



**Haier**

**ESD 300 and 400 Series**

**“Tall Tub”**

**UNDERCOUNTER  
DISHWASHER**

**Machine Compartment**

**Service**

Additional Service Programs include:

Door Components

Diagnostics

Pump Module Components

**Haier**

# MACHINE COMPARTMENT

FRONT

High Limit  
Thermostat

Electrical connection

Float switch

Drain Pump  
Assembly

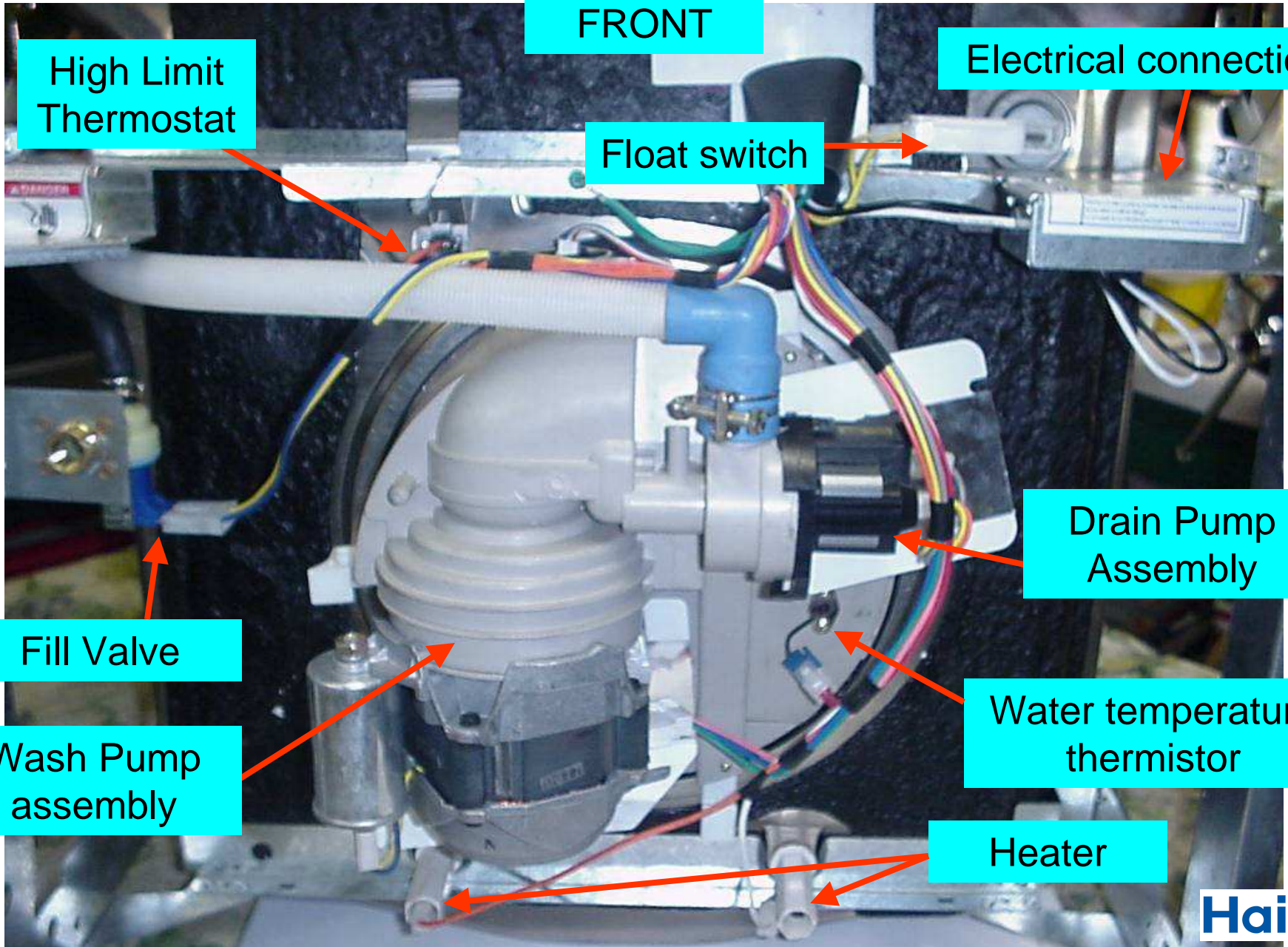
Fill Valve

Water temperature  
thermistor

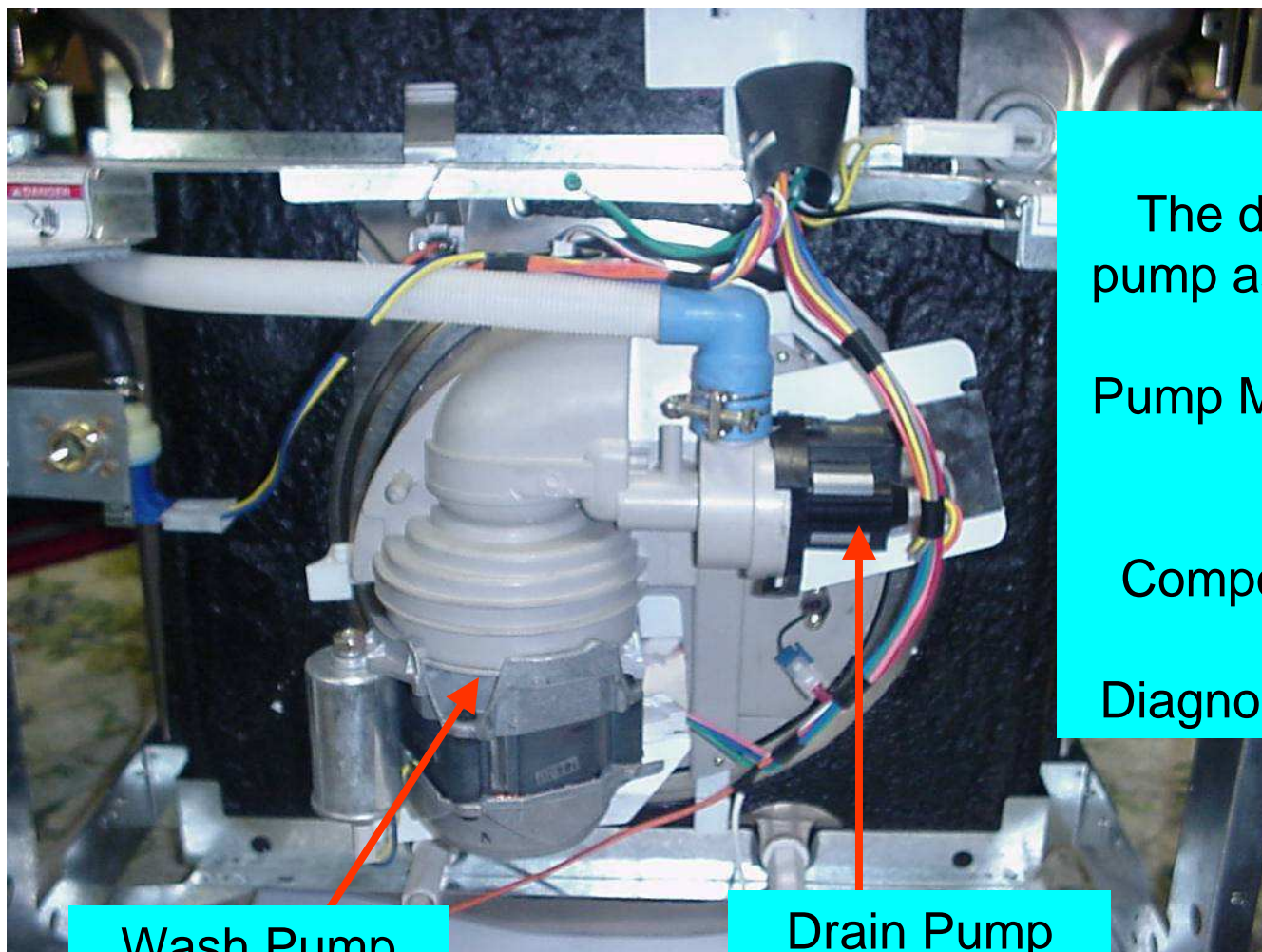
Wash Pump  
assembly

Heater

Haier



# MACHINE COMPARTMENT



Wash Pump  
assembly

Drain Pump  
Assembly

## Notice

The drain pump and wash pump assemblies are covered in detail in the Pump Module Service training program.

Component diagnostics are covered in the Diagnostics training program.

## MACHINE COMPARTMENT Float and Float Switch

Dishwasher has a time fill with a float safety switch.

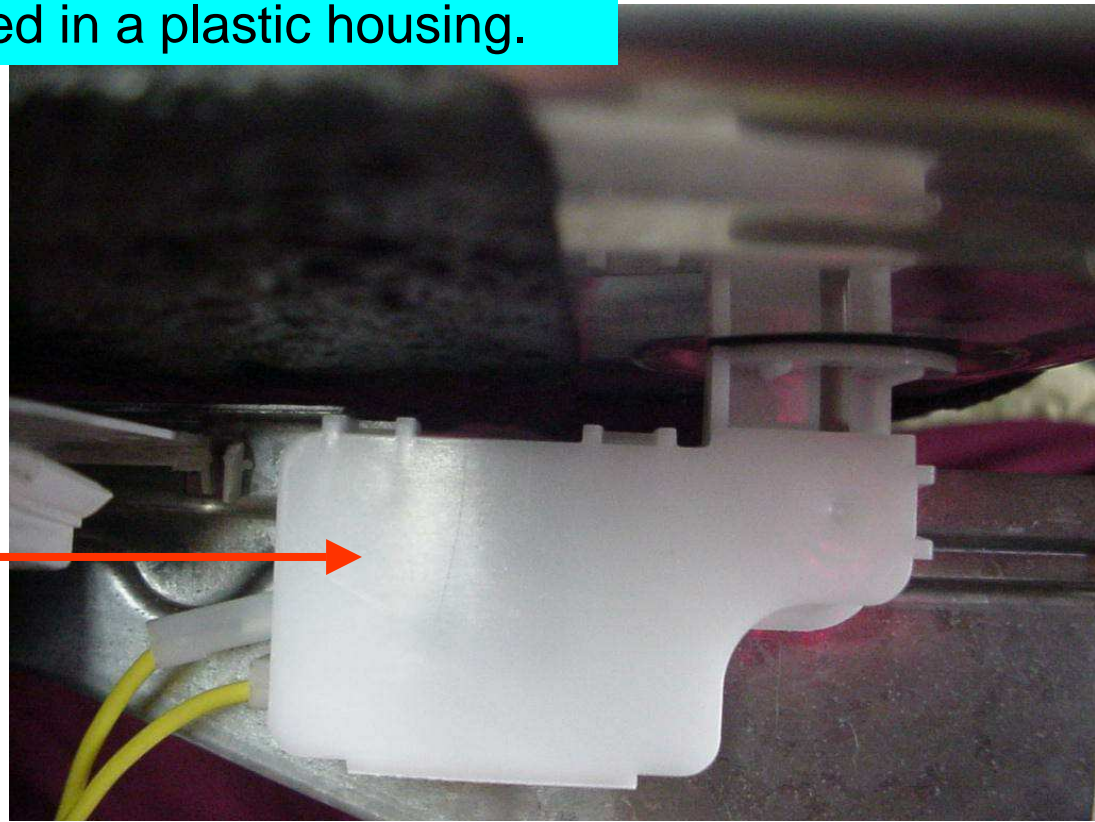
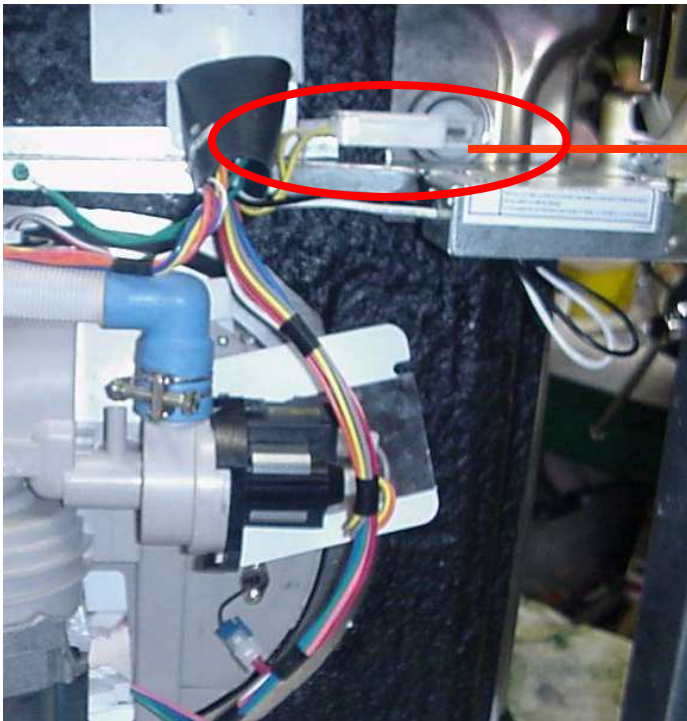
Water fill cycle is 90 seconds.

Float is held in place with the float switch cover

# MACHINE COMPARTMENT

## Float and Float Switch

Safety switch is encased in a plastic housing.

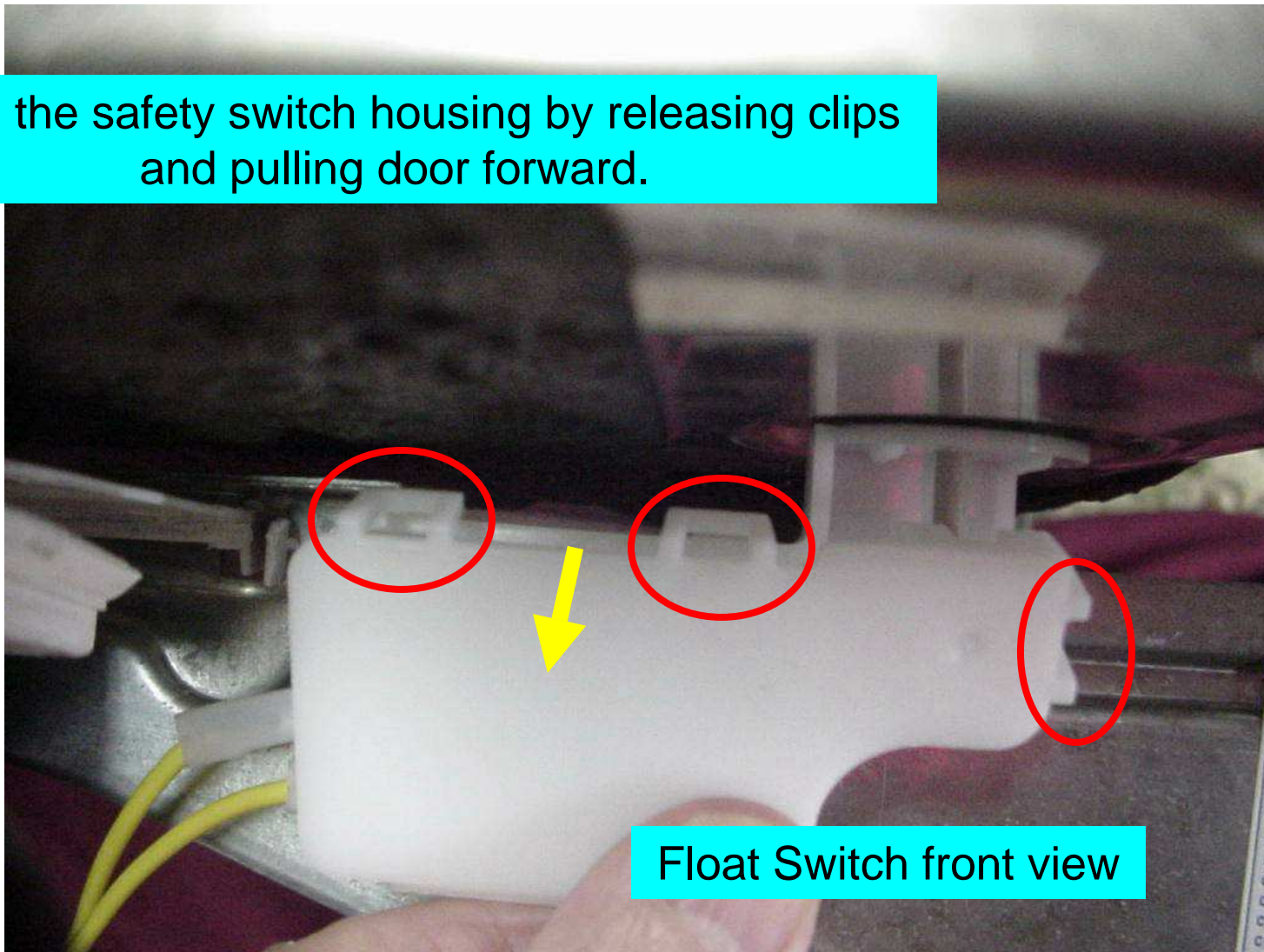


Float Switch front view

# MACHINE COMPARTMENT

## Float and Float Switch

Open the safety switch housing by releasing clips and pulling door forward.



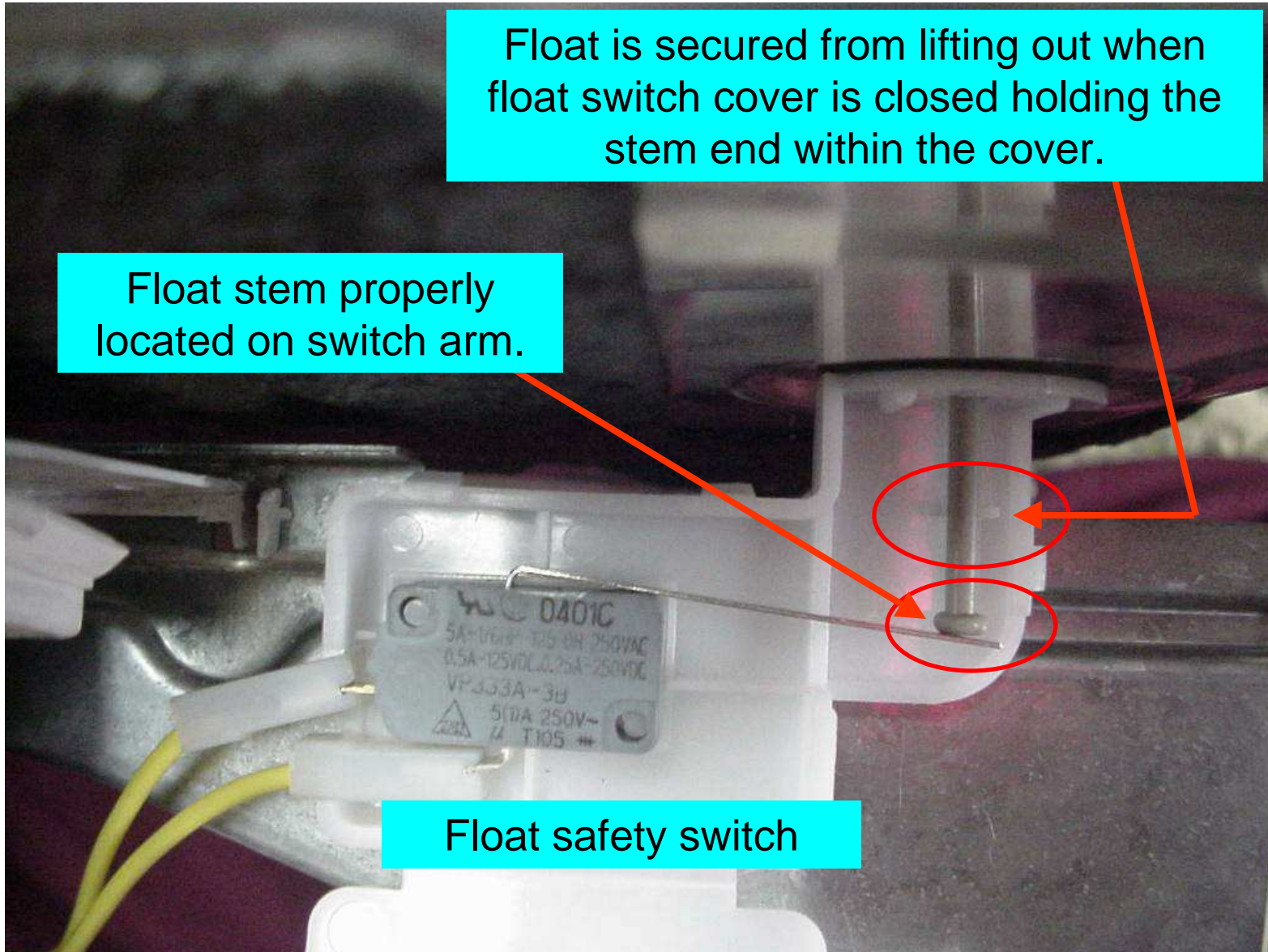
# MACHINE COMPARTMENT

## Float and Float Switch

Float is secured from lifting out when float switch cover is closed holding the stem end within the cover.

Float stem properly located on switch arm.

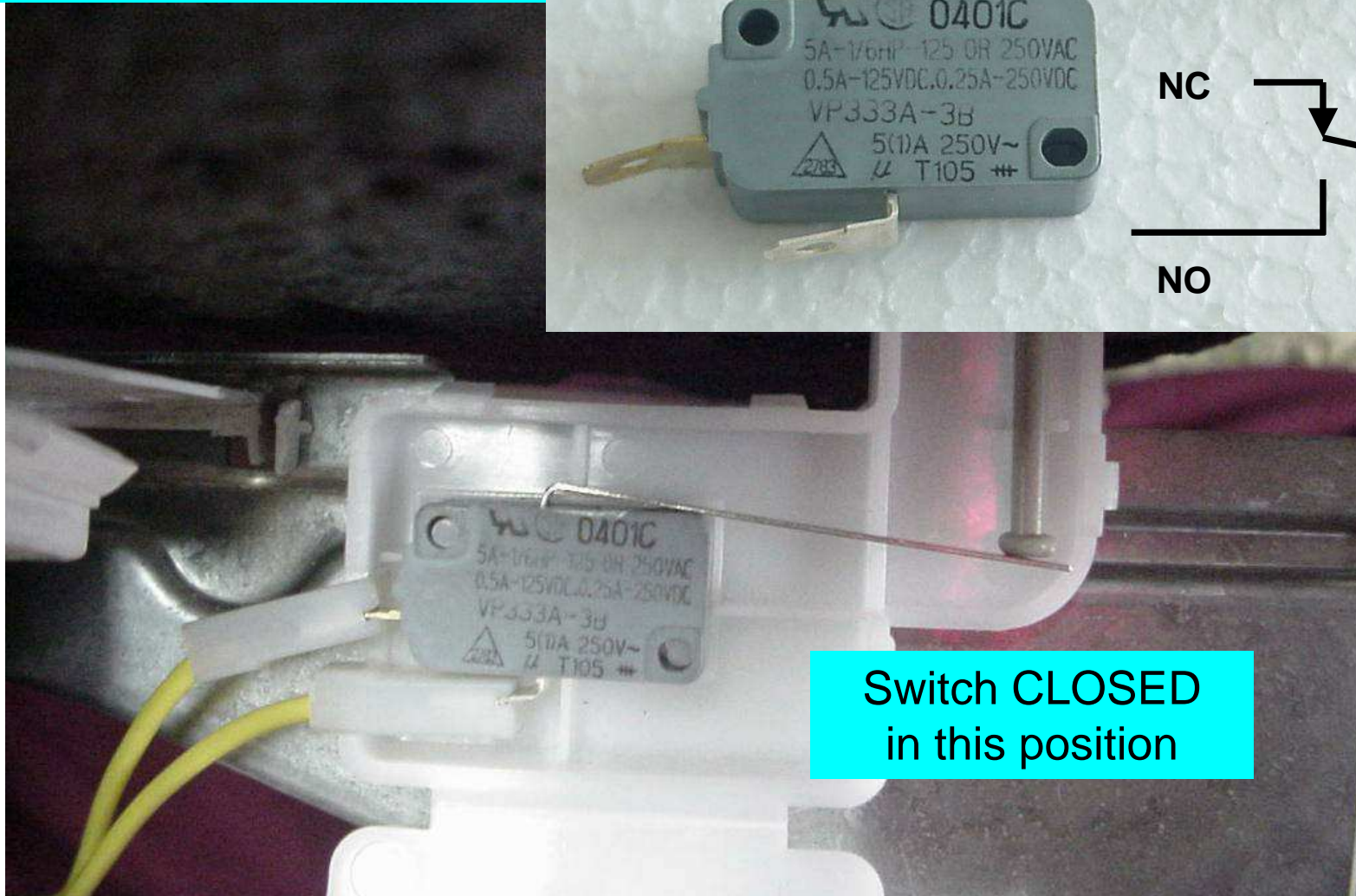
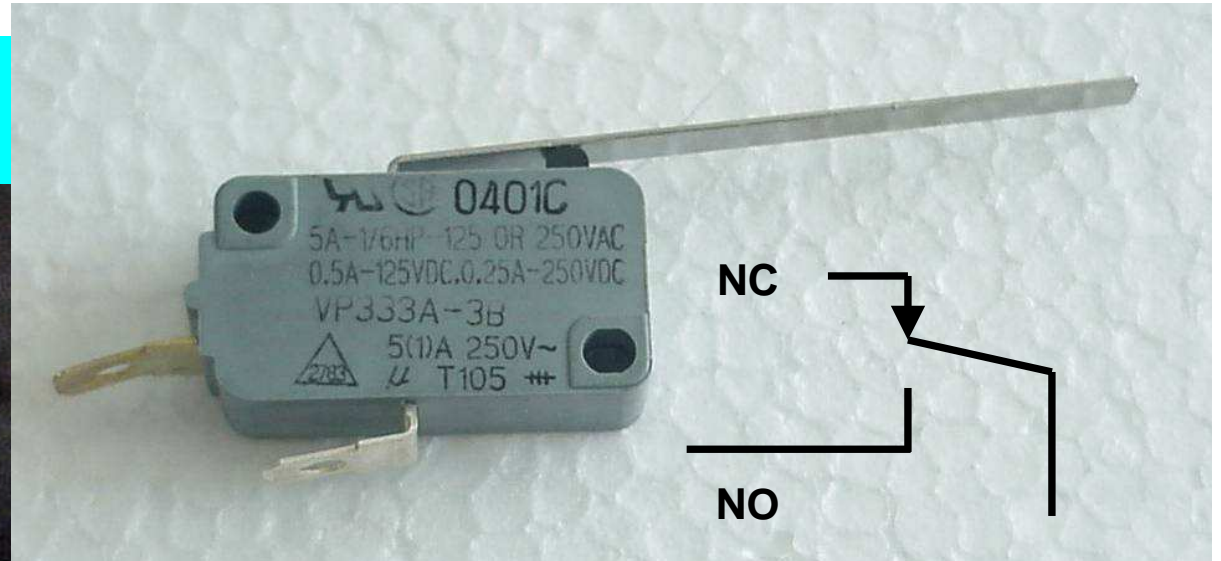
Float safety switch



# DIAGNOSTICS

## Float Safety Switch

Float Safety Switch is Normally Open



Switch CLOSED  
in this position



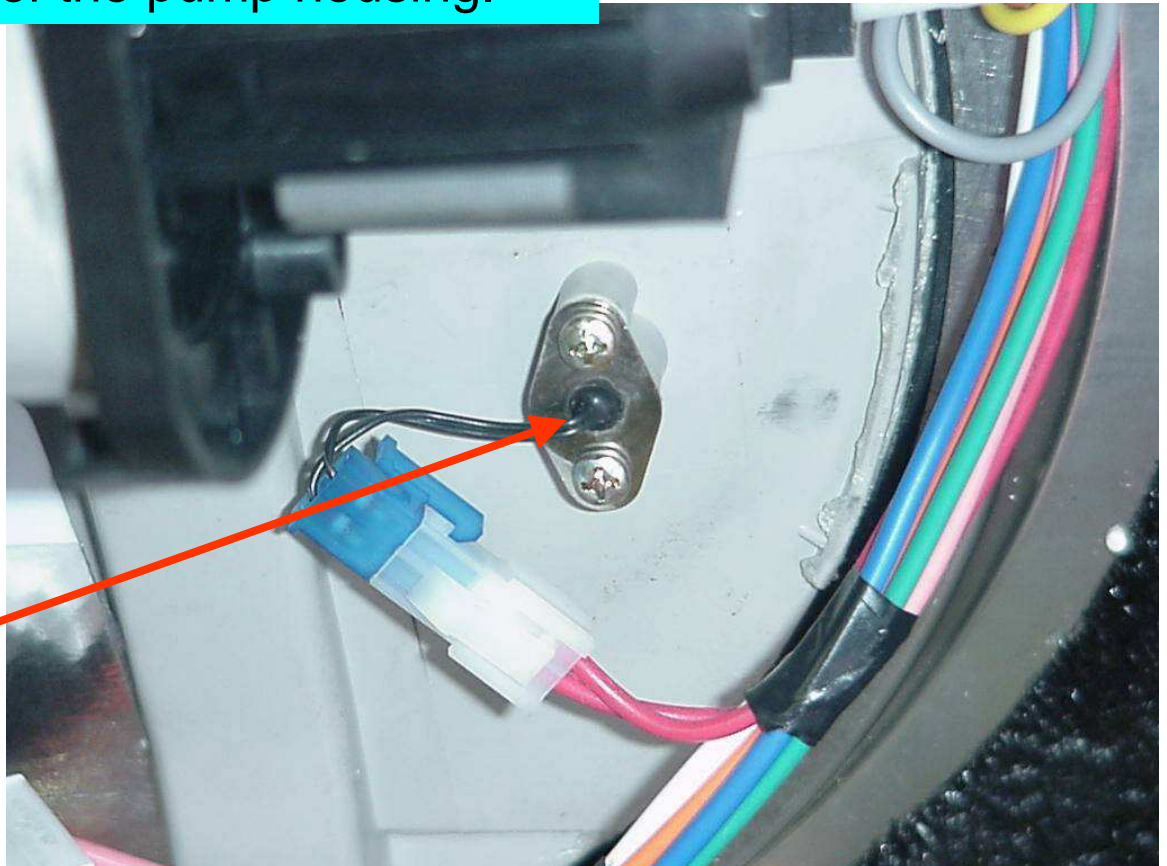
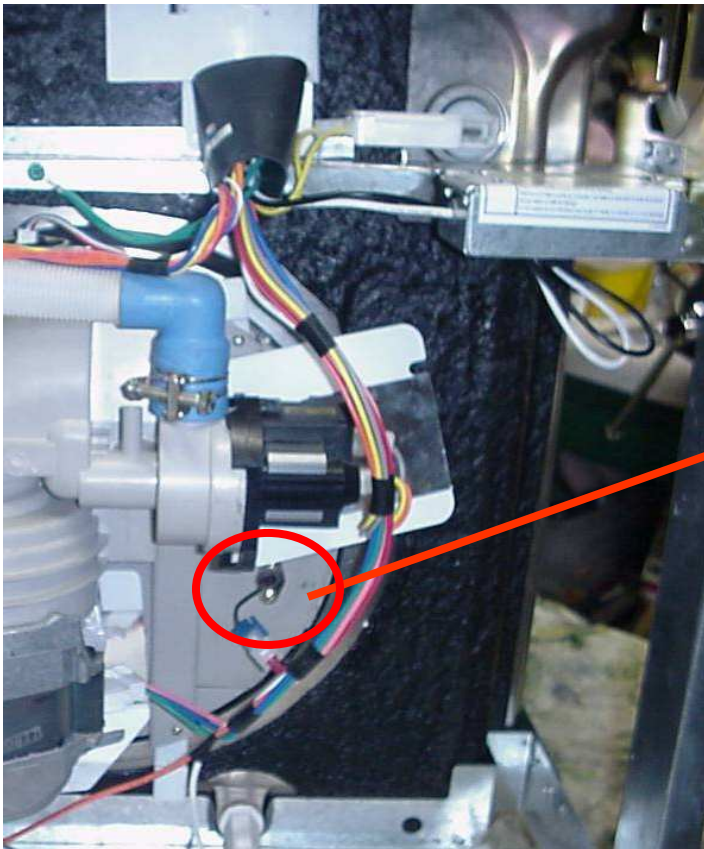
## MACHINE COMPARTMENT Float and Float Switch

Replace the float switch housing by opening cover and releasing the float. Then unscrew nut inside of tub.



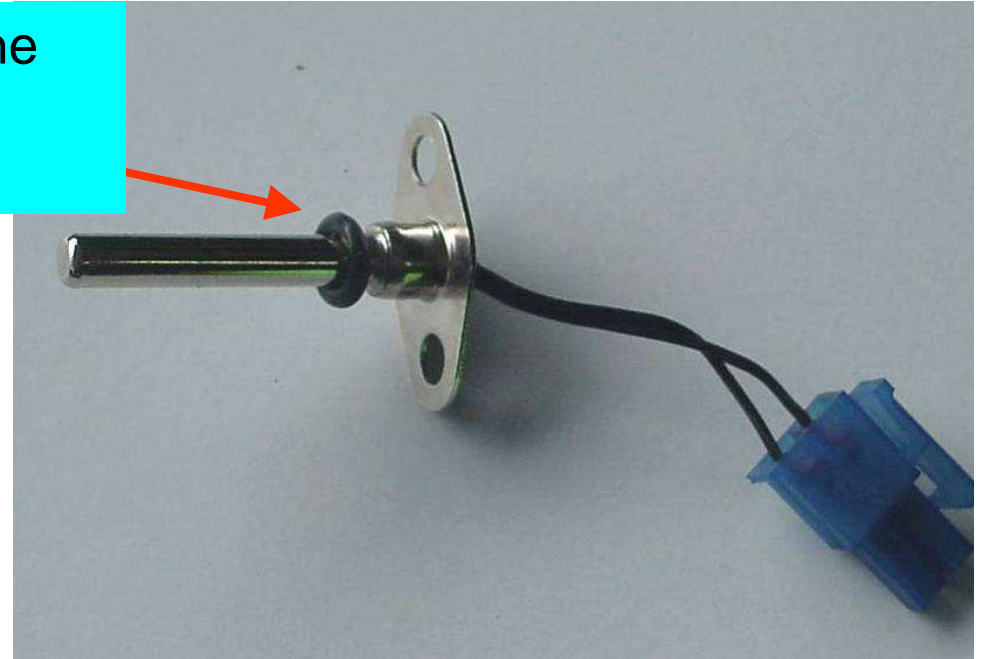
## MACHINE COMPARTMENT Water Temperature Thermistor

Water temperature is monitored with a thermistor mounted in the bottom of the pump housing.



# MACHINE COMPARTMENT Water Temperature Thermistor

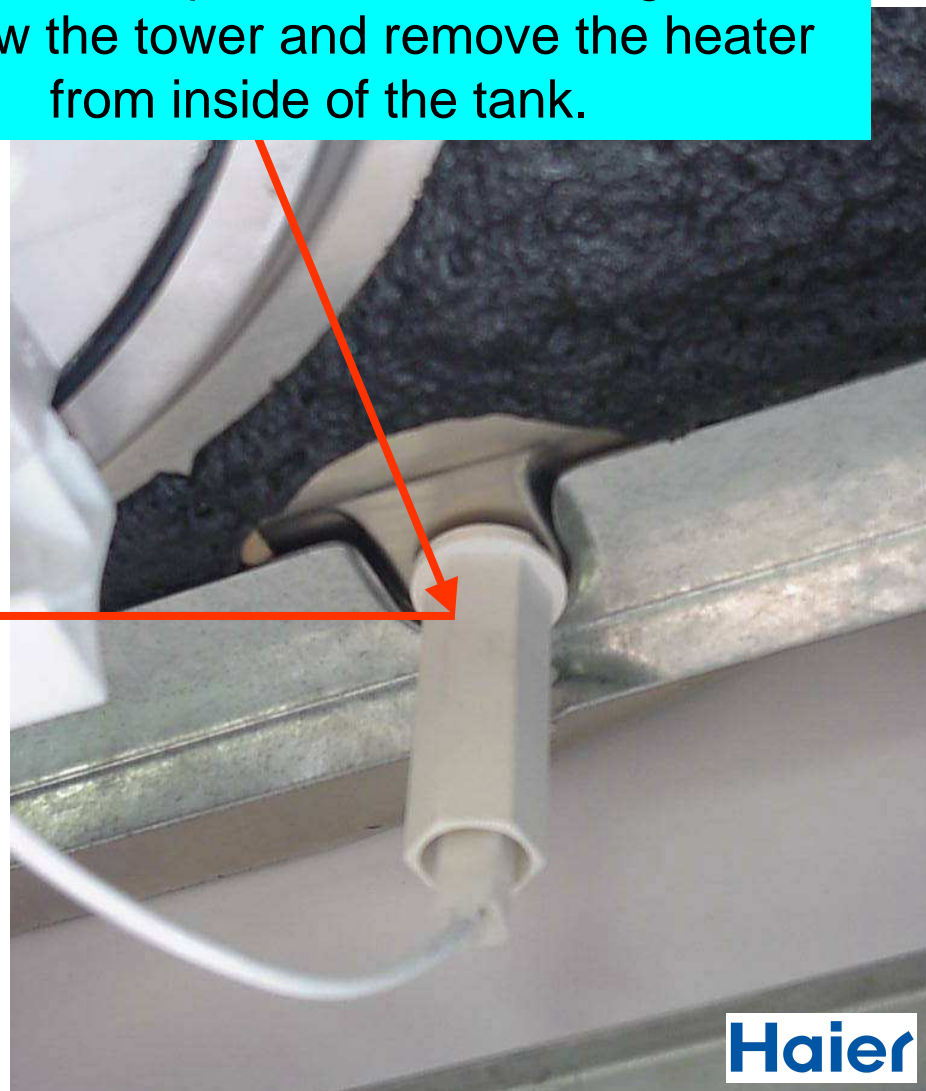
Be careful to mount the o-ring on the thermistor when replacing.  
Do not over-tighten screws.



NTC Thermistor  
(negative temperature coefficient)  
1380 ohms @ 70F  
780 ohms @ 90F  
approximate

## MACHINE COMPARTMENT Heater

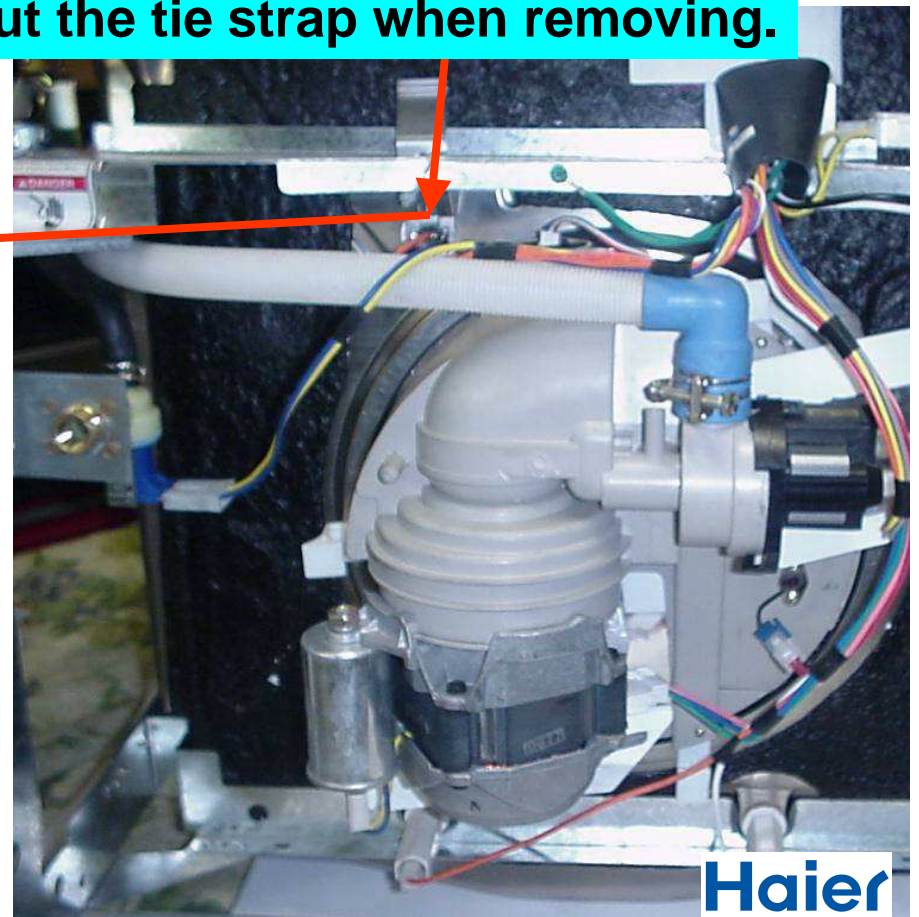
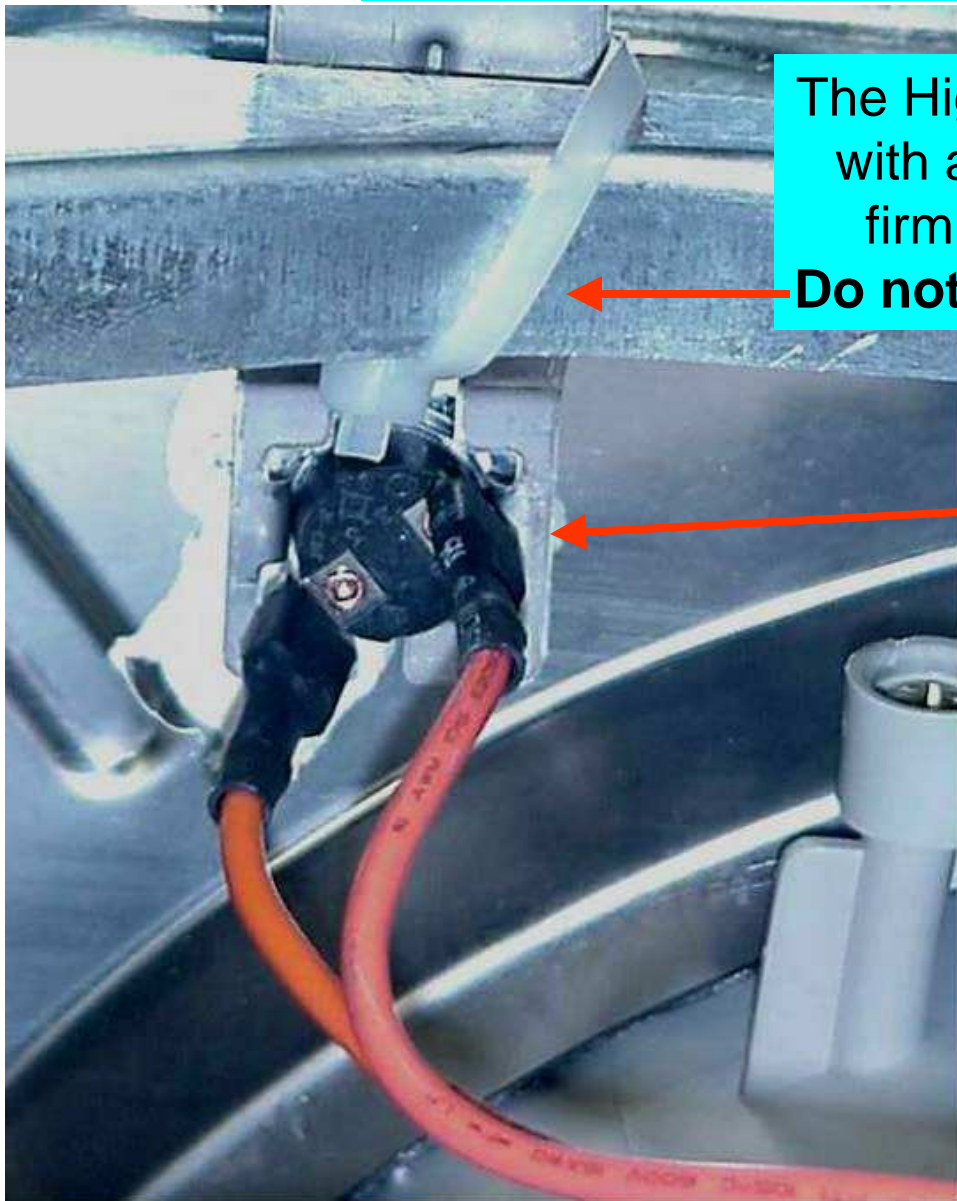
Heater is held in place with insulating towers.  
Unscrew the tower and remove the heater  
from inside of the tank.



# MACHINE COMPARTMENT High Limit Thermostat

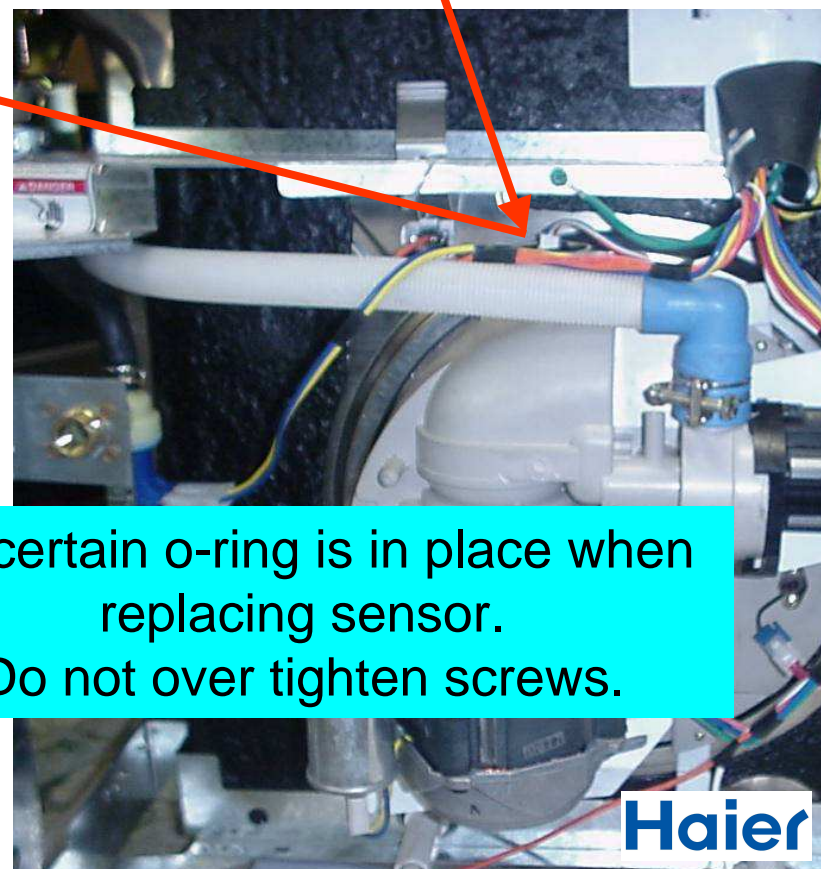
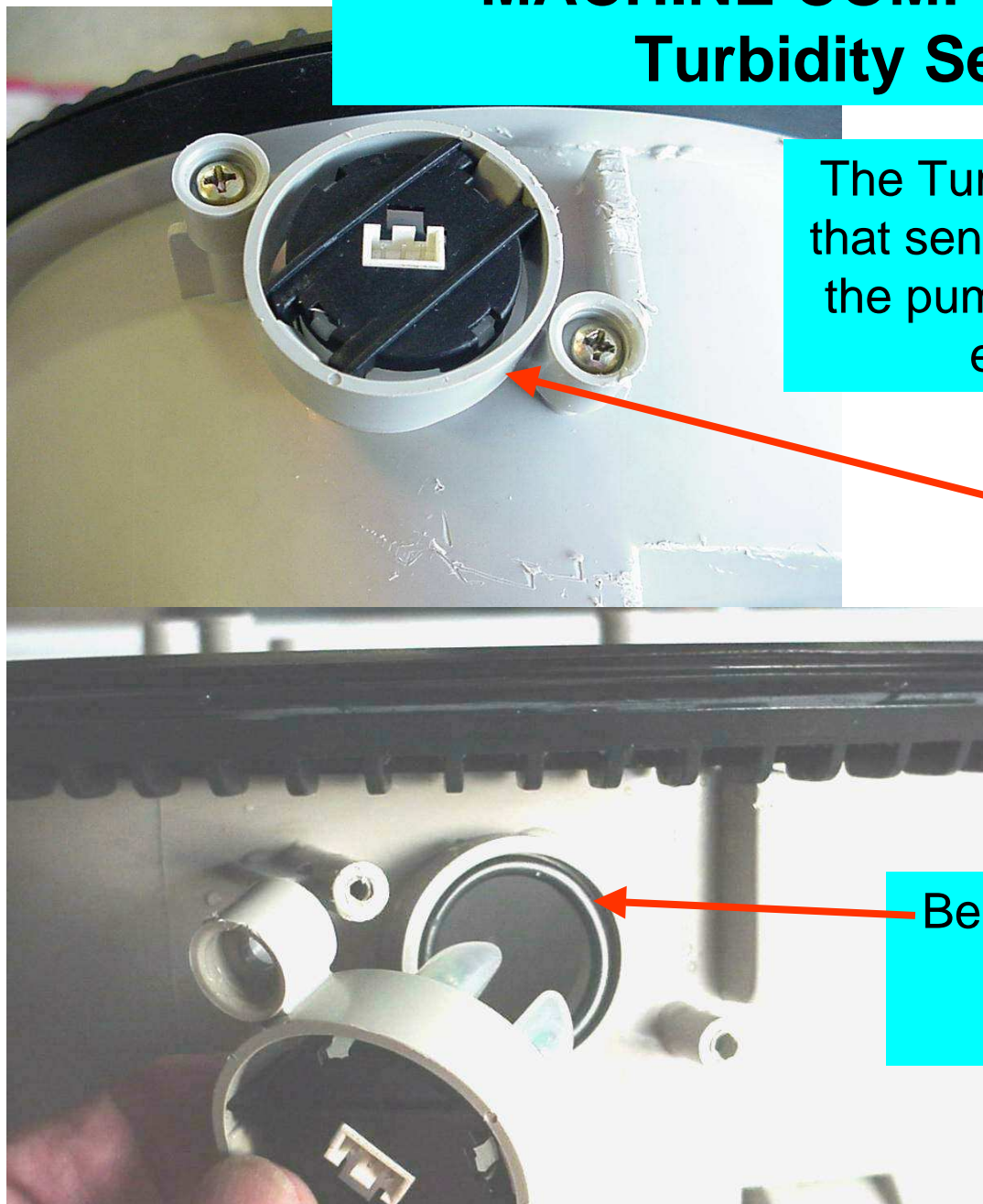
The High Limit Thermostat is held in place with a flat spring type bracket holding it firmly against the bottom of the tank.

**Do not cut the tie strap when removing.**



## MACHINE COMPARTMENT Turbidity Sensor

The Turbidity Sensor is an optical device that senses the degree soil in the water in the pump housing. High amounts of soil extend the pre-wash cycle.



Be certain o-ring is in place when replacing sensor.  
Do not over tighten screws.

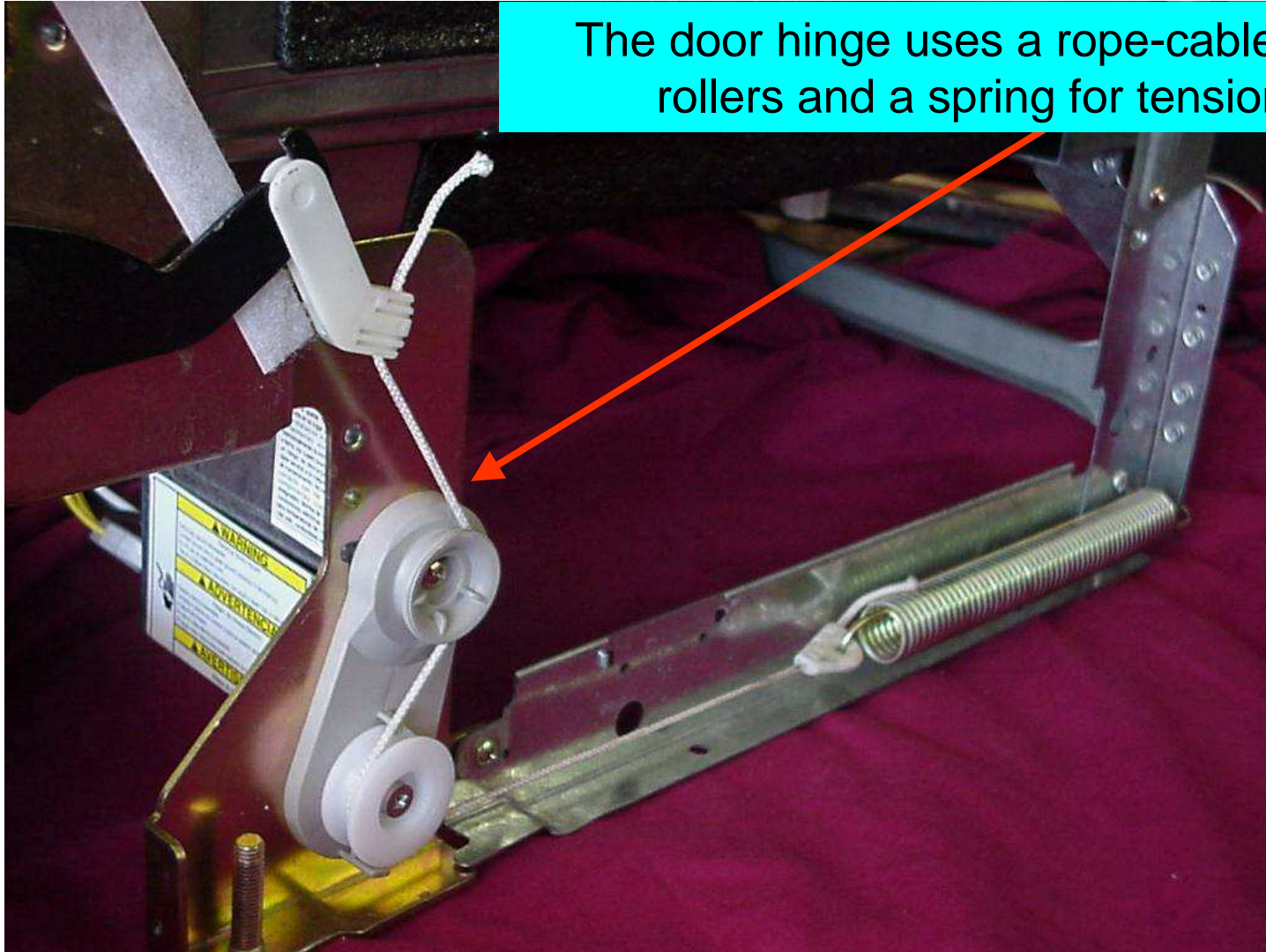
## MACHINE COMPARTMENT Drain Loop and Water Inlet

The dishwasher is equipped with an anti-siphon drain loop on the left side of the tank.

The water inlet to the tank is mounted on the left side of the tank above the fill valve.

# MACHINE COMPARTMENT Door Hinge

The door hinge uses a rope-cable over rollers and a spring for tension.







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This completes the  
**Machine Compartment**  
training  
for the  
**ESD 300 and 400 Series**

**“Tall Tub”**

**UNDERCOUNTER  
DISHWASHER**

**Other sections include:**

**Door – Diagnostics**

**and**

**Pump Module**

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## ESD 300 and 400 Series

### “Tall Tub”

## UNDERCOUNTER DISHWASHER

### Pump Module Components

Additional Service Programs include:

Door Components

Diagnostics

Machine Compartment Components



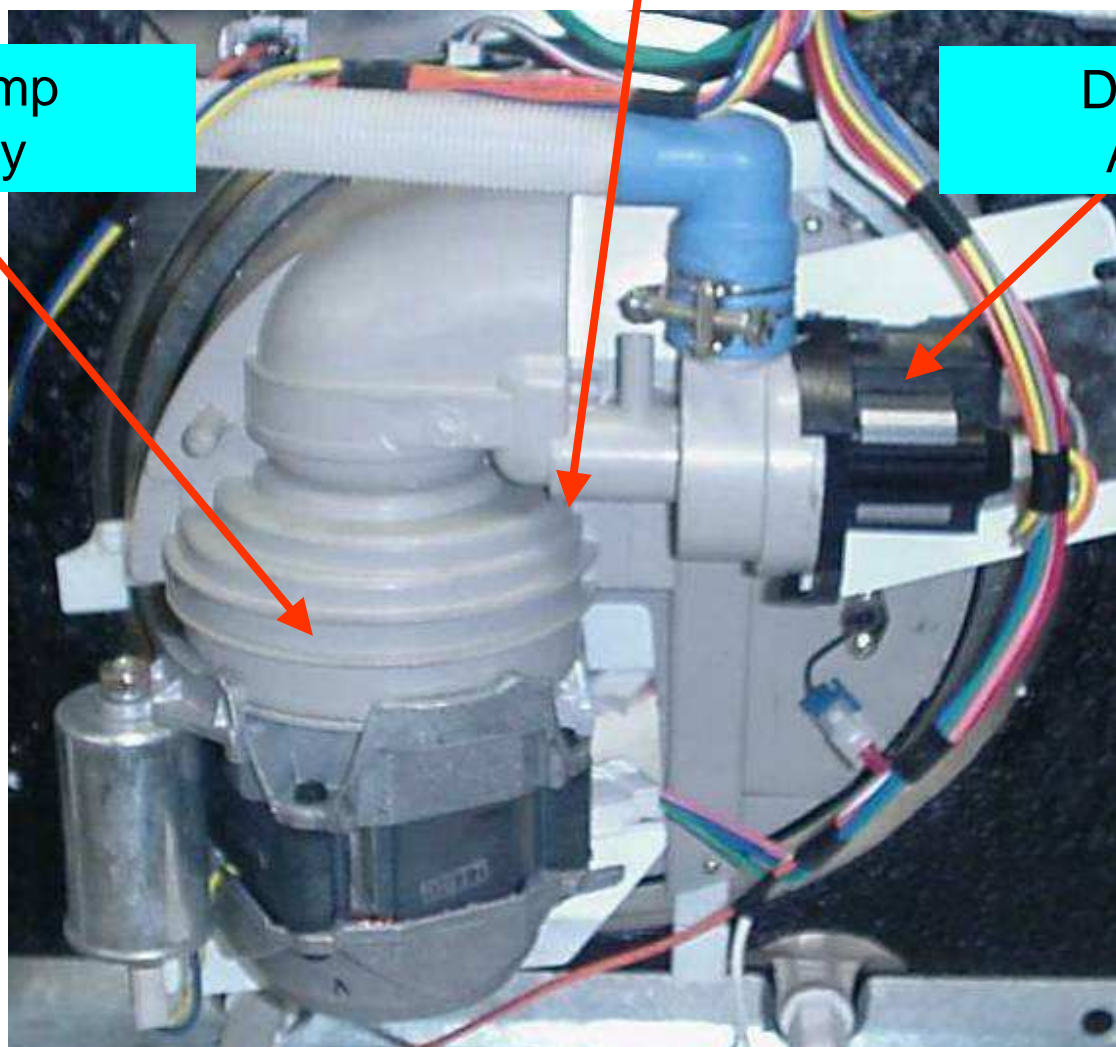
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## PUMP MODULE SERVICE

In order to service the wash pump, the drain pump must be removed before removing the main pump assembly.

Wash Pump  
assembly

Drain Pump  
Assembly

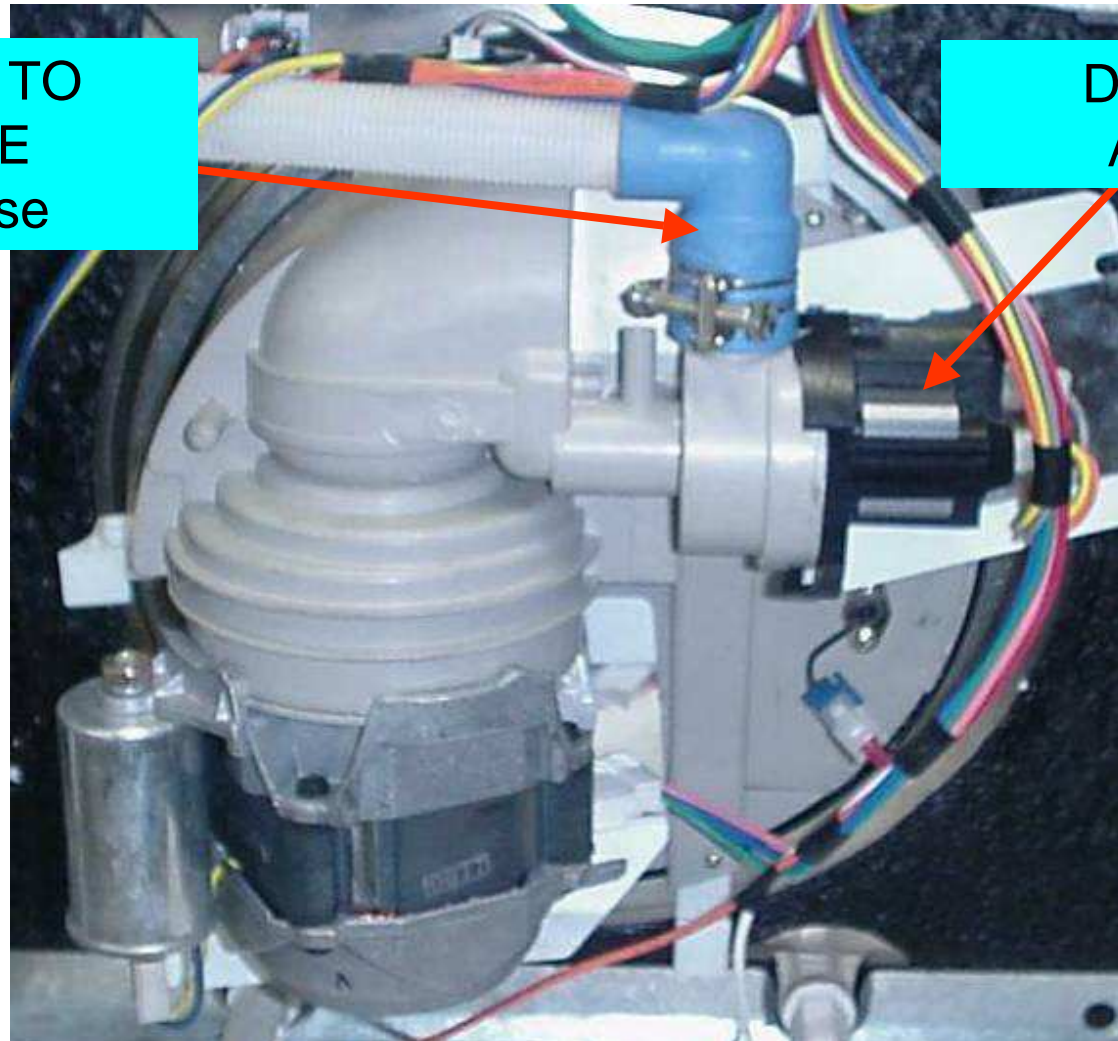


# DRAIN PUMP SERVICE

The Drain Pump can be serviced in place without removing the pump module

NO NEED TO REMOVE Drain Hose

Drain Pump Assembly



# DRAIN PUMP SERVICE

Drain Pump  
end view

Drain Pump  
Assembly

DRIP SHIELD  
MUST BE  
REPLACED WHEN  
REINSTALLING THE  
ASSEMBLY

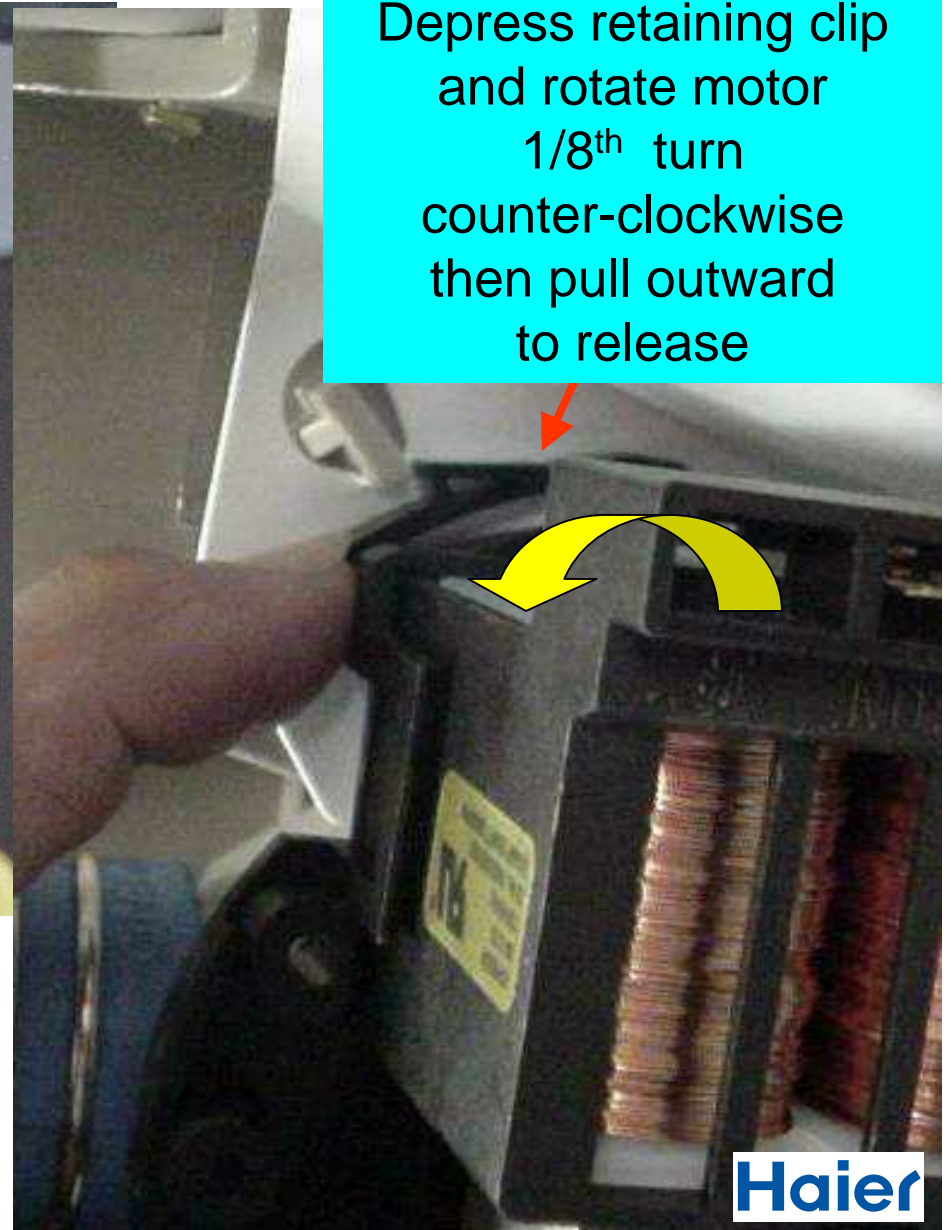
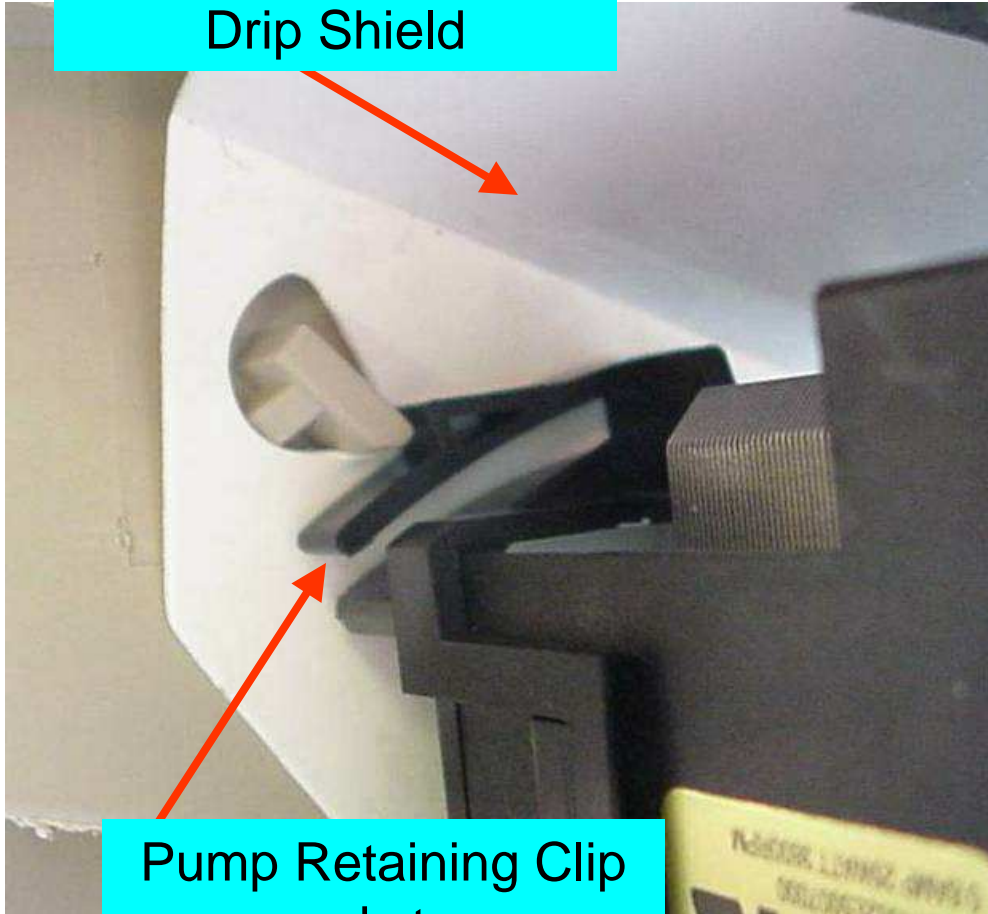


# DRAIN PUMP REMOVAL

Drip Shield

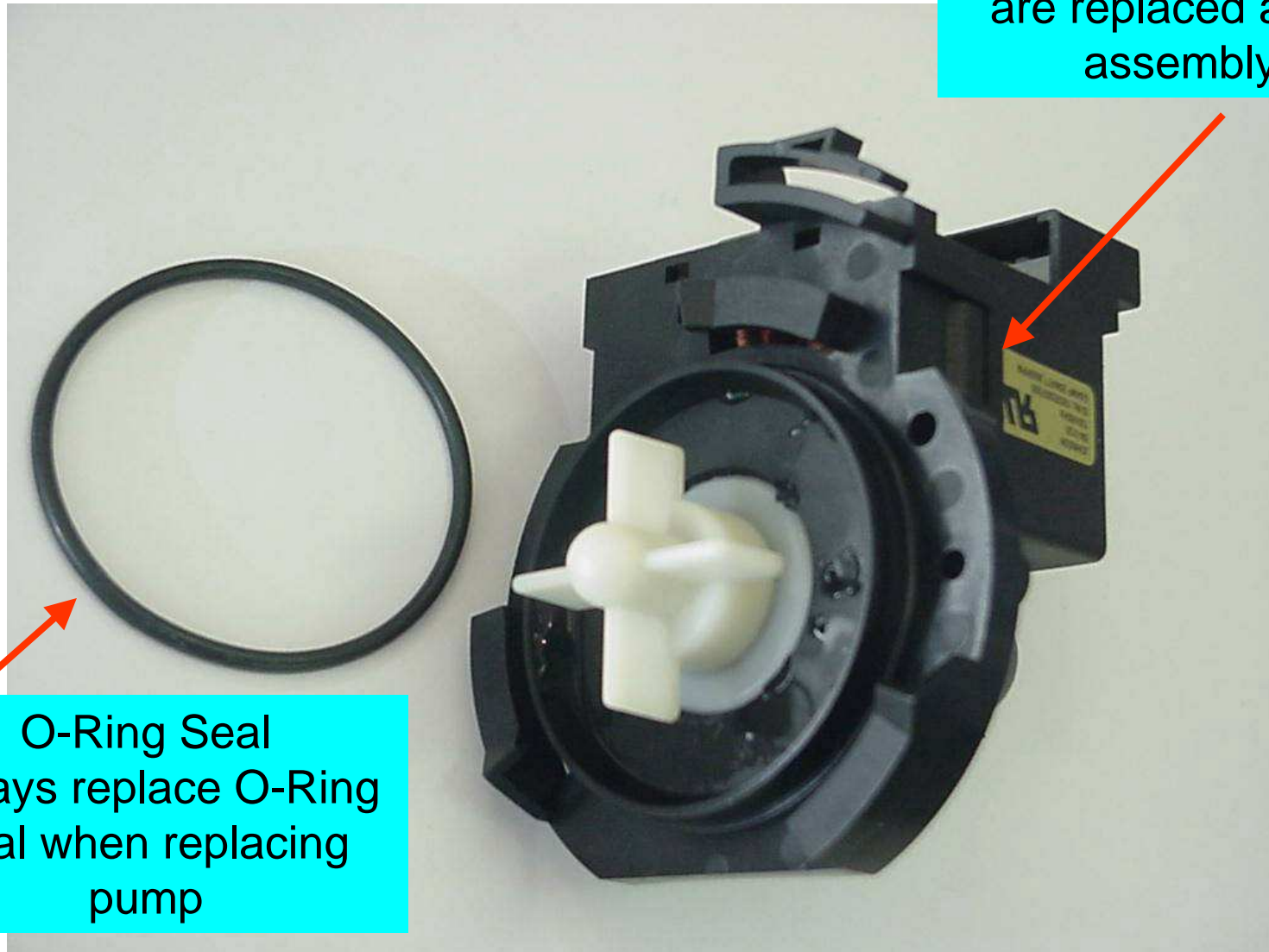
Pump Retaining Clip  
and stop

Depress retaining clip  
and rotate motor  
1/8<sup>th</sup> turn  
counter-clockwise  
then pull outward  
to release



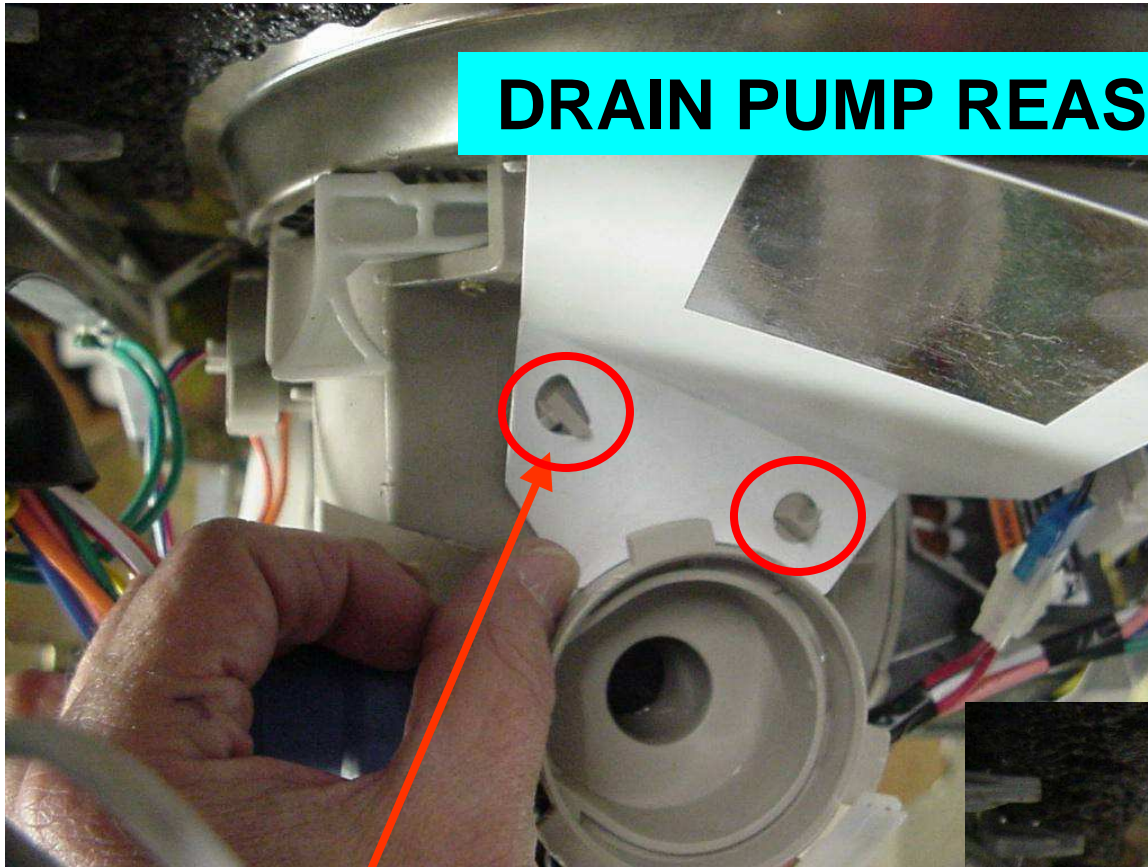
# DRAIN PUMP SERVICE

Motor and Impeller are replaced as an assembly



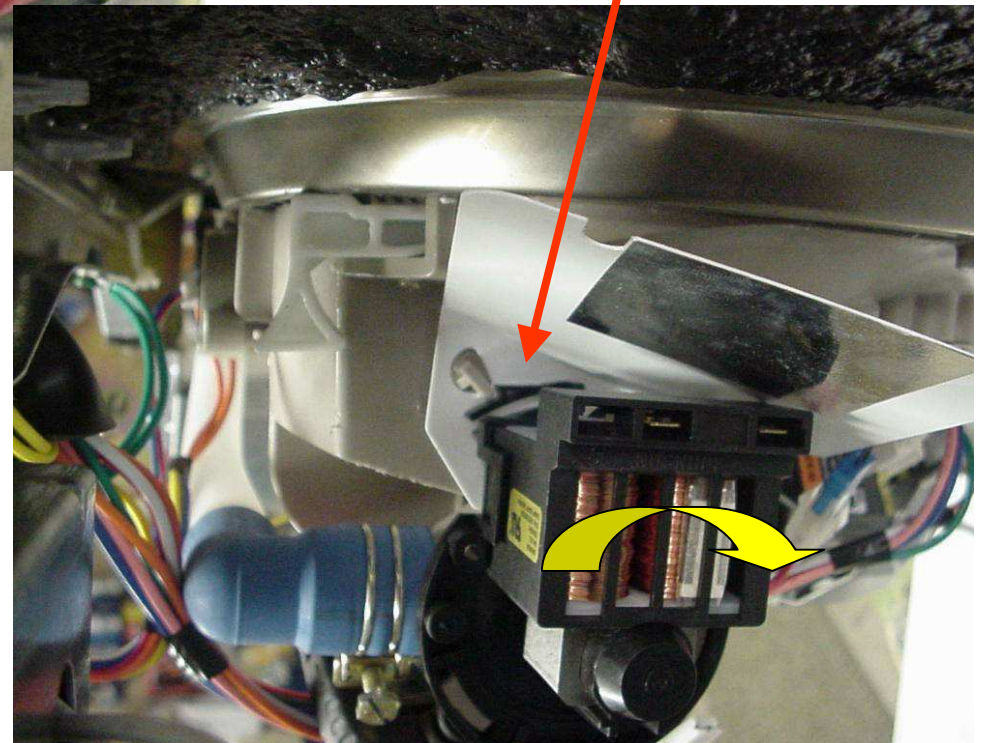
O-Ring Seal  
Always replace O-Ring seal when replacing pump

## DRAIN PUMP REASSEMBLY



Reinstall Drip Shield  
over tabs before  
installing pump

Install O- ring on motor  
flange then install motor  
assembly  
Rotate motor  
1/8<sup>th</sup> turn clockwise to lock  
motor in place





# WASH PUMP SERVICE

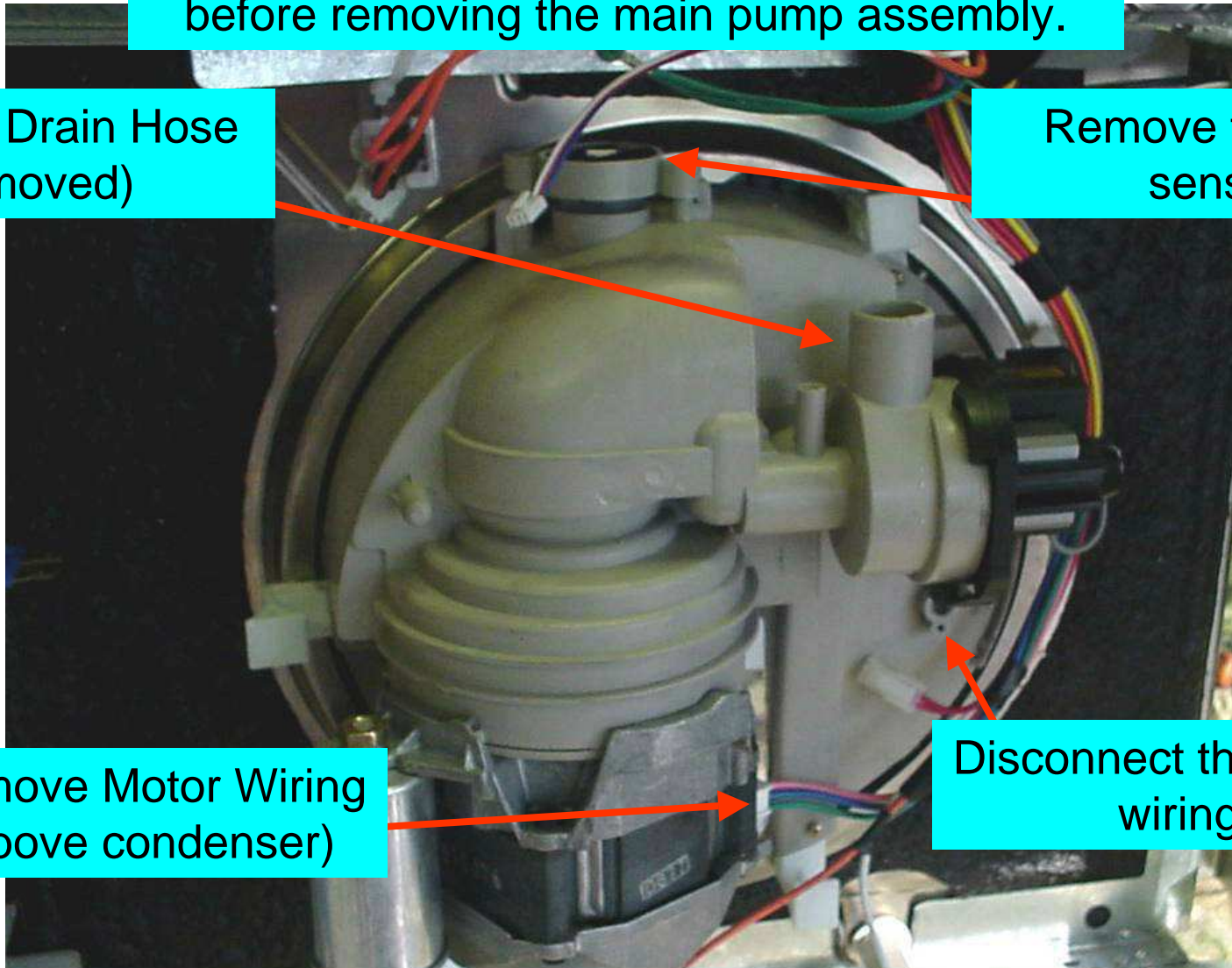
In order to service the wash pump, the drain pump and turbidity sensor must be removed before removing the main pump assembly.

Remove Drain Hose  
(removed)

Remove turbidity  
sensor

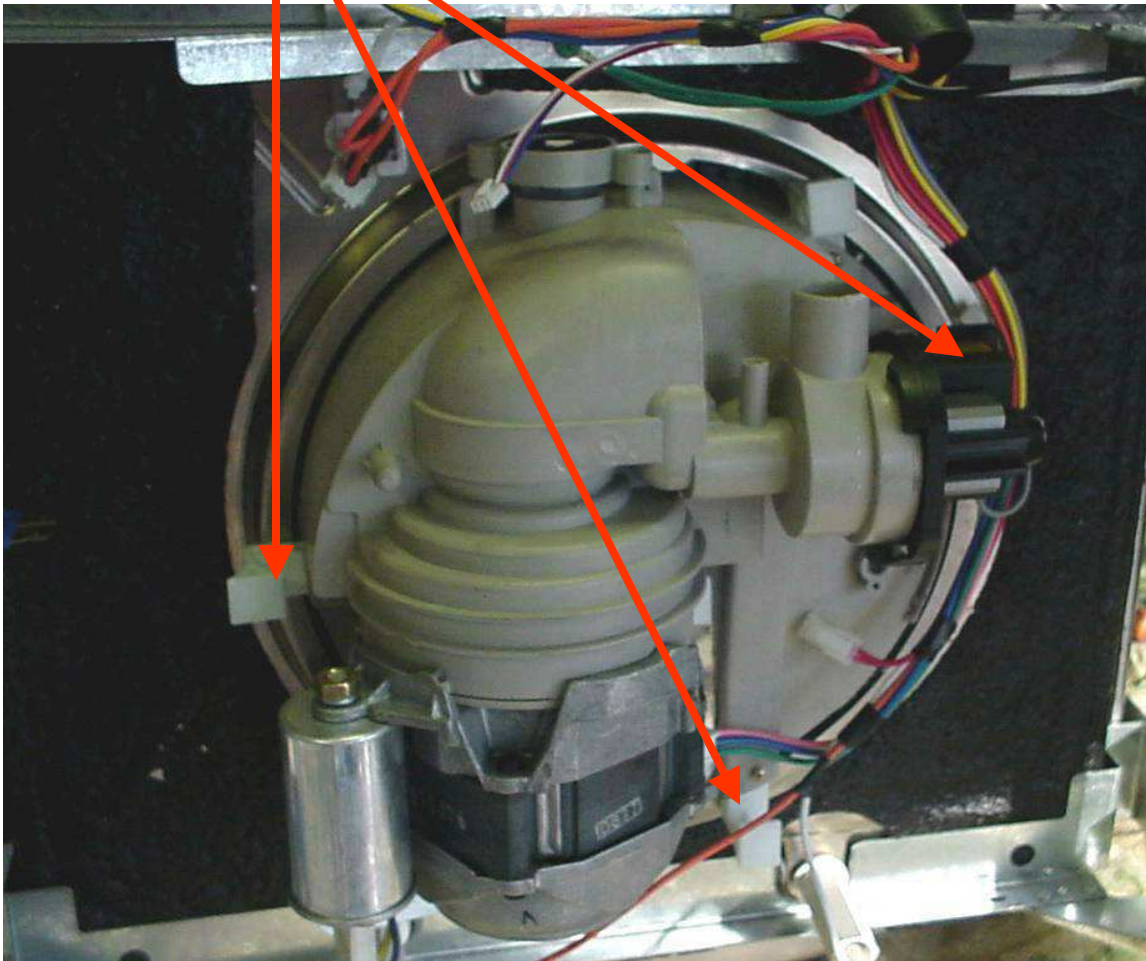
Remove Motor Wiring  
(above condenser)

Disconnect thermistor  
wiring



# WASH PUMP SERVICE

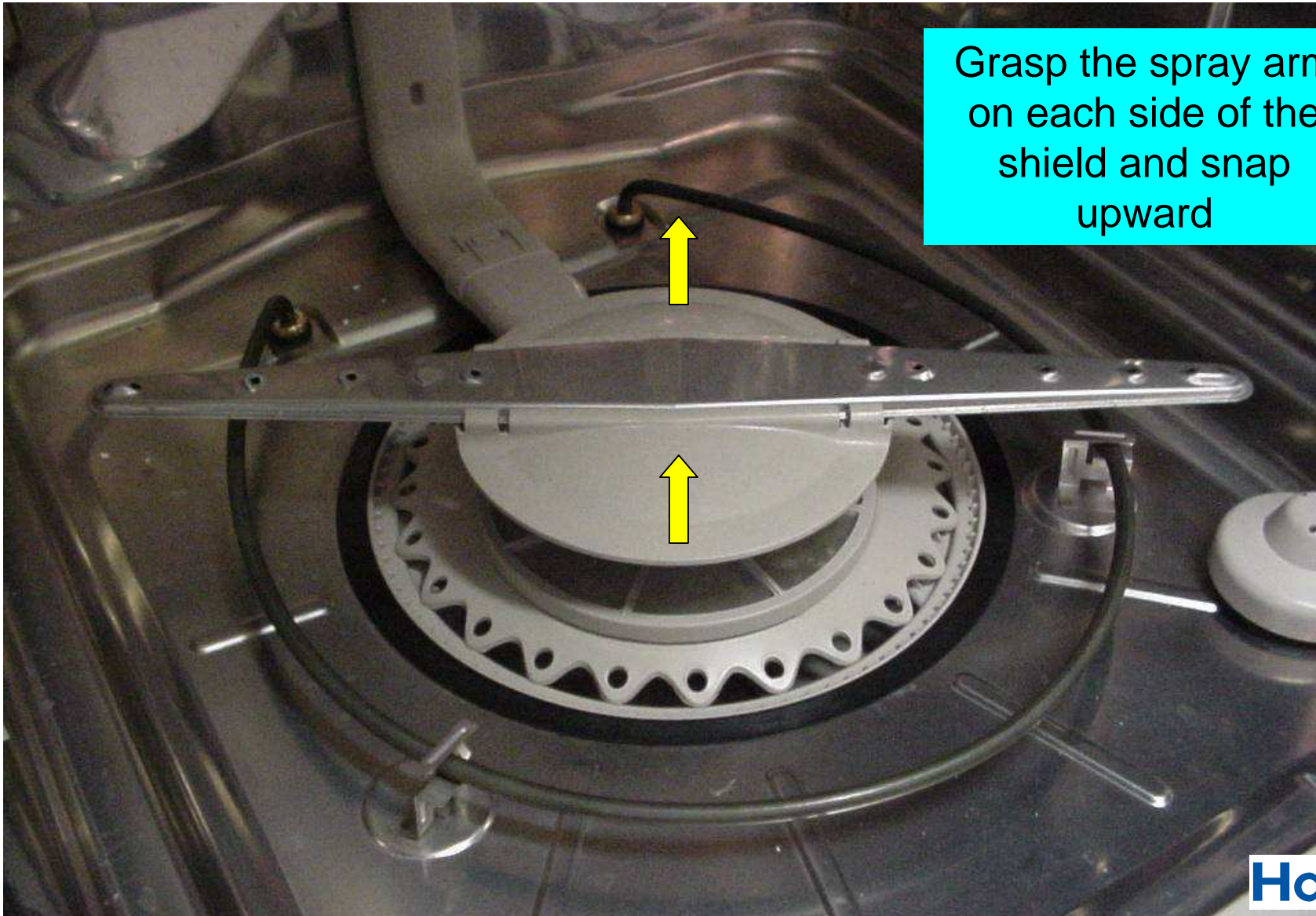
Remove Pump  
Retaining Locks (3)



# PUMP BODY REMOVAL

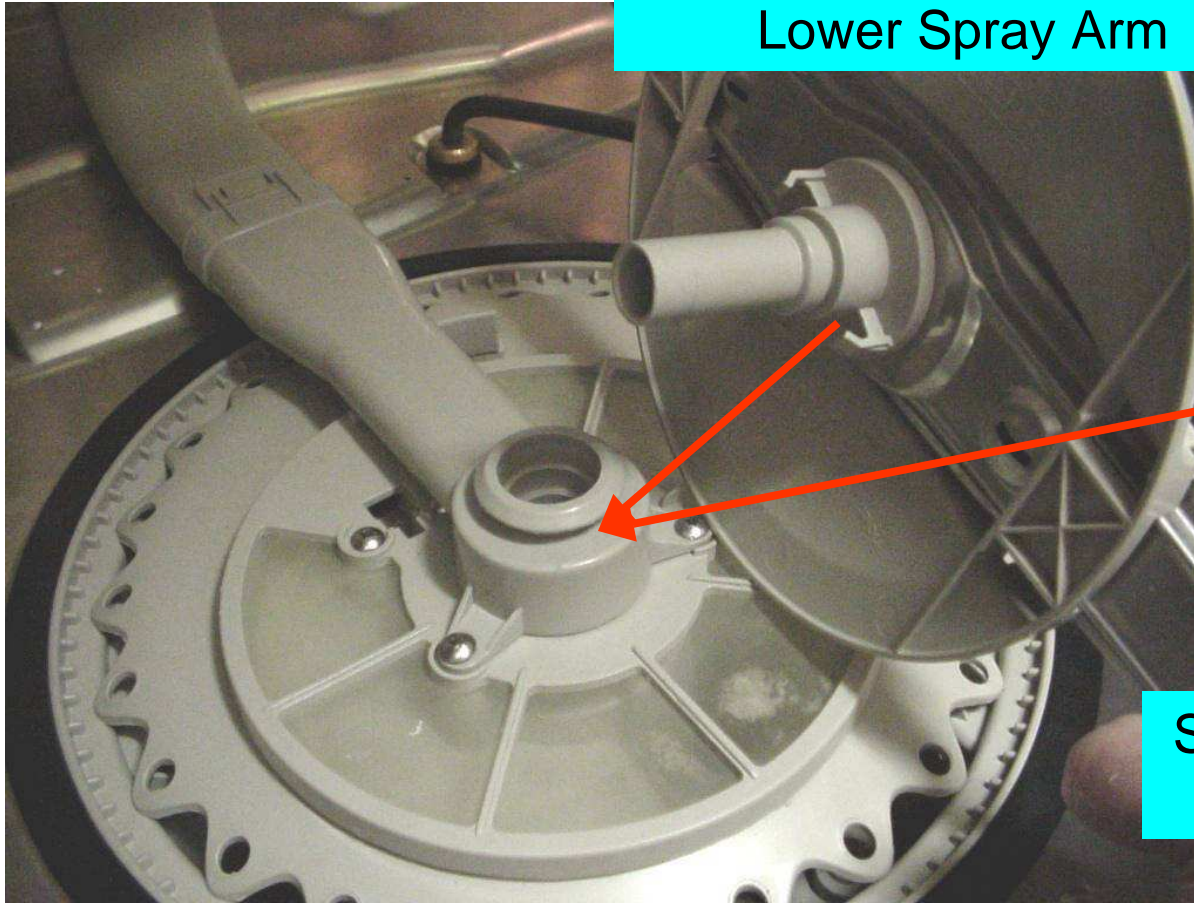
Remove Lower Spray Arm

Grasp the spray arm on each side of the shield and snap upward



# PUMP BODY REMOVAL

Lower Spray Arm

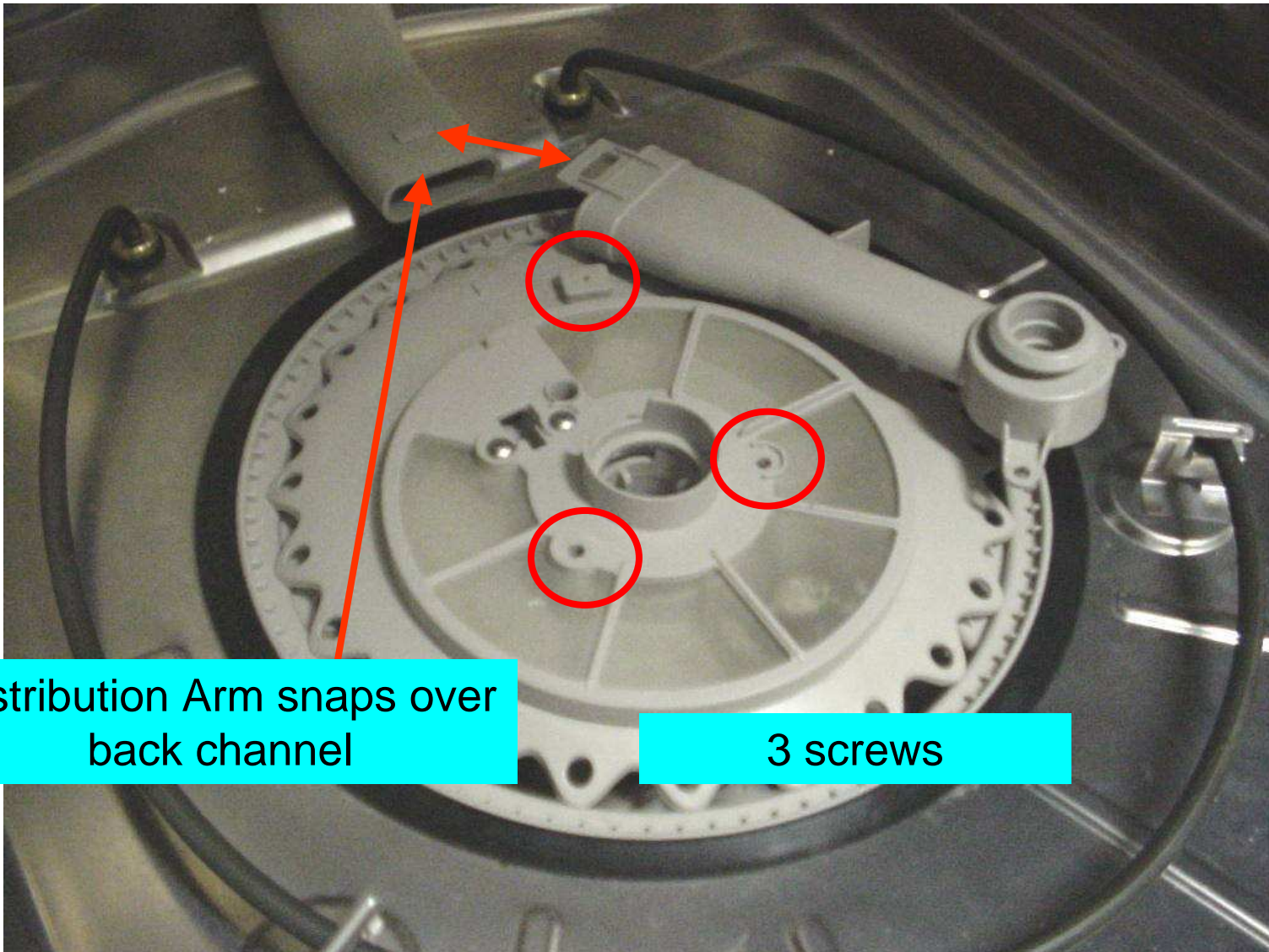


Spray arm post screws into bottom of spray arm

Spray arm post snaps onto water distribution tower

# PUMP BODY REMOVAL

Remove Water Distribution Arm



Distribution Arm snaps over  
back channel

3 screws

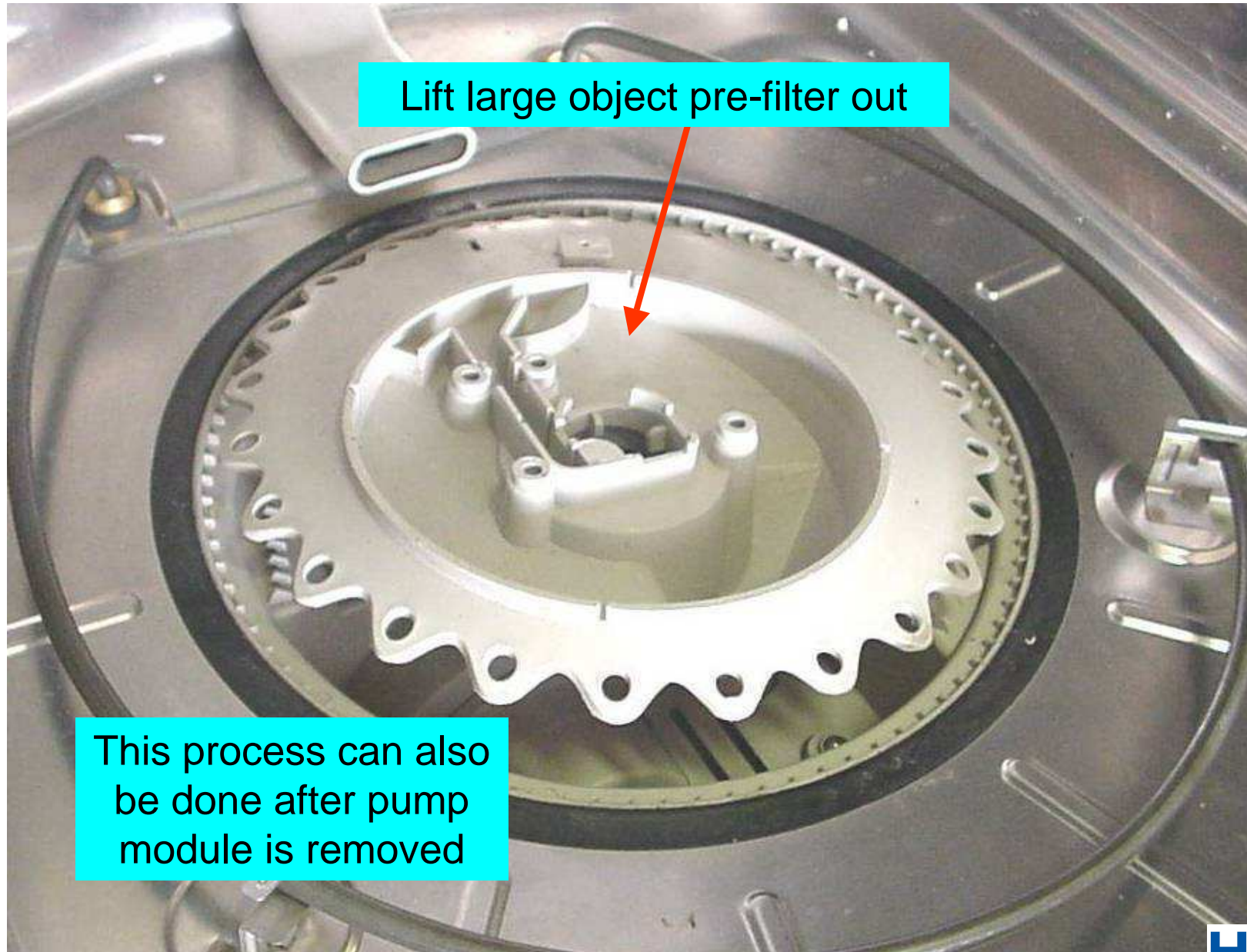
## PUMP BODY REMOVAL

Remove Remaining screws  
from filter cover

Remove filter

This process can also  
be done after pump  
module is removed

## PUMP BODY REMOVAL

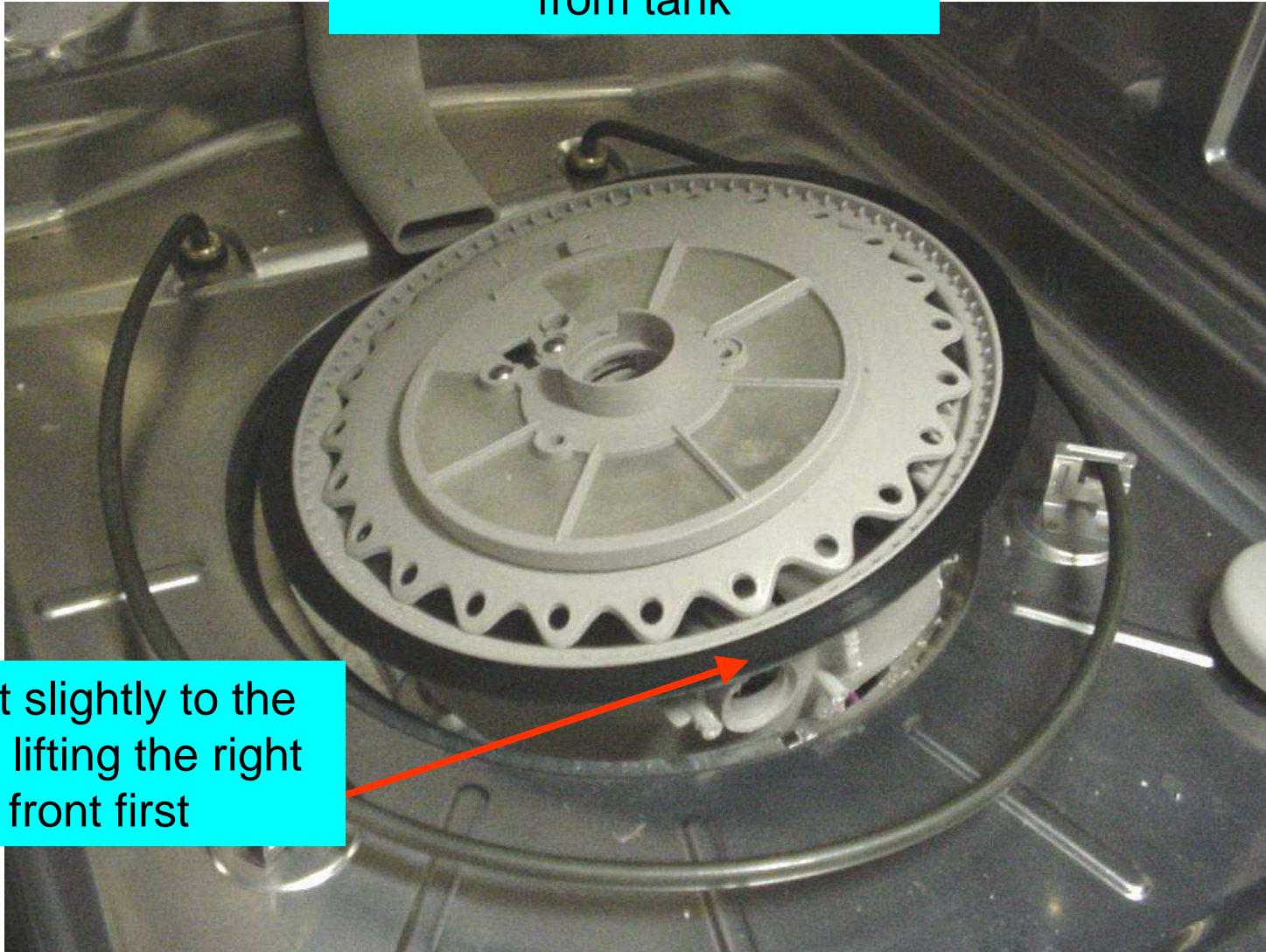


Lift large object pre-filter out

This process can also be done after pump module is removed

# PUMP BODY REMOVAL

Remove Pump Assembly  
from tank



Twist slightly to the  
right, lifting the right  
front first



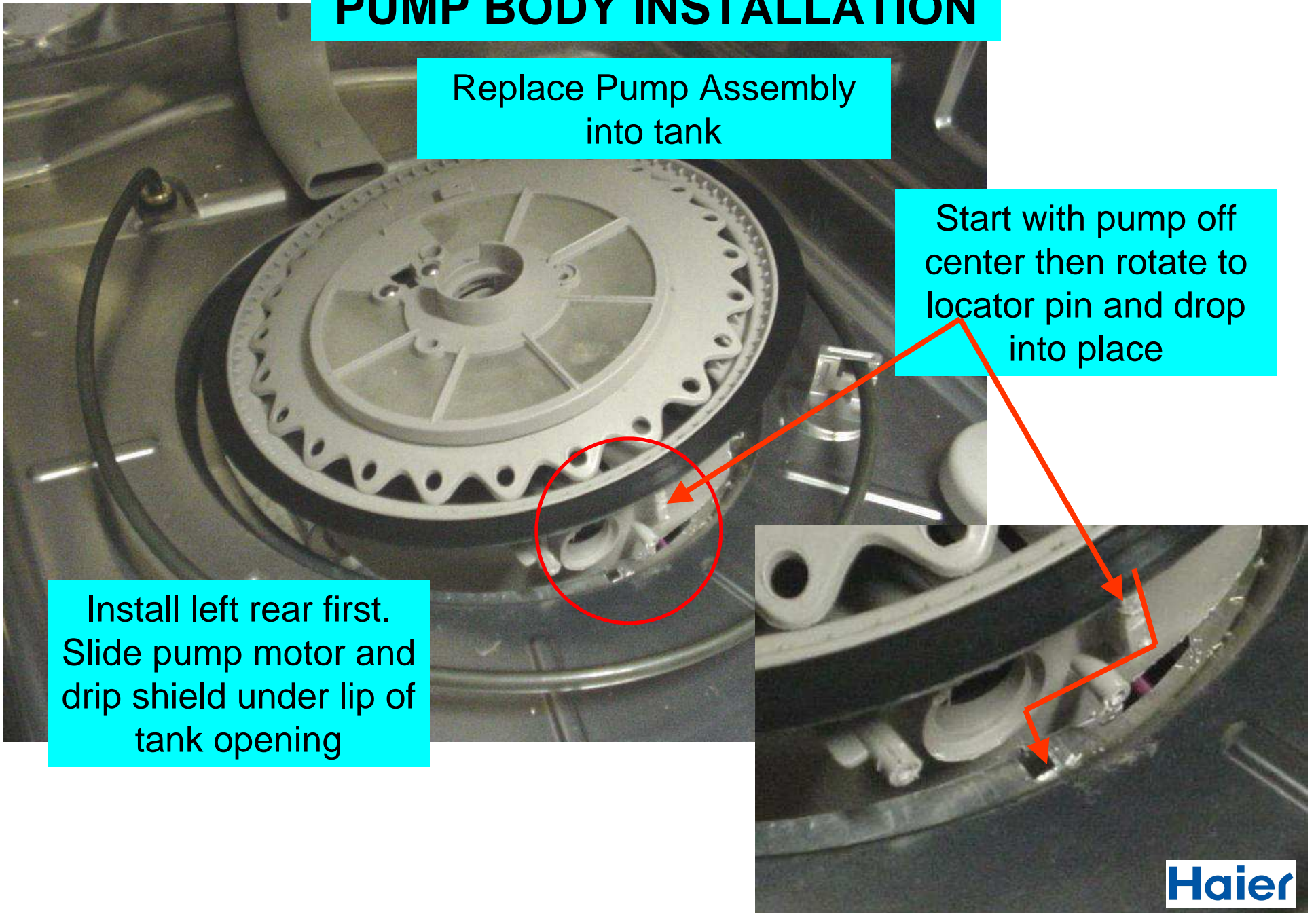
# PUMP BODY INSTALLATION

Replace Pump Assembly  
into tank

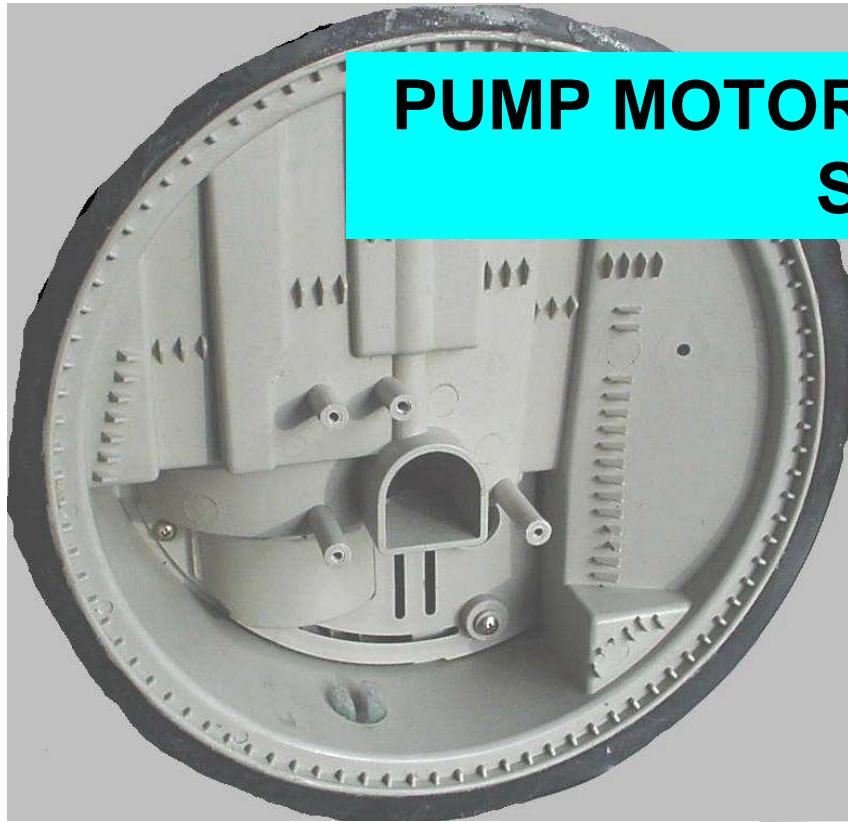
Start with pump off  
center then rotate to  
locator pin and drop  
into place

Install left rear first.  
Slide pump motor and  
drip shield under lip of  
tank opening

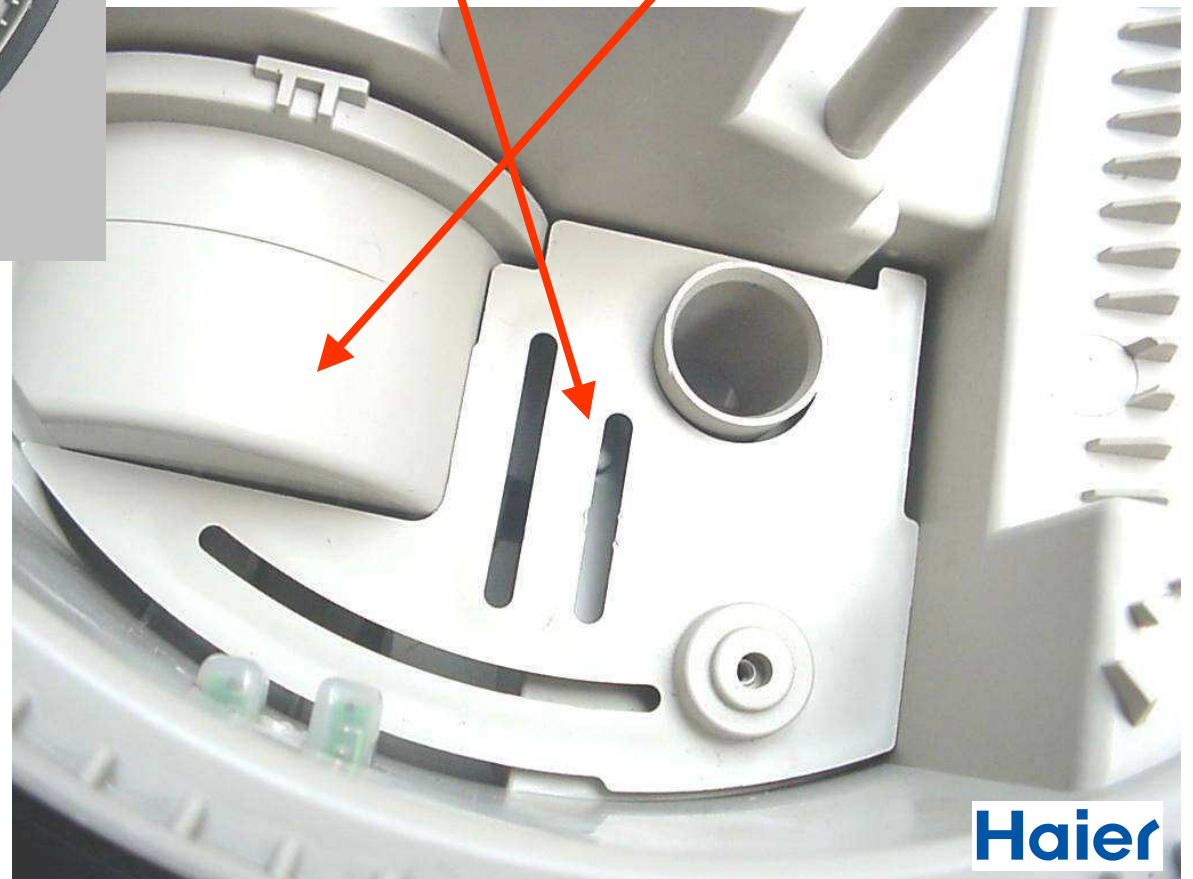
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# PUMP MOTOR – IMPELLER - SEAL SERVICE



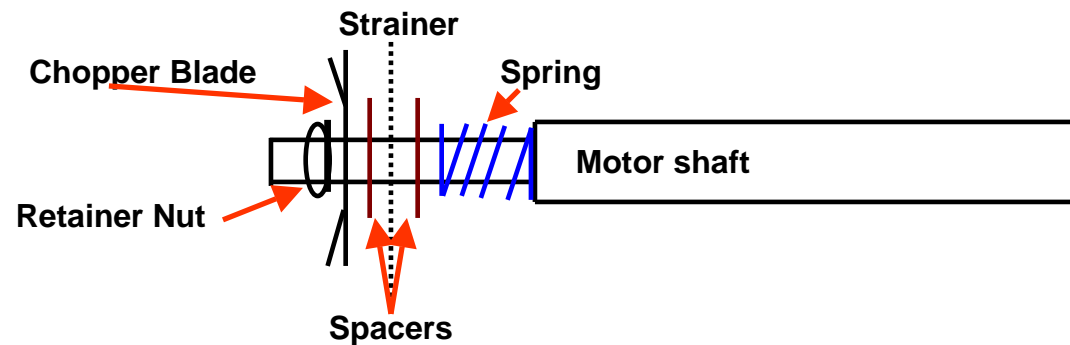
Remove  
inner strainer & impeller cover



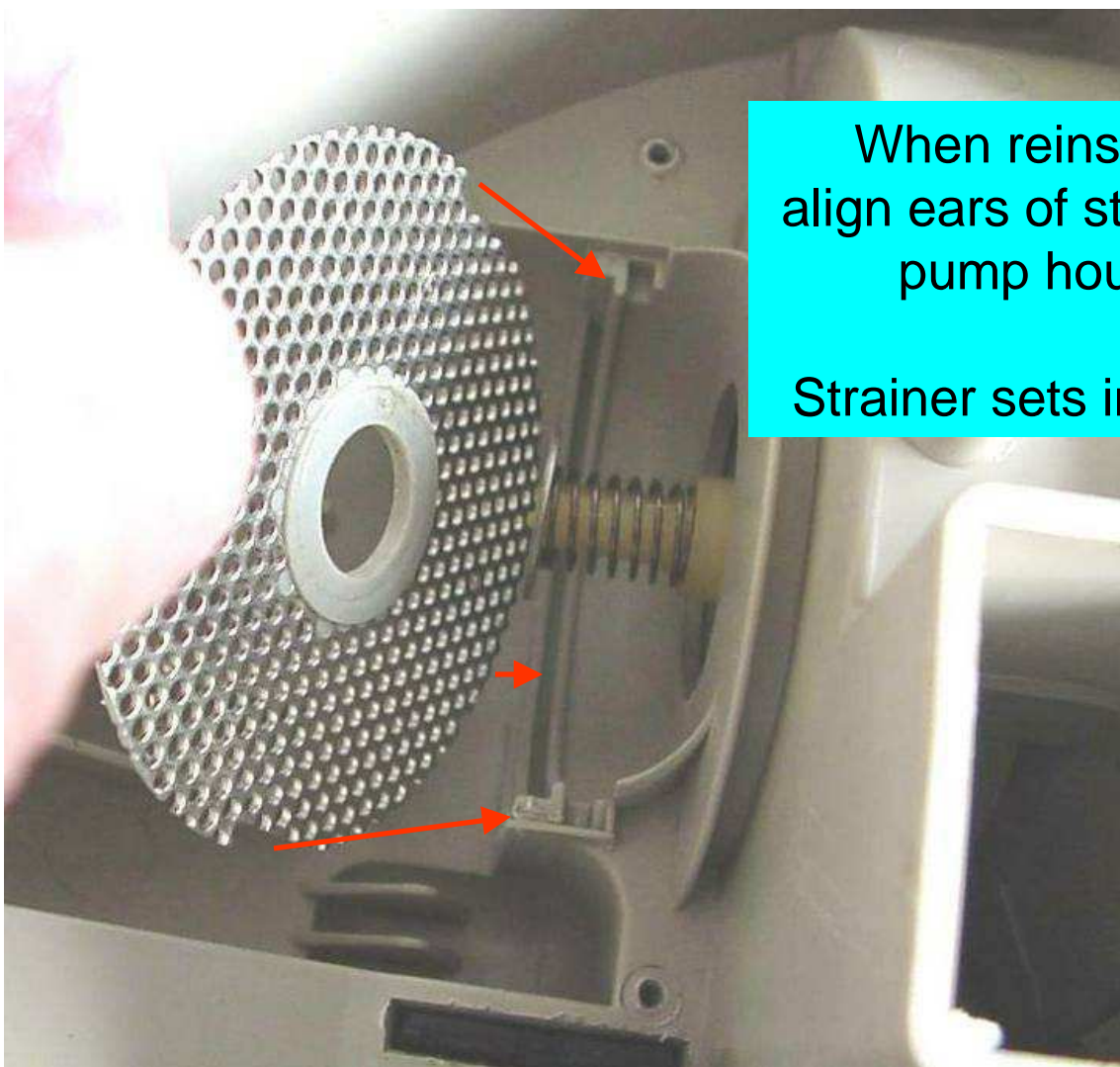
# PUMP MOTOR – IMPELLER - SEAL SERVICE

Solid food chopper and strainer assembly

Remove nut by prying off with thin screwdriver blade  
Pry between chopper blade and nut



## PUMP MOTOR – IMPELLER - SEAL SERVICE



When reinstalling strainer align ears of strainer on edge of pump housing groove

Strainer sets in retainer groove

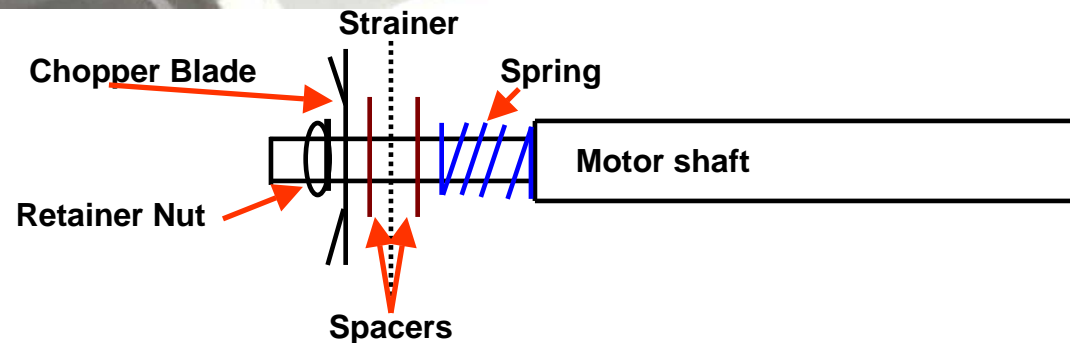
# PUMP MOTOR – IMPELLER - SEAL SERVICE



When reinstalling cover be careful to locate strainer in locater groove

Reinstall chopper assembly in order shown below

Push retainer nut on with needle nose pliers



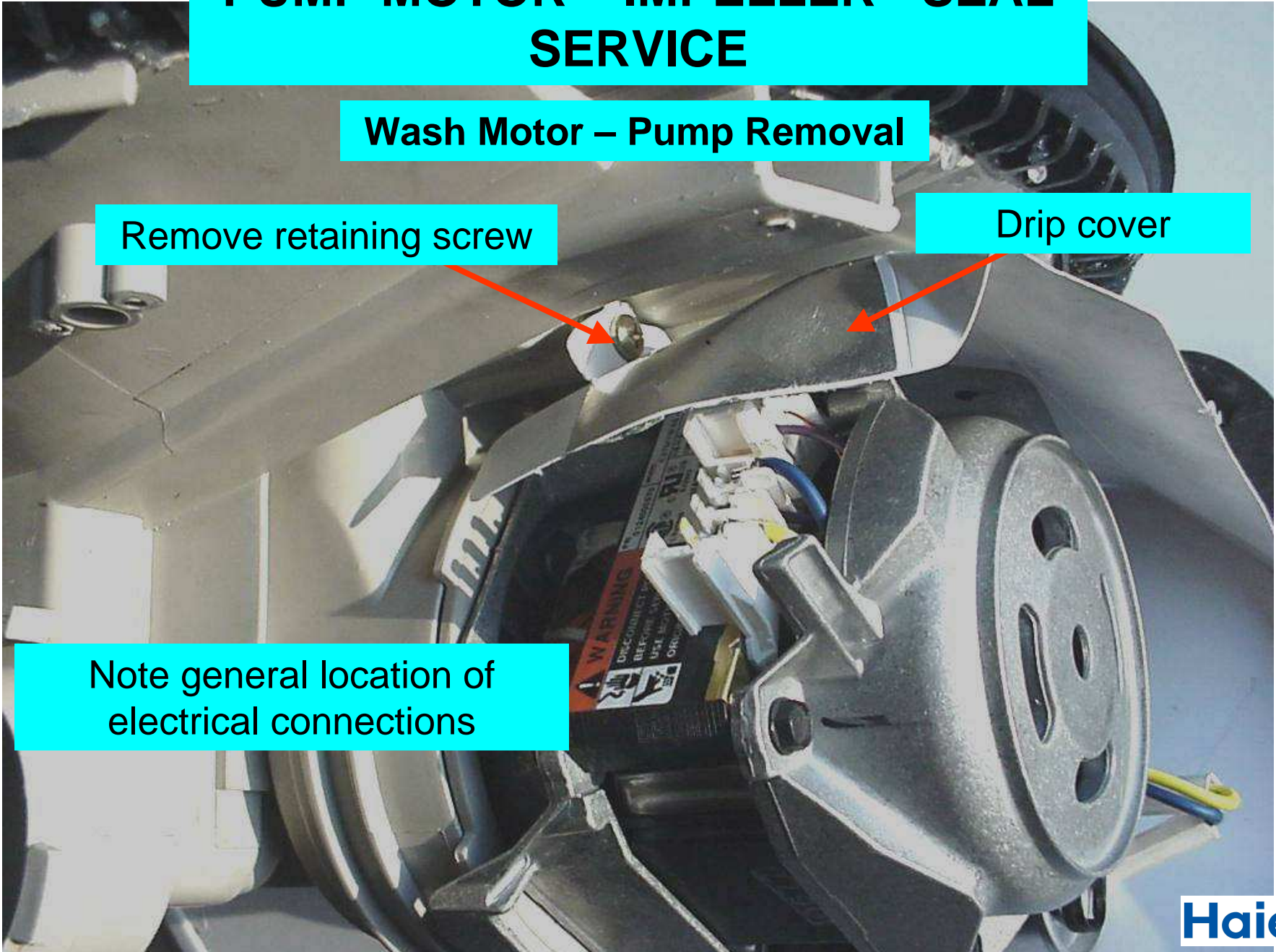
# PUMP MOTOR – IMPELLER - SEAL SERVICE

## Wash Motor – Pump Removal

Remove retaining screw

Drip cover

Note general location of electrical connections

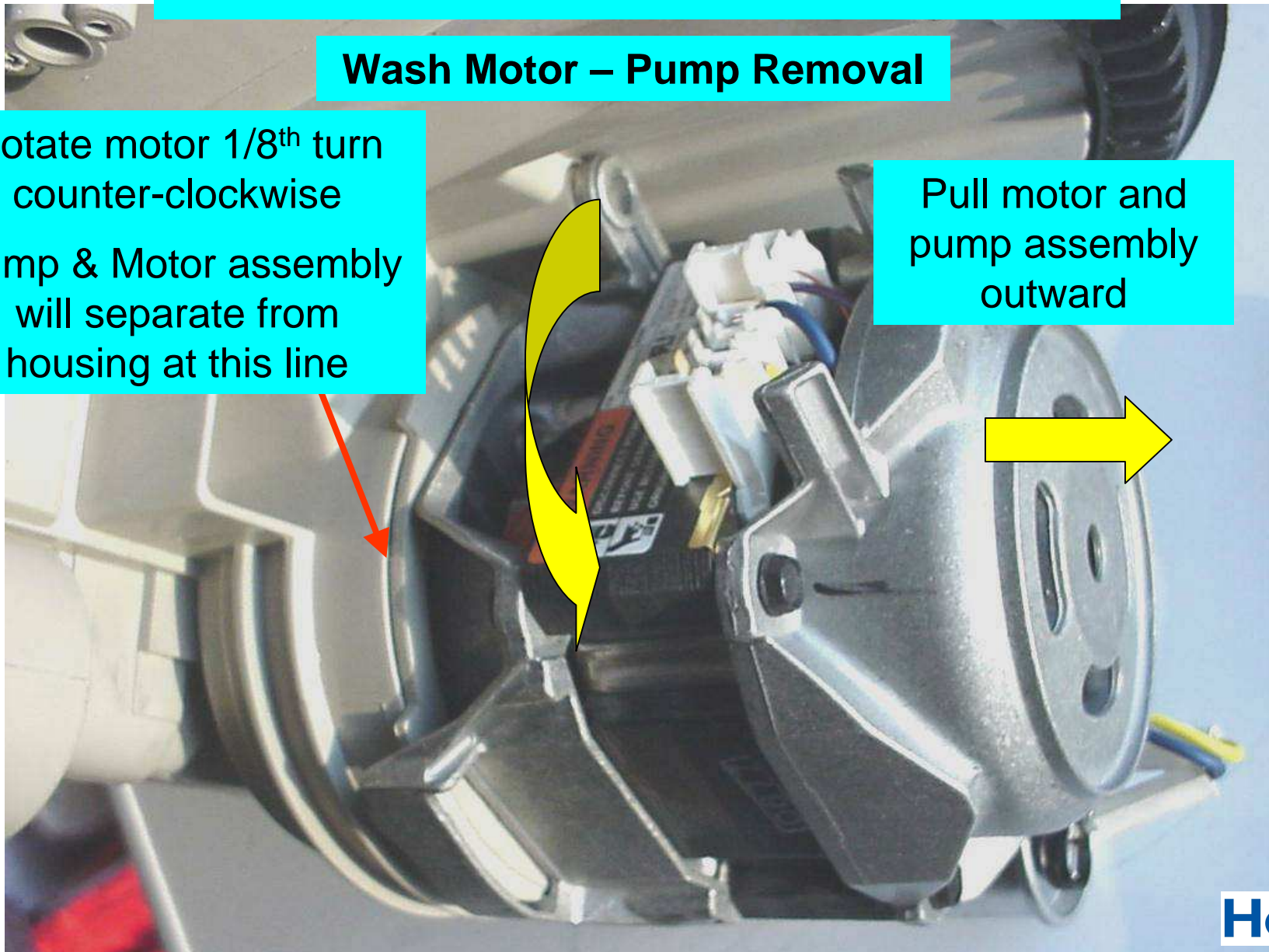


# PUMP MOTOR – IMPELLER - SEAL SERVICE

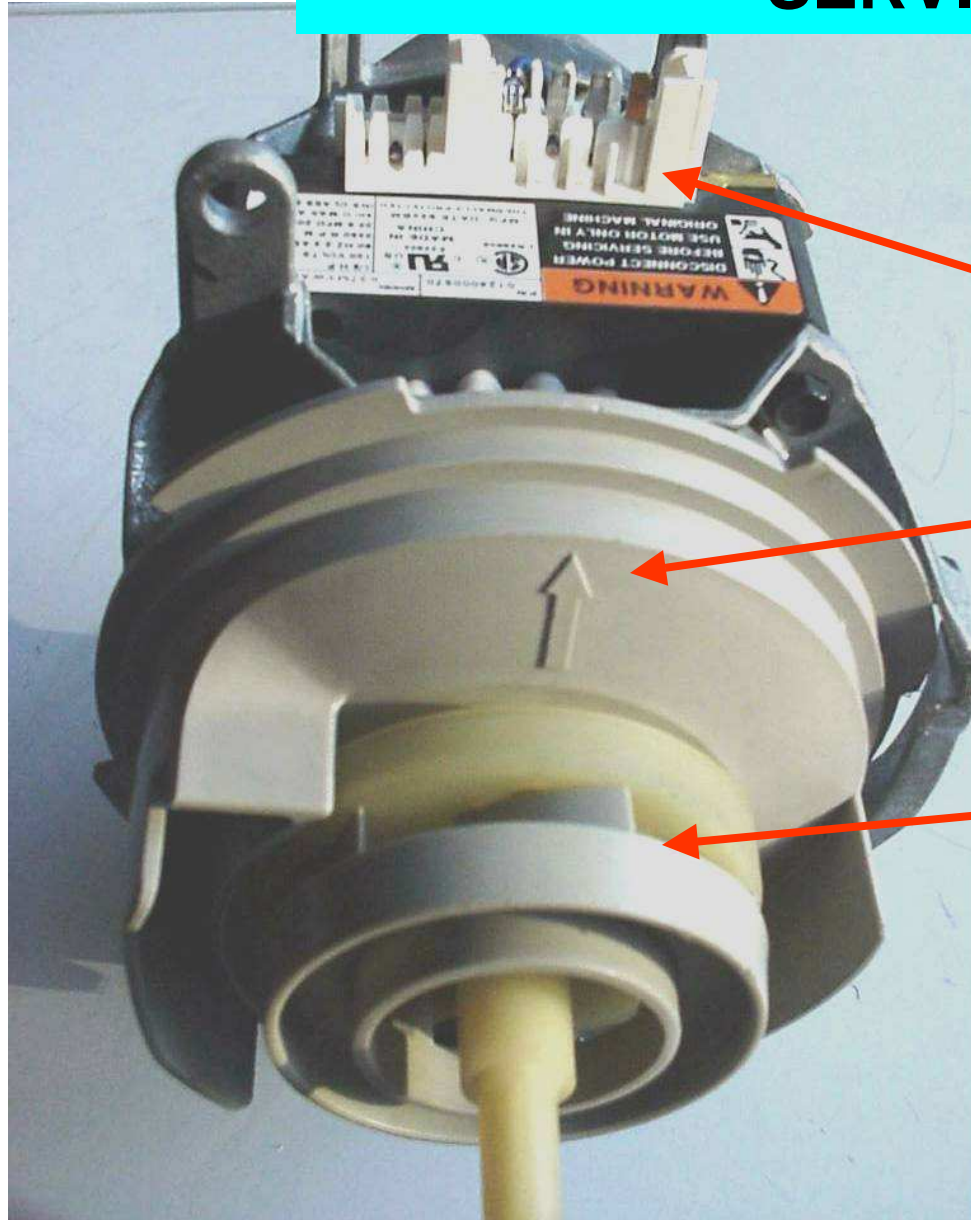
## Wash Motor – Pump Removal

Rotate motor 1/8<sup>th</sup> turn counter-clockwise  
Pump & Motor assembly will separate from housing at this line

Pull motor and pump assembly outward



# PUMP MOTOR – IMPELLER - SEAL SERVICE



Wash Pump  
Assembly

Electrical connection

Pump body - Align arrow  
with electrical  
connections when  
replacing

Impeller and shaft for  
solid food disposer  
components



# PUMP MOTOR – IMPELLER - SEAL SERVICE

Wash Pump  
Disassembly

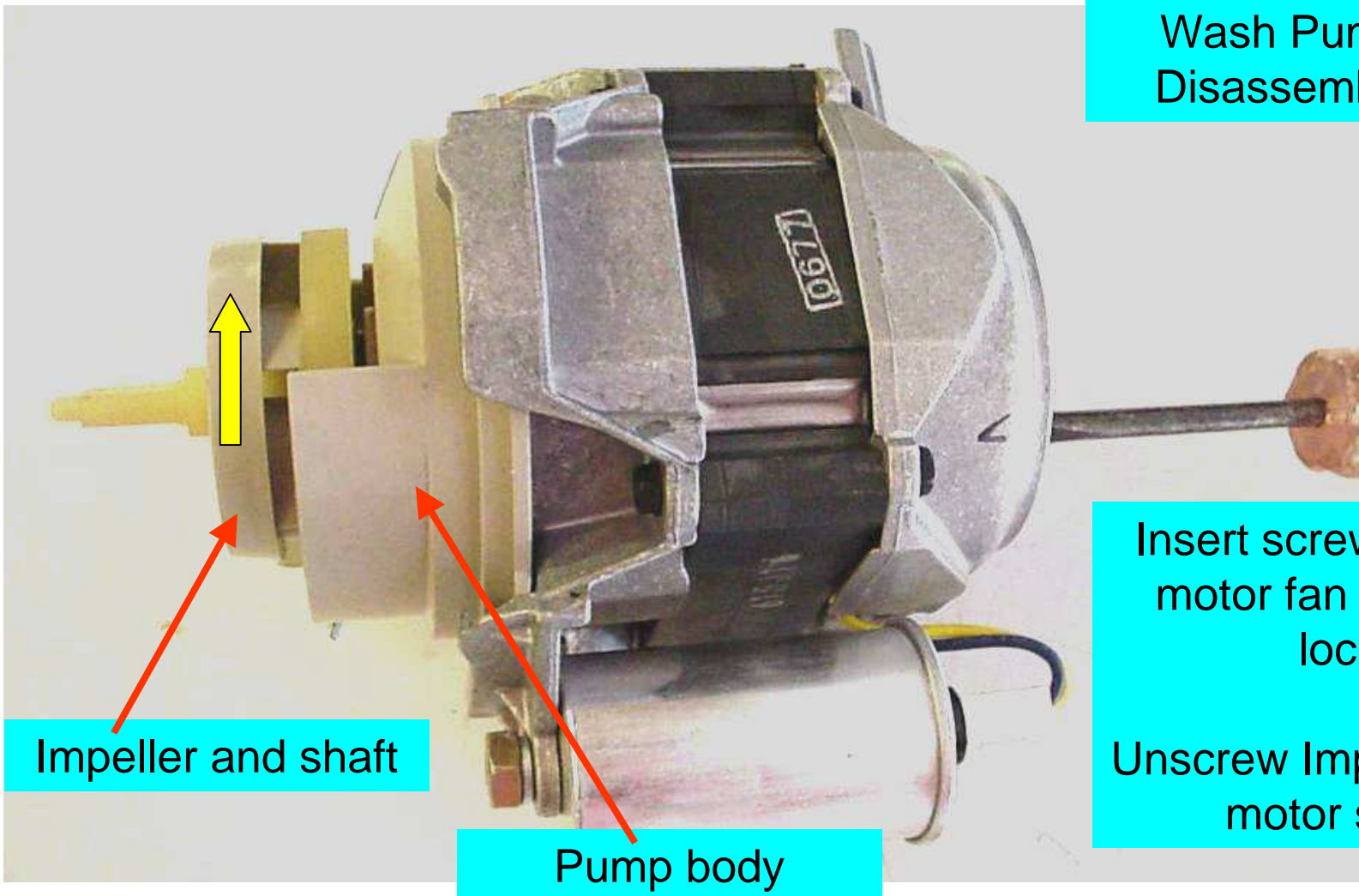
Insert screwdriver in  
motor fan blade to  
lock

Unscrew Impeller from  
motor shaft

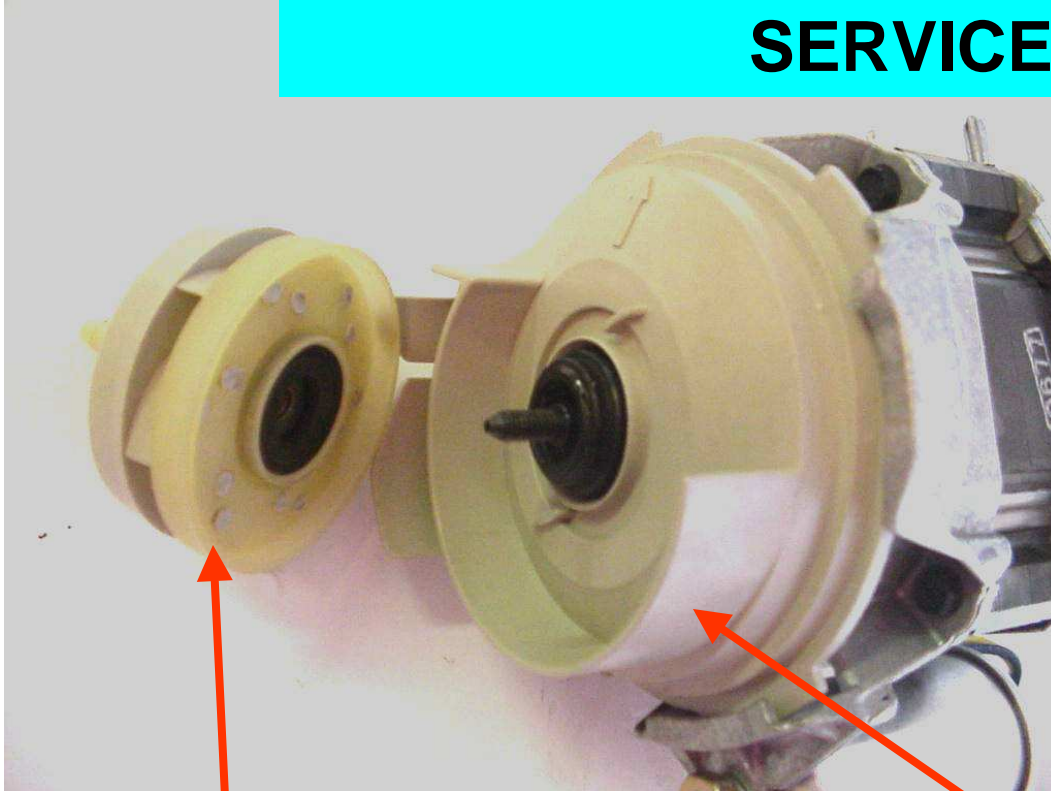
Impeller and shaft

Pump body

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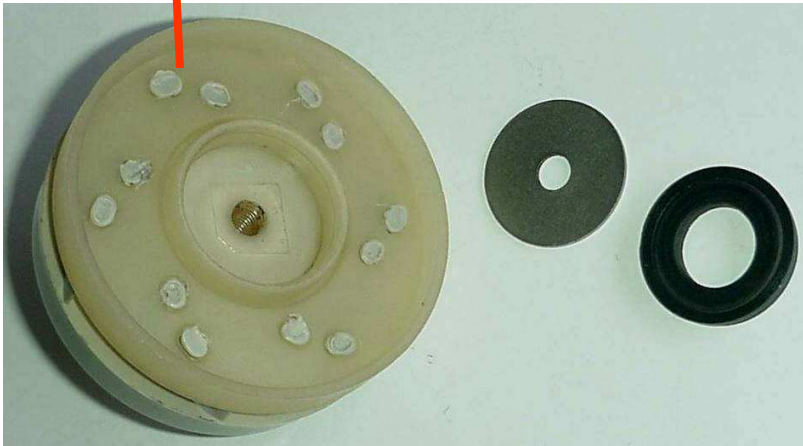


# PUMP MOTOR – IMPELLER - SEAL SERVICE



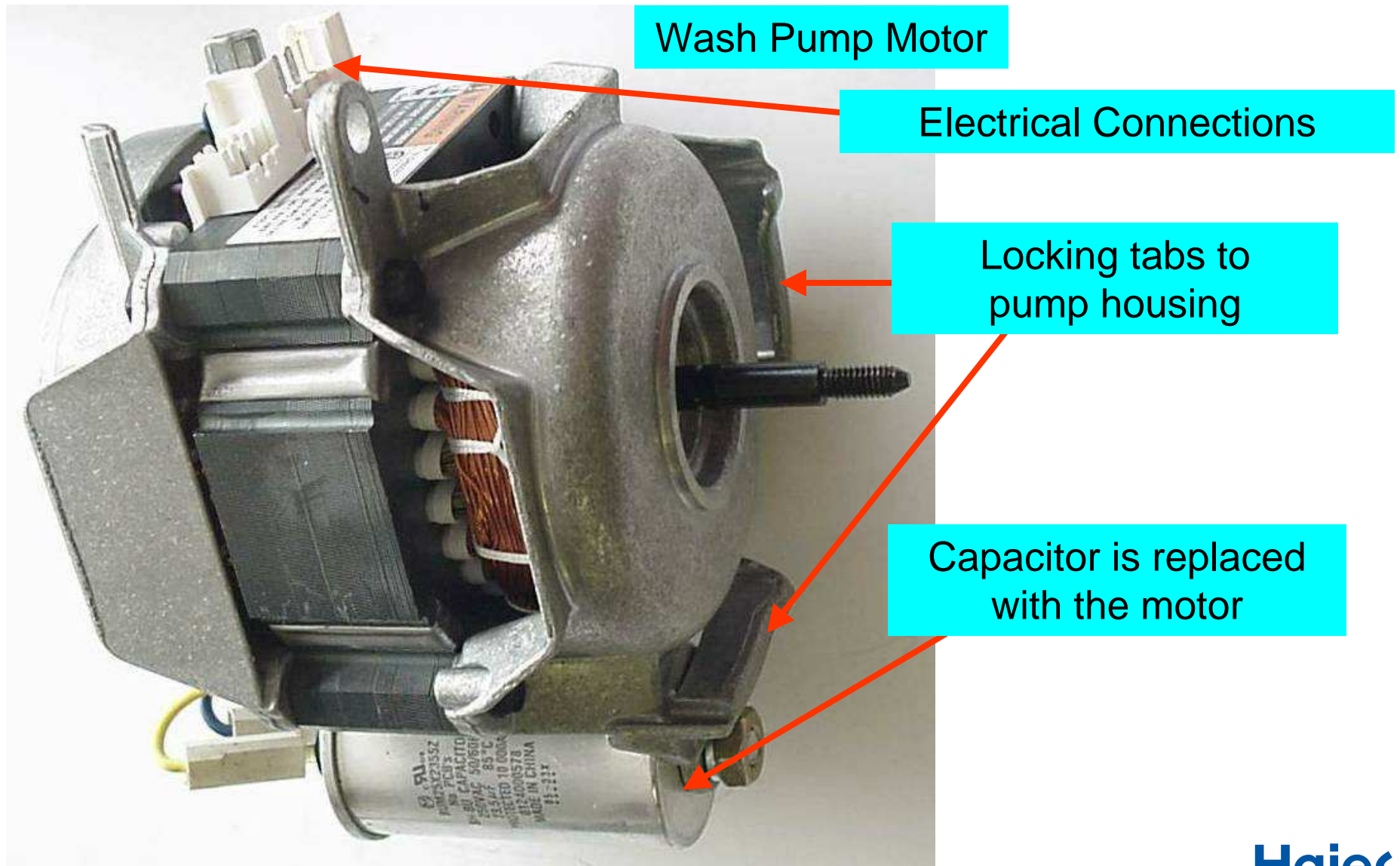
Wash Pump Seals

Seals are available separately and both halves must be replaced at the same time



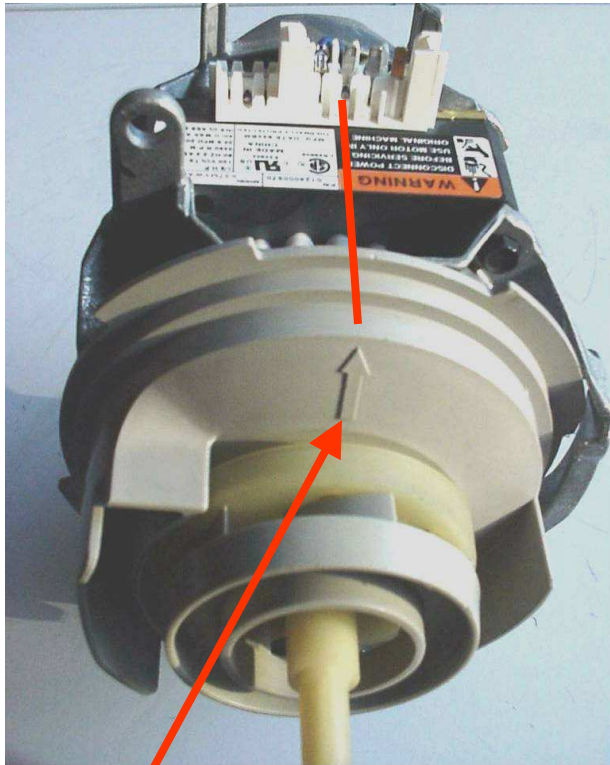
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# PUMP MOTOR – IMPELLER - SEAL SERVICE

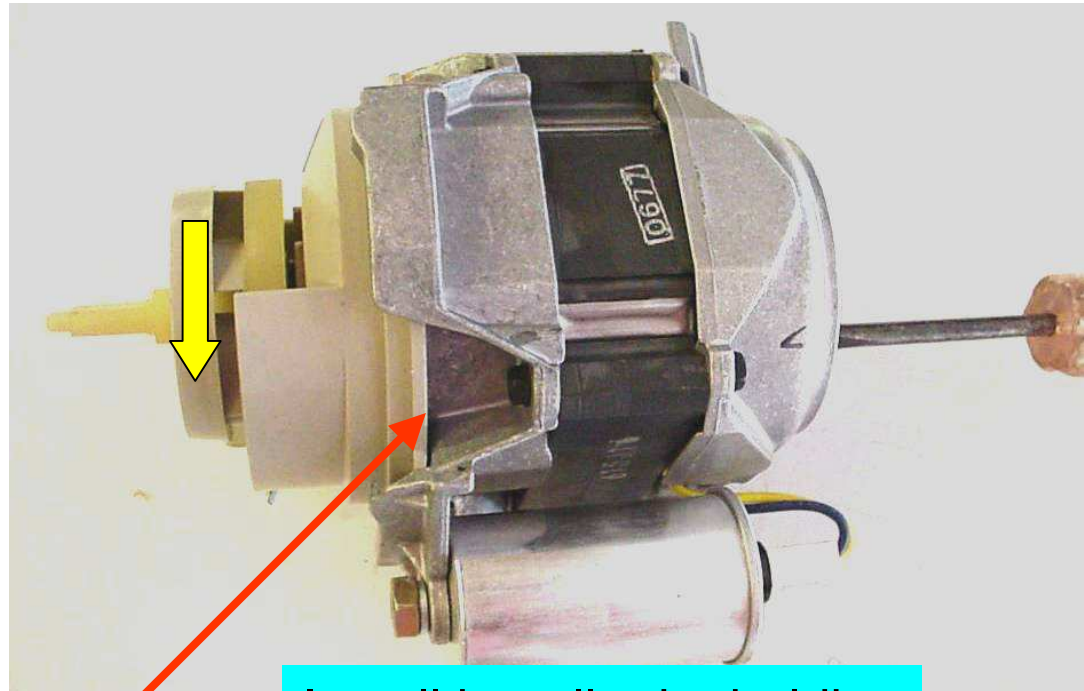


# PUMP MOTOR – IMPELLER - SEAL SERVICE

Wash Pump  
Re-Assembly



Pump body - Align arrow with electrical connections when replacing  
Pump must sit flush against motor housing

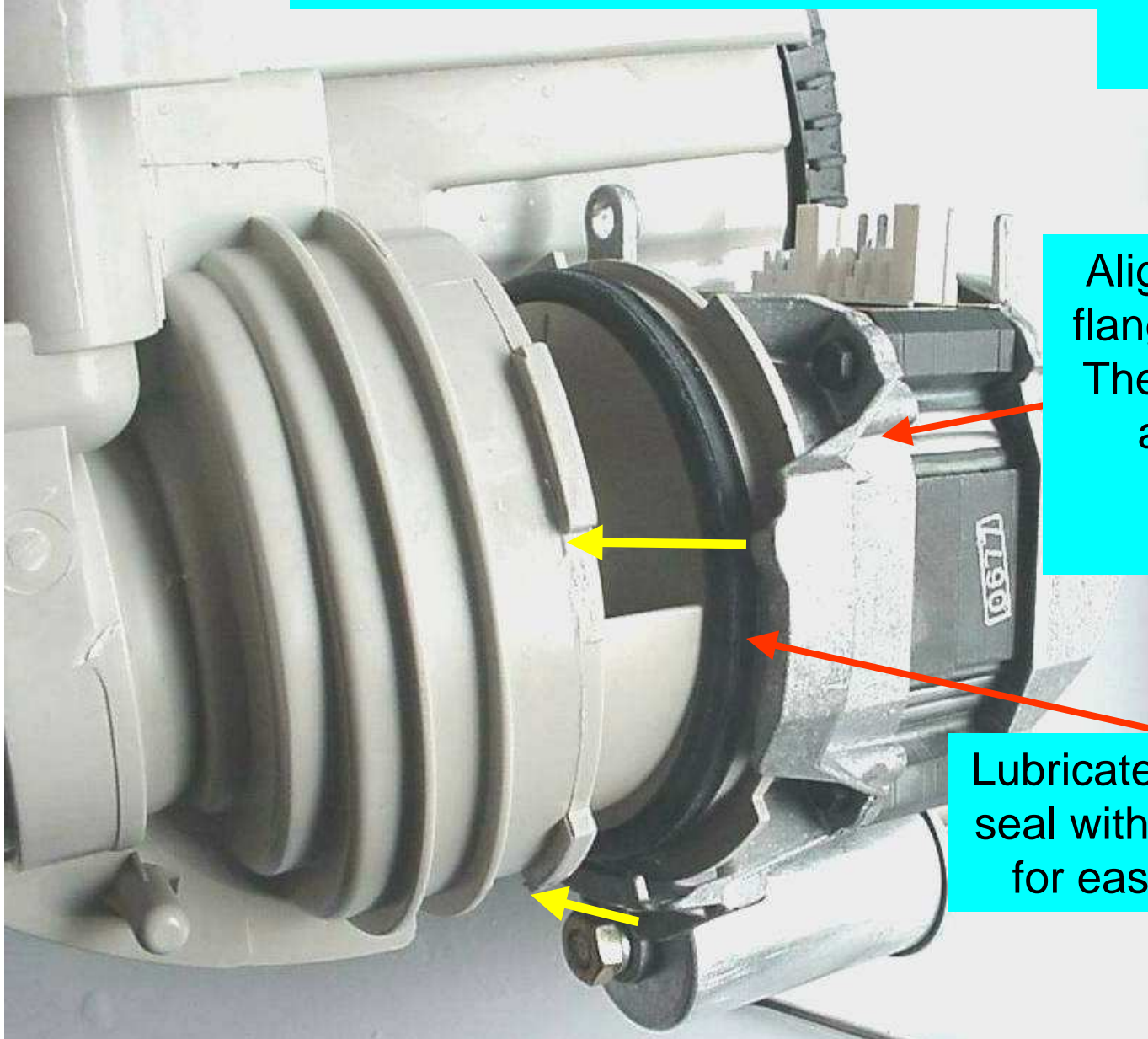


Install impeller by holding motor fan blade

**HAND TIGHTEN ONLY**

# PUMP MOTOR – IMPELLER - SEAL SERVICE

Wash Pump  
Re-Assembly



Align motor flange with  
flange on pump housing  
Then slide pump motor  
assembly into the  
housing

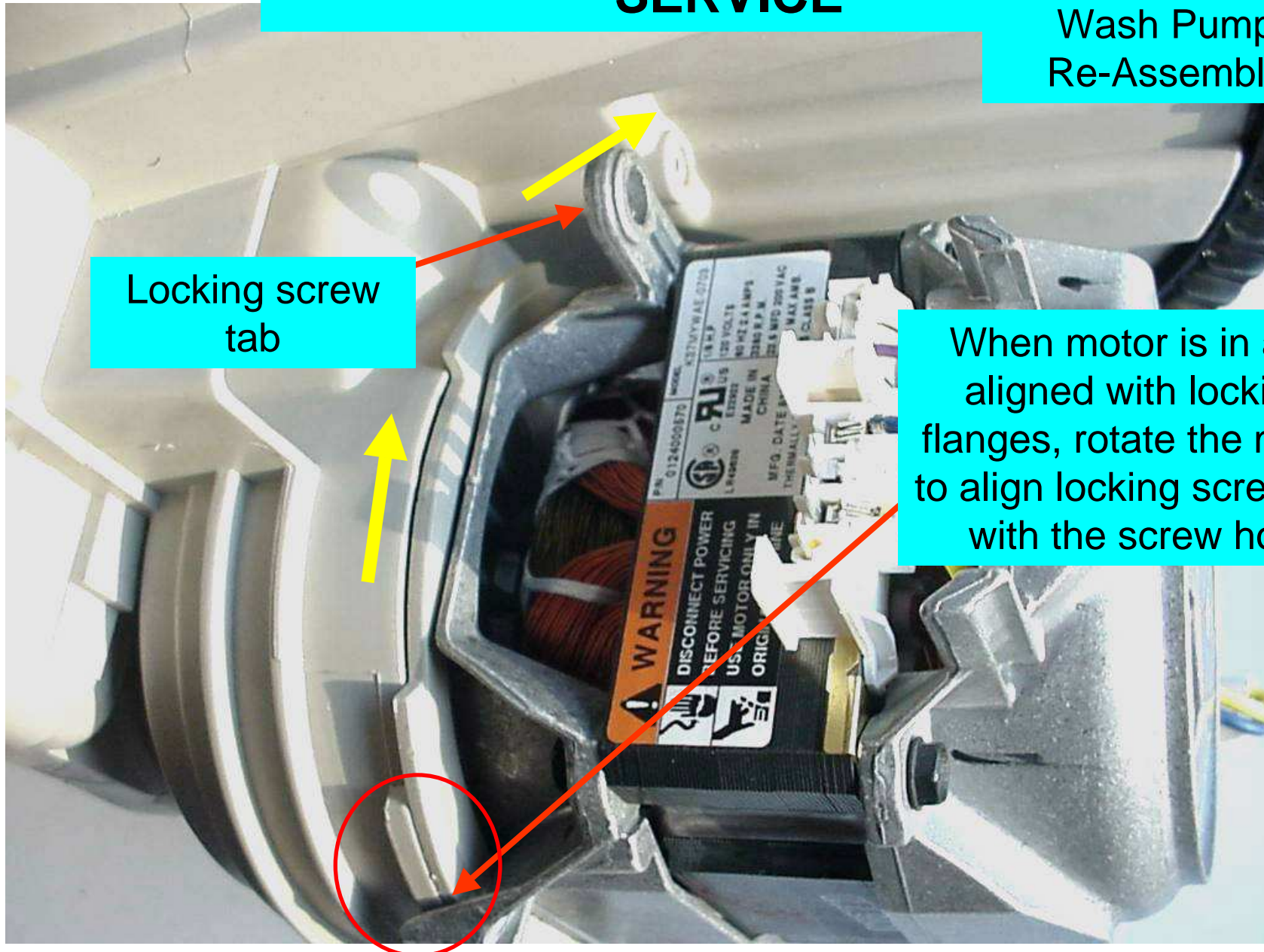
Lubricate the pump body  
seal with silicone grease  
for easier installation

# PUMP MOTOR – IMPELLER - SEAL SERVICE

Wash Pump  
Re-Assembly

Locking screw  
tab

When motor is in and  
aligned with locking  
flanges, rotate the motor  
to align locking screw  
tab with the screw hole

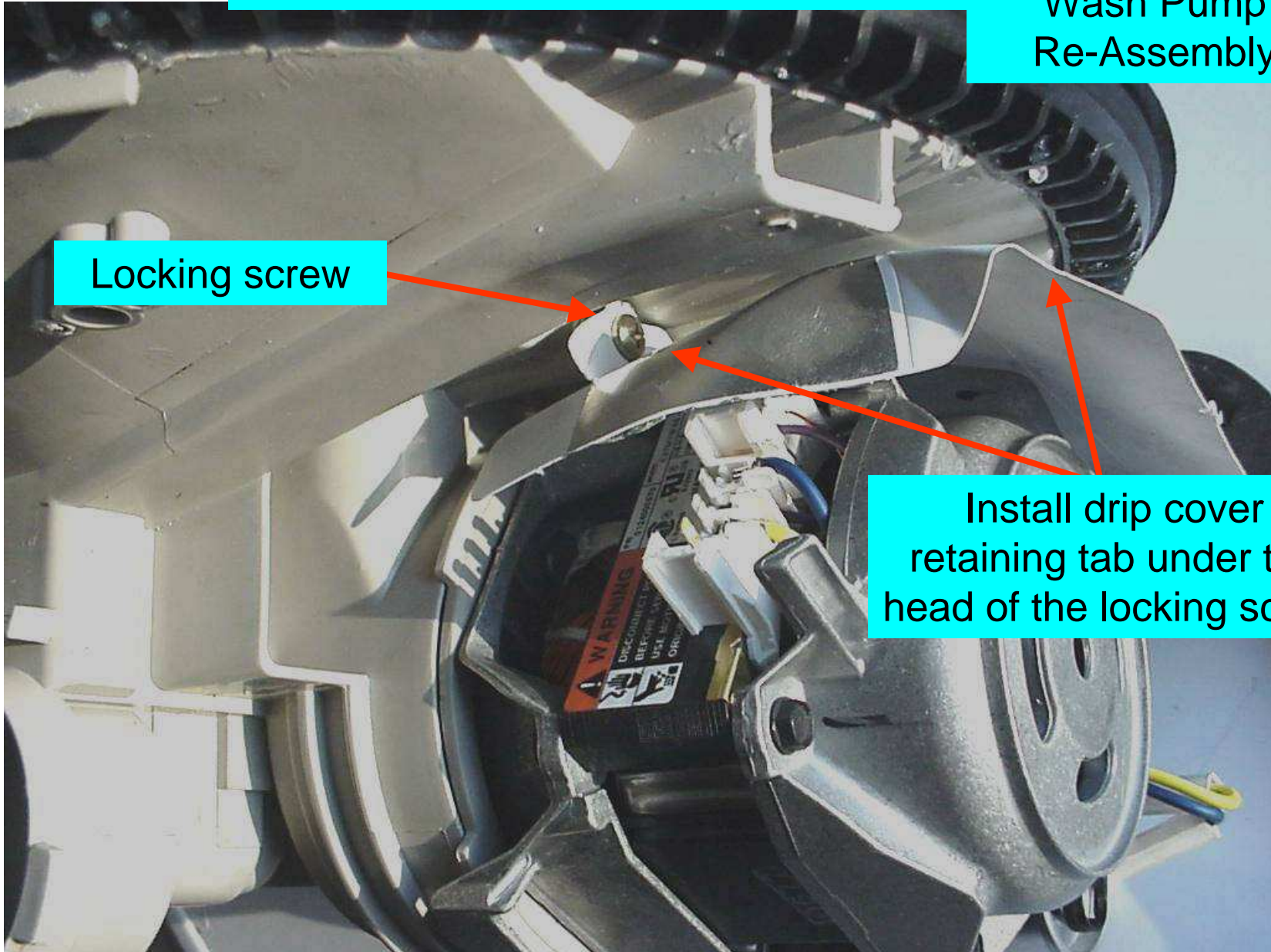


# PUMP MOTOR – IMPELLER - SEAL SERVICE

Wash Pump  
Re-Assembly

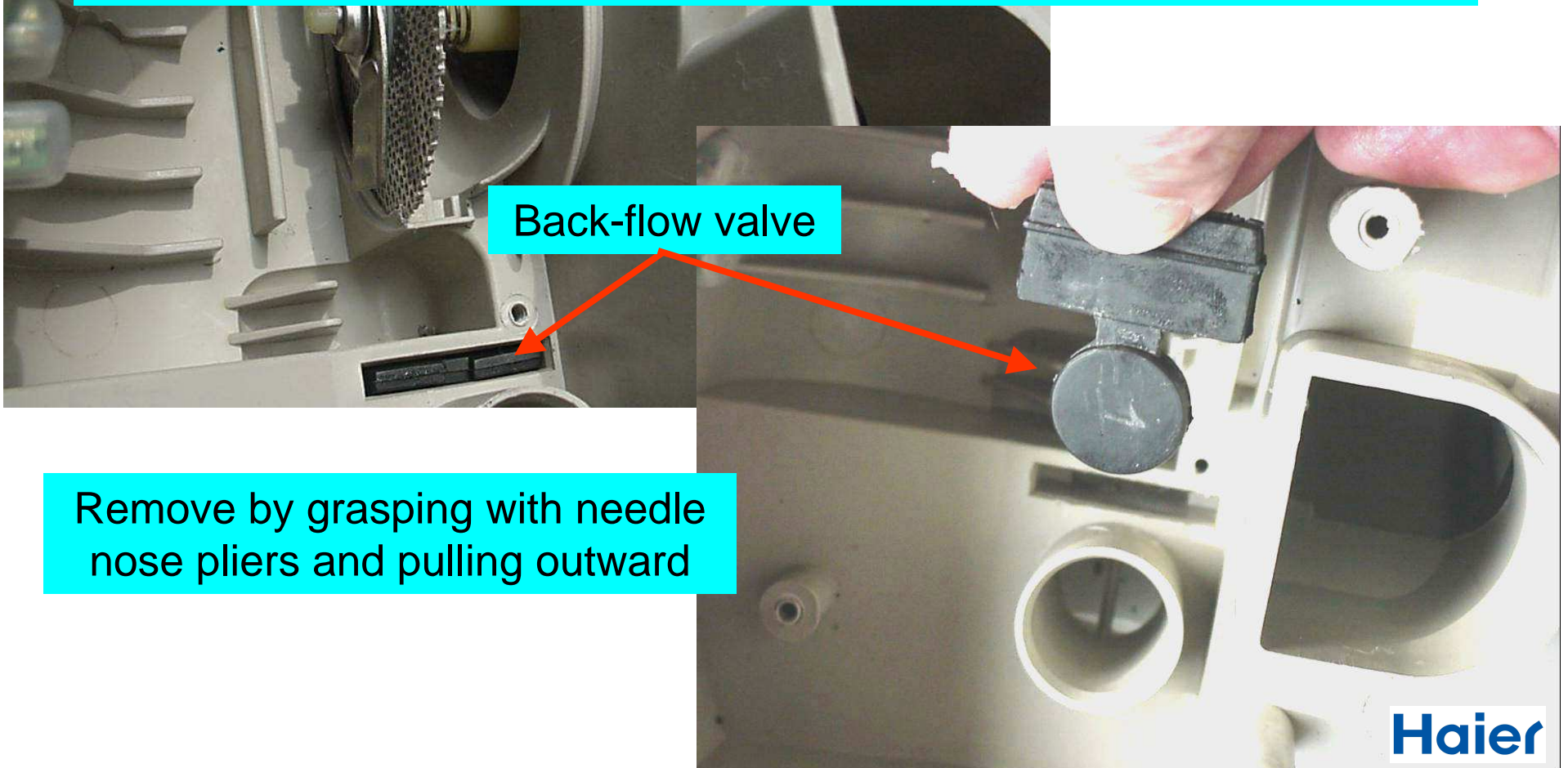
Locking screw

Install drip cover  
retaining tab under the  
head of the locking screw



## Back-flow Valve

A back-flow valve is located in the base of the pump housing. It allows heavy soil to be removed from the pump body through the drain pump cycle and prevent fine soil trapped in the upper filter from reentering the wash system during the wash cycle. It also prevents waste water from reentering the wash pump at the end of the drain cycle.







# Haier

This completes the  
**Pump Module Components**

training

for the

**ESD 300 and 400 Series**

**“Tall Tub”**

**UNDERCOUNTER  
DISHWASHER**

**Other sections include:**

**Door – Machine Compartment**

**and**

**Diagnostics**

# Haier



# Haier

## ESD 300 and 400 Series

### “Tall Tub”

## UNDERCOUNTER DISHWASHER

### Door Components

Additional Service Programs include:

Diagnostics

Machine Compartment

Pump Module Components

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# DOOR PANEL Removal

Control Panel  
Removal  
remove all  
screws

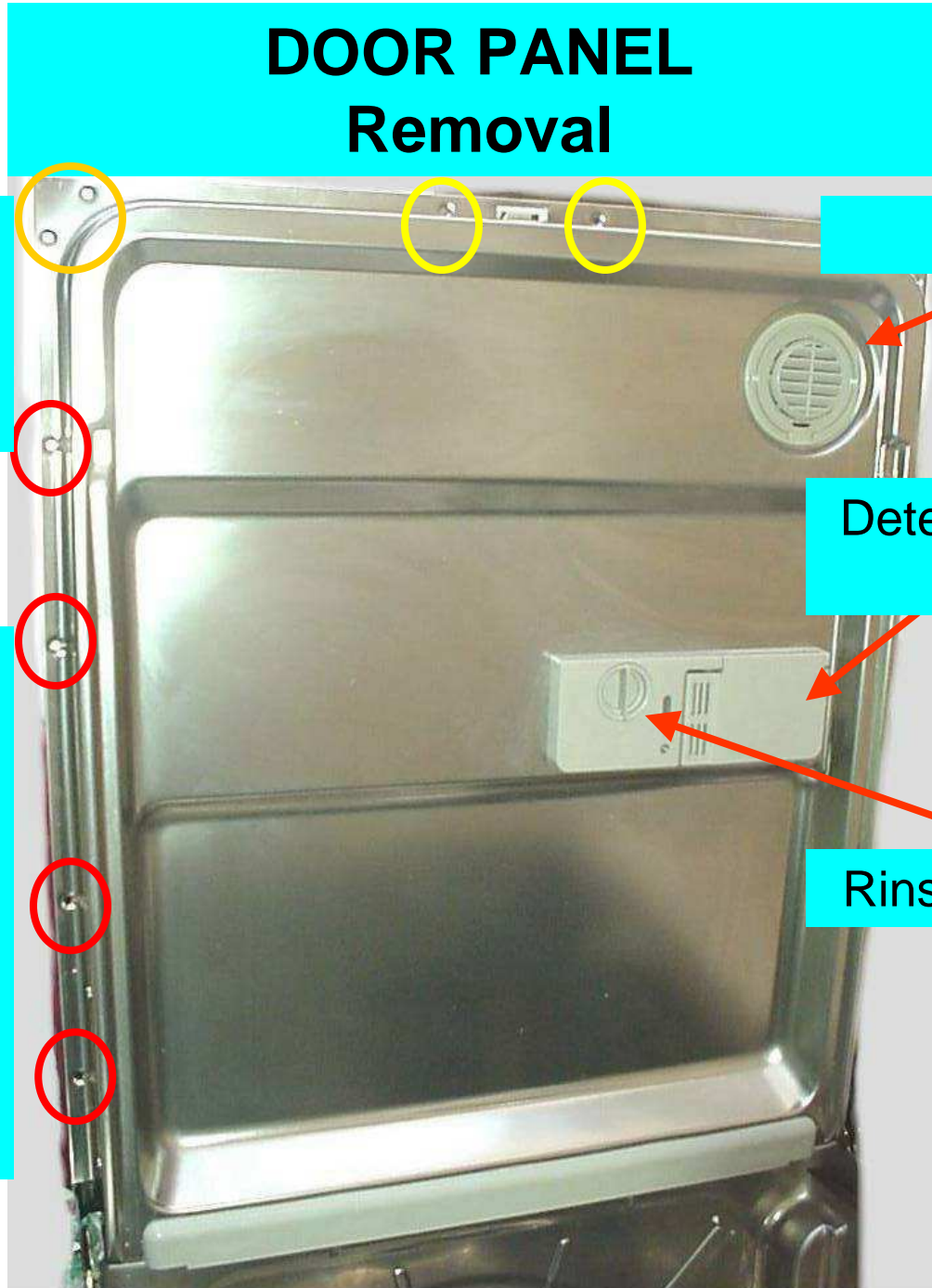
Vent Cover

Detergent Dispenser  
(closed)

Door Panel  
Removal  
remove screws  
shown in red

Rinse Aid Dispenser

Additional  
screws on  
opposite side of  
door

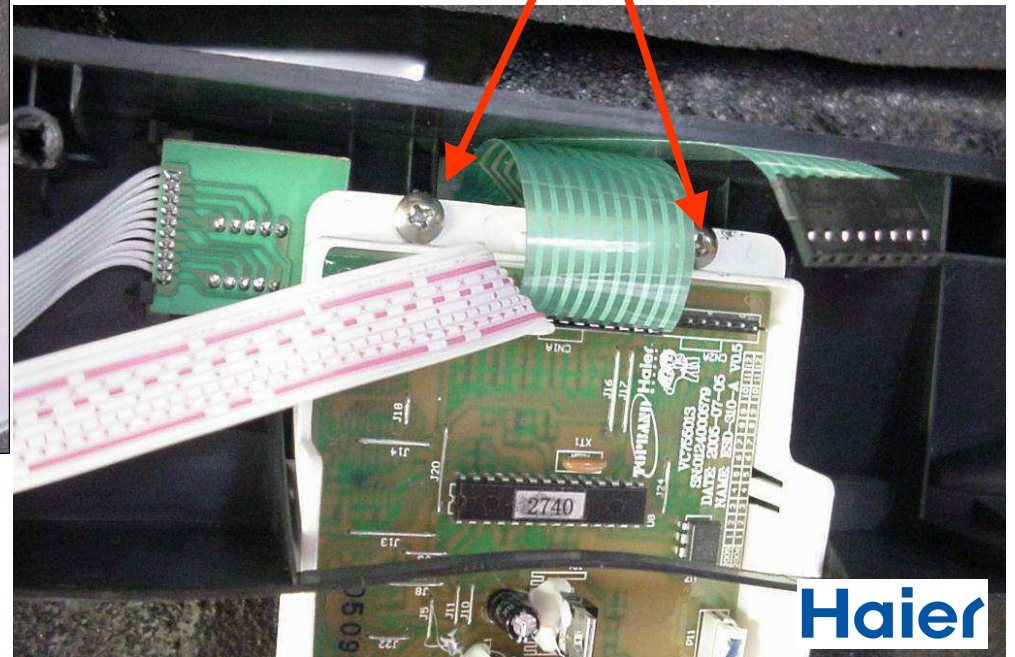
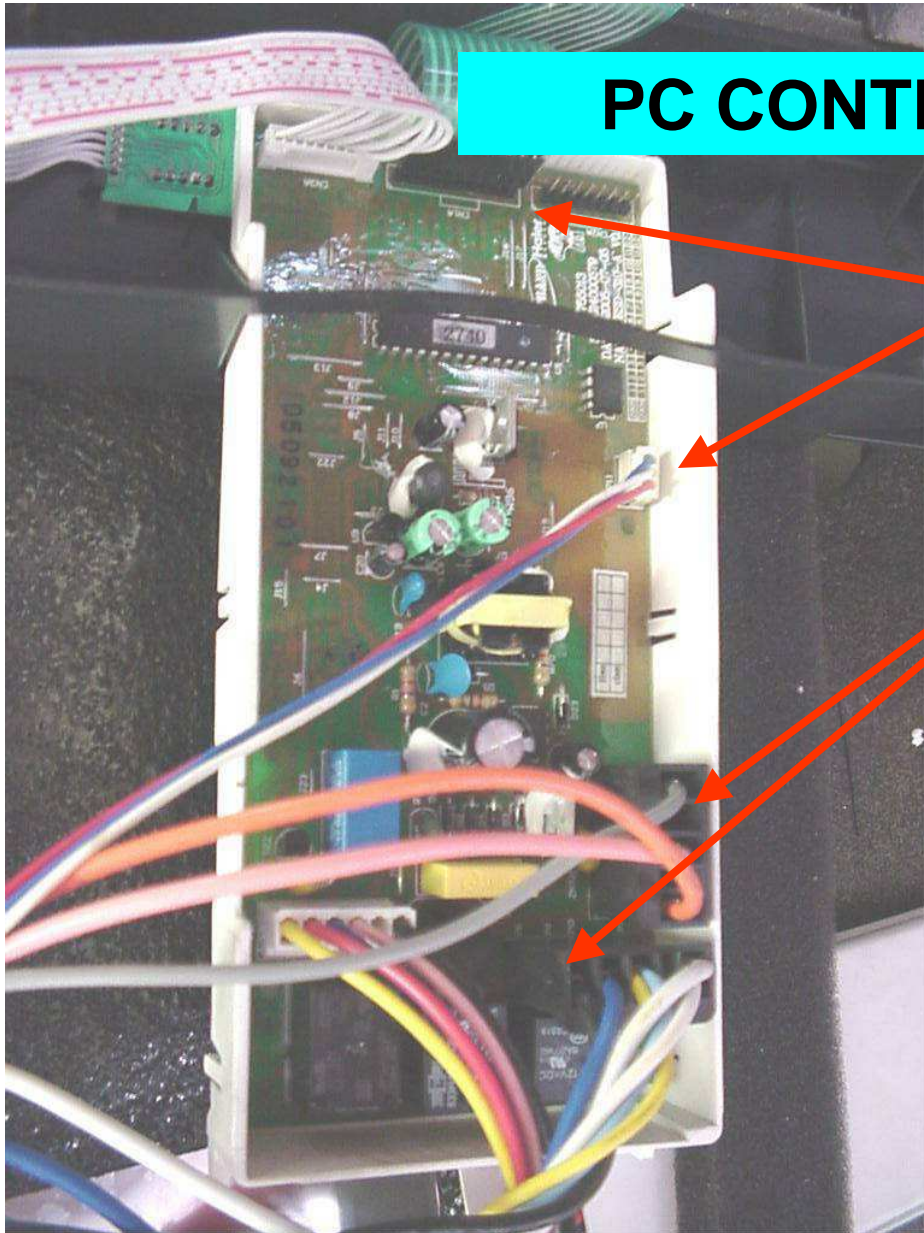


# PC CONTROL BOARD

Low Voltage connectors to touch panel – rinse aid dispenser

High Voltage connectors to motors, heater, inlet valve, etc

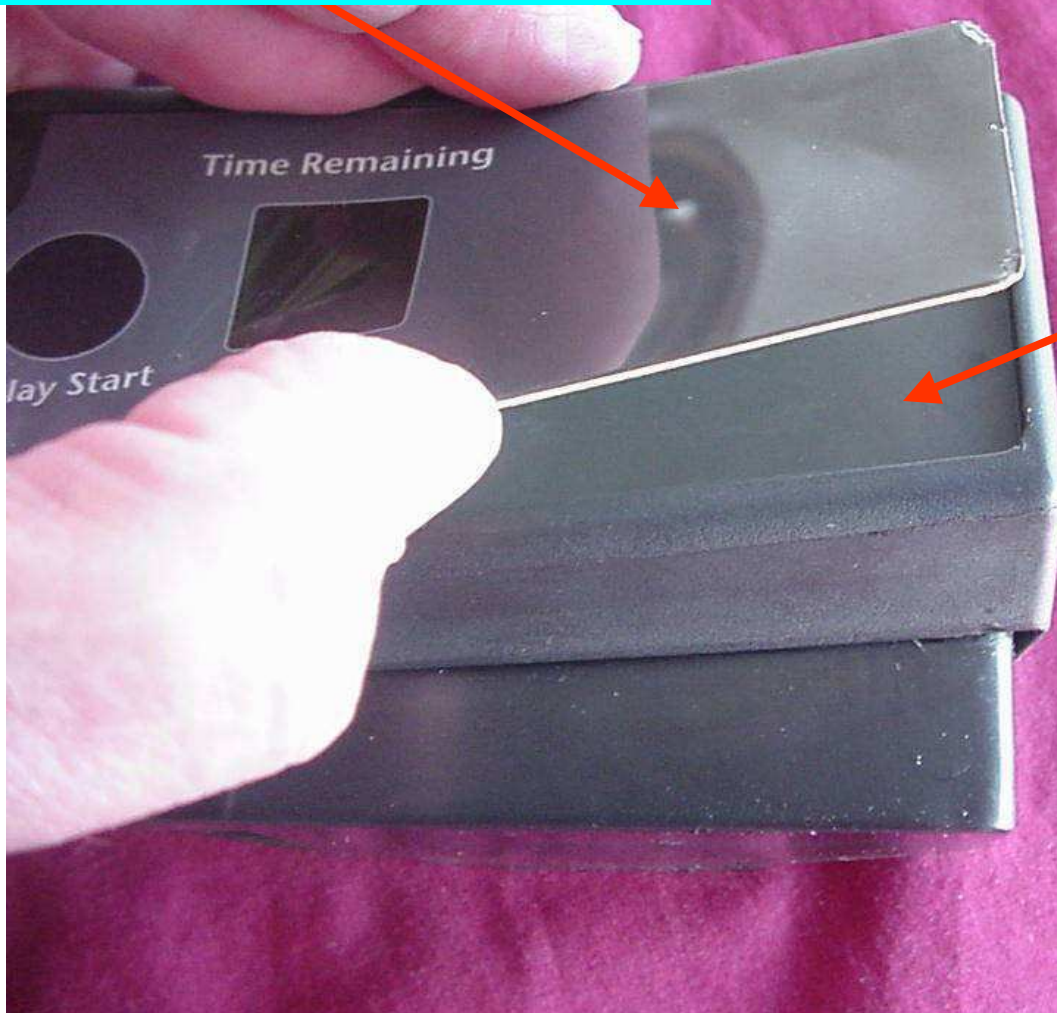
Retaining screws



## TOUCH PANEL

Touch Panel can be replaced by carefully prying up and then peeling off laminated panel

Clean Touch Panel frame with rubbing alcohol before replacing touch panel



DO NOT BEND  
OR KINK  
Touch Panel  
during assembly

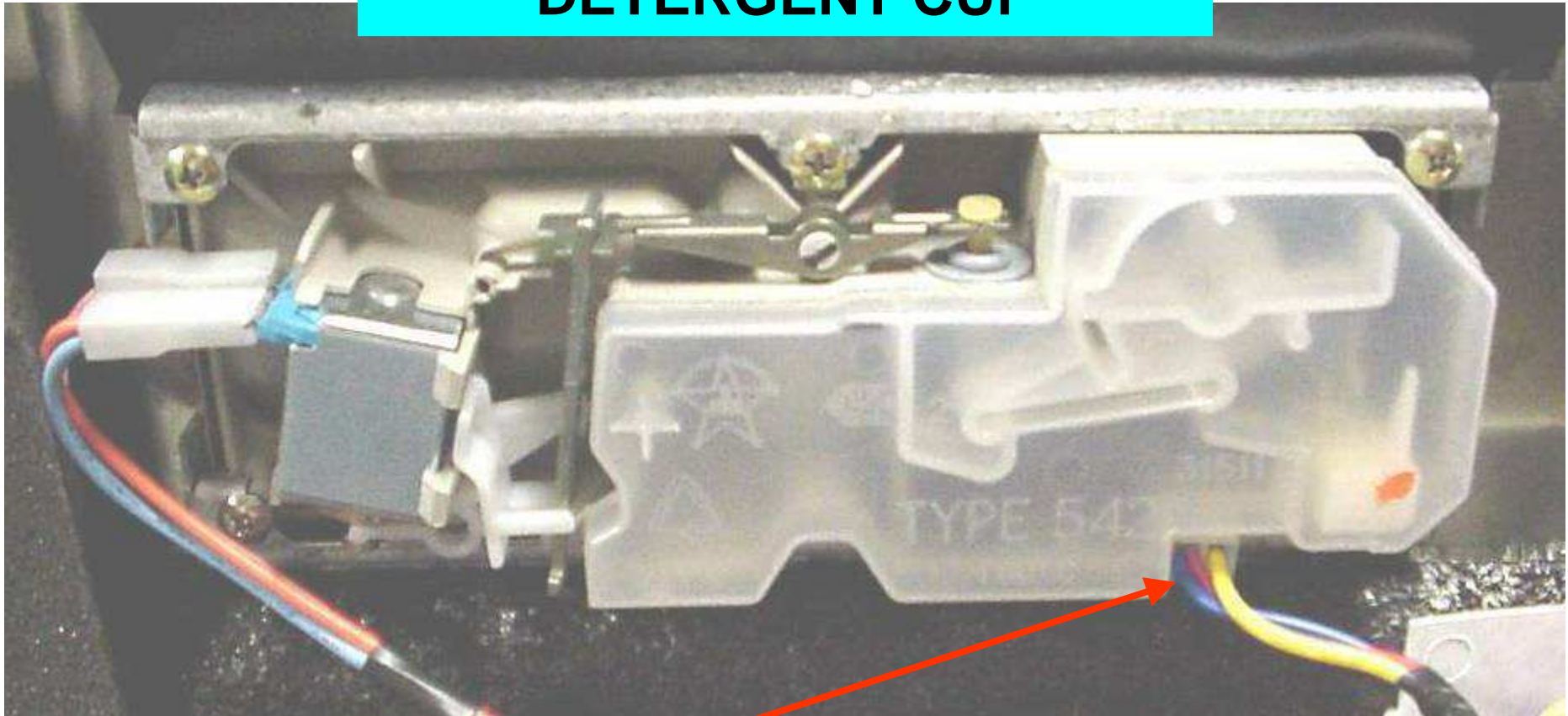
# DETERGENT CUP

Test Solenoid and check for actuation of door release and rinse aid plunger

Dispenser actuates 2 times  
1<sup>st</sup> – opens detergent door  
2<sup>nd</sup> – dispenses rinse aid

300 Ohms  
+ / - 25

## DETERGENT CUP

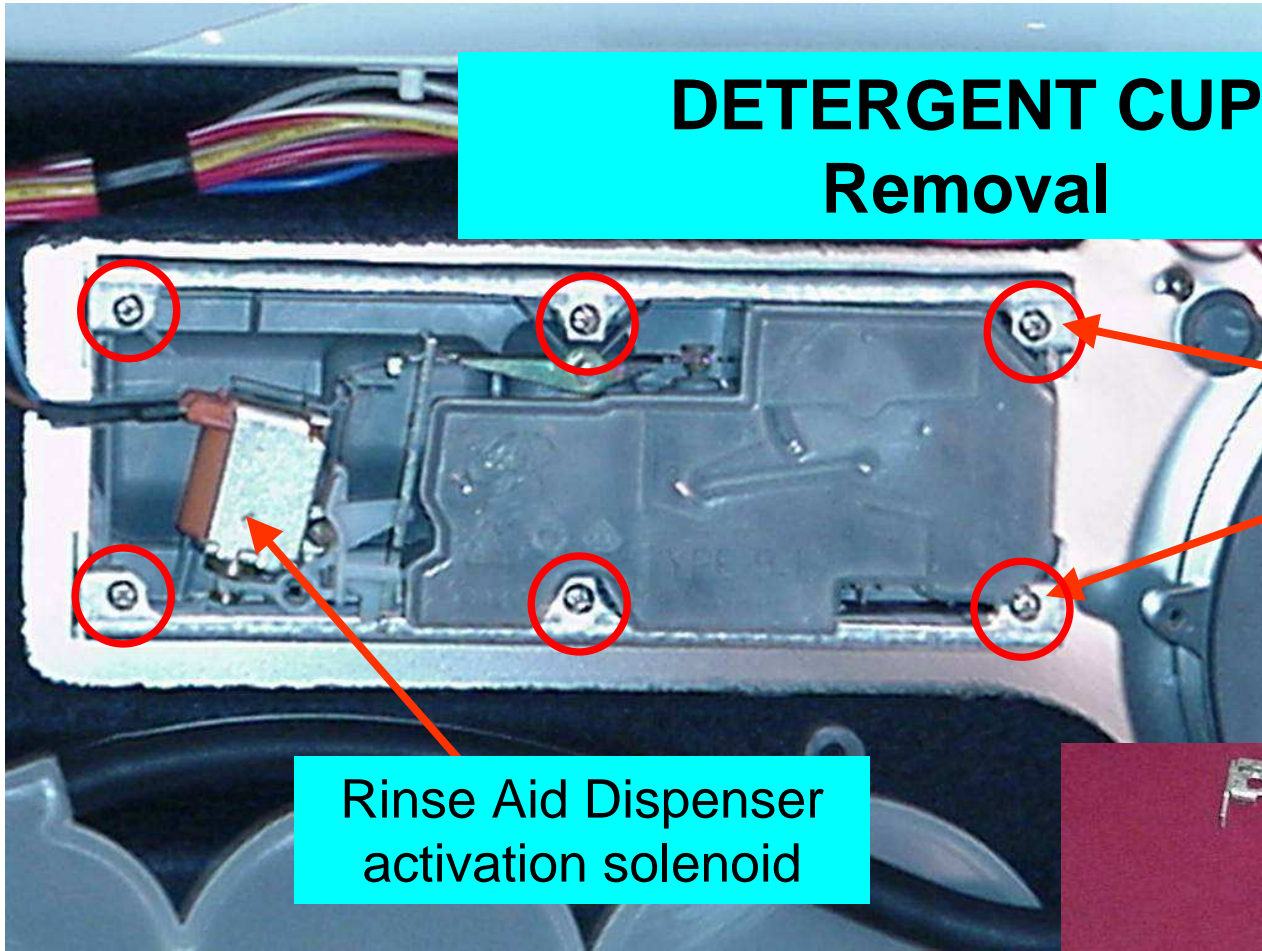


Rinse Aid Sensor  
float type switch

Float type switch  
0 ohms resistance  
when empty

Indicator on control panel shows  
when rinse aid is low.  
If no signal when rinse aid is empty,  
replace detergent cup assembly

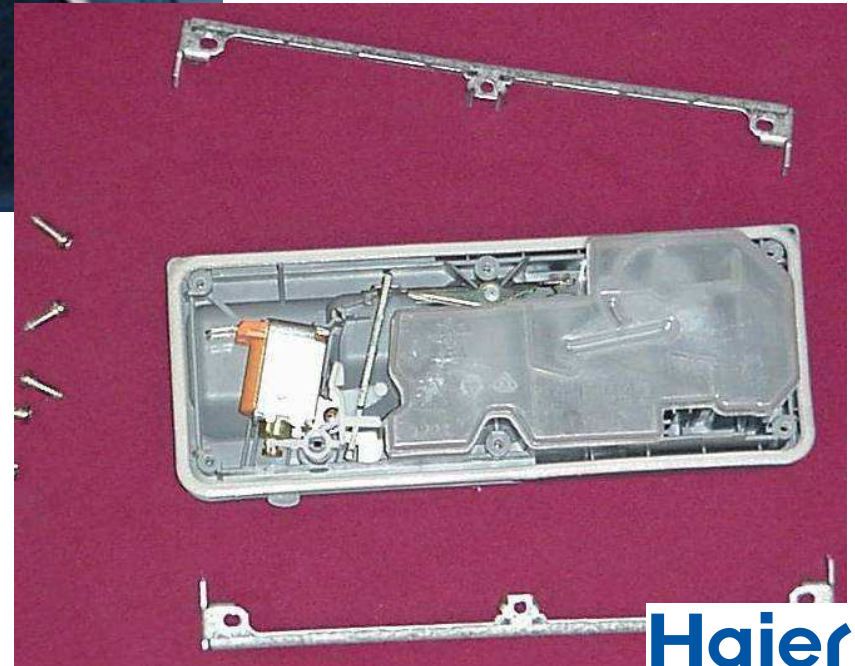
# DETERGENT CUP Removal



Remove 6 Screws to  
remove detergent cup  
(Replace as a unit)

Rinse Aid Dispenser  
activation solenoid

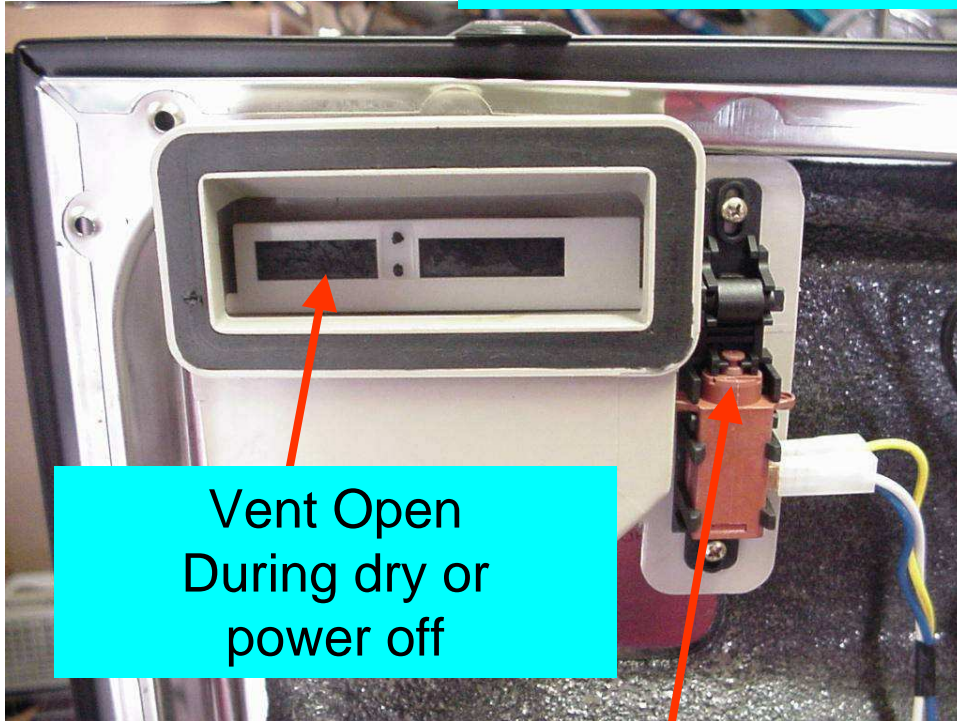
Replace Dispenser  
unit as an assembly



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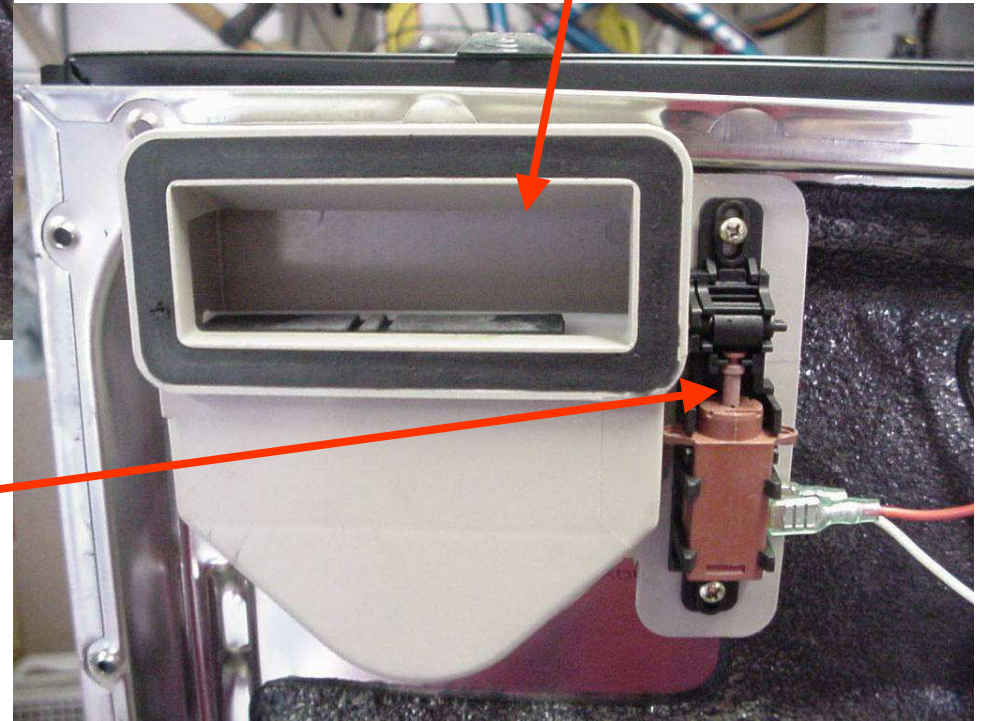
## DOOR VENT



Vent Open  
During dry or  
power off

Wax Motor  
Extends plunger to close vent  
15 seconds to close  
3 minutes to release (approx)

Vent Closed  
During wash / rinse



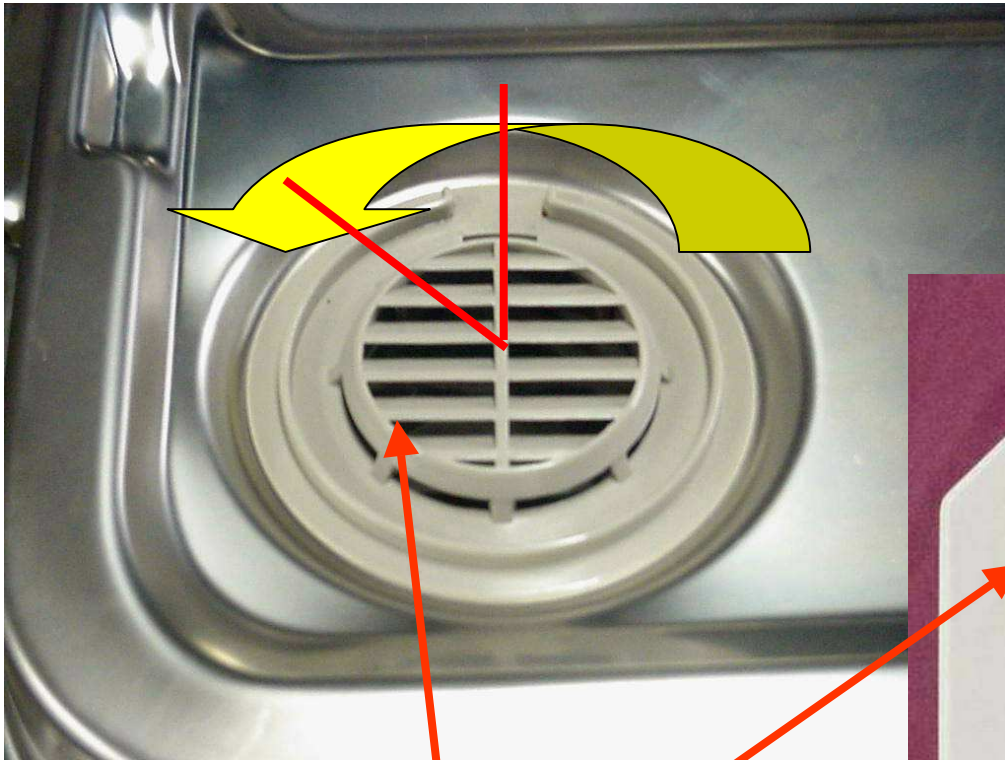
## DOOR VENT



Test  
1250 Ohms  
+ / - 100 ohms

Replace as an  
assembly

## DOOR VENT Removal



Rotate cap 1/8  
turn to release  
from inner body

Body is released from  
inside of door when cover  
is removed

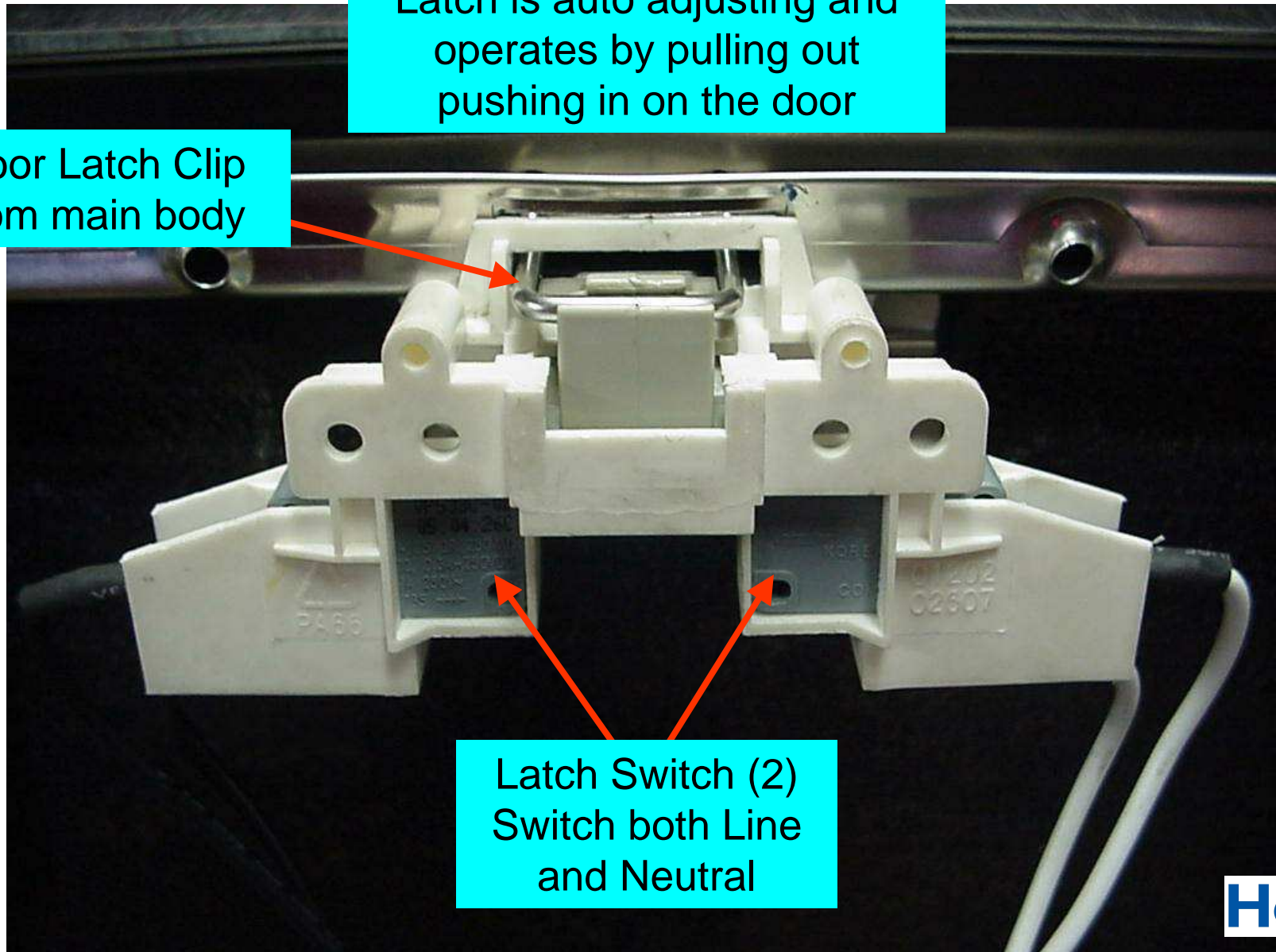


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# DOOR LATCH

Latch is auto adjusting and operates by pulling out pushing in on the door

Door Latch Clip from main body



Latch Switch (2)  
Switch both Line  
and Neutral

# DOOR LATCH

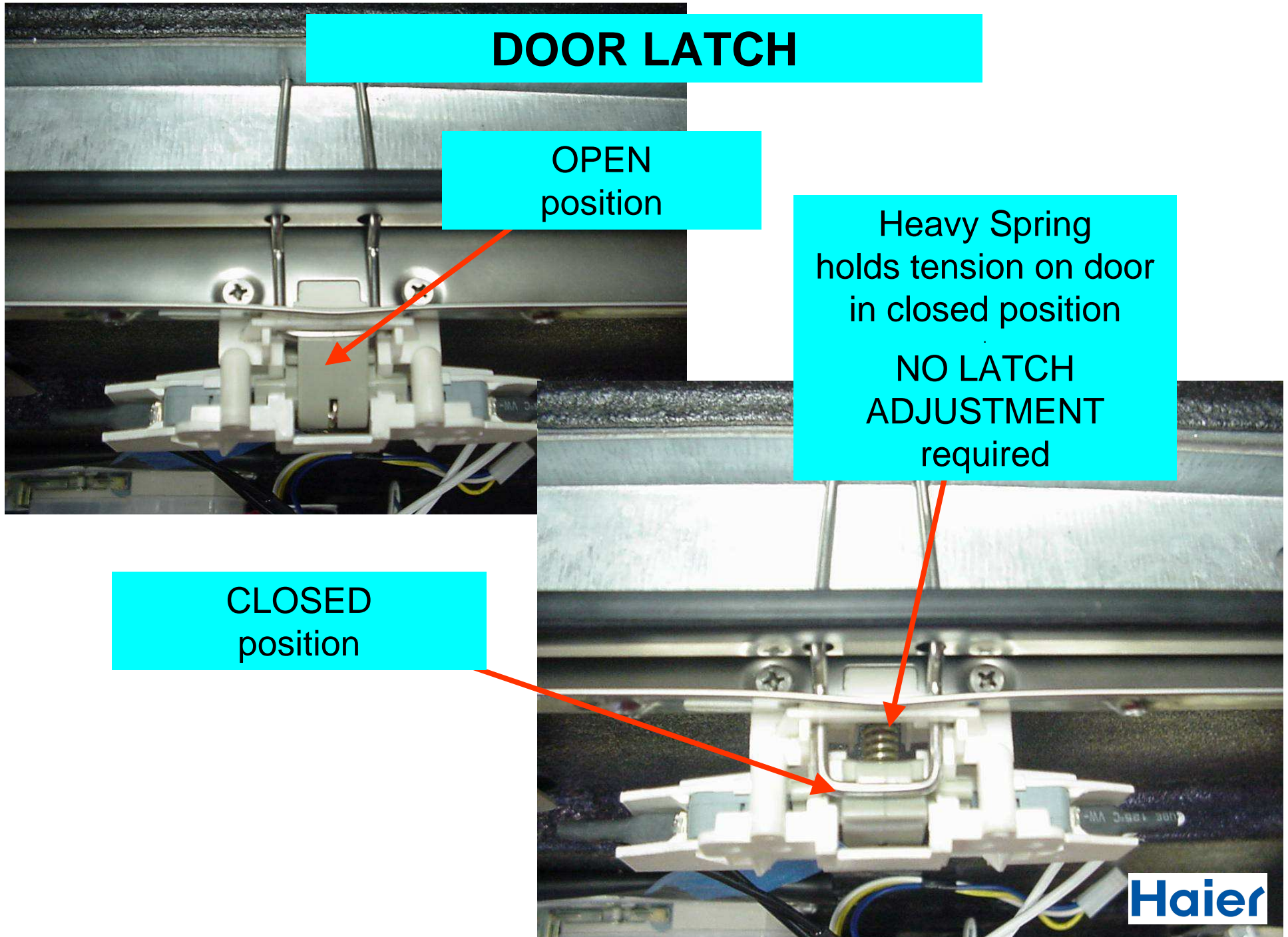
OPEN  
position

Heavy Spring  
holds tension on door  
in closed position

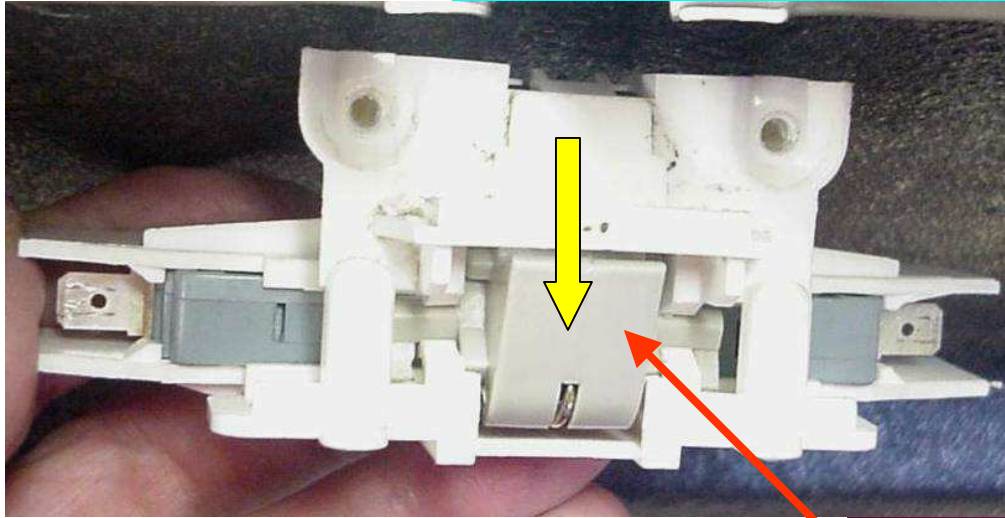
NO LATCH  
ADJUSTMENT  
required

CLOSED  
position

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# DOOR LATCH

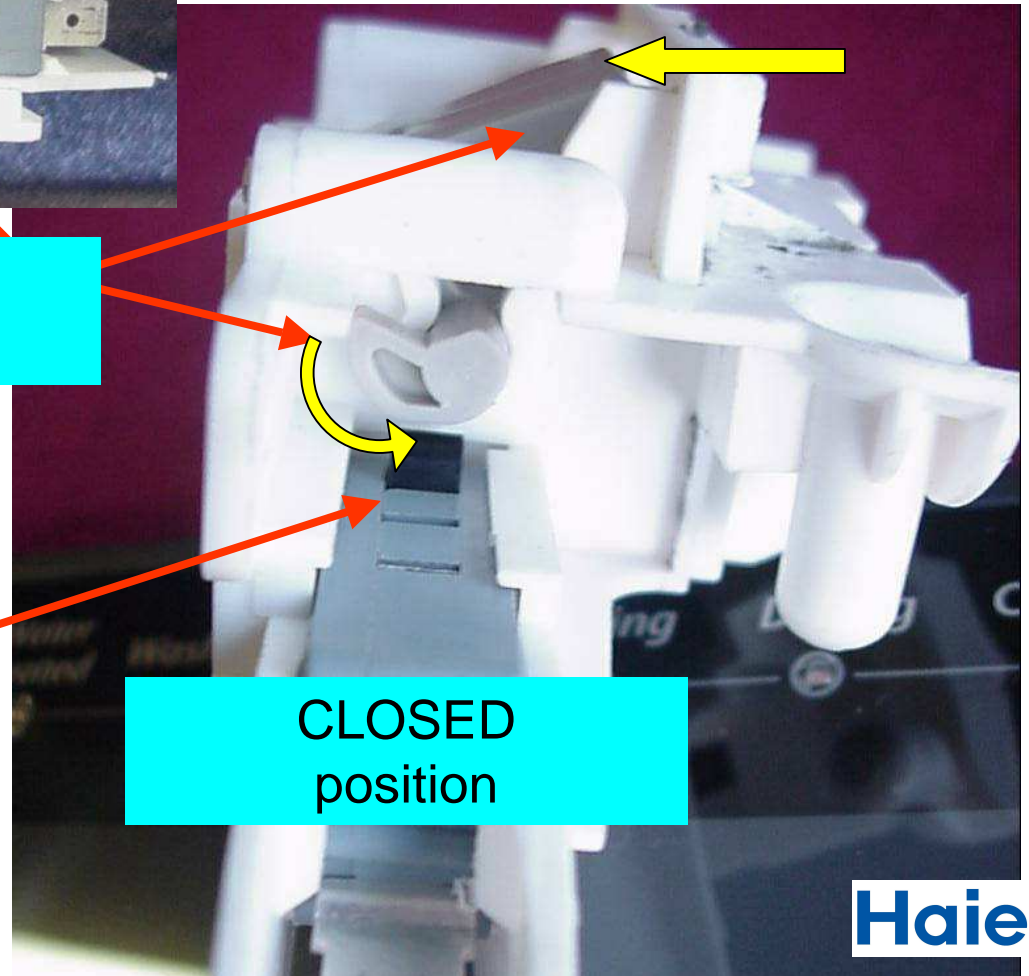


Switches are Normally OPEN when door is open

REPLACE AS AN ASSEMBLY

OPEN position

Door latch closes, cams above each switch to move to CLOSED POSITION



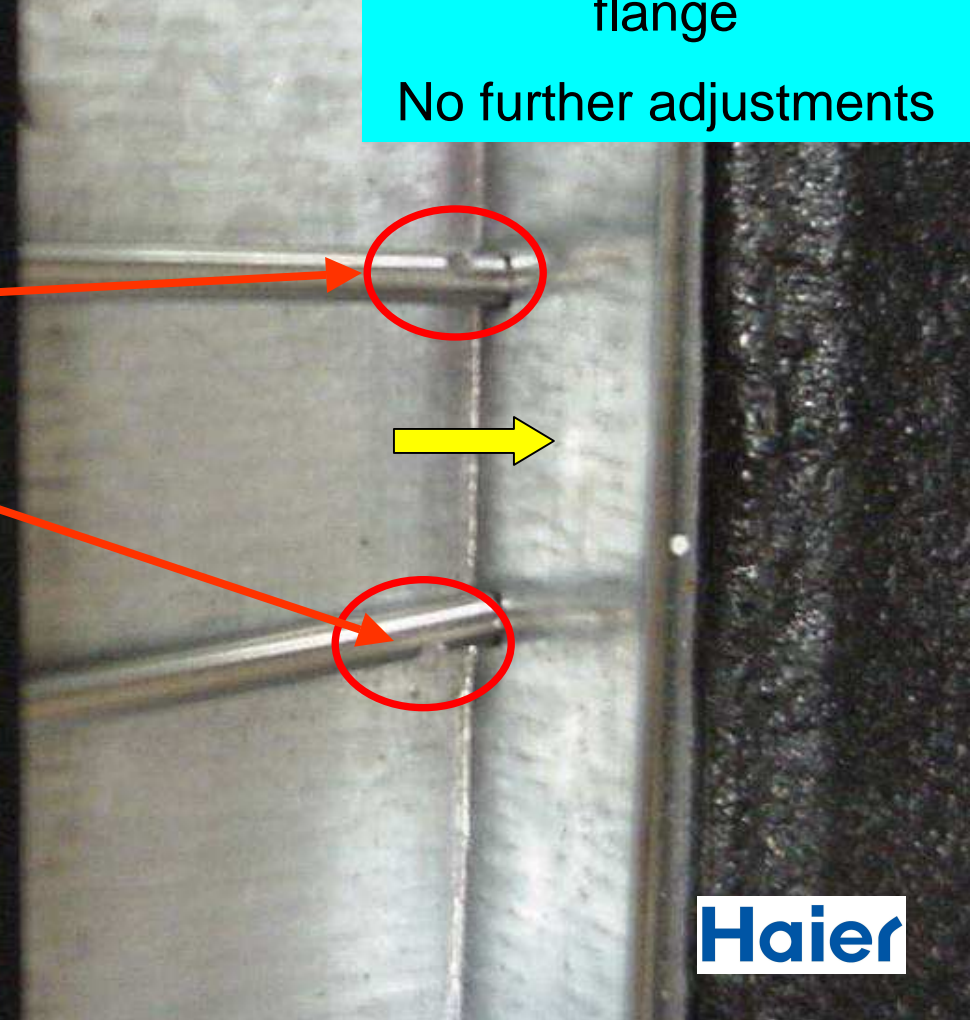
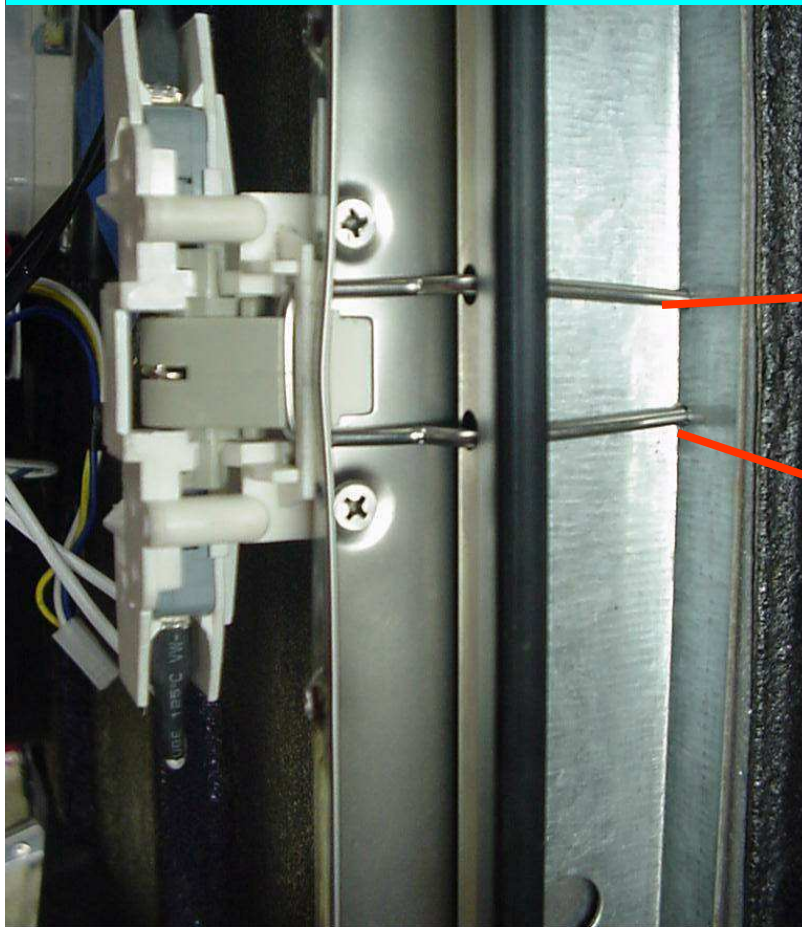
CLOSED position

## DOOR LATCH

Squeeze LATCH CLIP  
and pull outward  
to remove

Push LATCH CLIP in  
fully until notch  
engages in sheet metal  
flange

No further adjustments



# DOOR TENSION

Rope – Cable  
Routing

Spring

Door Hinge







# Haier

This completes the

**Door Components**

training

for the

**ESD 300 and 400 Series**

**“Tall Tub”**

**UNDERCOUNTER  
DISHWASHER**

**Other sections include:**

**Diagnostics**

**Machine Compartment**

**and**

**Pump Module**

**Haier**



**Haier**

**ESD 300 and 400 Series**

**“Tall Tub”**

**UNDERCOUNTER  
DISHWASHER**

**Diagnostics**

Additional Service Programs include:

Door Components

Machine Compartment

Pump Module Components

**Haier**

# DIAGNOSTICS

## Control Panel

### ESD 310-311-312



# DIAGNOSTICS Control Panel ESD 310-311-312



# DIAGNOSTICS Control Panel ESD 310-311-312



# DIAGNOSTICS

## Indicator Lamps



**Water Heated** (ESD310-311-312) Indicator glows only when the cycle pauses to heat water to a set temperature. Washing or rinsing continues as the water is heated. Once water reaches the set temperature, the light goes off and the cycle resumes.

**Washing** (ESD310-311-312) Indicator glows during the pre-wash and main wash periods.

**Turbidity Sensor** (ESD310-311-312) Indicator glows during the sensing part of the cycle. Washing continues during the sensing.

**Rinsing** (ESD310-311-312) Indicator glows during the rise periods.

**Drying** (ESD310-311-312) Indicator glows during the drying cycle after the final rinse.

**Clean** Indicator glows when a wash cycle is complete and will remain ON until the door is opened.

**Sanitized** Indicator glows when the cycle has met sanitization conditions. The light will remain ON until the door is opened.

**Add Rinse Aid** (ESD310-311-312) Indicates the Rinse Aid Dispenser is empty. The indicator glows while a cycle is running.

# DIAGNOSTICS

## Control Panel

### Child Lock (various models)

To activate the Child Safety Lock, press and hold Heated Dry for 3 seconds. Repeat to deactivate.

\*The Child Lock indicator will glow when activated.

\*If Child Lock is already activated, the Child Lock indicator will flash 3 times.

\*The lock can be activate with the door open or closed.

\*No controls will function once activated.

\*The wash cycle can be started then activated to prevent tampering.



# DIAGNOSTICS

## Rapid Test Program

### ESD 310-311-312

Confirm all tests in Service Bulletins on the Haier parts and service web site. Additional models available

Dishwasher door closed -- rapid advance by selecting the next button in sequence

1 press High Temp Wash

2 press Heated Dry

3 press High Temp Wash

LED will display 88 then

4 press Pots and Pans – water inlet valve will run for 90 seconds

5 press Normal Wash – wash motor will run for 2 minutes and then stop for 1 minute then repeat.

6 press China Crystal – the detergent dispenser will work for 1 minute then stop for 1 minute then repeat.

7 press Light Wash - The heater and washing pump will run for 1 minute then stop then repeat.

8 press Rinse & Hold – the heater is on for 5 minutes then off for 5 minutes then repeats

9 press Sanitize Rinse – the dry vent and drain pump operates for 2 minutes then stops for 9 seconds then repeats

10 press High Temp Wash – the vent door wax motor operates for 1 minute and stops for 1 minute then repeats

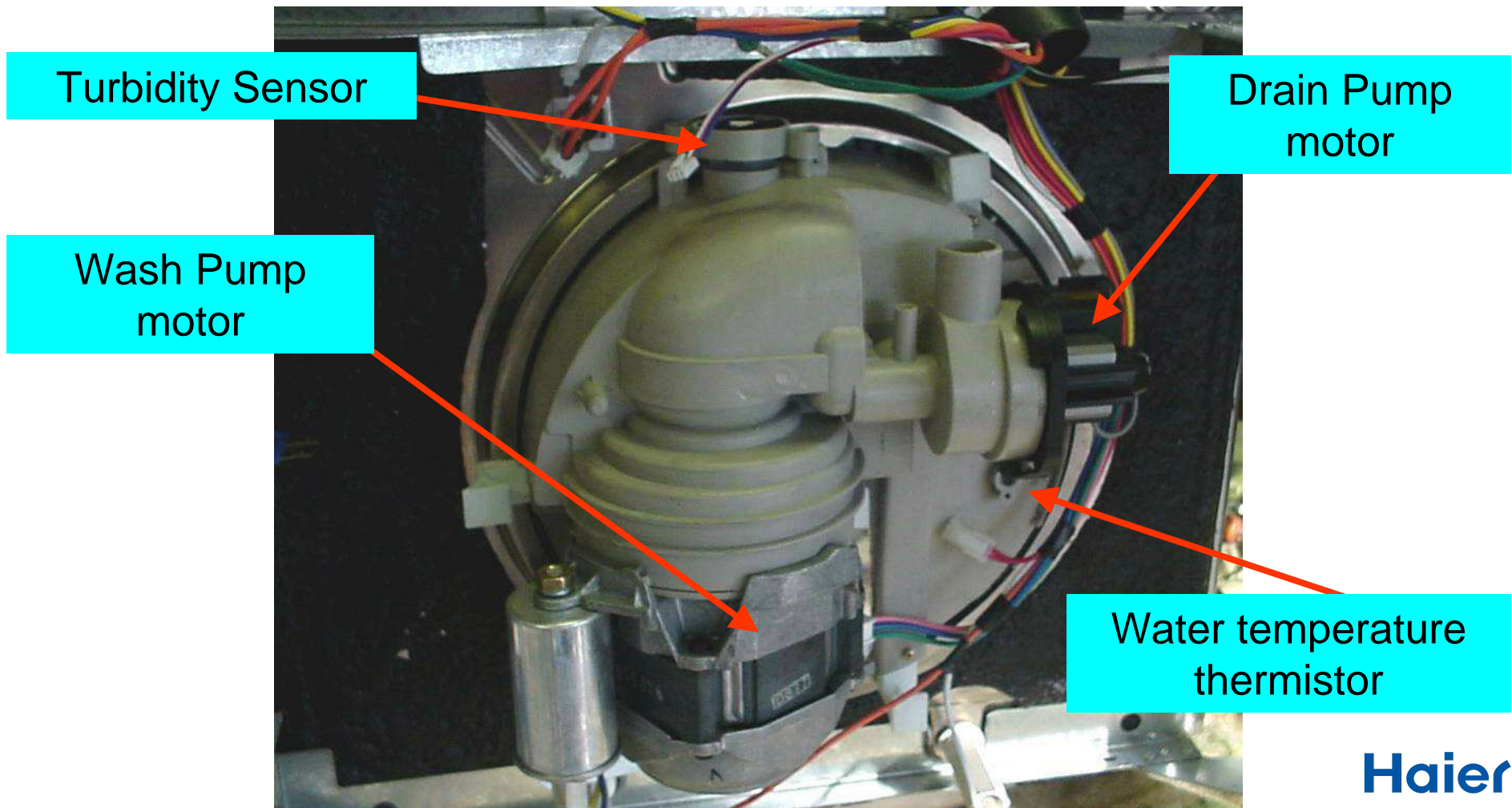
11 press Cancel / Drain – will end the test program and start a 2 minute pump-out. Remaining time will be displayed on the LED display



# DIAGNOSTICS

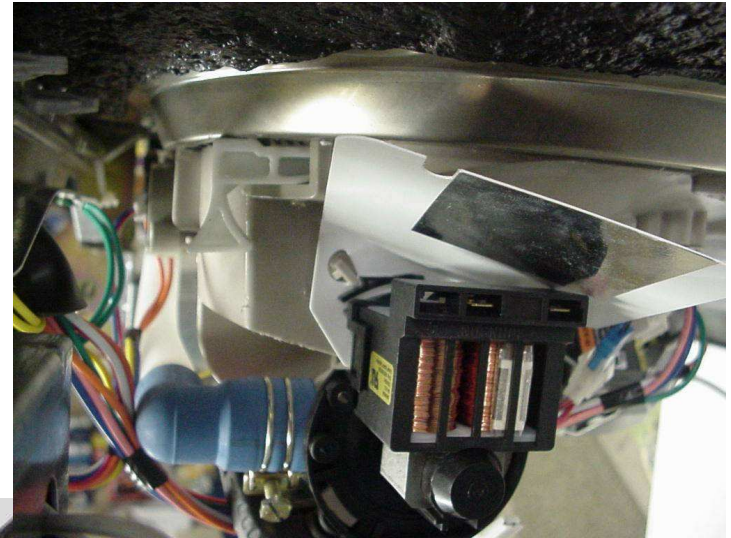
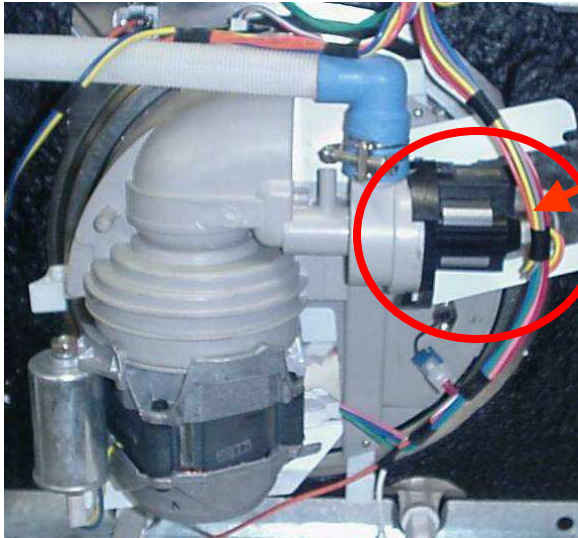
## Pump Module Components

All components can be tested in place by removing the toe panel and without removing the pump module



# DIAGNOSTICS

## Drain Pump Motor

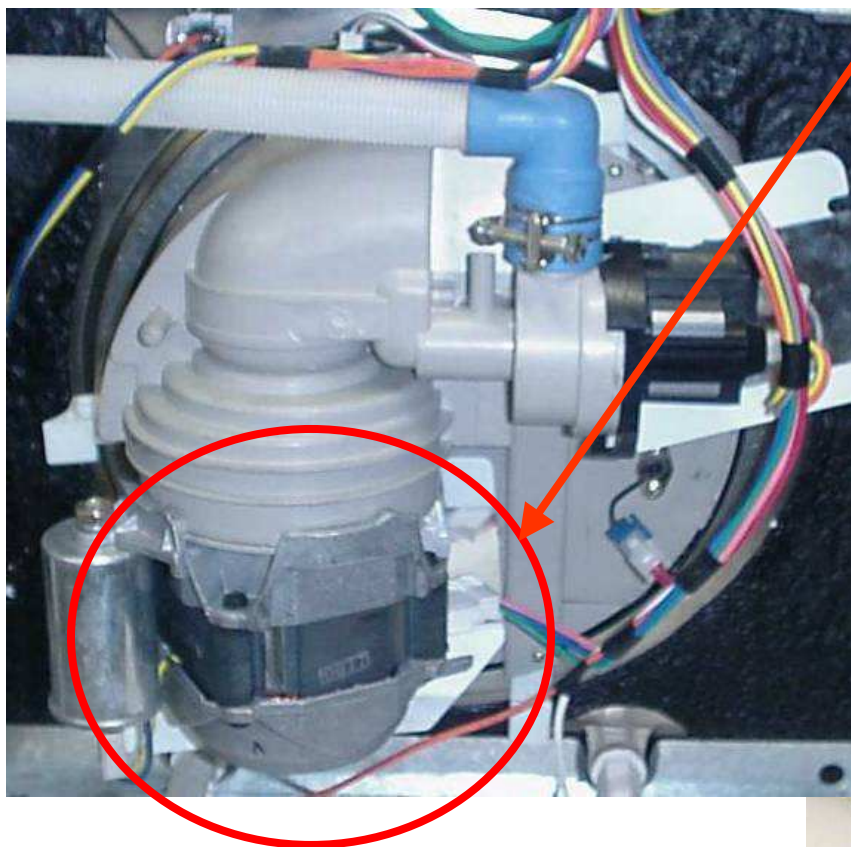


Drain pump  
motor  
Approx 26 ohms

# DIAGNOSTICS

## Wash Pump Motor

### Internal motor wiring



Dual winding  
capacitor start motor



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# DIAGNOSTICS

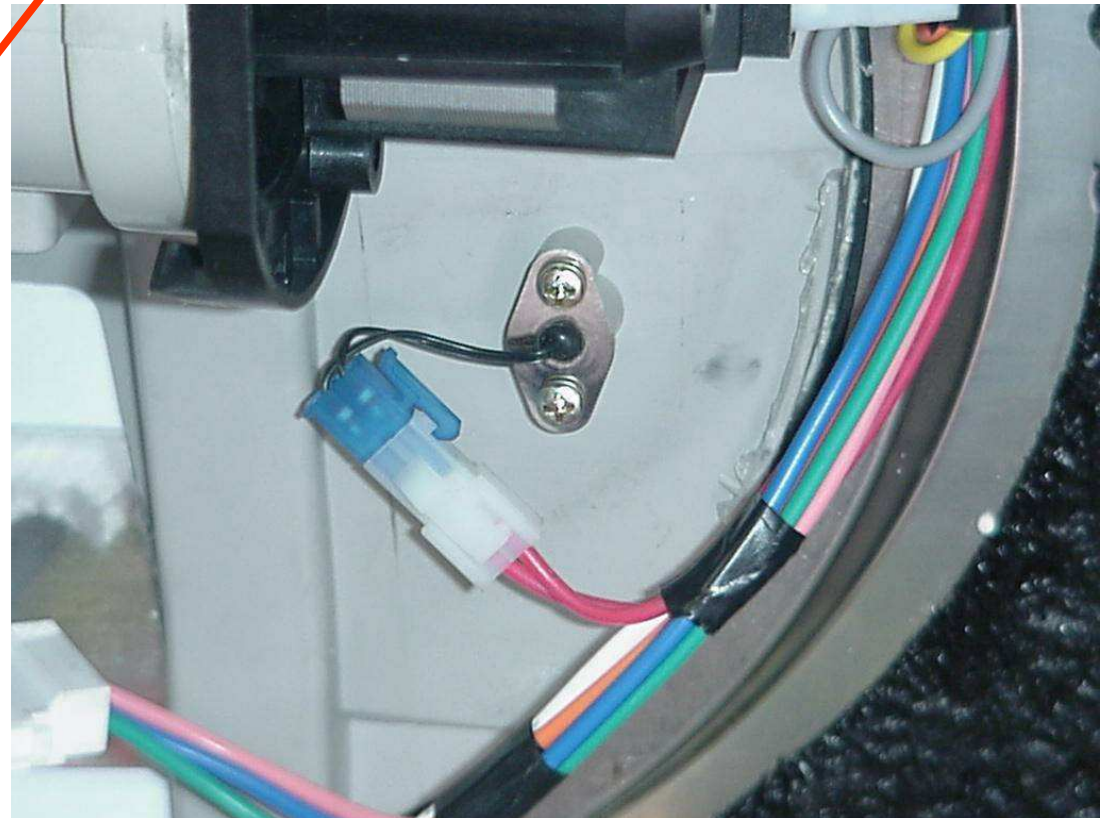
## Wash Pump Motor

### Internal motor wiring

Blue Purple Yellow

Blue – Purple 8.8 ohms  
Purple – Yellow 6.4 ohms  
Blue – Yellow 14.8 ohms  
approximate +/- 10%

**DIAGNOSTICS**  
**Thermistor**  
**water temperature sensor**



Dual winding  
capacitor start motor

# DIAGNOSTICS

## Thermistor

### water temperature sensor

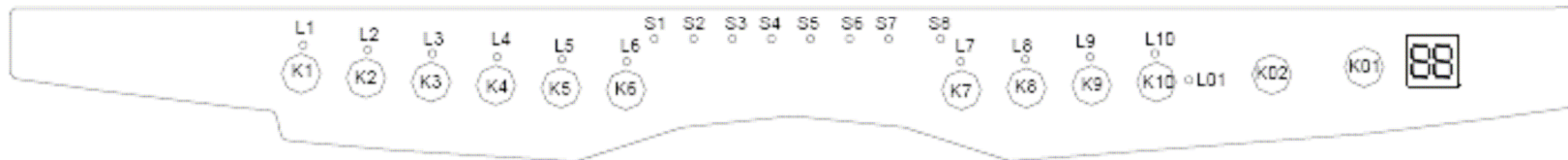
Onboard diagnostics for the thermistor

**ESD300/301/302**



If the s7(Clean) and s8(Ssanitized) indicator flash at same time,the temperature sensor is fault.

**ESD310/311/312**



If the 2-digit 7-segment displayer display **Er**, it shown that the temperature sensor is fault.

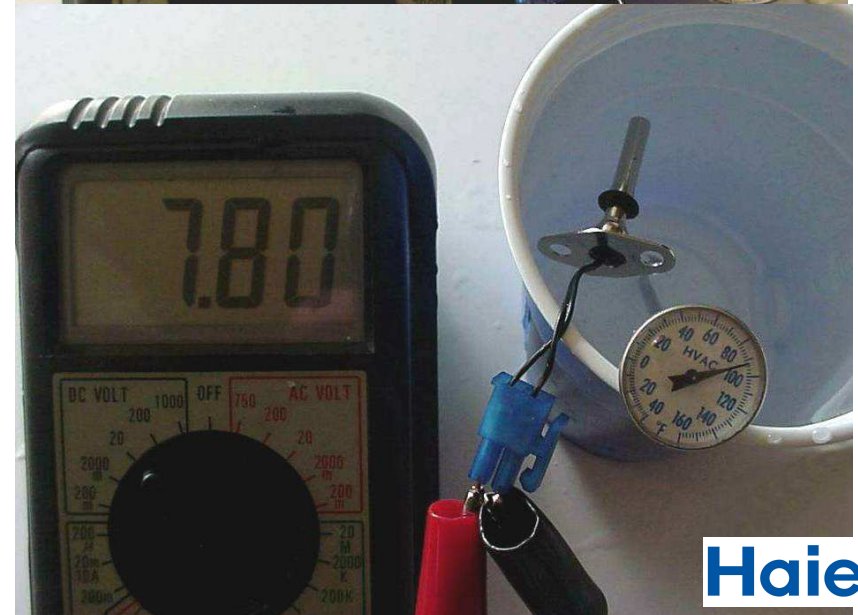
# DIAGNOSTICS

## Thermistor

### water temperature sensor

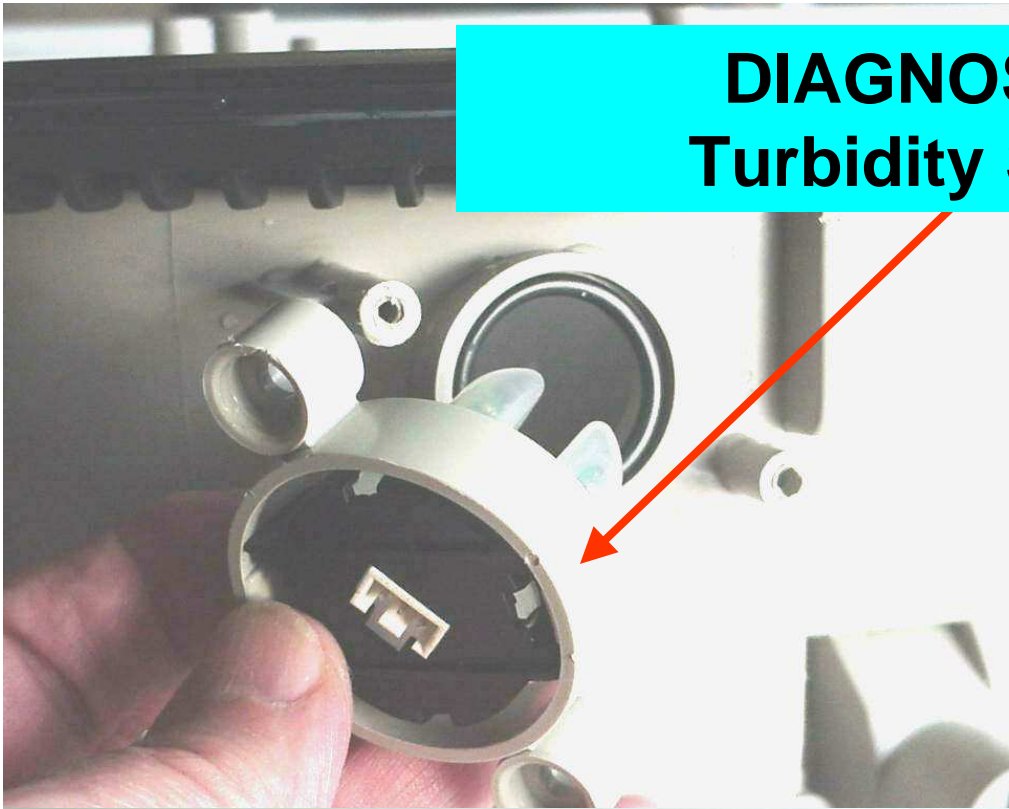


NTC Thermistor  
(negative temperature coefficient)  
1380 ohms @ 70°F  
780 ohms @ 90°F  
approximate



## DIAGNOSTICS

### Turbidity Sensor



The Turbidity Sensor senses the amount of soil in the water. The sensor indicator on the control panel glows during end of the Pre Wash Cycle. If soil is identified by the sensor, the cycle will be extended by a varied amount of time as the sensing continues.



No physical tests can be performed on the turbidity sensor. The indicator light ON during the final stages of the pre-wash cycle indicates the sensor is functioning.



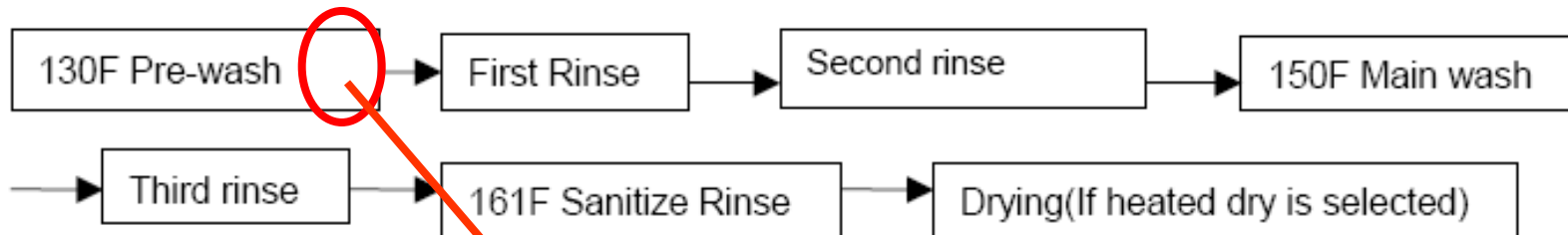
# DIAGNOSTICS

## Turbidity Sensor (all pre-wash cycles)

The turbidity sensor is active toward the end of the PRE-WASH cycle and the cycle will be extended if excessive turbidity is present.

The Turbidity Sensor light will be ON during this time.

1、Anti-Bacterial wash(Heavy soil, On ESD310/311/312 models)



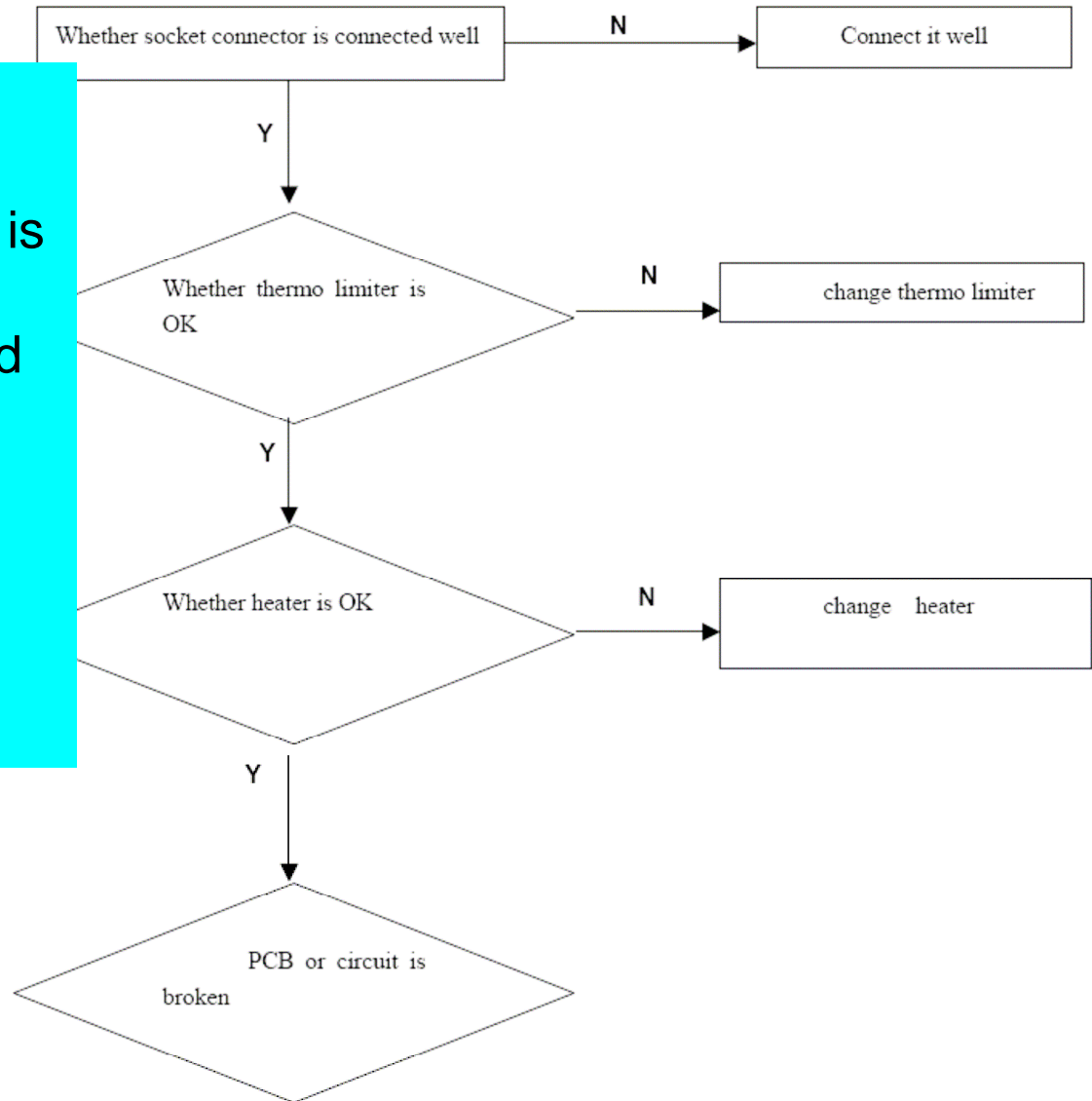
# DIAGNOSTICS

## Dishwasher running – program does not advance

If the timer stalls in a cycle, check water temperature. If the inlet water temperature is below 130°F in the normal cycle, the timer will 'stall' and heat the water until the minimum temperature is achieved.

Temperature rise is about 1.5°F per minute

Test for 120v at the heater



# DIAGNOSTICS

## dry cycle heater and high limit switch



Heater = 13 ohms  
approximate

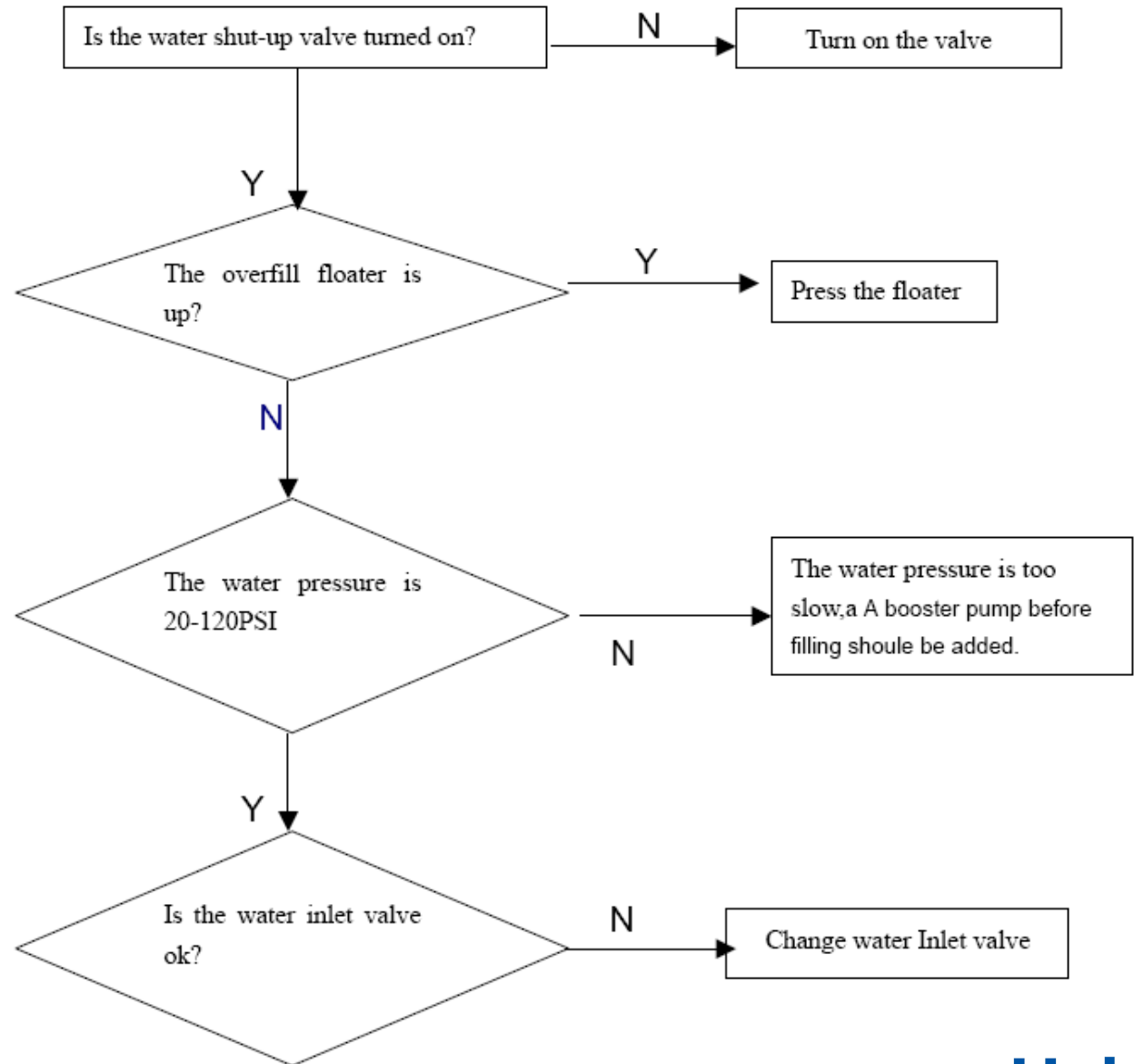
Dry cycle heater  
High Limit Switch  
normally closed  
Opens at 172F  
(78C)



# DIAGNOSTICS

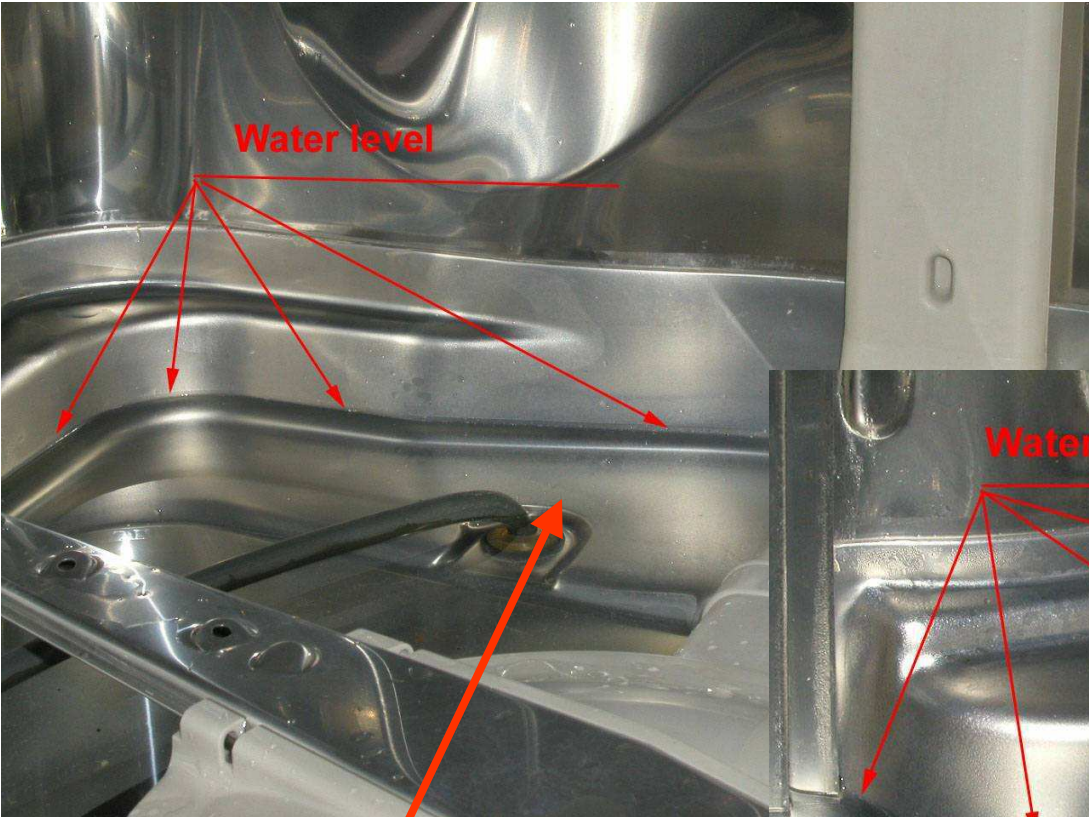
## Dishwasher running – no water in tub

From this flow chart, you can see that the dishwasher has a time fill with a safety float. Water fill cycle is 90 seconds.

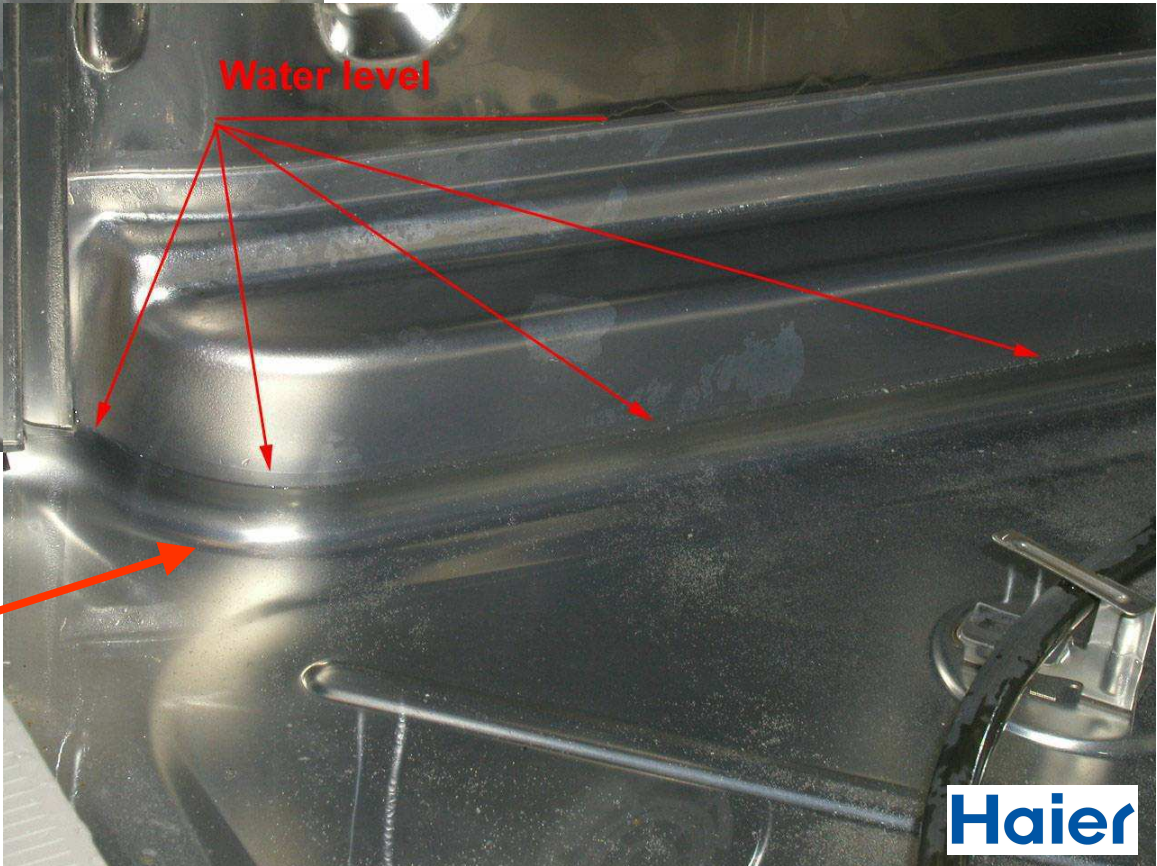


# DIAGNOSTICS

## Water Fill Level



Water fill level in all cycles is indicated by the ridge around the tank.



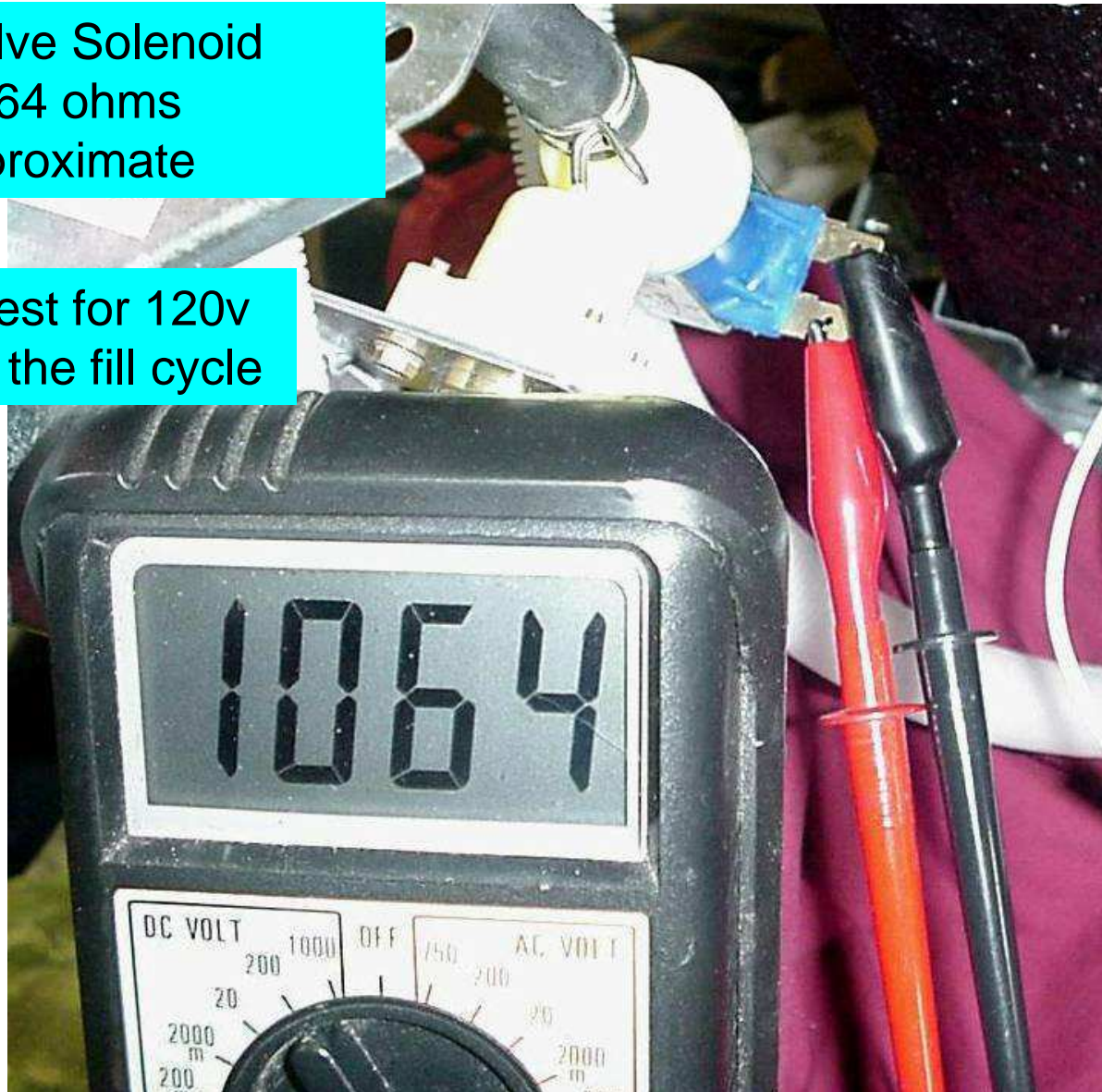
Rear of tank  
Front left corner

# DIAGNOSTICS

## Fill Valve Solenoid

Fill Valve Solenoid  
1064 ohms  
approximate

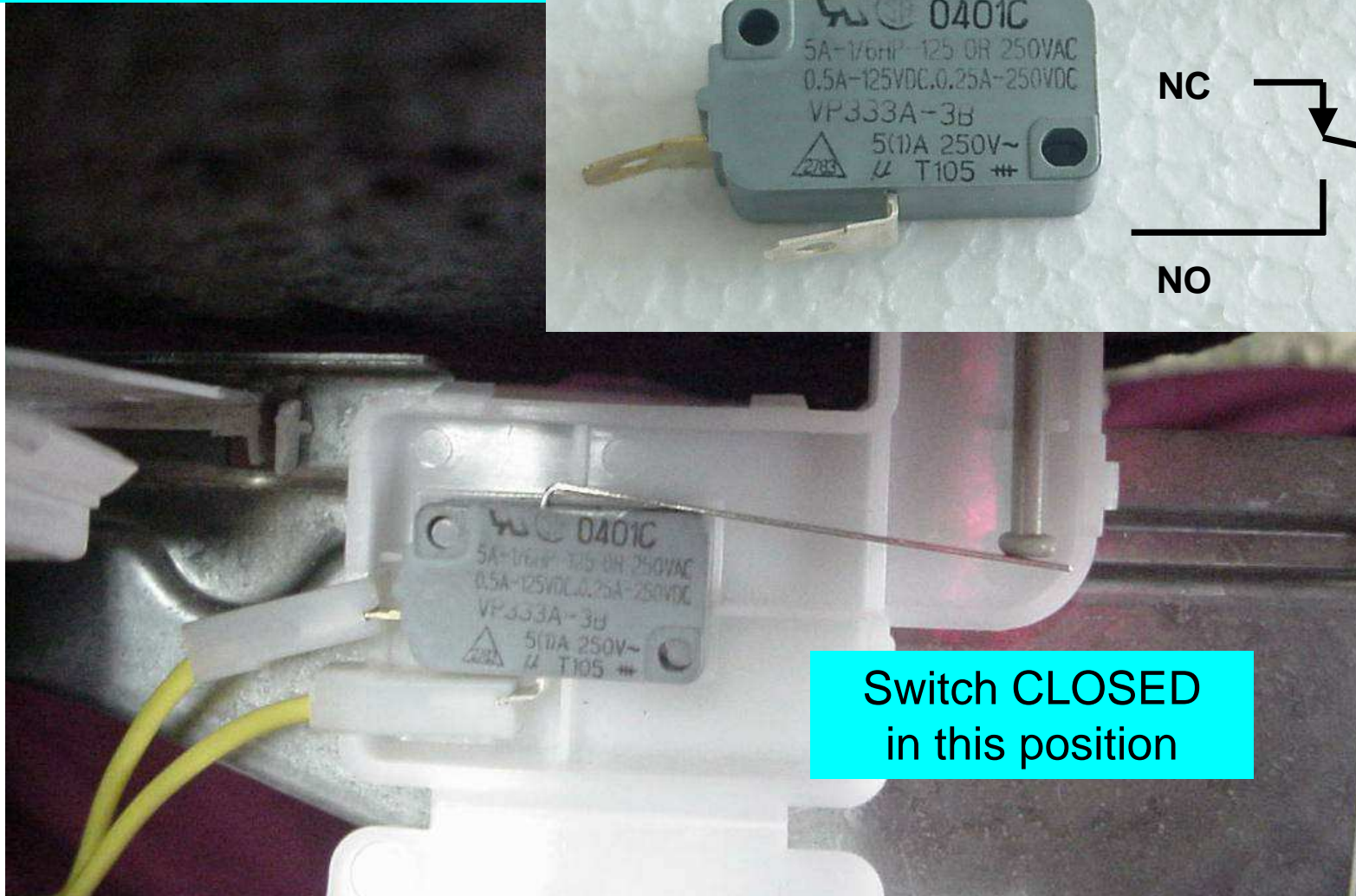
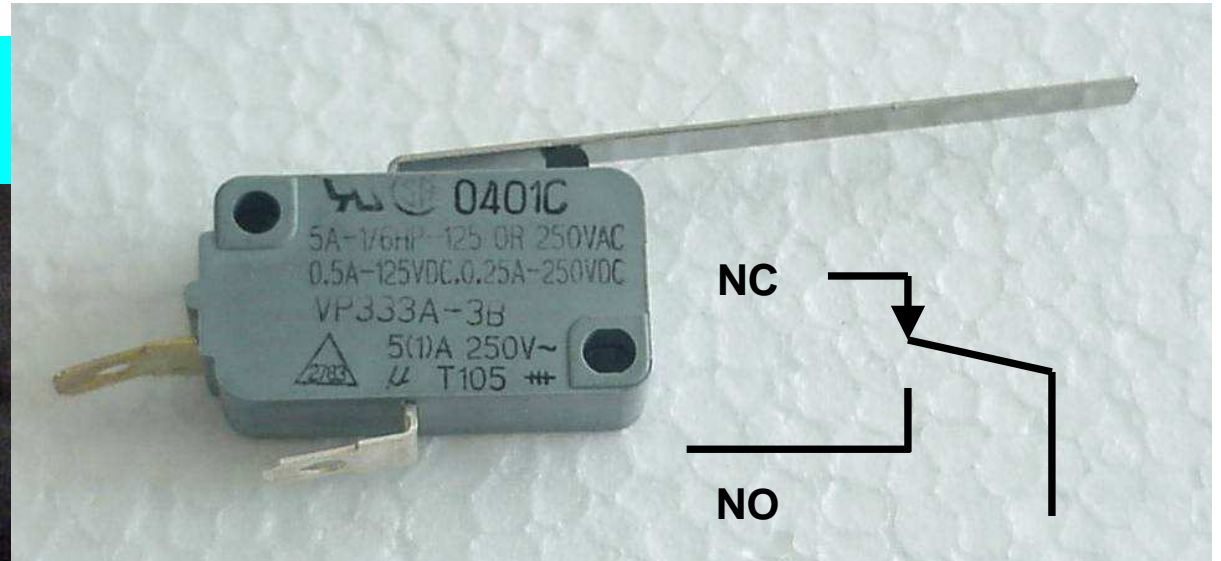
Also test for 120v  
during the fill cycle



# DIAGNOSTICS

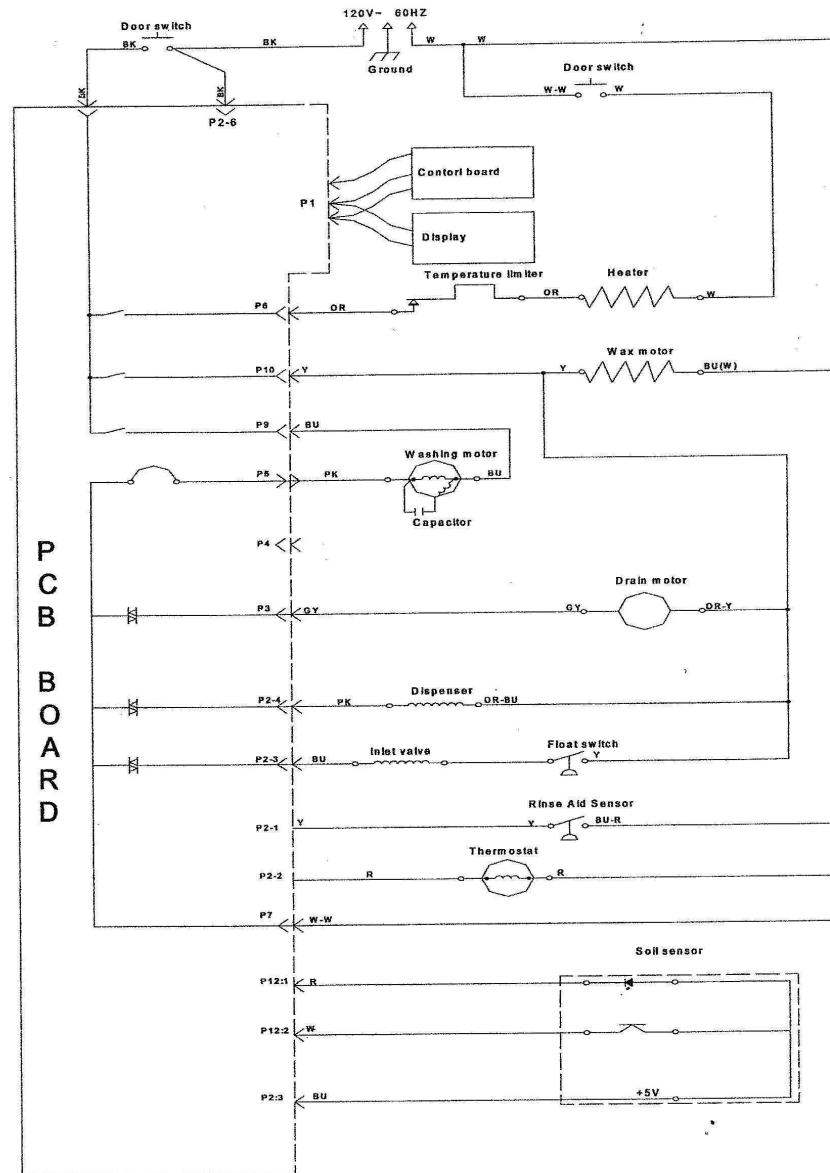
## Float Safety Switch

Float Safety Switch is Normally Open



# DIAGNOSTICS

## Schematic 310-311-312

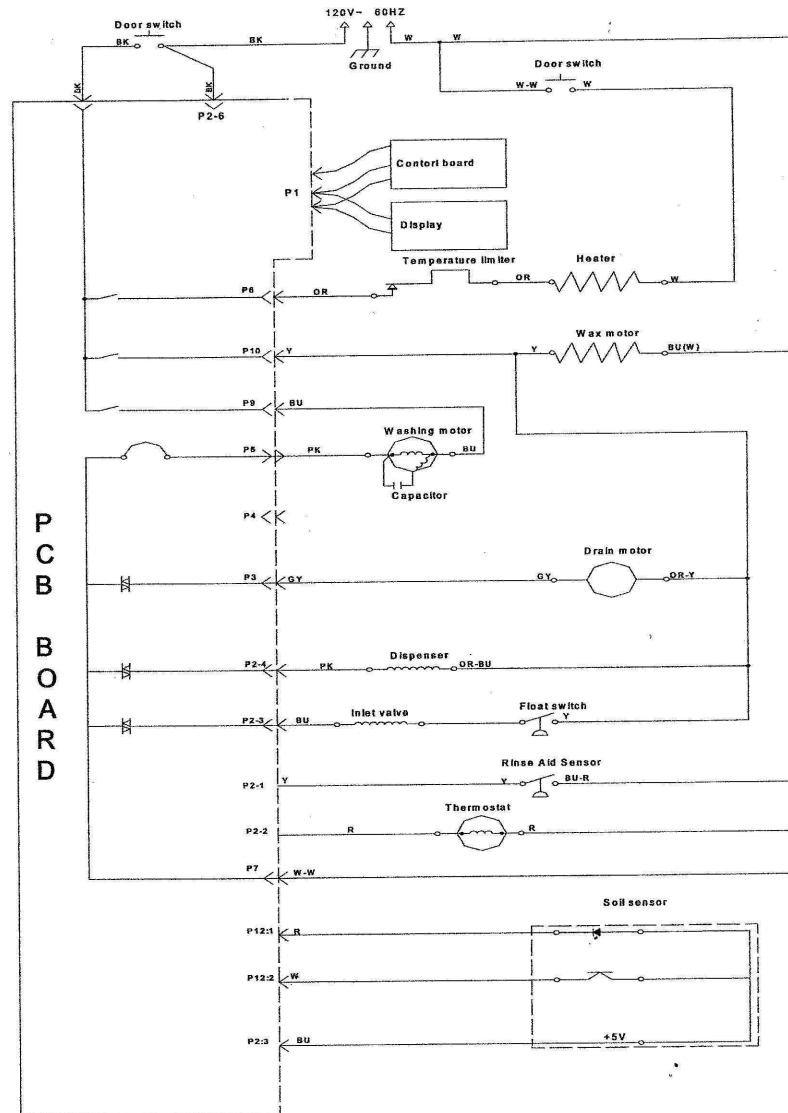




# DIAGNOSTICS

## Rapid Advance Test Procedure

ESD310/ESD311/ESD312 MODELS



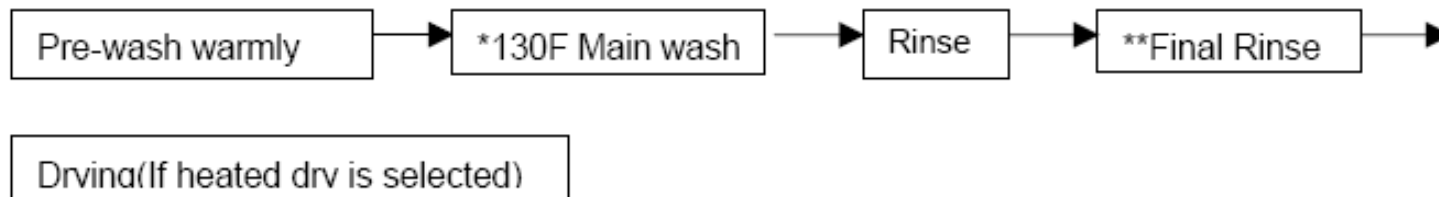
# DIAGNOSTICS

## Typical cycles and temperatures

Cycle time will vary due to inlet water temperature and heating time required.

### Normal Wash – Medium Soil Level

7.Normal Wash (On ESD310/311/312 models, Middle soil level)



**Notice:**

\*:The temp. Should 140 F when selecting Hi-Temp Wash.

\*\*:.If user select Sanitize Rinse option, the dishwasher would heat water to 161F in this step.

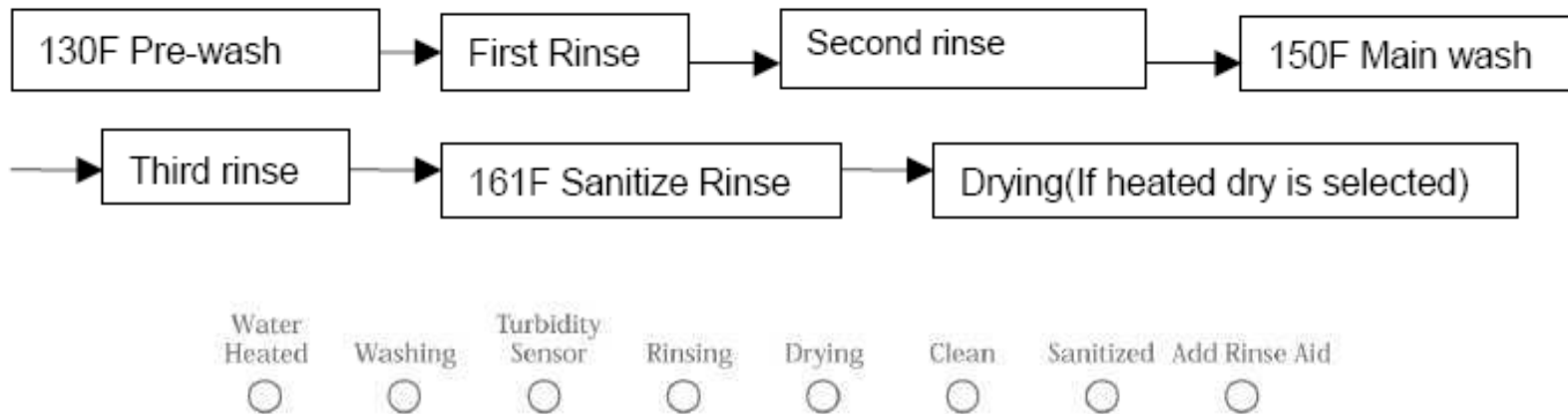
# DIAGNOSTICS

## Typical cycles and temperatures

Cycle time will vary due to inlet water temperature and heating time required.

### Anti-Bacterial Mode

1、 Anti-Bacterial wash(Heavy soil, On ESD310/311/312 models)





# Haier

This completes the

**Diagnostics**

training

for the

**ESD 300 and 400 Series**

**“Tall Tub”**

**UNDERCOUNTER  
DISHWASHER**

**Other sections include:**

**Door – Machine Compartment**

**and**

**Pump Module**

# Haier

**THANK YOU**



<http://service.haieramerica.com>

