

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 Scotsman ice machine cleaner is being poured into a green bucket. The bottle has a label that reads "SCOTSMAN ICE MACHINE CLEANER" and "FRIGIDAIRE". The liquid is being poured into the bucket, which is partially filled with water.

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

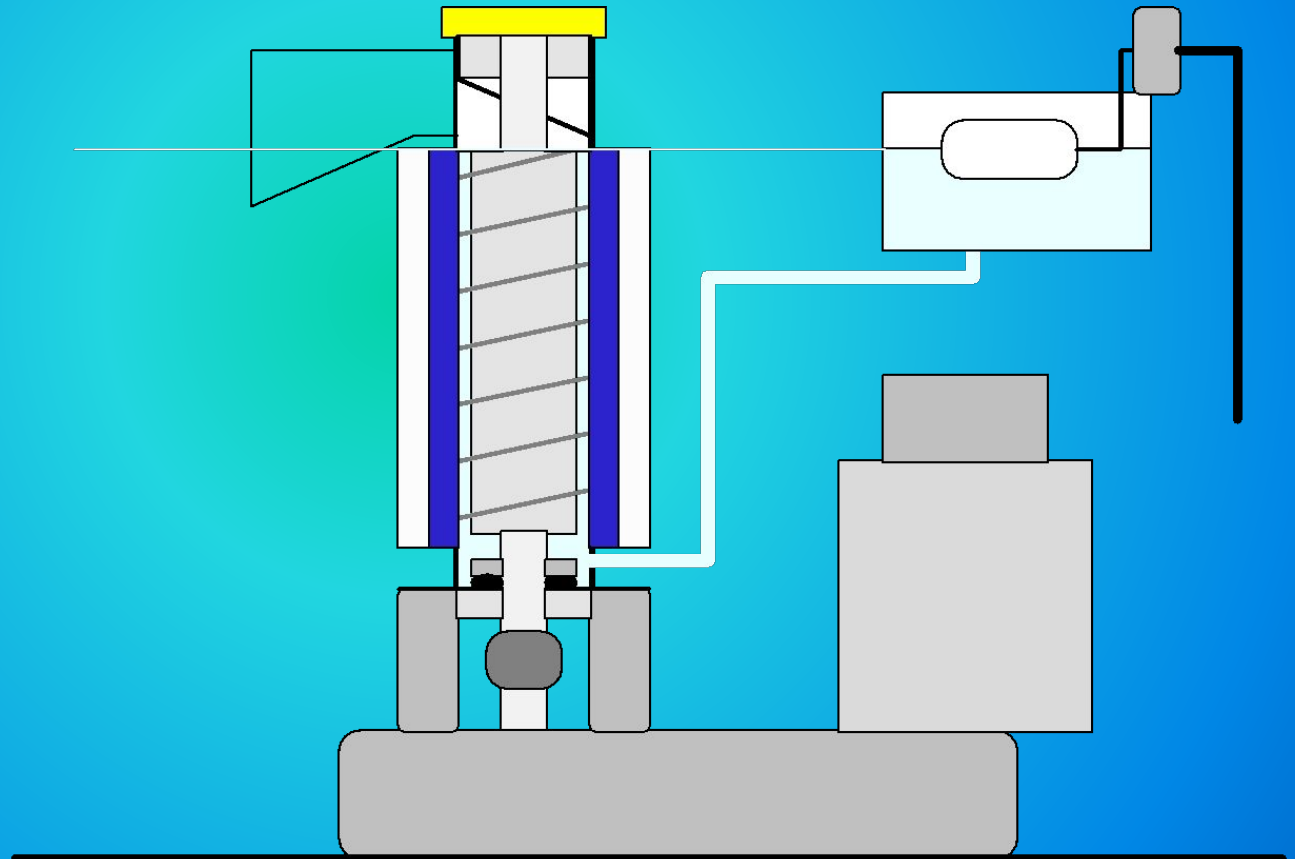
Remove the water reservoir cover then....

....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 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.



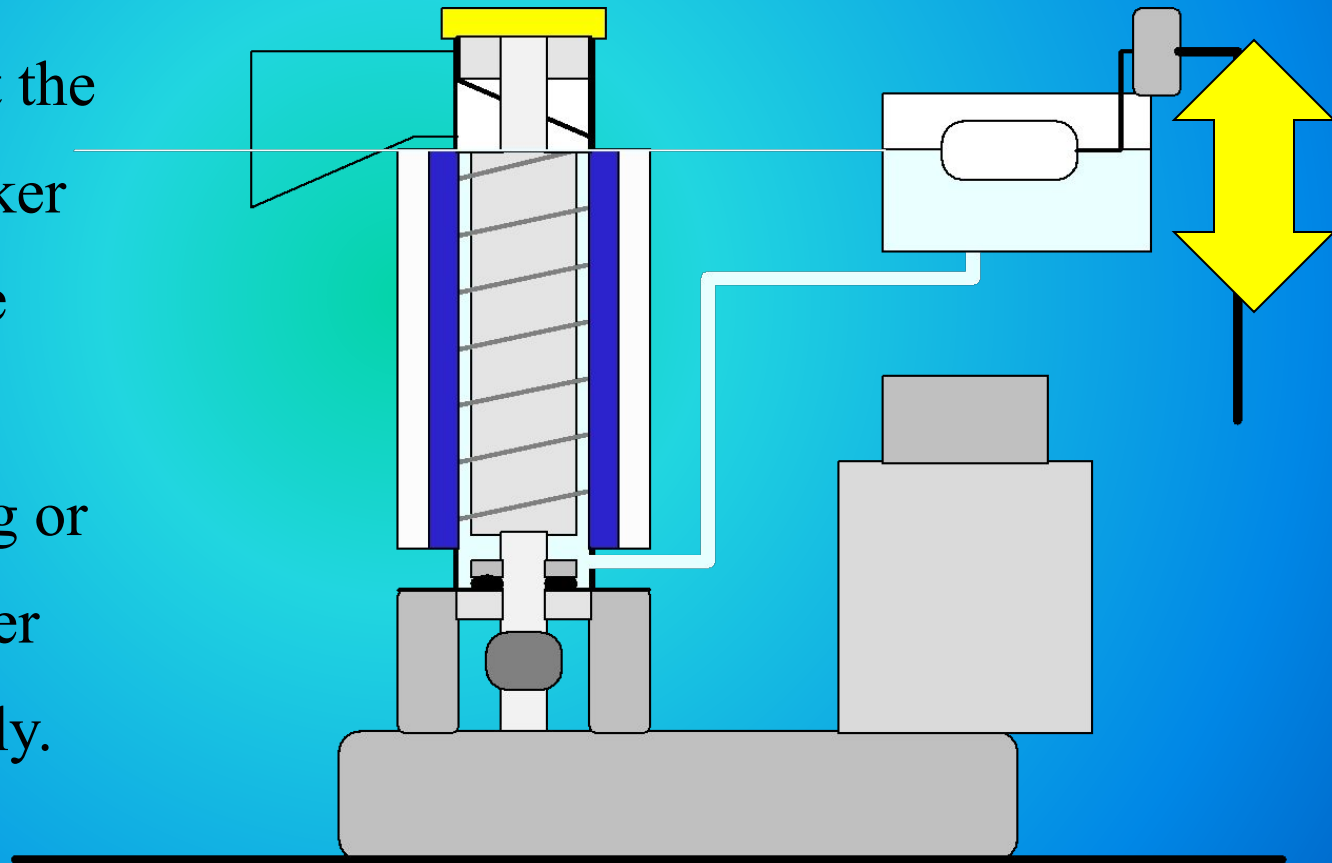
MF SERIES

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

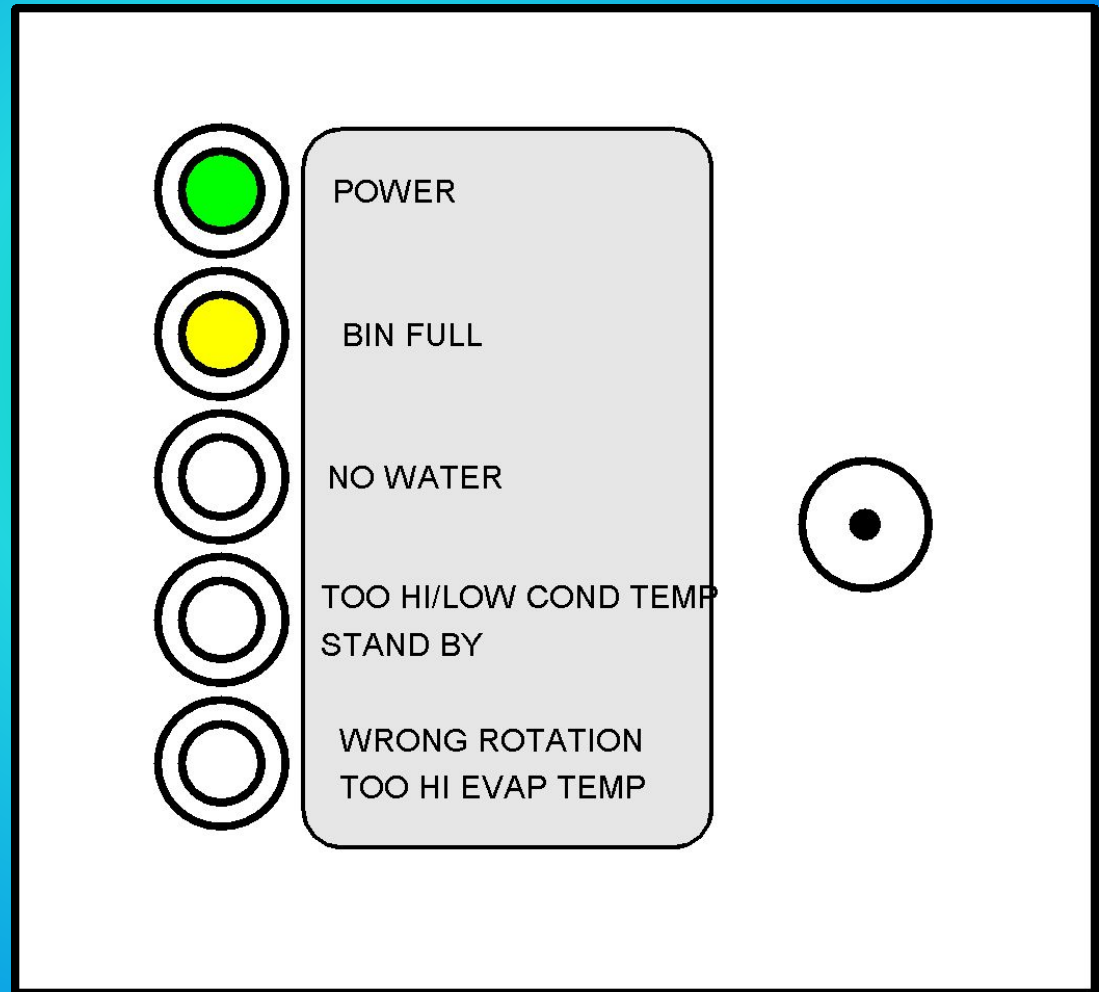
Bin Full

situation:

Green and

Yellow

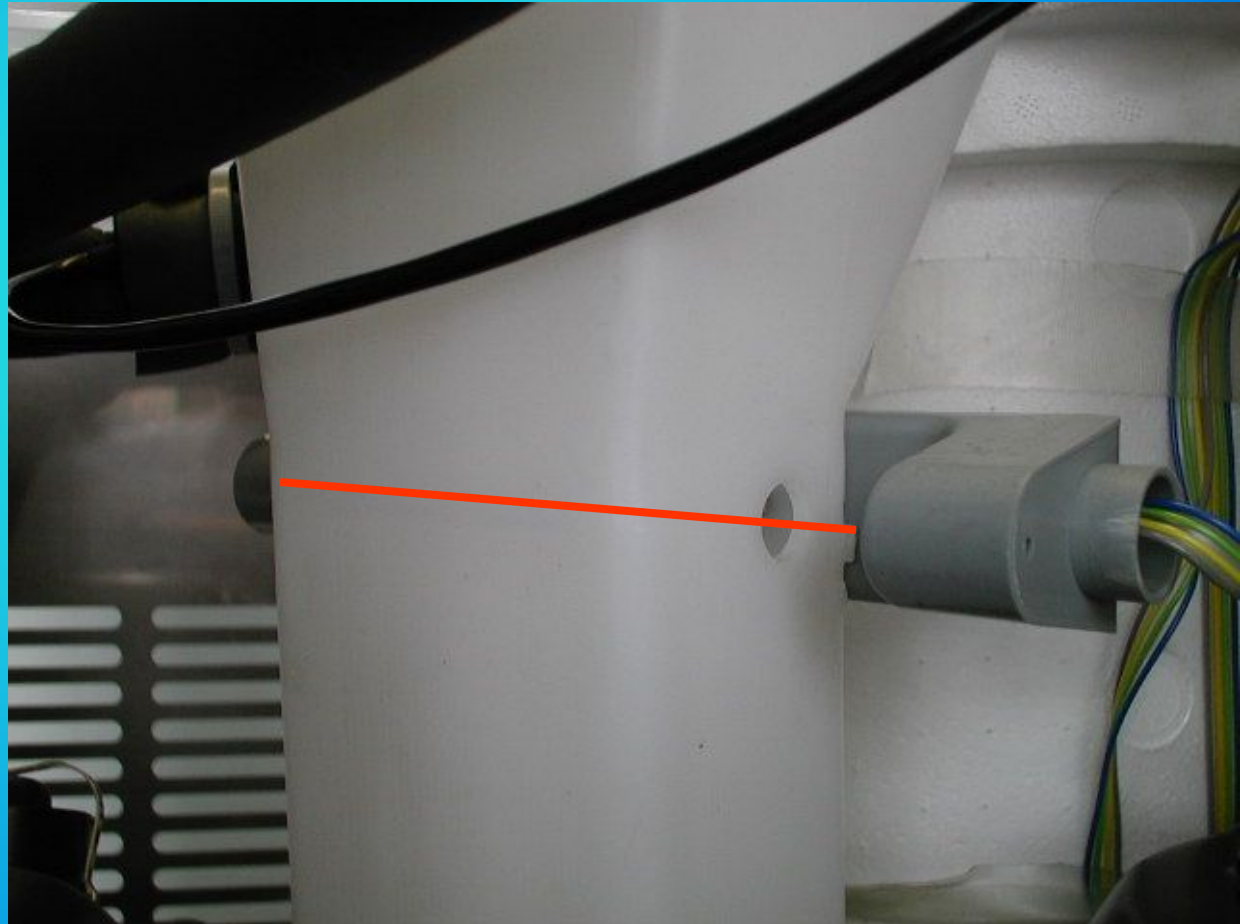
LED ON.



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

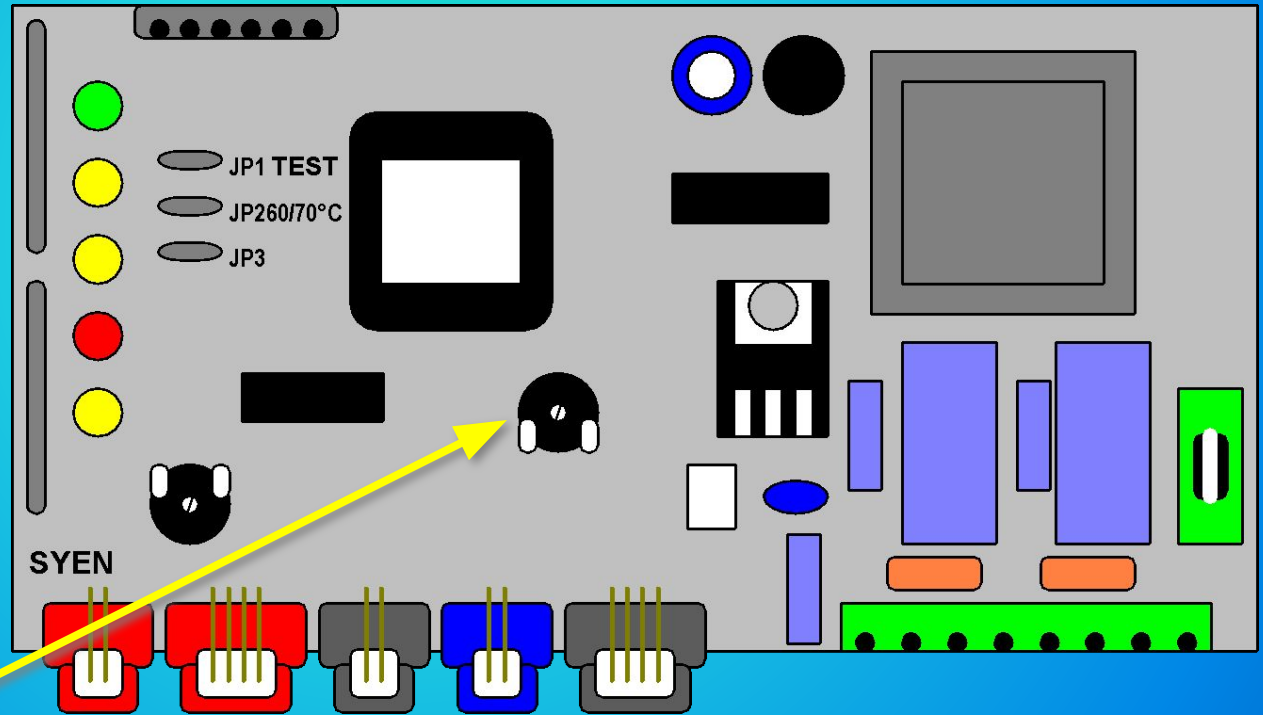
Check also for
any possible
accumulation of
scale around the
two holes
located on the
opposite sides
of the ice chute.



MF SERIES

SERVICE ANALYSIS

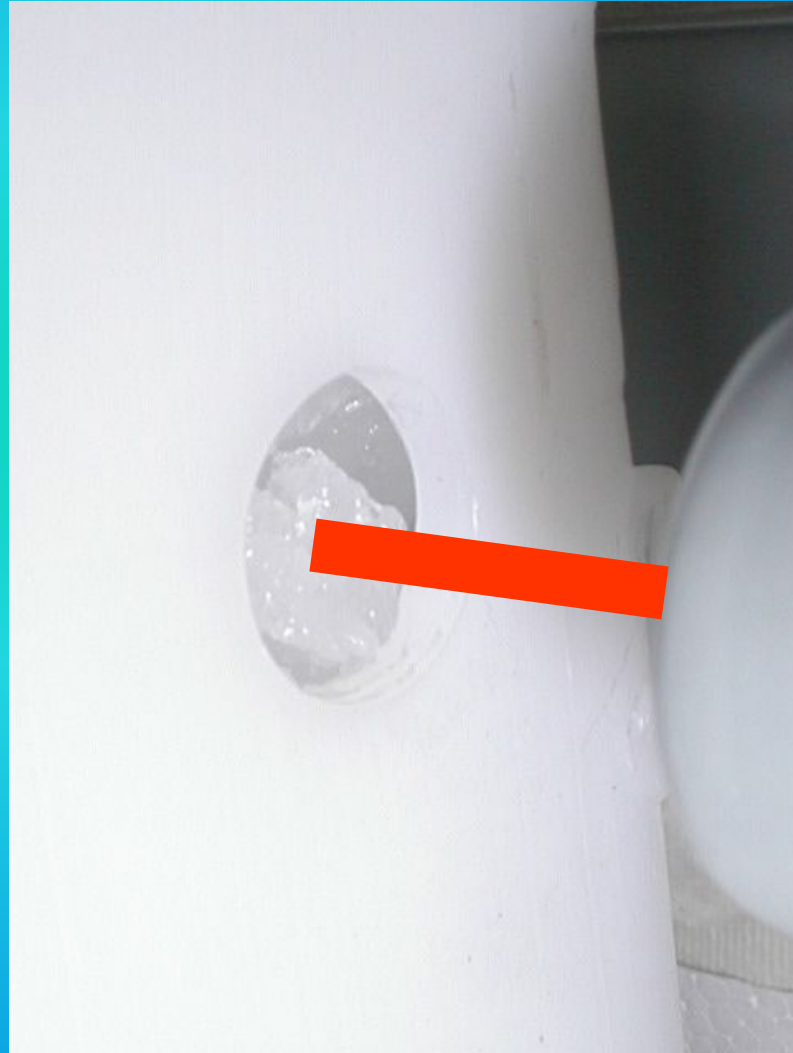
The power signal
transmitted by the
Optical Ice Level
Control to the PC
Board can be
increased by means
a small trimmer.



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

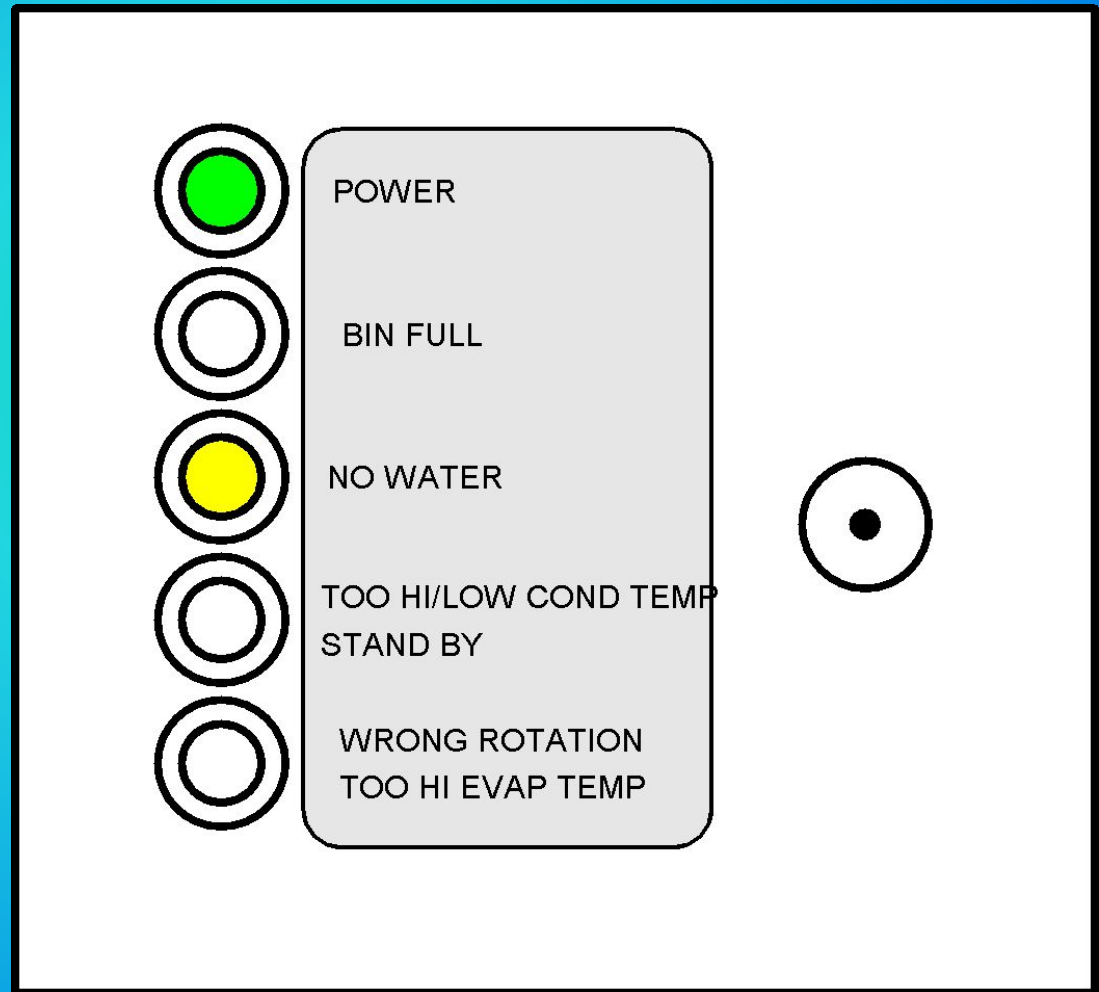
No water

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

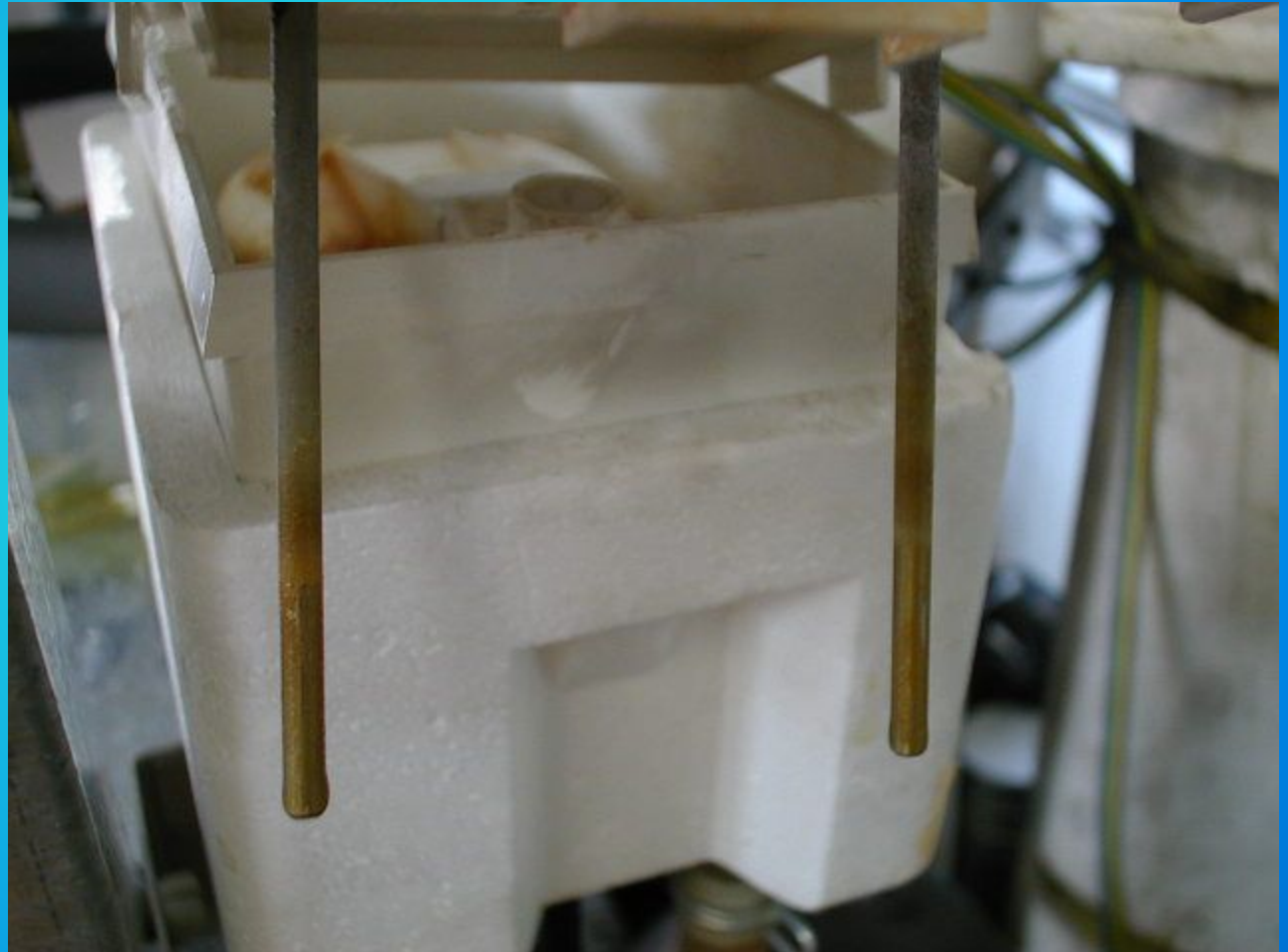
.....for the correct
cleaning of the
orifice of the water
reservoir.

If not clean it with a
small metal pin.



MF SERIES SERVICE ANALYSIS

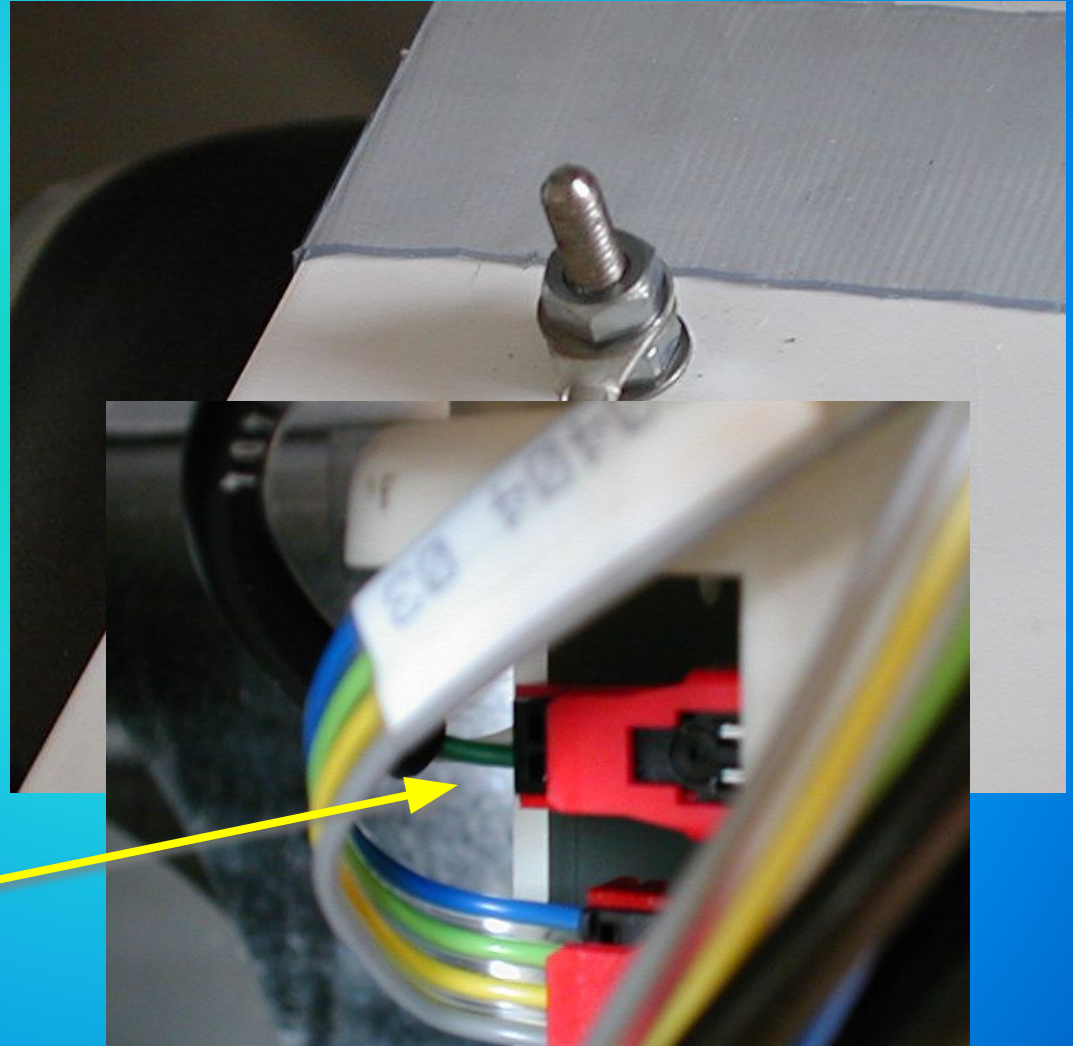
In case of water
into the water
reservoir check
for any scale
deposit onto the
two metal pins
of the water
level sensor.....



MF SERIES SERVICE ANALYSIS

.....or for any loosening 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 μ S electrical conductivity water** is required for correct operation of the machine.

MF SERIES

SERVICE ANALYSIS

3' waiting

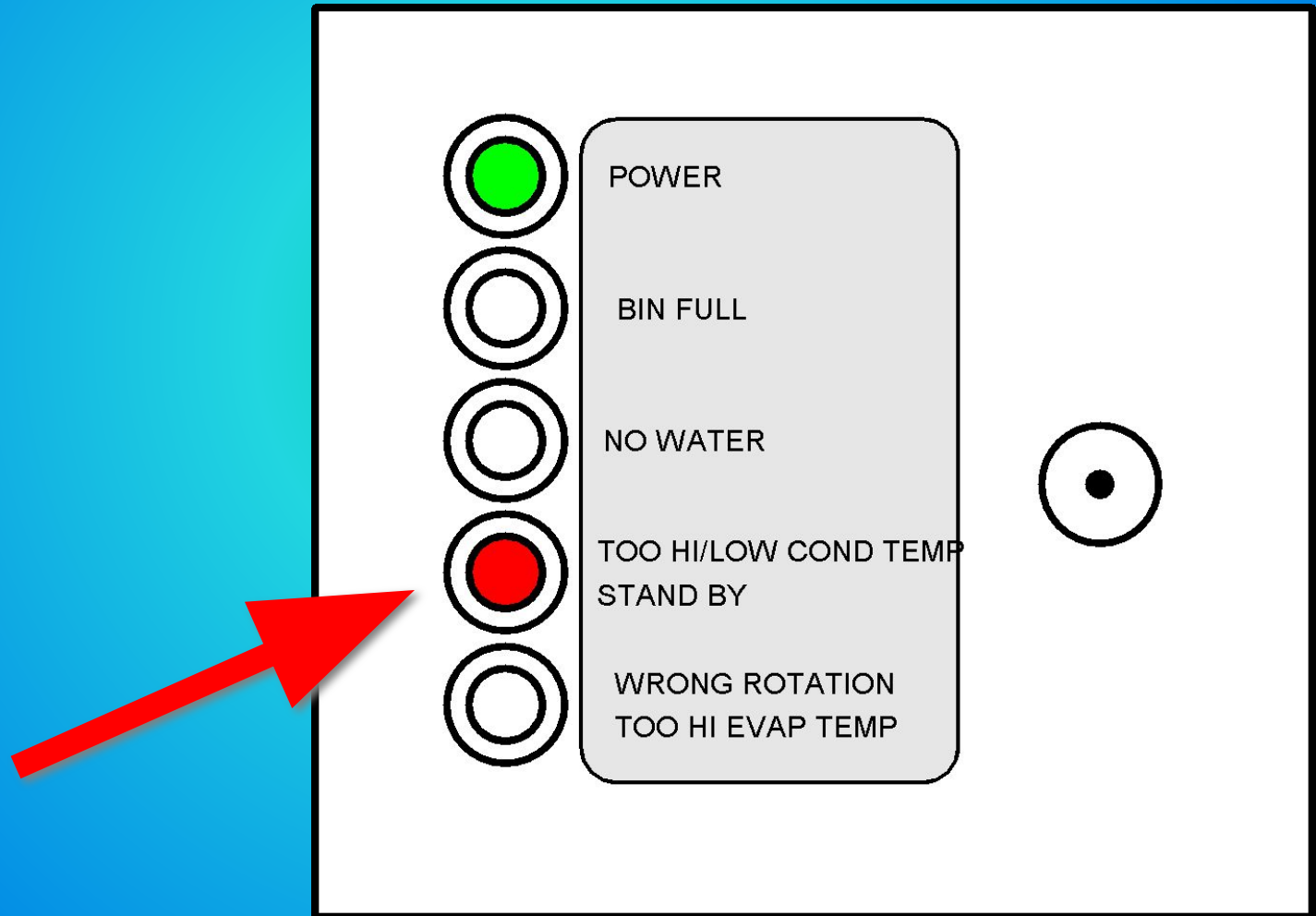
time:

Green

LED ON

Red LED

blinking



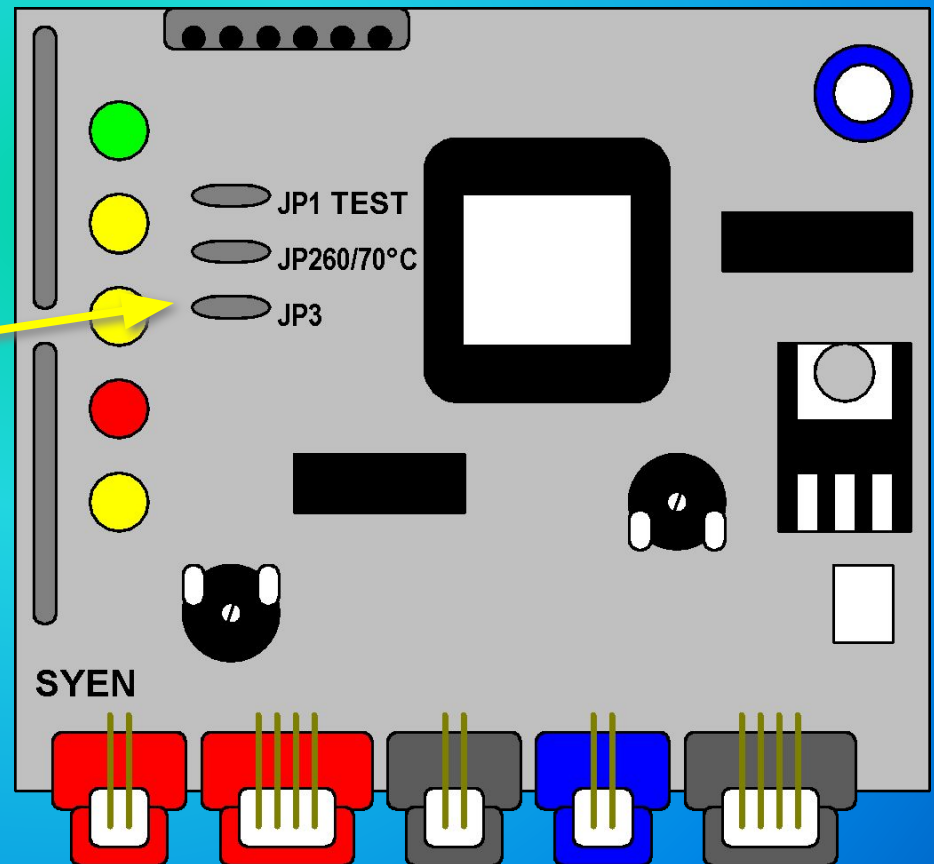
MF SERIES

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.

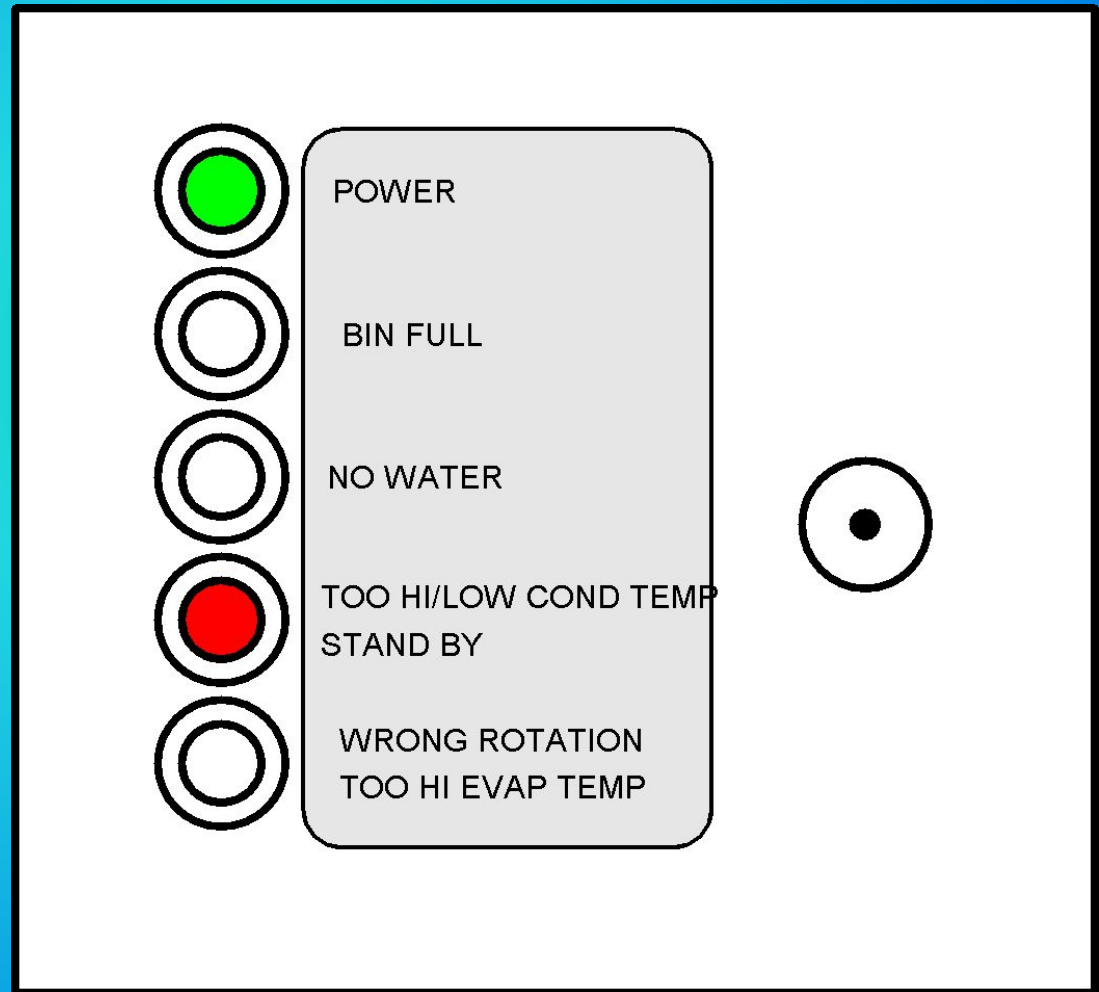


MF SERIES

SERVICE ANALYSIS

**Too low
ambient
temperature
($<+3^{\circ}\text{C}$)**

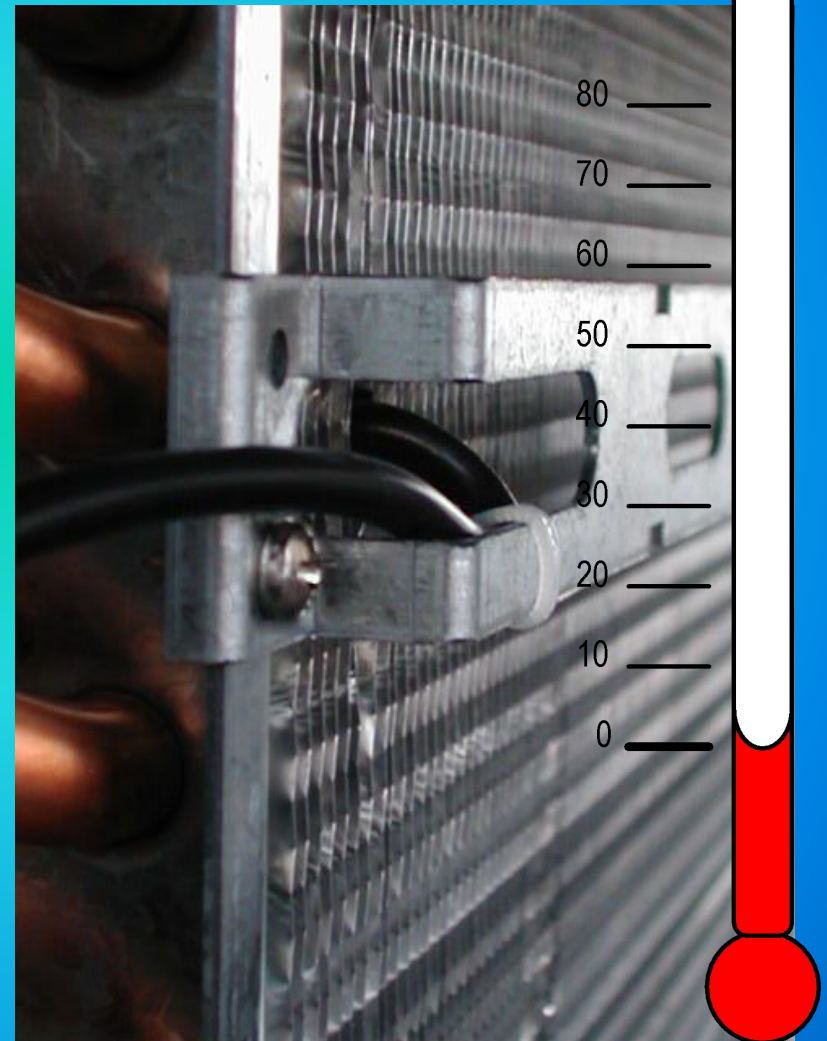
**Green and
Red LED
ON.**



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 $+5^{\circ}\text{C}$.

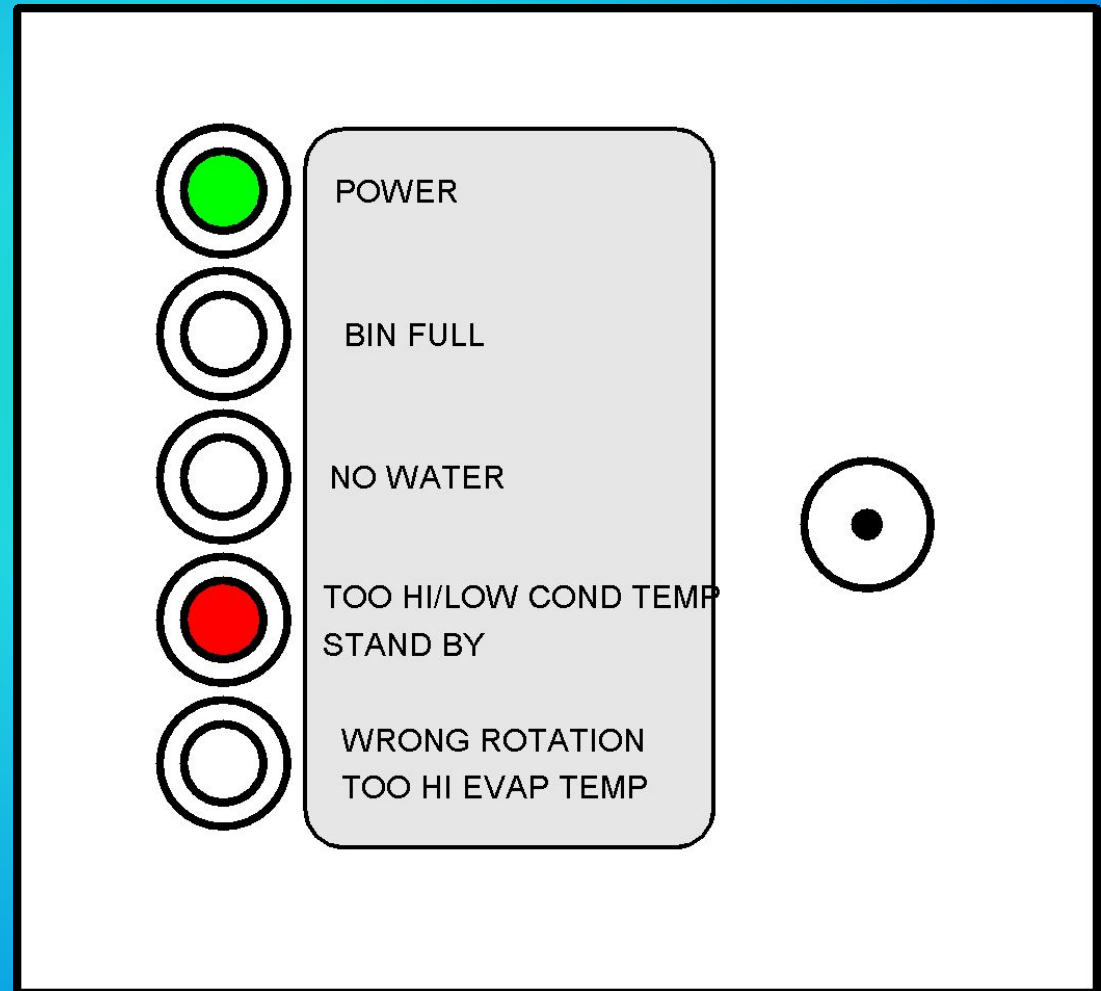


MF SERIES

SERVICE ANALYSIS

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

Green and
Red LED
ON.



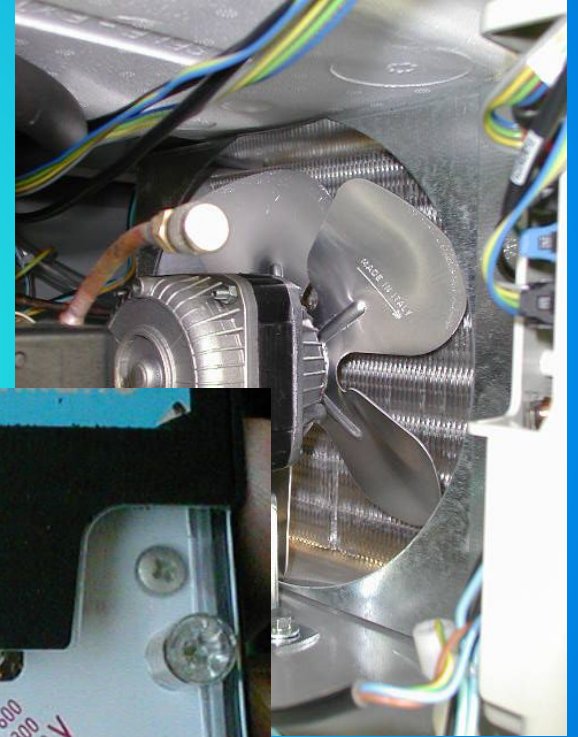
MF SERIES SERVICE ANALYSIS

On Air Cooled Version

check first for the correct
operation of the fan motor

i.e.:

- Power to the motor



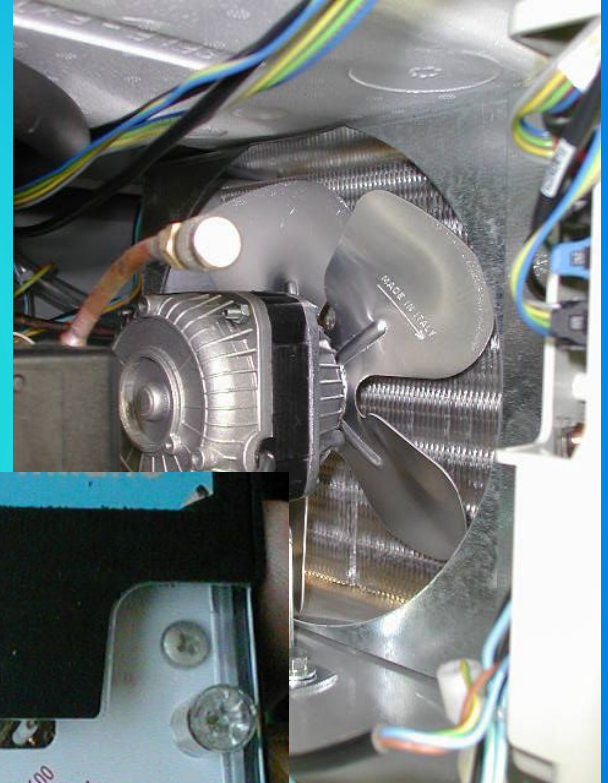
MF SERIES SERVICE ANALYSIS

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

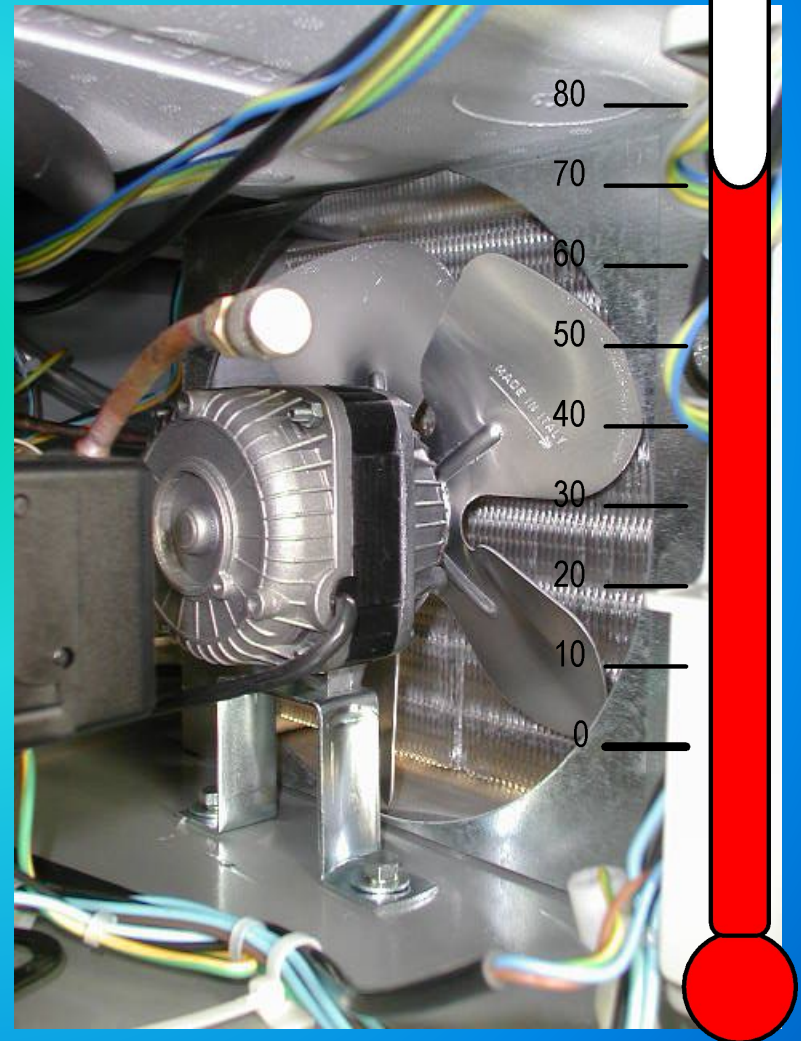
On Air Cooled Version

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

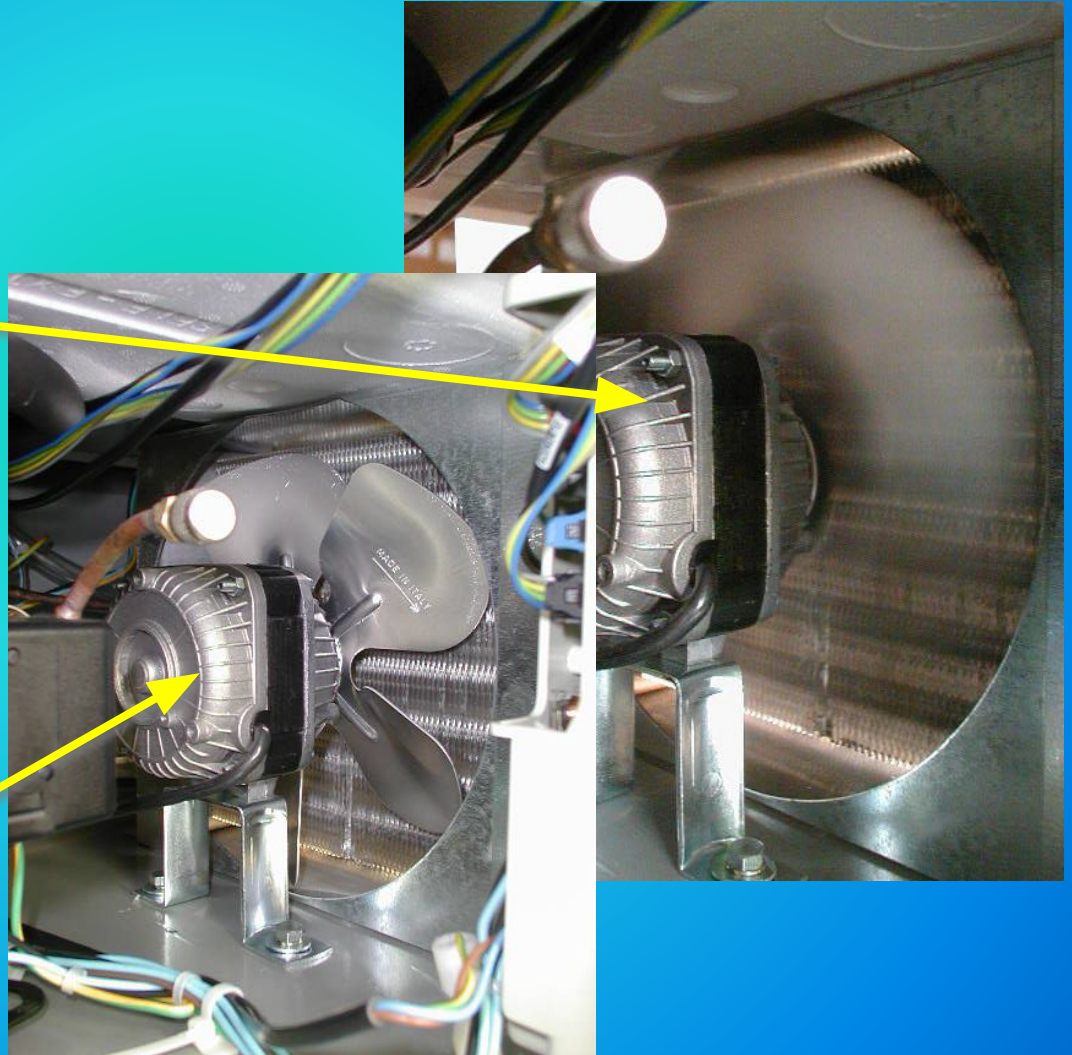
One more possibility
(very rare) it is a faulty
PC Board (TRIAC) that
can keep energized the
fan motor during the OFF
period with a low voltage
but higher then the
minimum one need for
tripping OFF the motor.



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

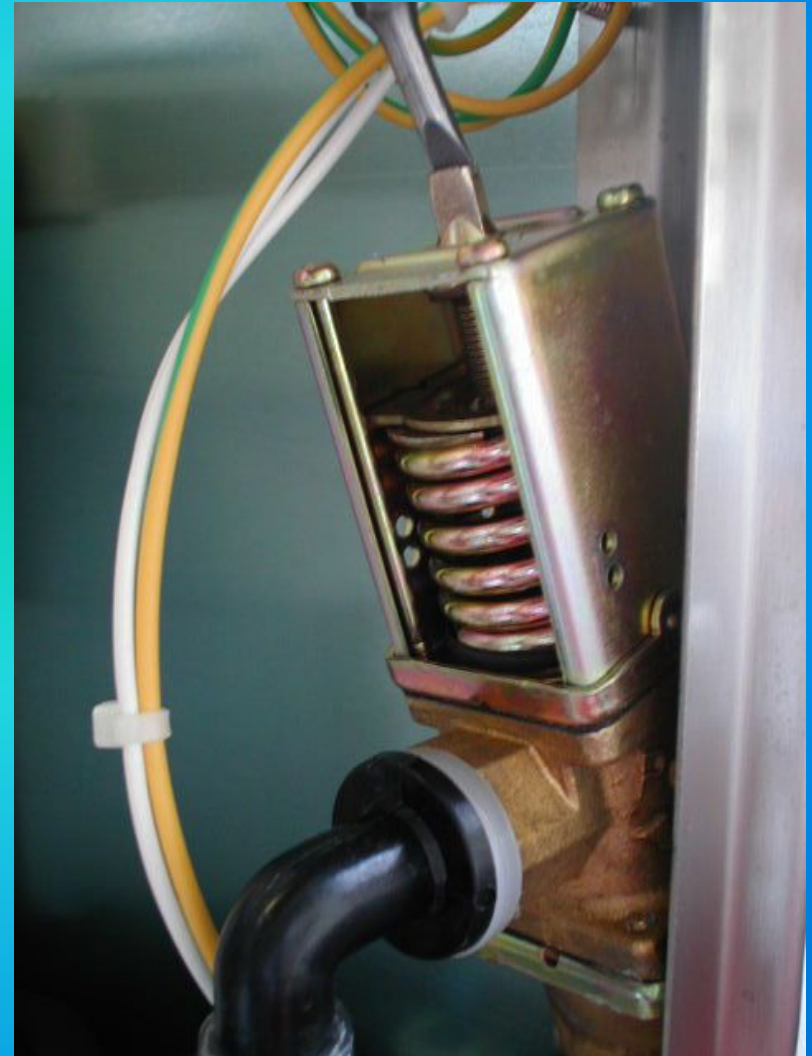


MF SERIES SERVICE ANALYSIS

On Water Cooled

Version check first
for the:

- Water tap
- Correct operation
of the water
regulating valve



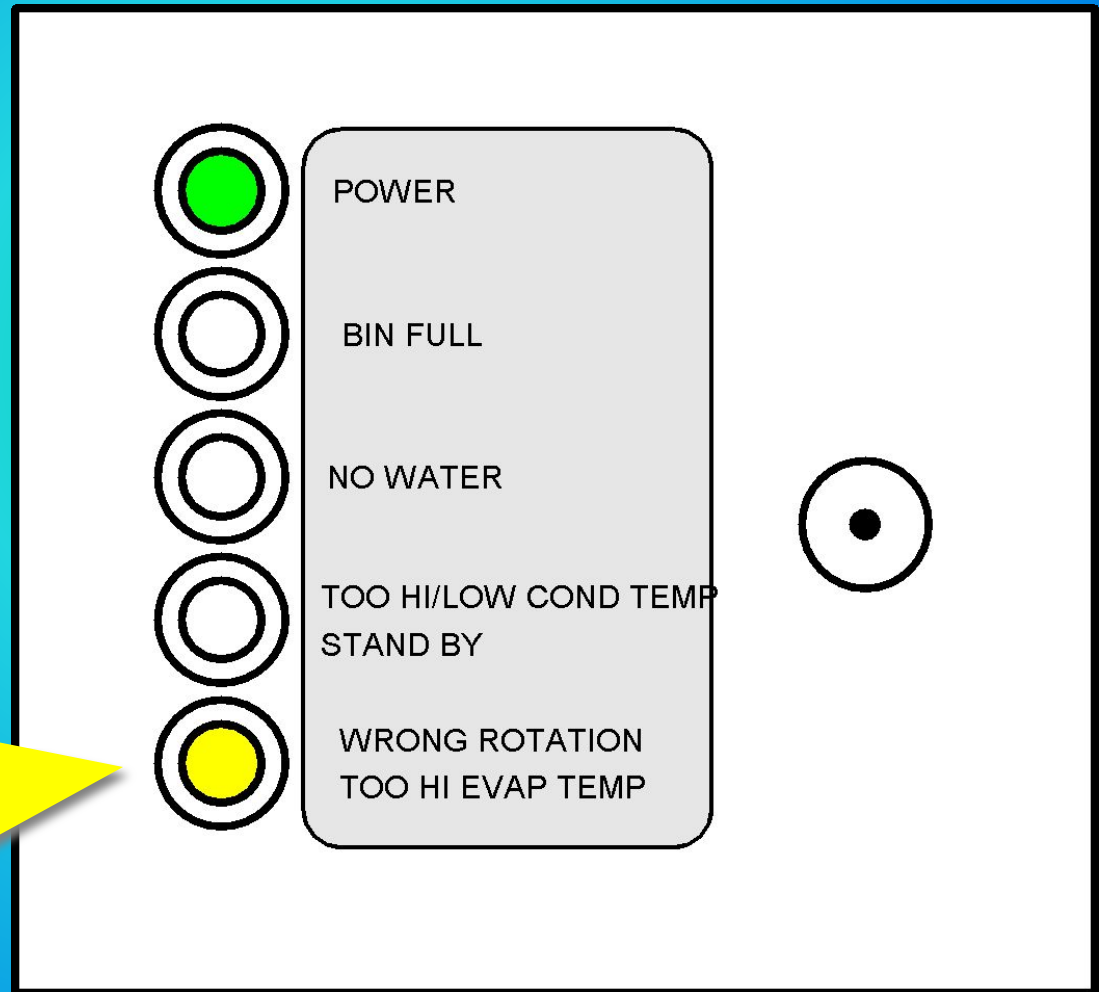
MF SERIES

SERVICE ANALYSIS

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

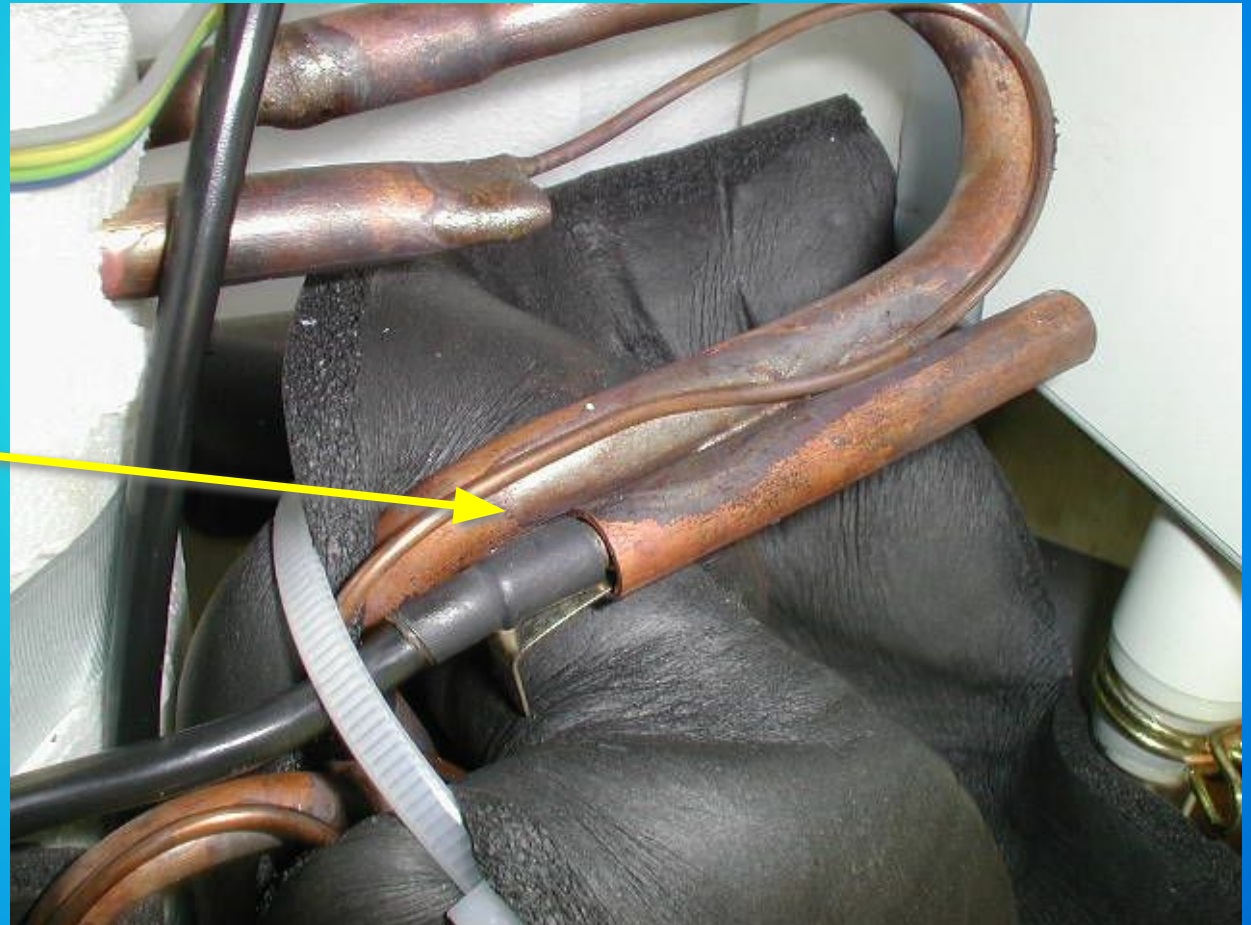
Green LED ON

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).



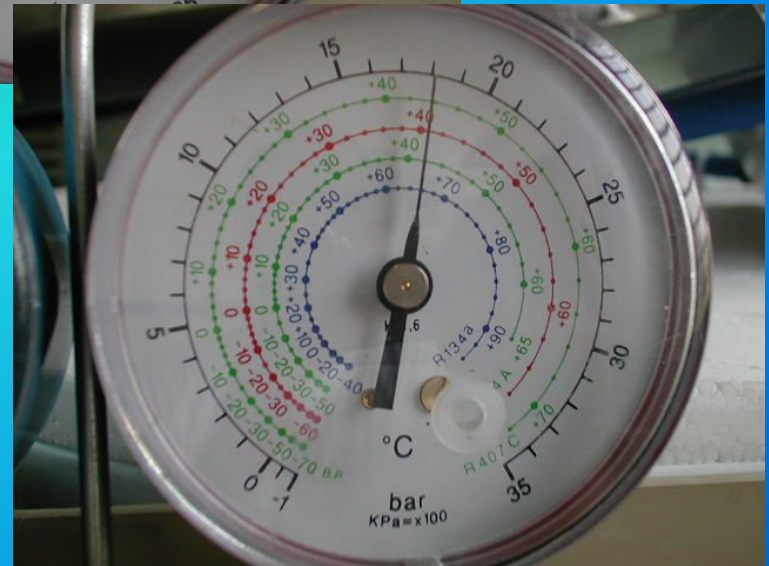
MF SERIES

SERVICE ANALYSIS

If no ice is produced check
for:

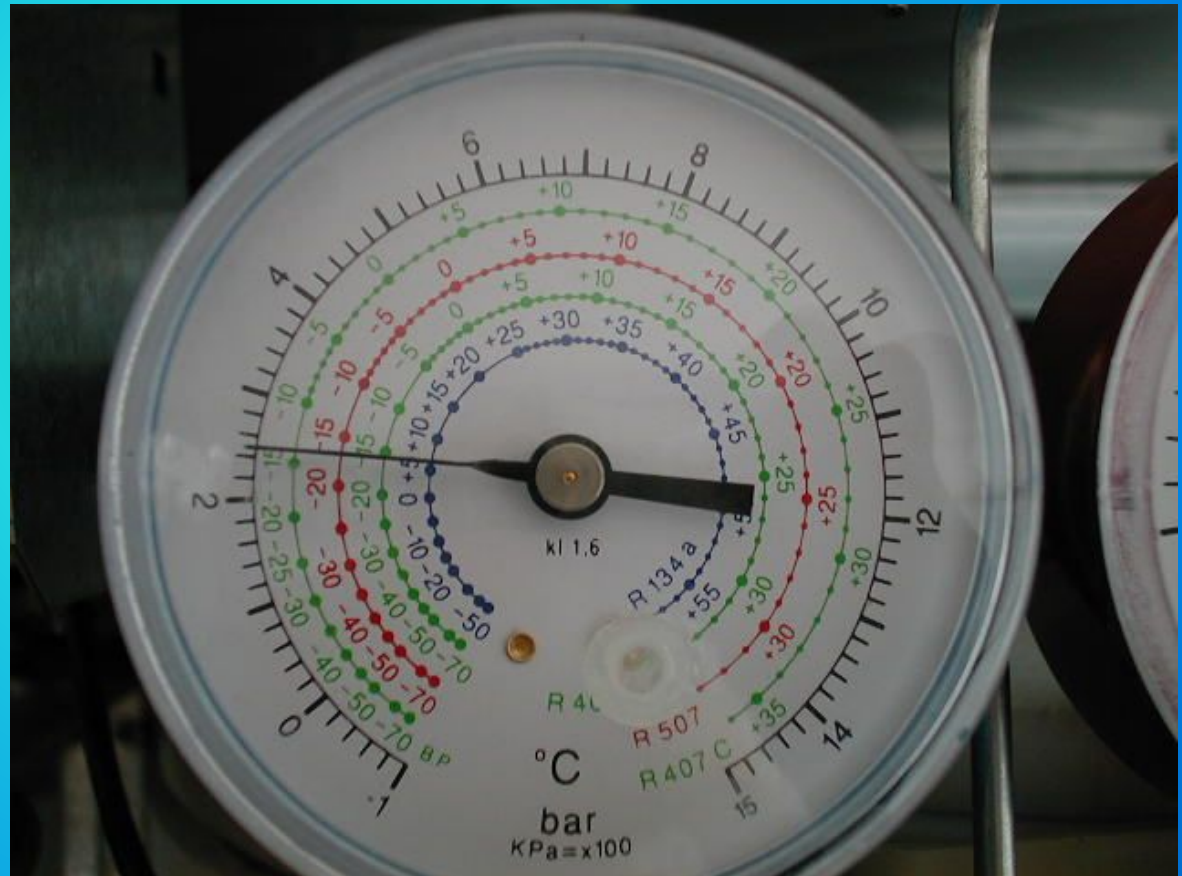
- Refrigerant charge.

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:

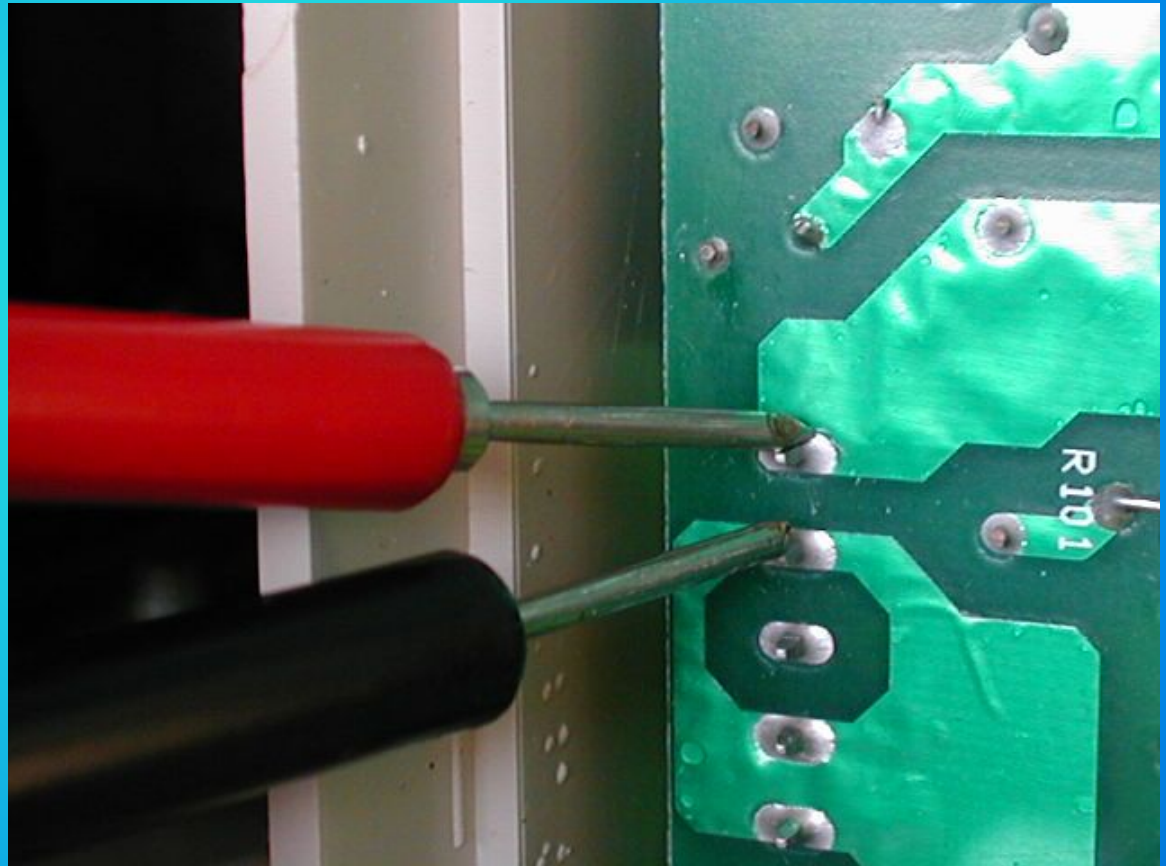
- Refrigerant charge
- Operation of Compressor



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

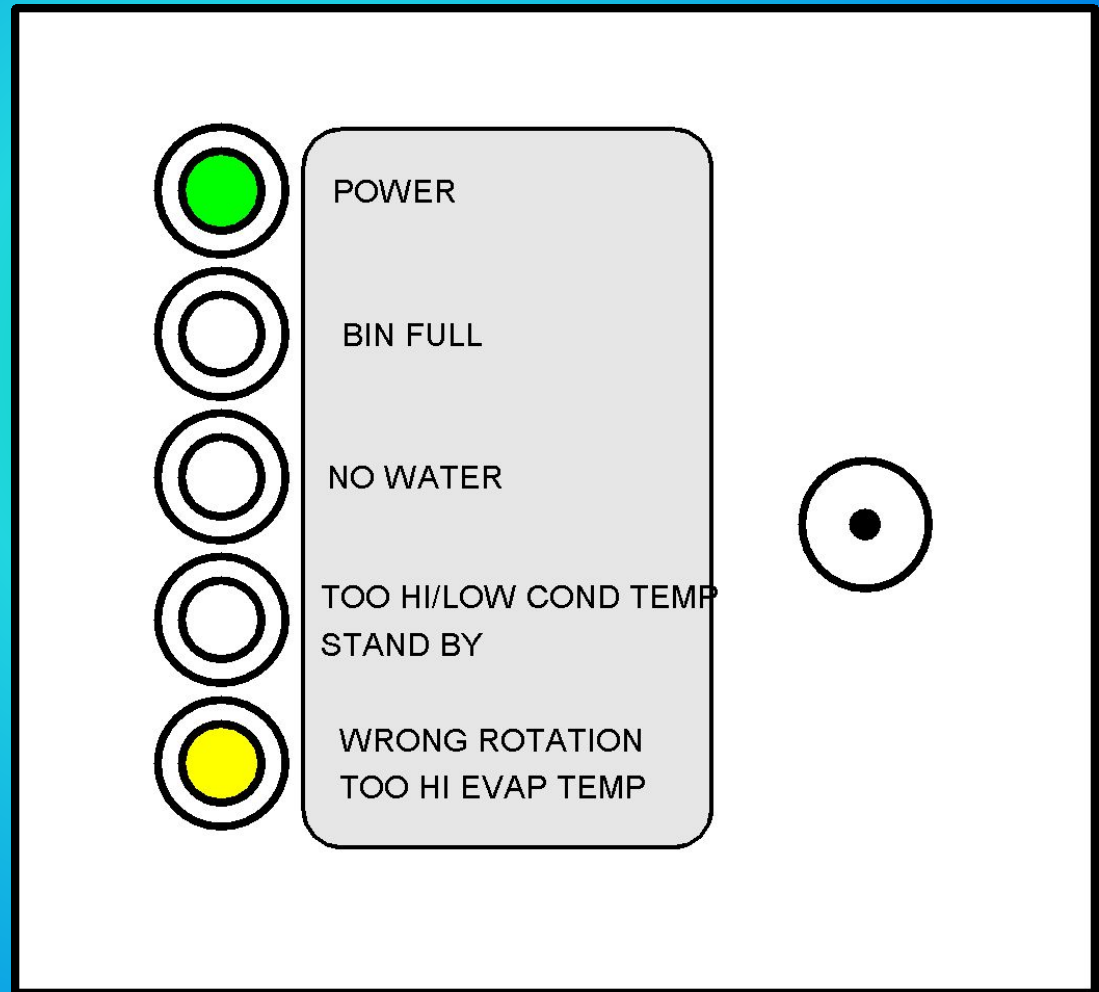


MF SERIES

SERVICE ANALYSIS

No
rotation of
drive
motor

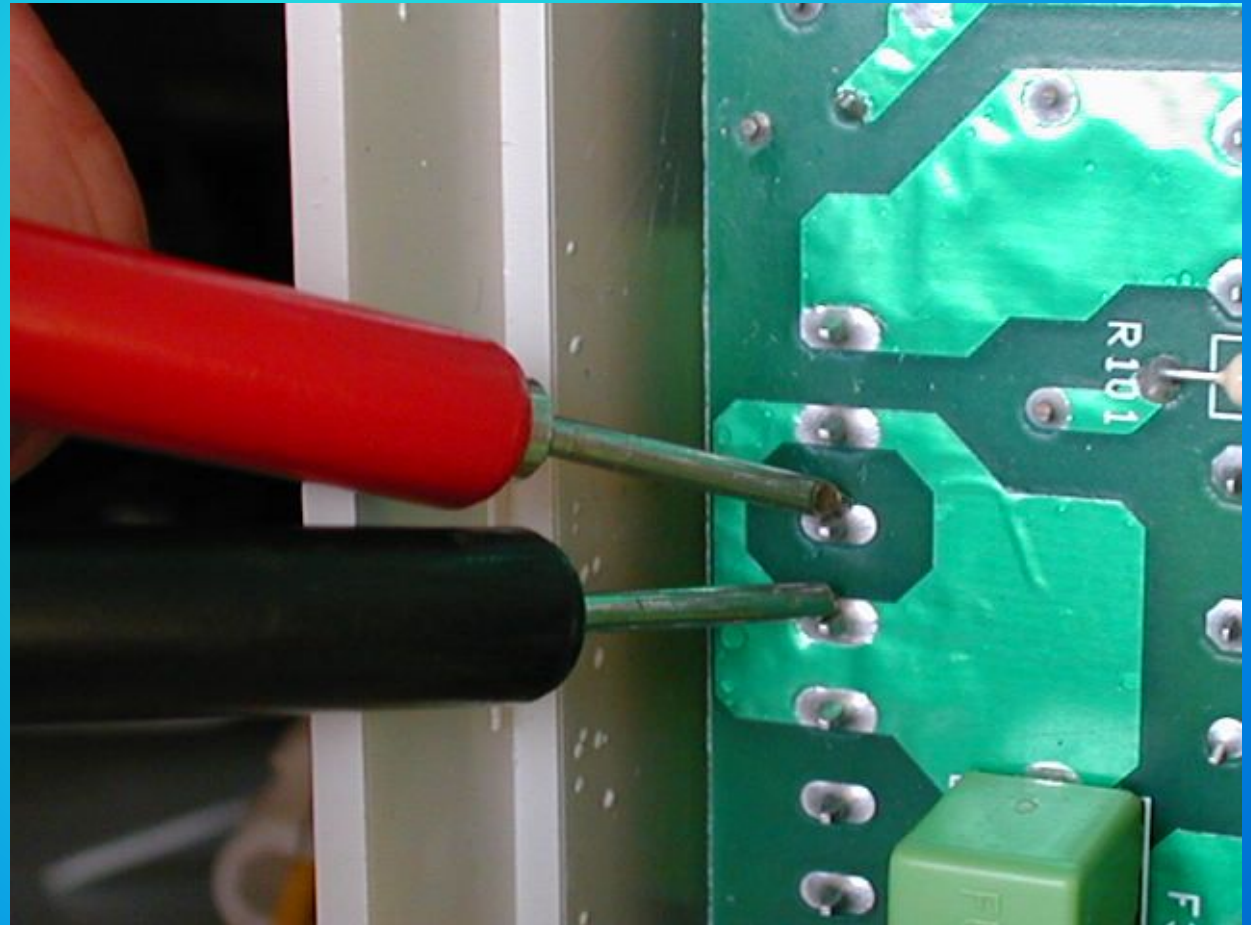
Green and
Yellow
LED ON.



MF SERIES SERVICE ANALYSIS

If the drive motor
doesn't turn check
for:

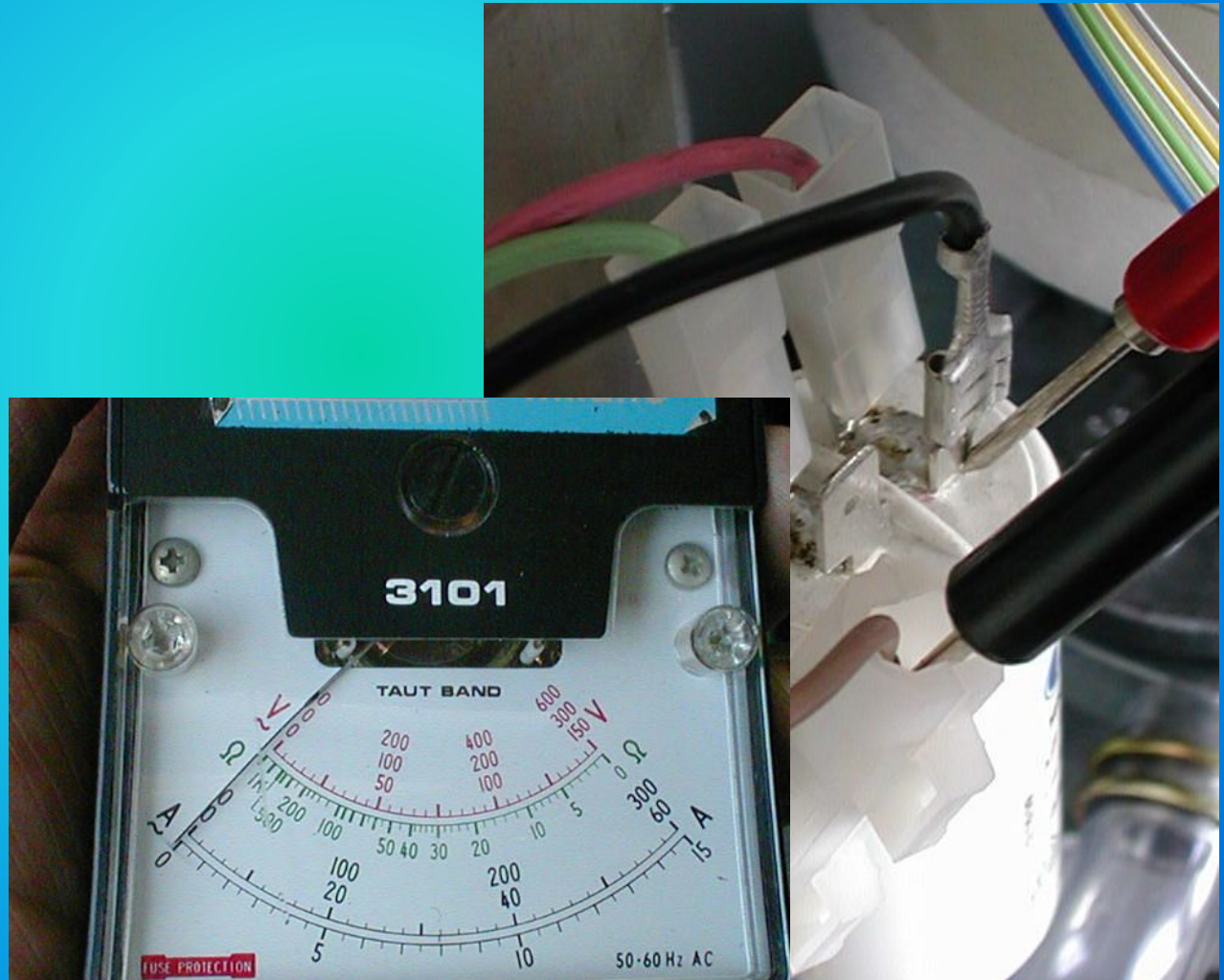
- Power out on
the contacts 5
and 6 of the PC
Board



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:

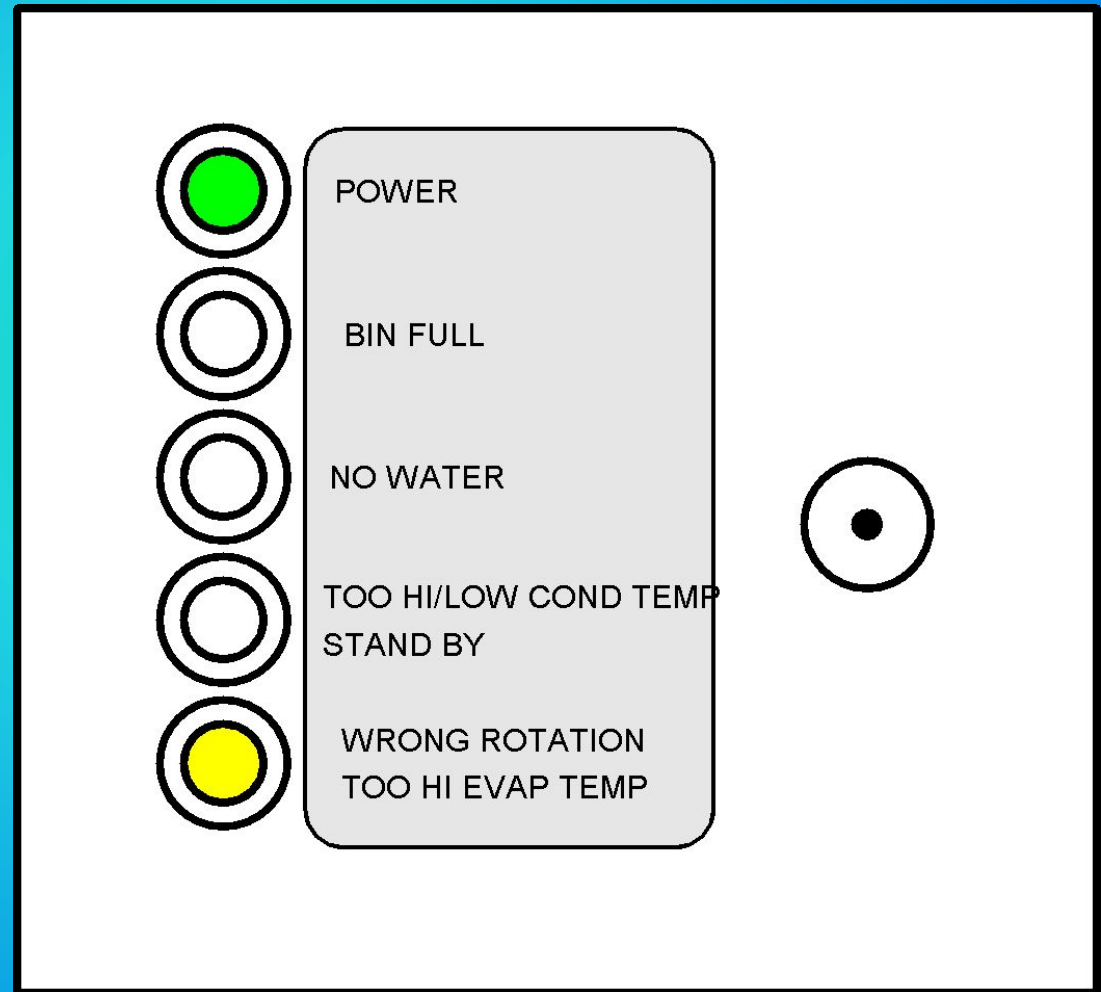
- Power out on the contacts
5 and 6 of the PC Board
- Drive motor with open
winding
- Drive motor capacitor
worn-out
- Looked rotor

MF SERIES

SERVICE ANALYSIS

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

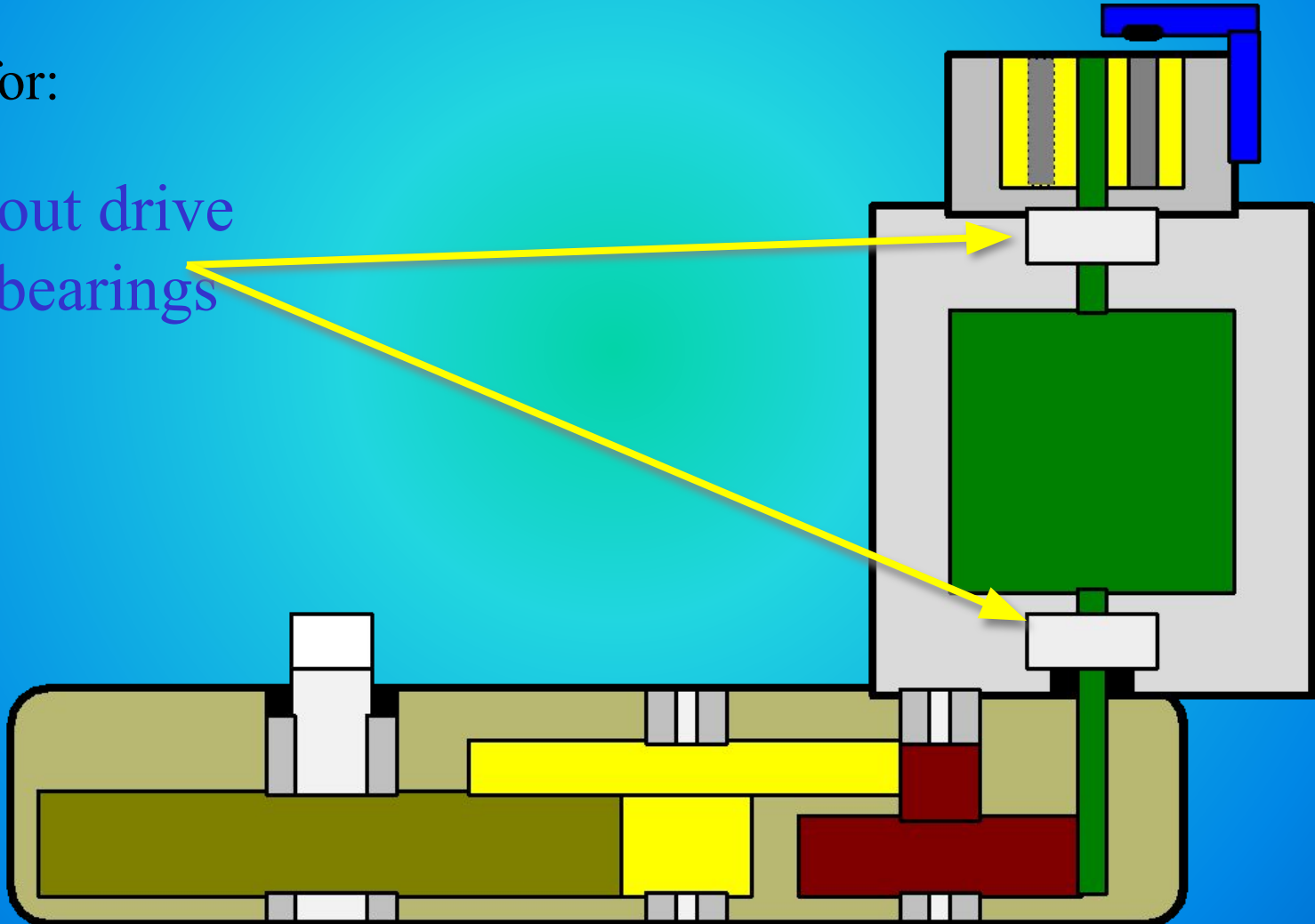
Green and
Yellow
LED ON.



MF SERIES SERVICE ANALYSIS

Check for:

- Worn out drive motor bearings

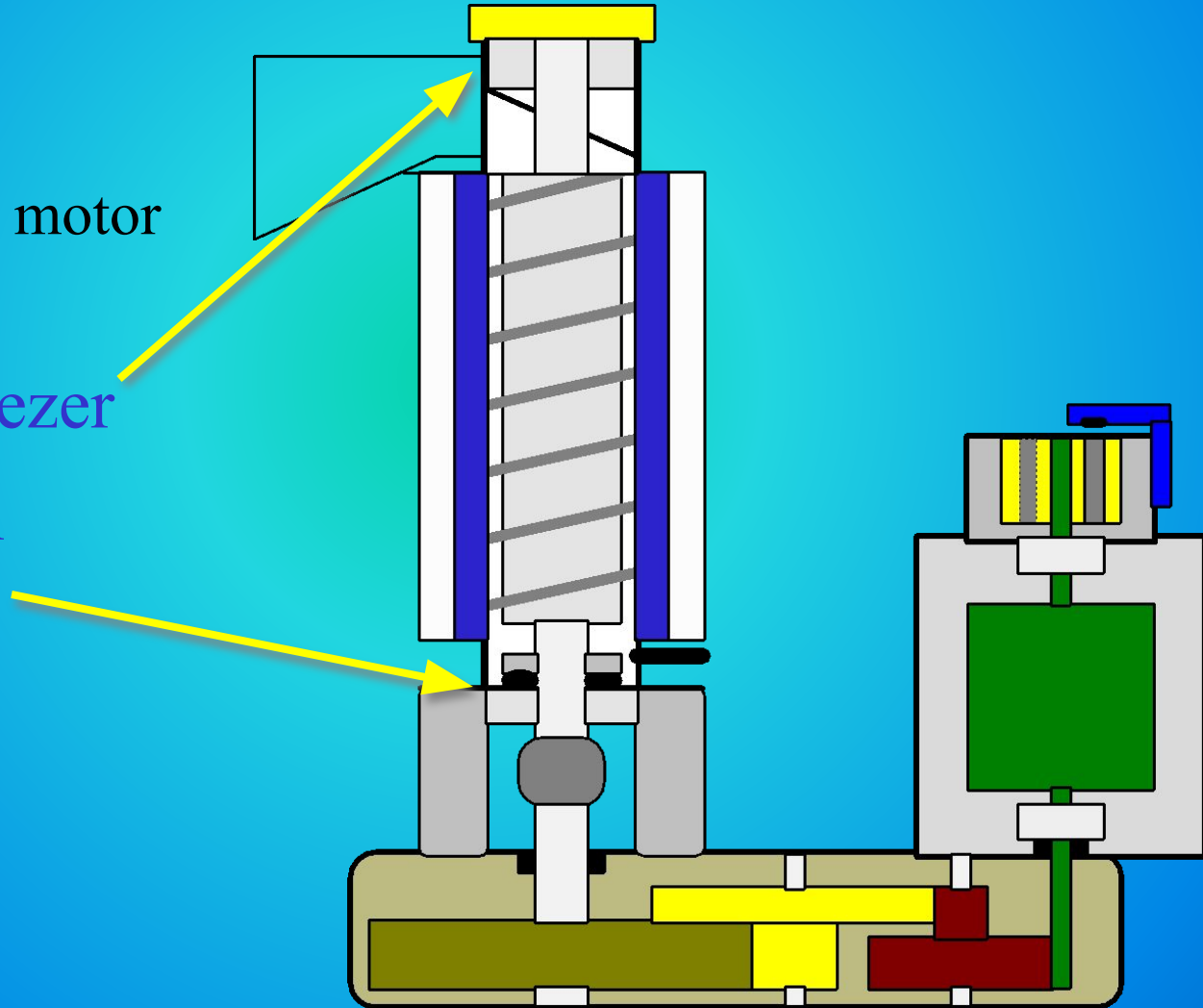


MF SERIES

SERVICE ANALYSIS

Check for:

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



MF SERIES SERVICE ANALYSIS

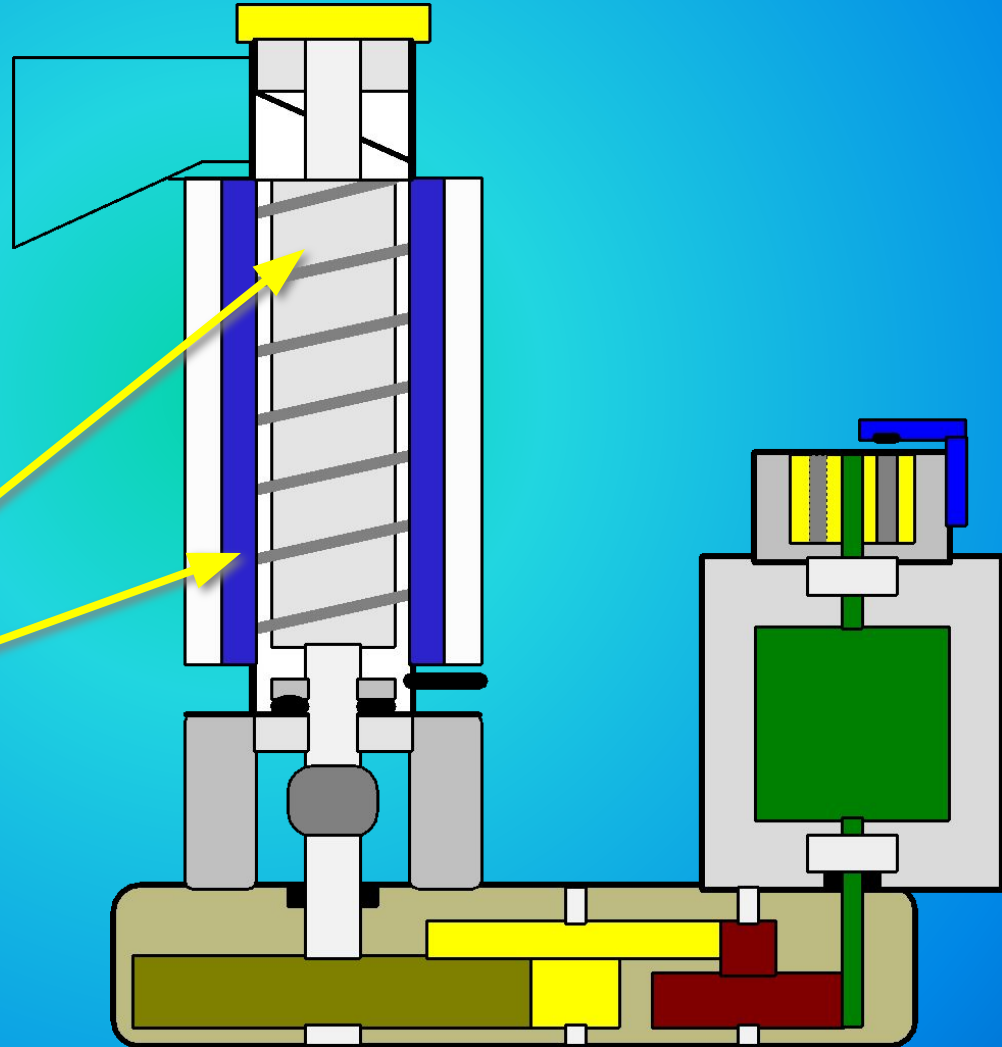


MF SERIES

SERVICE ANALYSIS

Check for:

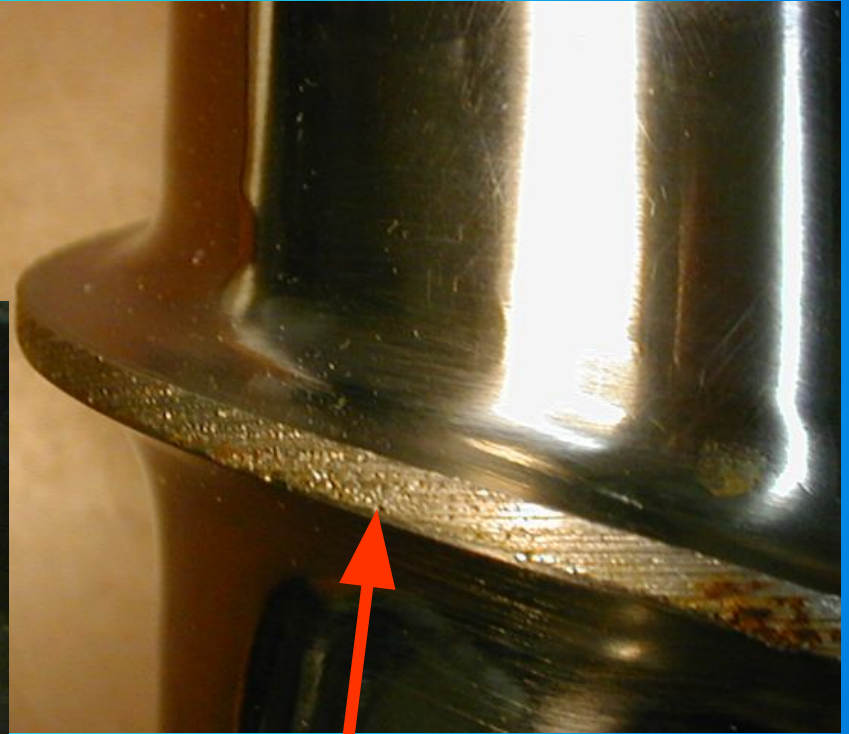
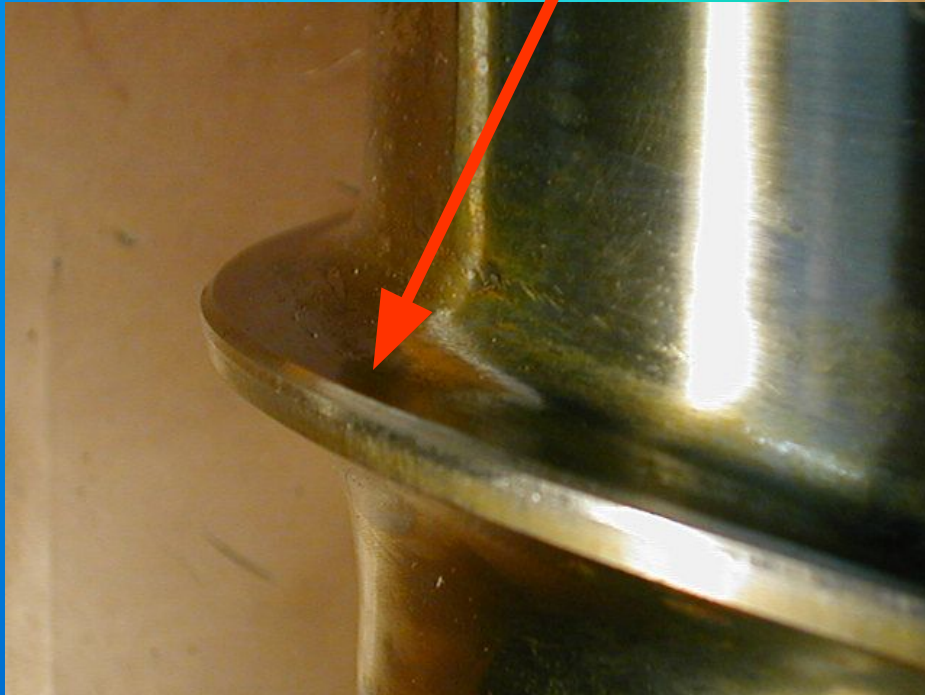
- Worn out drive motor bearings
- Worn out freezer top or bottom bearings
- Worn out auger/freezer



MF SERIES

SERVICE ANALYSIS

OK!

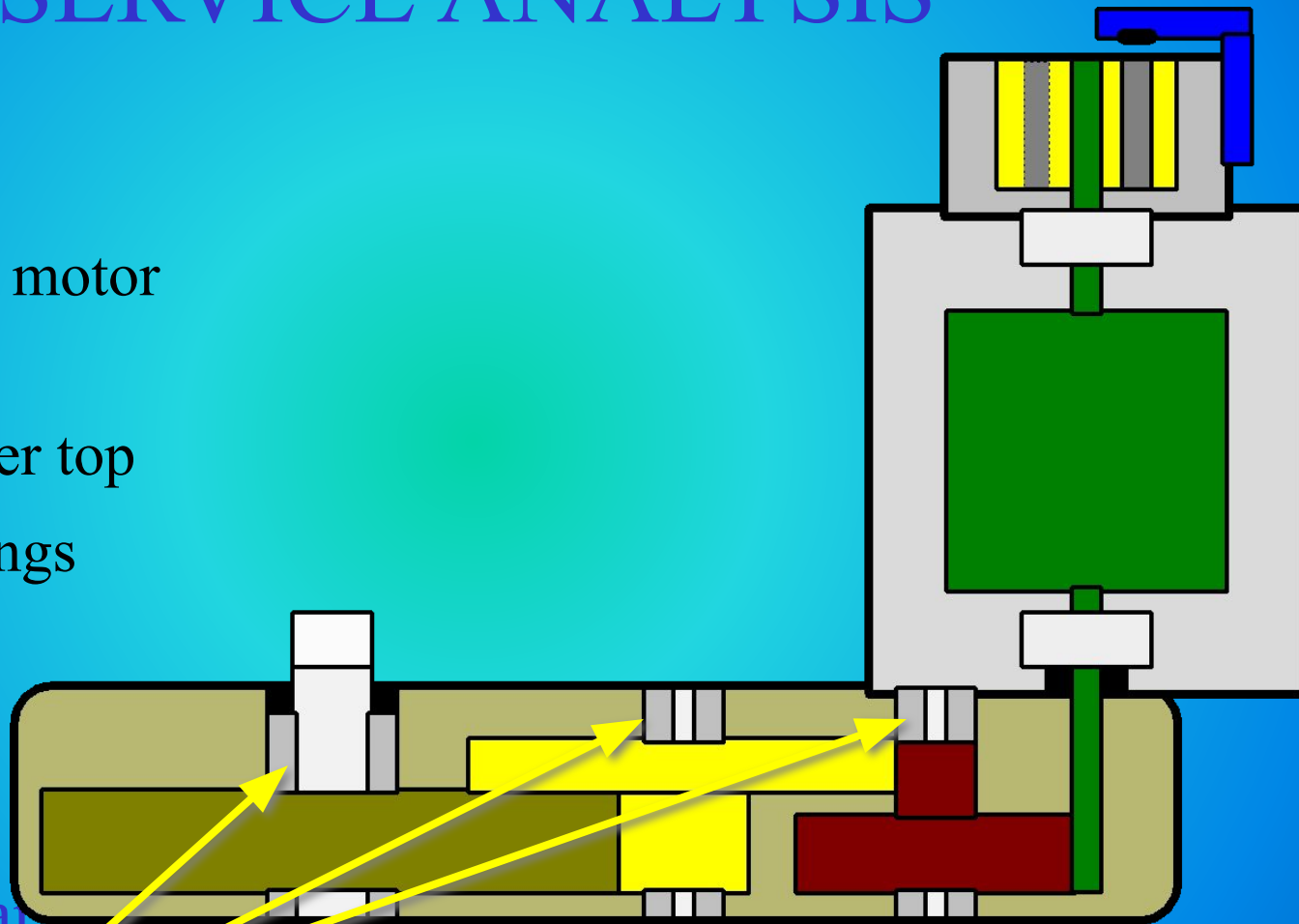


KO!

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

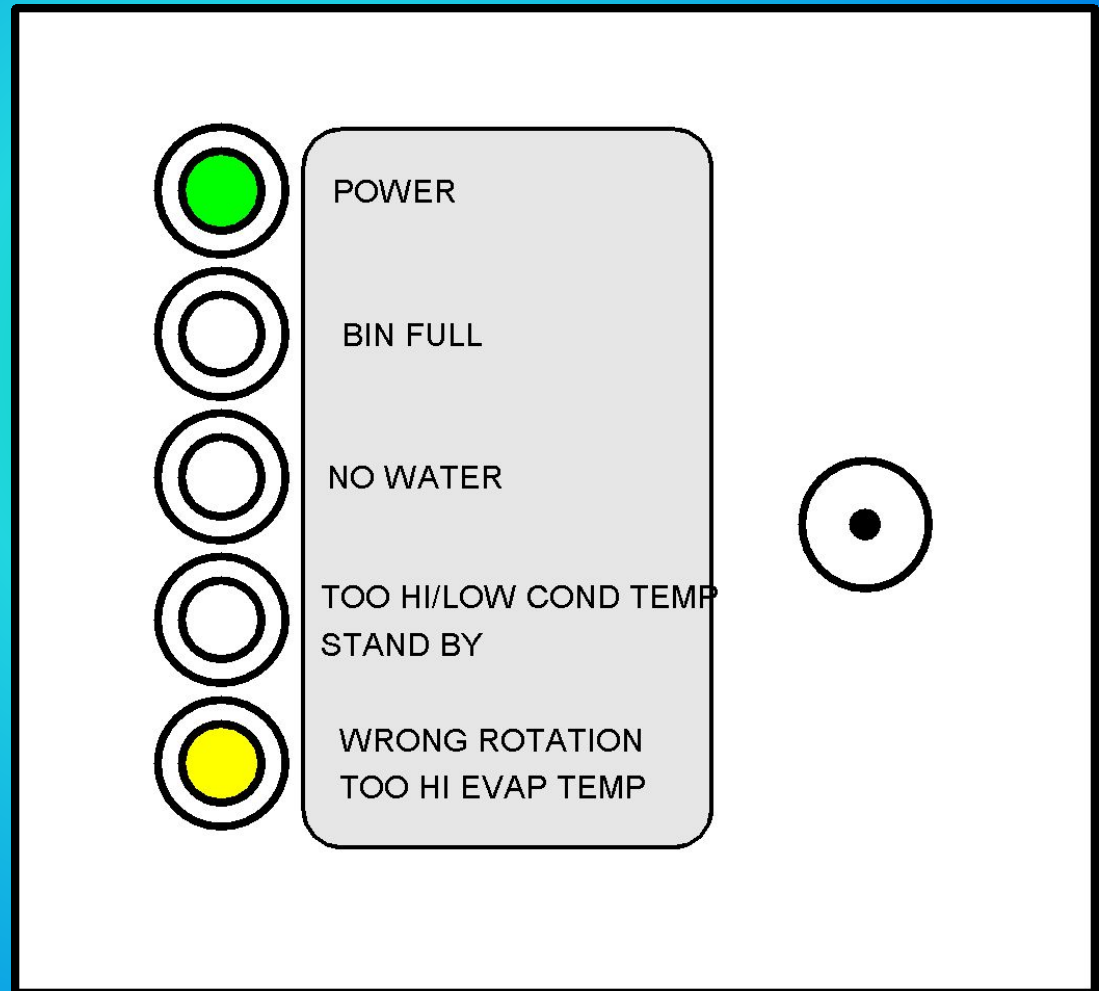


MF SERIES

SERVICE ANALYSIS

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

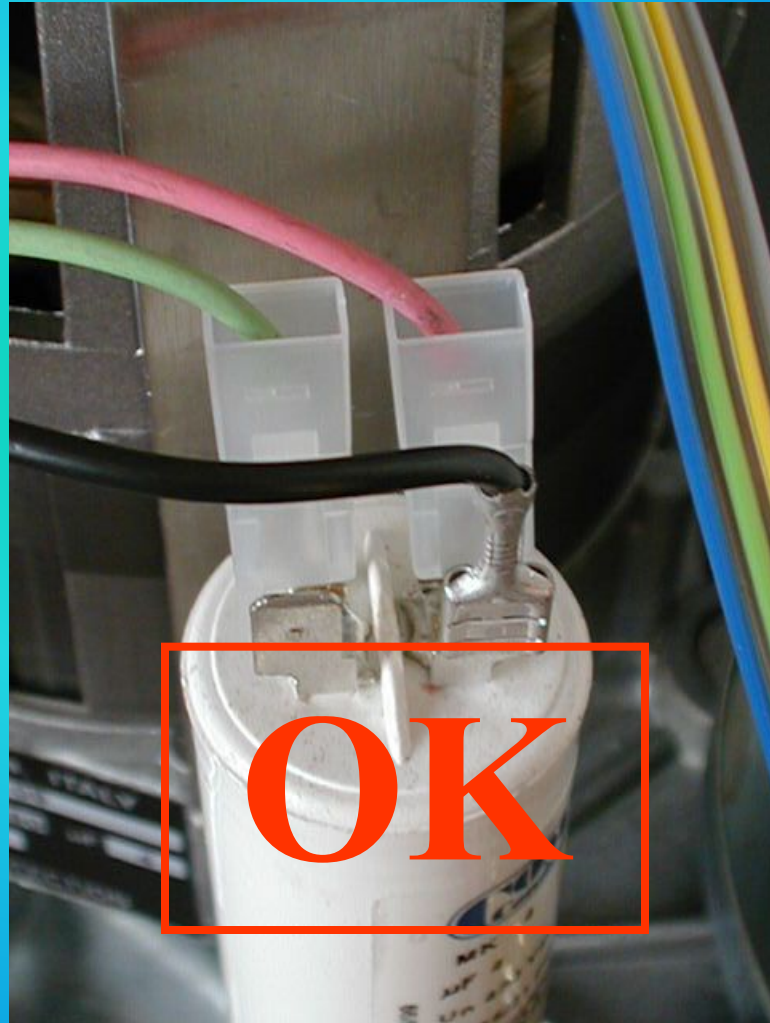
Green and
Yellow
LED ON.



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

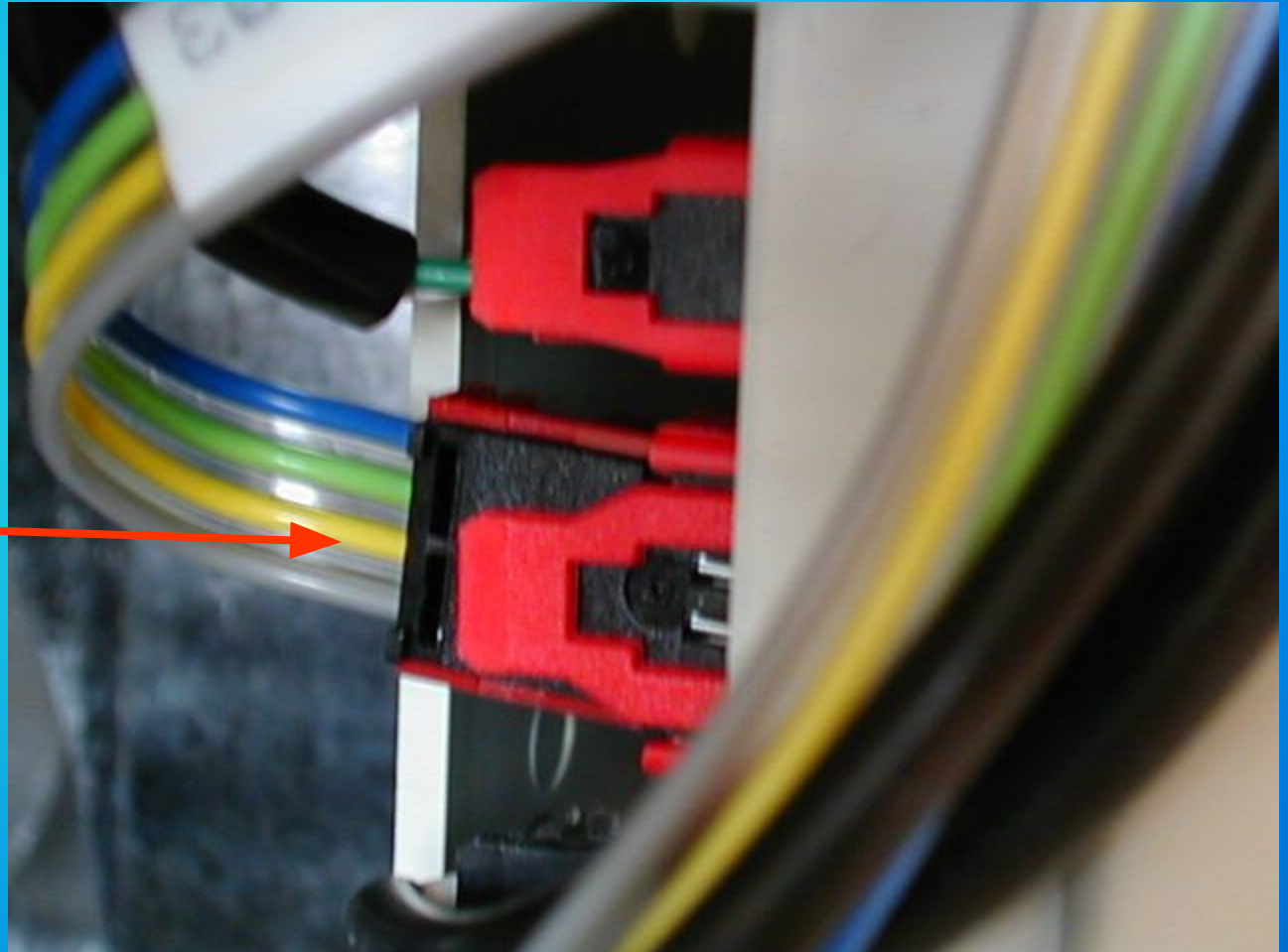
Check for:

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

MF SERIES SERVICE ANALYSIS

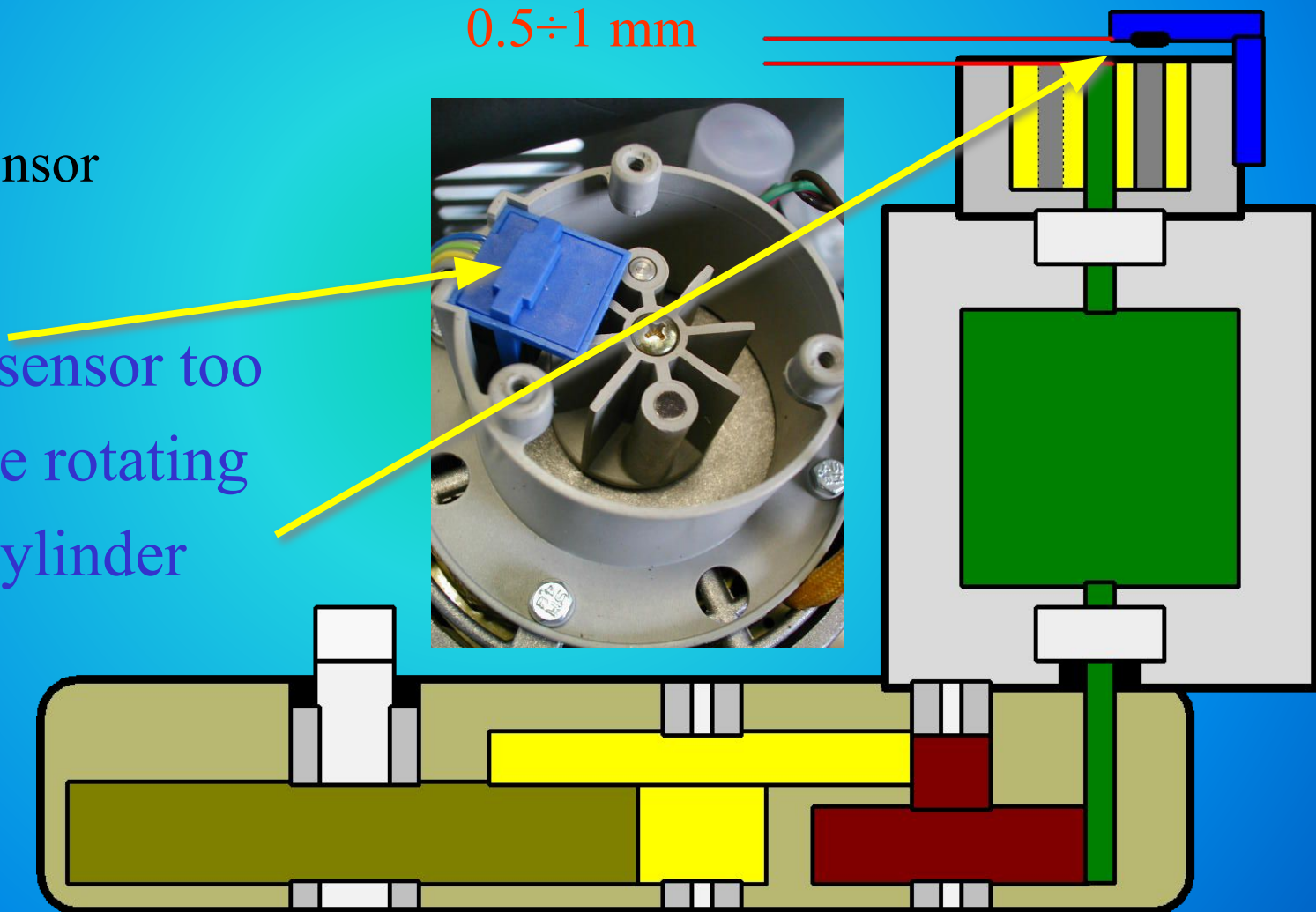
Additional reasons for the **tripping OFF at Rotation Error** are:

- Magnetic sensor unplugged



MF SERIES SERVICE ANALYSIS

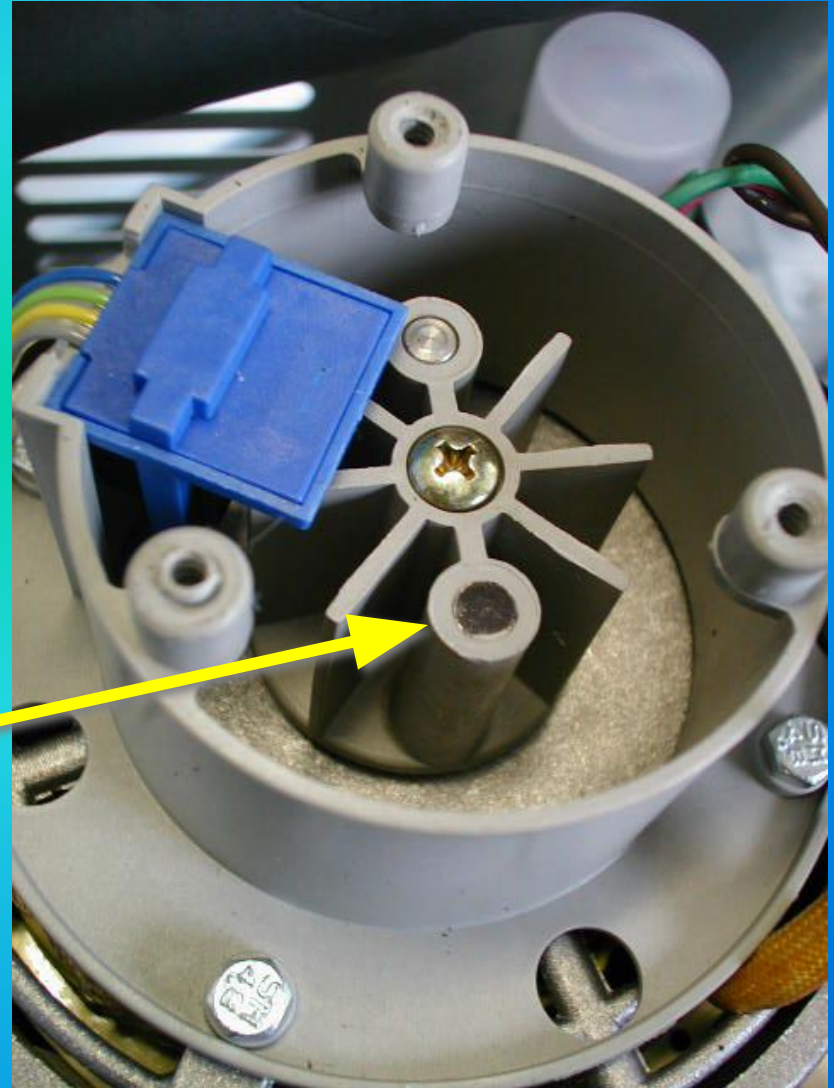
- Magnetic sensor unplugged
- Magnetic sensor too far from the rotating magnetic cylinder



MF SERIES

SERVICE ANALYSIS

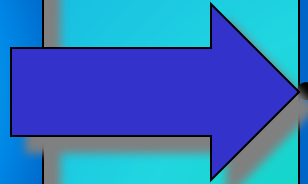
- Magnetic sensor unplugged
- Magnetic sensor too far from the rotating magnetic cylinder
- Magnetic cylinder partially or fully demagnetized



MF SERIES

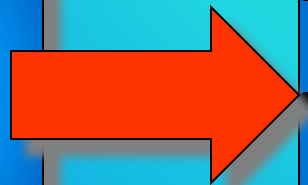
SERVICE ANALYSIS

**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

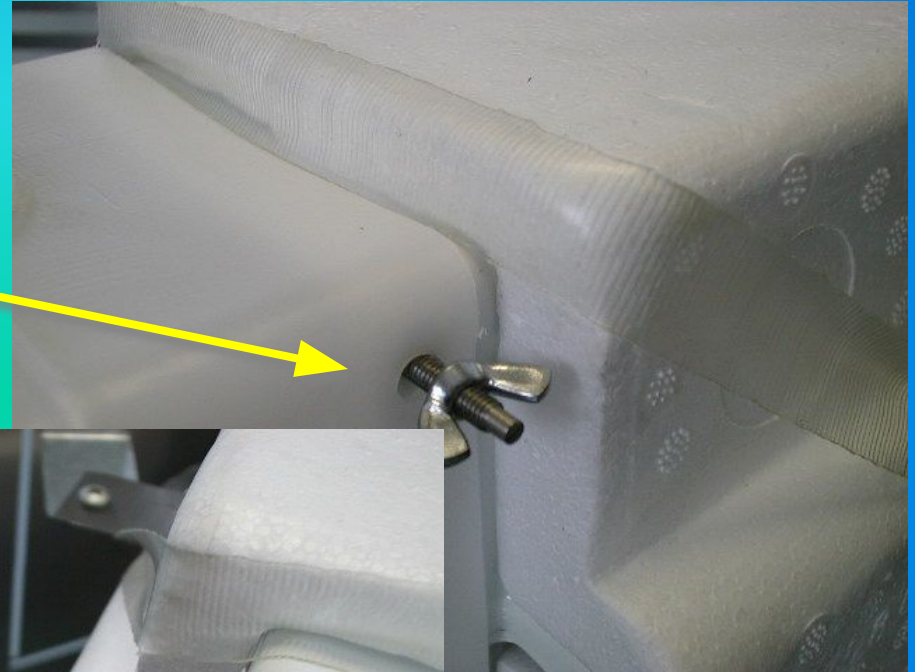
.....the sides/rear
panel.



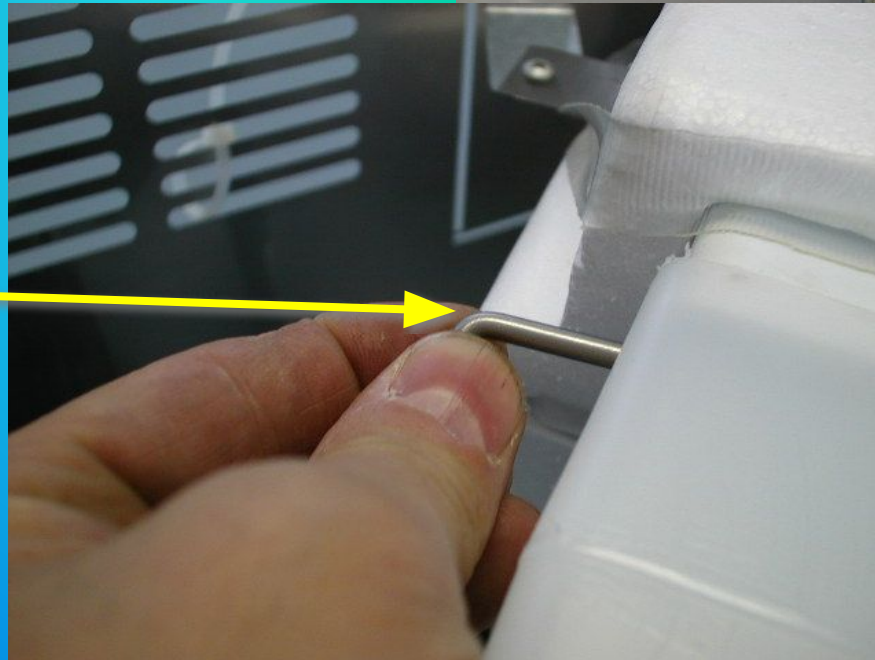
MF 22-30 SERIES

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

Unloose the
wing nut
then.....



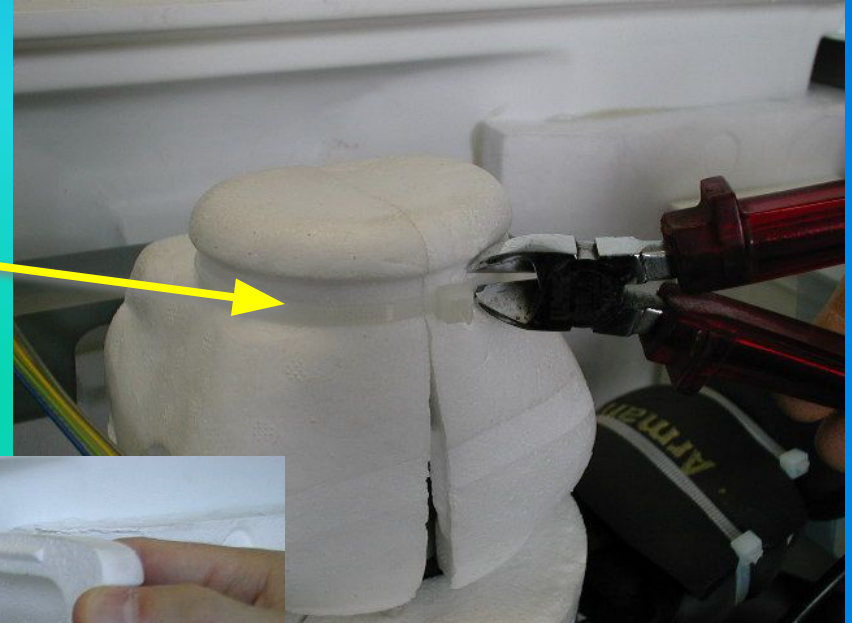
.....remove
the metal rod
securing the
plastic ice
chute to the
ice spout.



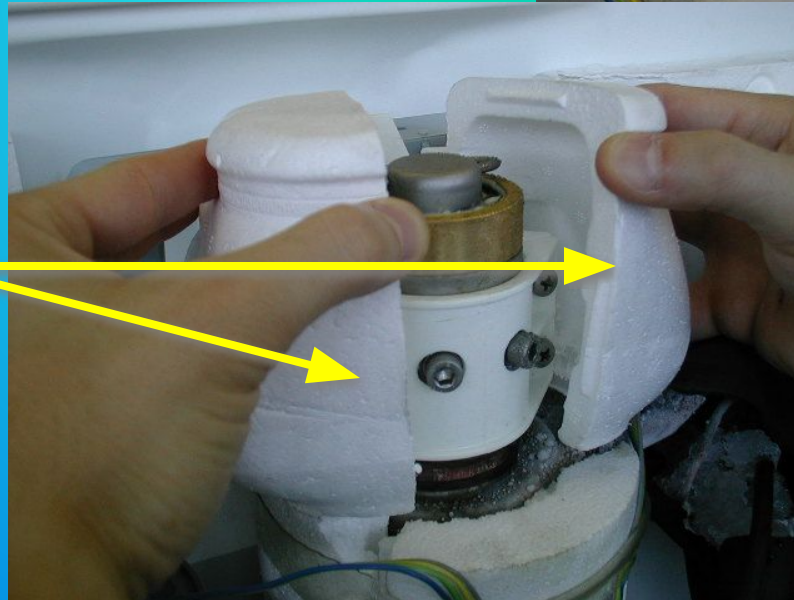
MF 22-30 SERIES

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

Cut the
plastic strap
and remove
the....



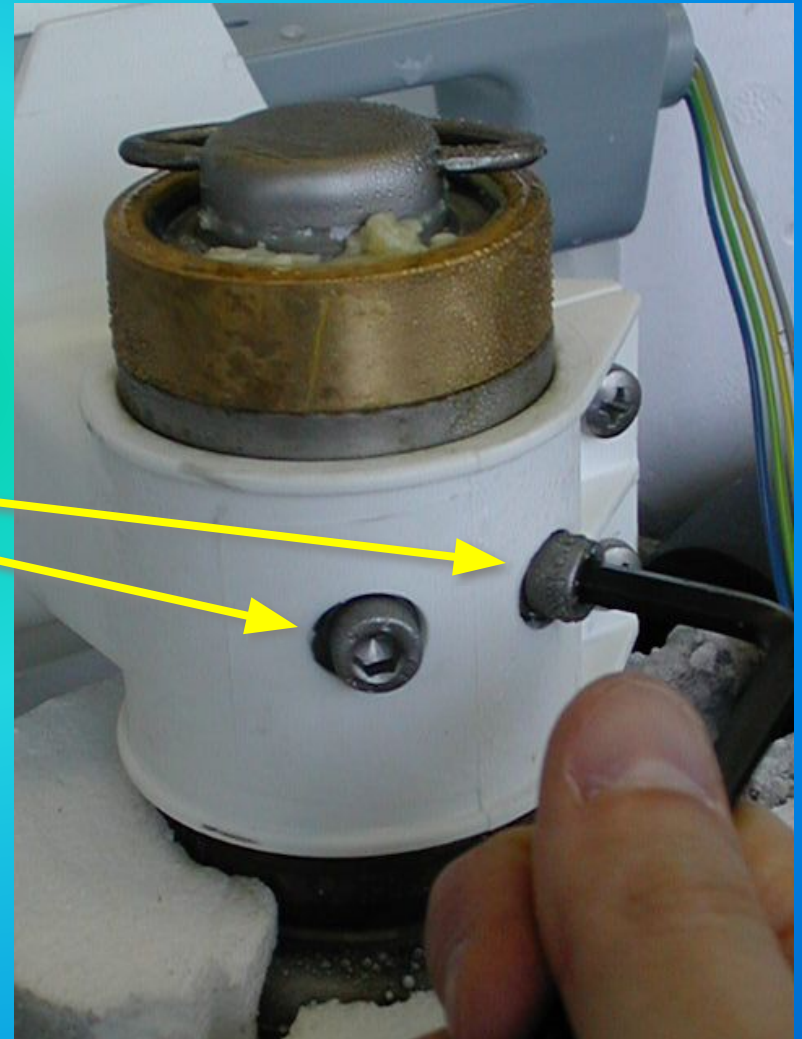
.....two
polystyrene
insulation
from the
spout.



MF 22-30 SERIES

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

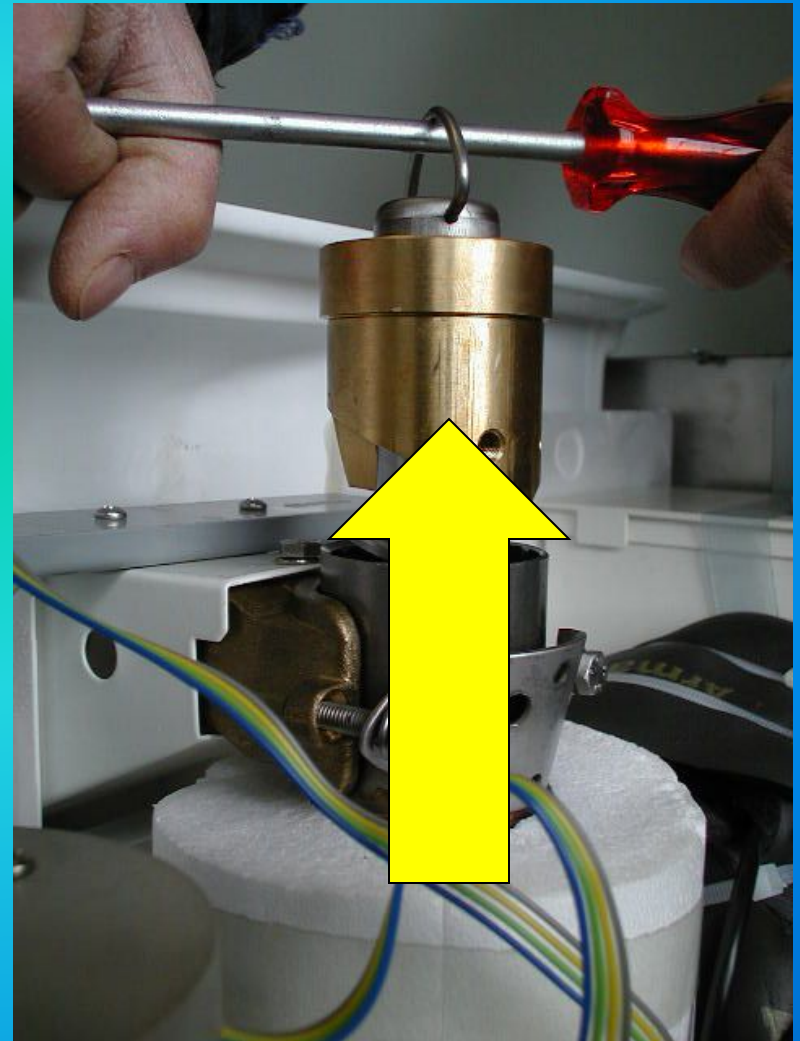
Unscrew and
remove the two
screws securing
the brass ice
breaker to the
evaporator.



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

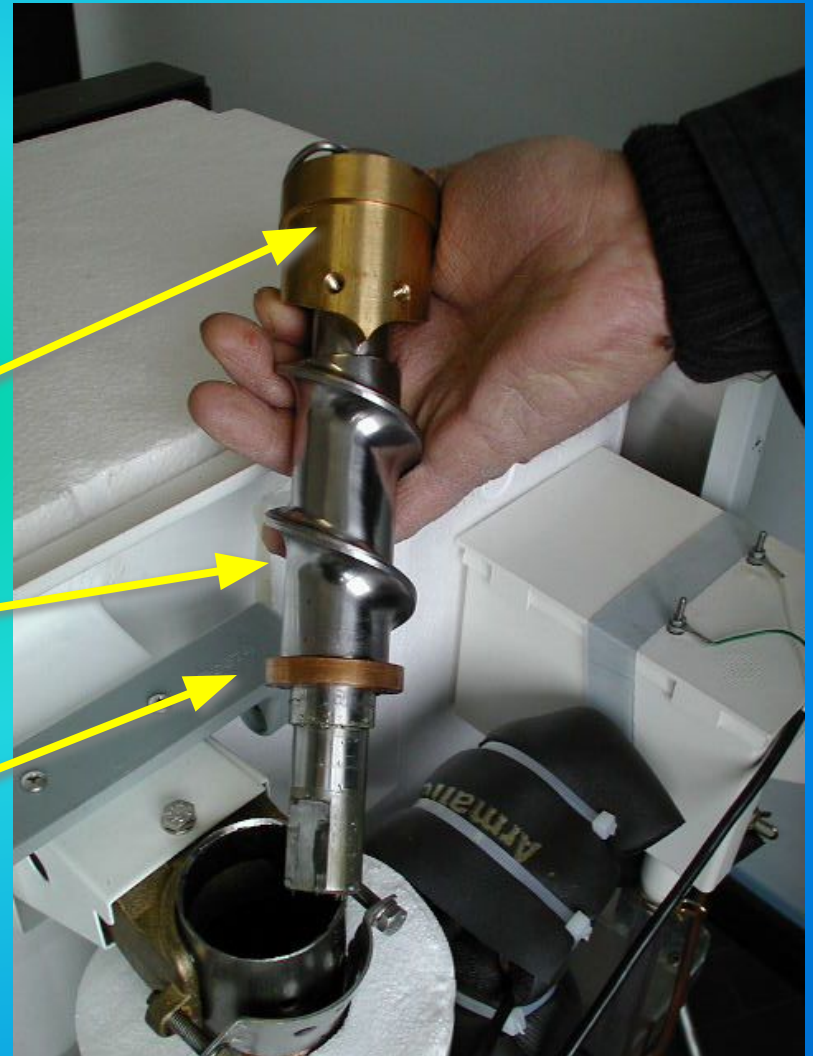
REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

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

ice breaker assembly

auger

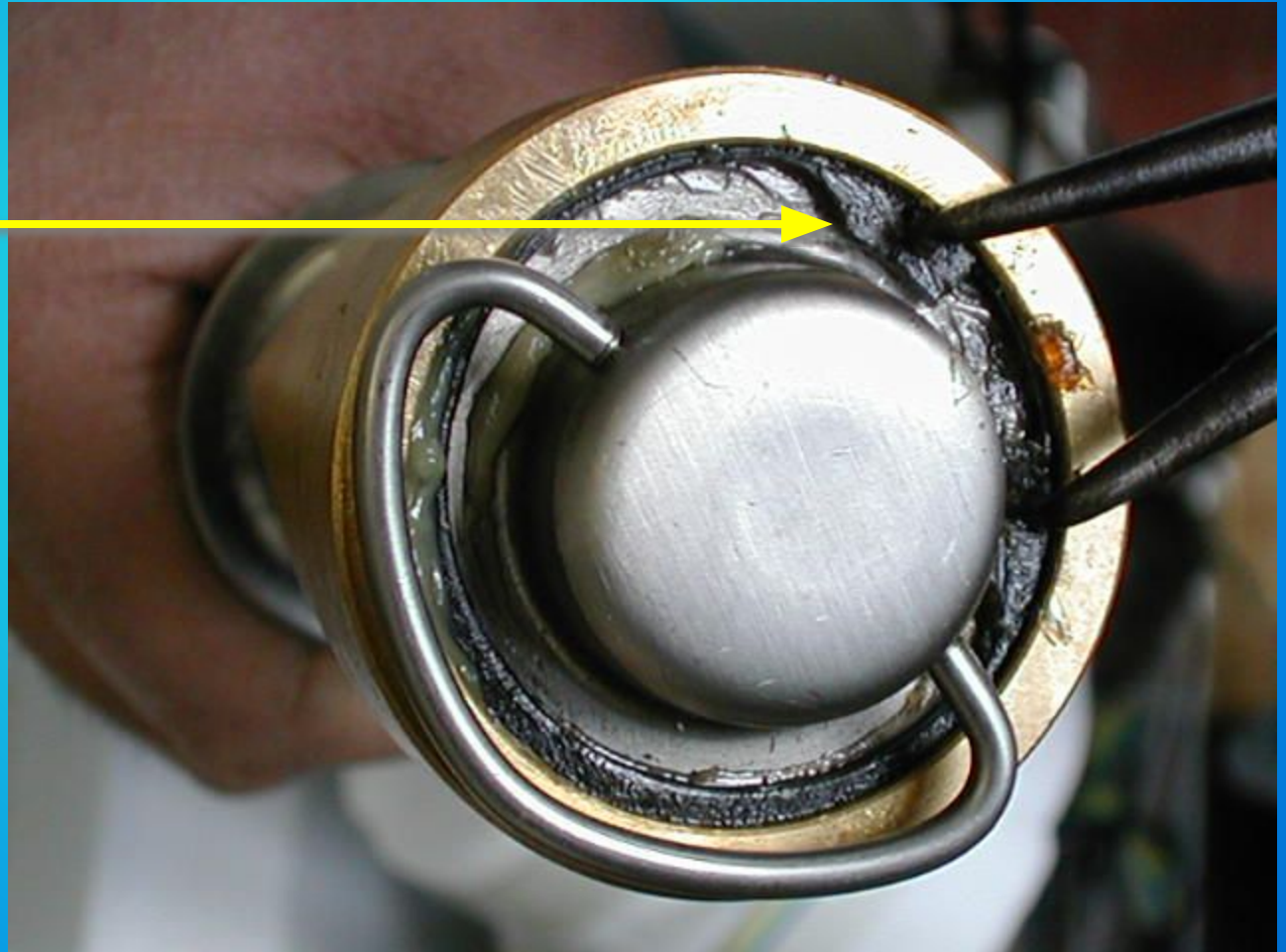
top half of the water seal



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

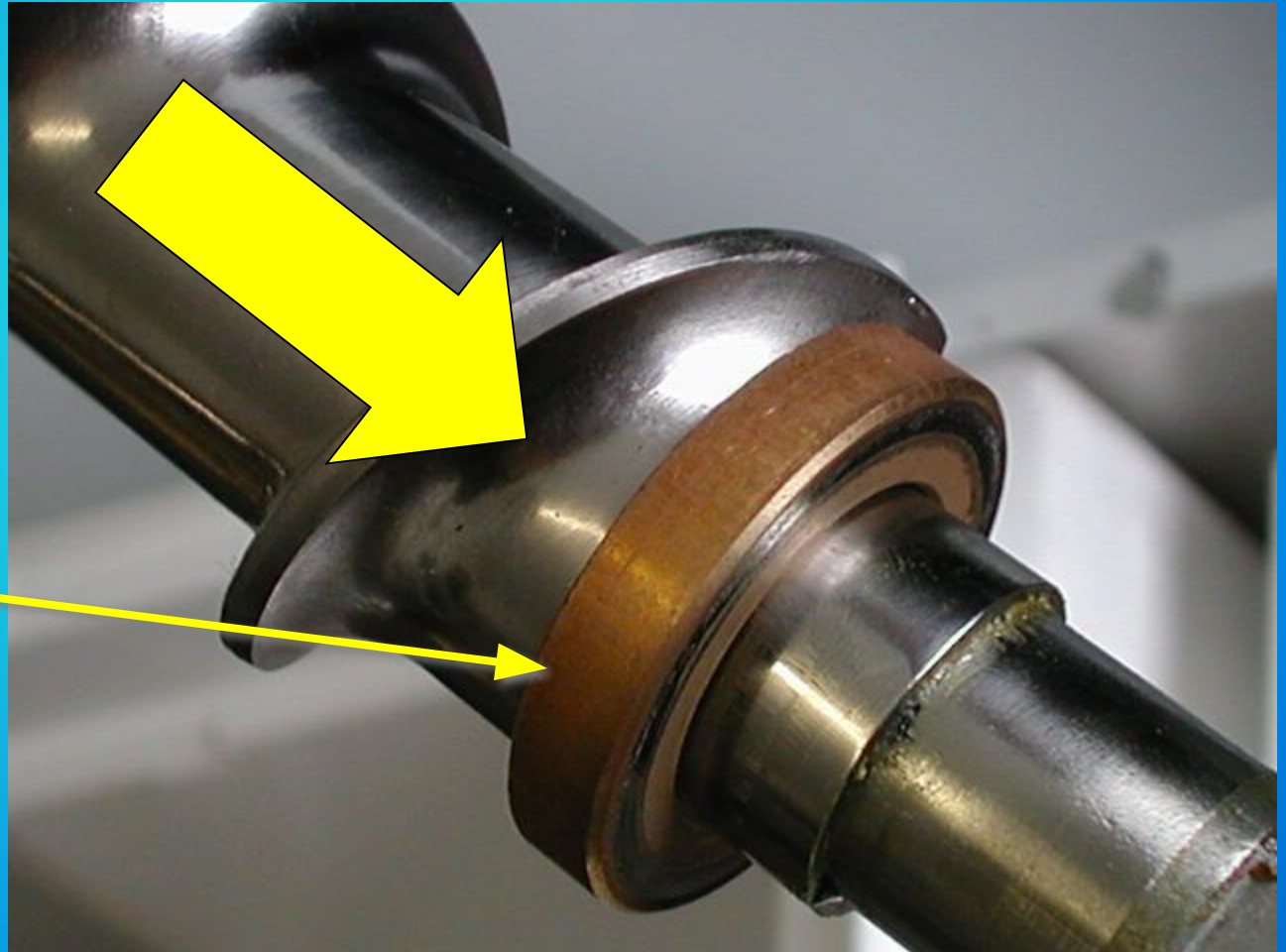
..... as well as
the condition
of the O ring.



MF 22-30 SERIES

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

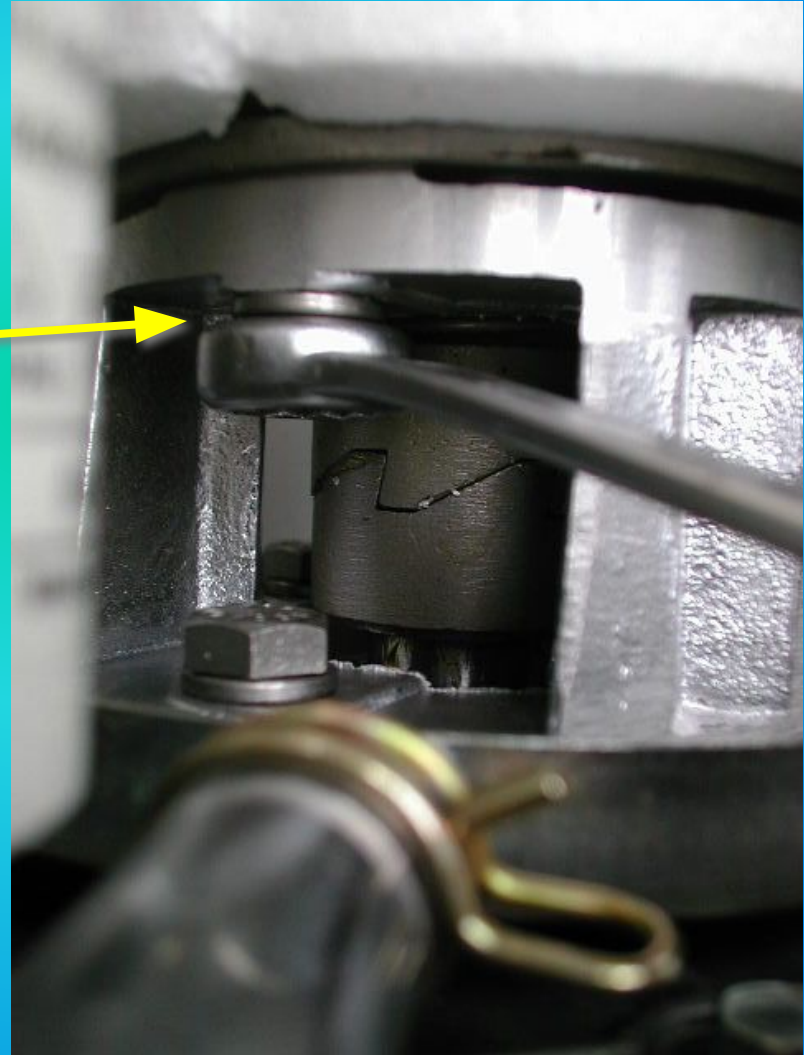
Slide off from
the bottom of
the auger the
upper half of
the water seal.



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

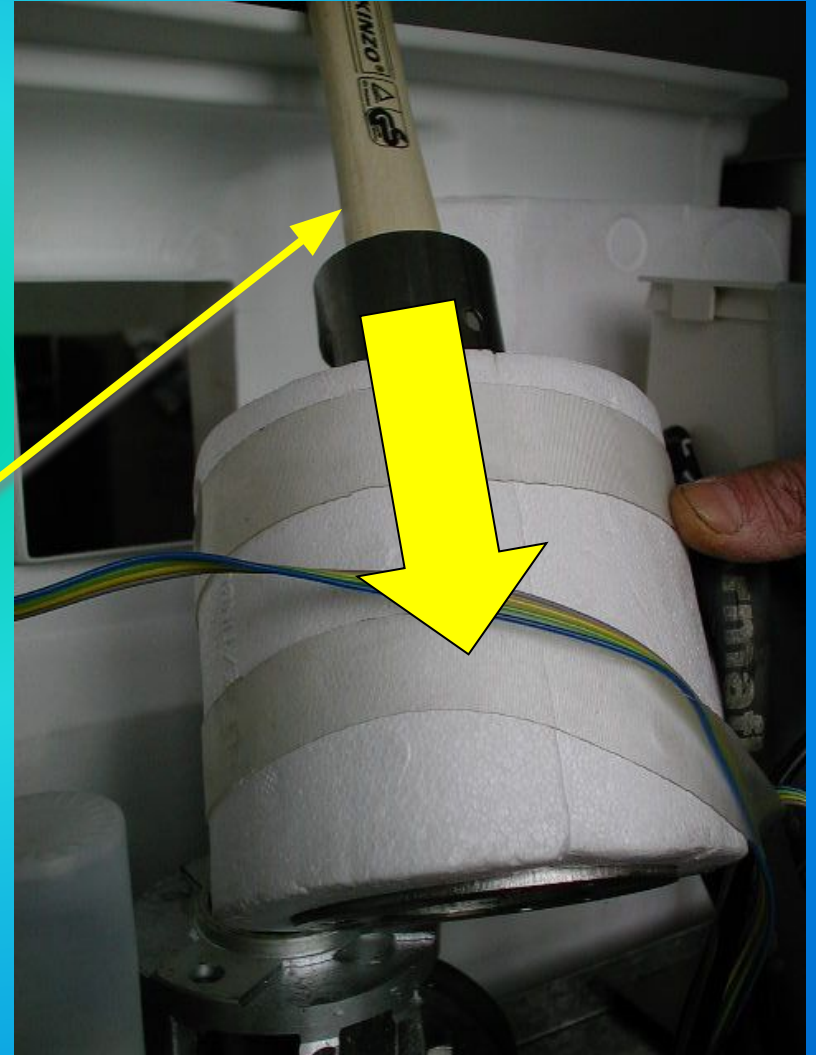


MF 22-30 SERIES

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.....

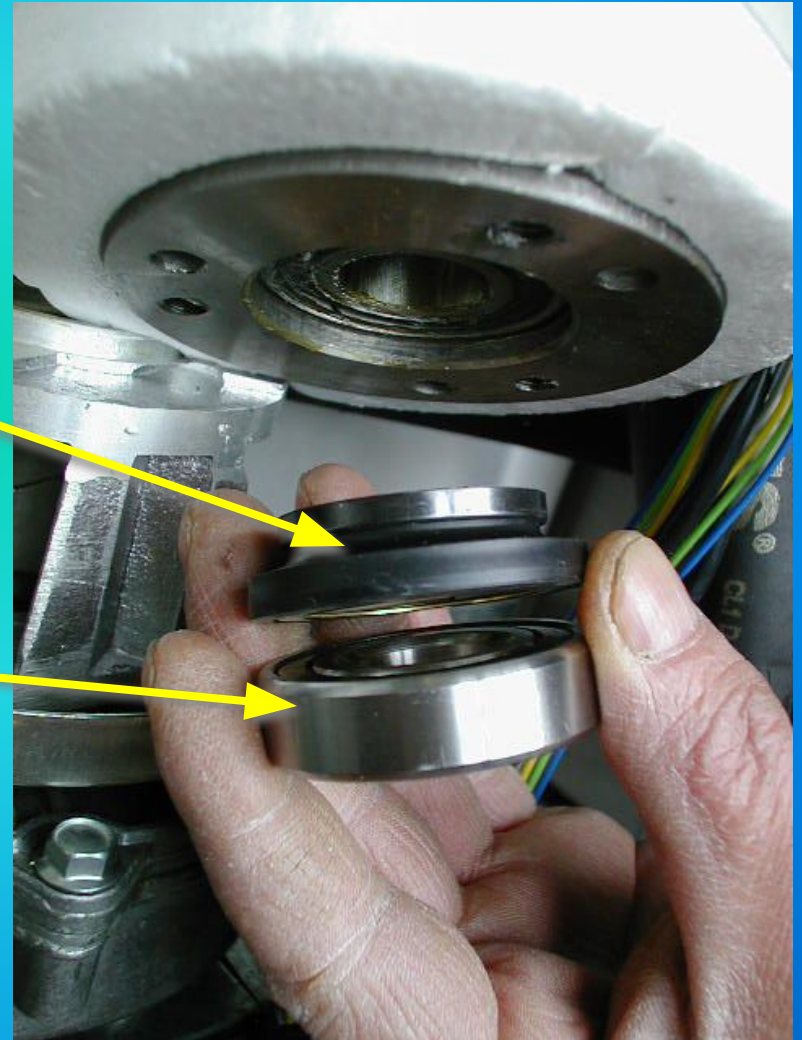


MF 22-30 SERIES

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

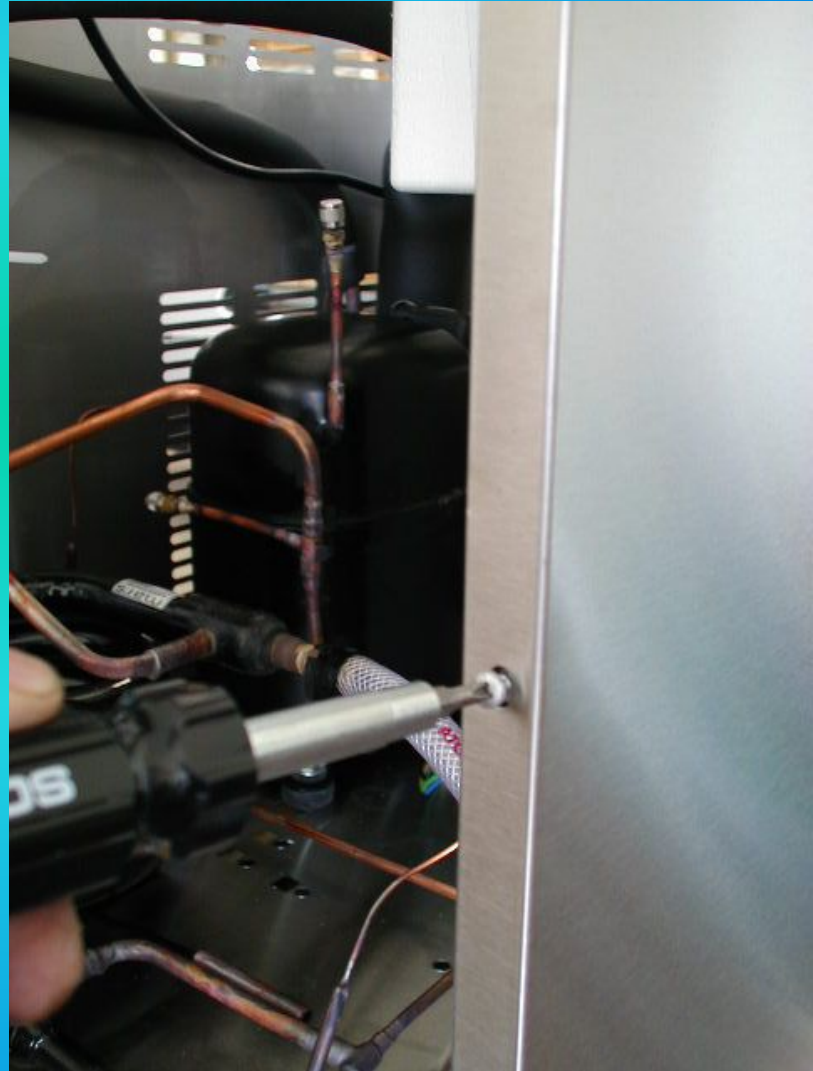
Remove first the
front/top panel
and then



MF 41-51-61 SERIES

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

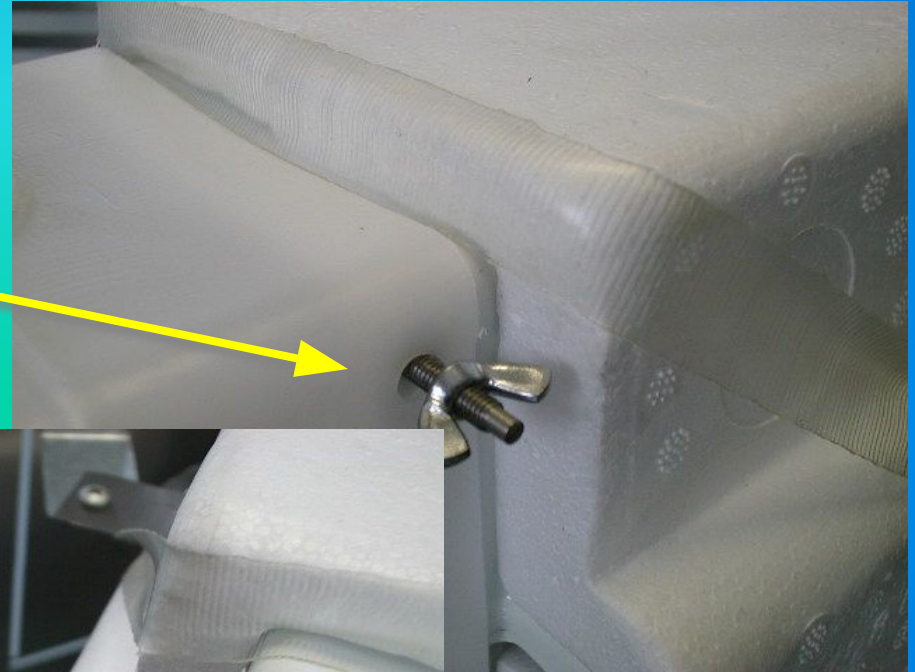
.....the sides/rear
panel.



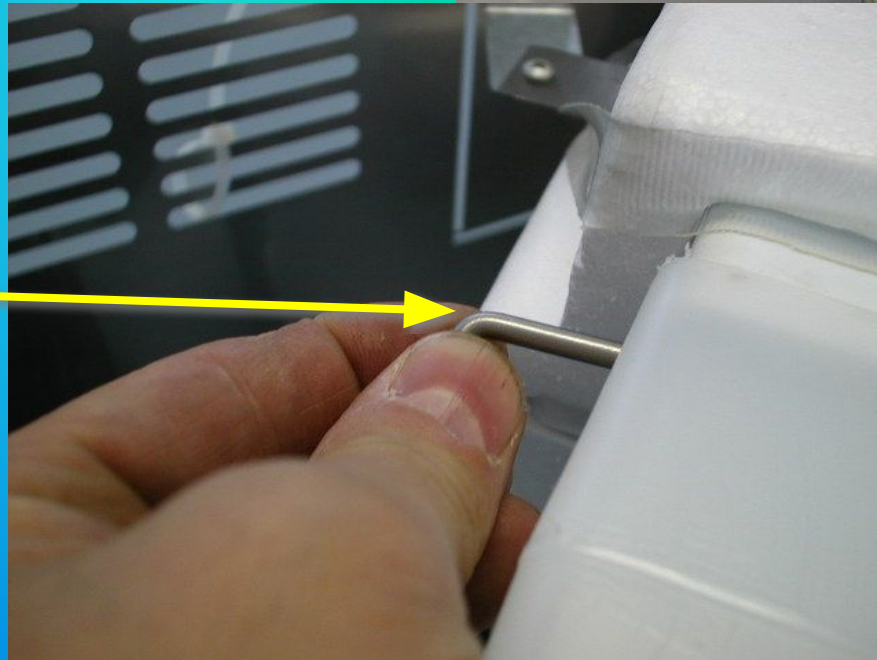
MF 41-51-61 SERIES

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....

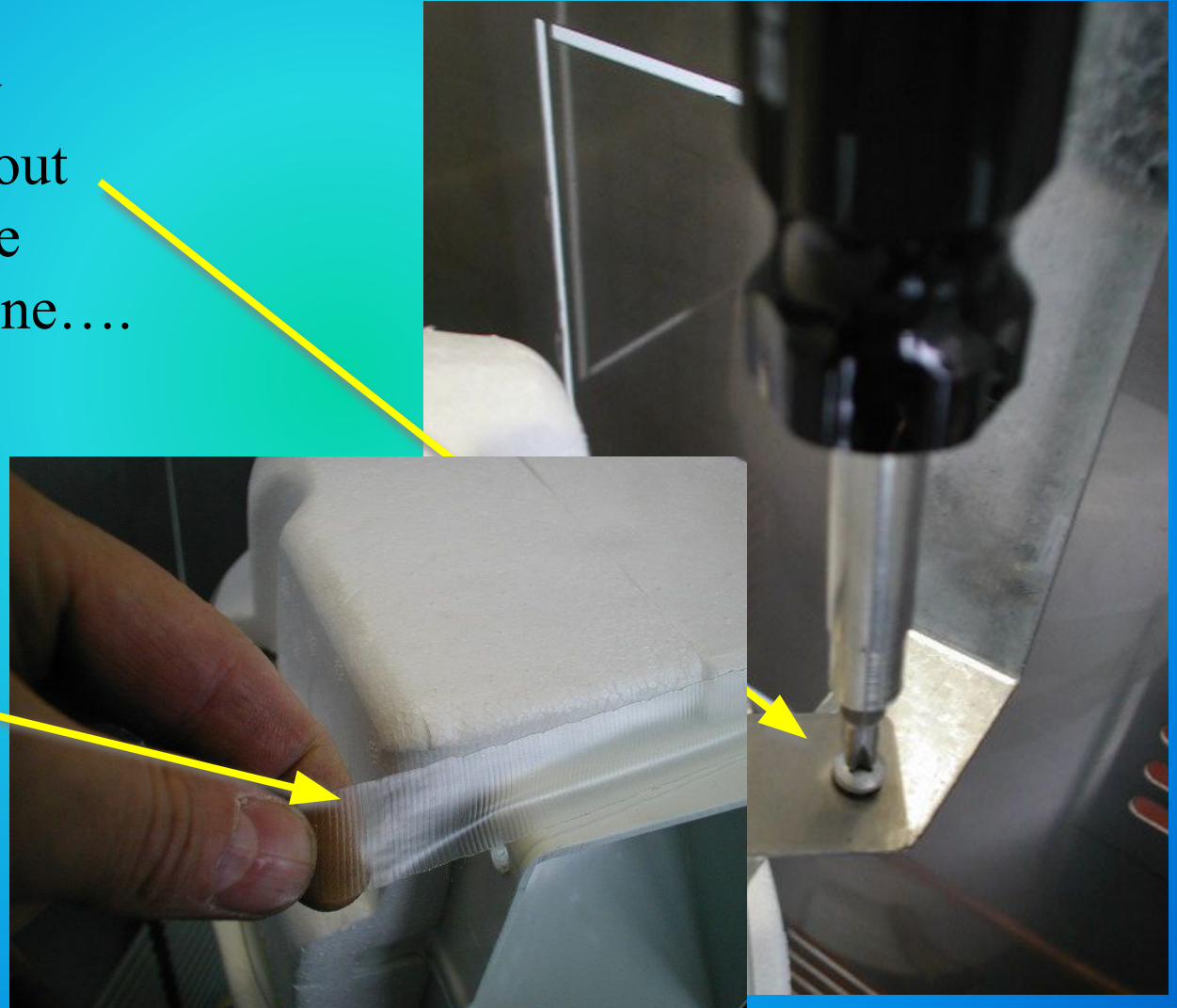


MF 41-51-61 SERIES

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
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....

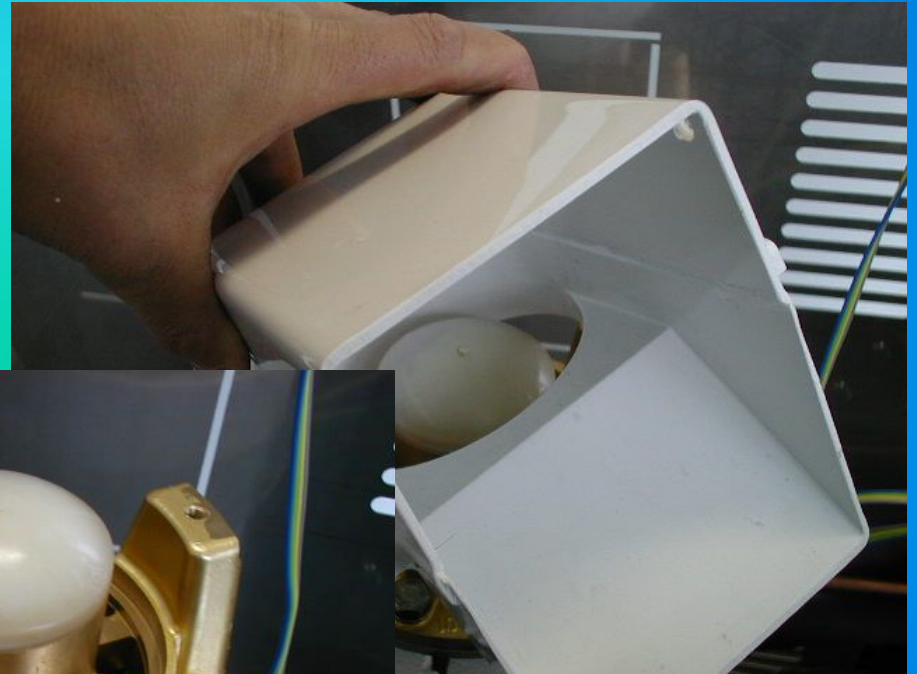
....and
remove it.



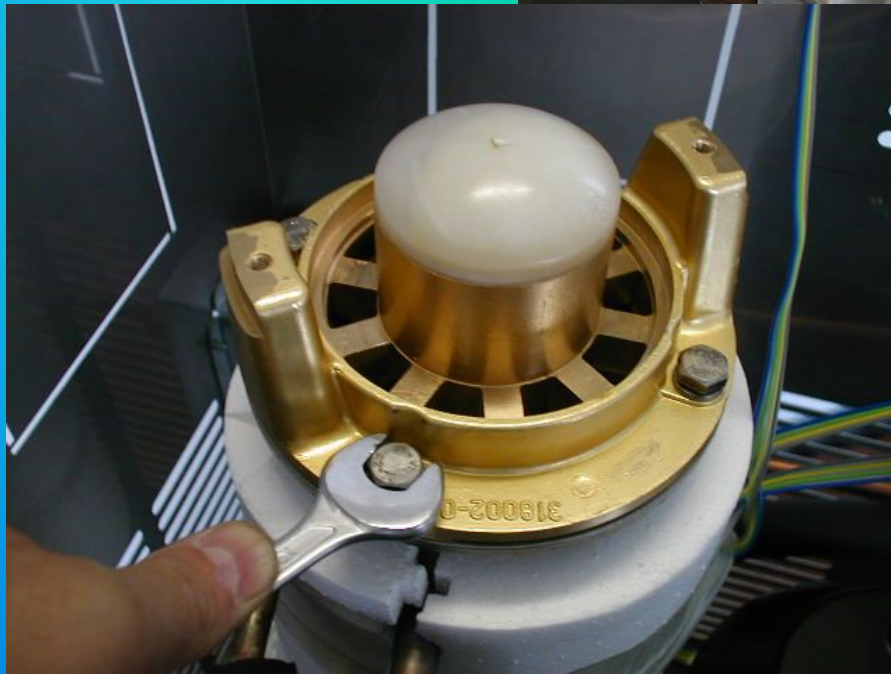
MF 41-51-61 SERIES

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

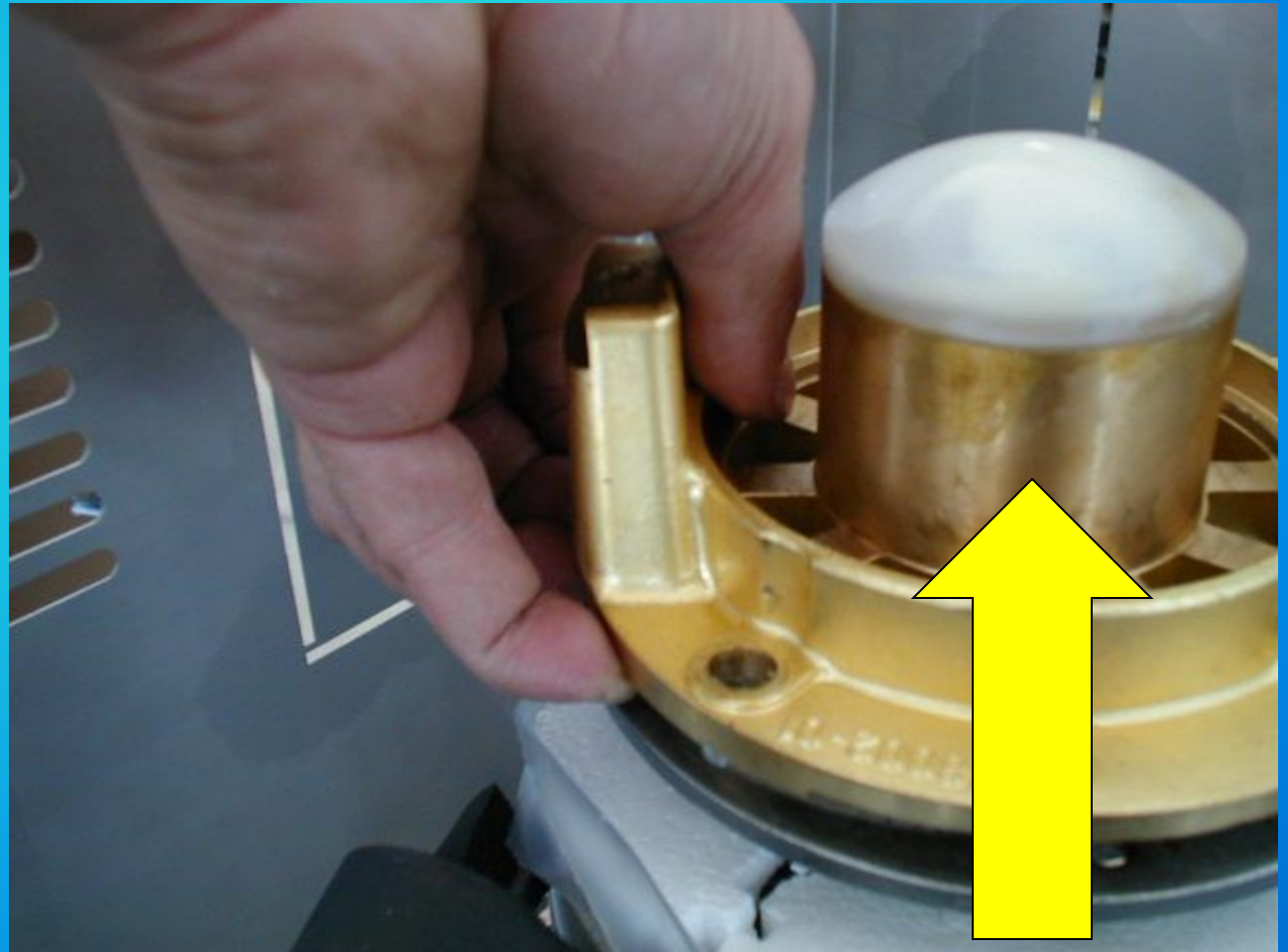
With a couple
of screwdrivers
rise up a little
bit the ice
breaker and
auger assembly
then



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

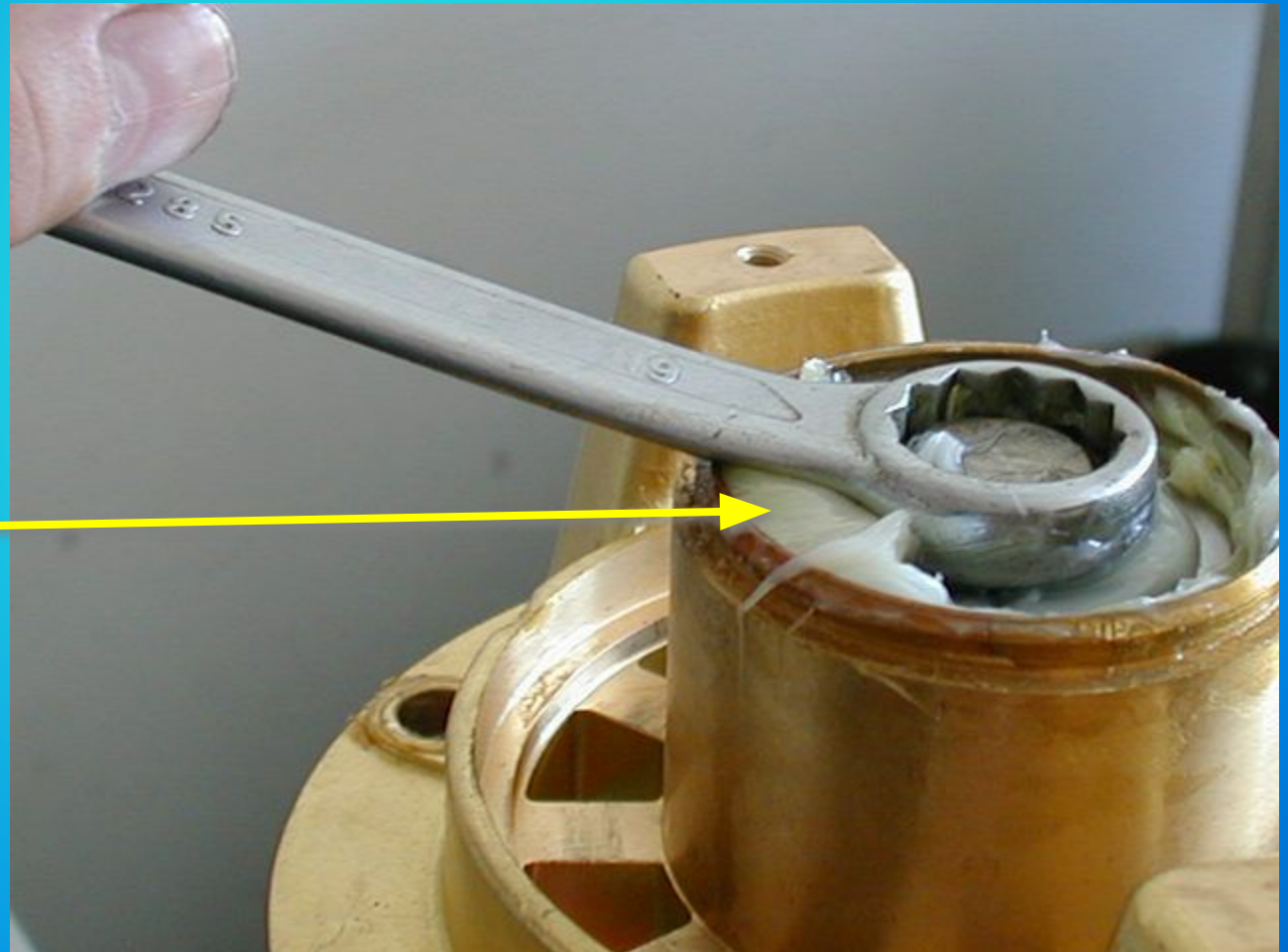
With a
screwdriver
remove the
plastic cap
from the
upper side of
the ice
breaker.



MF 41-51-61 SERIES

REPLACEMENT OF AUGER, WATER SEAL AND BEARINGS

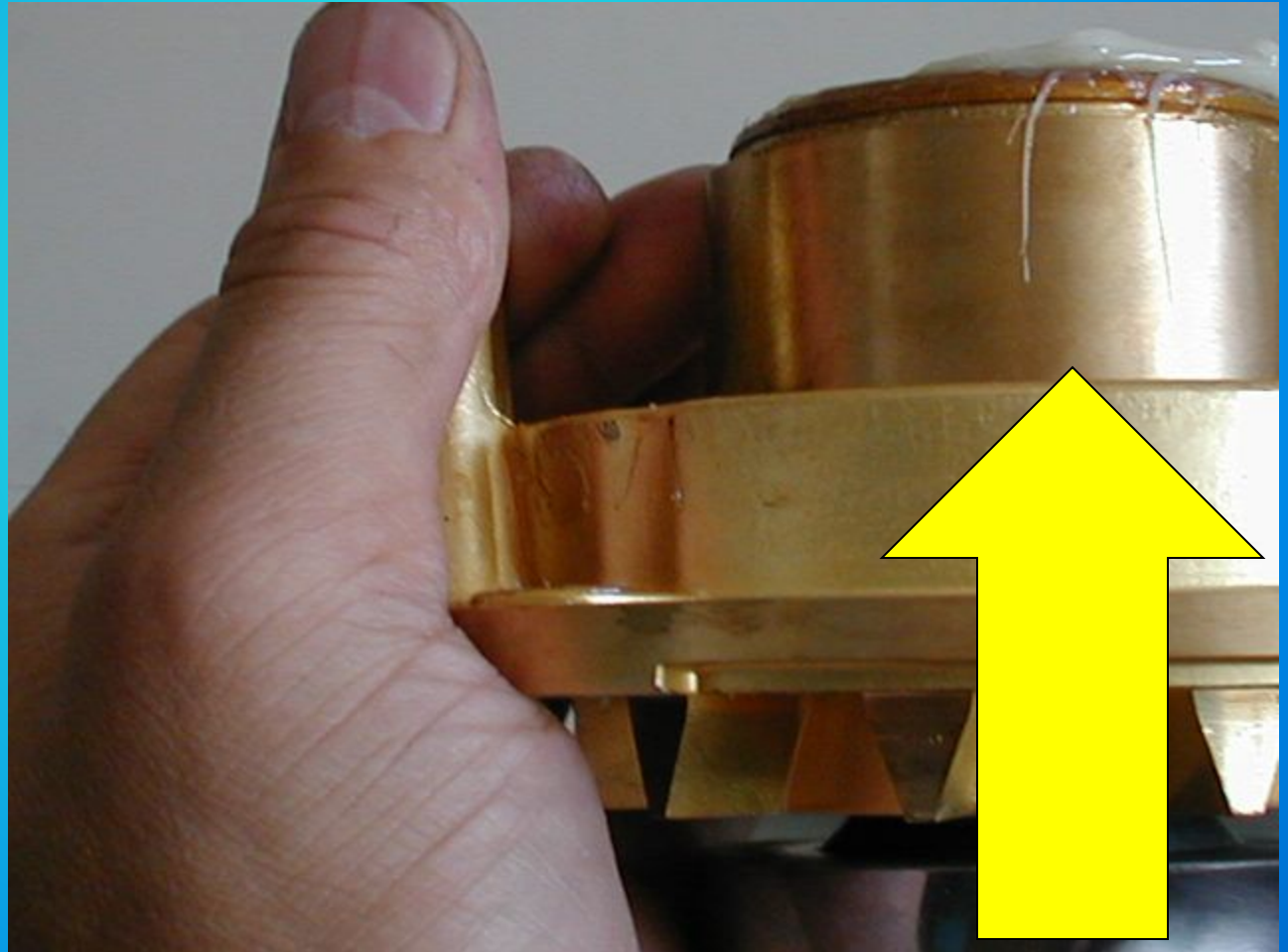
Unloose and
remove the
screw and.....



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

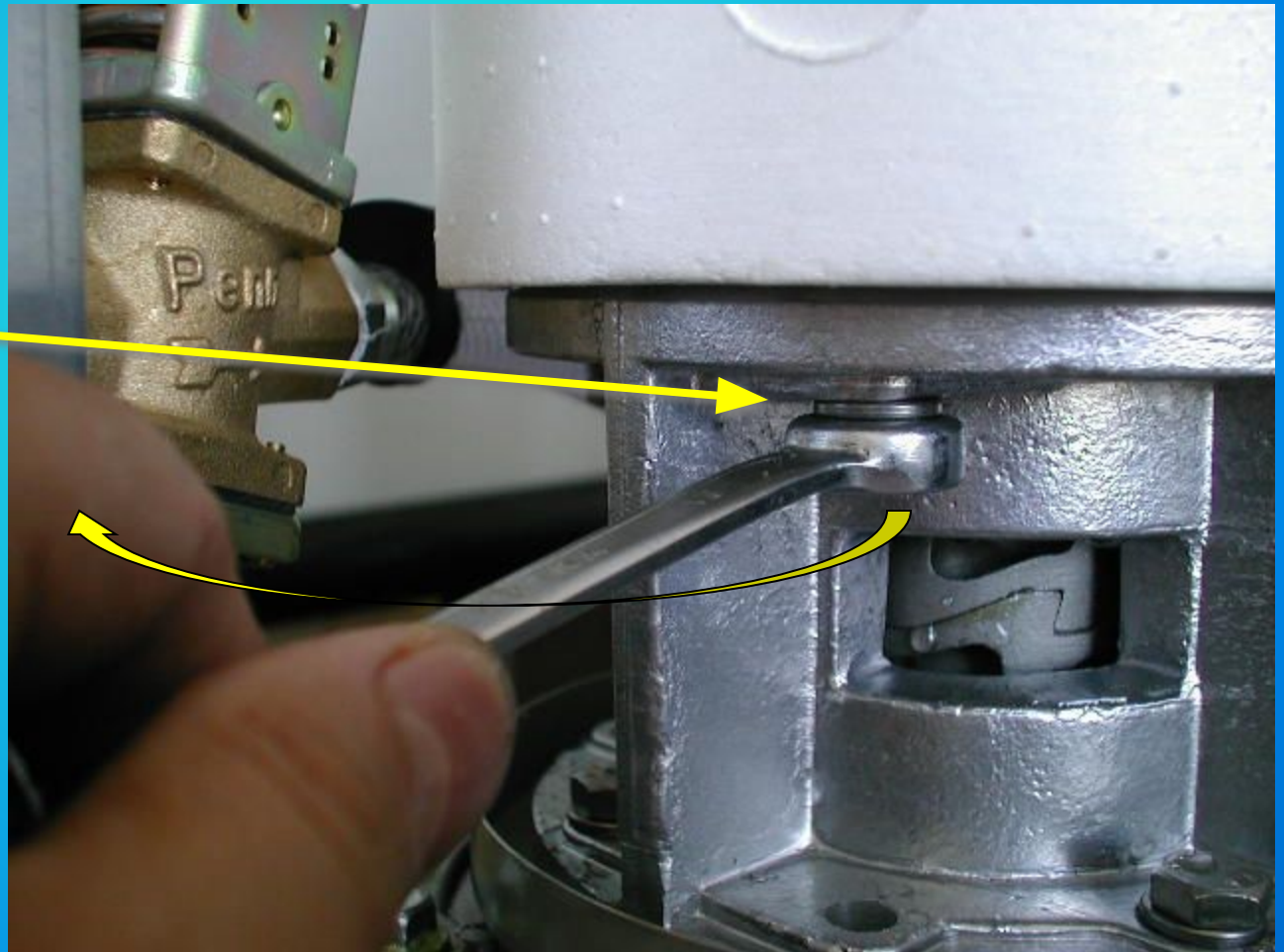
Slide off from
the bottom of
the auger the
upper half of
the water seal.



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
.....

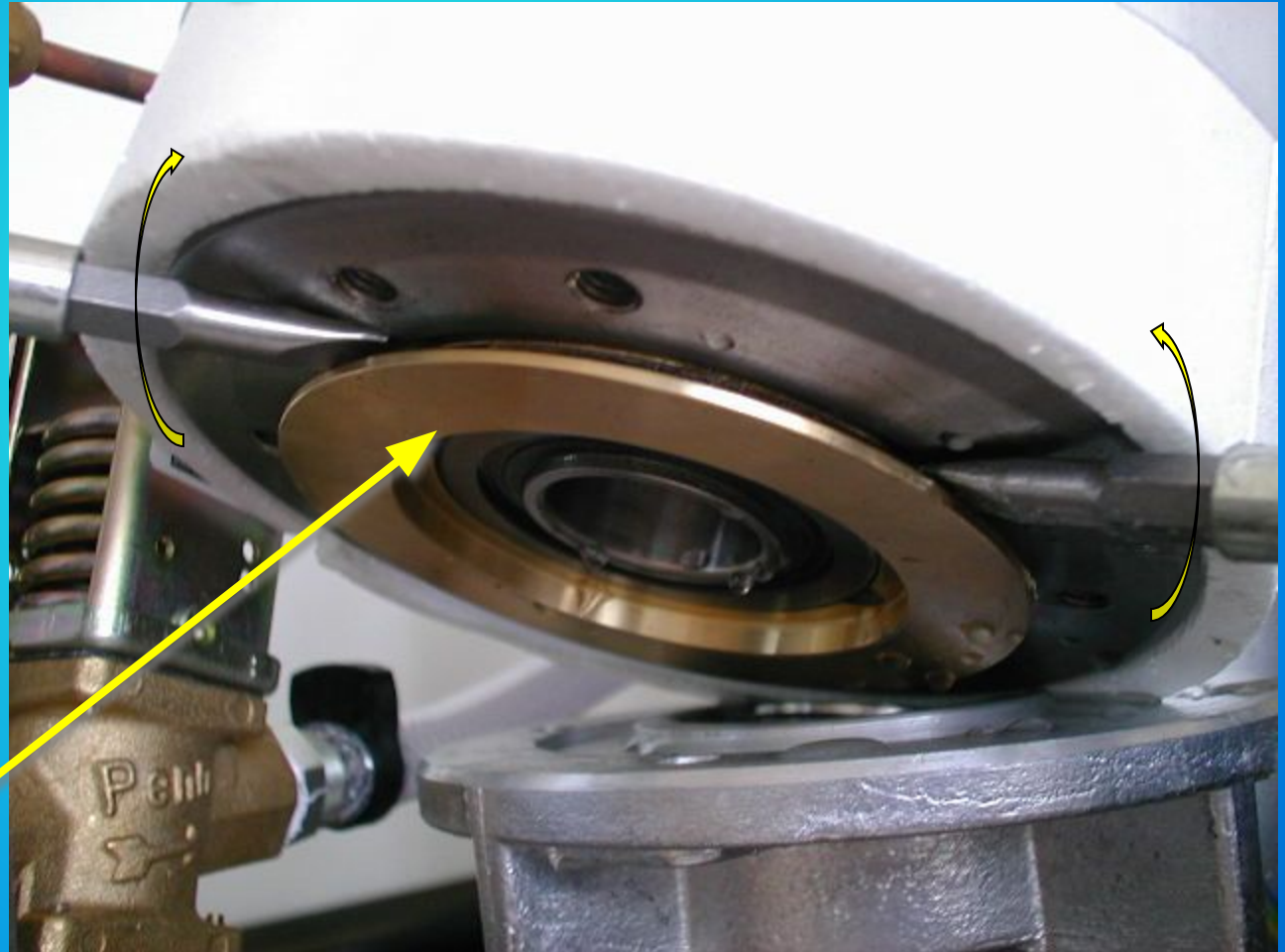


MF 41-51-61 SERIES

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