

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

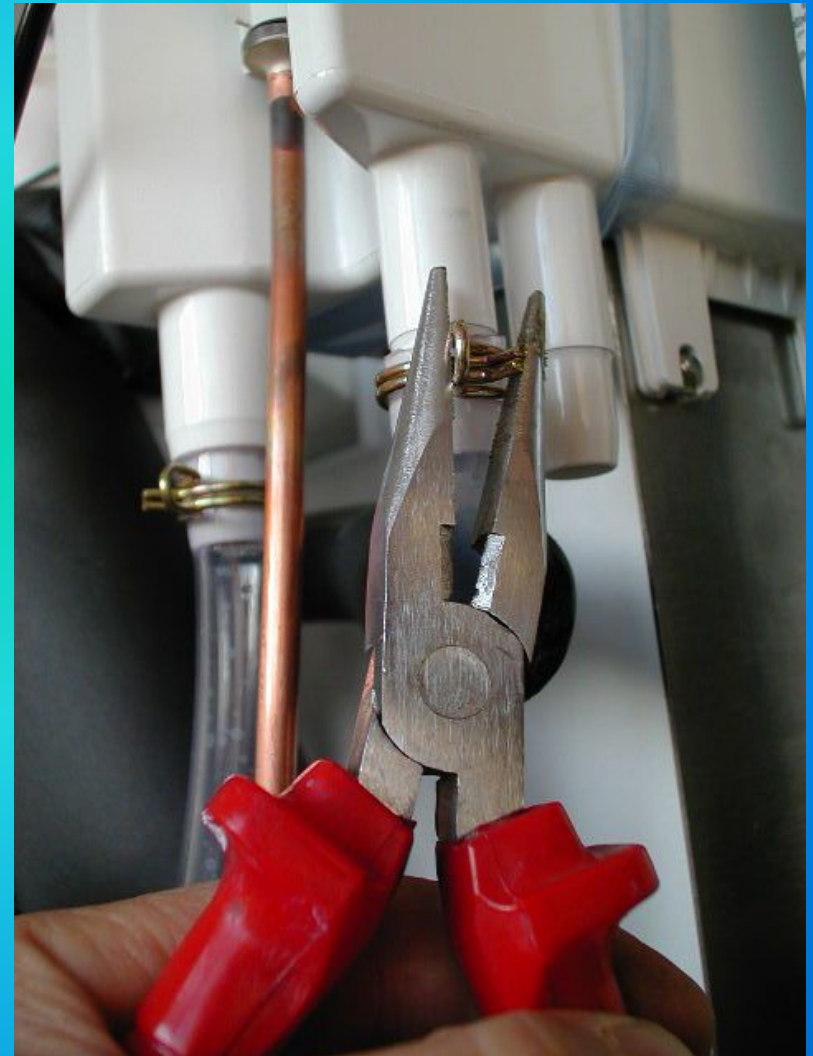
Scoop out all  
ice stored into  
the bin so to  
prevent its  
contamination.



# 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 40°C) with **SCOTSMAN Ice Machine Cleaner** as per the following quantities:





A white plastic bottle of Scott's Emulsion is being poured into a green bucket. The bottle is tilted, and a stream of white liquid is falling into the bucket. The bottle has a label with the text "SCOTT'S EMULSION" and "EUCALYPTI OLEUM". The background is a wooden surface.

# 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

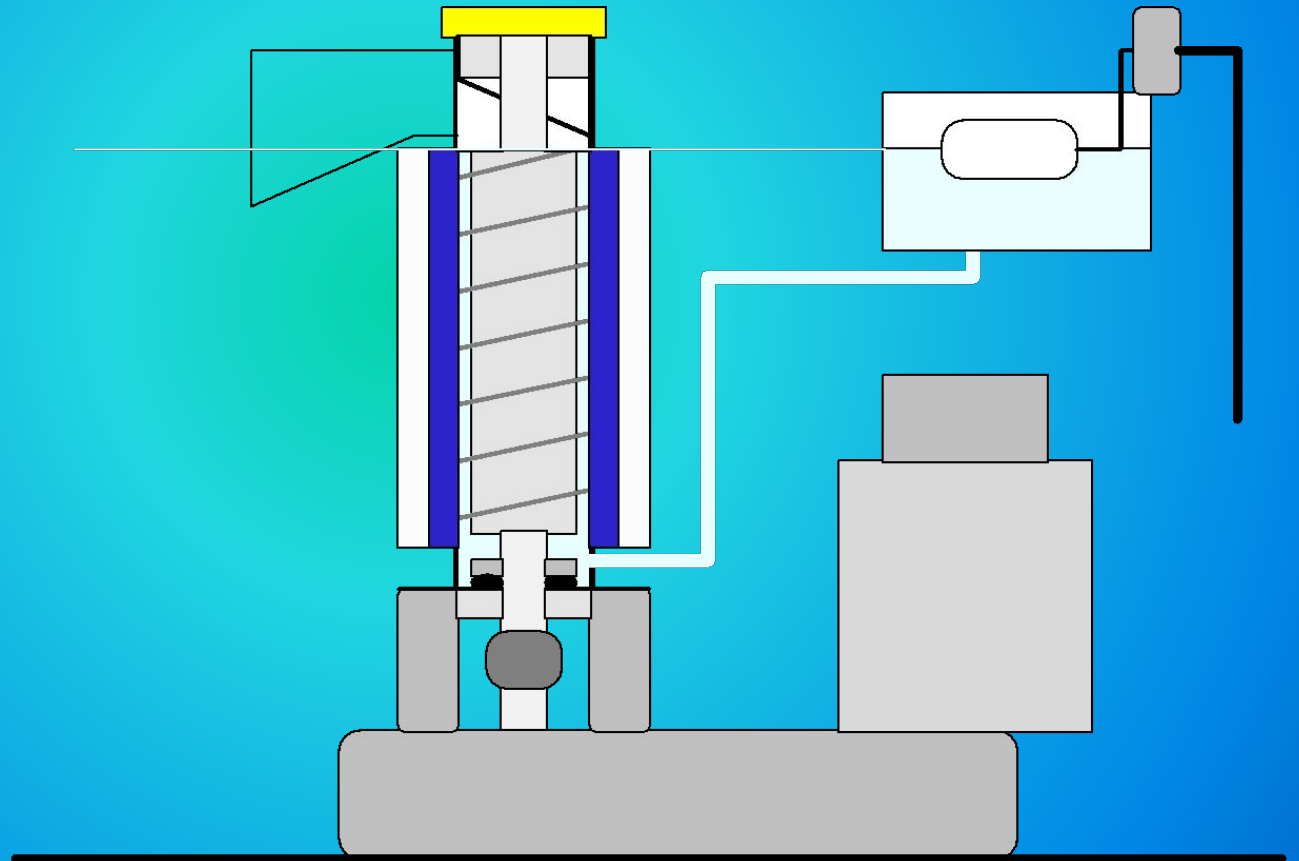
Remove the water reservoir cover then....

....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.



**ON**

# 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 pour 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.





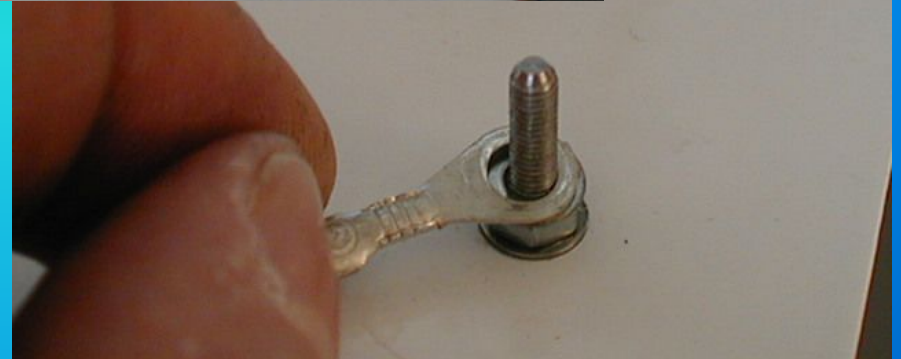
# MF SERIES MAINTENANCE

When sure that  
no more trace of  
cleaning  
solution is left  
into the water  
system pour 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/sanit  
izing  
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.





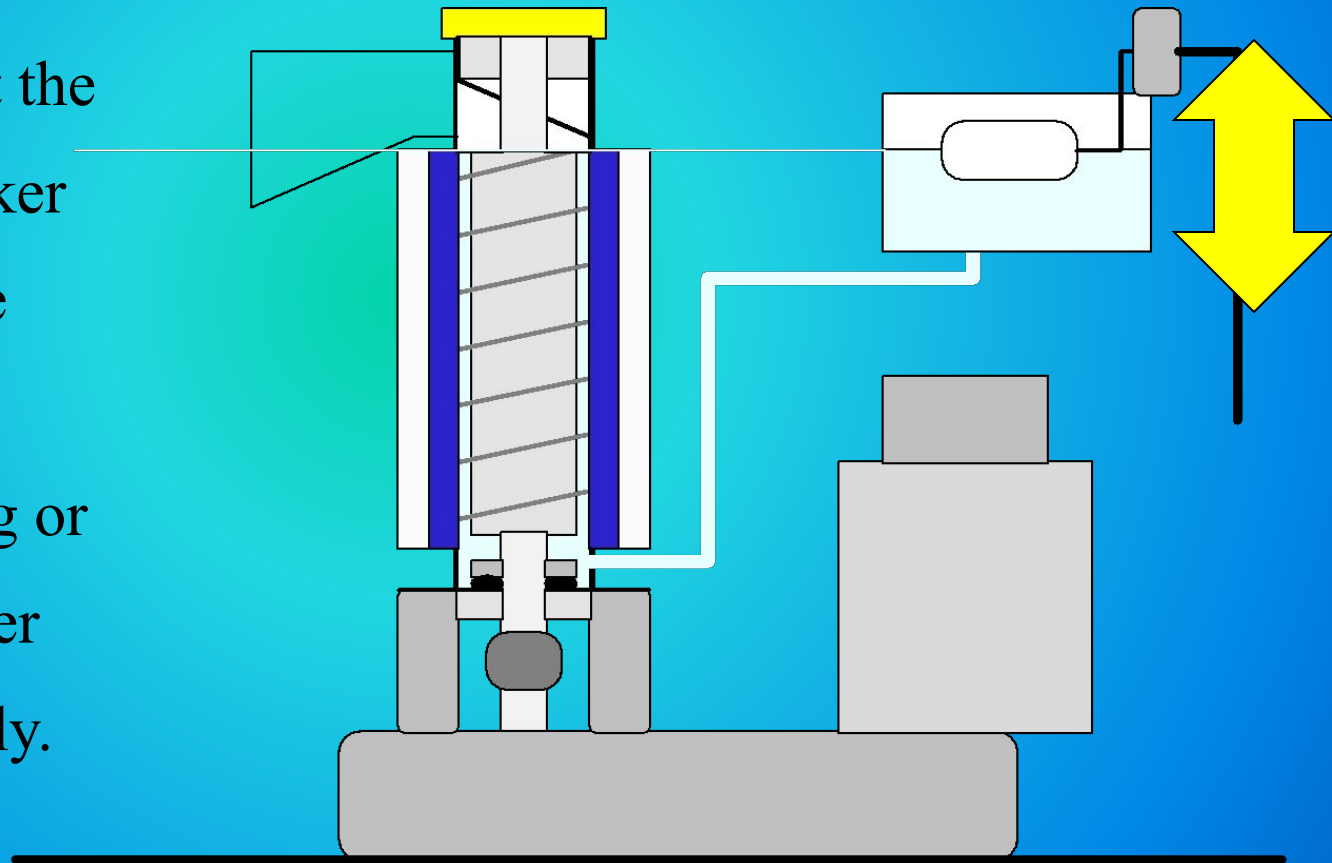
# MF SERIES

## 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

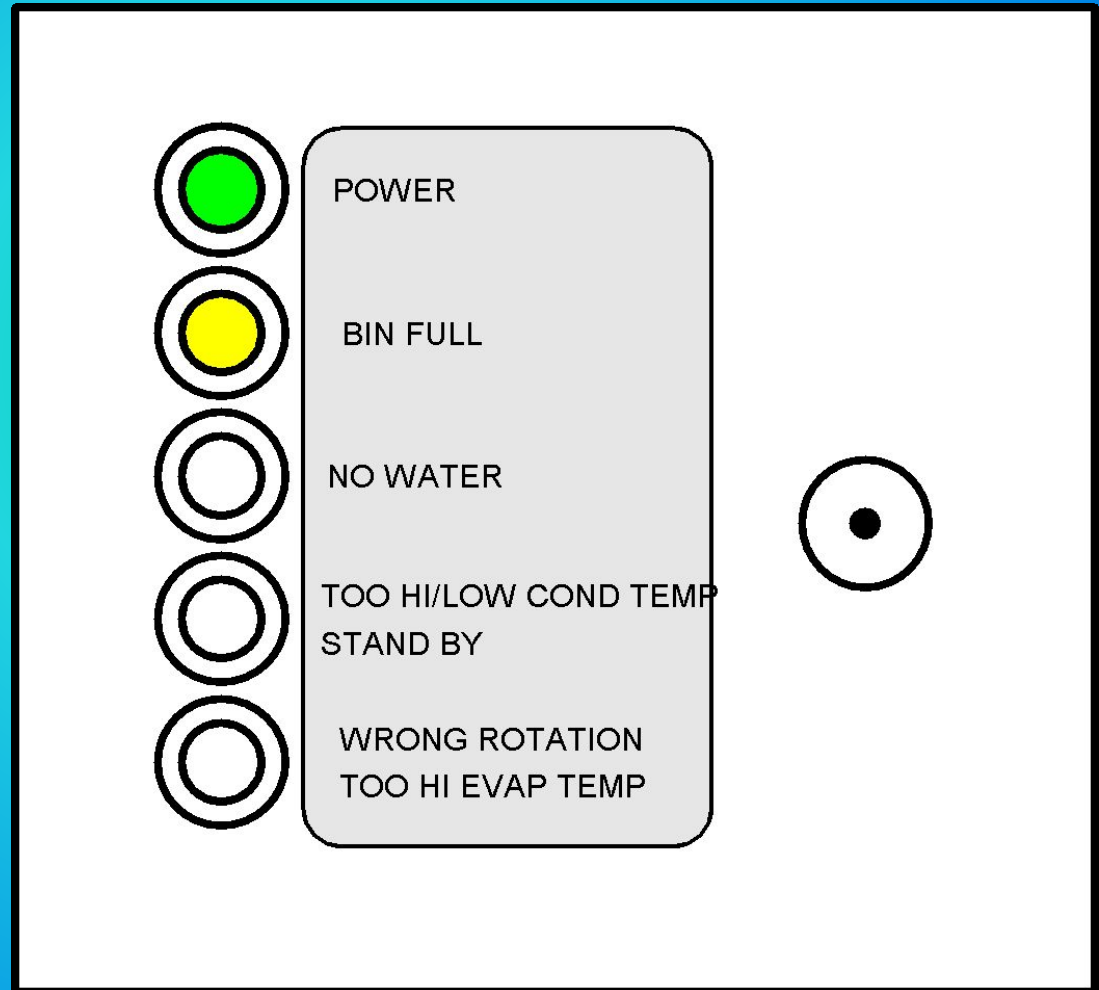
**Bin Full**

situation:

Green and

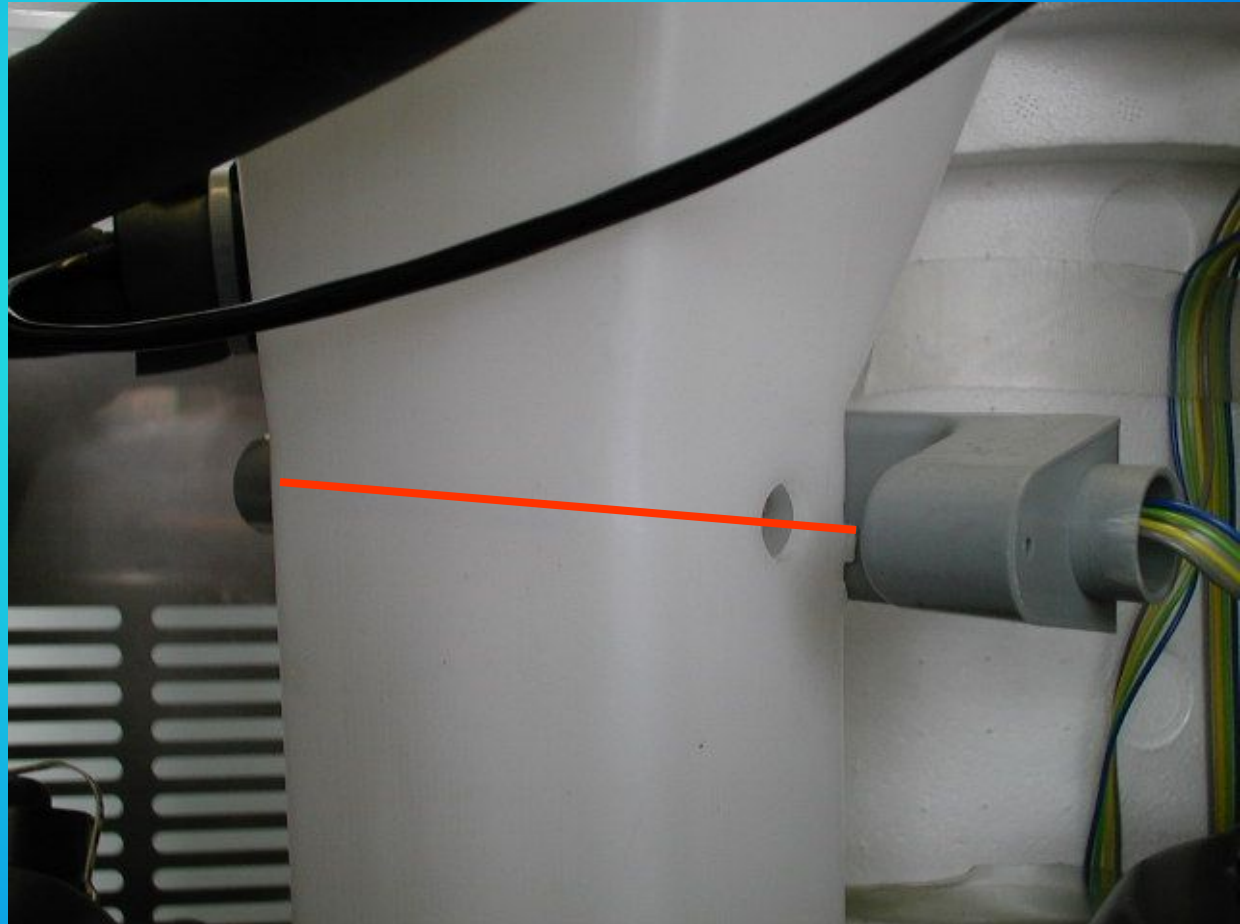
Yellow

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

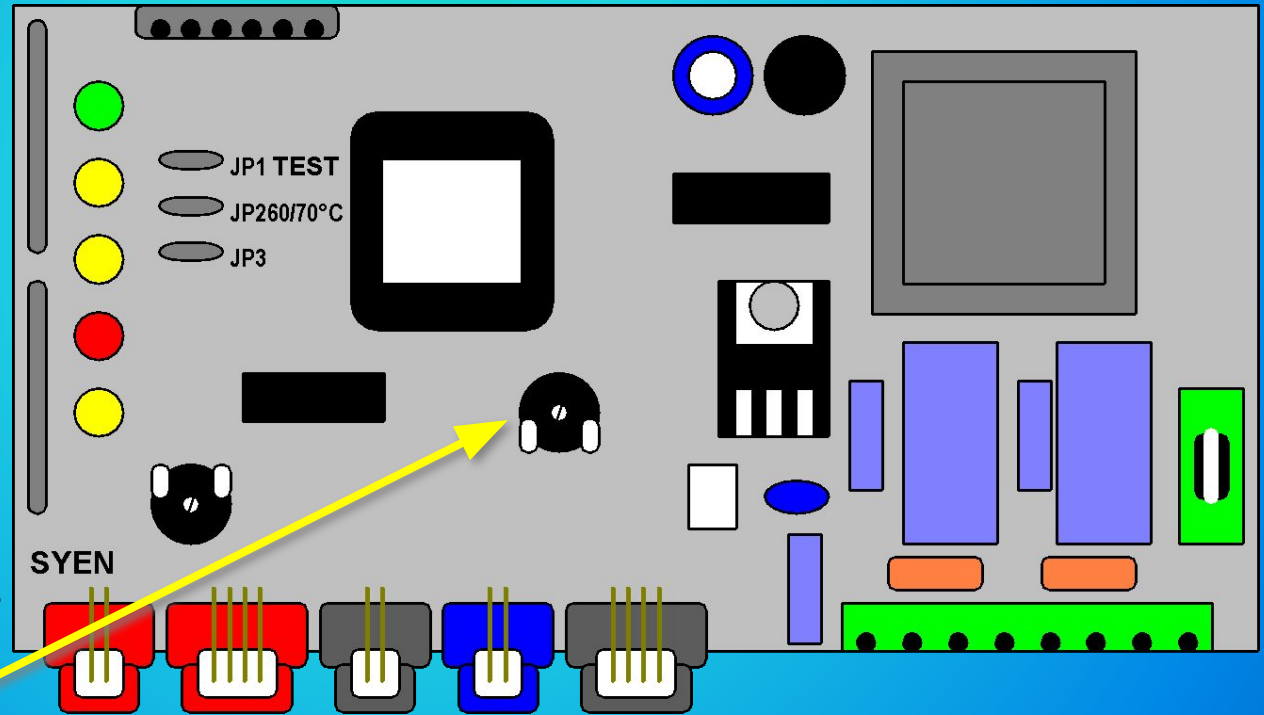
Check also for any possible accumulation of scale around the two holes located on the opposite sides of the ice chute.





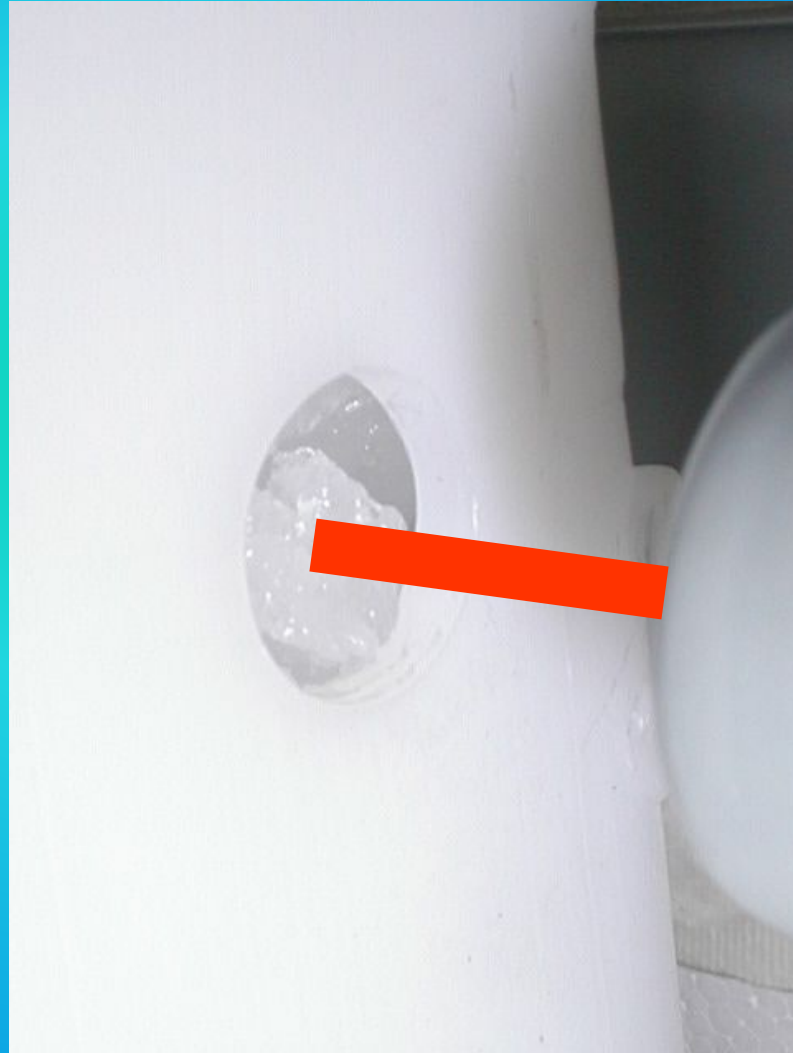
# MF SERIES SERVICE ANALYSIS

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

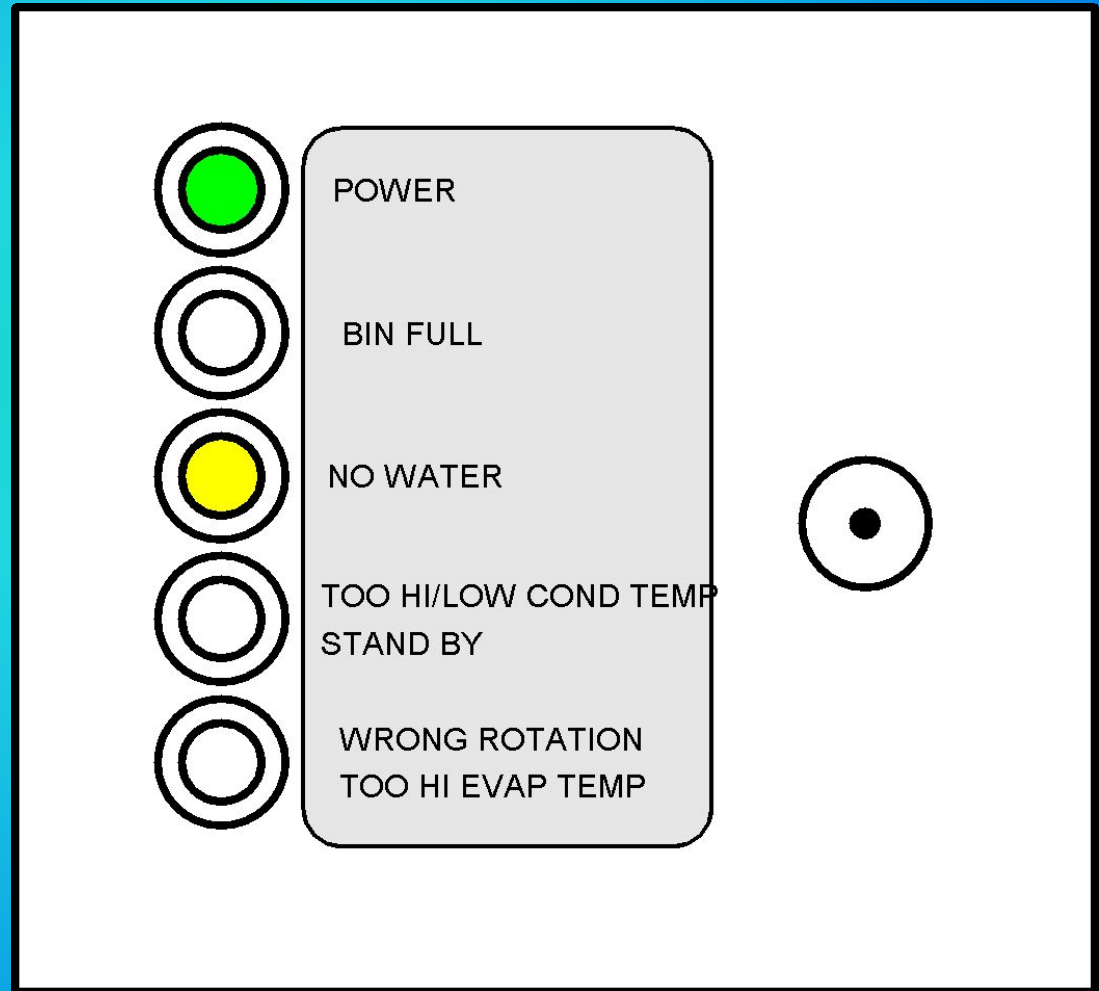
No water

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.

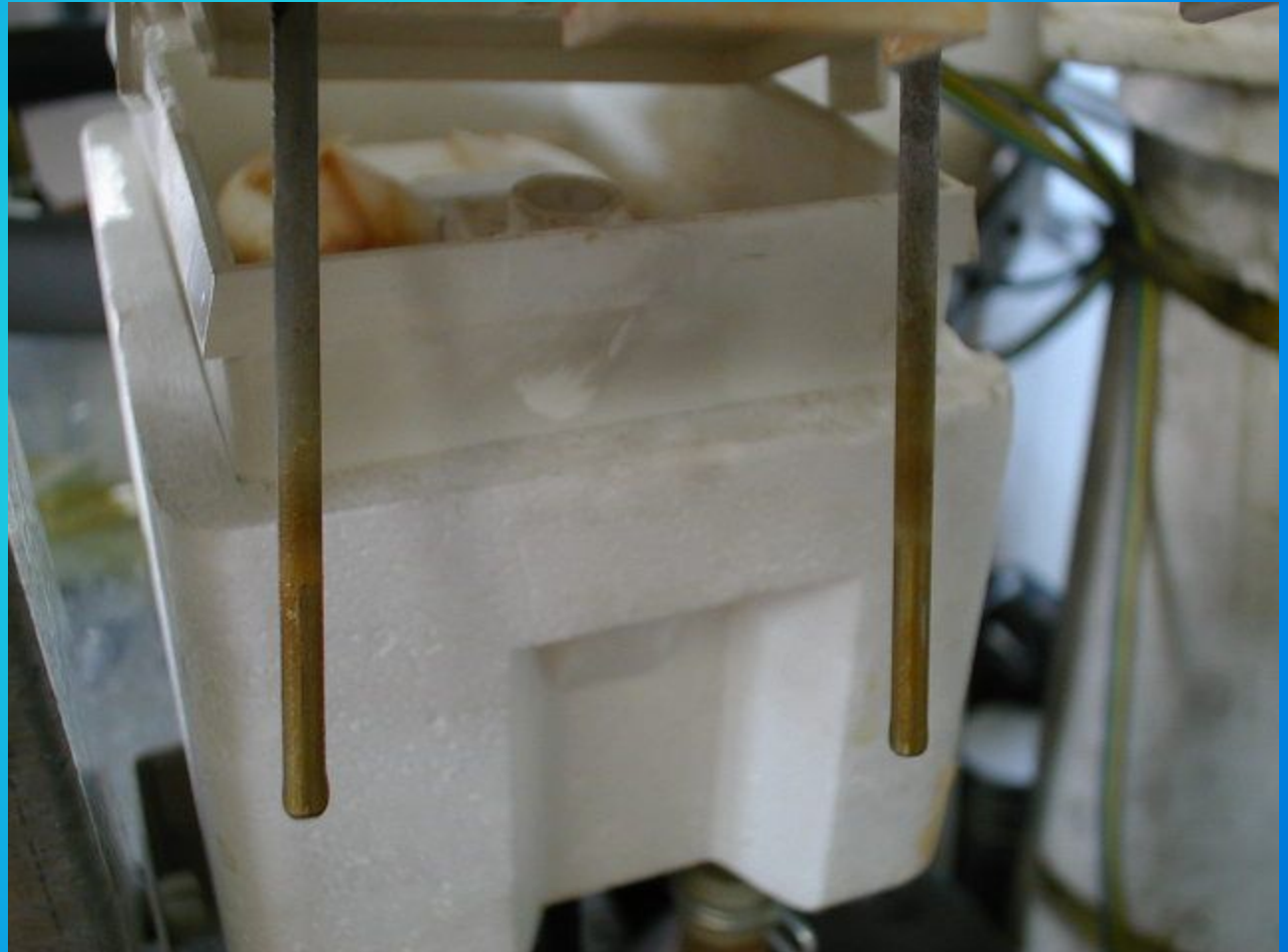
If not clean it with a  
small metal pin.





# MF SERIES SERVICE ANALYSIS

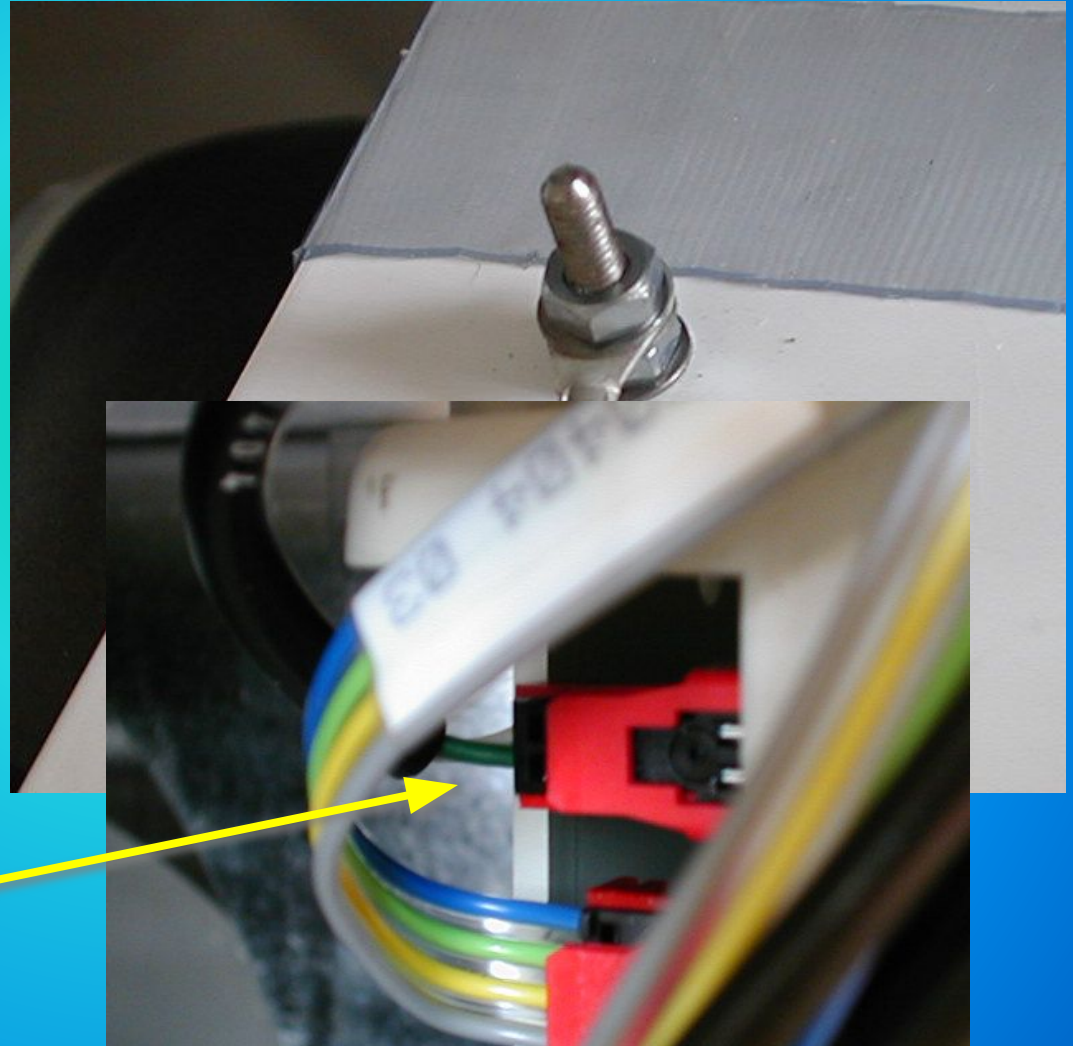
In case of water  
into the water  
reservoir check  
for any scale  
deposit onto the  
two metal pins  
of the water  
level sensor.....



# 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 30 $\mu$ S electrical conductivity water** is required for correct operation of the machine.

# MF SERIES SERVICE ANALYSIS

3' waiting

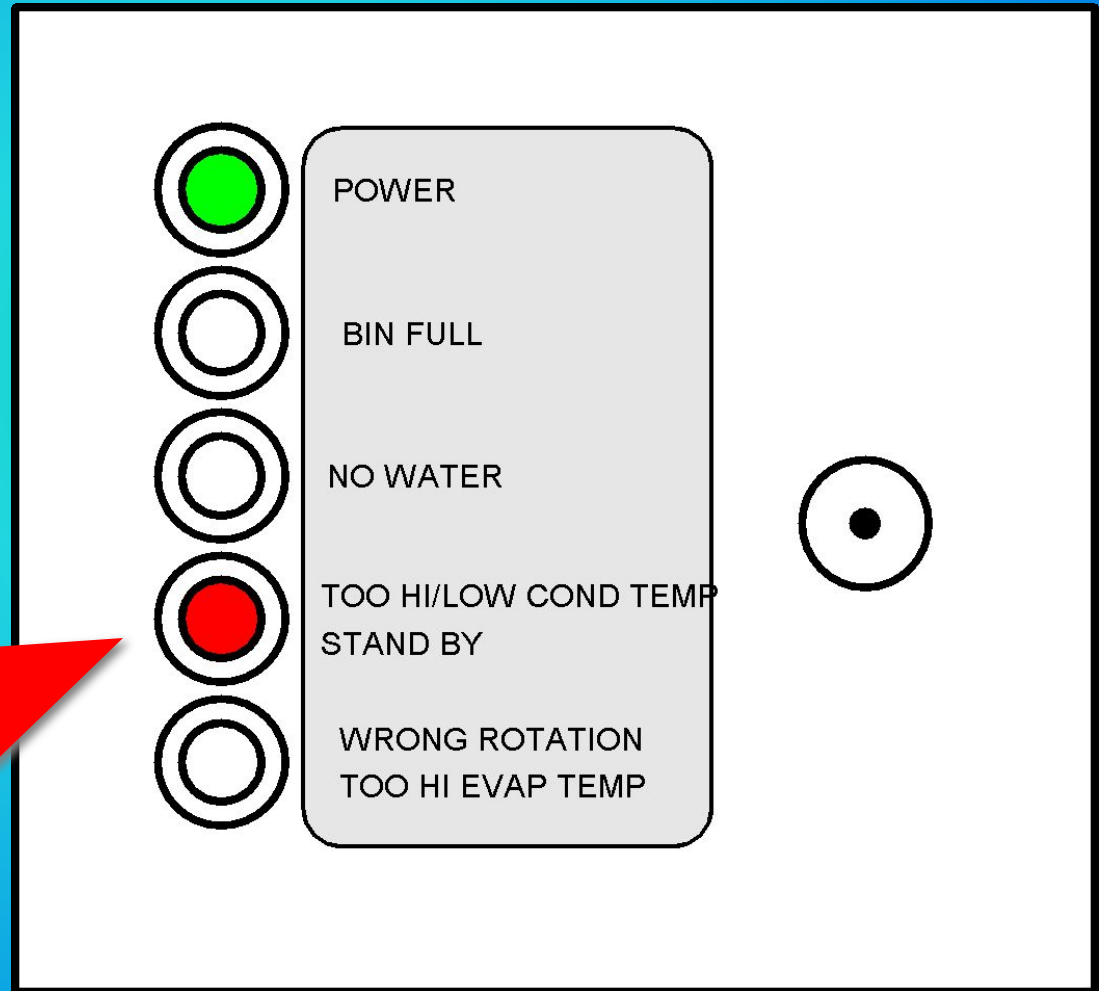
time:

Green

LED ON

Red LED

blinking



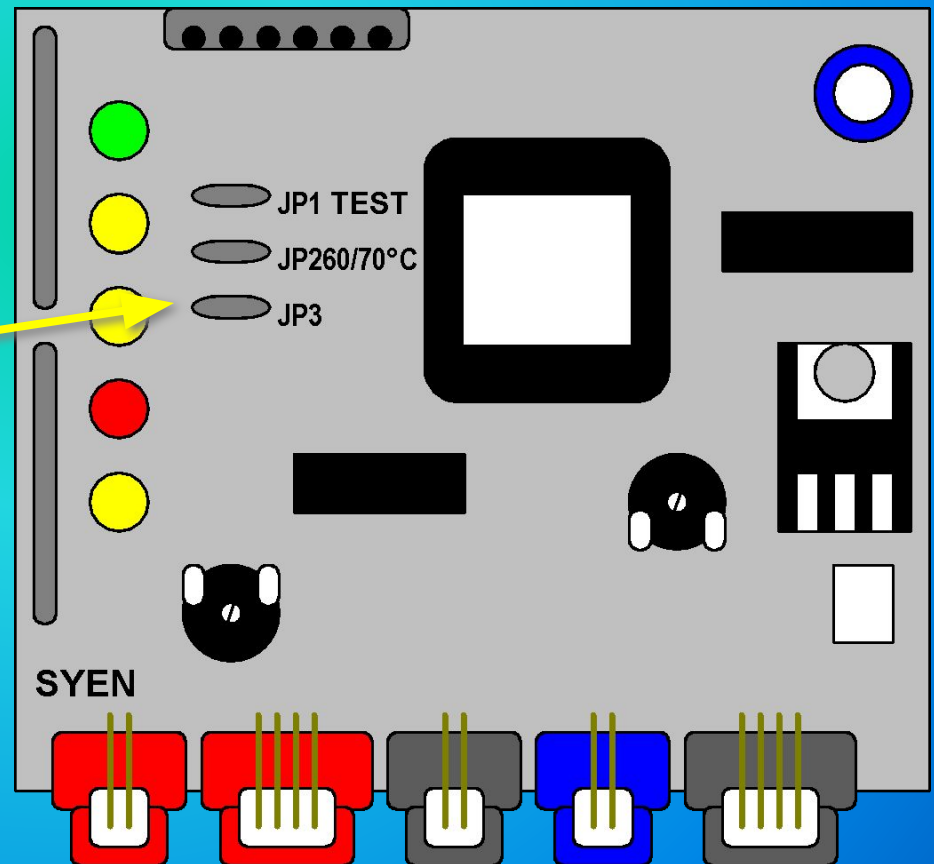


# MF SERIES SERVICE ANALYSIS

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

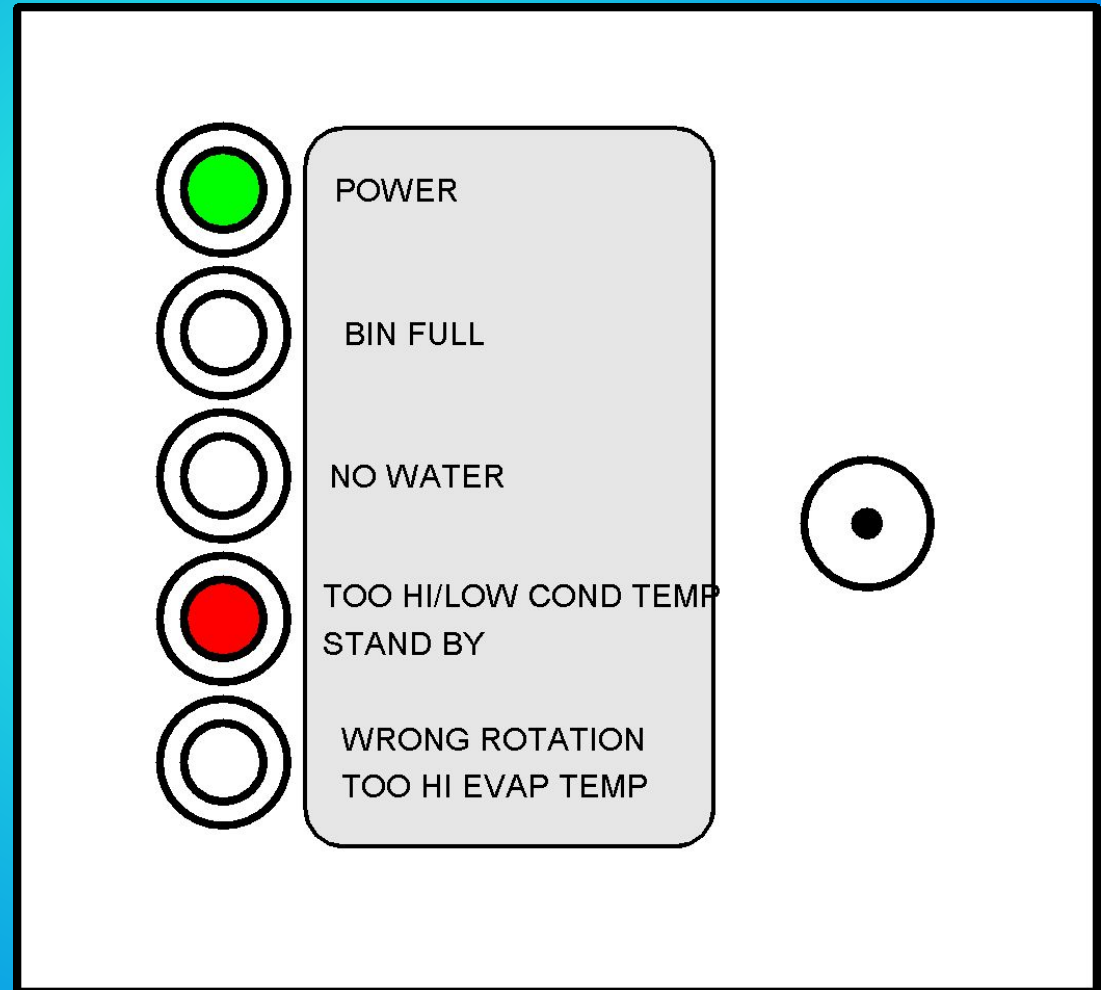
**Too low  
ambient  
temperature**

**(<+3°C)**

**Green and**

**Red LED**

**ON.**



# MF SERIES SERVICE ANALYSIS

It is a typical **winter situation**.

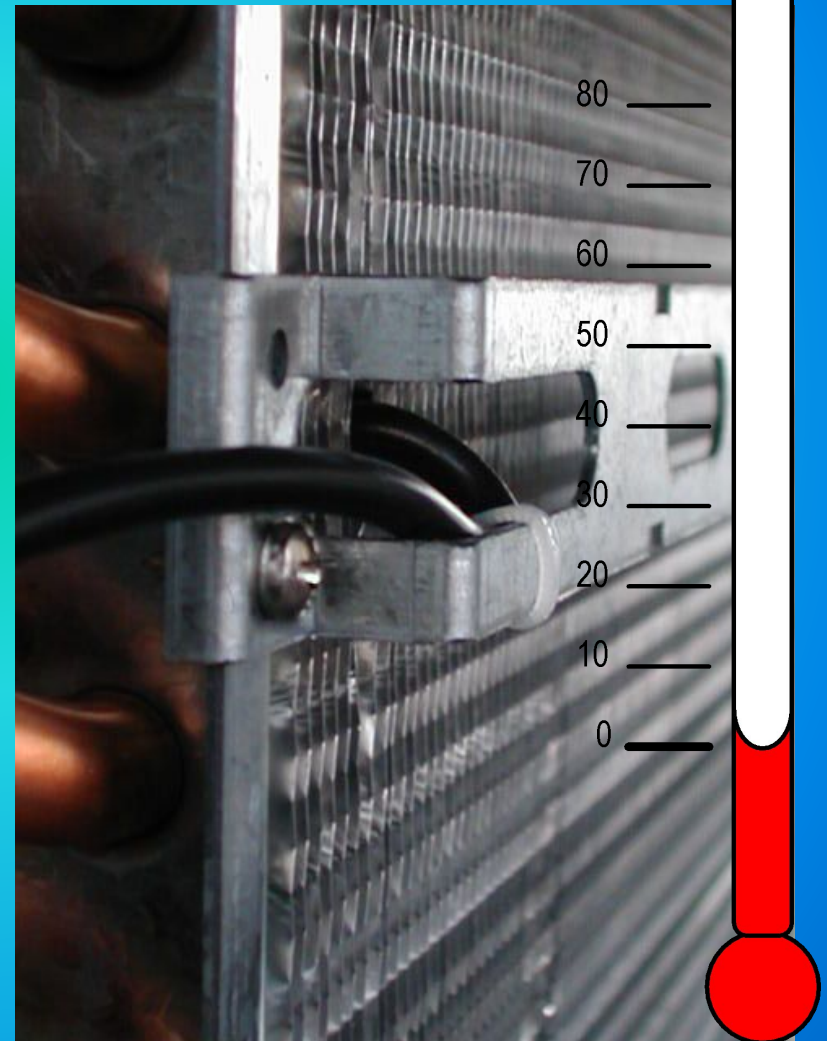
When the machine is located in a

**very cold room ( $<+3^{\circ}\text{C}$ )** the

condenser sensor keep the

machine OFF till the temperature

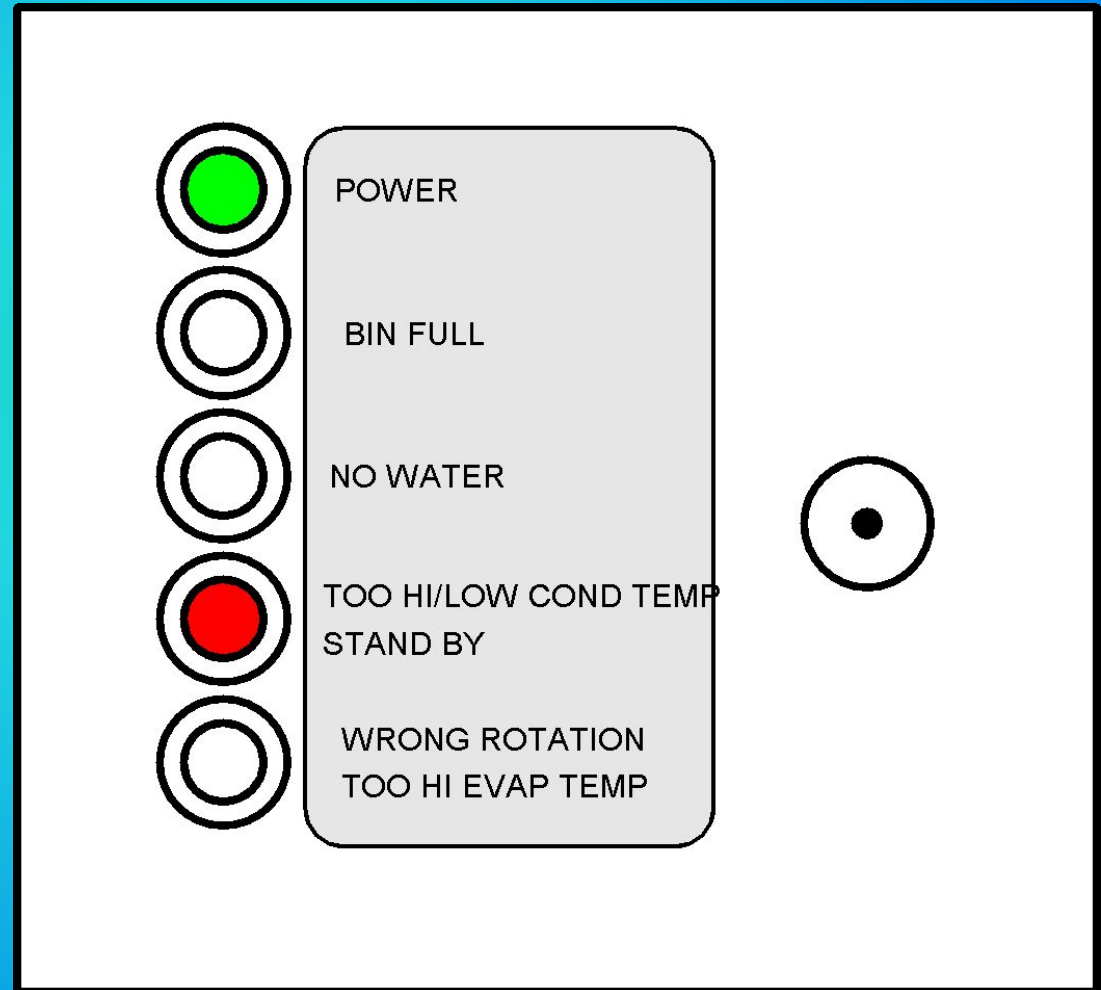
rise up to more then  $+5^{\circ}\text{C}$ .



# MF SERIES SERVICE ANALYSIS

**Too high  
condensing  
temperature  
( $>60^{\circ}\text{C}$  or  
 $>70^{\circ}\text{C}$ )**

**Green and  
Red LED  
ON.**





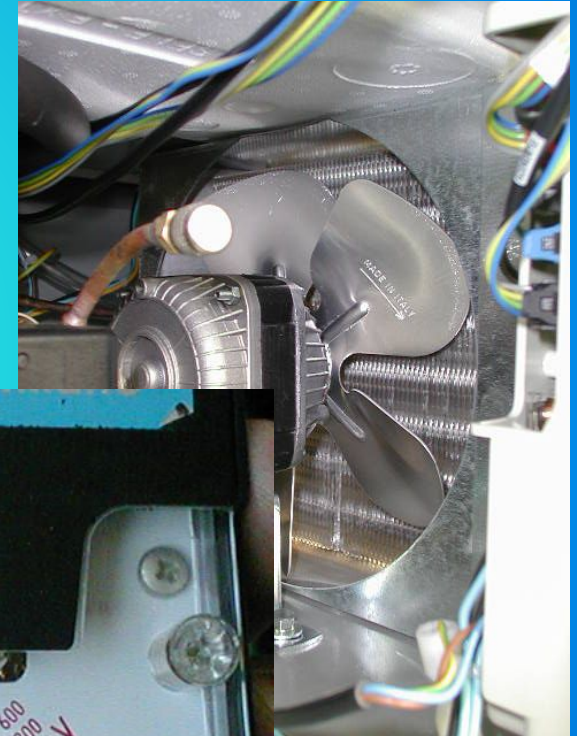
# MF SERIES SERVICE ANALYSIS

## On Air Cooled Version

check first for the correct  
operation of the fan motor

i.e.:

- Power to the motor



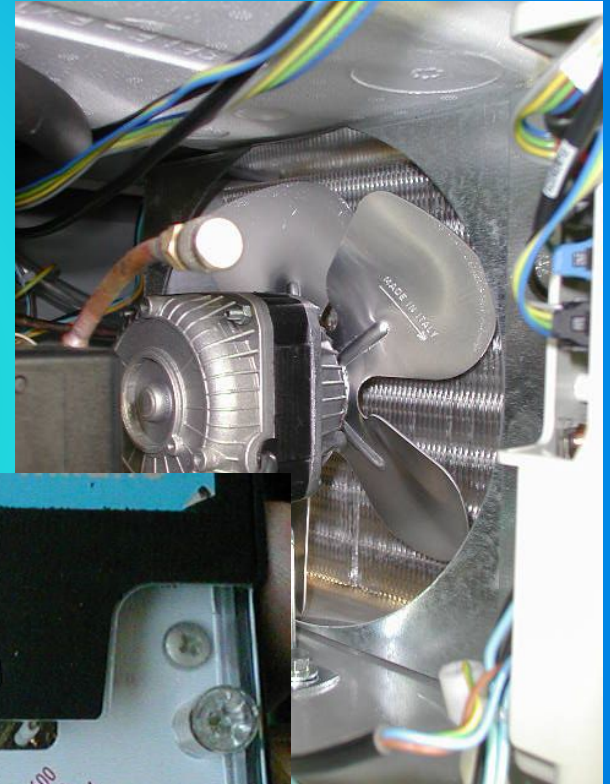
# MF SERIES SERVICE ANALYSIS

## 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

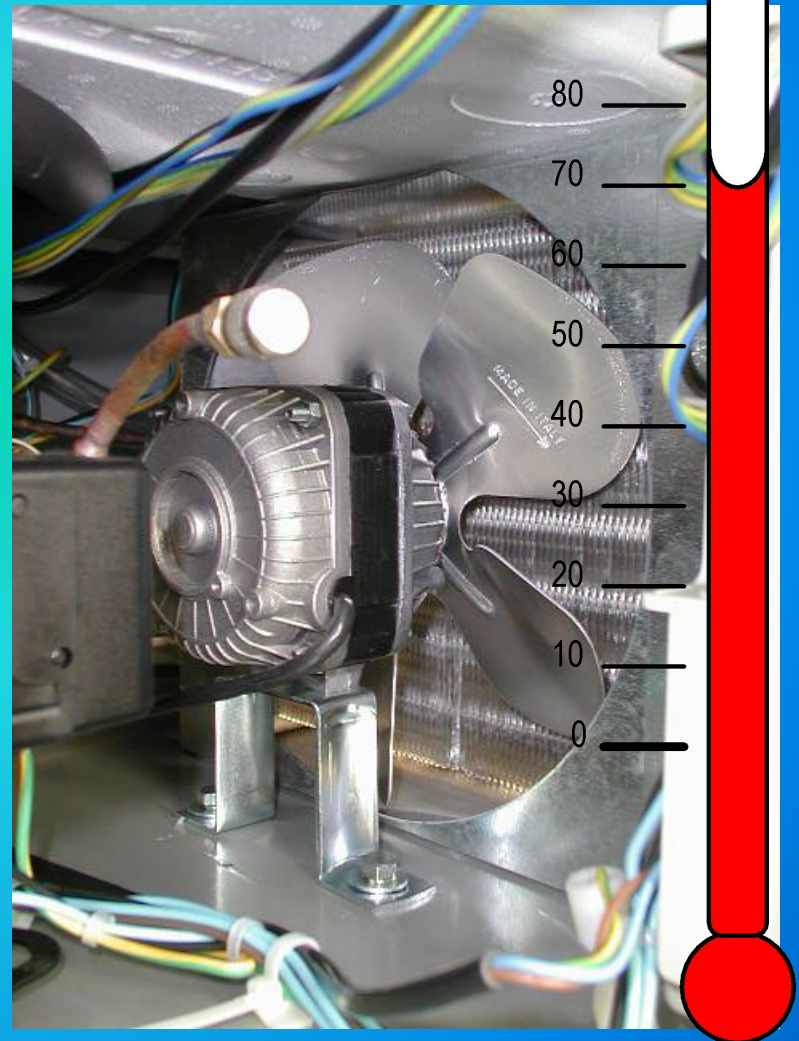
i.e.:

- 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

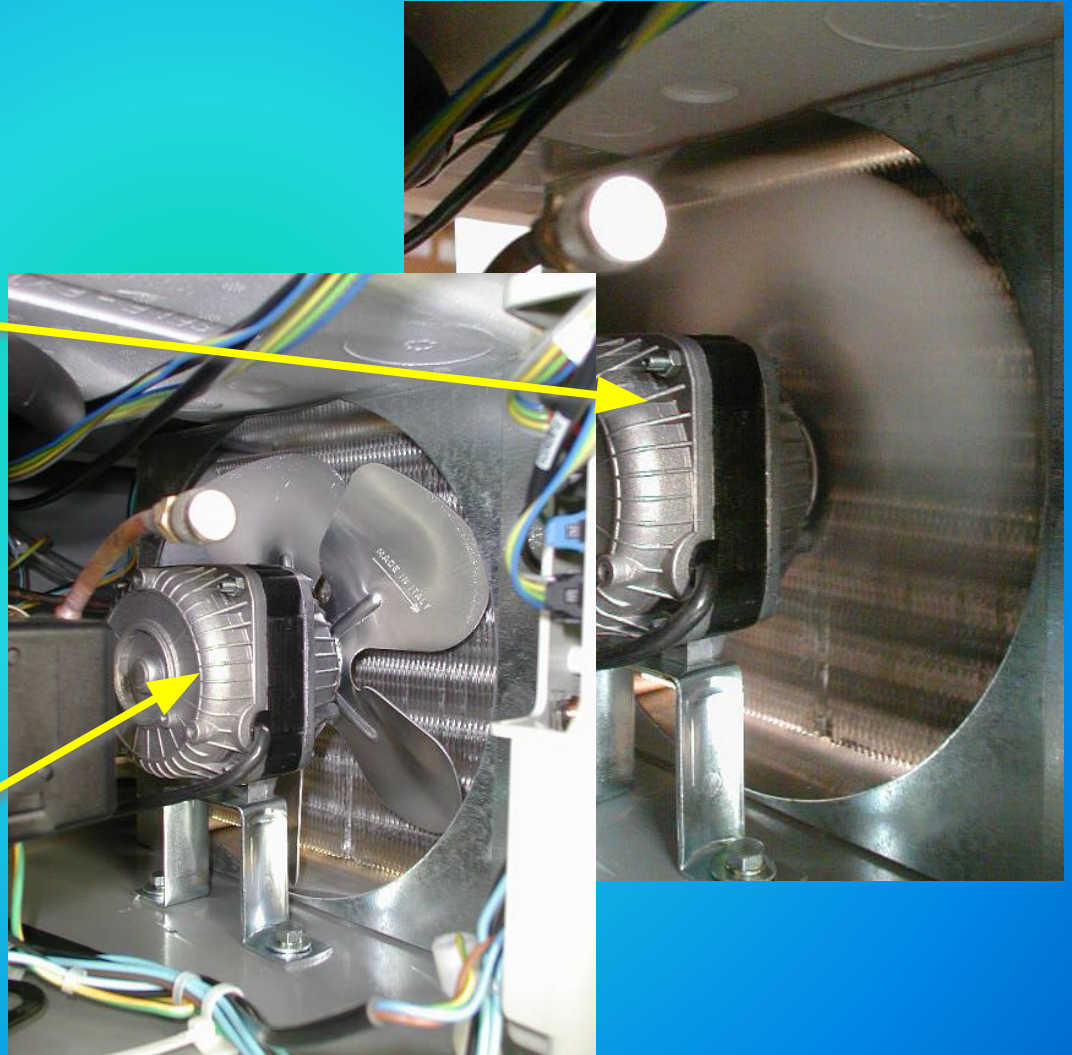
One more possibility  
(very rare) it is a faulty  
PC Board (TRIAC) that  
can keep energized the  
fan motor during the OFF  
period with a low voltage  
but higher than the  
minimum one need for  
tripping OFF the motor.



# 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





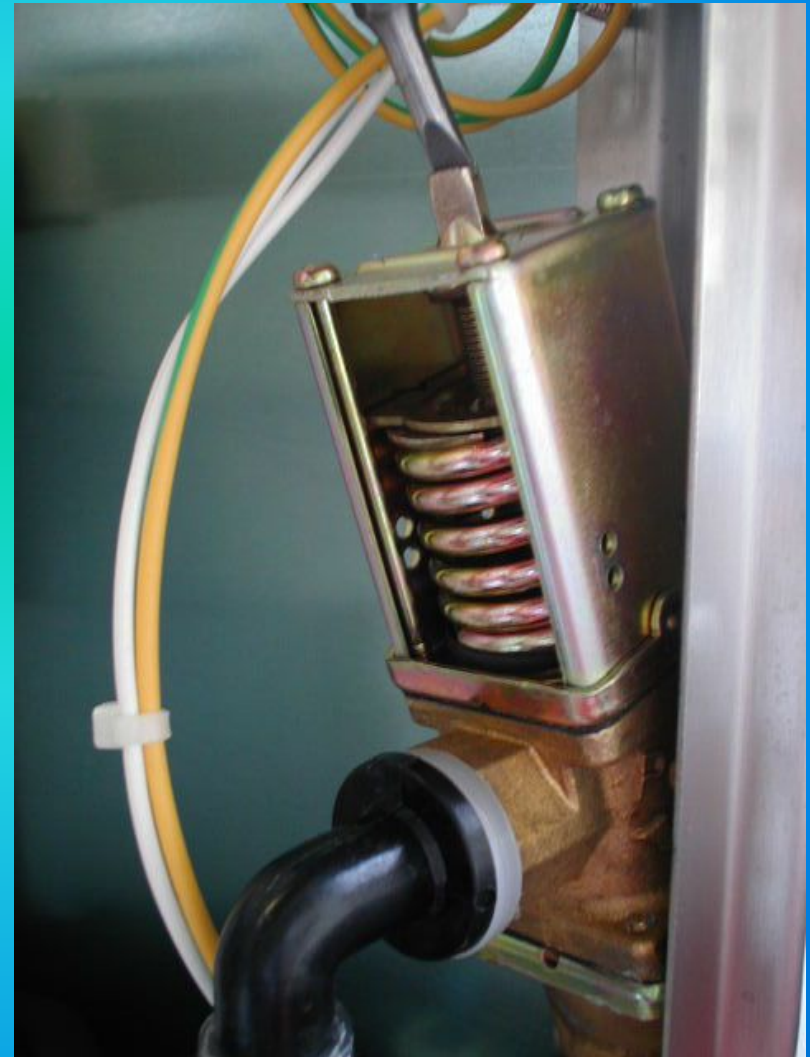
# MF SERIES SERVICE ANALYSIS

**On Water Cooled**

**Version** check first

for the:

- Water tap
- Correct operation of the water regulating valve



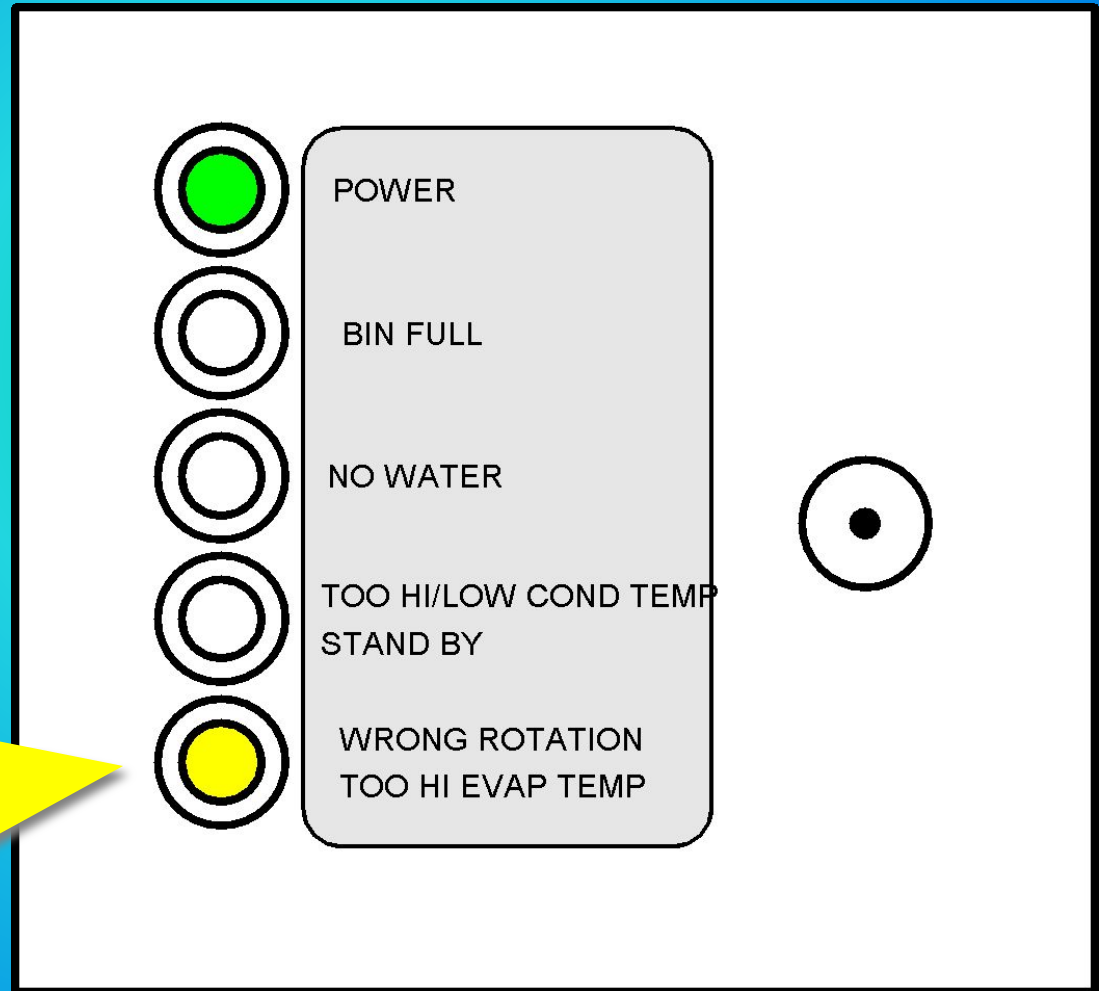
# MF SERIES

## SERVICE ANALYSIS

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

Green LED ON

Yellow LED  
blinking



POWER

BIN FULL

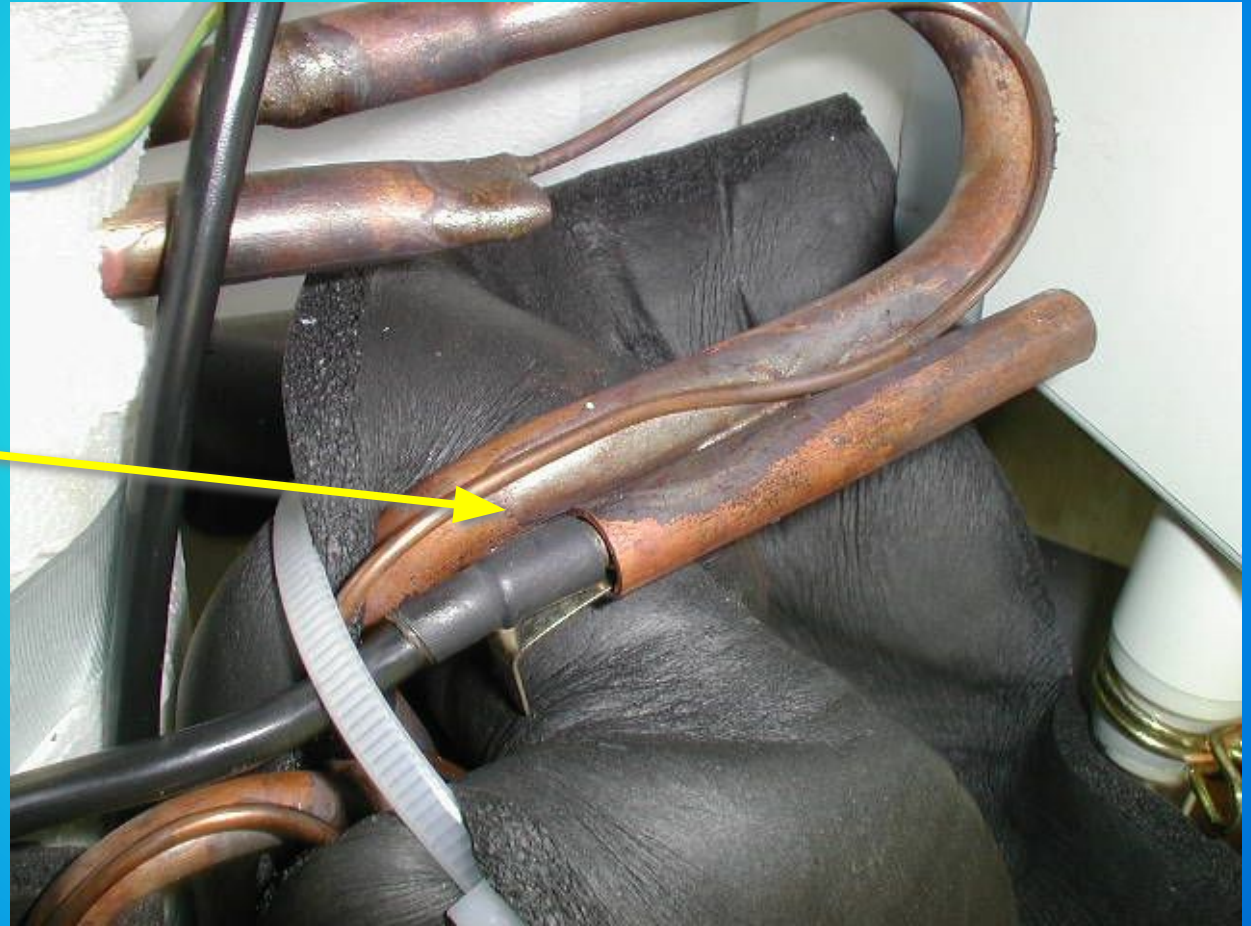
NO WATER

TOO HI/LOW COND TEMP  
STAND BY

WRONG ROTATION  
TOO HI EVAP TEMP

# 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).



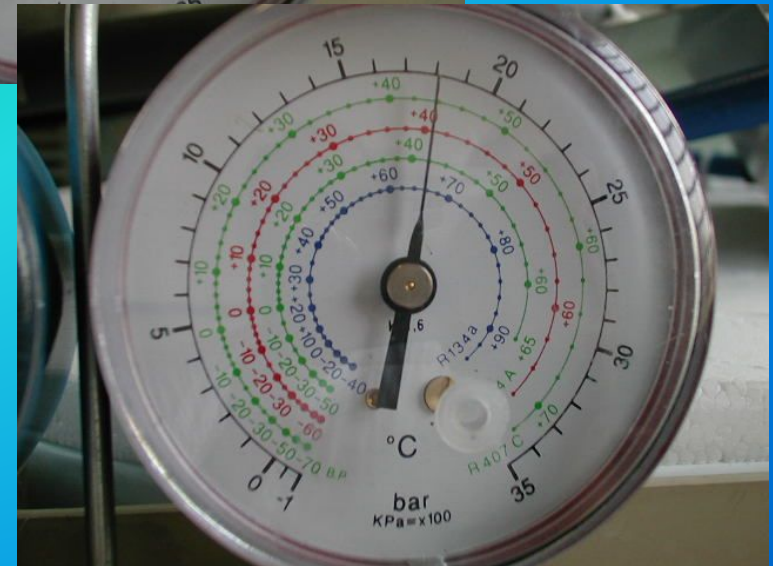


# MF SERIES SERVICE ANALYSIS

If no ice is produced check  
for:

- Refrigerant charge.

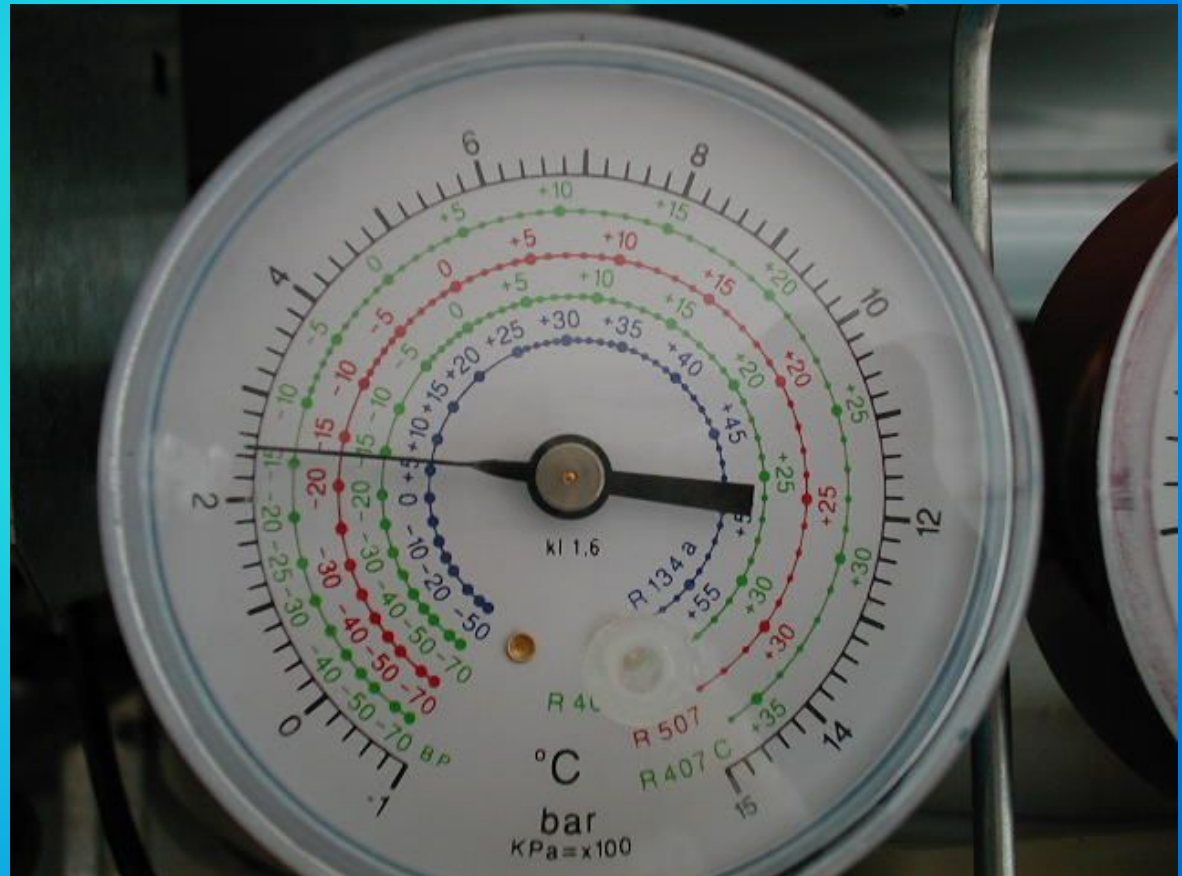
Hi side pressure must  
be between 17÷18 bar  
(240÷250 PSI).....





# 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:

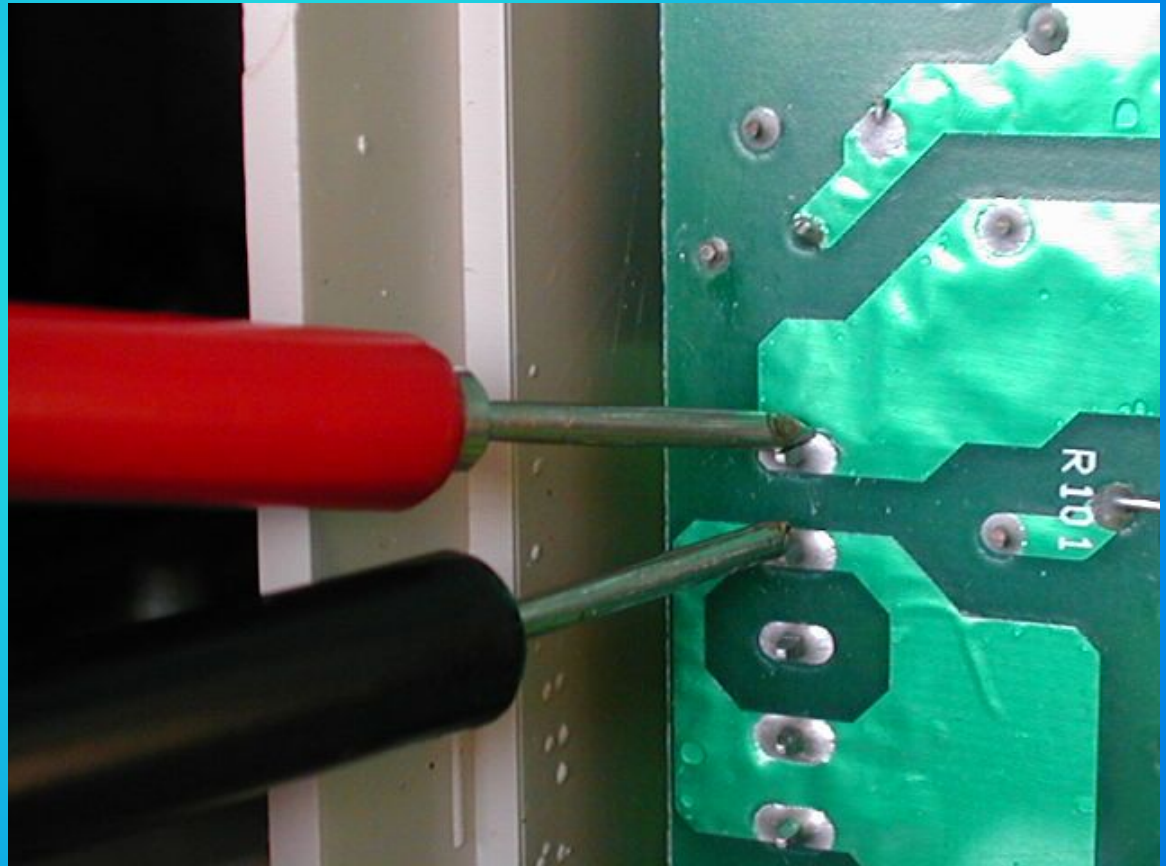
- Refrigerant charge
- Operation of  
Compressor



# MF SERIES SERVICE ANALYSIS

If no ice is produced  
check for:

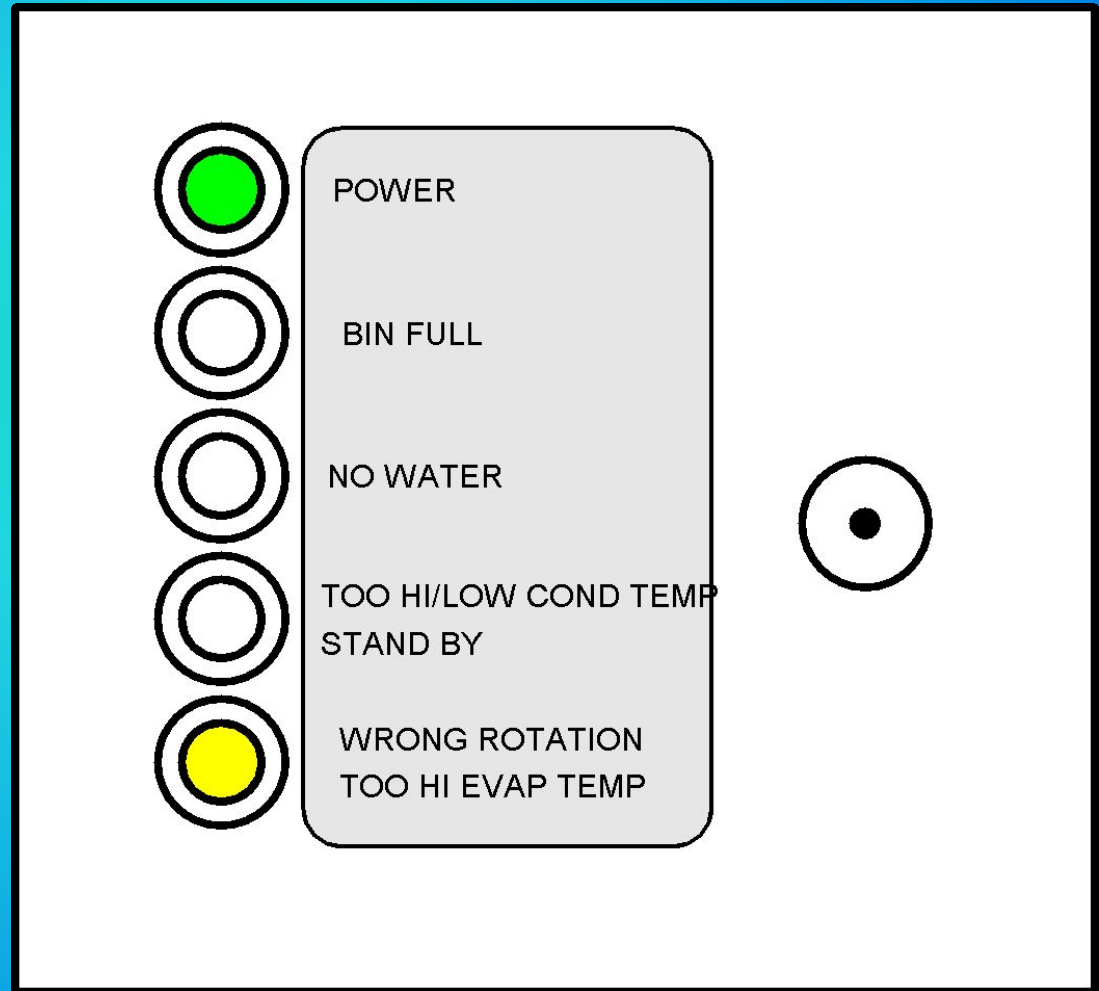
- Refrigerant charge
- Operation of  
Compressor
- Power out on the  
contacts 7 and 8  
of the PC Board





# MF SERIES SERVICE ANALYSIS

**No**  
**rotation of**  
**drive**  
**motor**  
  
Green and  
Yellow  
LED ON.

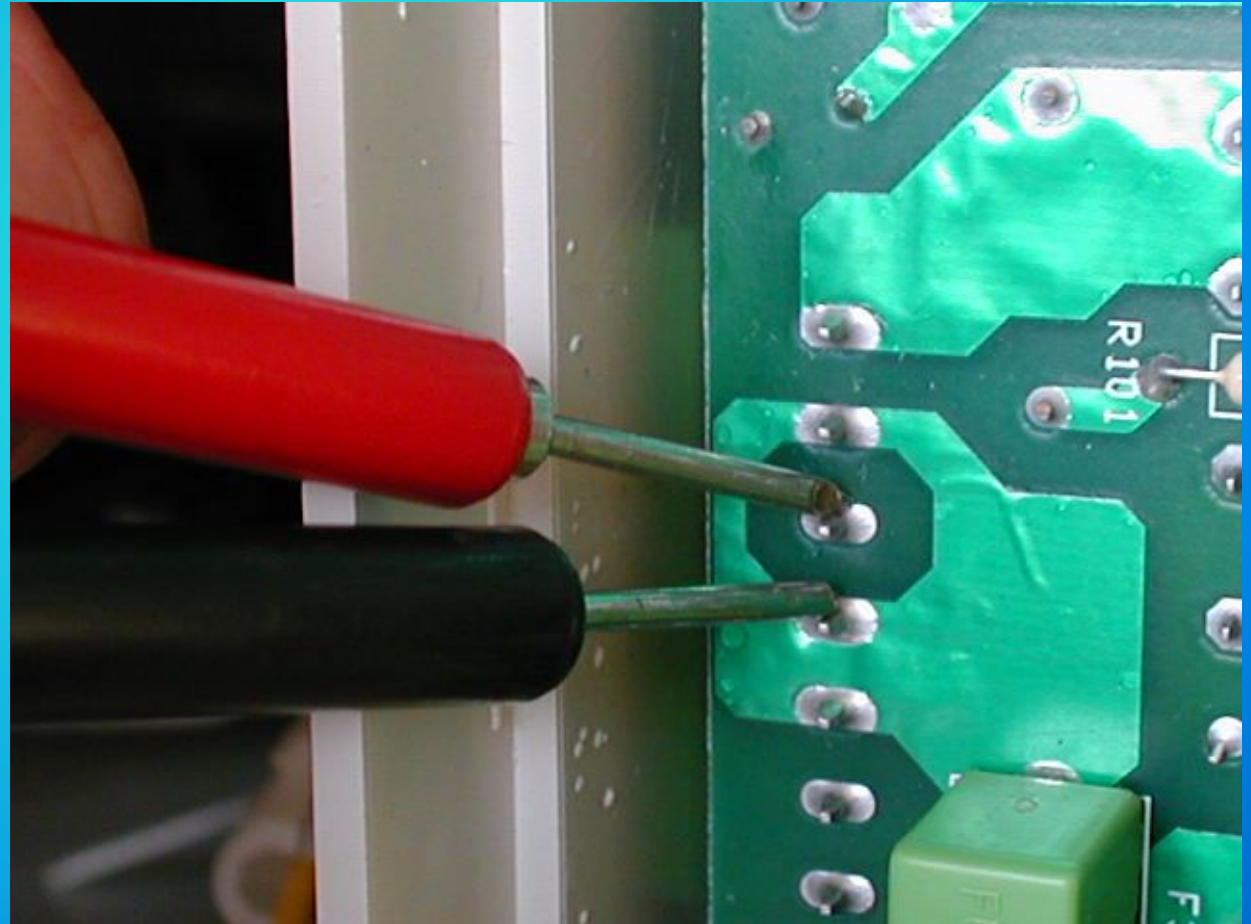




# MF SERIES SERVICE ANALYSIS

If the drive motor  
doesn't turn check  
for:

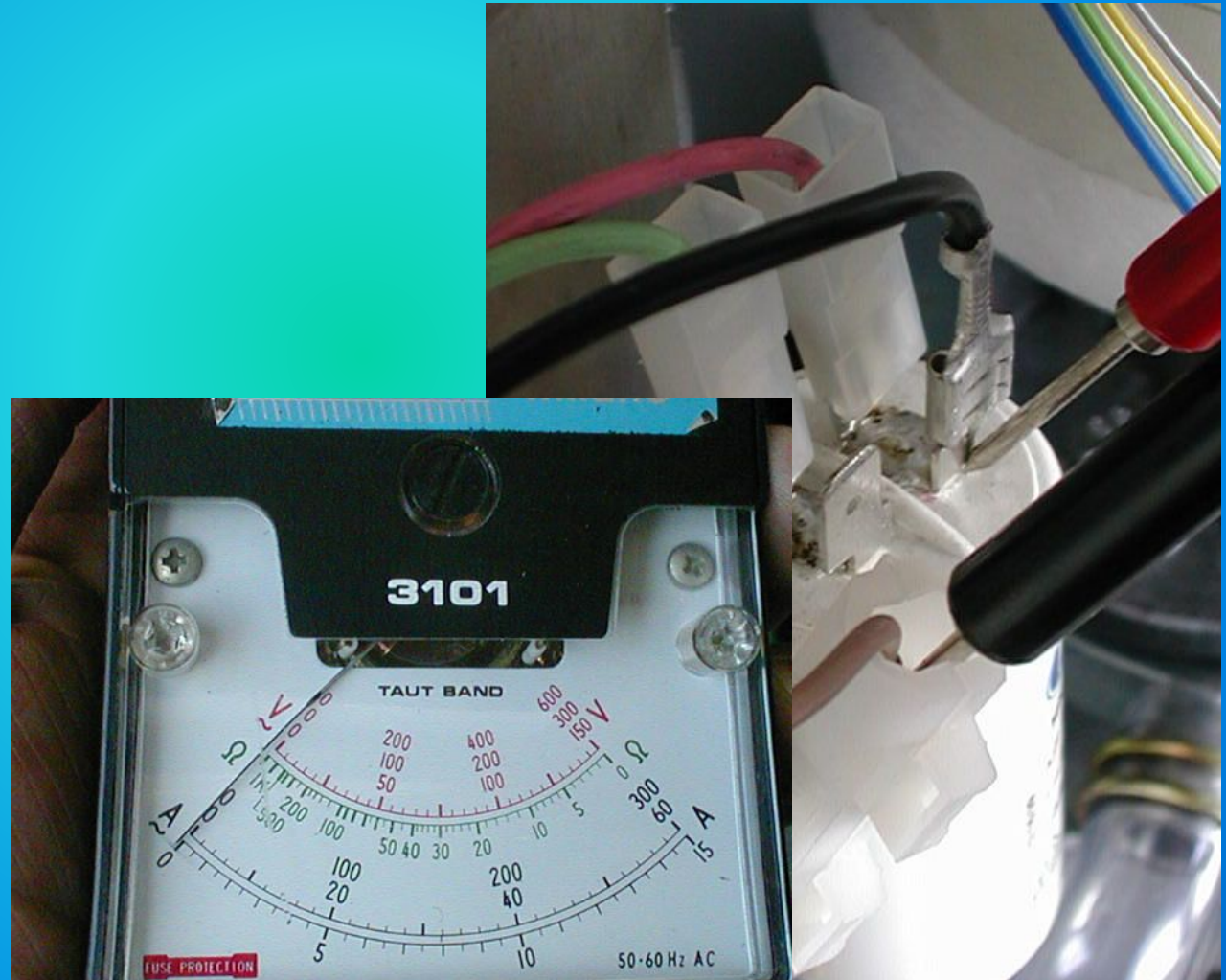
- Power out on  
the contacts 5  
and 6 of the PC  
Board



# 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:

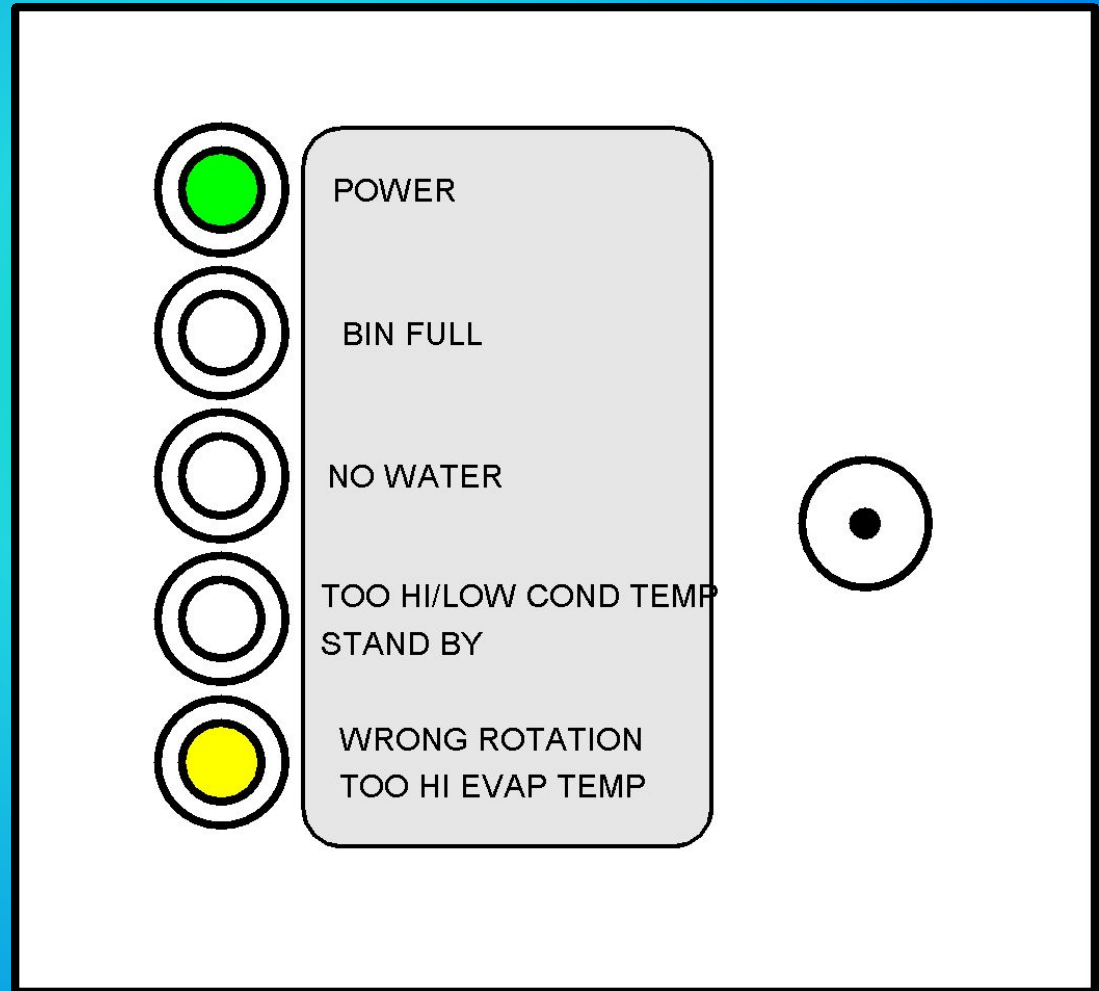
- Power out on the contacts  
5 and 6 of the PC Board
- Drive motor with open  
winding
- Drive motor capacitor  
worn-out
- Looked rotor



# MF SERIES SERVICE ANALYSIS

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

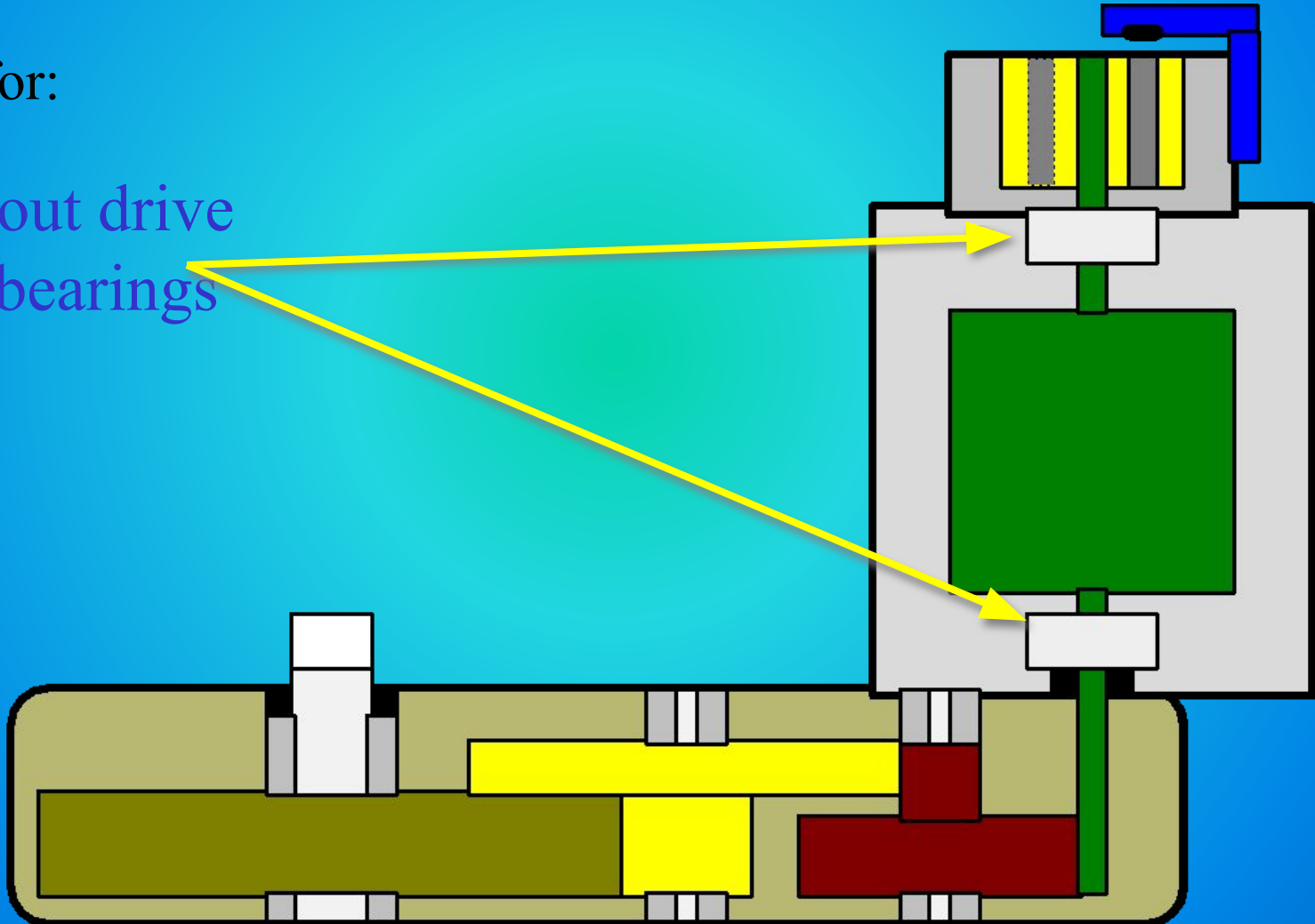
Green and  
Yellow  
LED ON.



# MF SERIES SERVICE ANALYSIS

Check for:

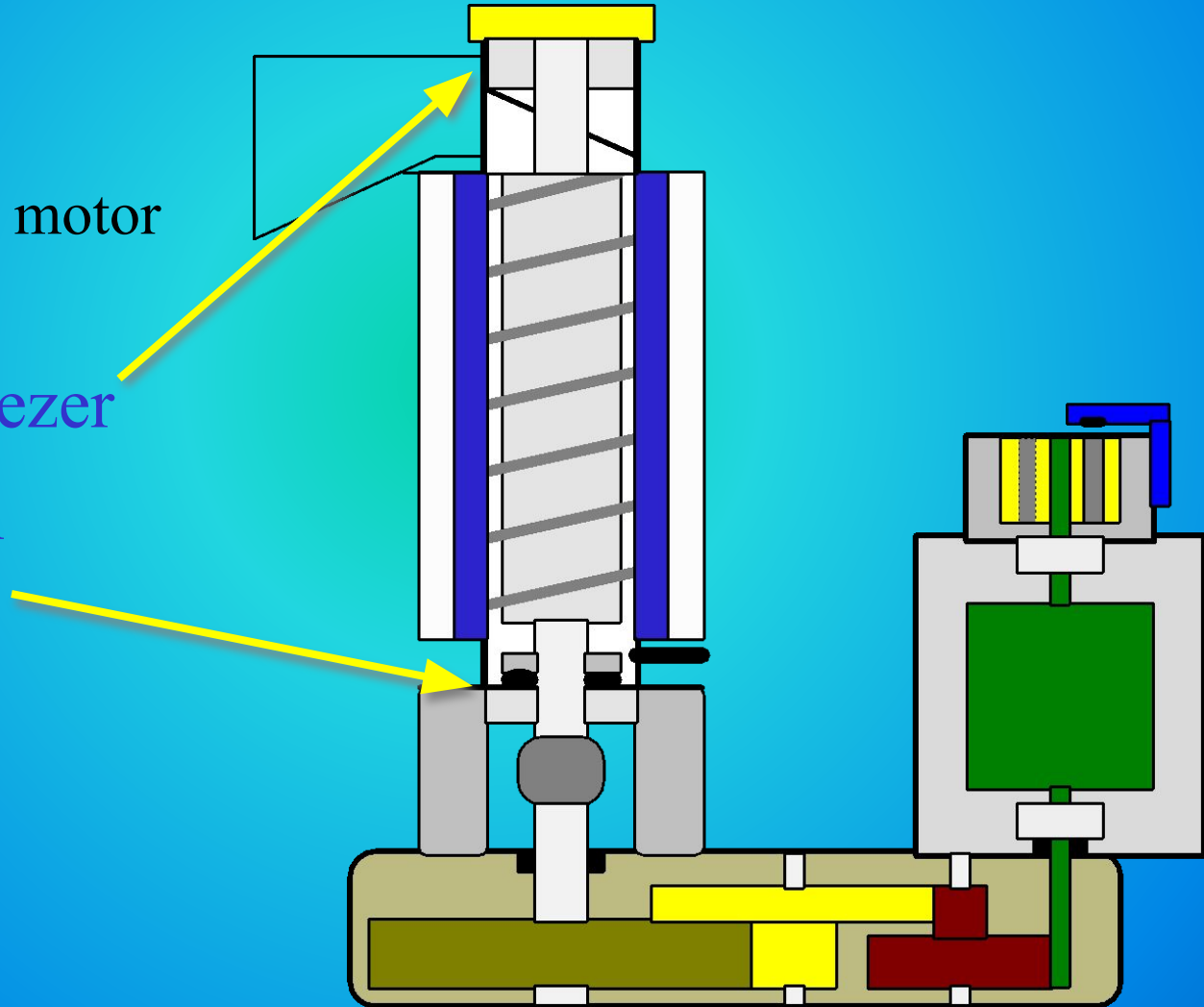
- Worn out drive motor bearings



# MF SERIES SERVICE ANALYSIS

Check for:

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



# MF SERIES SERVICE ANALYSIS

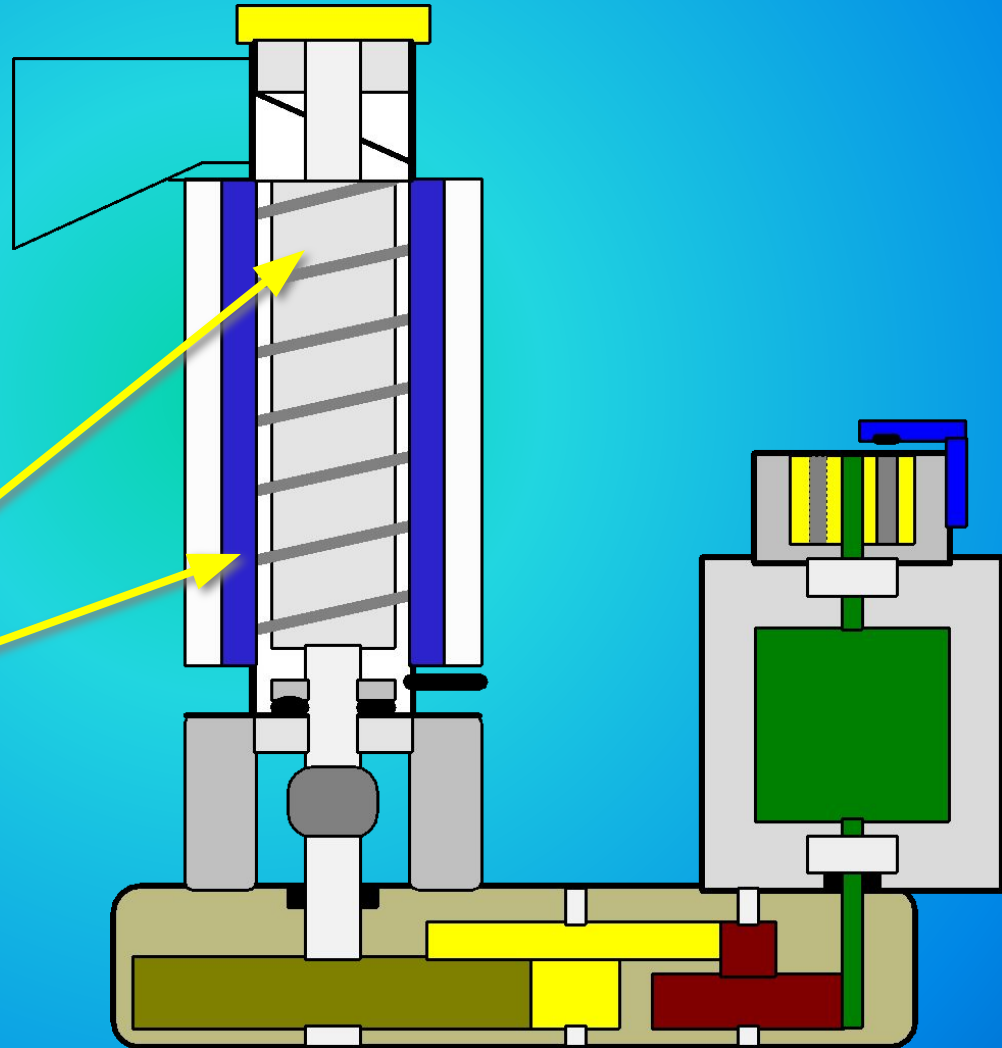




# MF SERIES SERVICE ANALYSIS

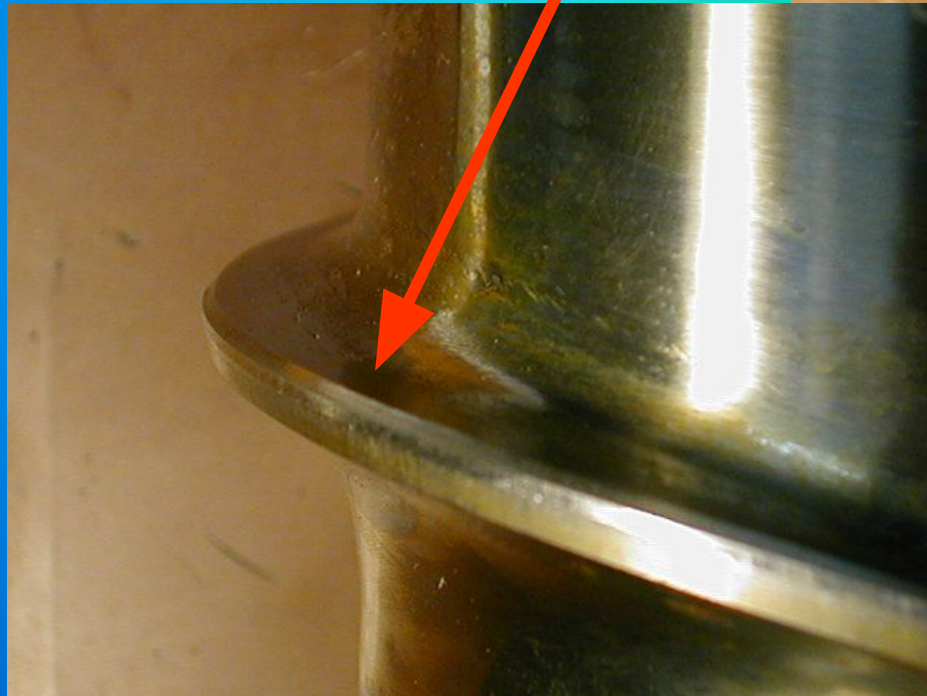
Check for:

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



# MF SERIES SERVICE ANALYSIS

OK!

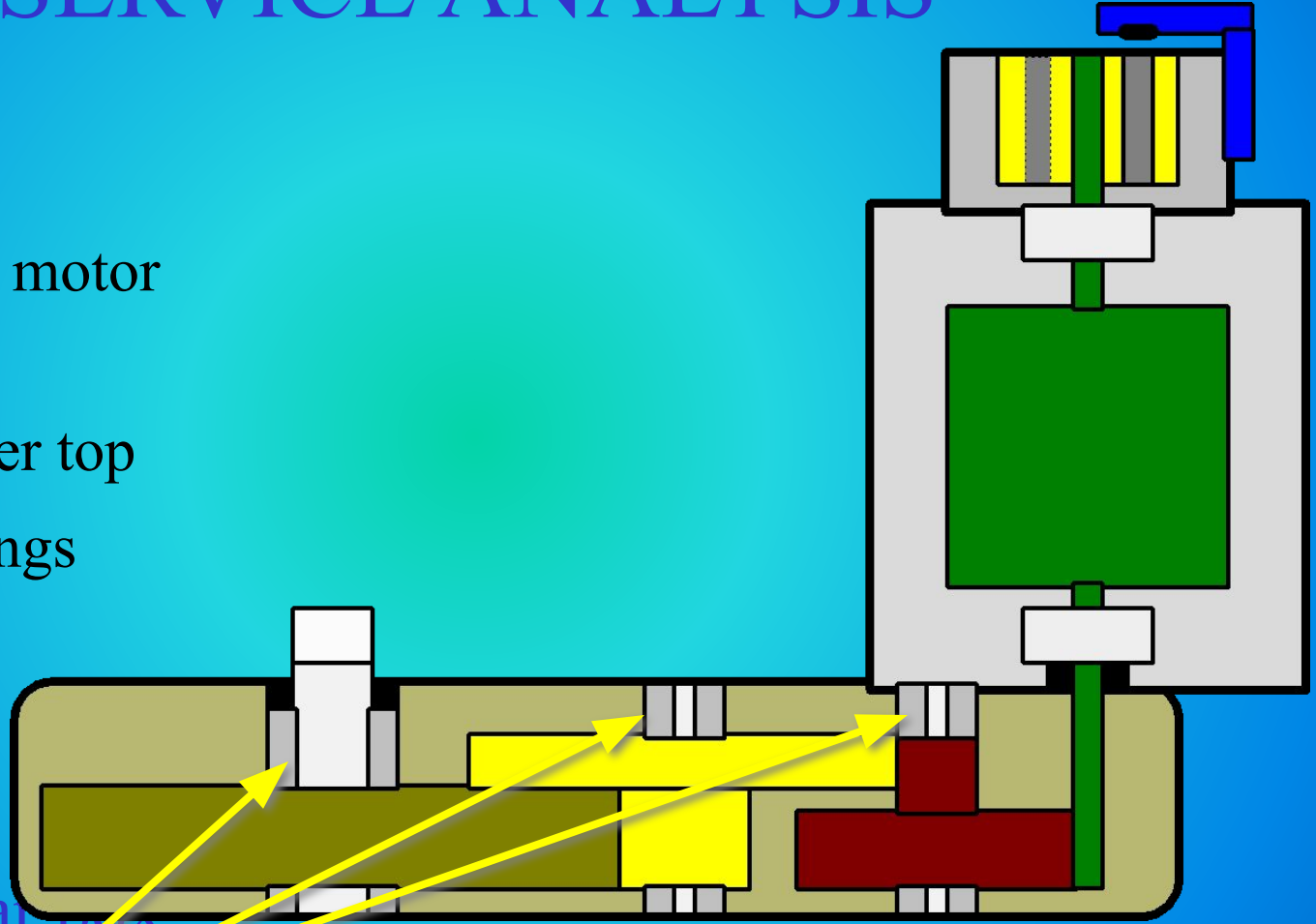


KO!

# 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

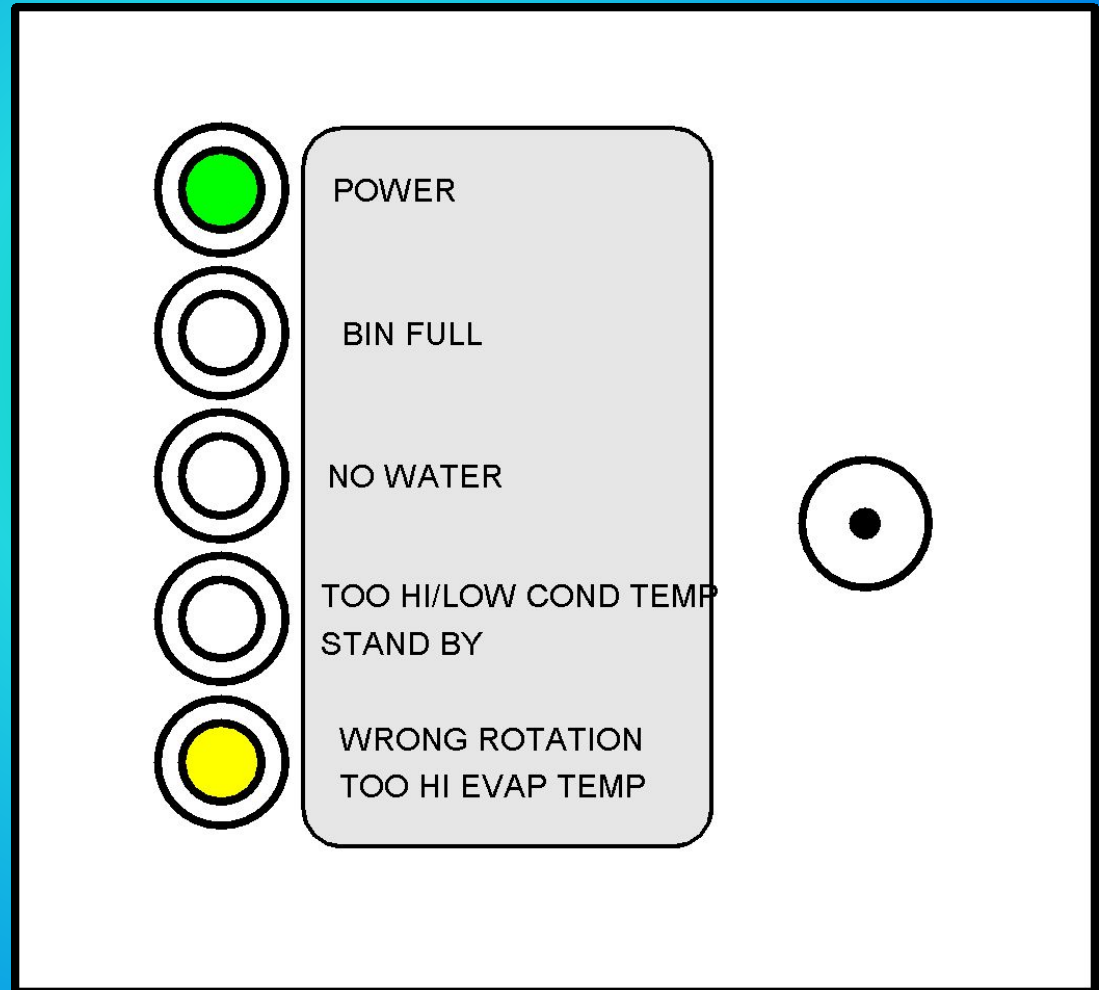




# MF SERIES SERVICE ANALYSIS

**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:

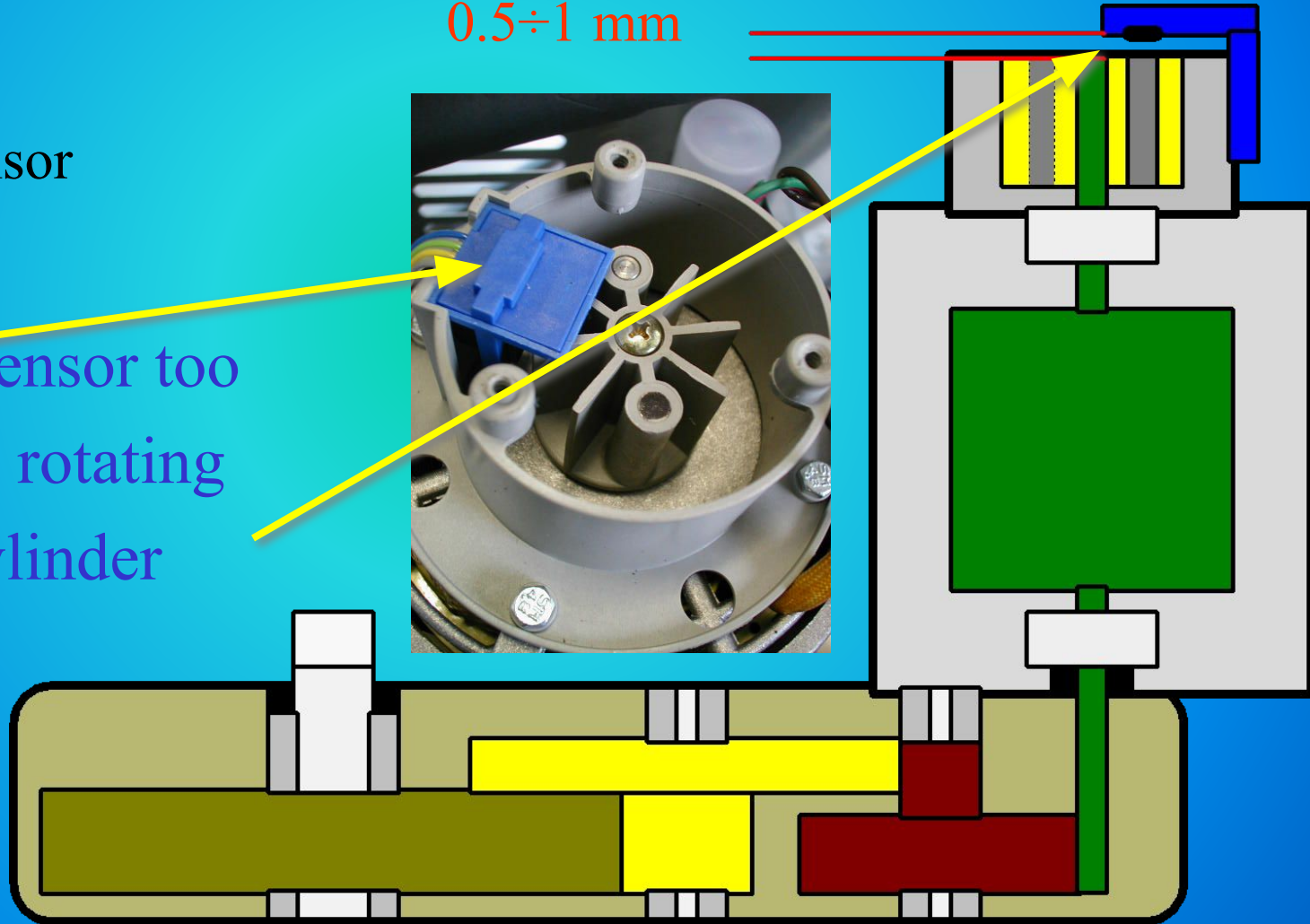
- Magnetic sensor unplugged



# MF SERIES SERVICE ANALYSIS

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

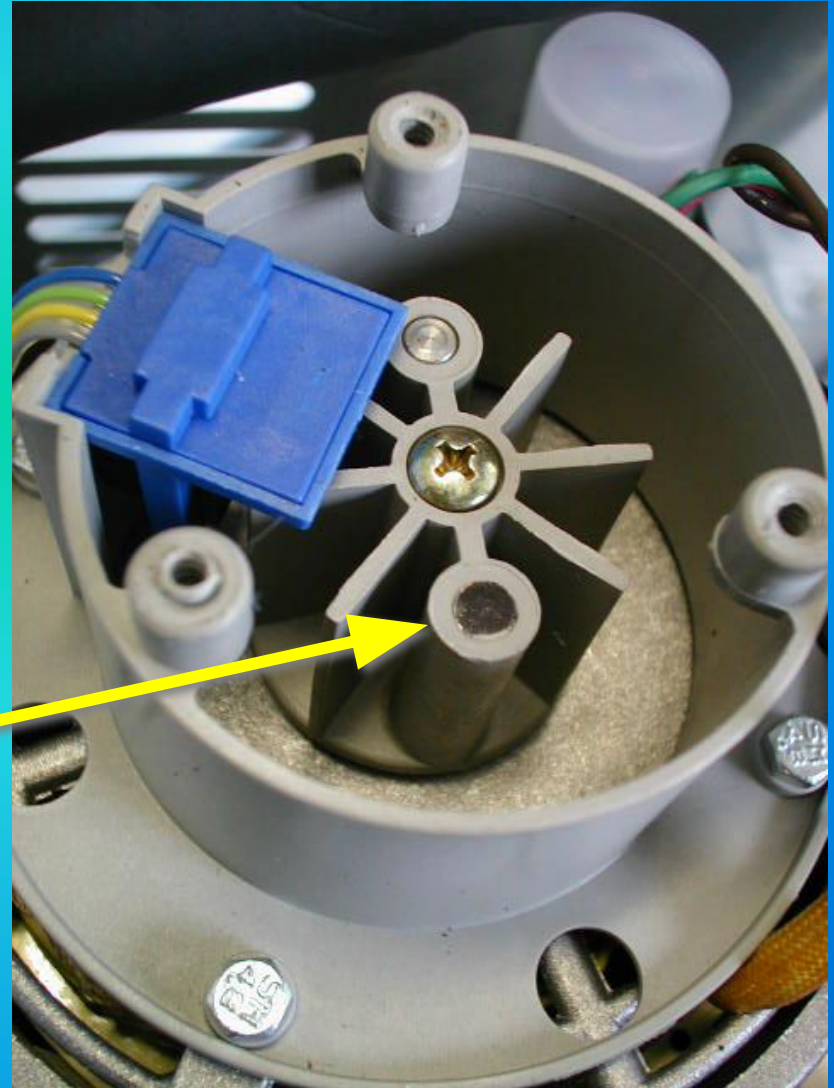
0.5÷1 mm



# MF SERIES

## SERVICE ANALYSIS

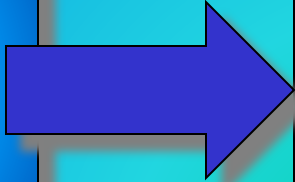
- Magnetic sensor unplugged
- Magnetic sensor too far from the rotating magnetic cylinder
- Magnetic cylinder partially or fully demagnetized



# 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

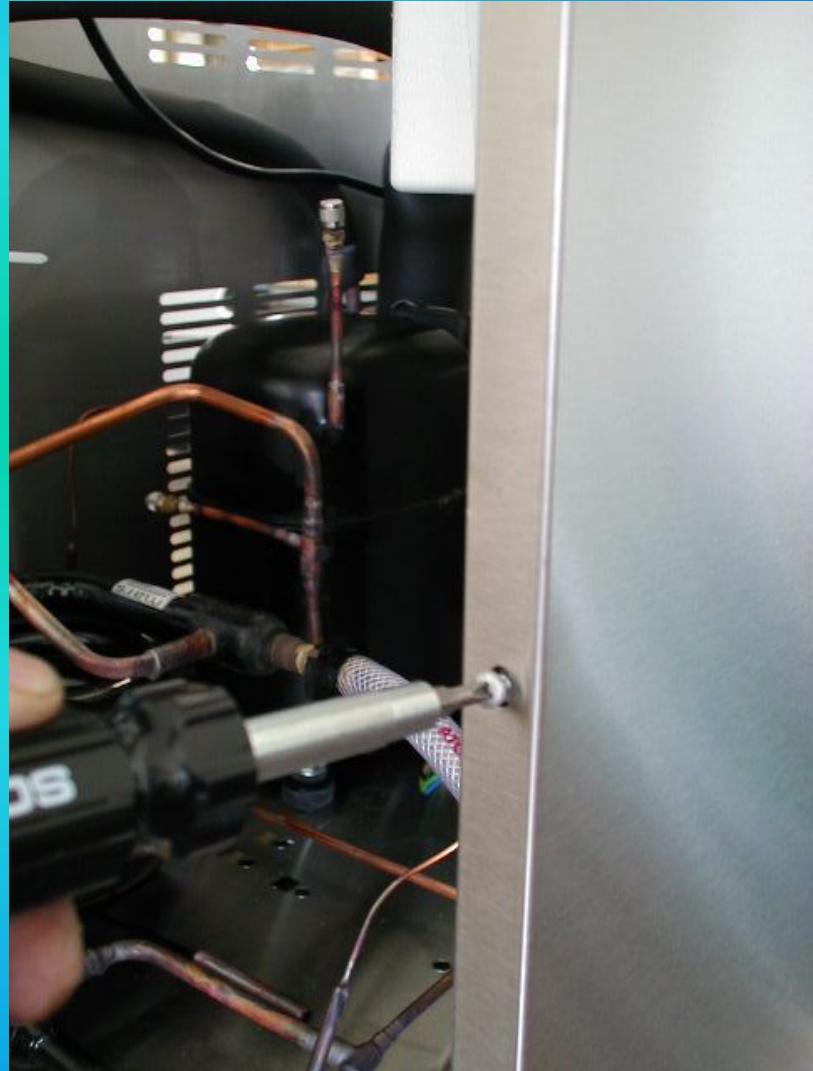
Remove first the  
front/top panel  
and then .....



# MF 22-30 SERIES

## REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

.....the sides/rear  
panel.

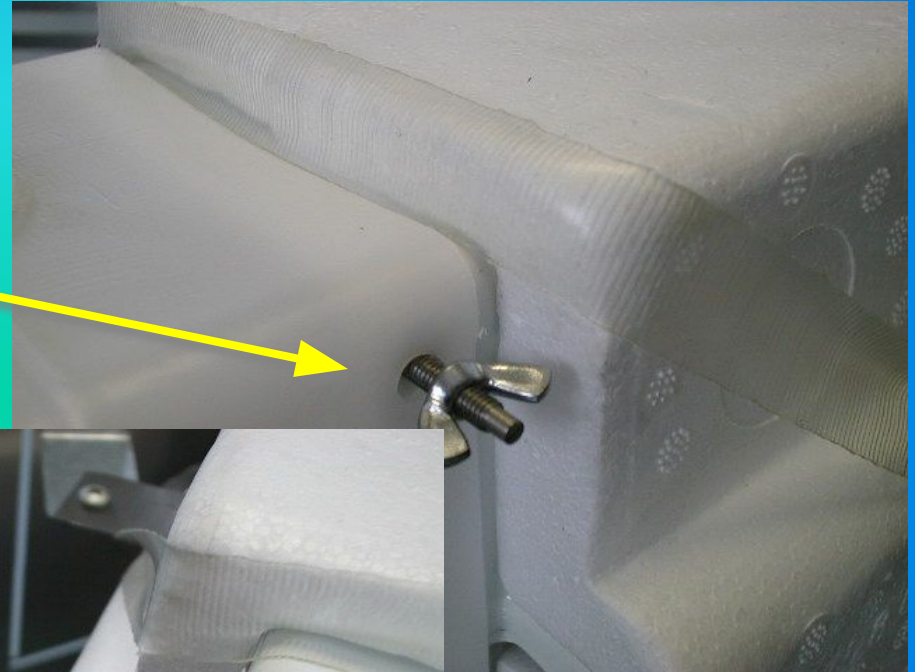




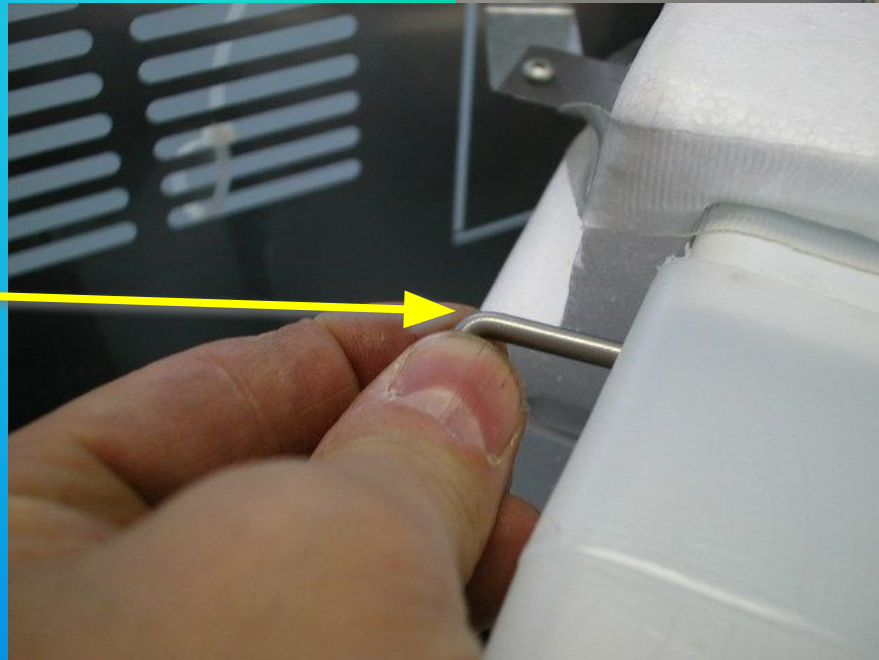
# MF 22-30 SERIES

## REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

Unloose the  
wing nut  
then.....



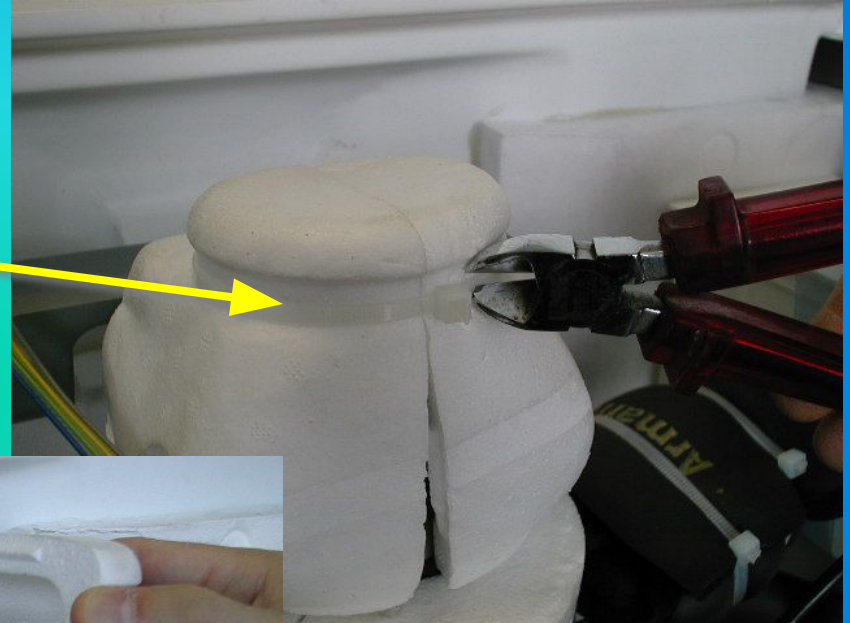
.....remove  
the metal rod  
securing the  
plastic ice  
chute to the  
ice spout.



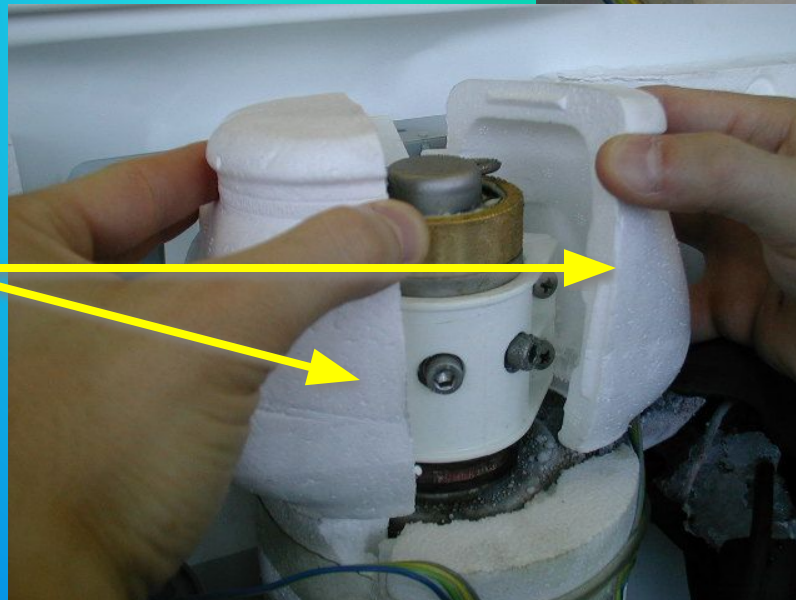
# MF 22-30 SERIES

## REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

Cut the plastic strap and remove the....



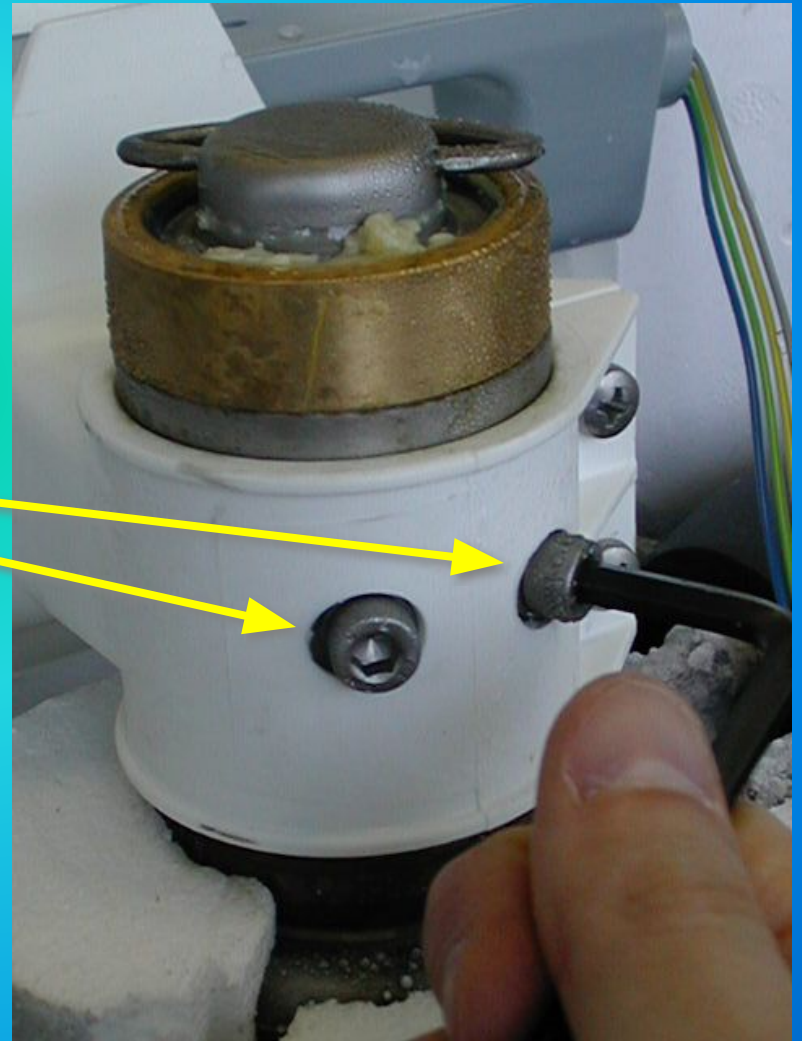
.....two polystyrene insulation from the spout.



# 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.

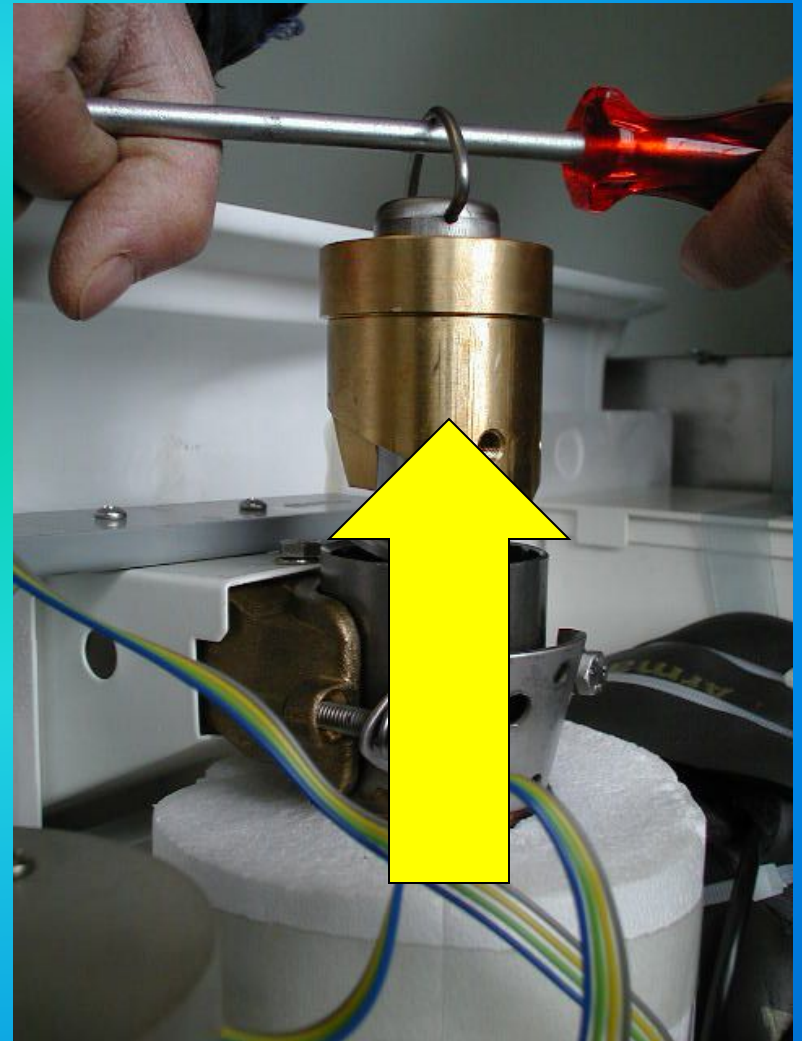




# MF 22-30 SERIES

## 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

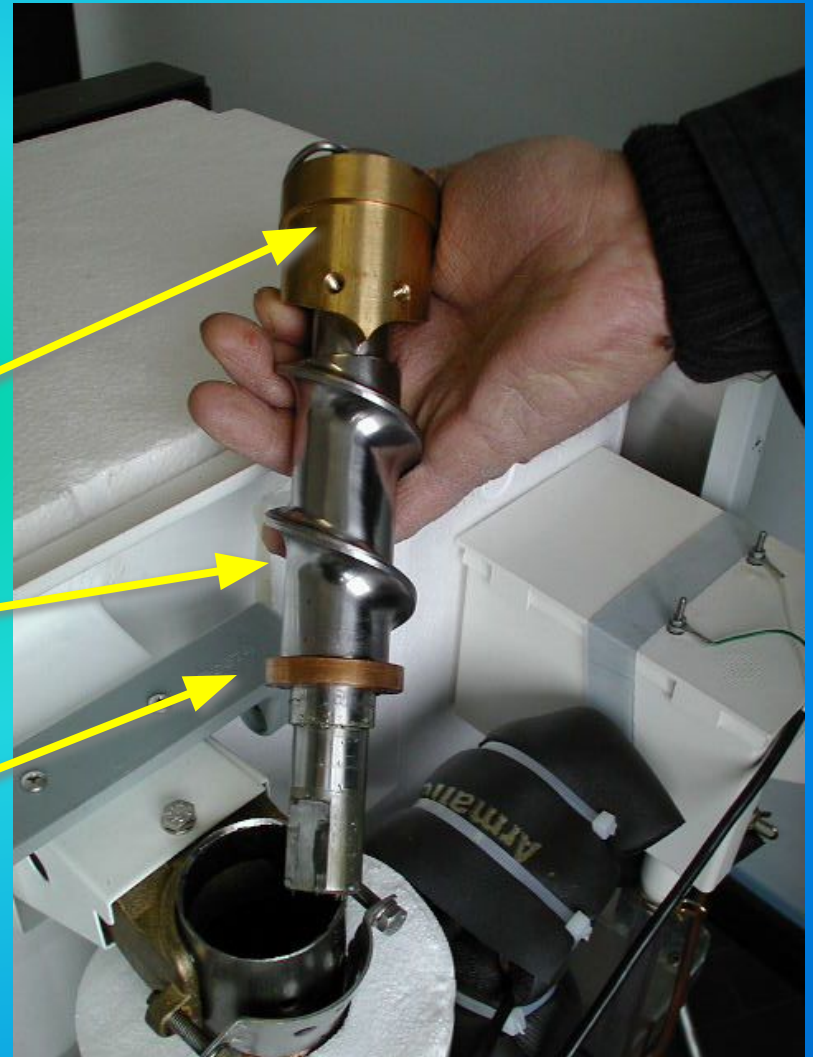
## REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

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

ice breaker assembly

auger

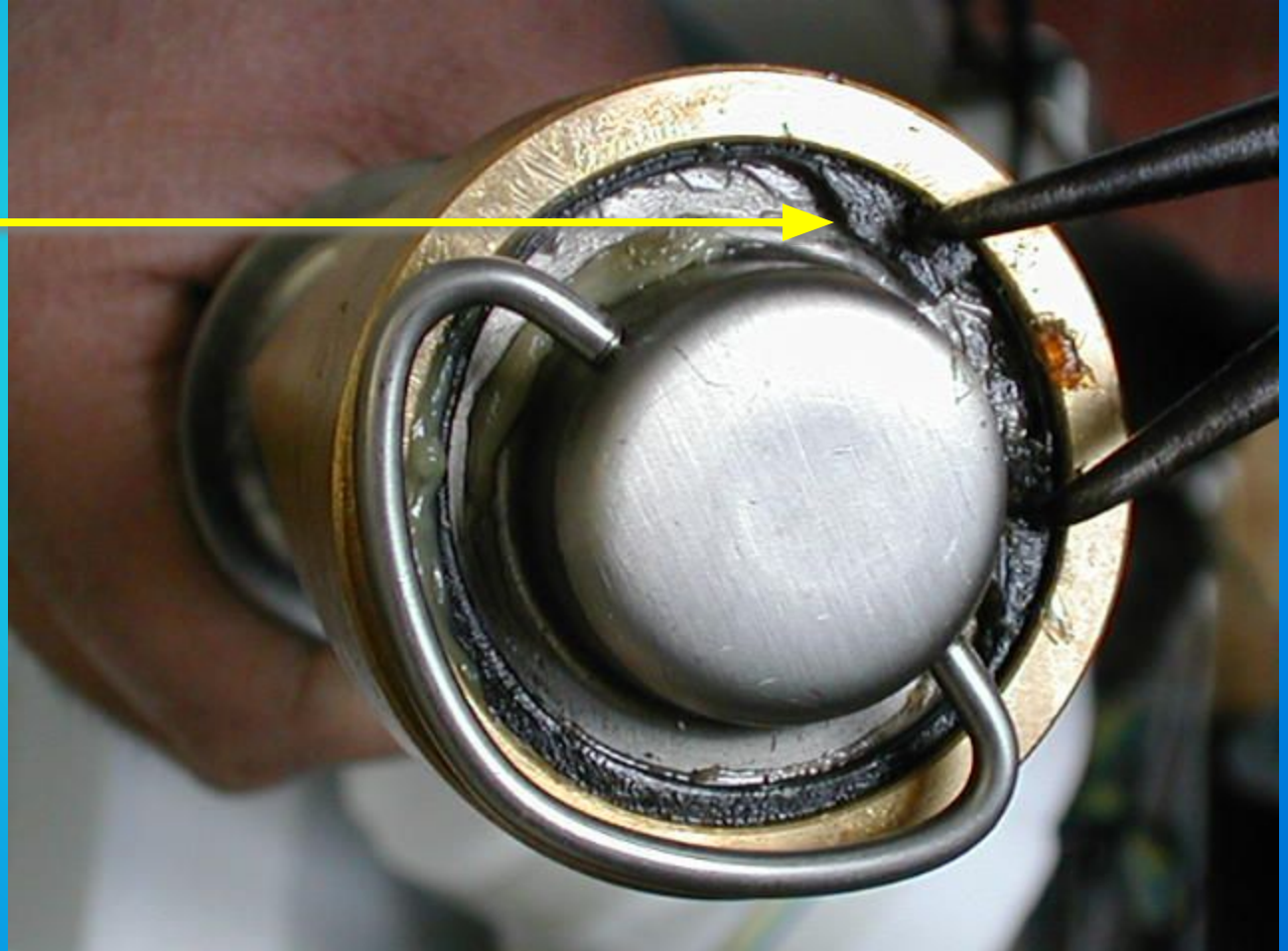
top half of the water seal



# 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.

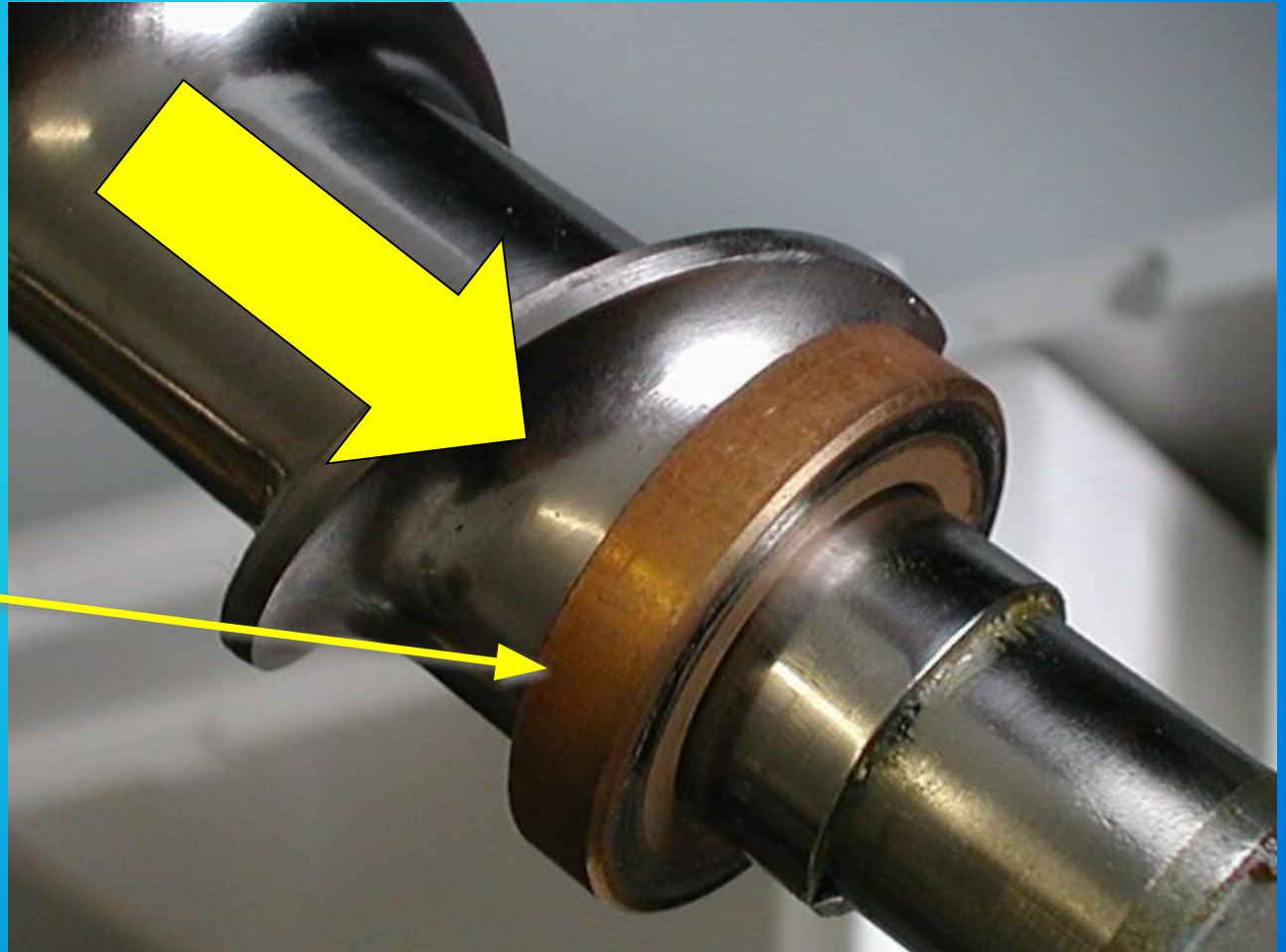




# MF 22-30 SERIES

## REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

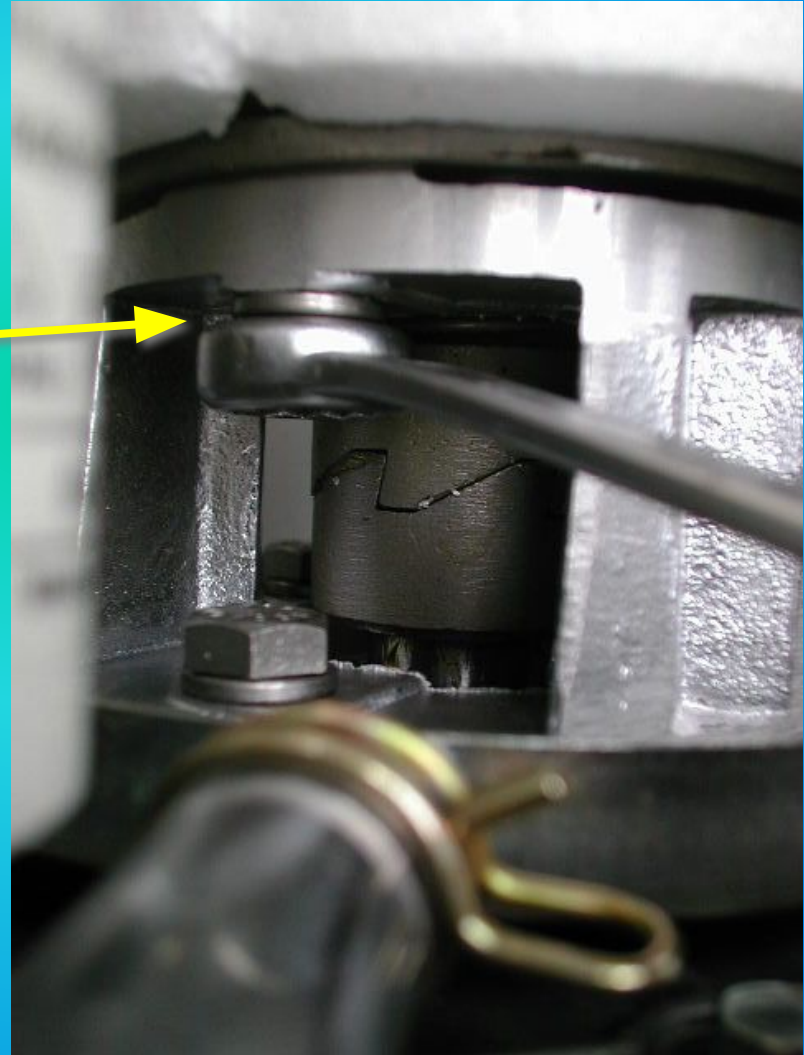
Slide off from the bottom of the auger the upper half of the water seal.



# 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 .....



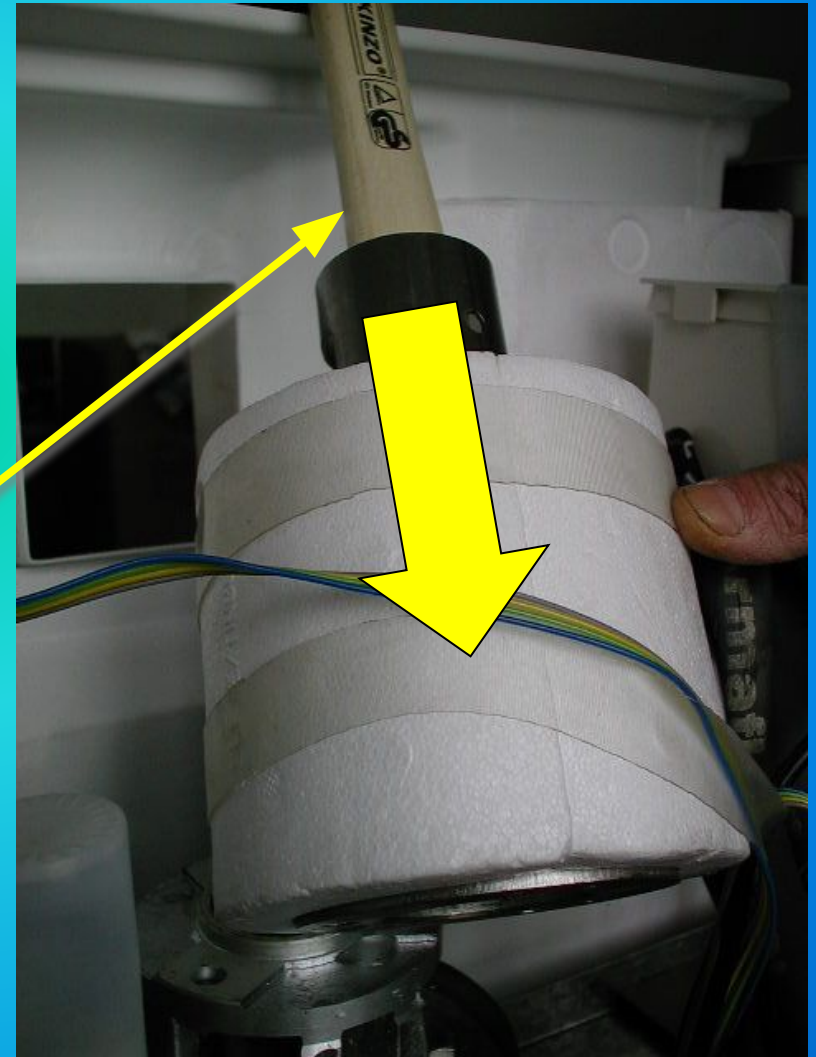


# MF 22-30 SERIES

## 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.....

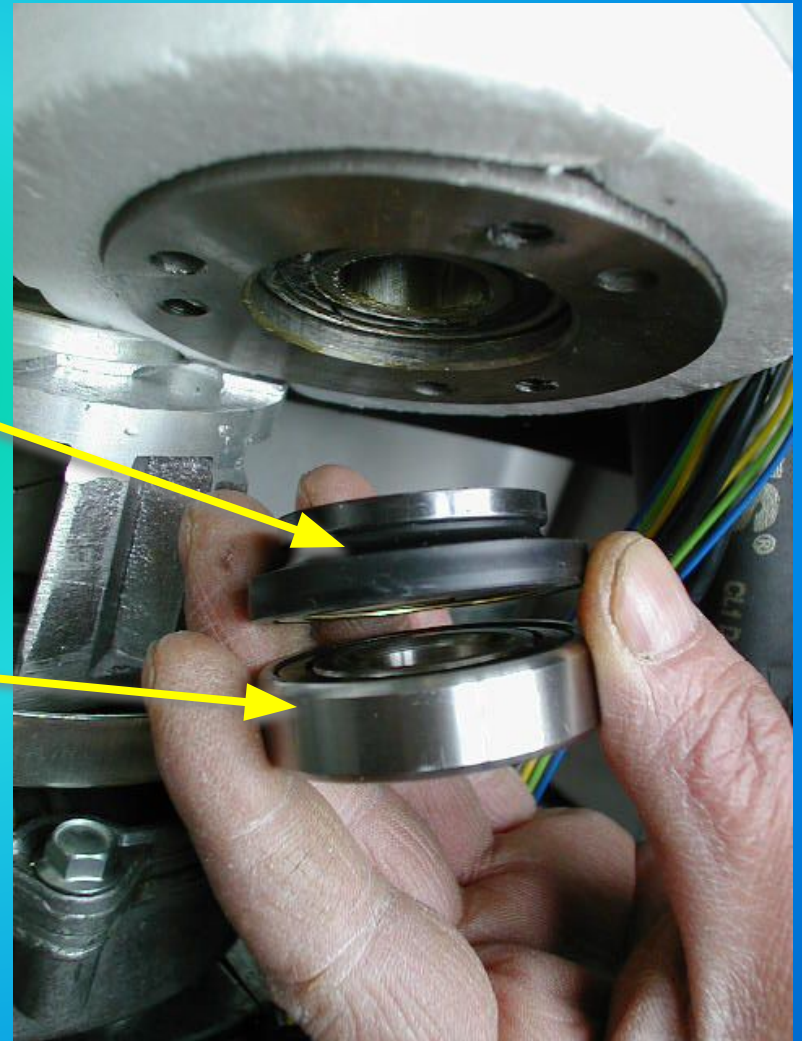


# MF 22-30 SERIES

## 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

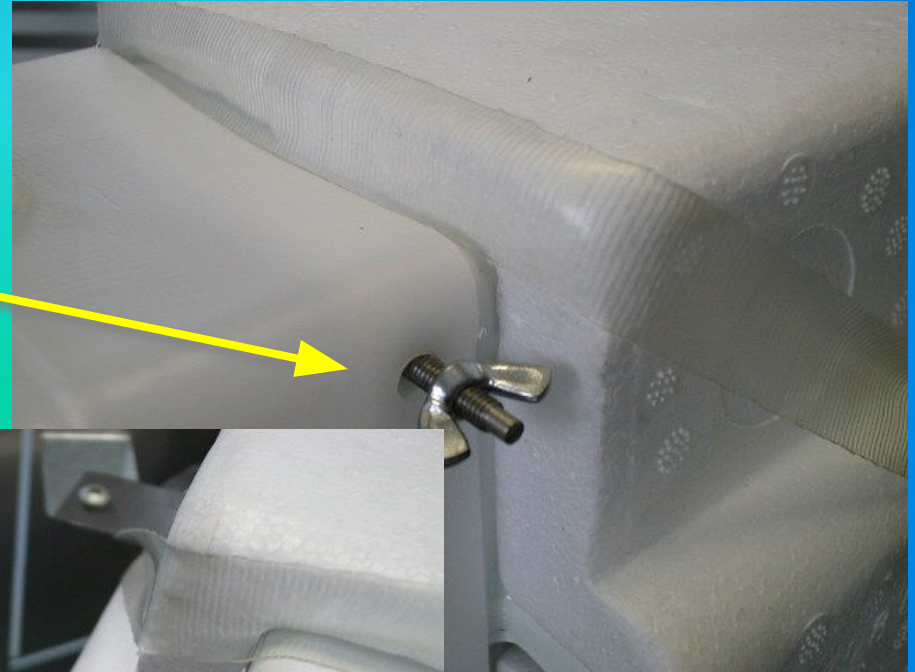
.....the sides/rear  
panel.



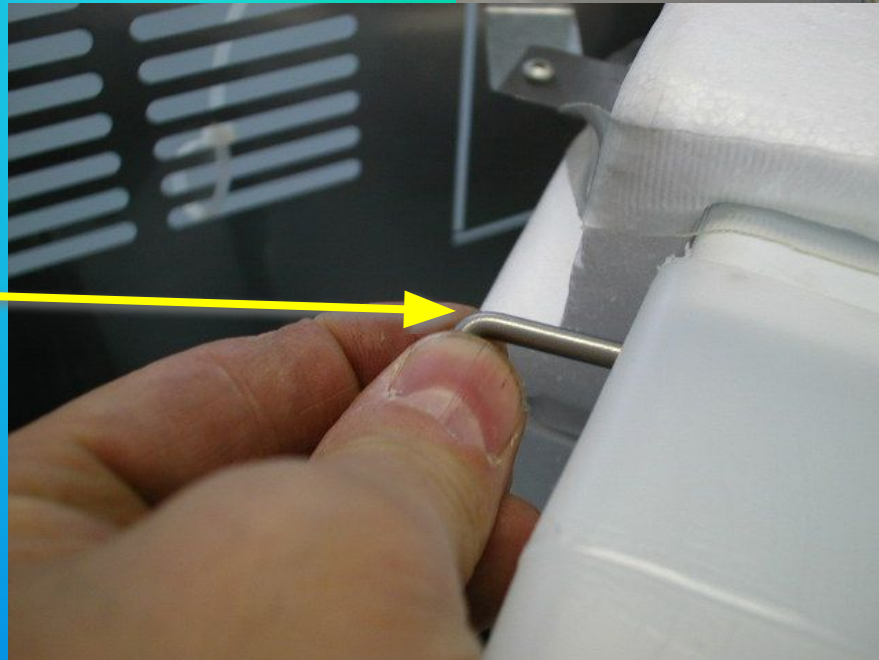
# MF 41-51-61 SERIES

## 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....



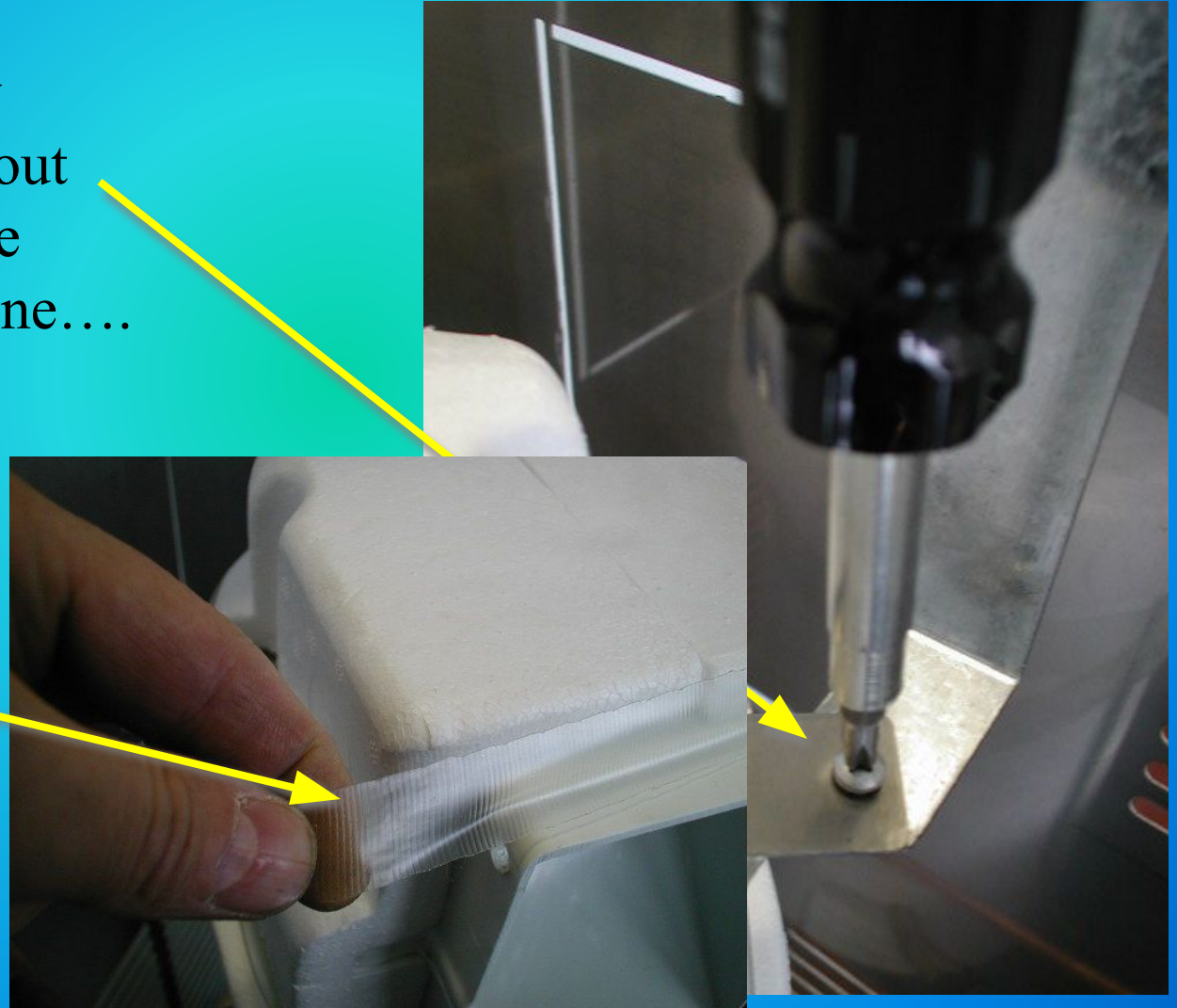


# MF 41-51-61 SERIES

## 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  
polystyrene  
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.

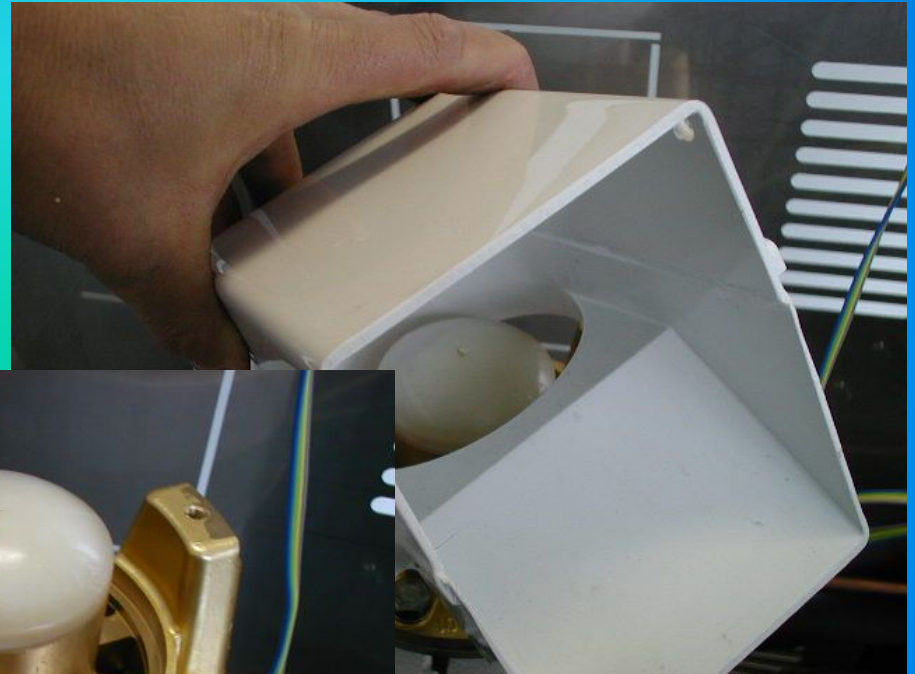




# MF 41-51-61 SERIES

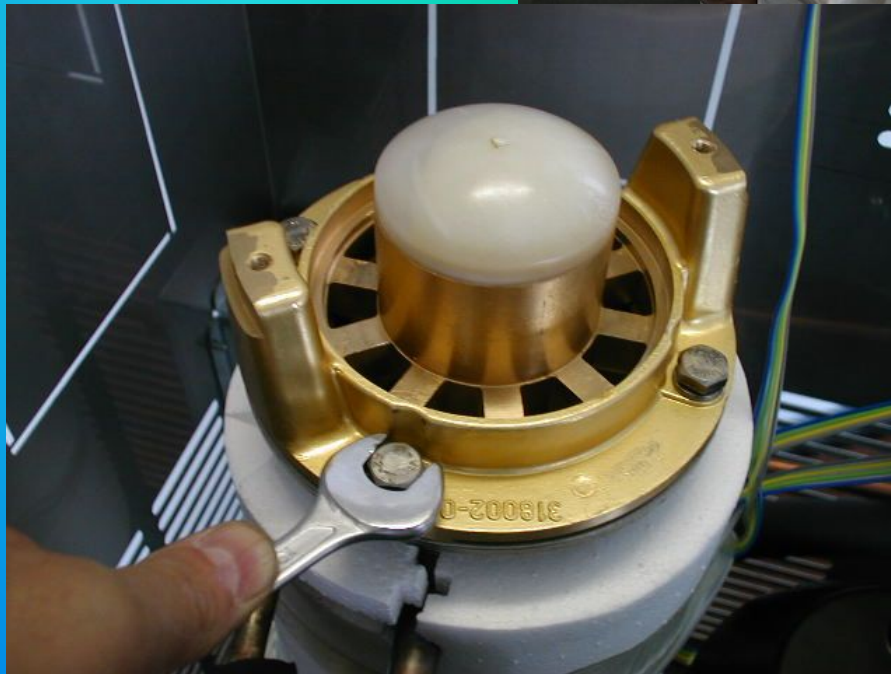
## REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

Remove the plastic ice spout....



....then

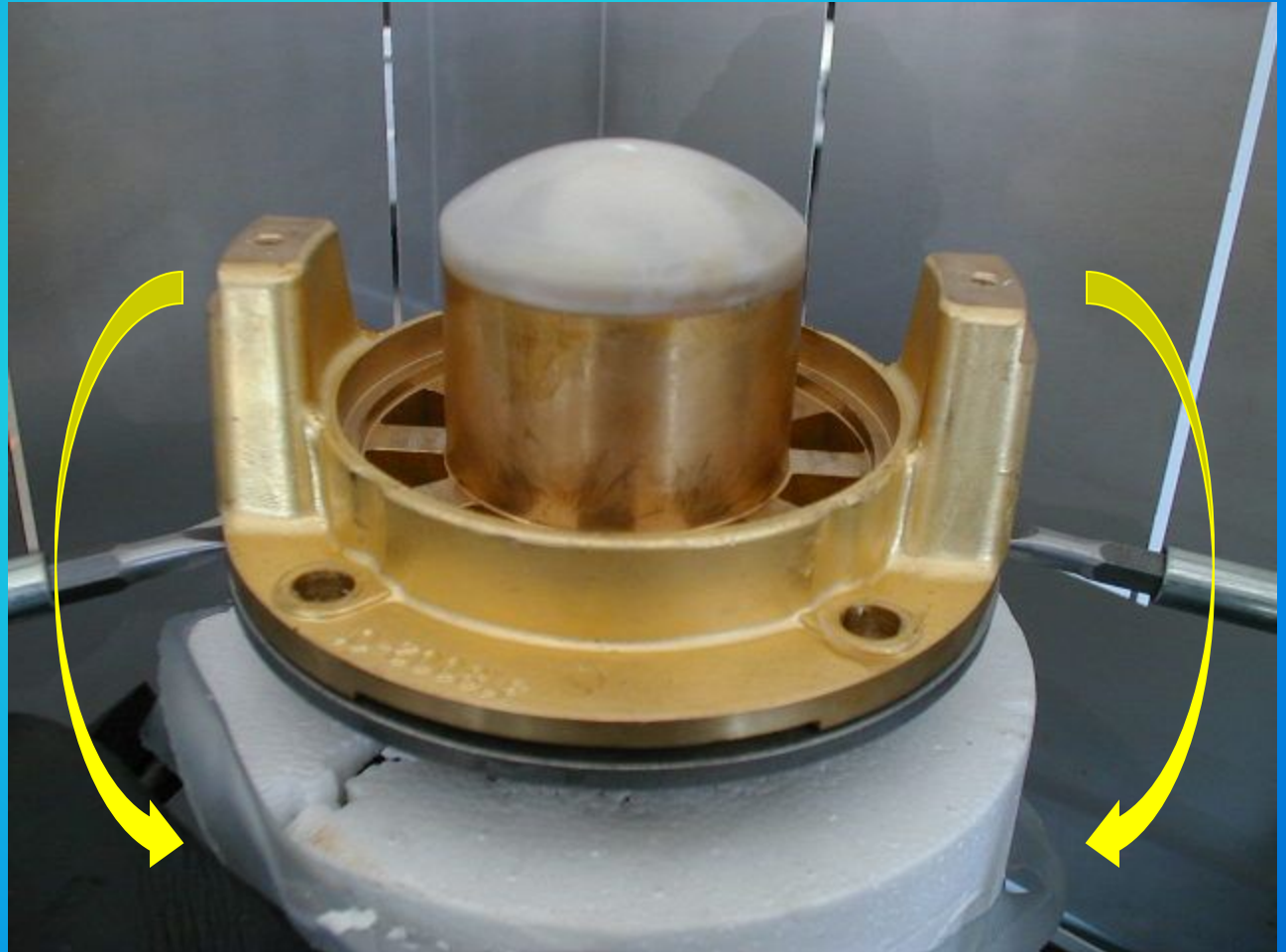
unloose the  
four bolts  
holding the  
ice breaker  
to the upper  
flange of  
the freezer.



# MF 41-51-61 SERIES

## REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

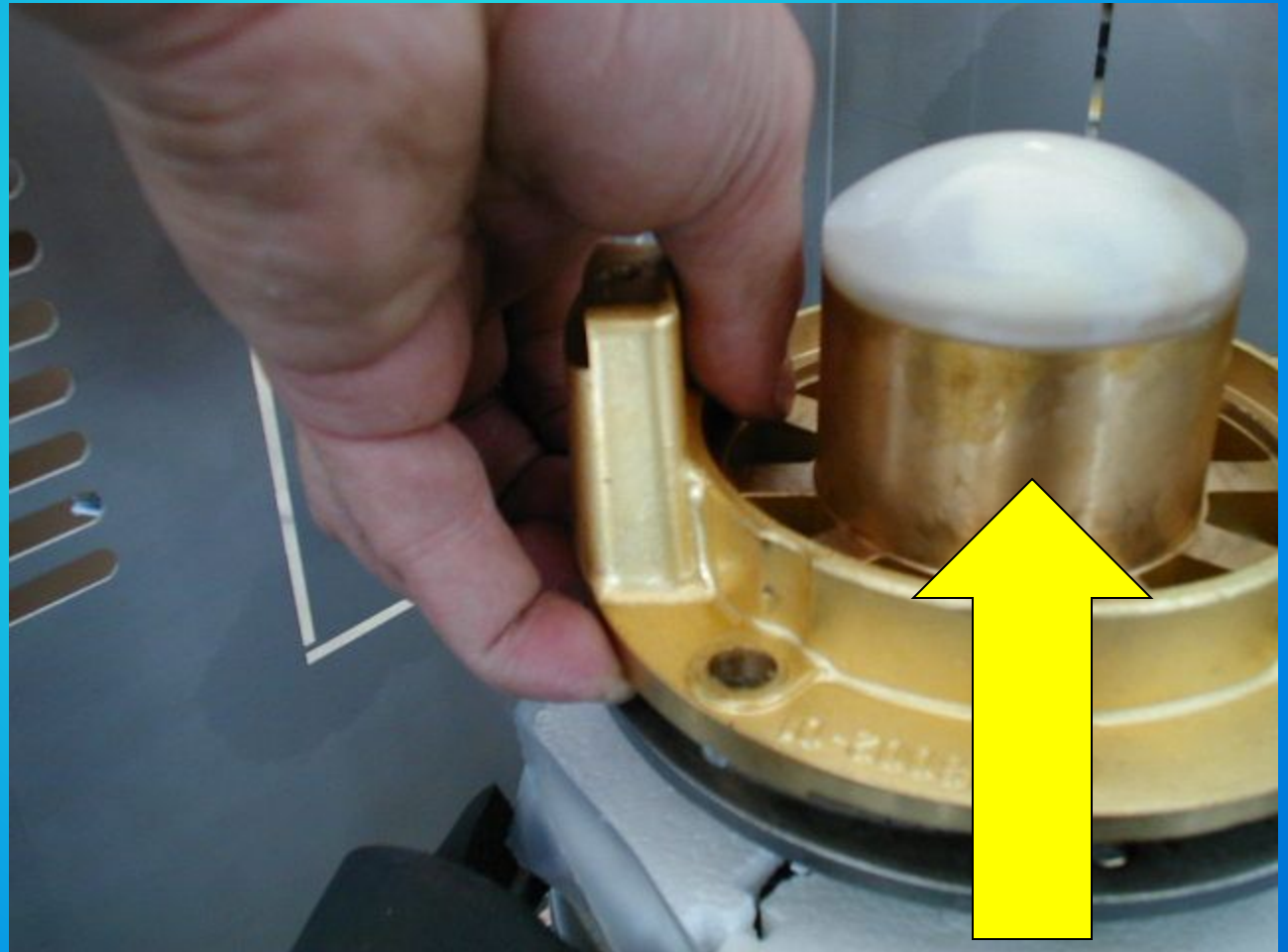
With a couple  
of screwdrivers  
rise up a little  
bit the ice  
breaker and  
auger assembly  
then ....



# 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

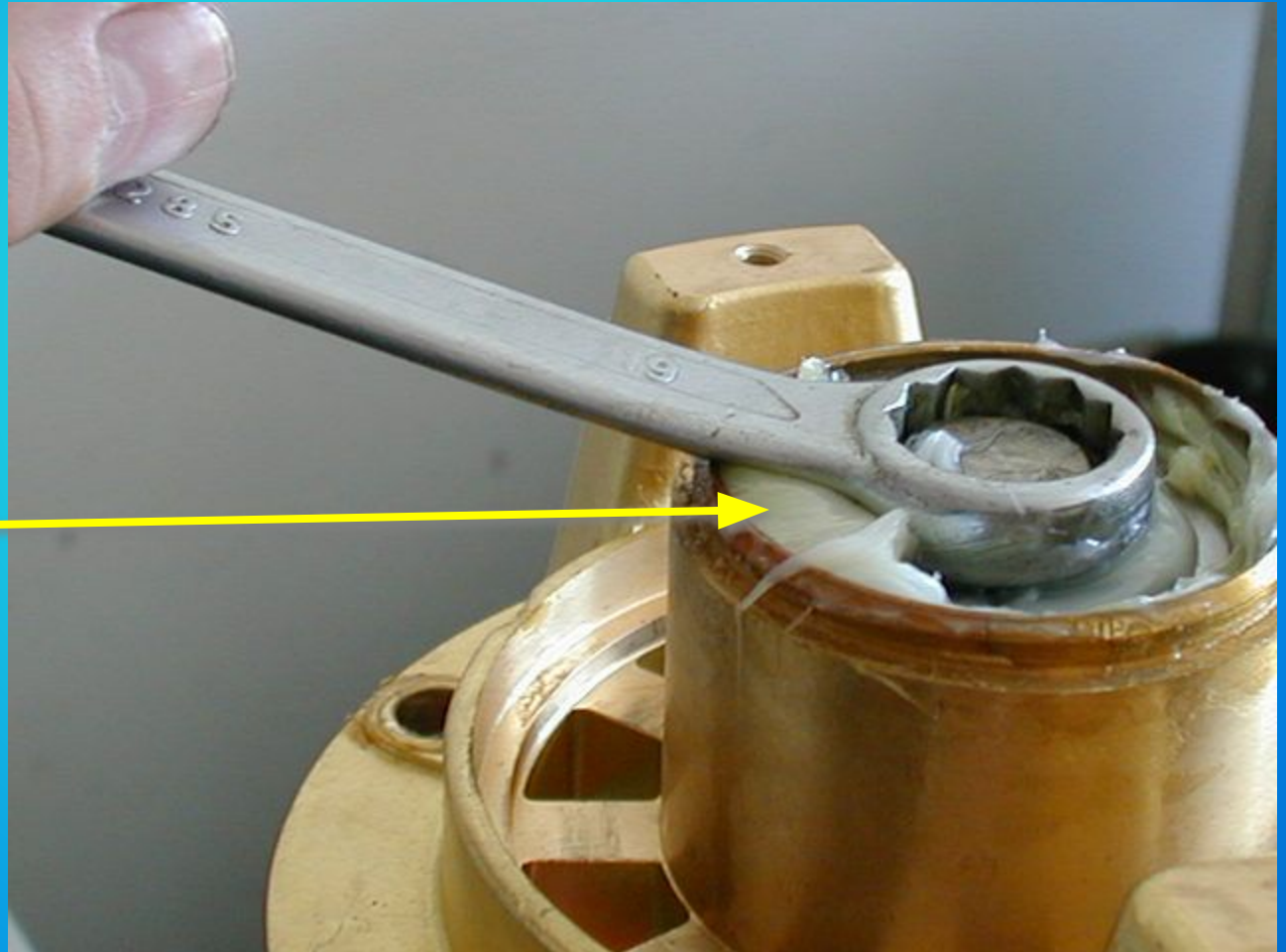
With a screwdriver remove the plastic cap from the upper side of the ice breaker.



# MF 41-51-61 SERIES

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

Unloose and  
remove the  
screw and.....

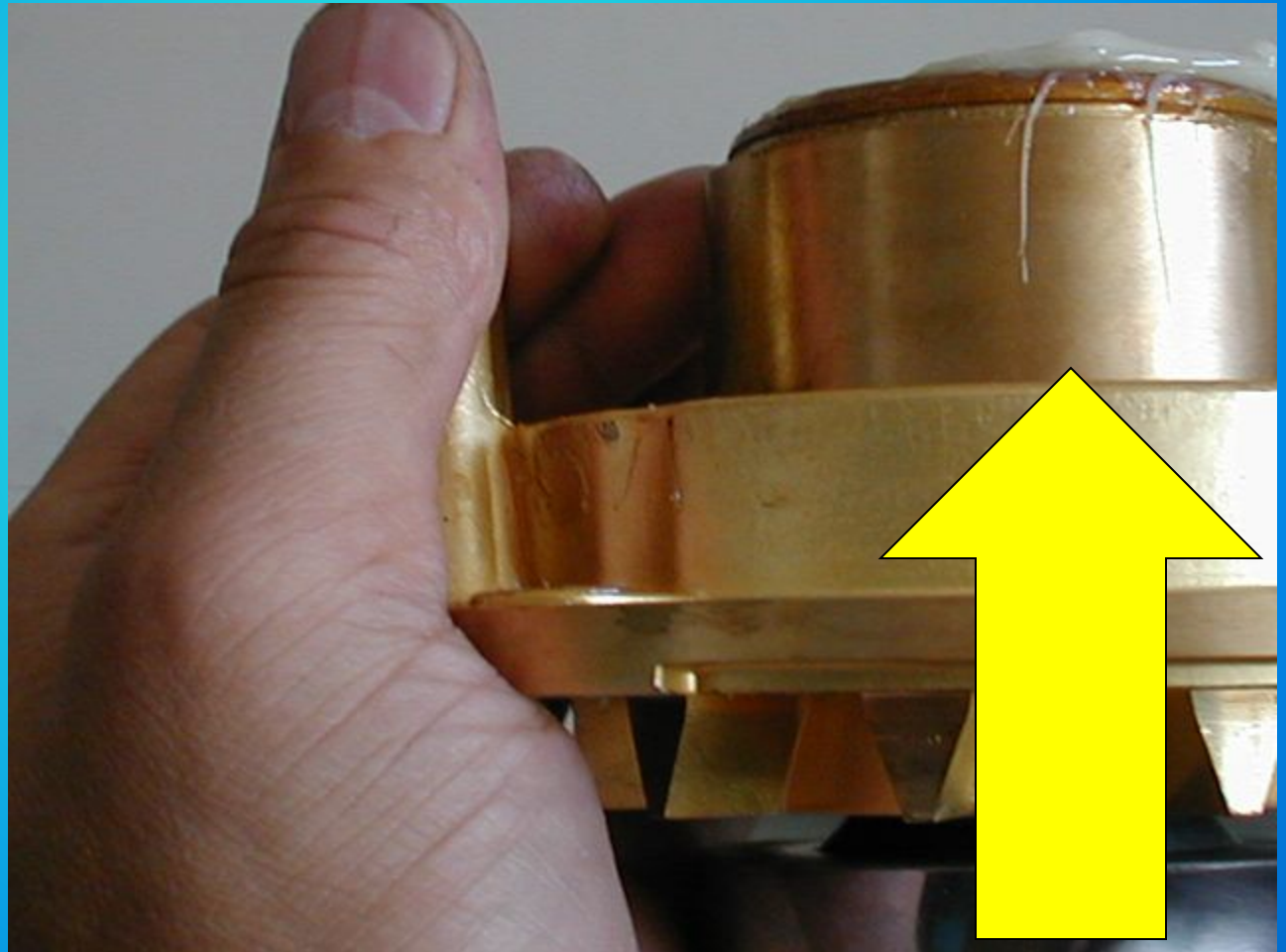




# MF 41-51-61 SERIES

## 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 SEAL AND BEARINGS

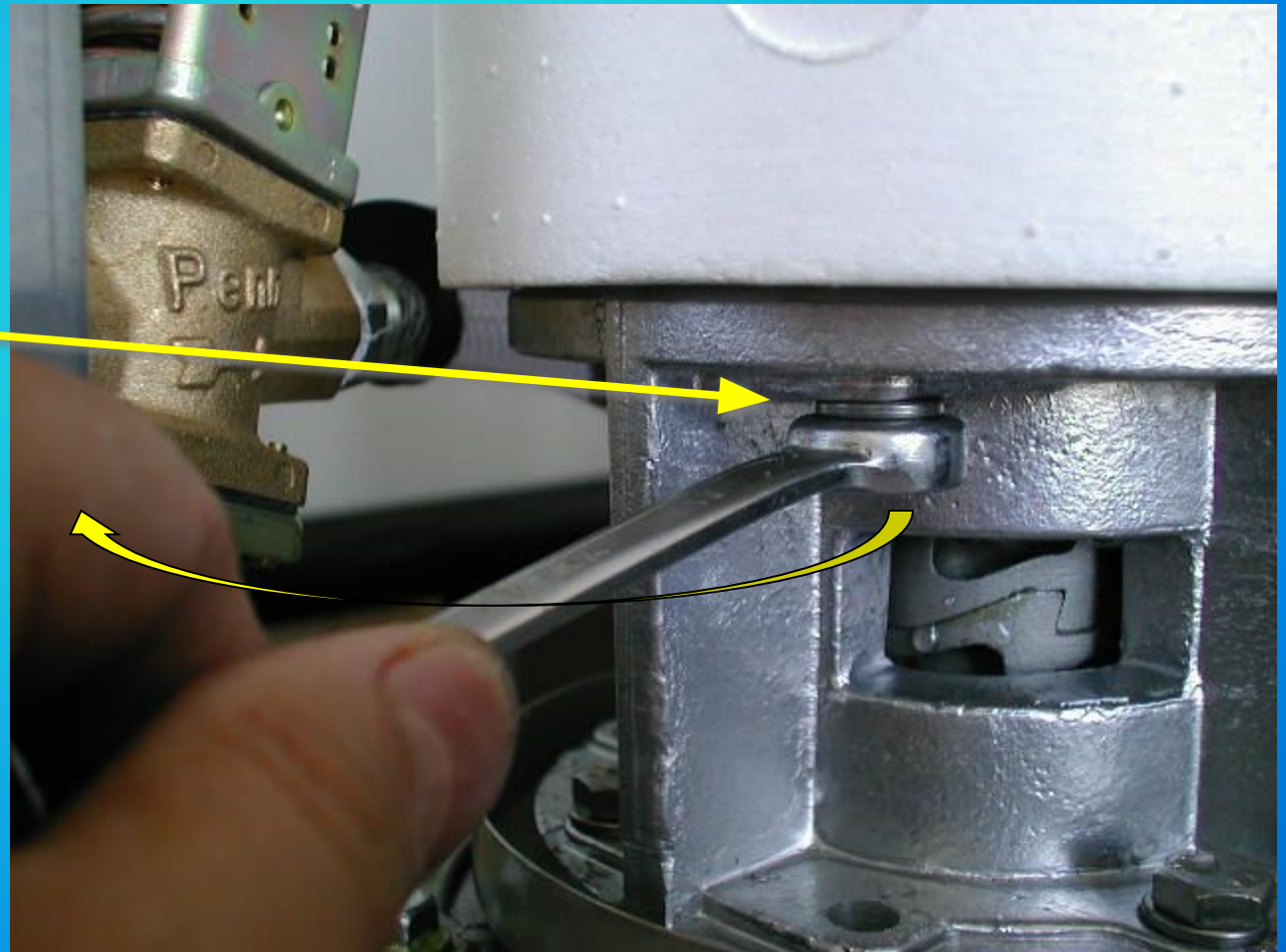
Slide off from  
the bottom of  
the auger the  
upper half of  
the water seal.



# 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  
.....

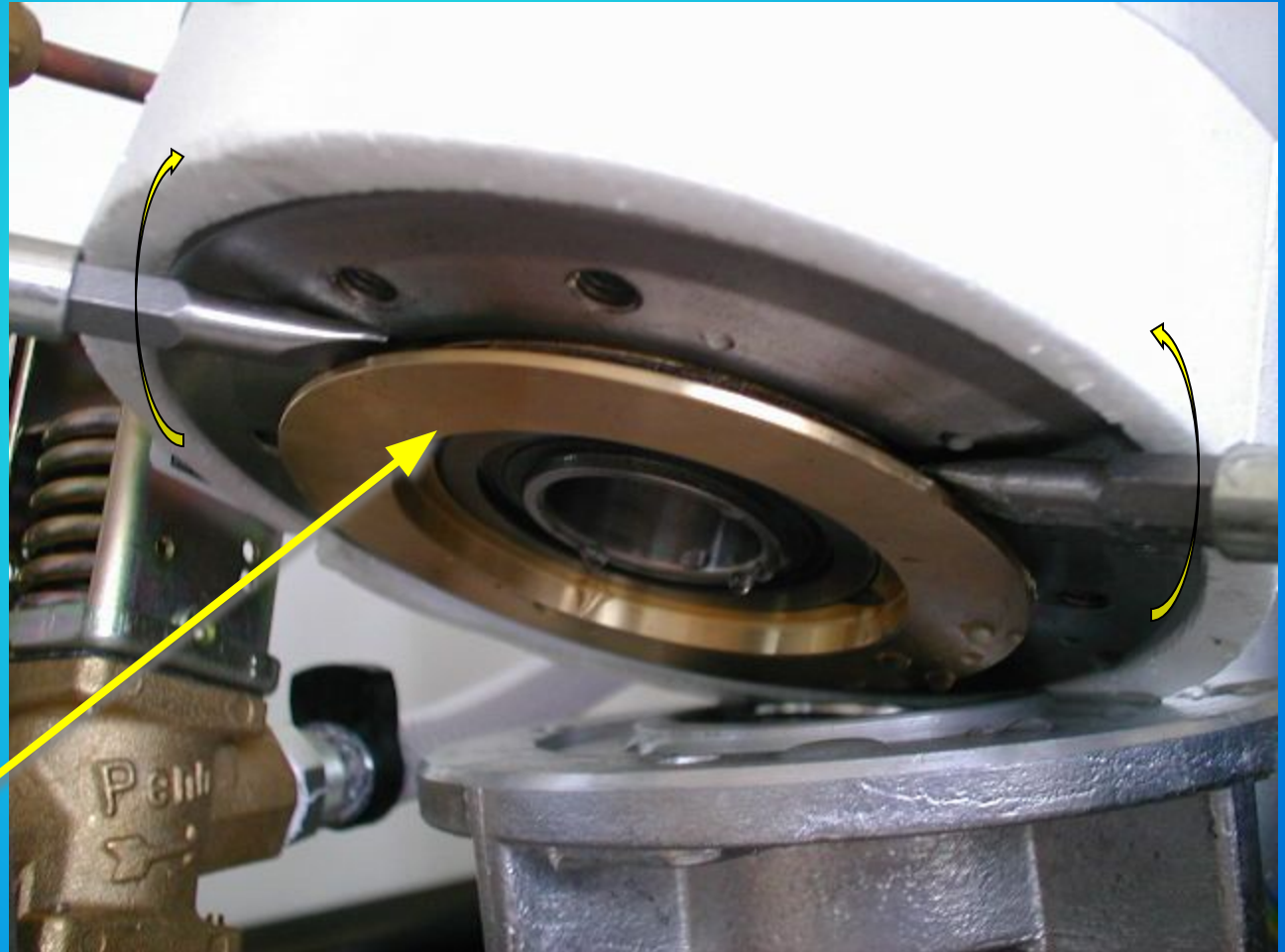


# MF 41-51-61 SERIES

## 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