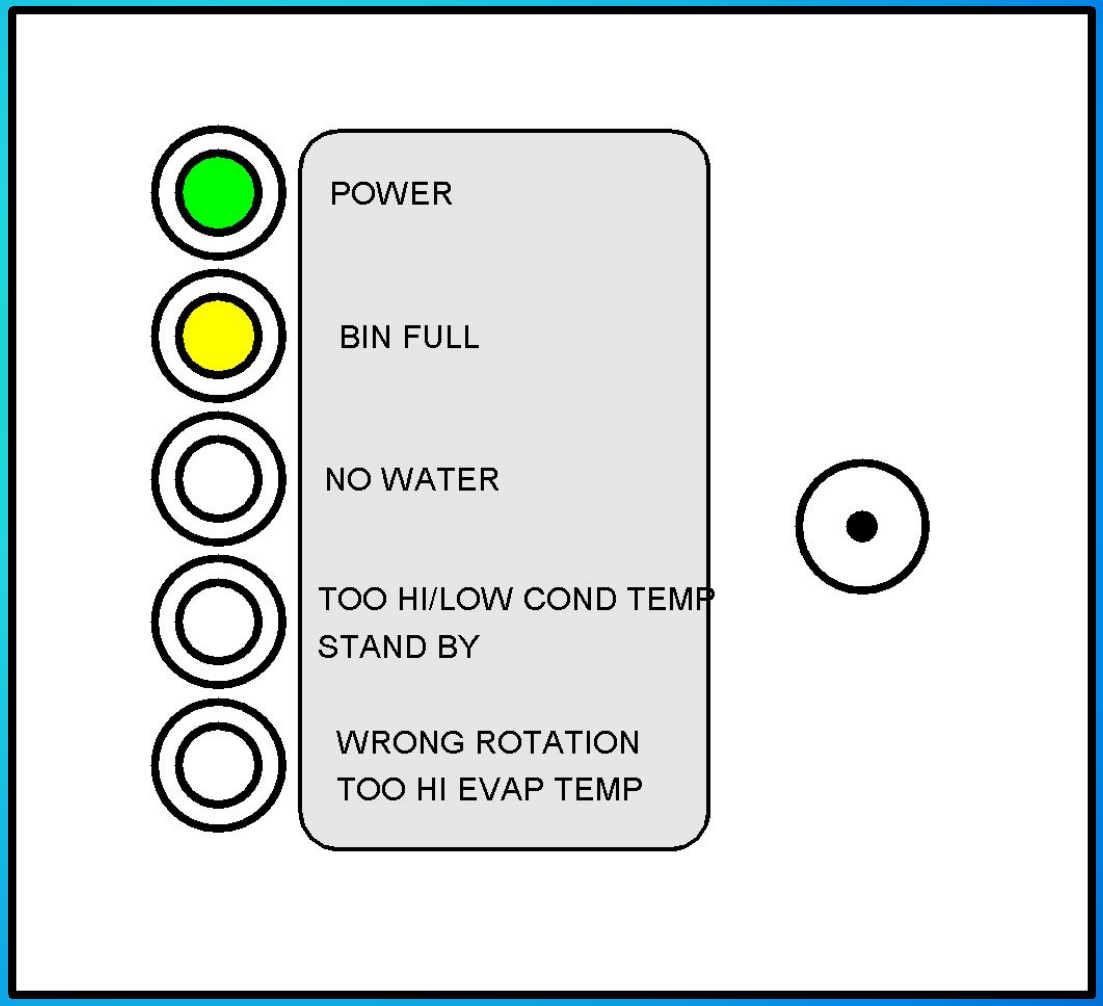
Bin Full

situation:

Green and

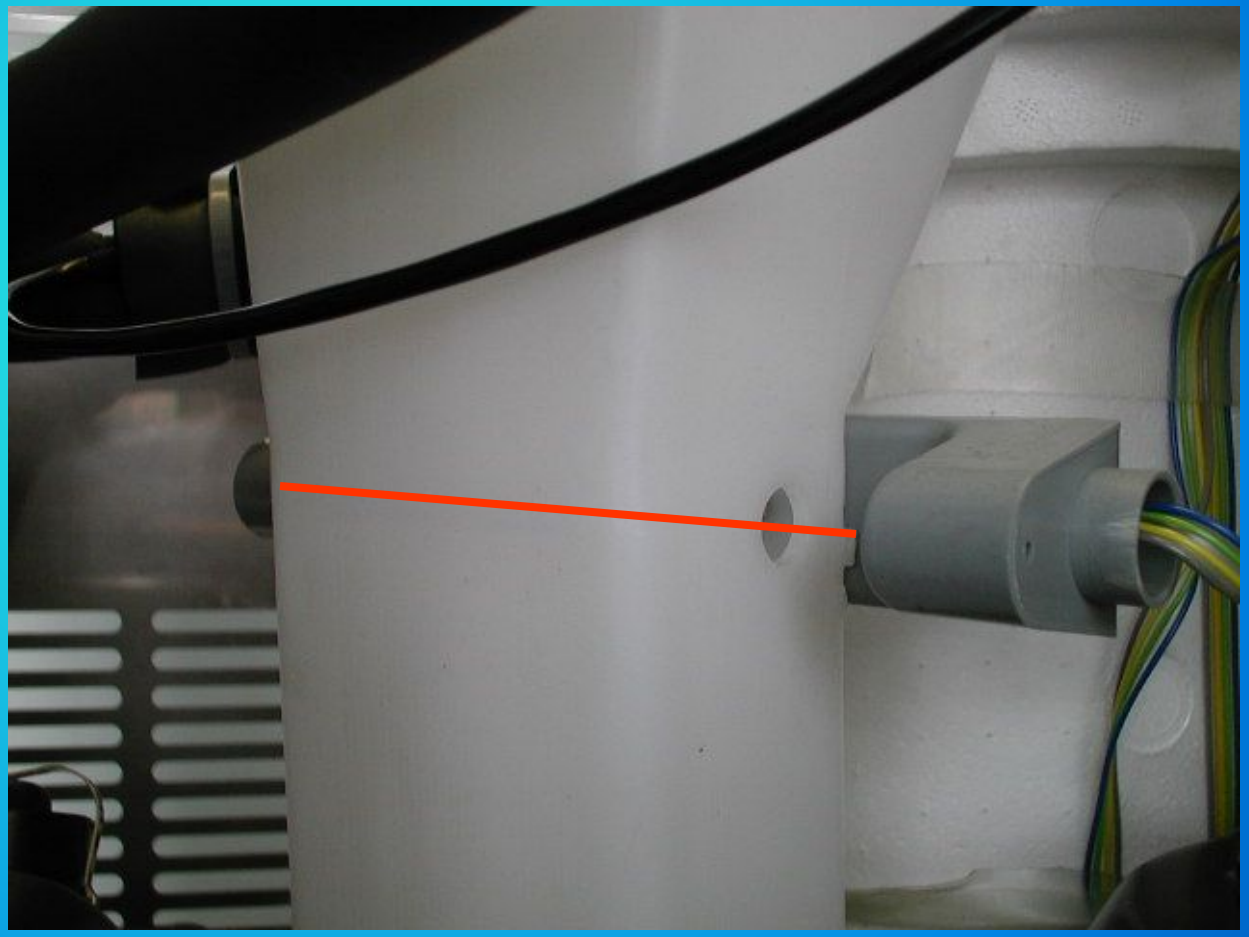
Yellow

LED ON.



MF SERIES
SERVICE ANALYSIS

Check for the correct operation of the Optical Ice Level control located on the upper outside part of the ice chute.



MF SERIES
SERVICE ANALYSIS

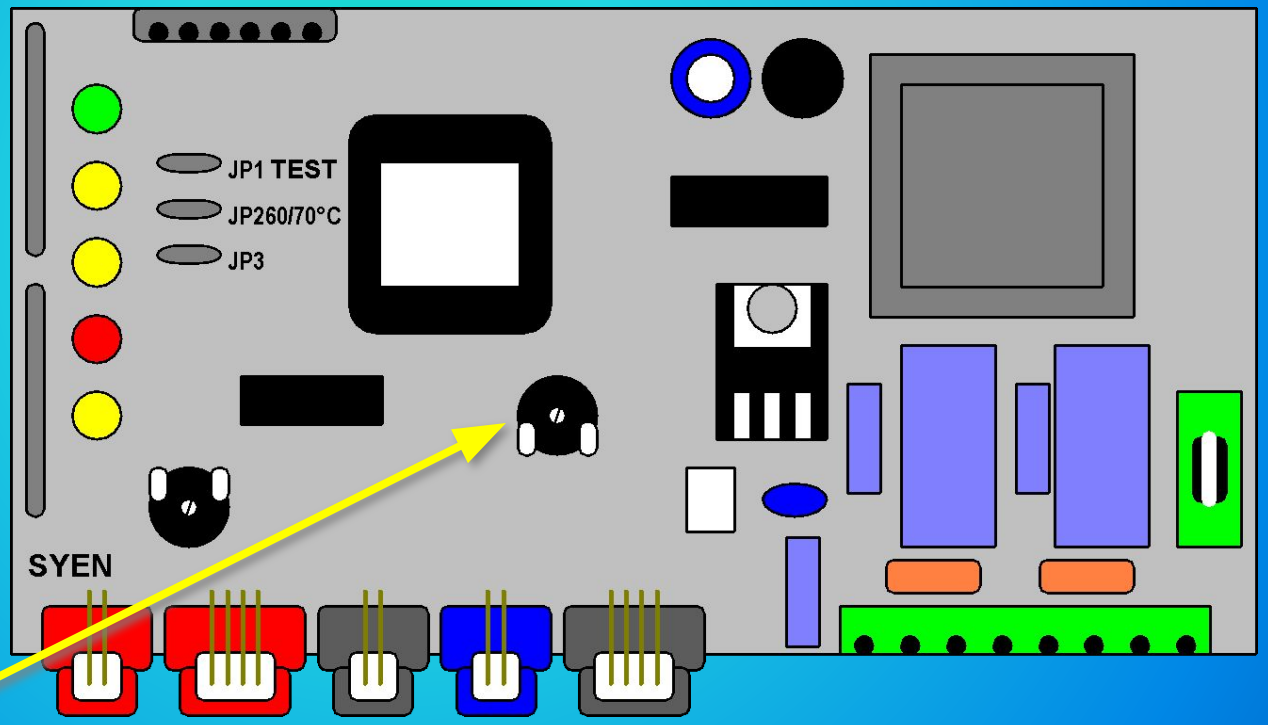
The two eyes placed on the opposite side of the plastic bracket must be perfectly clean with no dust and/or scale.

MF SERIES
SERVICE ANALYSIS

Check also for any possible accumulation of scale around the two holes located on the opposite sides of the ice chute.

MF SERIES
SERVICE ANALYSIS

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



MF SERIES
SERVICE ANALYSIS

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

MF SERIES
SERVICE ANALYSIS

ATTENTION. The Optical Ice Level Control can be affected by the sun light.

Avoid to leave the machine in operation directly under the sun light and/or without the service panels.

MF SERIES
SERVICE ANALYSIS

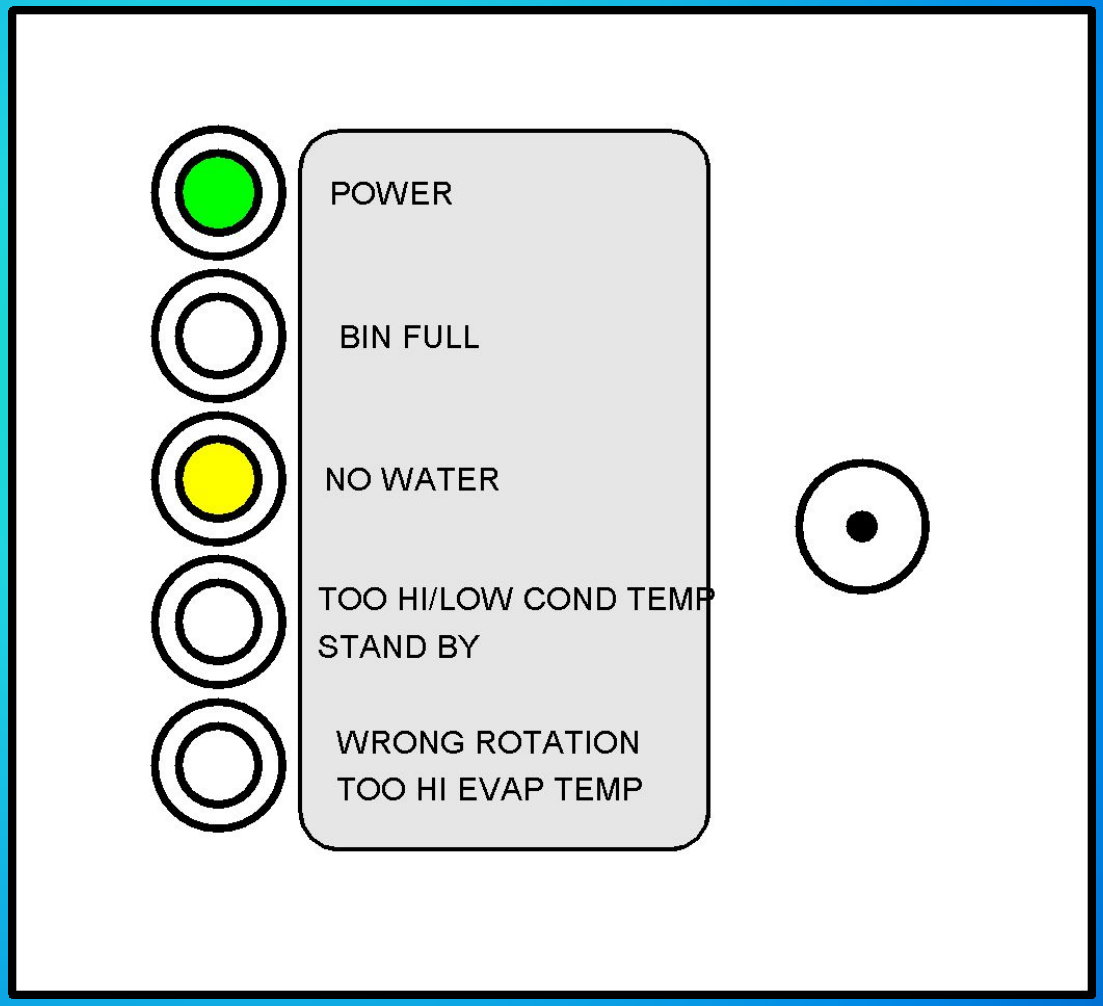
No water

situation:

Green and

Yellow

LED ON.



MF SERIES
SERVICE ANALYSIS

Check first for the

water tap on the

water supply line

……

MF SERIES
SERVICE ANALYSIS

……for the water filter

located on the water inlet

line…..

MF SERIES
SERVICE ANALYSIS

……for the water strainer

located inside the water

inlet fitting…..

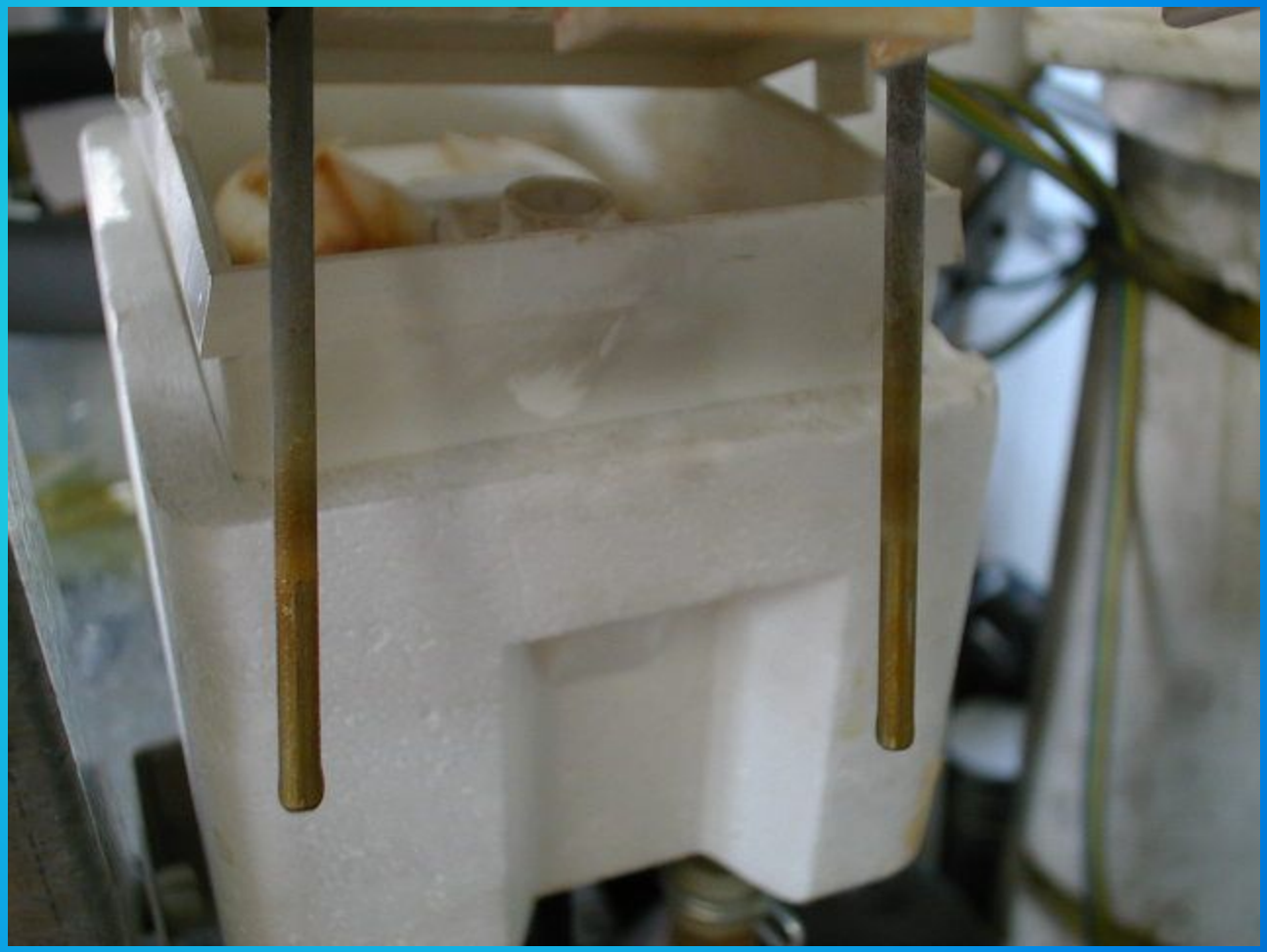
MF SERIES
SERVICE ANALYSIS

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

If not clean it with a small metal pin.

MF SERIES
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…..



MF SERIES
SERVICE ANALYSIS

…..or for any loosing wire

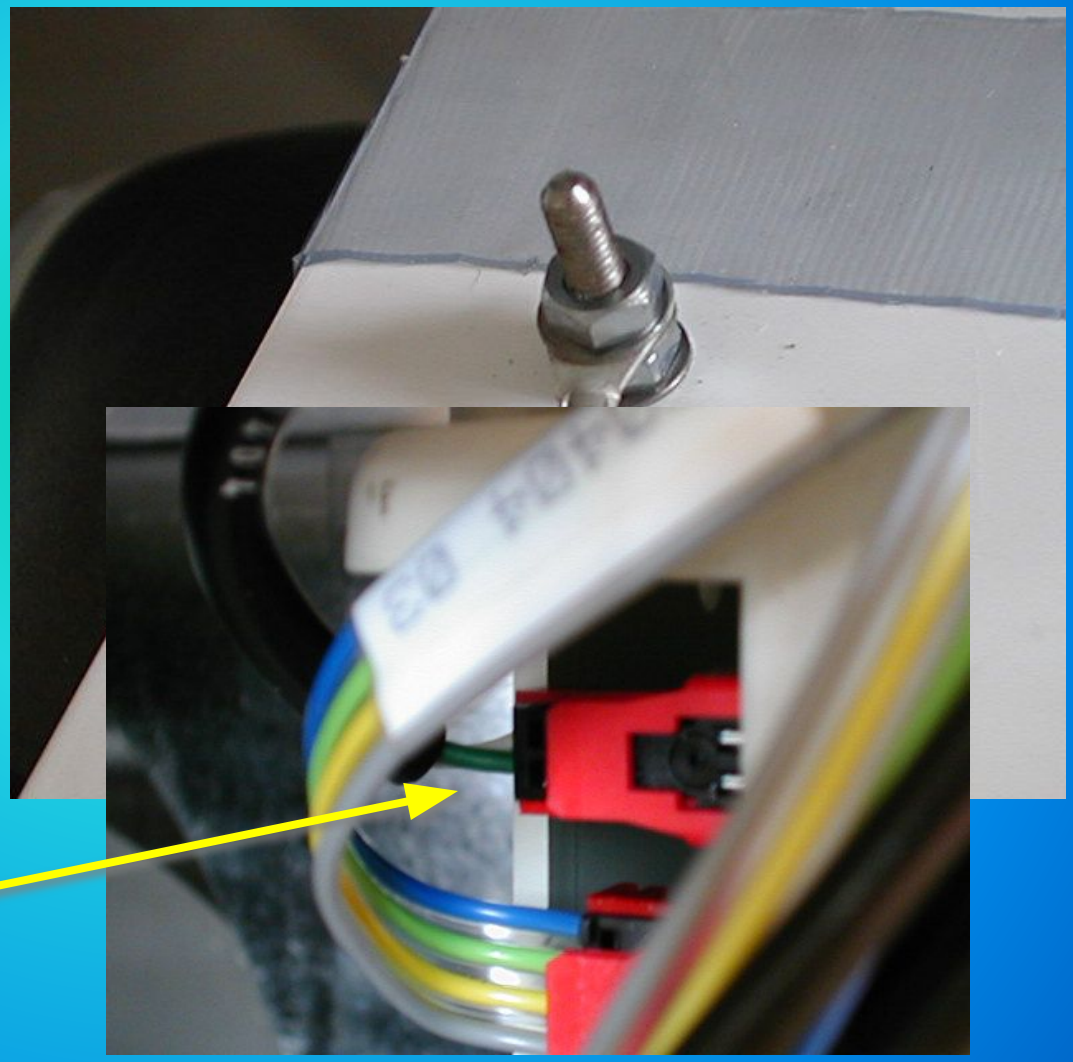
between the two metal pins

and……

……the PC Board

connector (red color two

pins connector).



MF SERIES
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.**

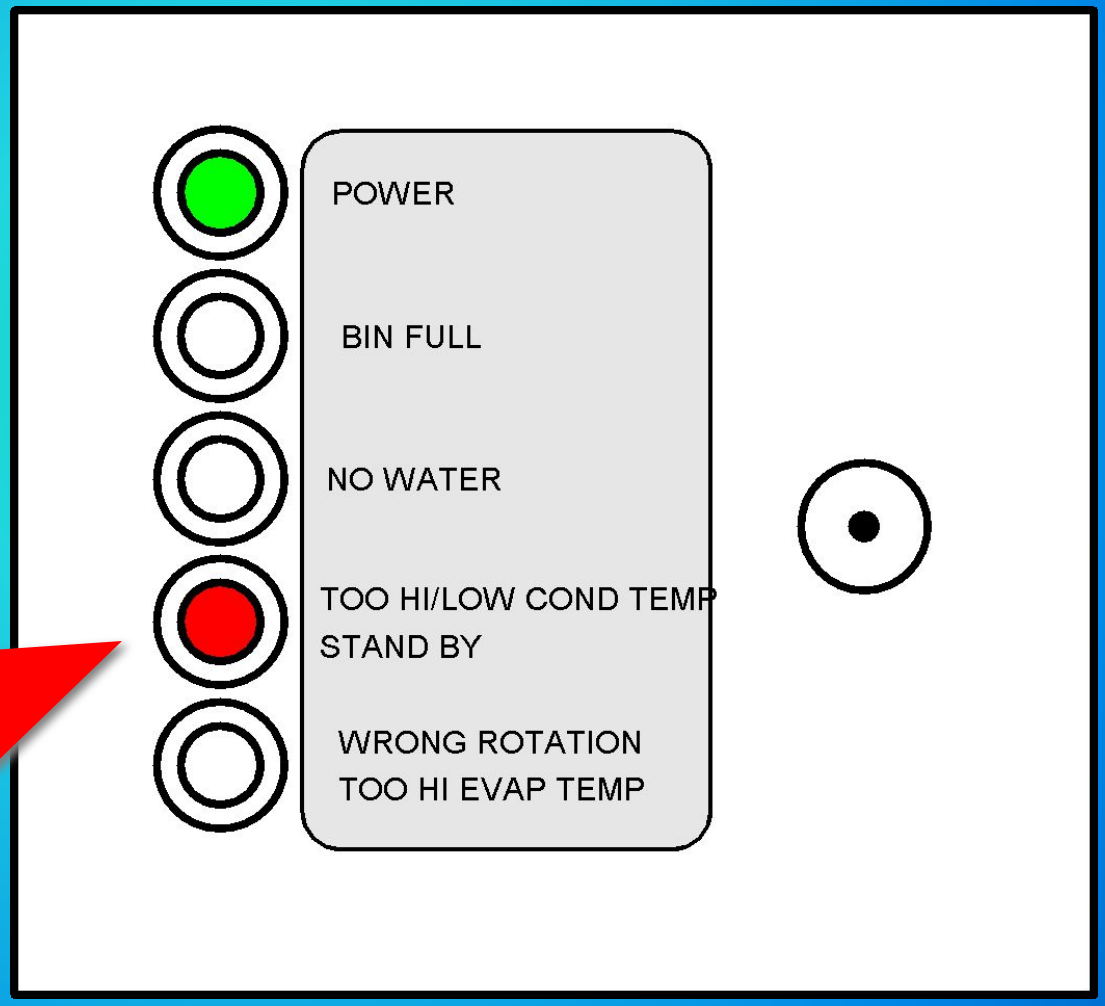
A minimum of 30µS electrical conductivity water is required for correct operation of the machine.

MF SERIES
SERVICE ANALYSIS

3' waiting time:

Green LED ON

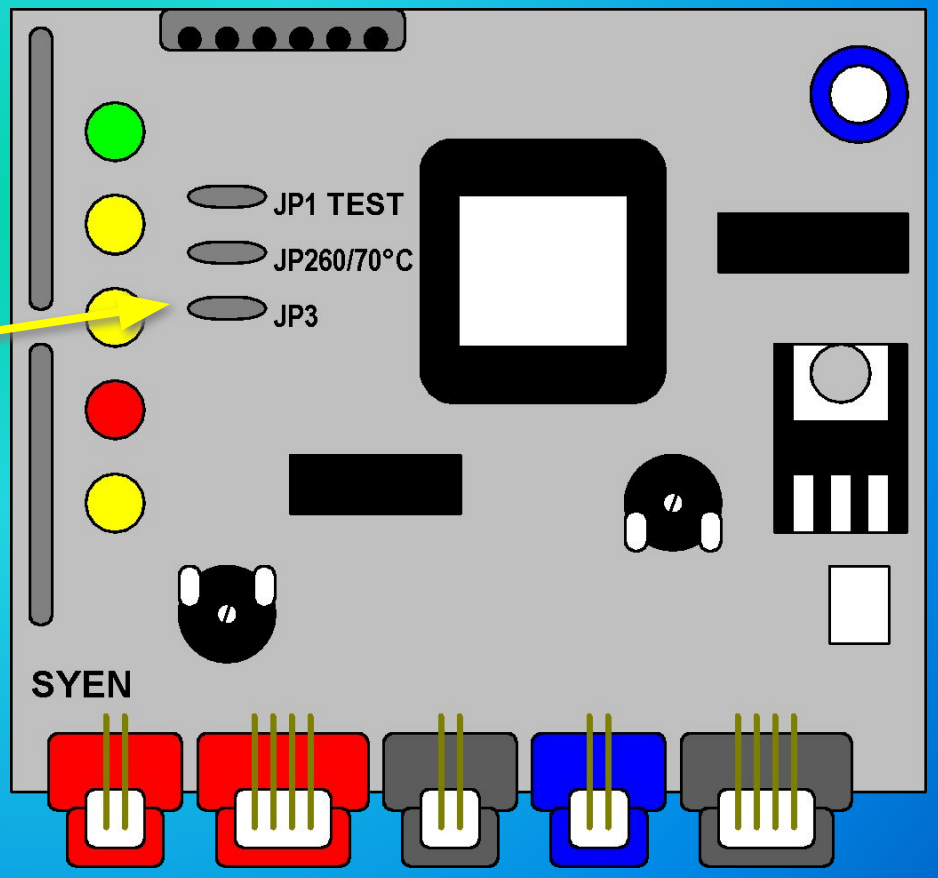
Red LED blinking



MF SERIES
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 jumping the two contacts **J3**…..

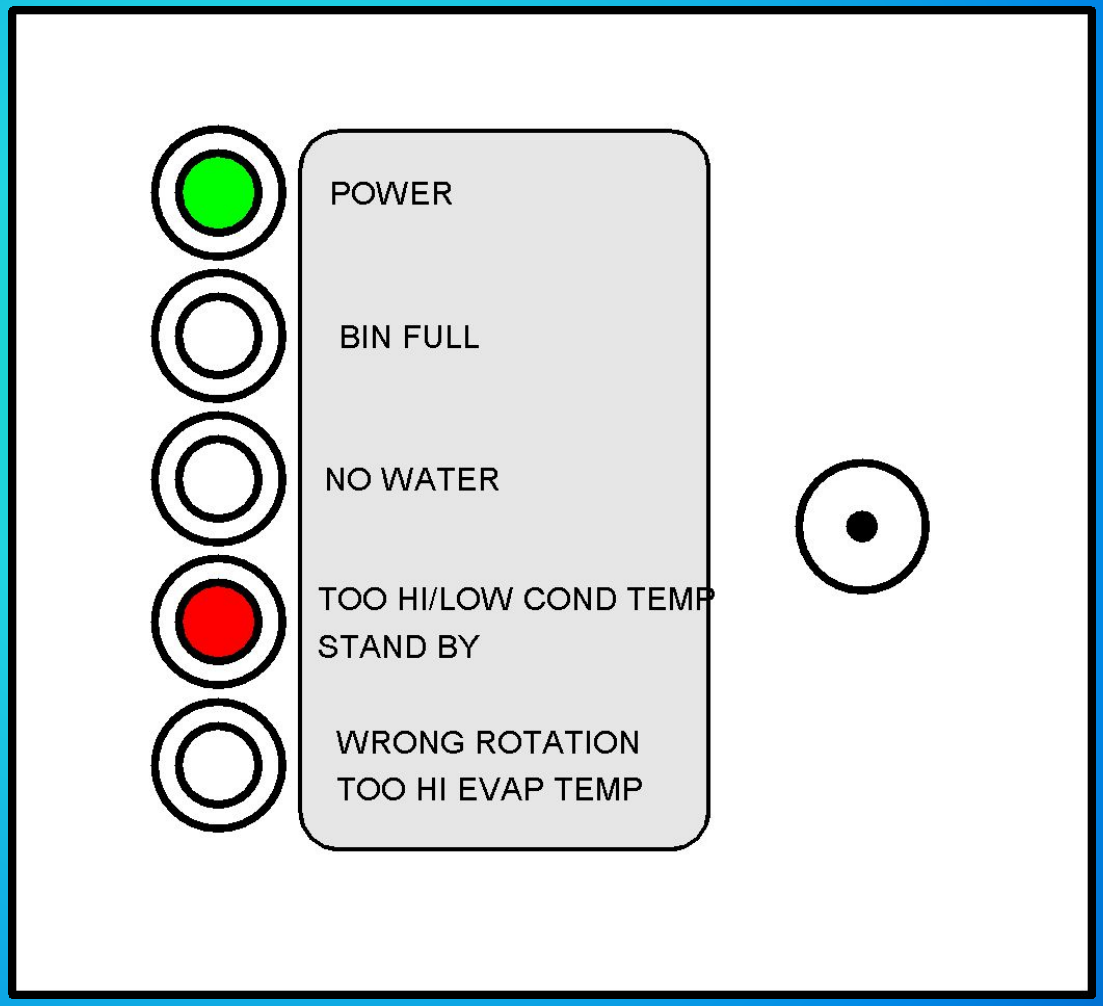


……and **Switch OFF and ON the machine.**

MF SERIES
SERVICE ANALYSIS

Too low ambient temperature (<+3°C)

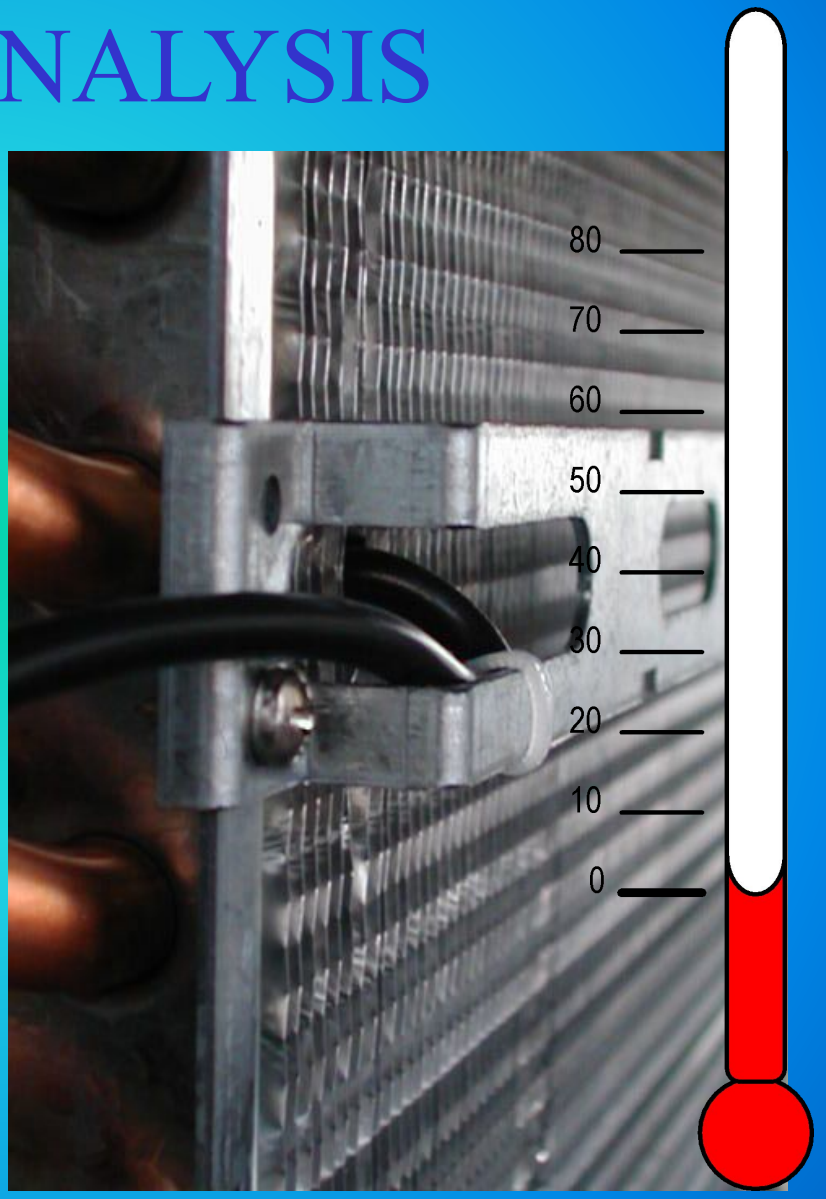
Green and Red LED ON.



MF SERIES
SERVICE ANALYSIS

It is a typical **winter situation**.

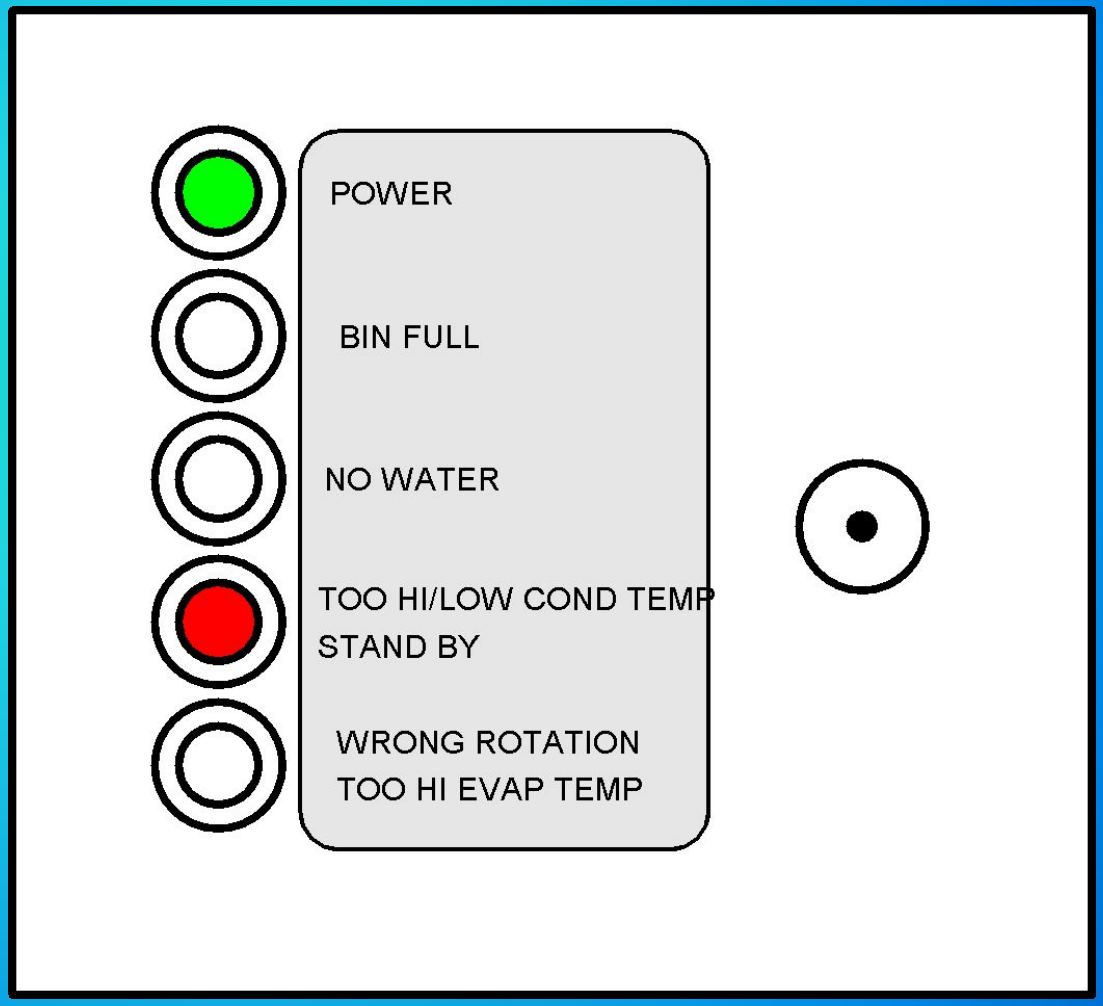
When the machine is located in a **very cold room (<+3ºC)** the condenser sensor keep the machine OFF till the temperature rise up to more then +5ºC.



MF SERIES
SERVICE ANALYSIS

Too high condensing temperature (>60°C or >70°C)

Green and Red LED ON.



MF SERIES
SERVICE ANALYSIS

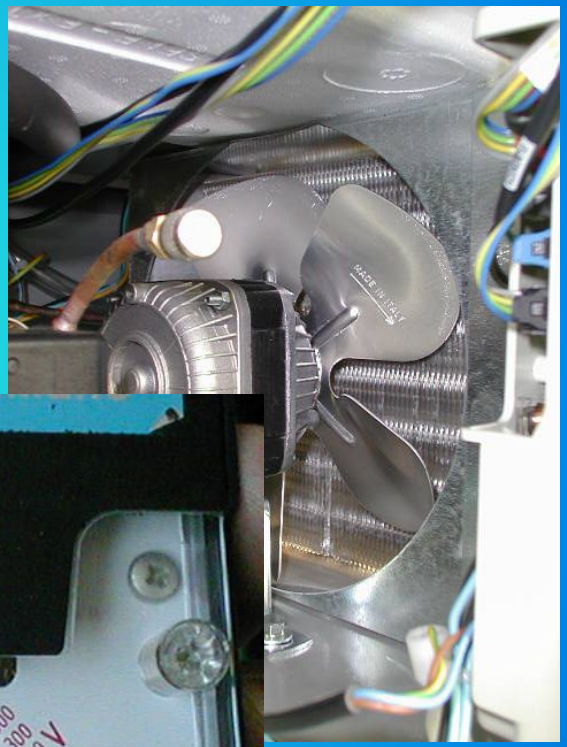
On **Air Cooled Version**

check first for the correct

operation of the fan motor

i.e.:

- Power to the motor



MF SERIES
SERVICE ANALYSIS

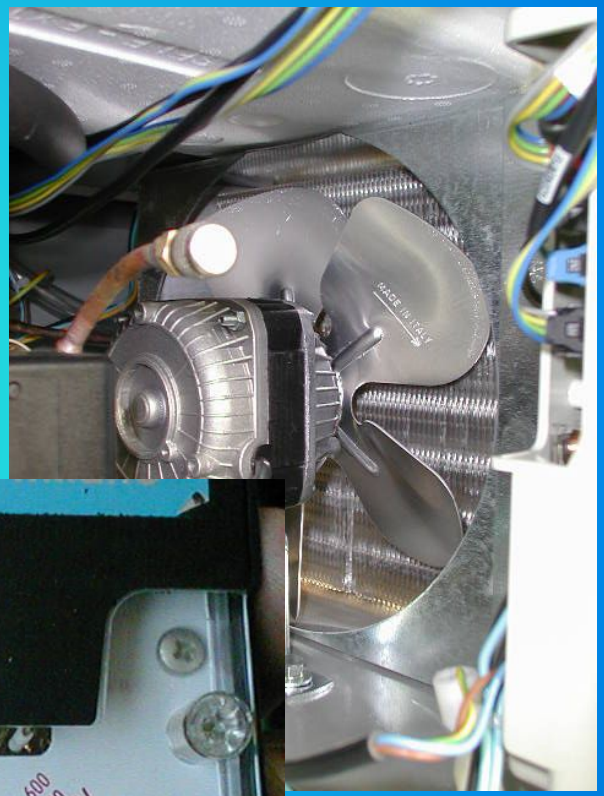
On **Air Cooled Version**

check first for the correct

operation of the fan motor

i.e.:

- Power to the motor
- Open winding of the motor



MF SERIES
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

MF SERIES
SERVICE ANALYSIS

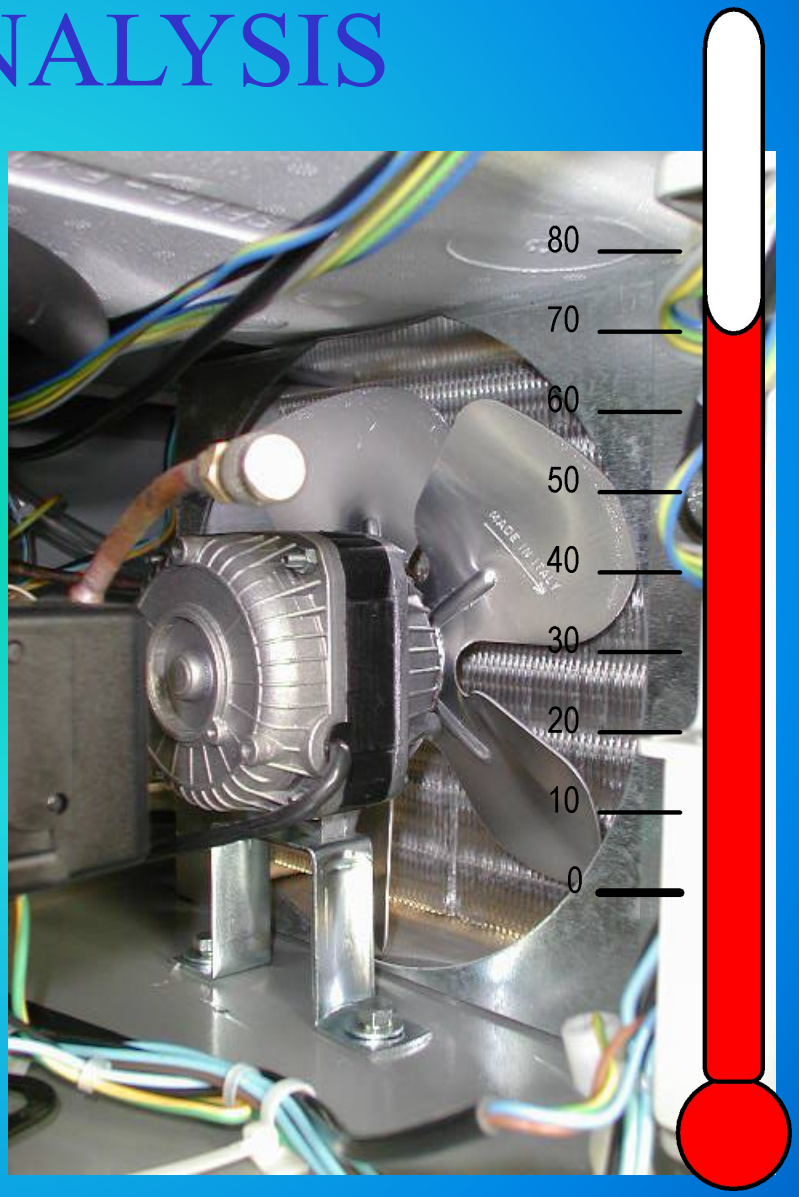
Check also for any possibility

of **fan motor overheating** that

can happen after a certain time

from the start up of the

machine.



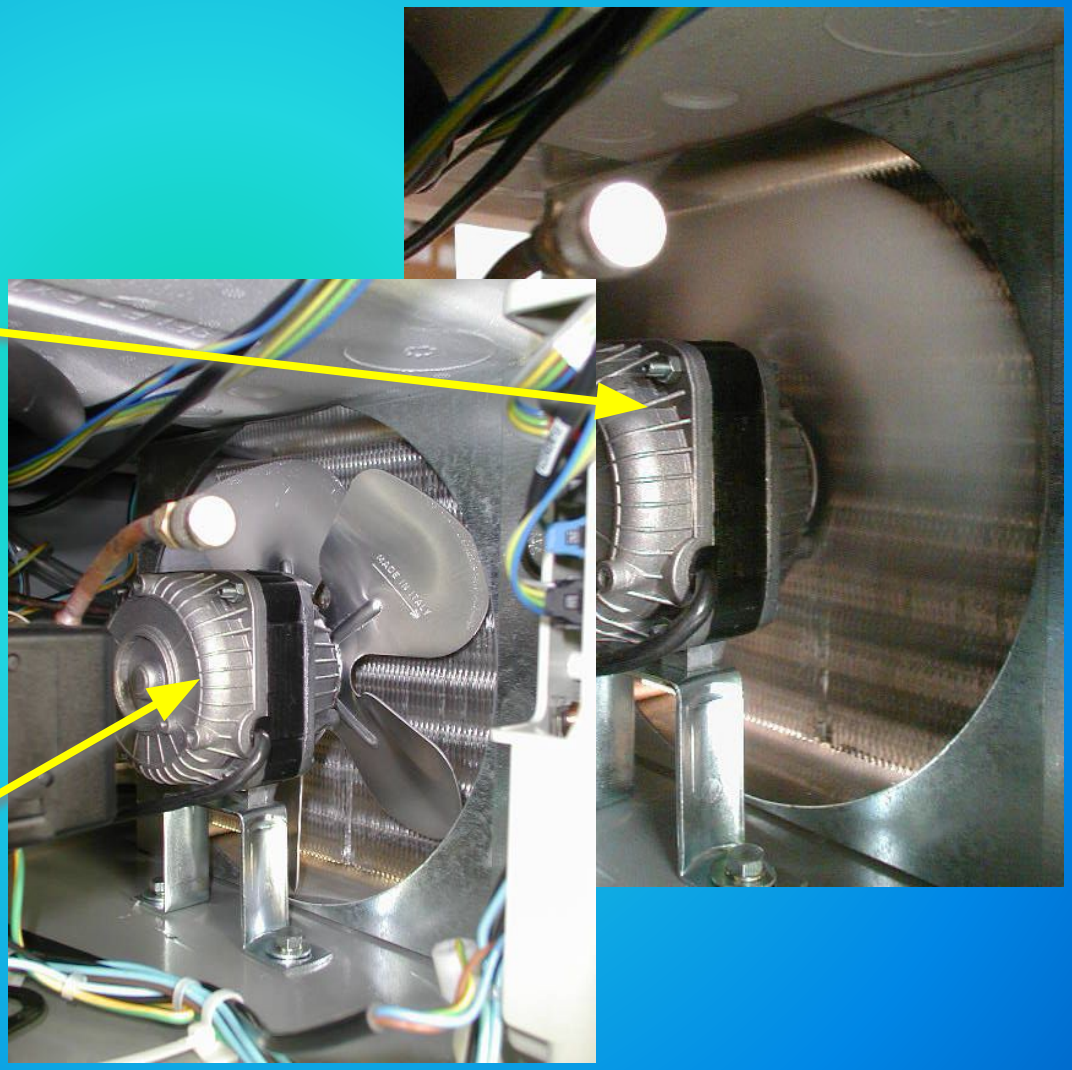
MF SERIES
SERVICE ANALYSIS

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 then the minimum one need for tripping OFF the motor.

MF SERIES
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**.



MF SERIES
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.

MF SERIES
SERVICE ANALYSIS

On **Water Cooled Version**

check first for the:

- Water tap

MF SERIES
SERVICE ANALYSIS

On **Water Cooled Version** check first for the:

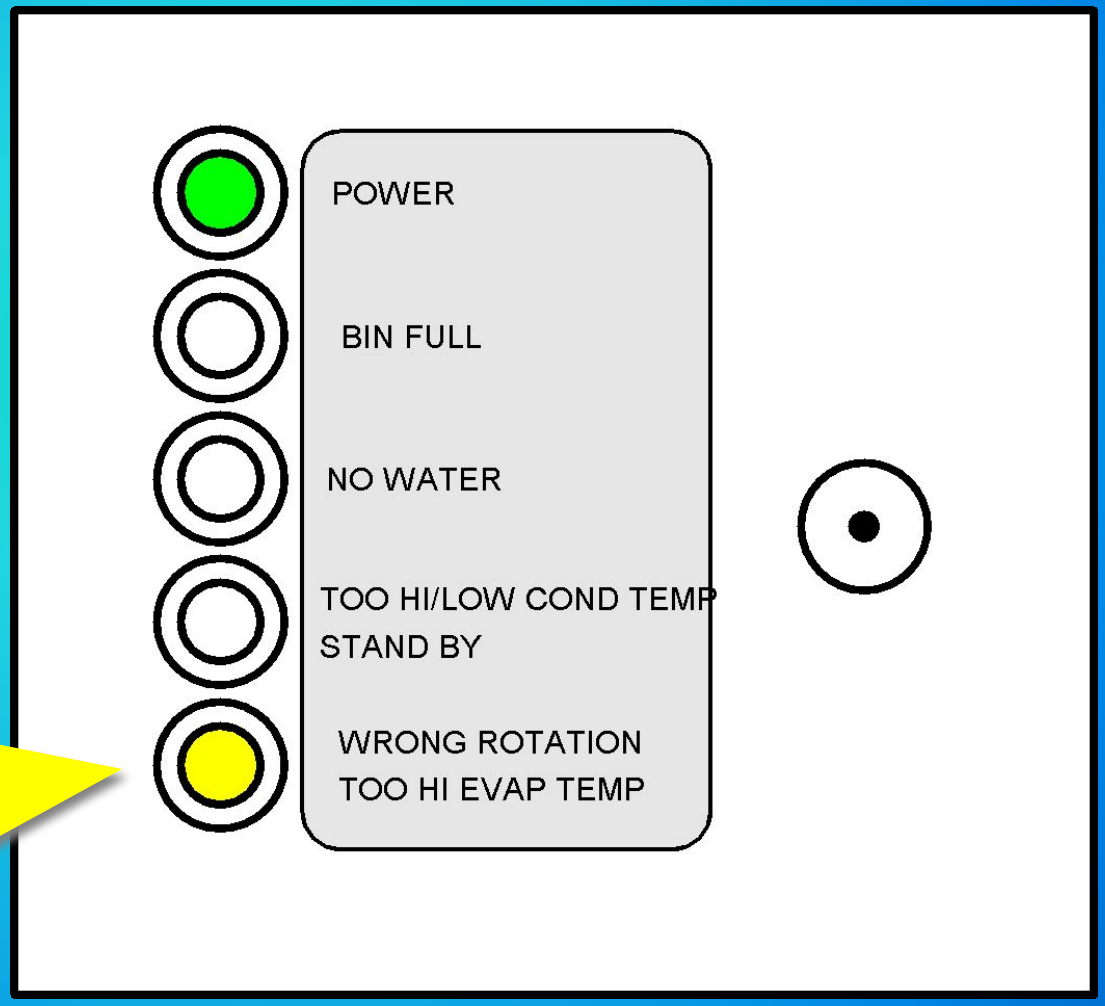
- Water tap
- Correct operation of the water regulating valve

MF SERIES
SERVICE ANALYSIS

Too high evaporating temperature after 10' operation

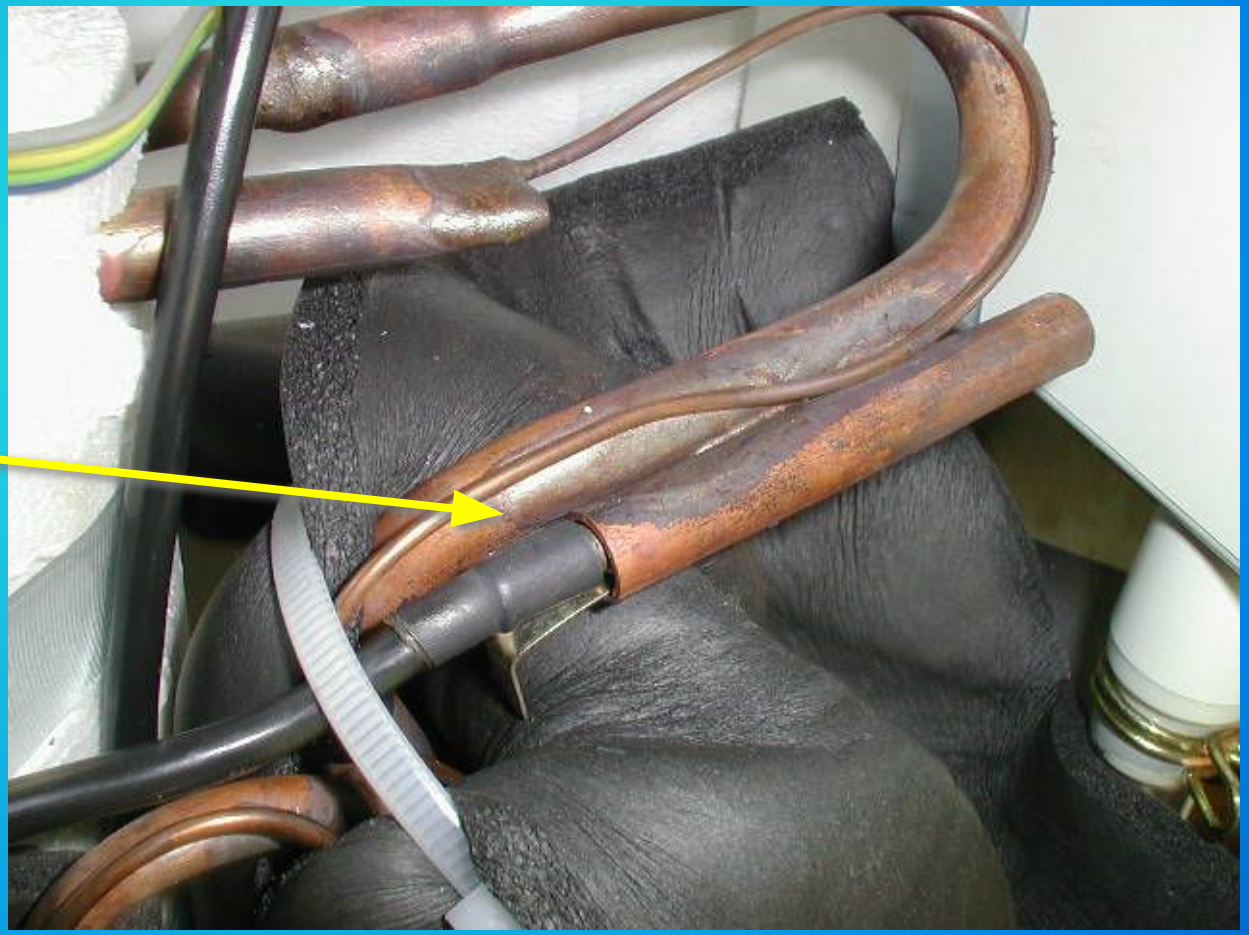
Green LED ON

Yellow LED blinking



MF SERIES
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).

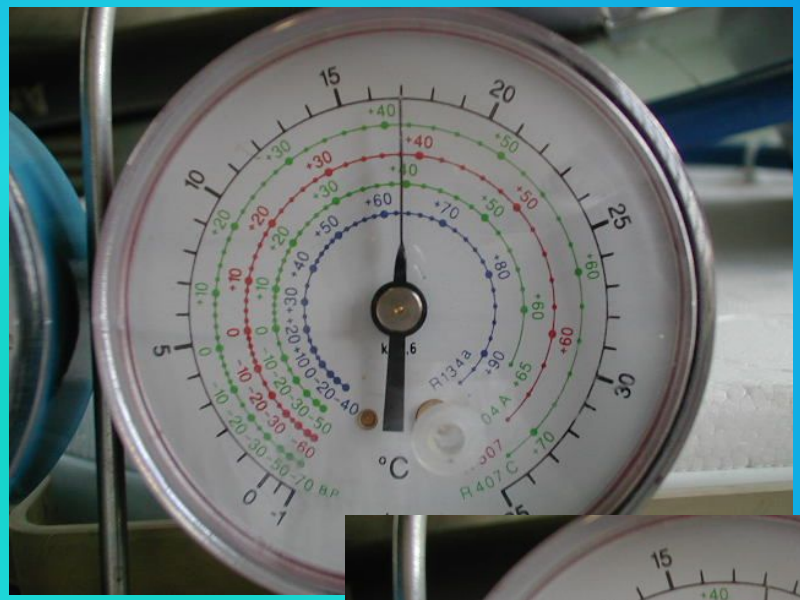


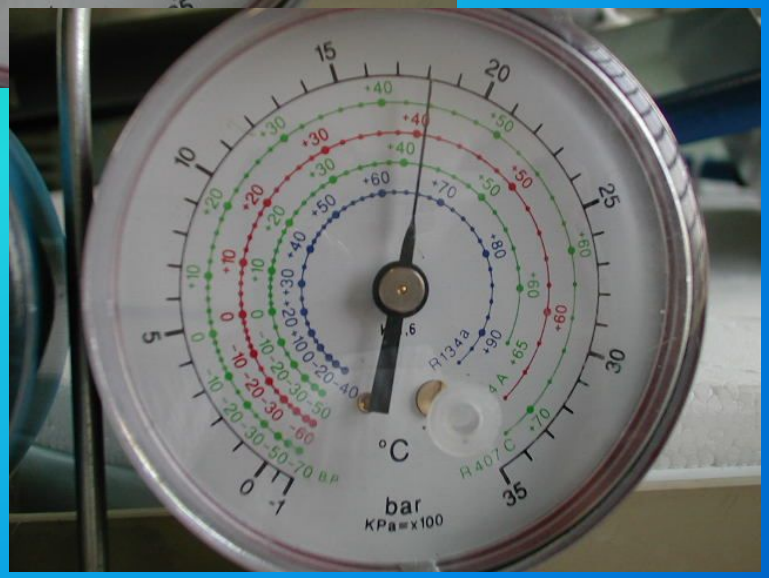
MF SERIES
SERVICE ANALYSIS

If no ice is produced check for:

- Refrigerant charge.

Hi side pressure must be between 17÷18 bar (240÷250 PSI)…..



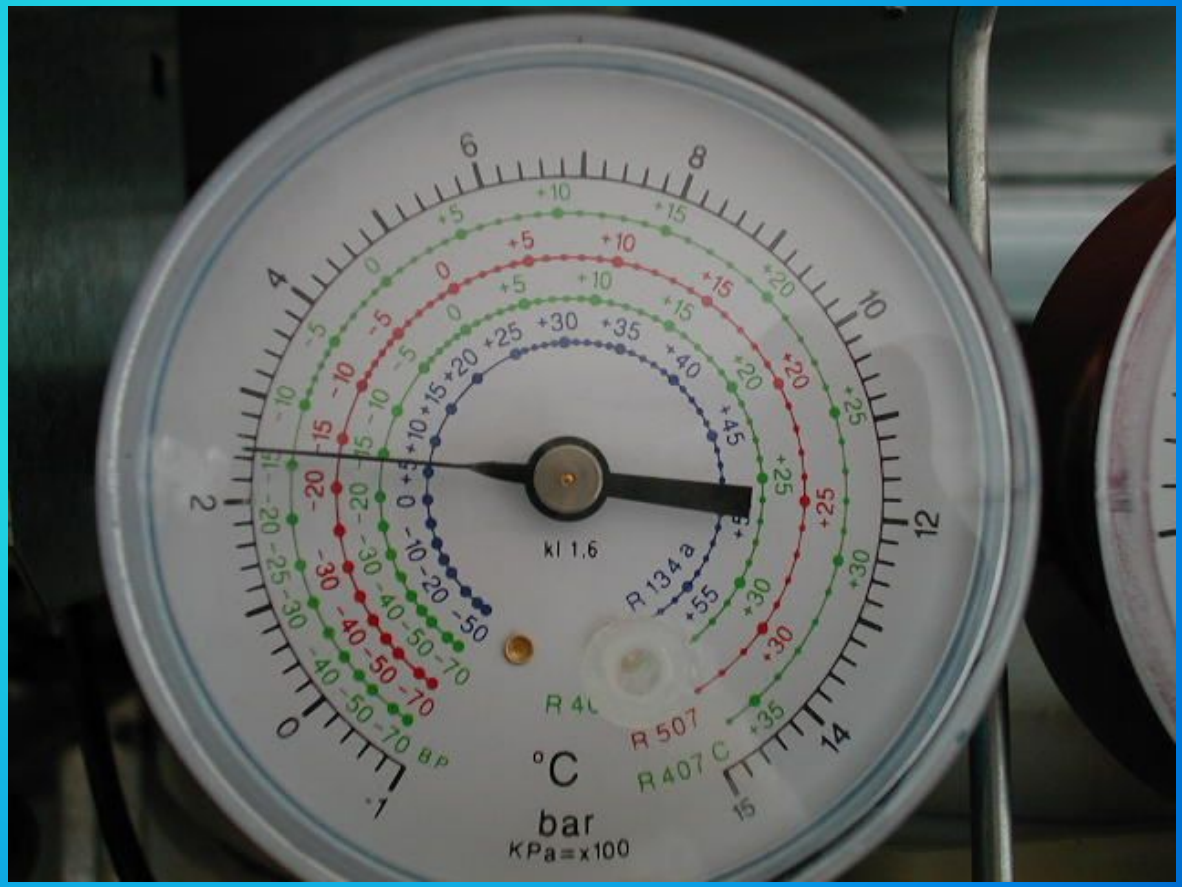


MF SERIES
SERVICE ANALYSIS

……while suction

pressure must be 2.5

bar (35 PSI)



MF SERIES
SERVICE ANALYSIS

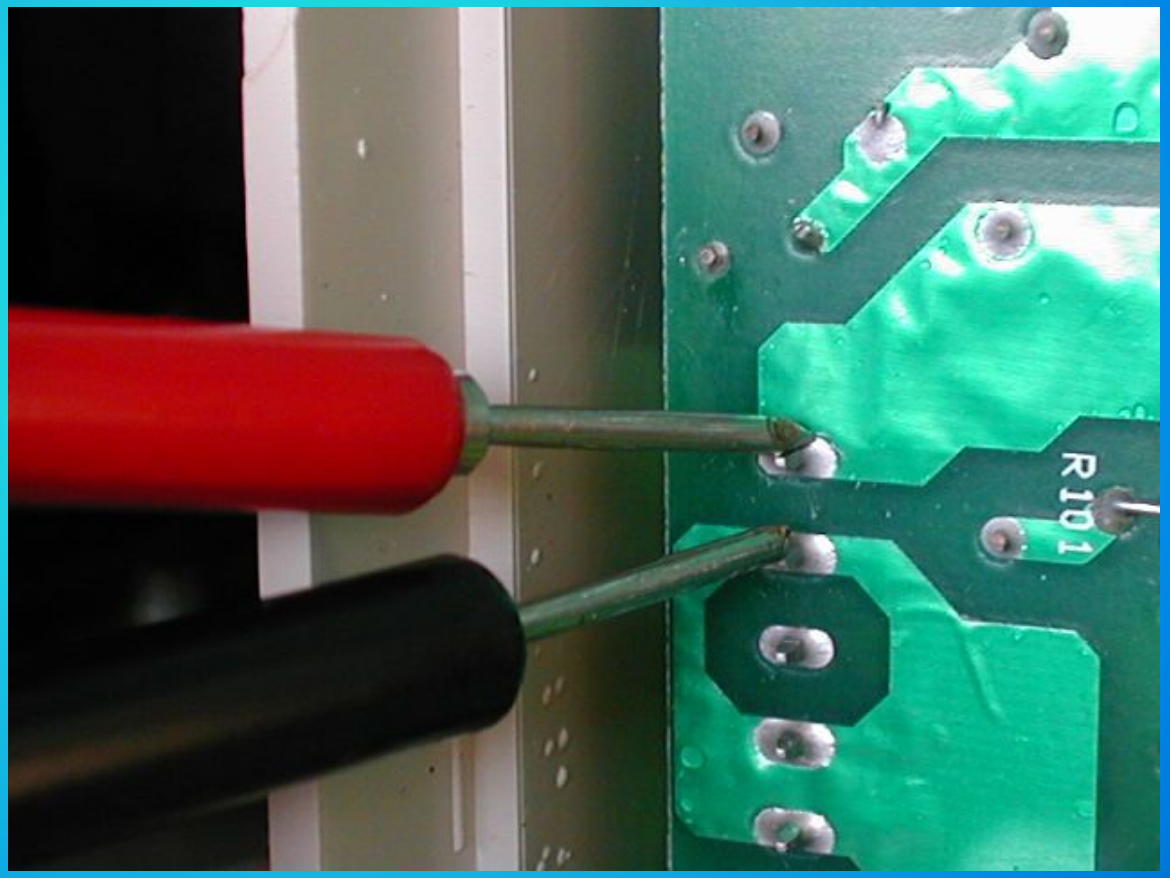
If no ice is produced check for:

- Refrigerant charge
- Operation of Compressor

MF SERIES
SERVICE ANALYSIS

If no ice is produced check for:

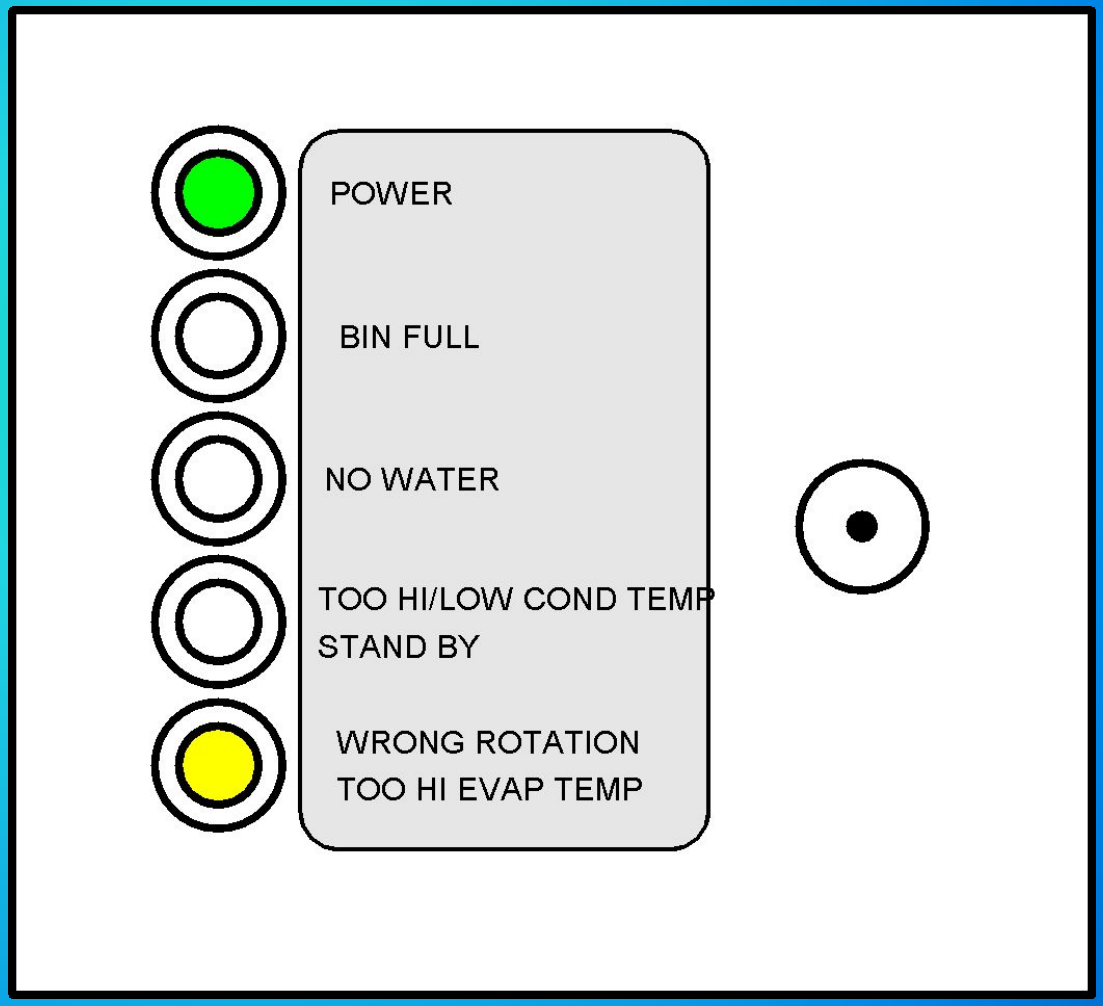
- Refrigerant charge
- Operation of Compressor
- Power out on the contacts 7 and 8 of the PC Board



MF SERIES
SERVICE ANALYSIS

No rotation of drive motor

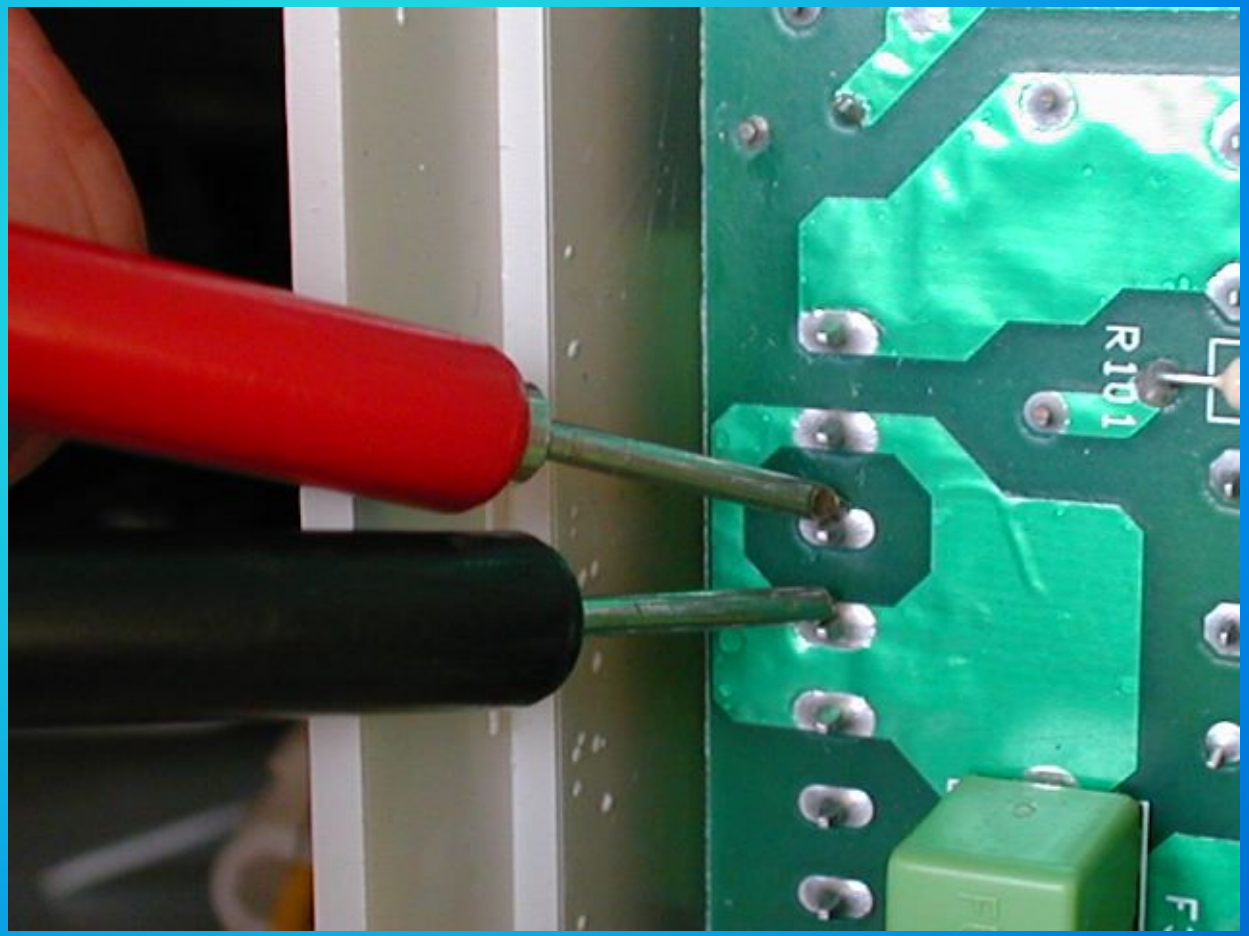
Green and Yellow LED ON.



MF SERIES
SERVICE ANALYSIS

If the drive motor doesn't turn check for:

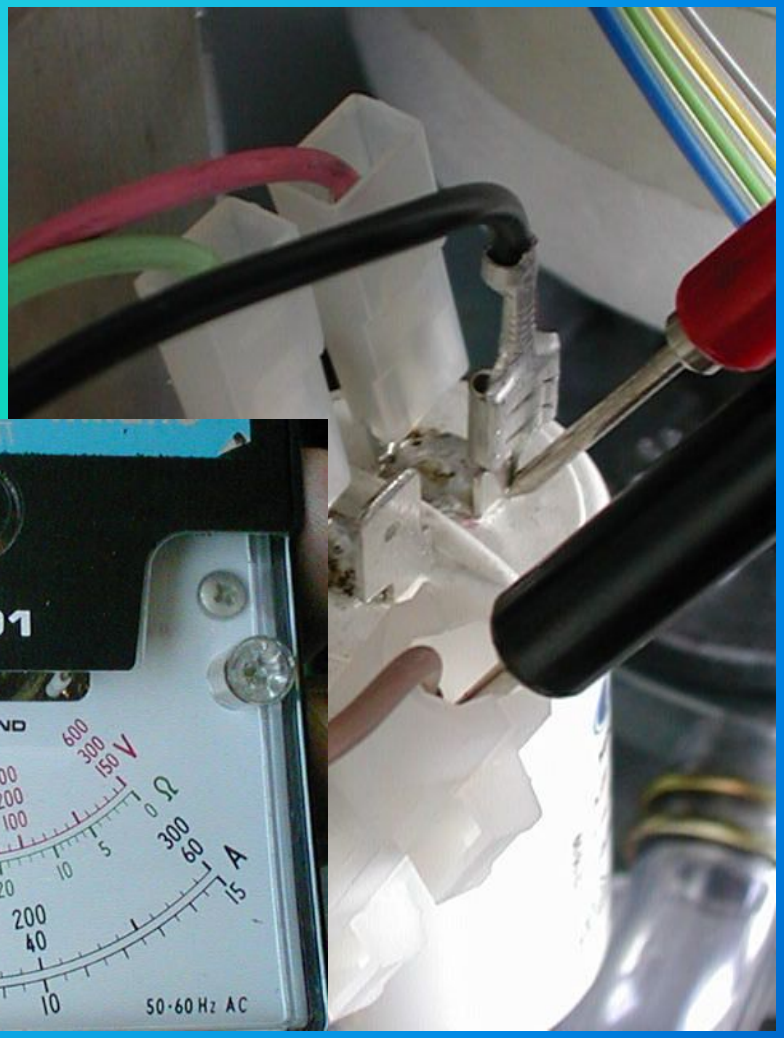
- Power out on the contacts 5 and 6 of the PC Board



MF SERIES
SERVICE ANALYSIS

If the drive motor doesn't turn check for:

- Power out on the contacts 5 and 6 of the PC Board
- Drive motor with open winding



MF SERIES
SERVICE ANALYSIS

If the drive motor doesn't turn check for:

- Power out on the contacts 5 and 6 of the PC Board
- Drive motor with open winding
- Drive motor capacitor worn-out

MF SERIES
SERVICE ANALYSIS

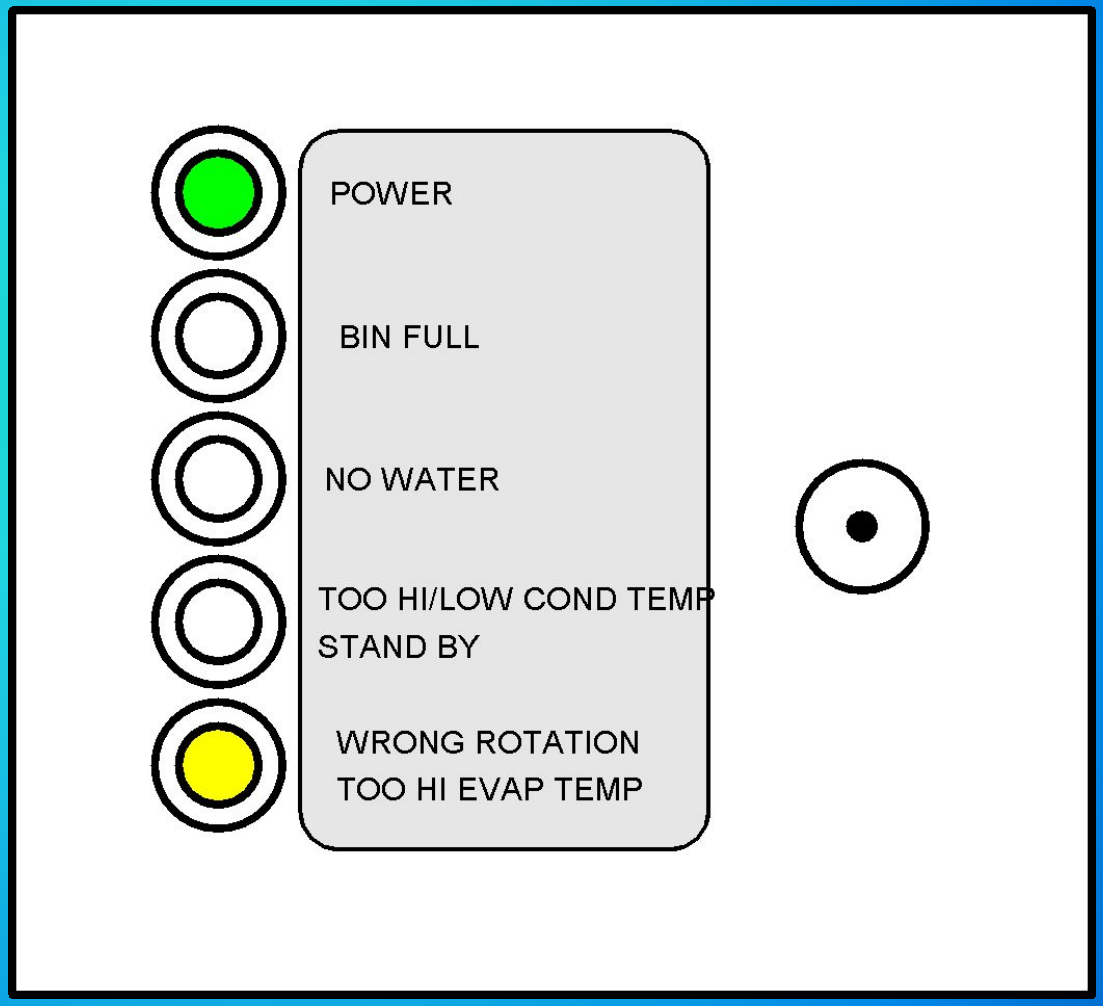
If the drive motor doesn't turn check for:

- Power out on the contacts 5 and 6 of the PC Board
- Drive motor with open winding
- Drive motor capacitor worn-out
- Looked rotor

MF SERIES
SERVICE ANALYSIS

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

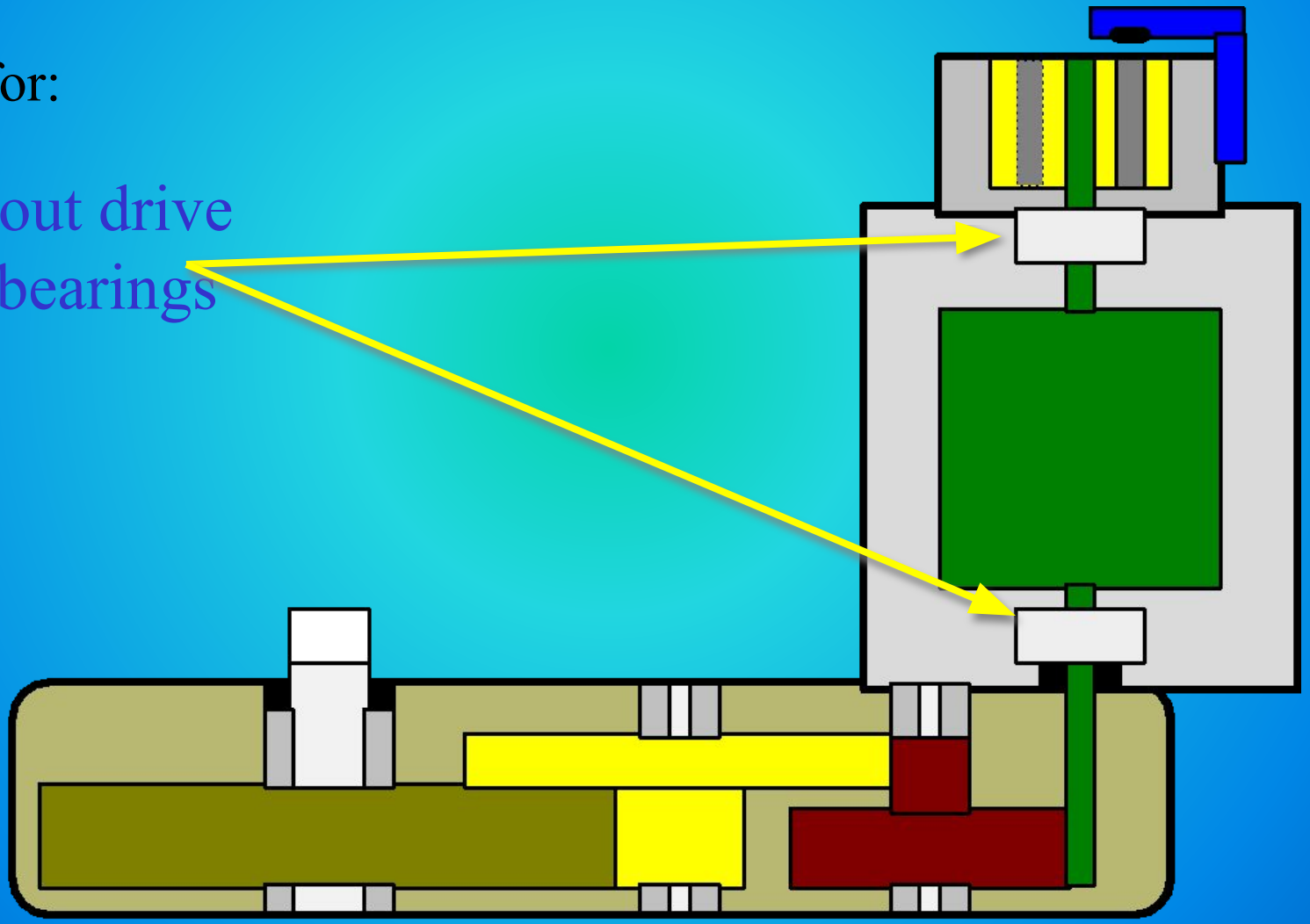
Green and Yellow LED ON.



MF SERIES
SERVICE ANALYSIS

Check for:

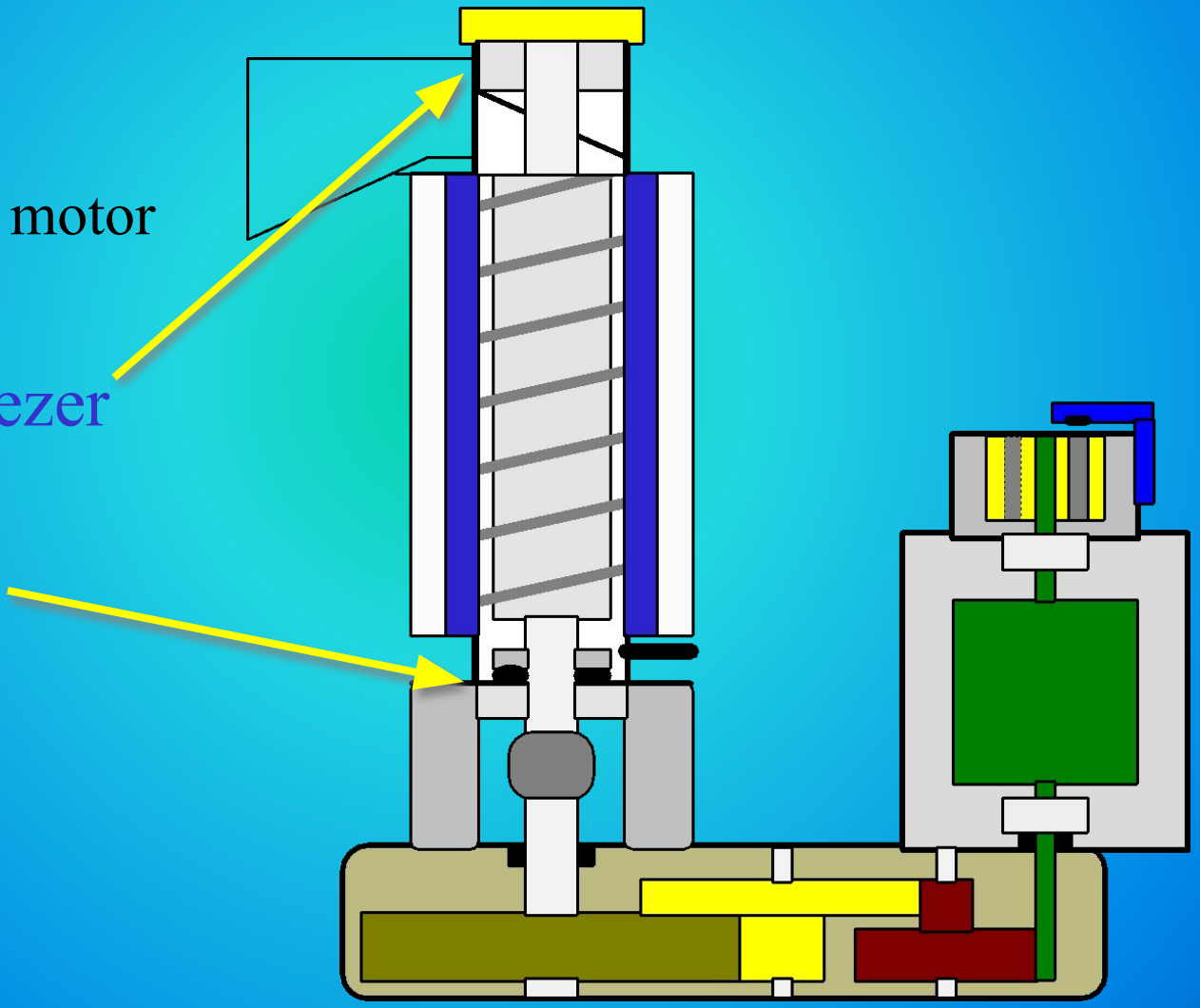
- Worn out drive motor bearings



MF SERIES
SERVICE ANALYSIS

Check for:

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

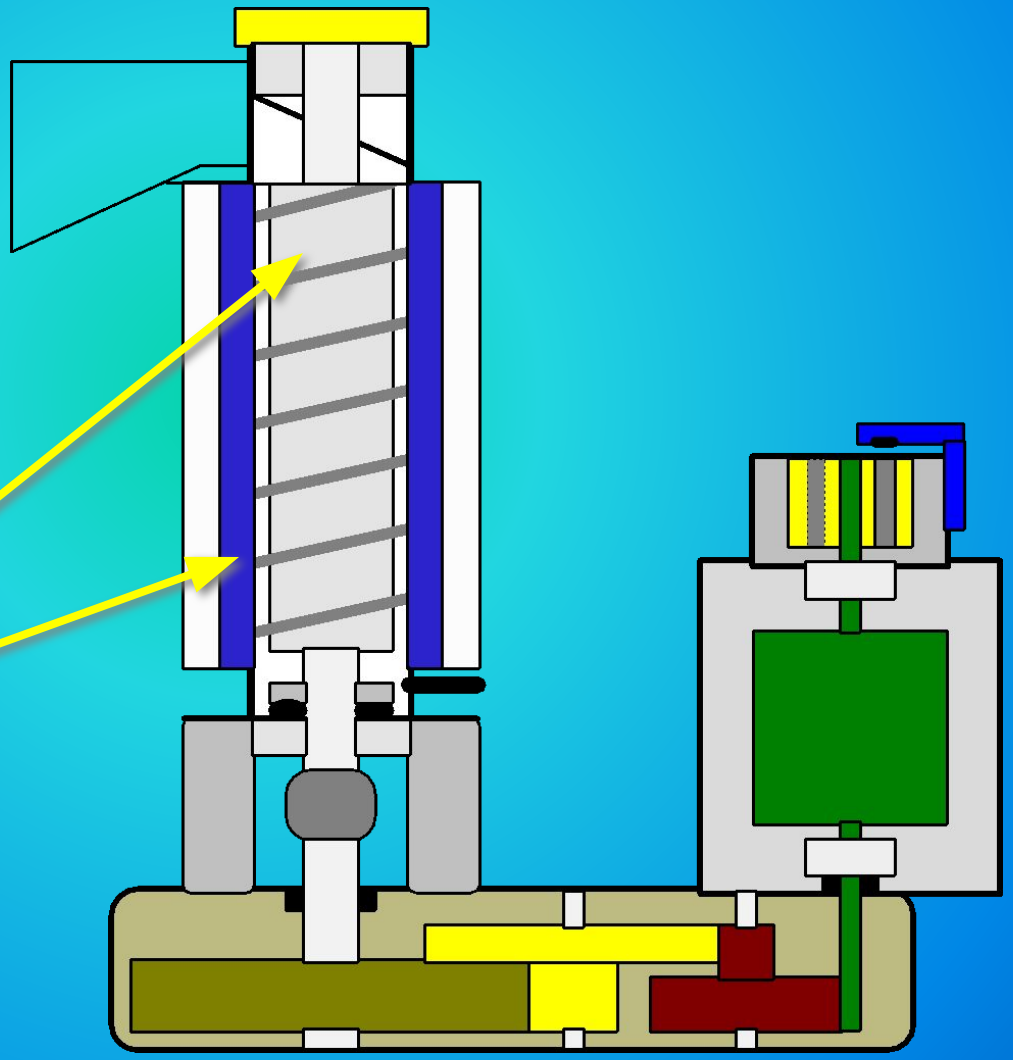


MF SERIES
SERVICE ANALYSIS

MF SERIES
SERVICE ANALYSIS

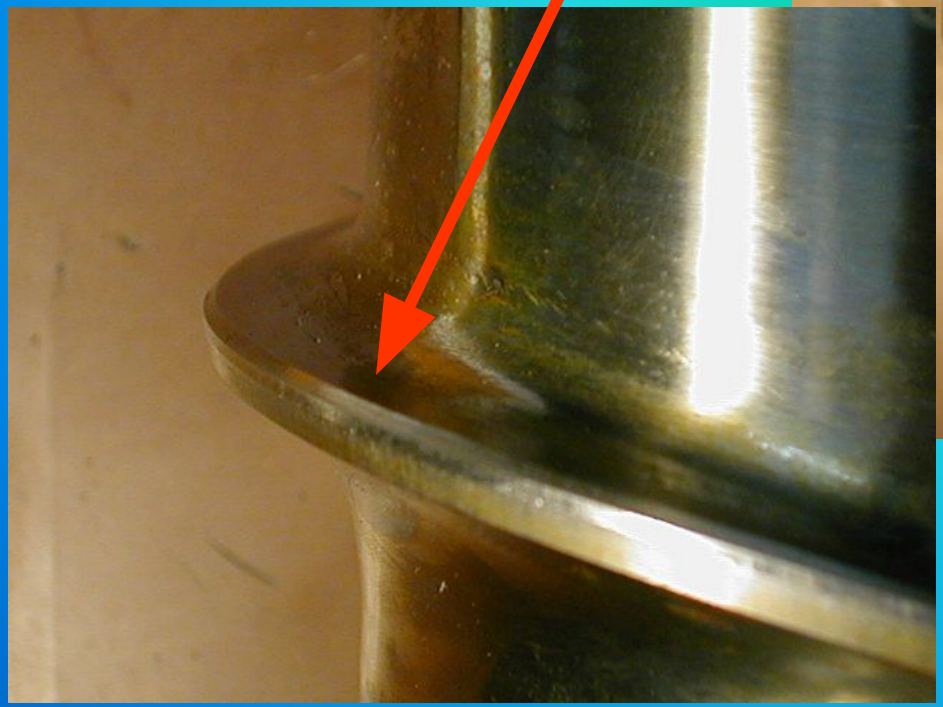
Check for:

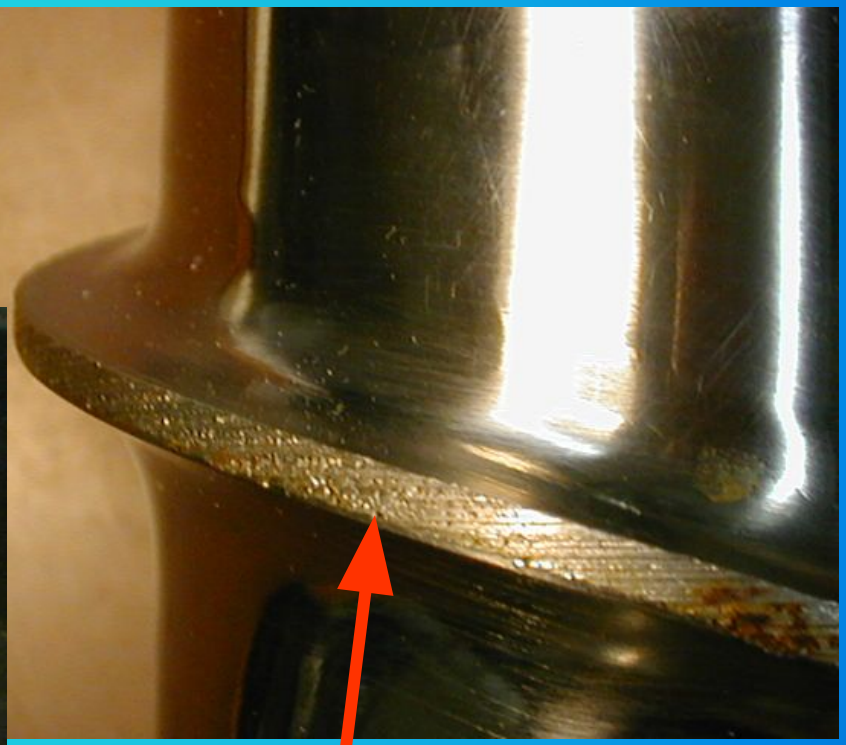
- Worn out drive motor bearings
- Worn out freezer top or bottom bearings
- Worn out auger/freezer



MF SERIES
SERVICE ANALYSIS

OK!



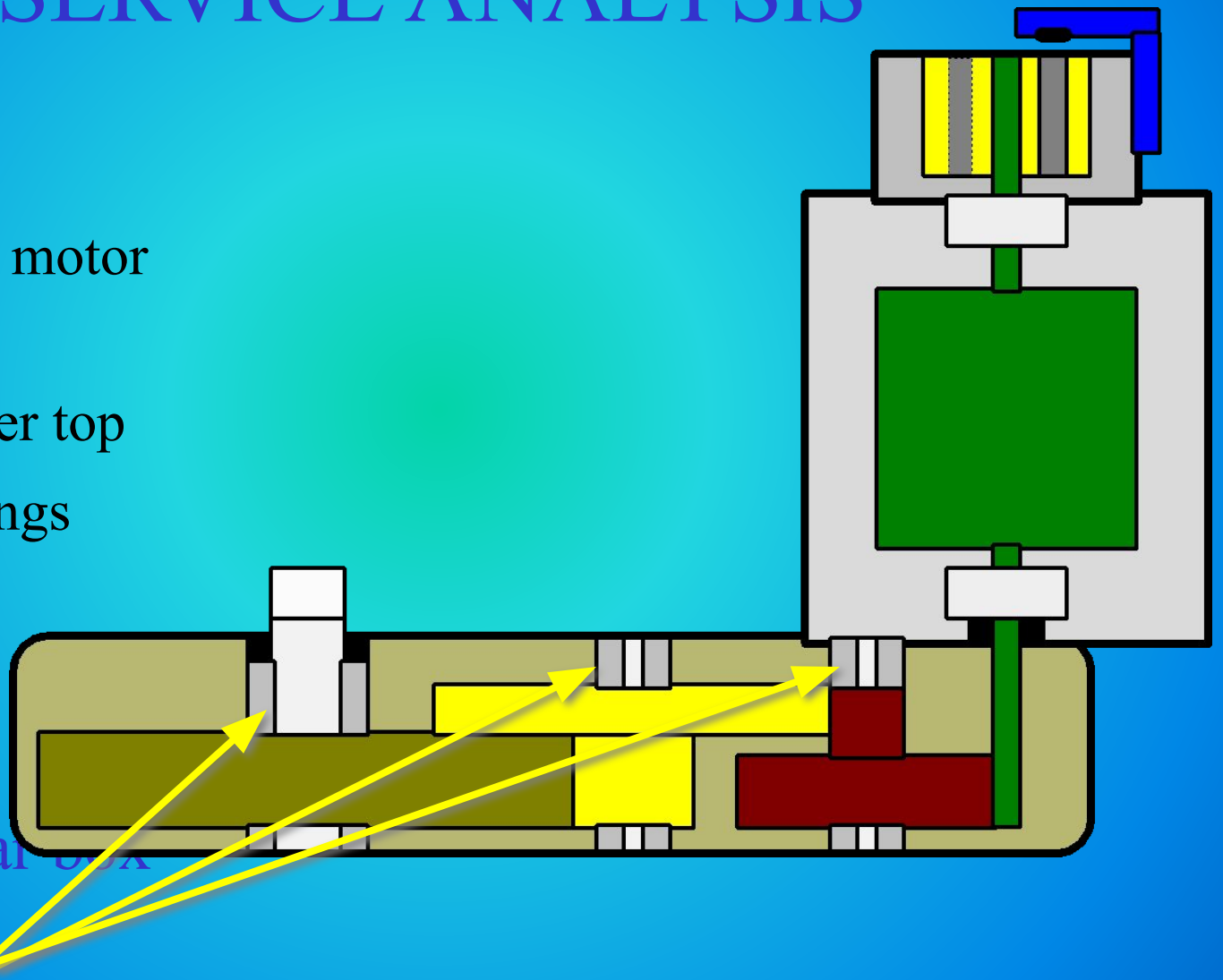


KO!

MF SERIES
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

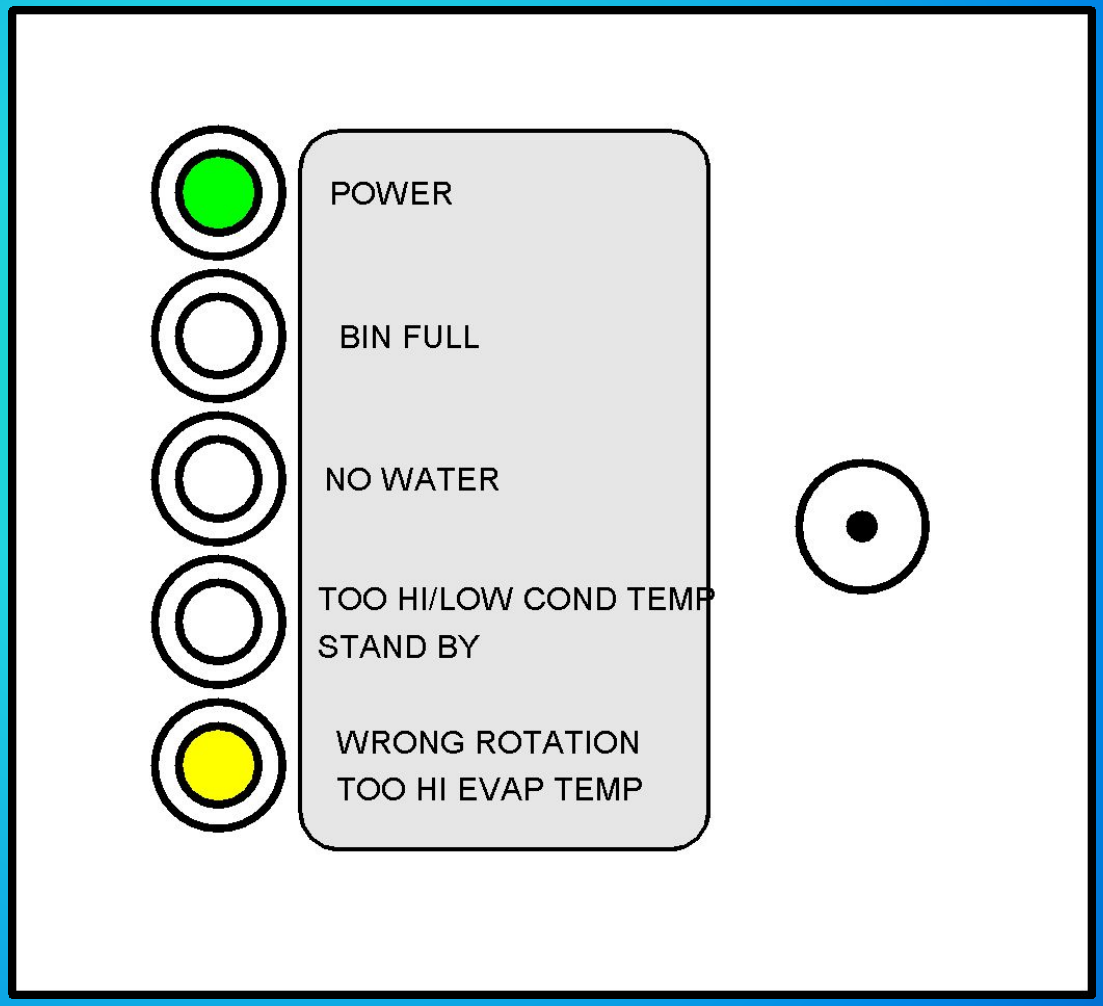


MF SERIES
SERVICE ANALYSIS

MF SERIES
SERVICE ANALYSIS

Wrong rotation of drive motor (opposite direction)

Green and Yellow LED ON.



MF SERIES
SERVICE ANALYSIS

Check for:

- Correct wires connection to the drive motor capacitor

MF SERIES
SERVICE ANALYSIS

Check for:

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

MF SERIES
SERVICE ANALYSIS

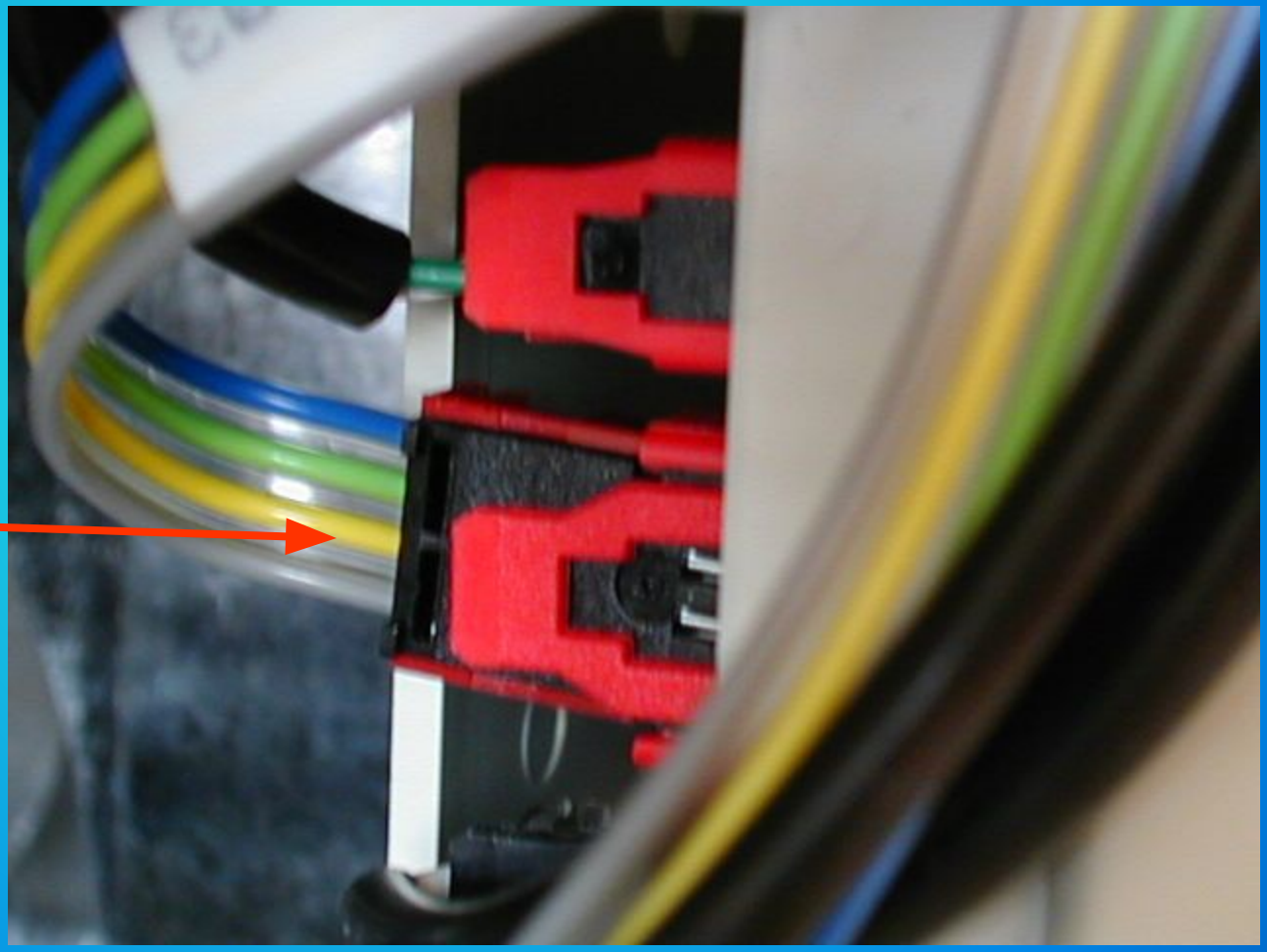
Check for:

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

MF SERIES
SERVICE ANALYSIS

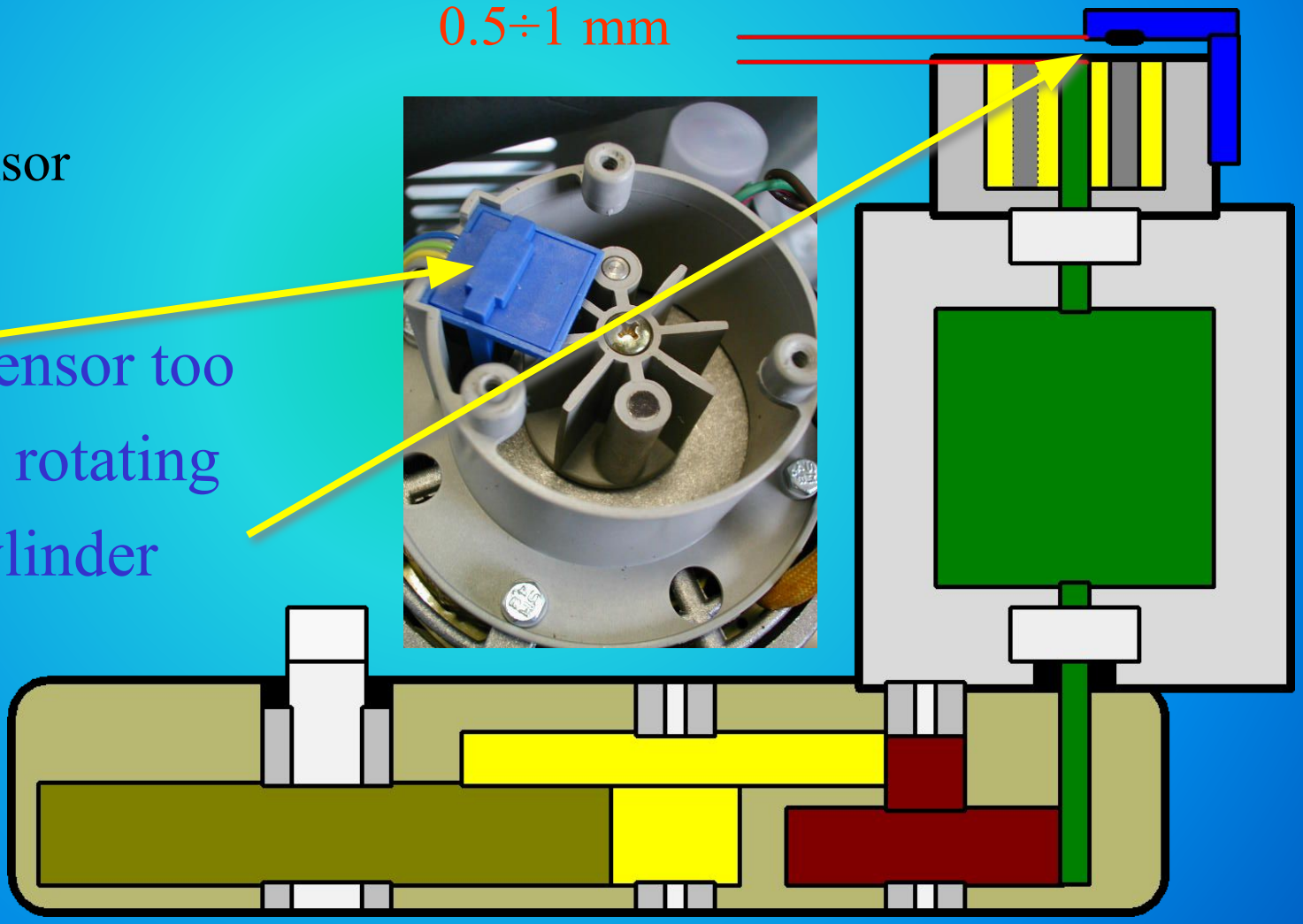
Additional reasons for the **tripping OFF at Rotation Error** are:

- Magnetic sensor unplugged



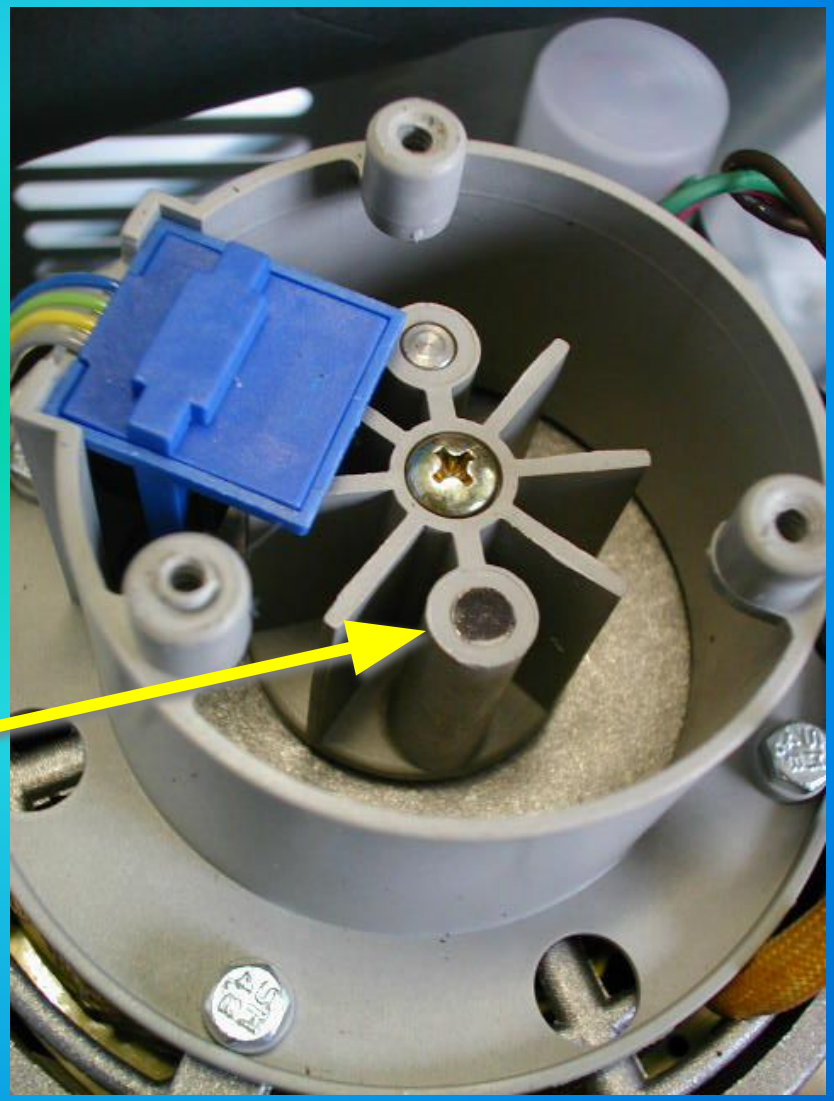
MF SERIES
SERVICE ANALYSIS

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



MF SERIES
SERVICE ANALYSIS

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



MF SERIES
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**

MF SERIES
SERVICE ANALYSIS

Manual reset mode

The New Flaker PC Board Trip OFF definitively the machine on ALARM after three tripping OFF for the same reason in 4 hours.

In this way the New PC Board should avoid any Tripping OFF due to possible magnetic fields and/or micro black OUT of power supply that can affect the correct operation of the Flaker machine.

MF SERIES

REPLACEMENT OF THE AUGER, WATER SEAL AND BEARINGS

MF 22-30 SERIES

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

Remove first the

front/top panel

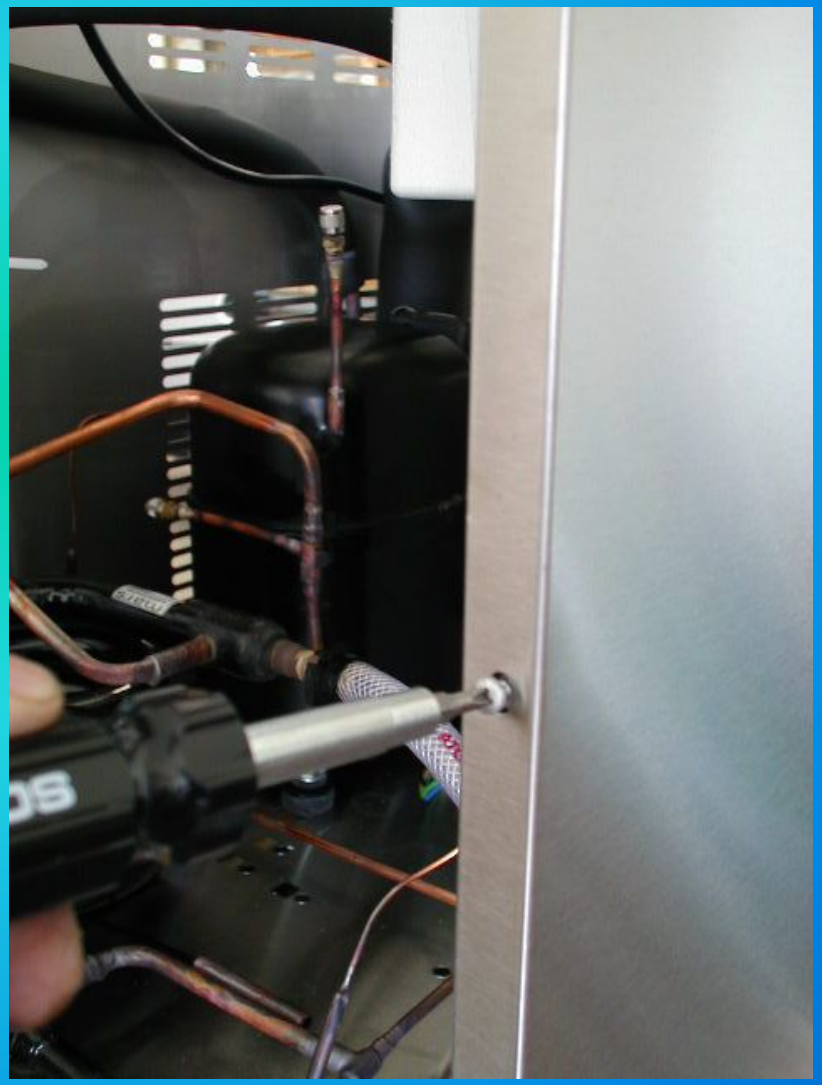
and then ……

MF 22-30 SERIES

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

……the sides/rear

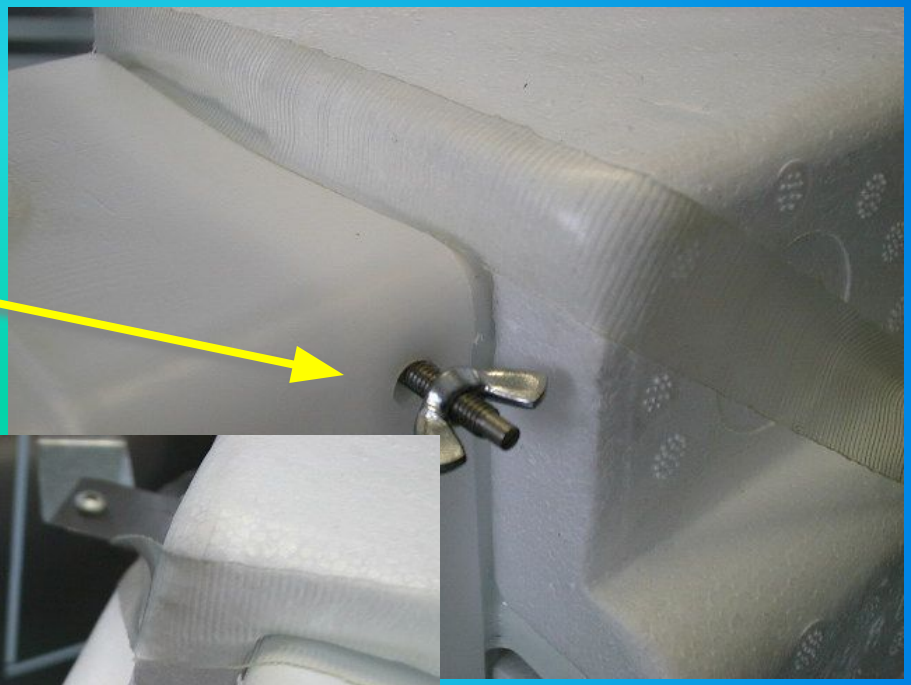
panel.



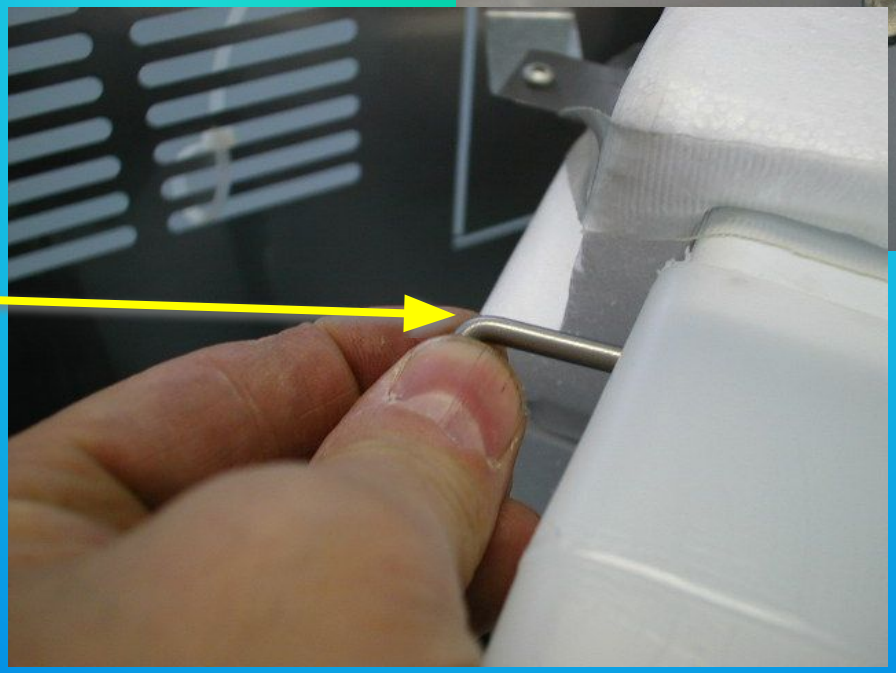
MF 22-30 SERIES

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

Unloose the wing nut then……



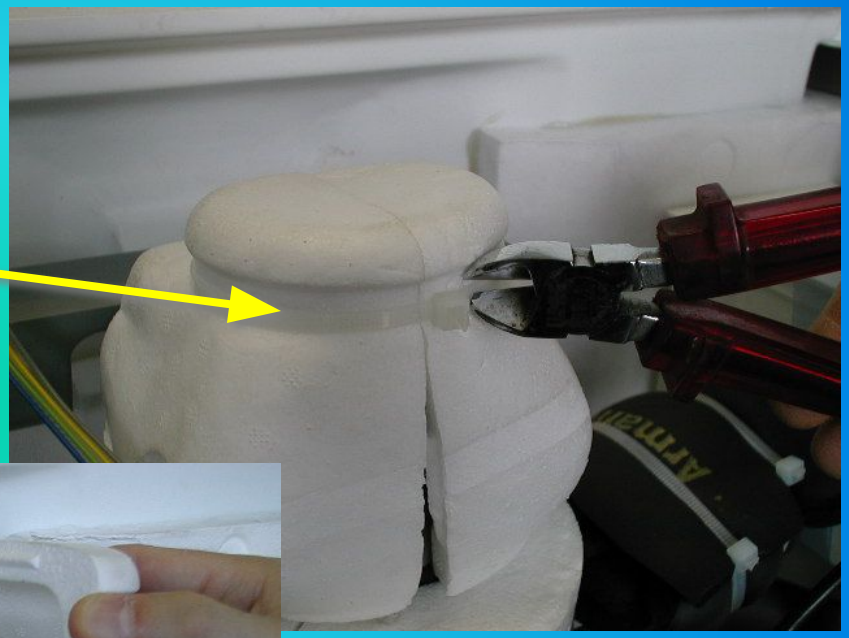
…..remove the metal rod securing the plastic ice chute to the ice spout.



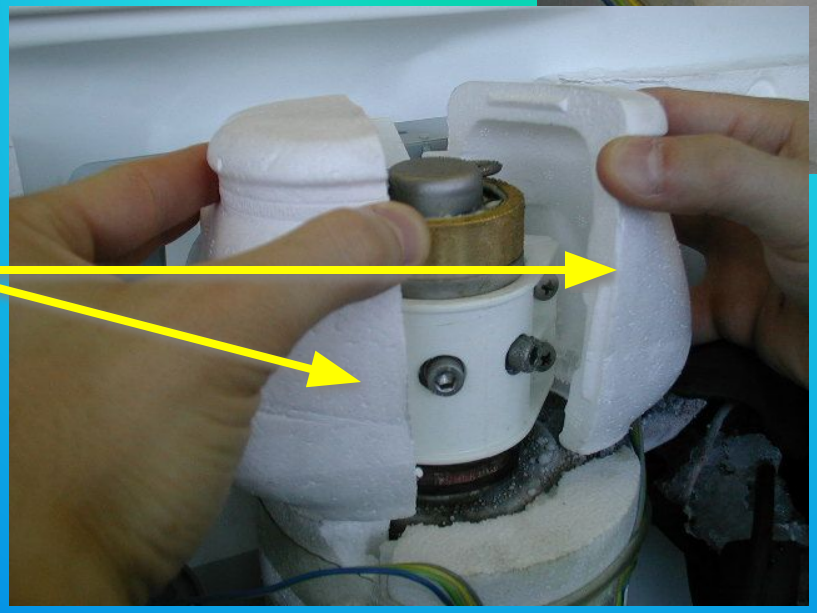
MF 22-30 SERIES

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

Cut the plastic strap and remove the….



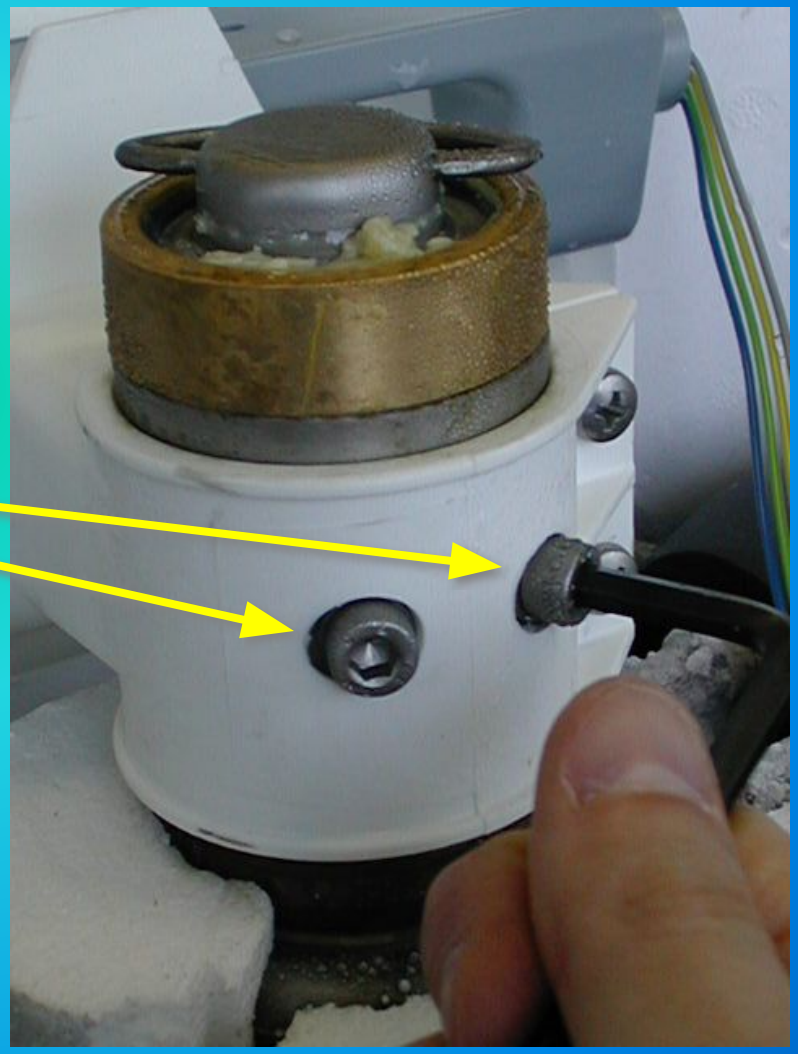
…..two polystyrene insulation from the spout.



MF 22-30 SERIES

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

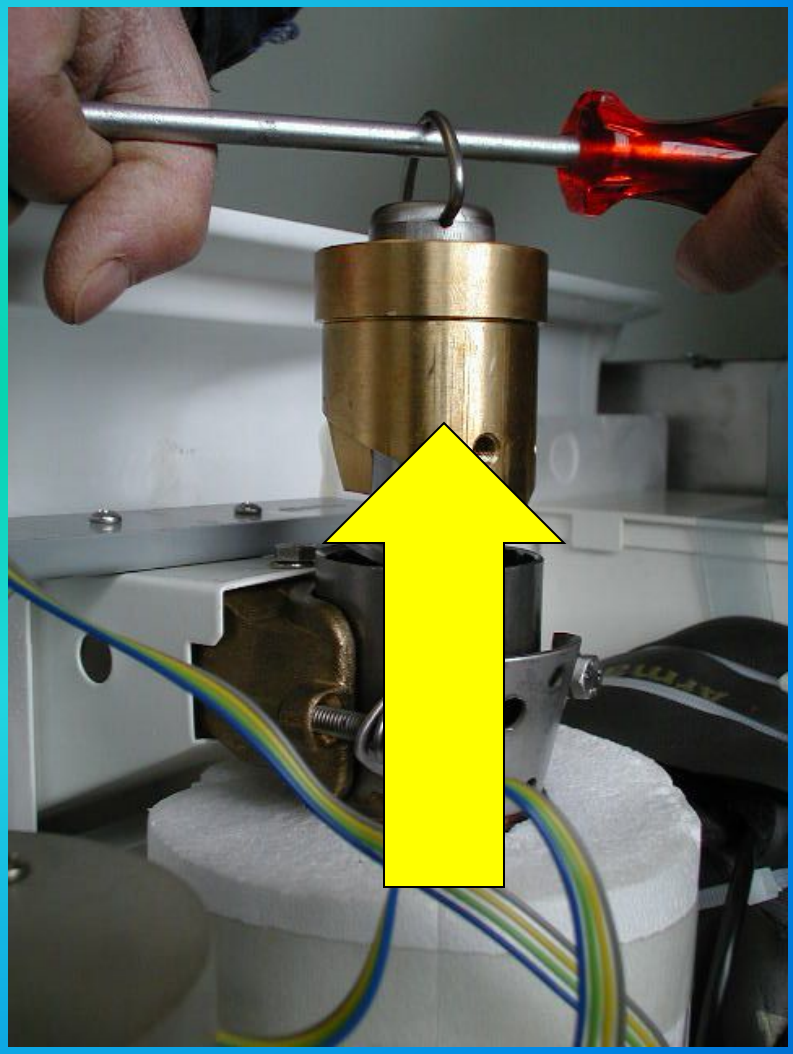
Unscrew and remove the two screws securing the brass ice breaker to the evaporator.



MF 22-30 SERIES

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

Grasp with a screw driver the wire cap hook located at the top of the freezer and pull out the auger and attached ice breaker assembly.



MF 22-30 SERIES

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

Parts pulled out from the

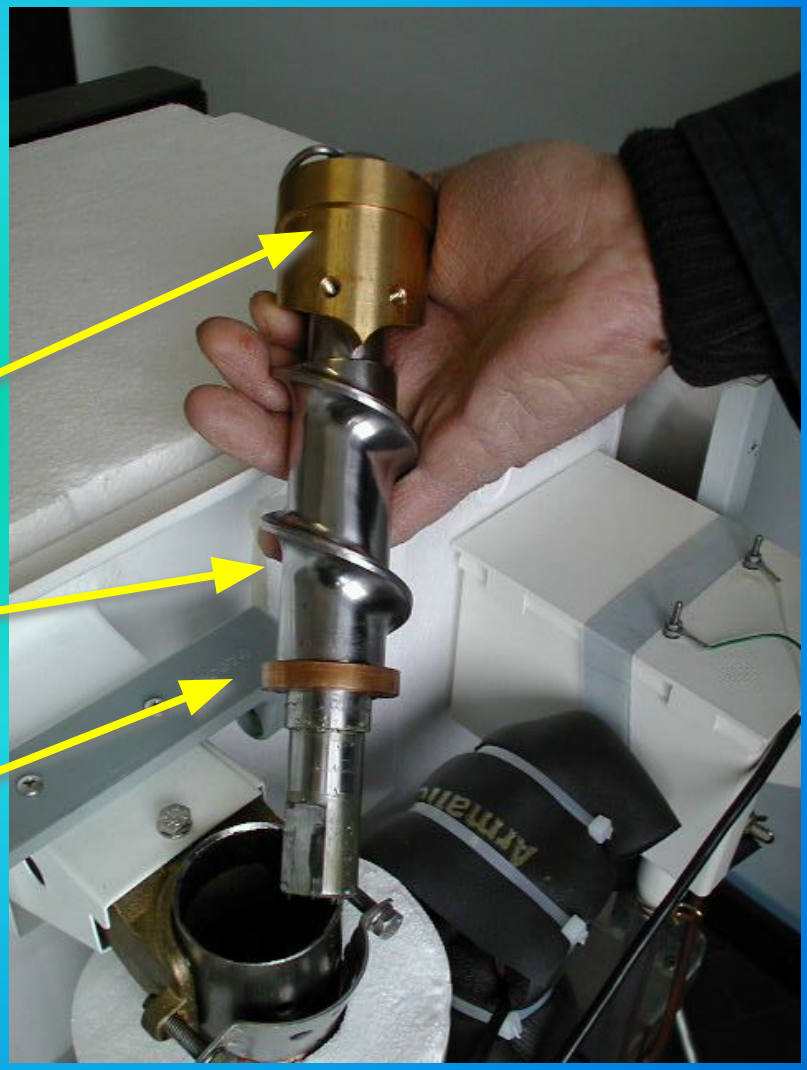
top of the

evaporator/worm tube are:

ice breaker assembly

auger

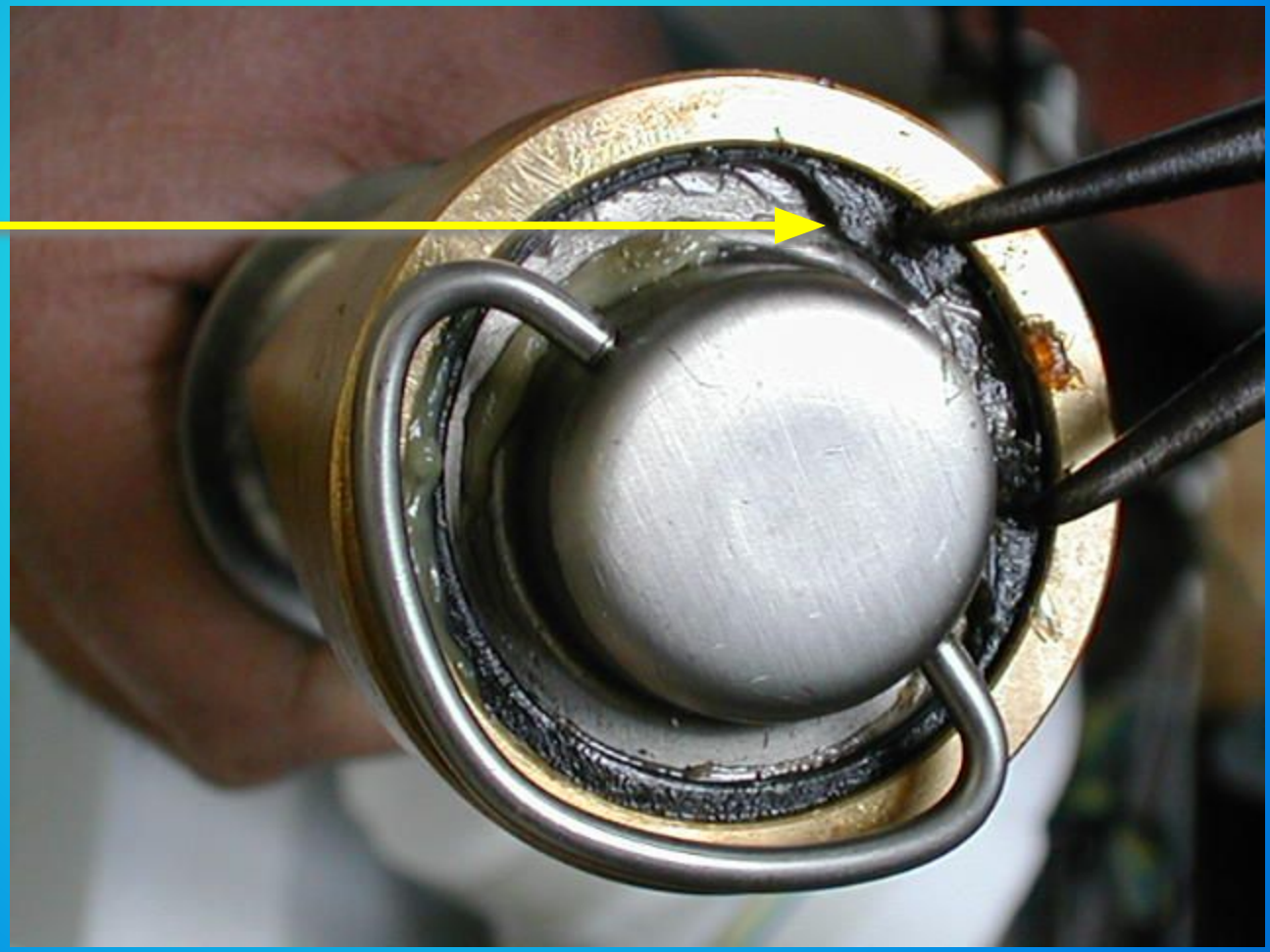
top half of the water seal



MF 22-30 SERIES

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

With a clip ring pliers remove the retaining ring and the cap from the ice breaker.



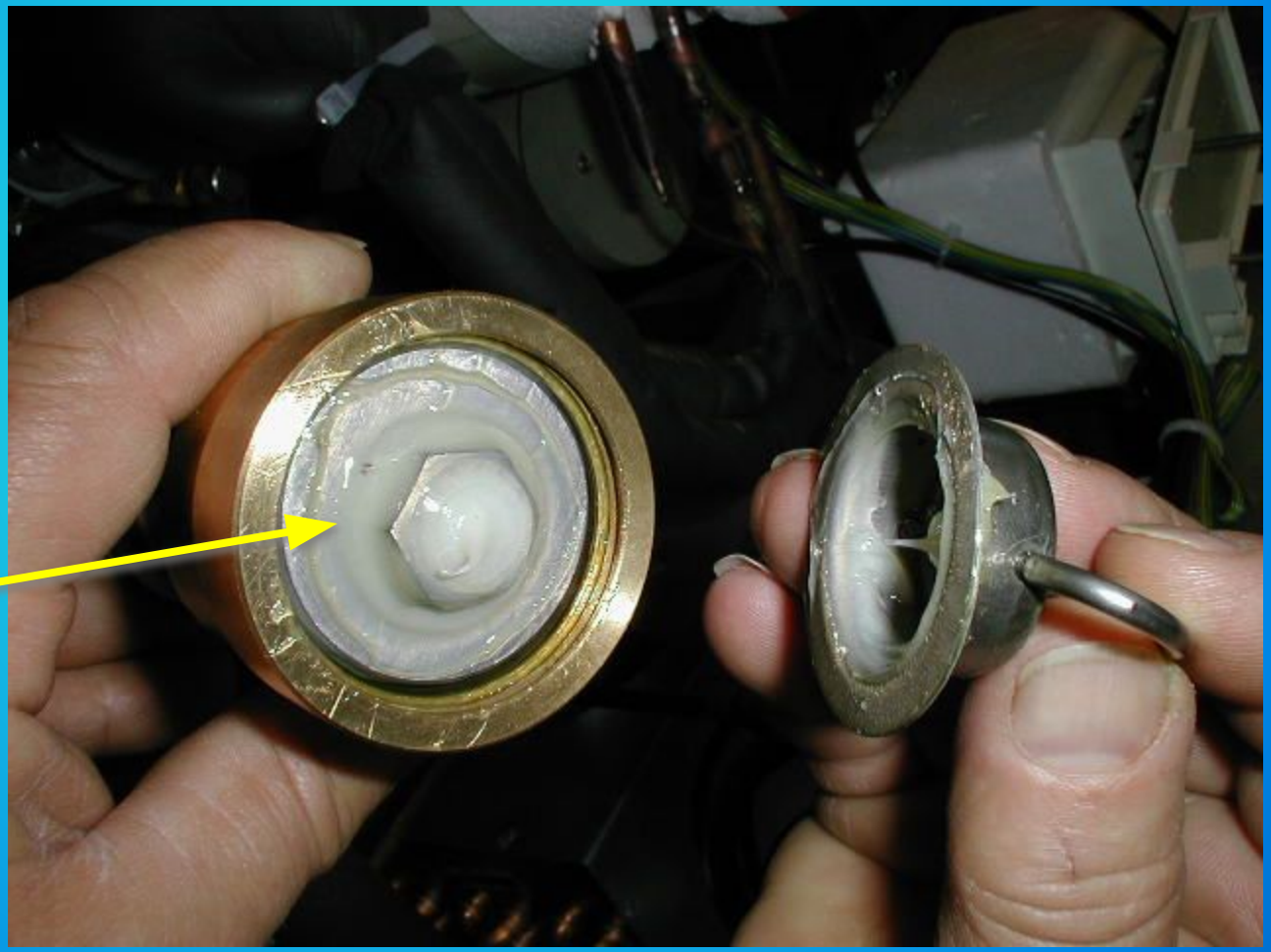
MF 22-30 SERIES

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

Unloose and

remove the

screw and…..



MF 22-30 SERIES

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

…….remove the ice breaker assembly from the auger.

MF 22-30 SERIES

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

…...

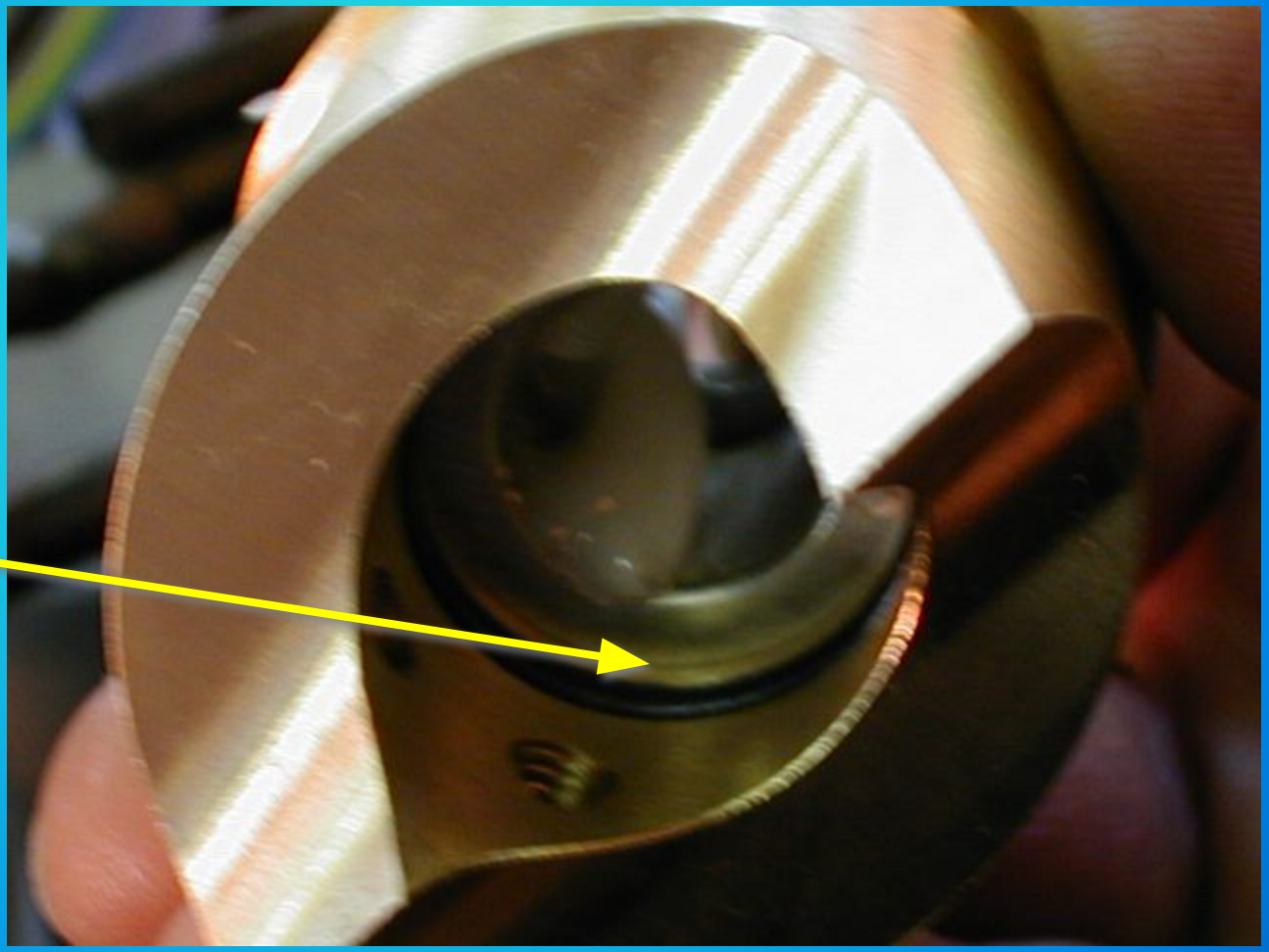
MF 22-30 SERIES

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

…... as well as

the condition

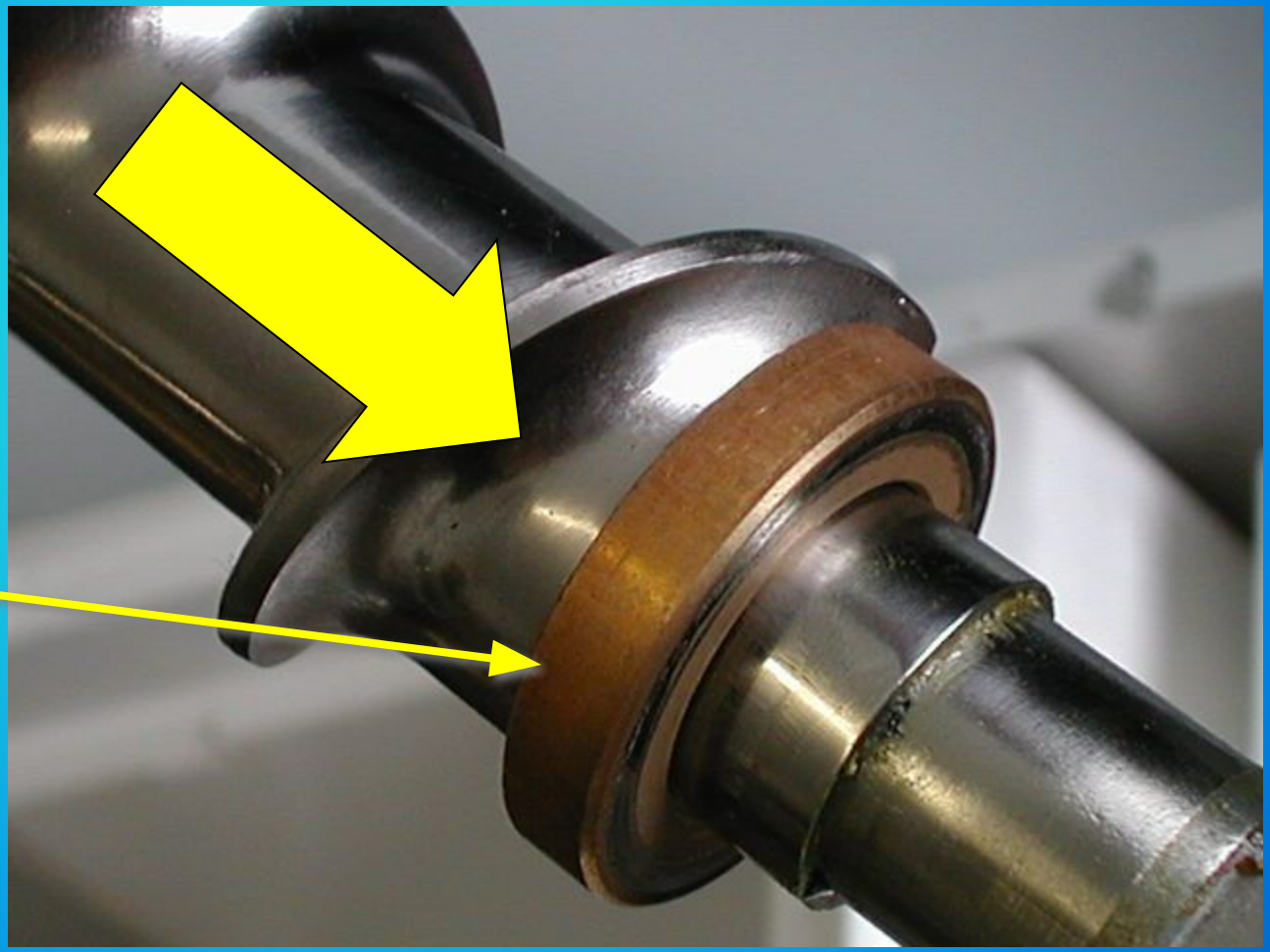
of the O ring.



MF 22-30 SERIES

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

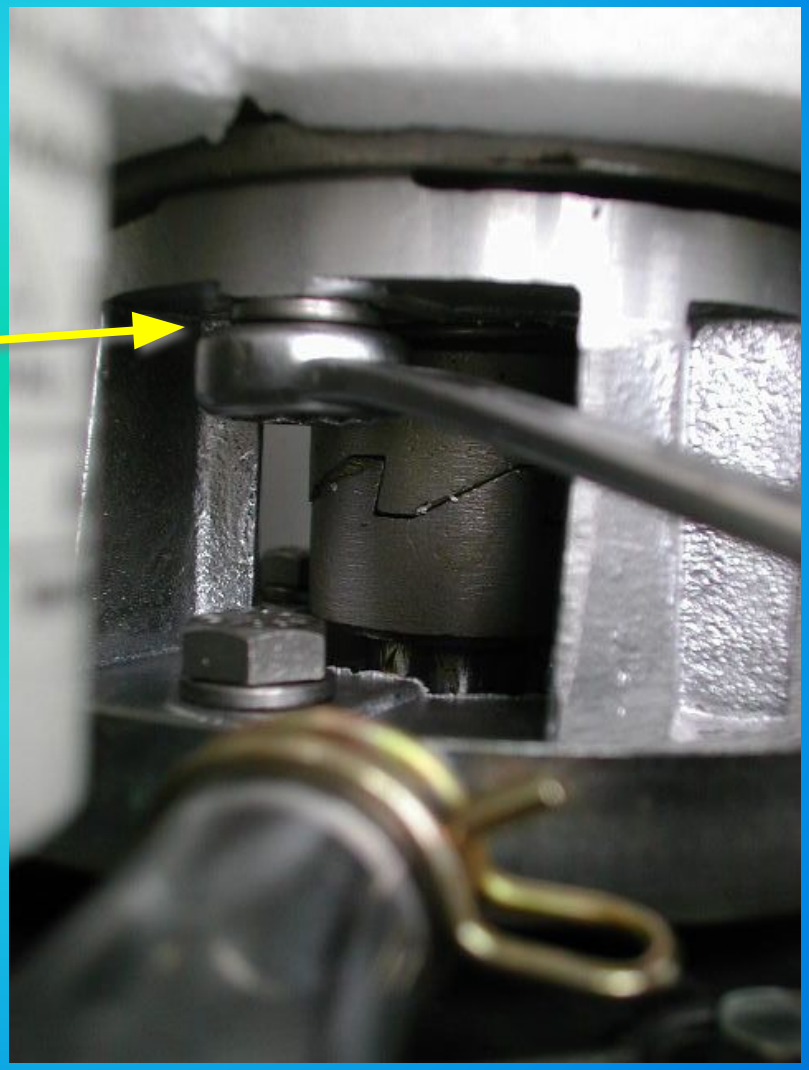
Slide off from the bottom of the auger the upper half of the water seal.



MF 22-30 SERIES

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

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

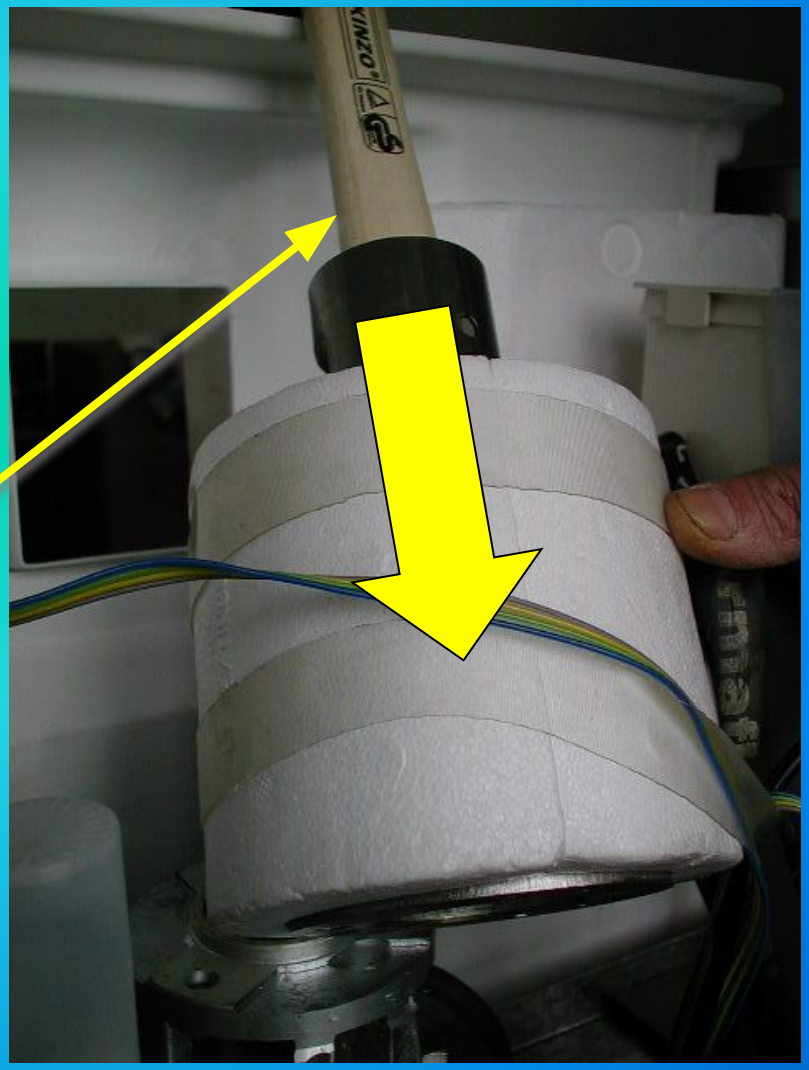


MF 22-30 SERIES

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…...

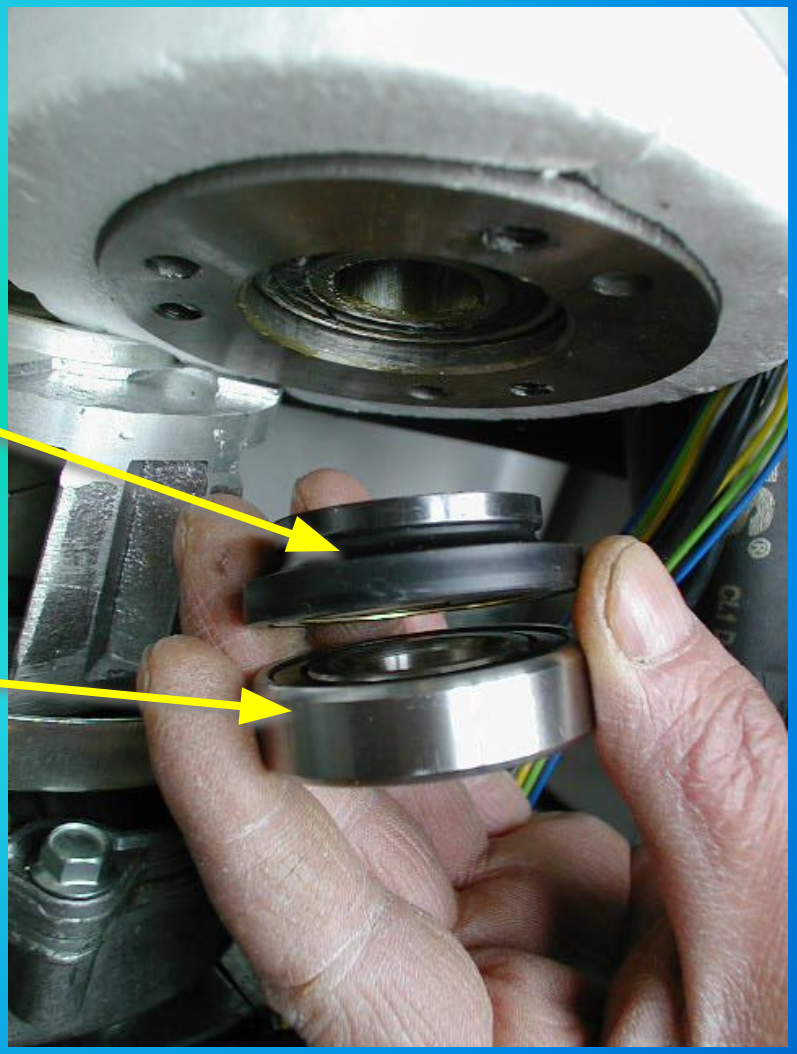


MF 22-30 SERIES

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.



MF 22-30 SERIES

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**.

MF 41-51-61 SERIES

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

Remove first the

front/top panel

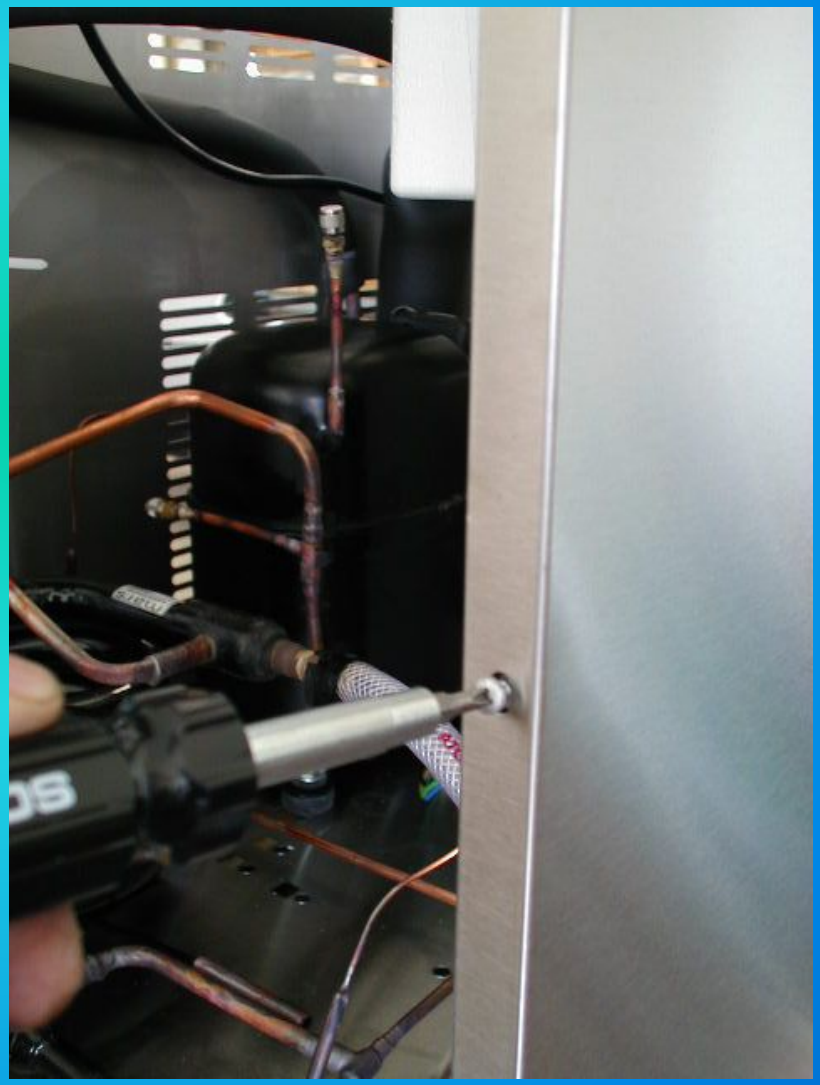
and then ……

MF 41-51-61 SERIES

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

……the sides/rear

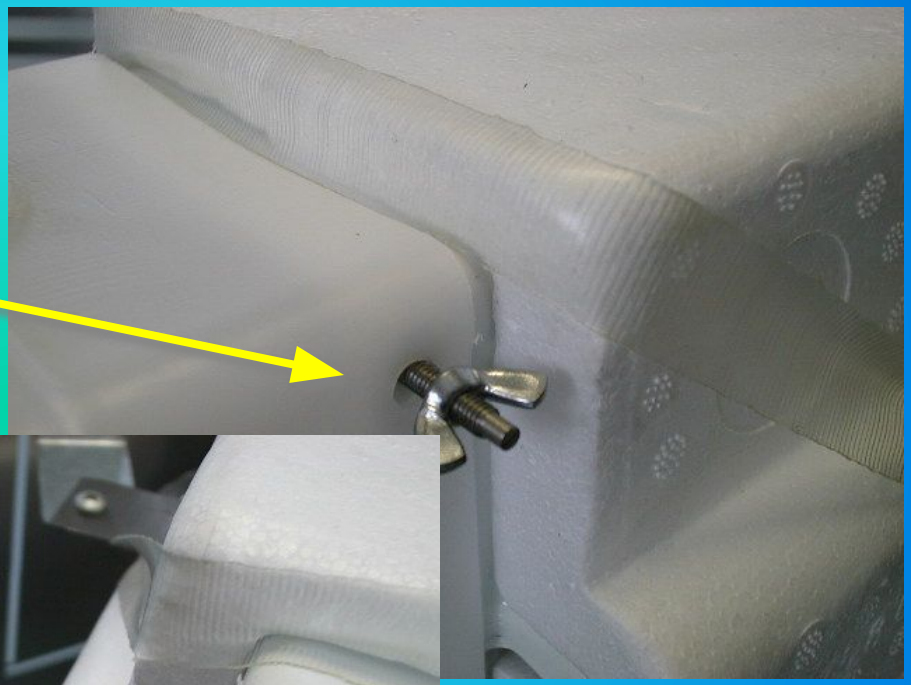
panel.



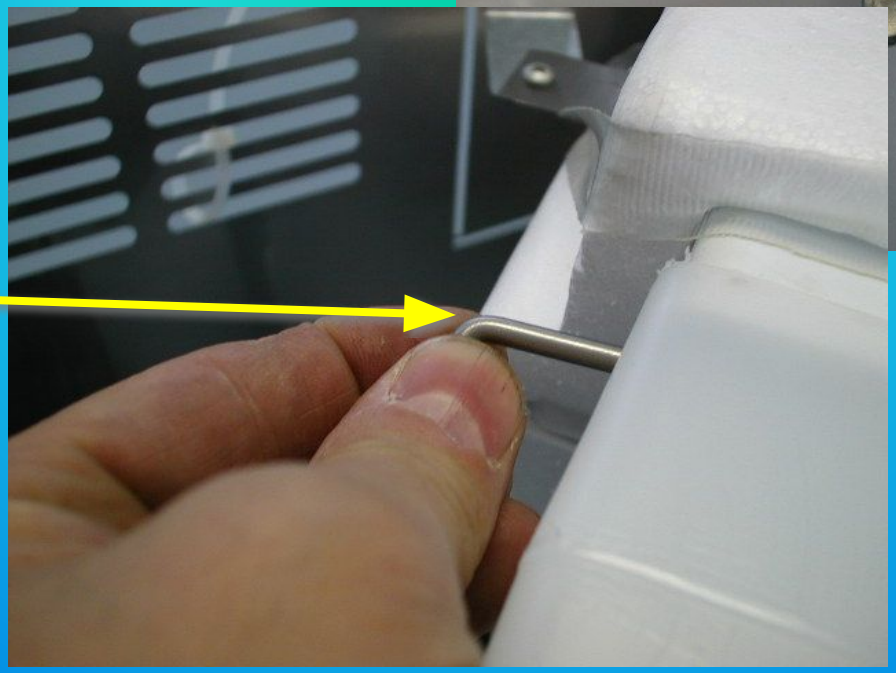
MF 41-51-61 SERIES

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

Unloose the wing nut then……



…..remove the metal rod securing the plastic ice chute to the ice spout.



MF 41-51-61 SERIES

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

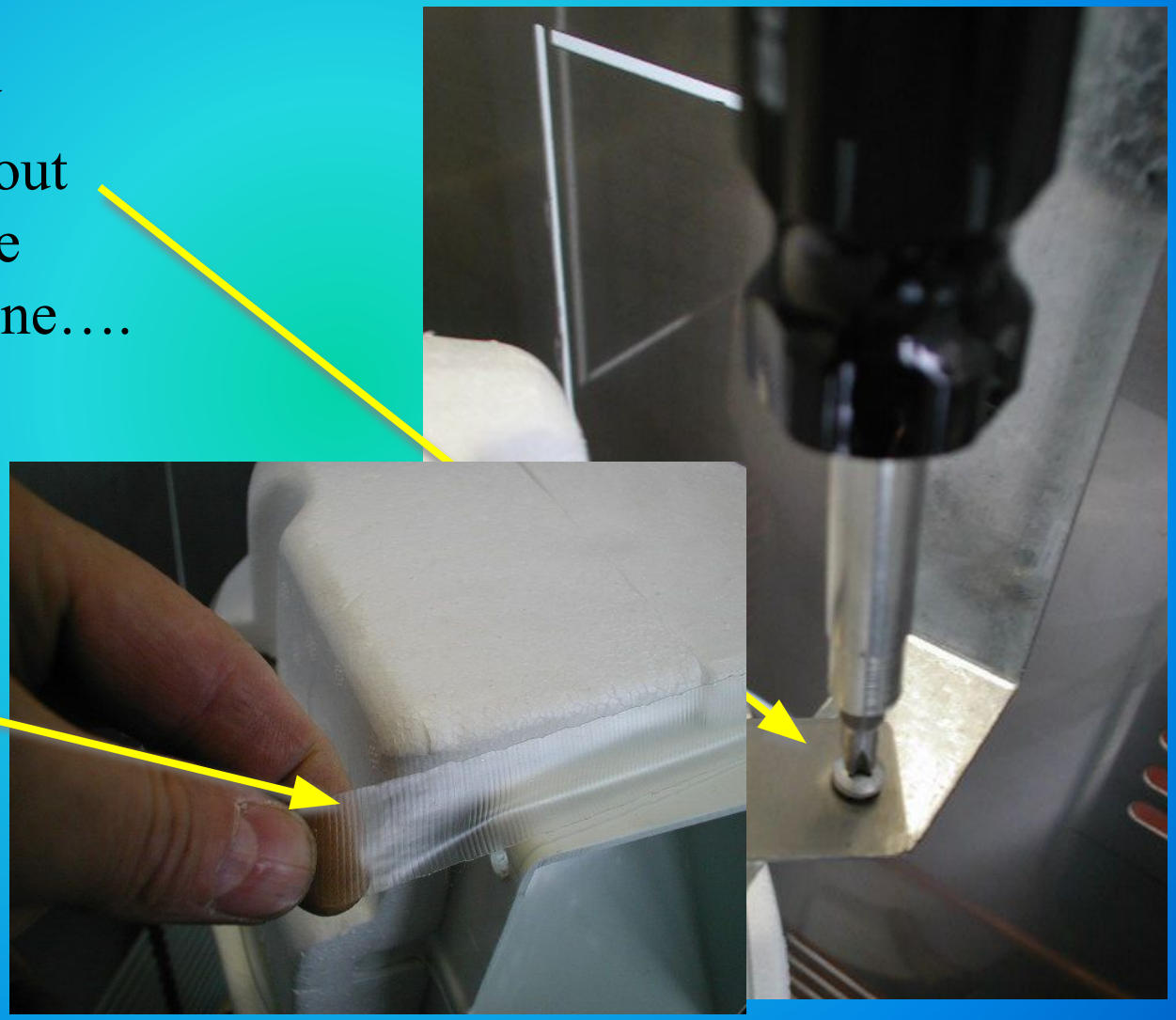
Remove the ice chute with the optical ice level control secured on it then….

MF 41-51-61 SERIES

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

Unscrew the screw securing the ice spout metal bracket to the frame of the machine….

…..then remove the strips from the insulated plastic ice spout.



MF 41-51-61 SERIES

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

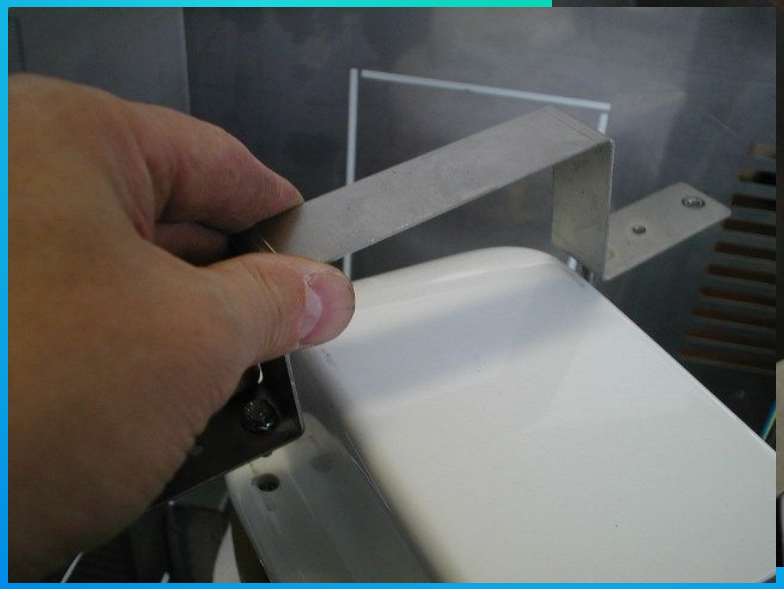
Remove from the plastic ice spout the two polystyre insulation covers then….

MF 41-51-61 SERIES

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

….unloose the two screws securing the ice spout metal bracket to the ice breaker....

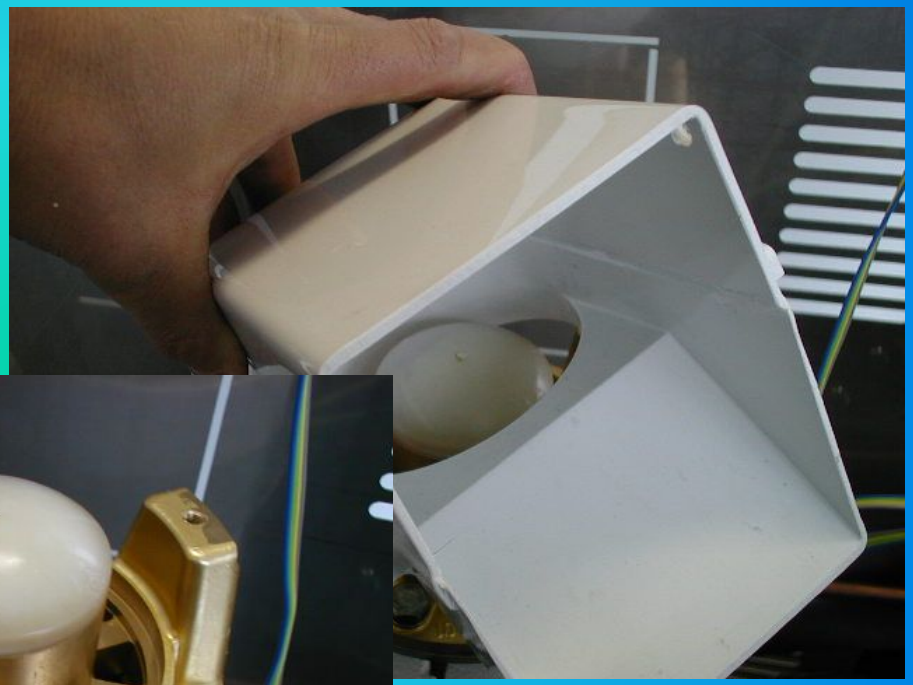
….and remove it.



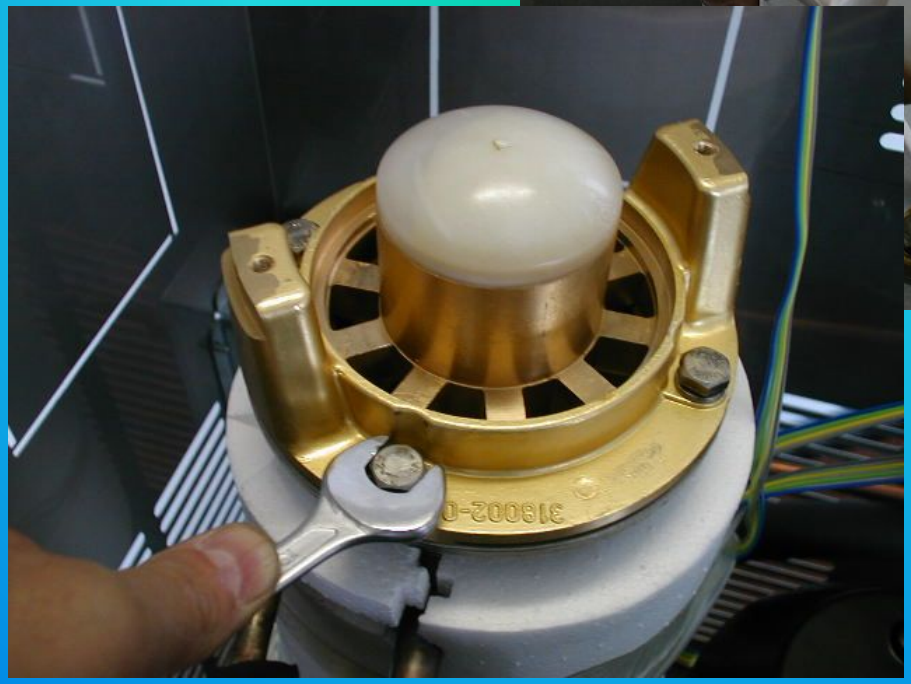
MF 41-51-61 SERIES

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

Remove the plastic ice spout….



….then unloose the four bolts holding the ice breaker to the upper flange of the freezer.



MF 41-51-61 SERIES

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

With a couple

of screwdrivers

rise up a little

bit the ice

breaker and

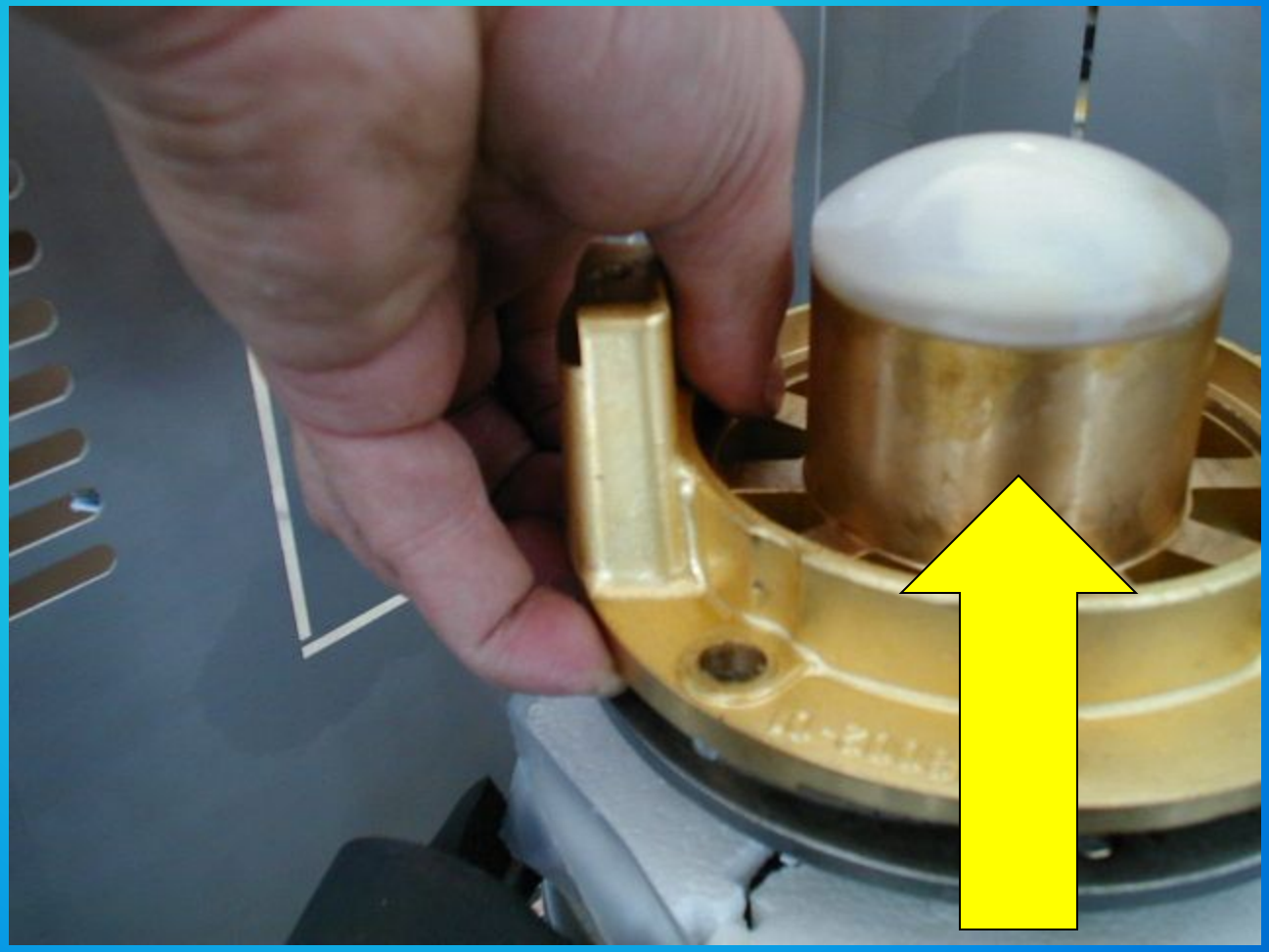
auger assembly

then ….

MF 41-51-61 SERIES

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

…. pull out the auger and ice breaker assembly.



MF 41-51-61 SERIES

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

Parts pulled out from the

top of the

evaporator/worm tube are:

ice breaker assembly

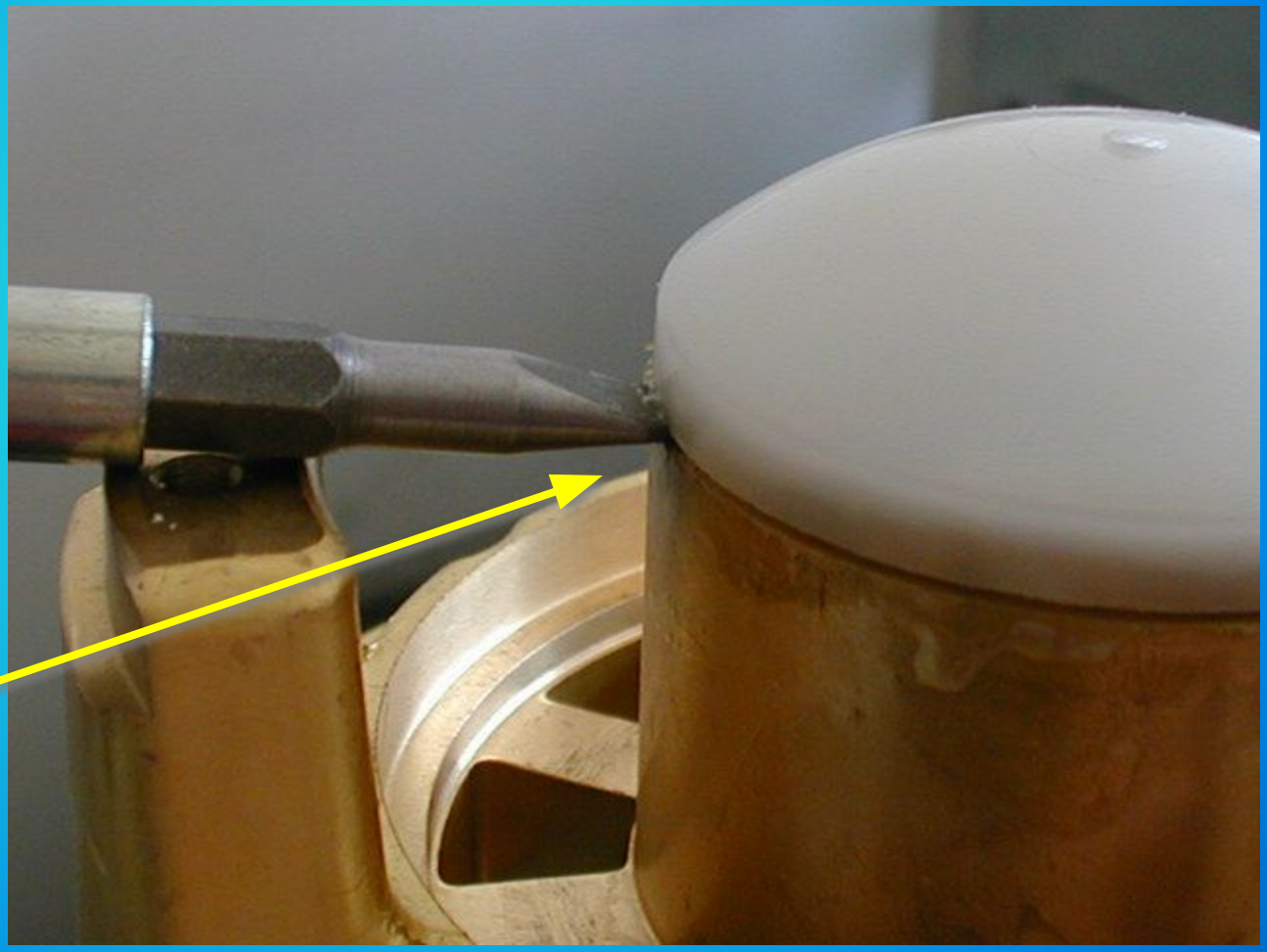
auger

top half of the water seal

MF 41-51-61 SERIES

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

With a screwdriver remove the plastic cap from the upper side of the ice breaker.



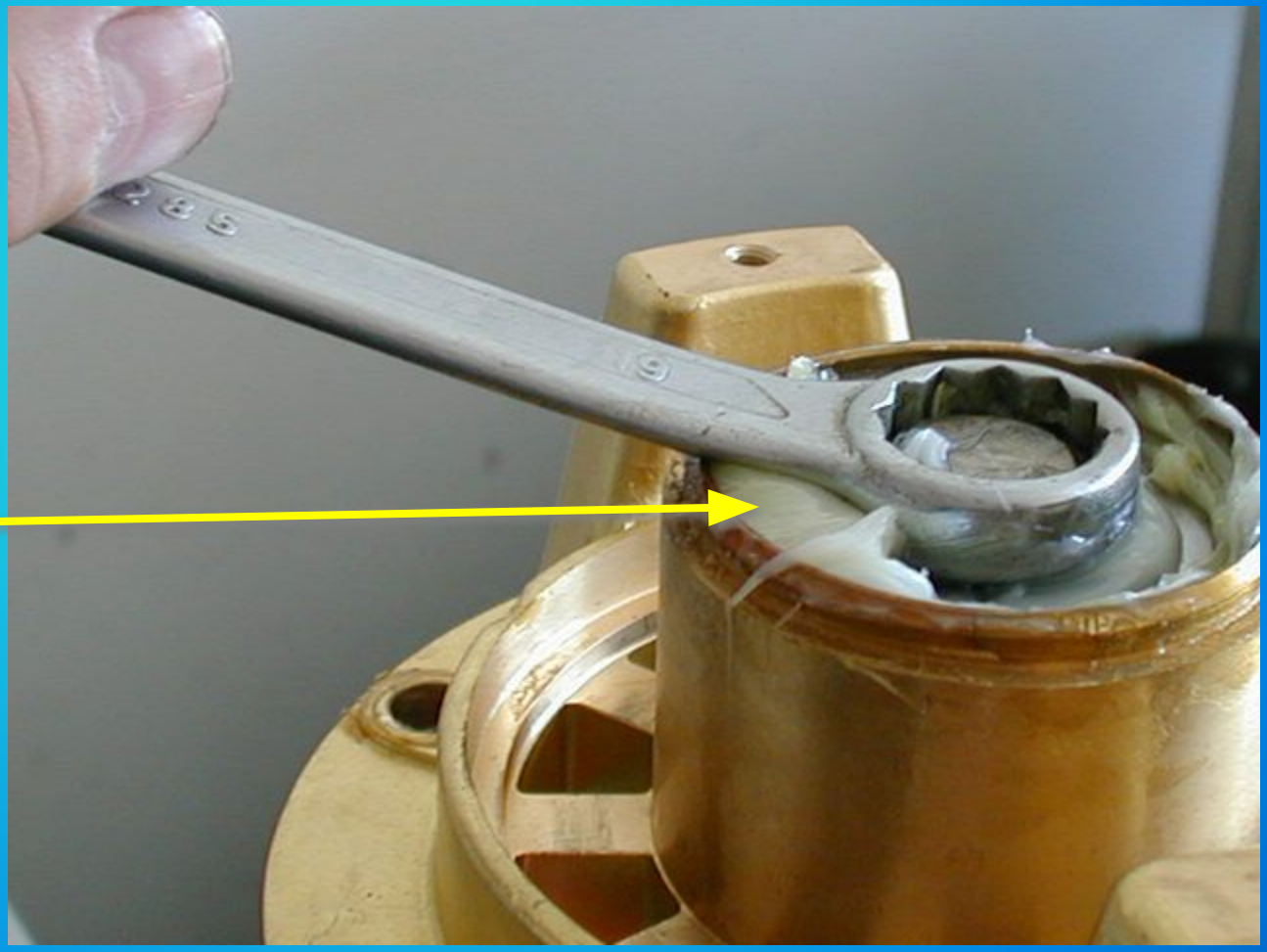
MF 41-51-61 SERIES

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

Unloose and

remove the

screw and…..



MF 41-51-61 SERIES

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

…….remove

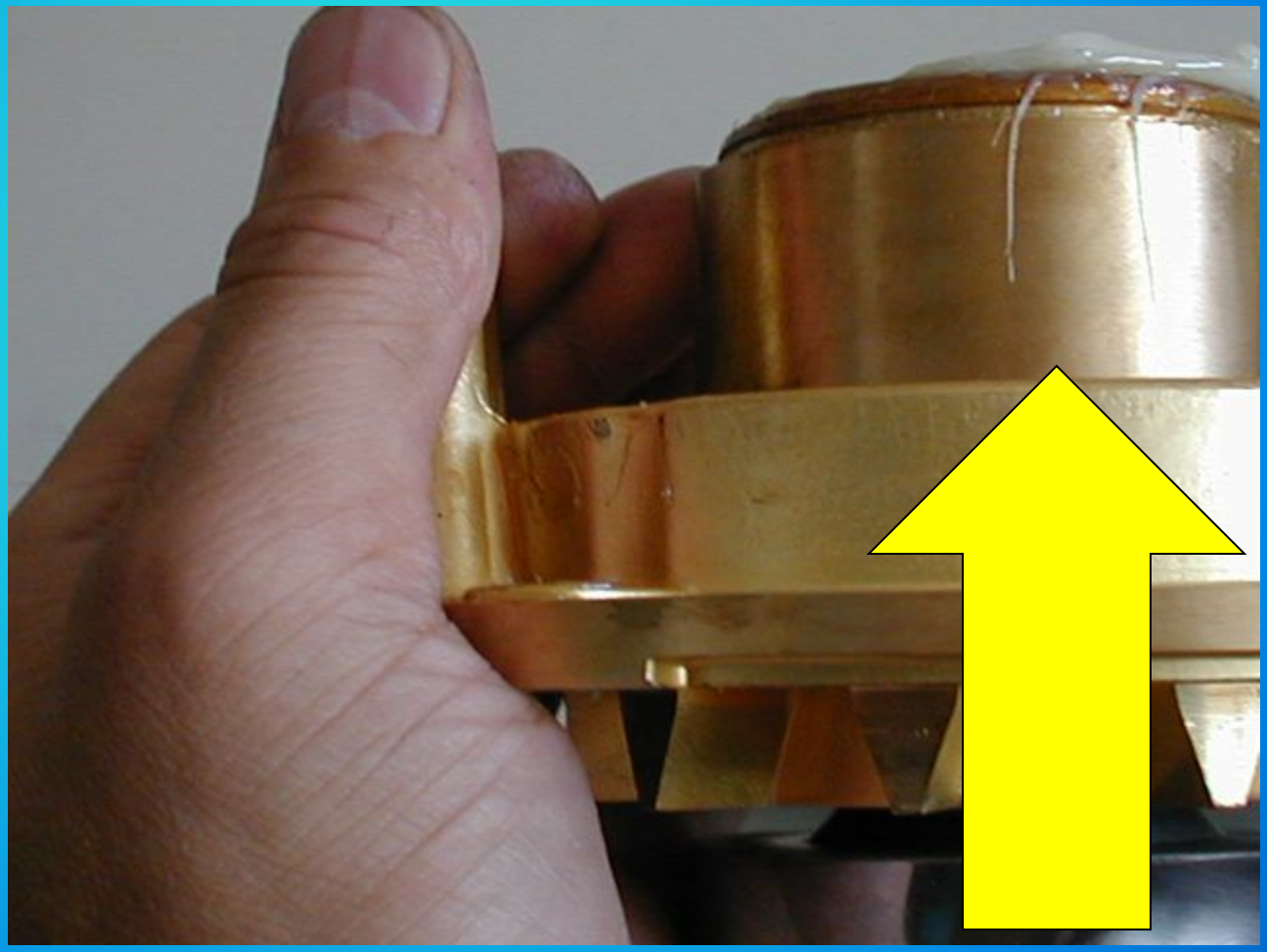
the ice

breaker

assembly

from the

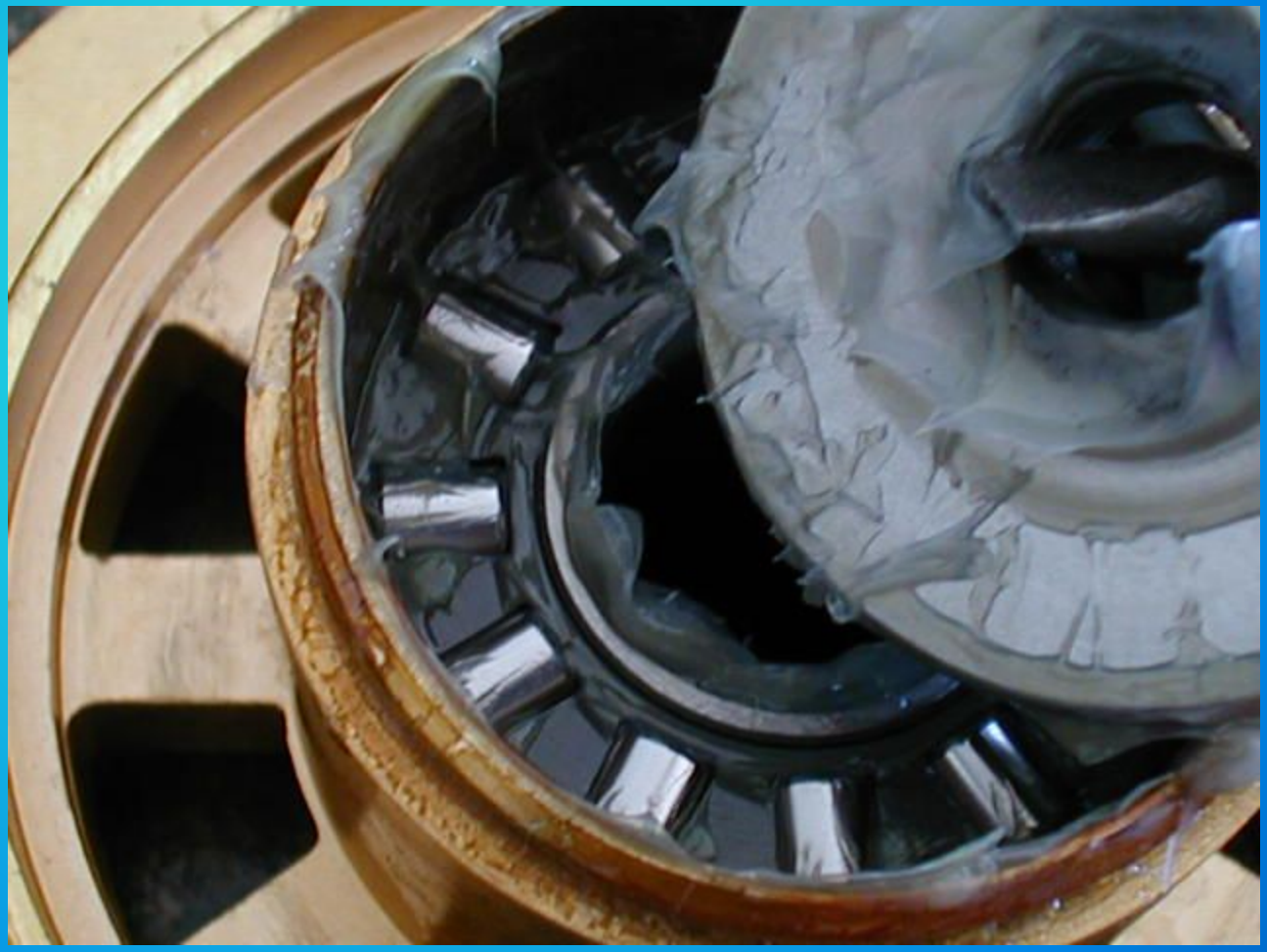
auger.



MF 41-51-61 SERIES

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 ……



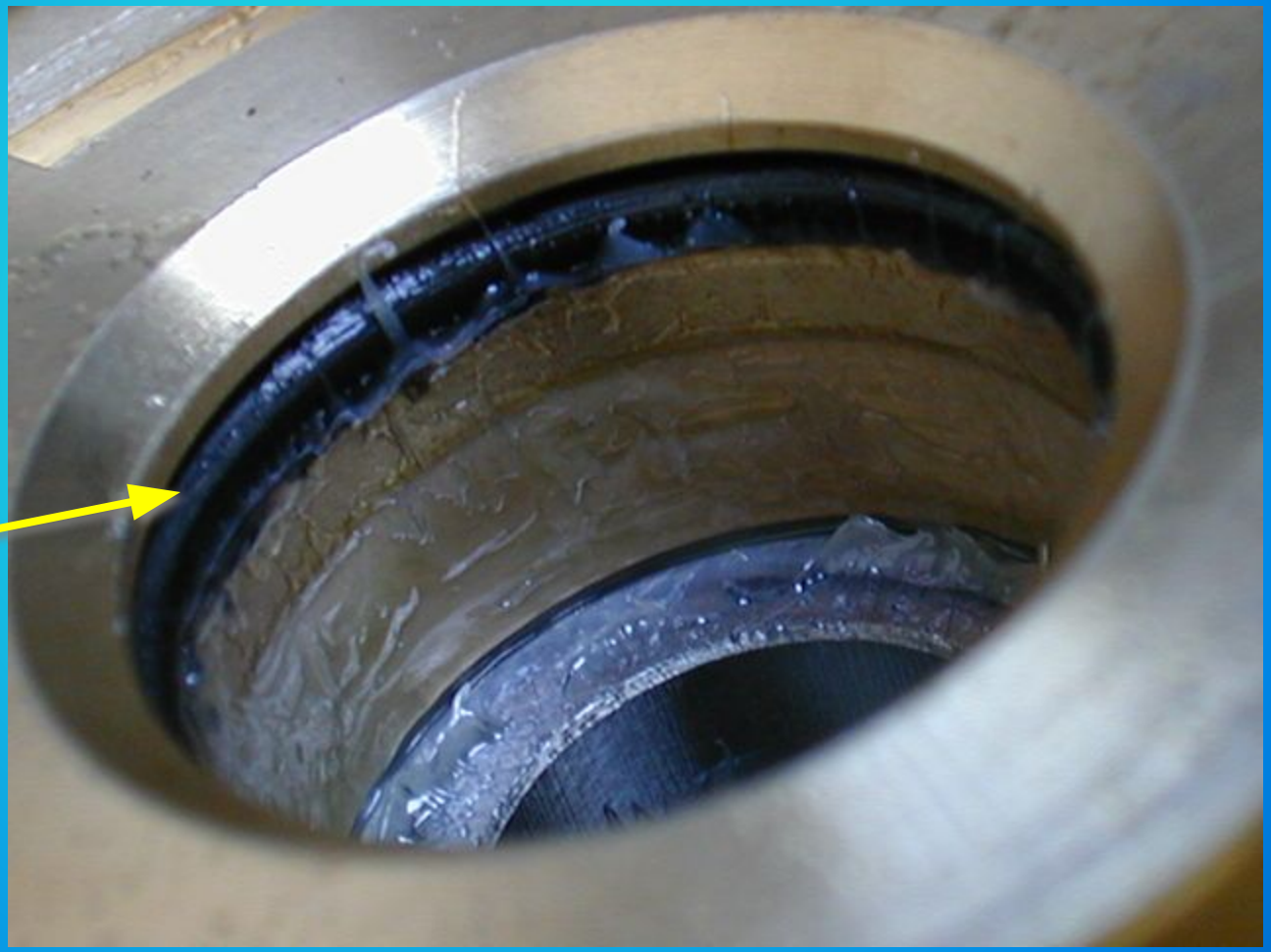
MF 41-51-61 SERIES

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

…… as well as

the condition

of the O ring.



MF 41-51-61 SERIES

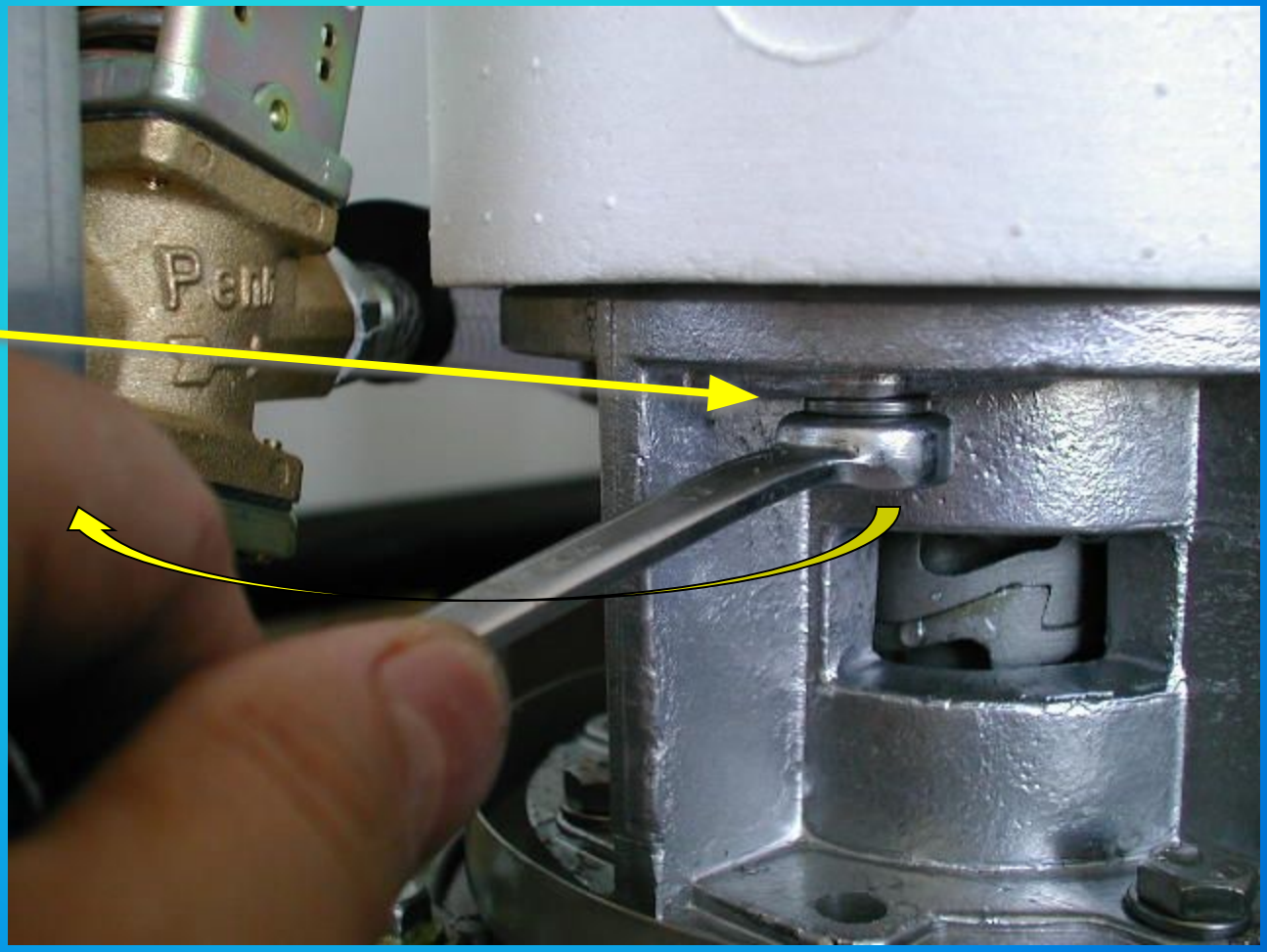
REPLACEMENT OF AUGER, WATER SE[illegible]ND BEARINGS

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

MF 41-51-61 SERIES

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

Unloose and remove the four bolts and lock-washers holding the freezer assembly to the aluminum adapter then …...

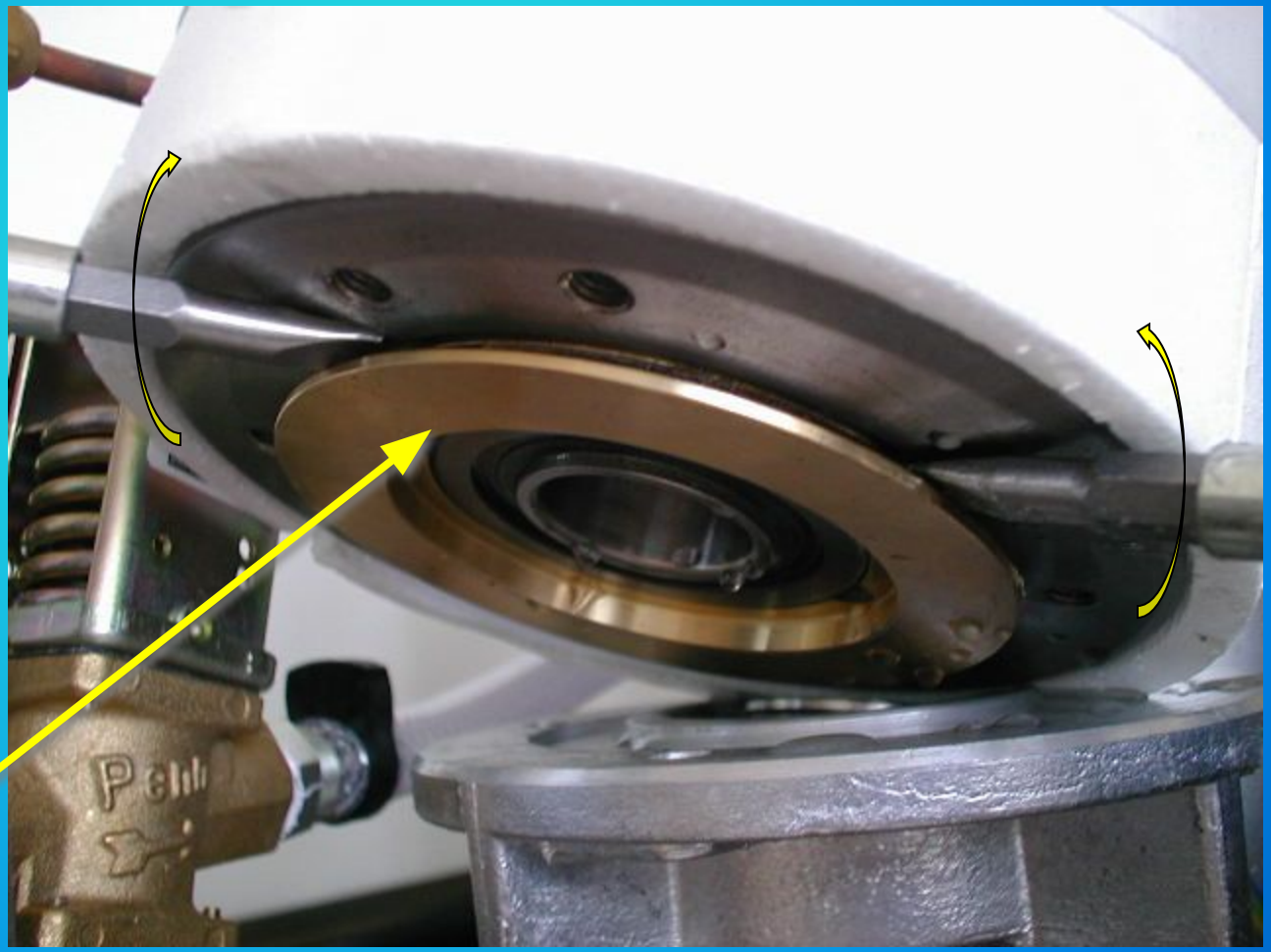


MF 41-51-61 SERIES

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.

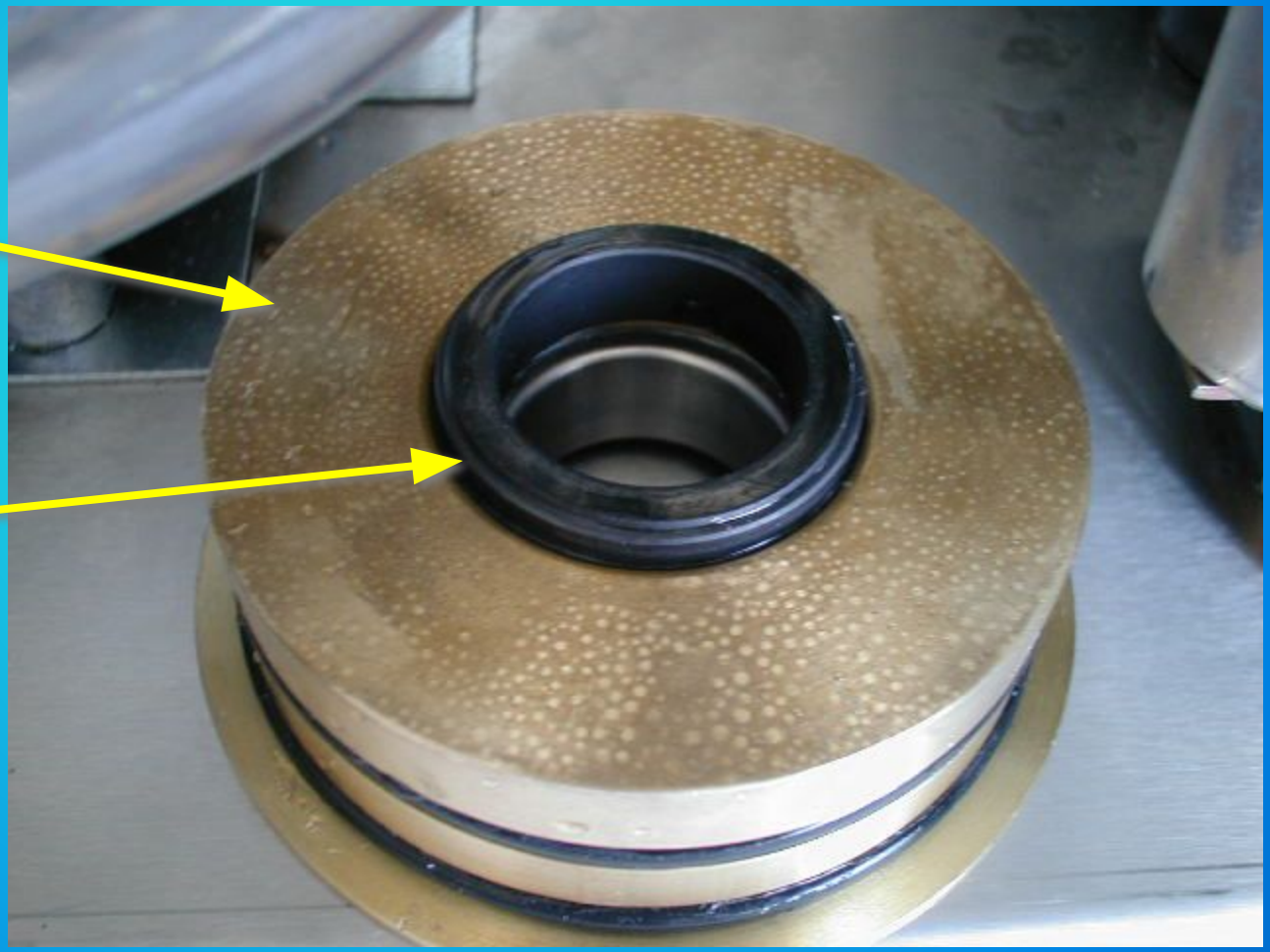
Using two flat screwdrivers remove…..



MF 41-51-61 SERIES

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

….. the bottom bearing and brass housing assembly with the bottom graphit ring of water seal.



MF 41-51-61 SERIES

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 rings** any time the auger is removed.

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


MF SERIES
END
A SCOTSMAN EUROPE presentation
Author: R. Ceriani