Installing and servicing MRS600-HE system

NOTICE: this document is a work in progress
NO official Pentair work document.

It does not replace the service manual !

This document is meant to support the installation and service manual & program with some visual references & explanations .

Should you notice an error or issue, missing item,… please let me know so I can update

Thx,

Billemon Ronny (07/11/2016)

Overview document

Multiple equipment support, one single system

UP TO 80% effective Recovery – IN SERVICE

Espresso Equipment
- Protection against scaling
- Optimal water for Coffee brewing
- Optimal water for tea brewing

Hot water boiler (slow coffee / tea)
- Protection against scaling
- Optimal water Coffee & tea

Dish washer – Glass & Cutlery washing
- Protection against scaling
- Water "without minerals" = a lot less chemical soap/ rinsing agent.
- Dishes (glassware) can evaporate without a trace = no polishing required

Baking oven
- Protection against scaling
- Optimal water for steam production

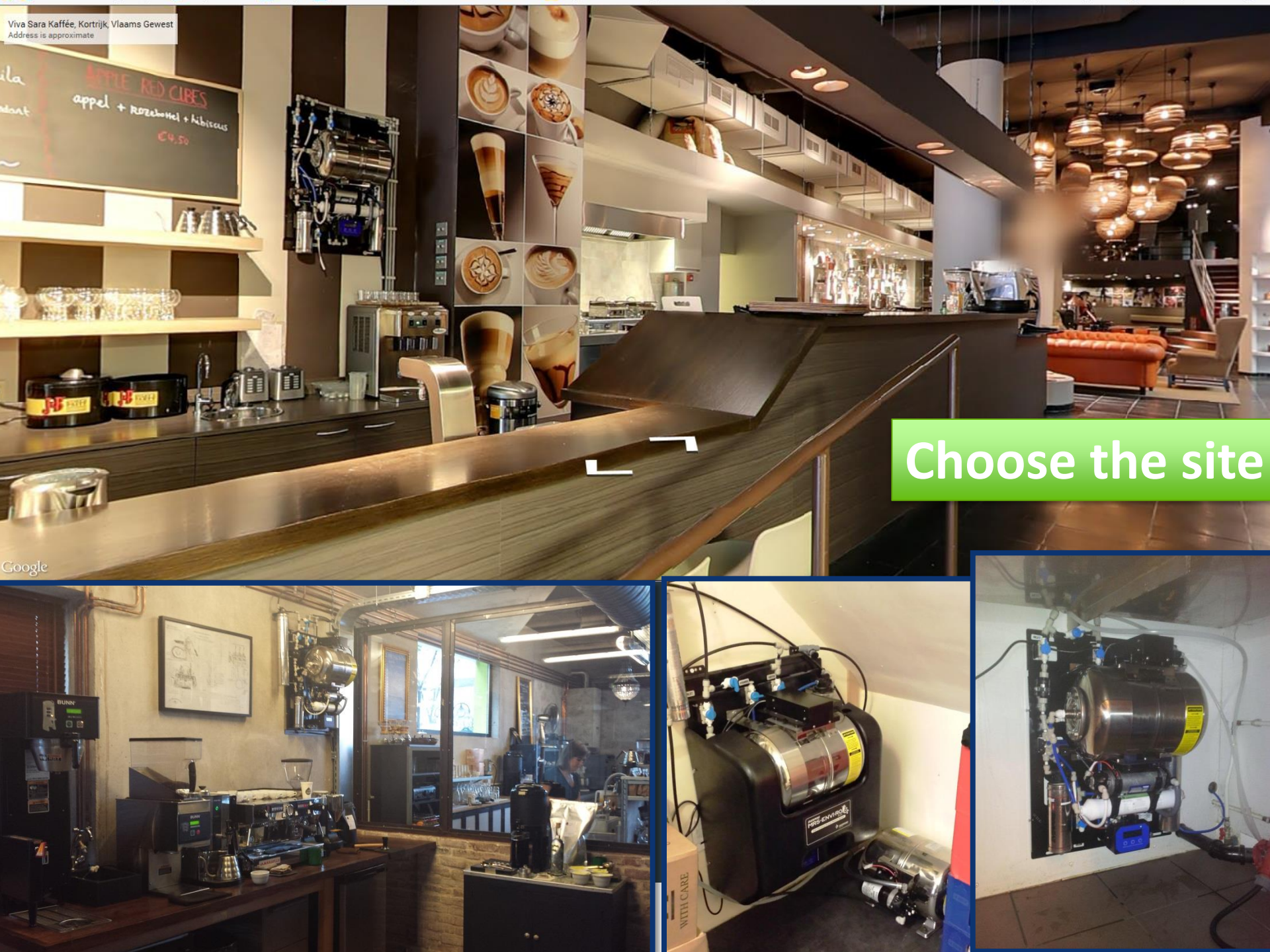
Combi Steamer (?)
- Protection against scaling
- Optimal water for steam production

Ice machine
- Clean equipment – optimal clear Ice production
- Minimum water waste – no scaling issues

(?) - Cooking

Nominal production capacity :
2.400 Liter / day
+/- 90 liter / hour
+/- 1,5 liter / minute

Basic setup for a coffee shop


Viva Sara Kaffée, Kortrijk, Vlaams Gewest
Address is approximate
APPLE RED CUBES
appel + rozebottel + hibiscus
€4.50
Google
Choose the site

Performances of the concept

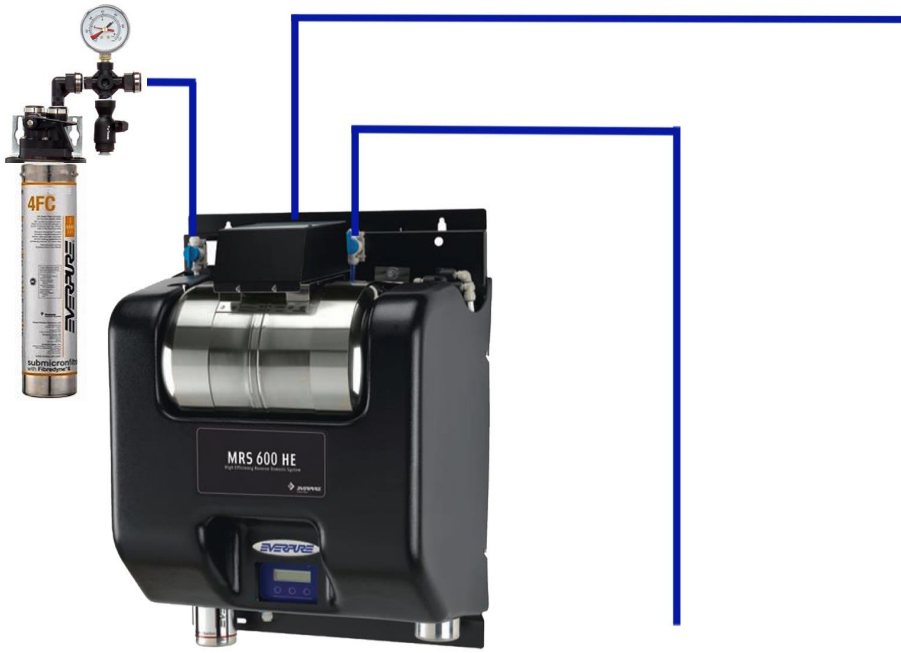
Pre filtration: MRS600-HE has no prefiltration on board.
Therefore always requires active carbon and sediment filtration ahead !

Average coffee shop might use: *(Super high volume shops / bad quality water / … might require alternative filtration systems)*

QL3BI filter head with pressure gauge (allows to evaluate incoming water pressure)

Everpure 4FC *(or alternative)* filter cartridge
- "Fiberdyne modified Carbon Block"
  - Filtration Chlorine / chloramine
  - Filtration T&O
  - High performance sediment filter and carbon Block in a single system
  - Minimal pressure loss

4FC: 56.781 L @ 9,5 L/min
7FC: 94.635 L @ 9,5 L/min



Nominal production capacity RO water: > 2.000 Liter / day + blend
+/- 90 liter / hour
+/- 1,5 liter / minute (buffer storage 24L with +/- 10 liter RO water on the system)

References:

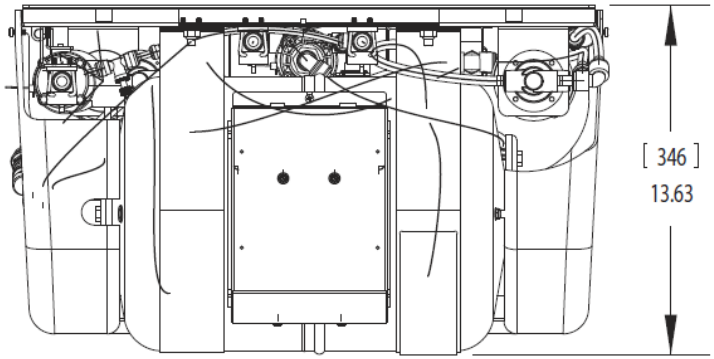
Part n°	Description
4313-14	QL3Bi Filter Head 3/8 NPT
EV961255	MC² Replacement Cartridge
EV969221	4FC Fibredyne II Cartridge
EV969261	7FC Fibredyne II Cartridge

EV997047	MRS-600 HE R.O. System 230VAC CE

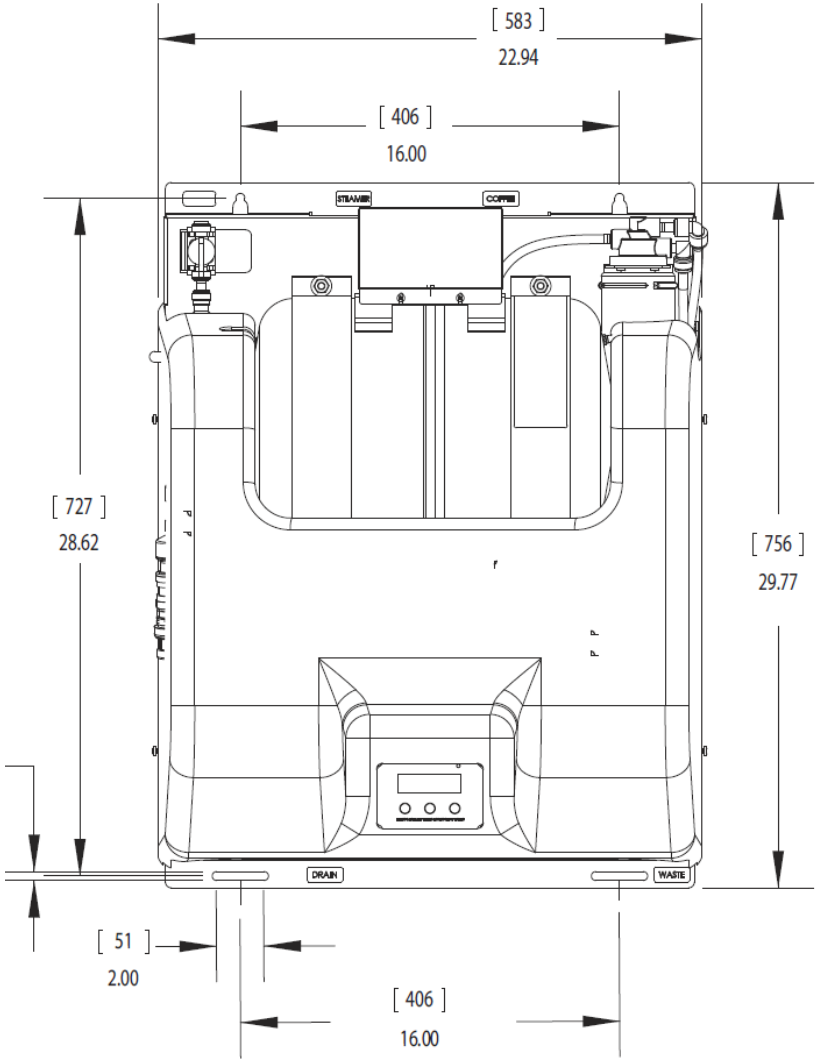
Part n°	Description
EV313537	RO Storage Tank SS - 22 liter
9971-10C	RO Storage Tank Classic with pressure relief valve kit - 55L
9971-11C	RO Storage Tank Classic with pressure relief valve kit - 75L
9971-12C	RO Storage Tank Classic with pressure relief valve kit - 112L
9971-13C	RO Storage Tank Classic with pressure relief valve kit - 153L
9971-14C	RO Storage Tank Classic with pressure relief valve kit - 235 L

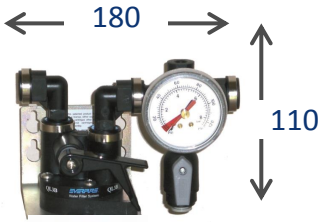
Measurements

Top View

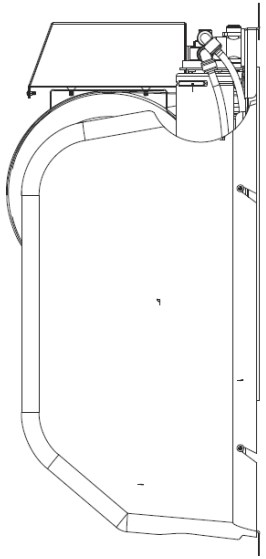


Front View





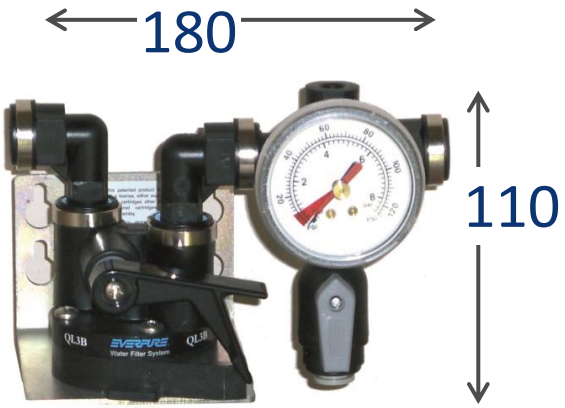
Side View

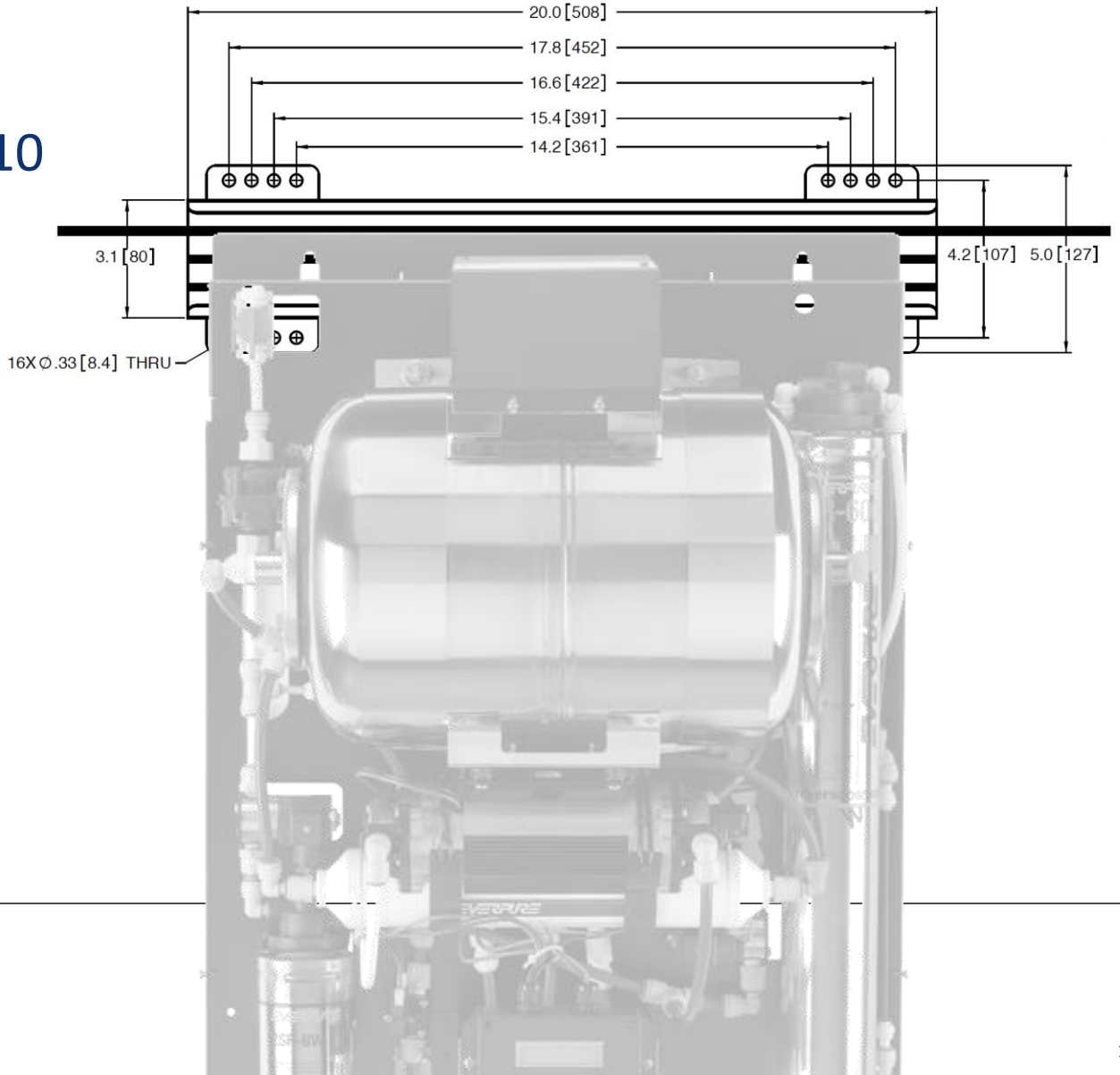


Basic requirements

- **- 220V Electricity < 1m**
- **Water supply > 3 liter/min. capacity , ½" tubing**
- **Water pressure > 2,5 bar continue**
  preferential > 3.5 bar
- **Water waste line**
- **Connections to the equipment**
- **"some space"**

Positioning of the pre filter and MRS rail





Some examples

A flow meter allows easy follow-up on real water volumes going trough the system and supports maintenance planning.

Positioning, attachment, securing MRS

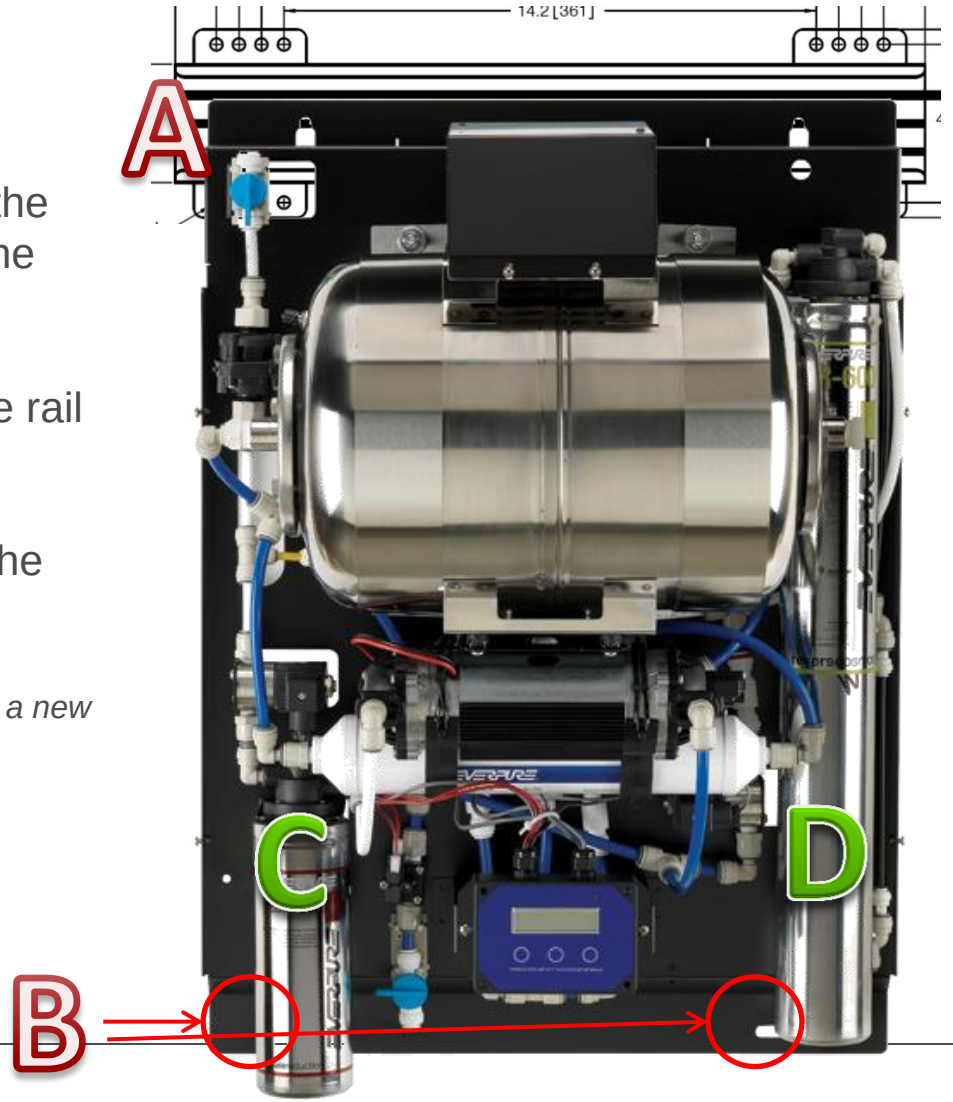
Attachment:

The system can be installed without the rail by fixing the platform straight to the wall.

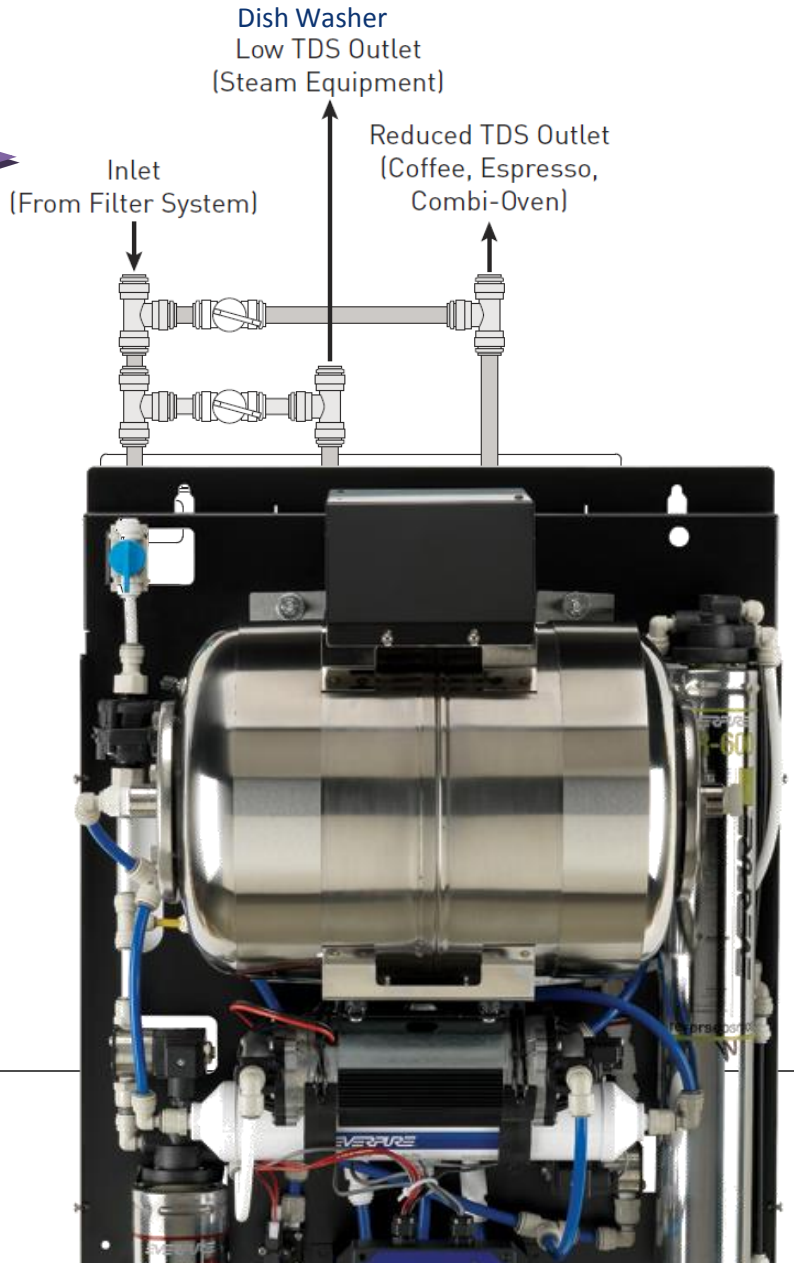
The entire RO platform hooks into the rail (A).

Fixing screws should be installed at the bottom to secure the installation (B)

Notice: cartridges (C) and (D) are not installed on a new platform, they are in the package.



Connecting pre filtration & bypass

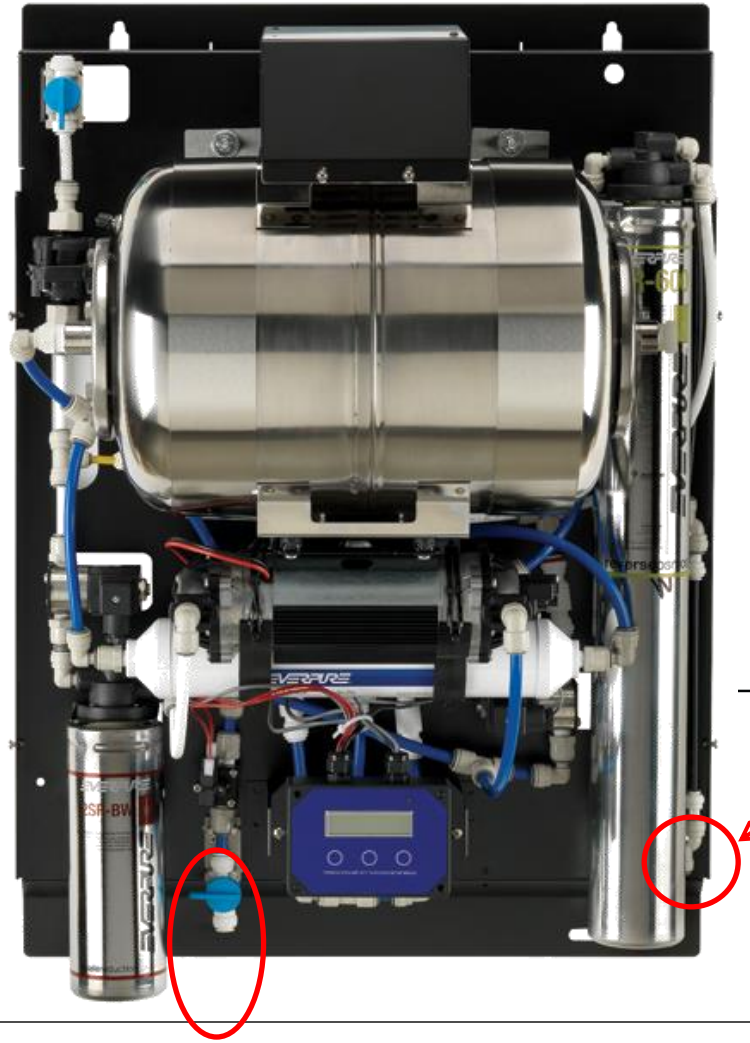


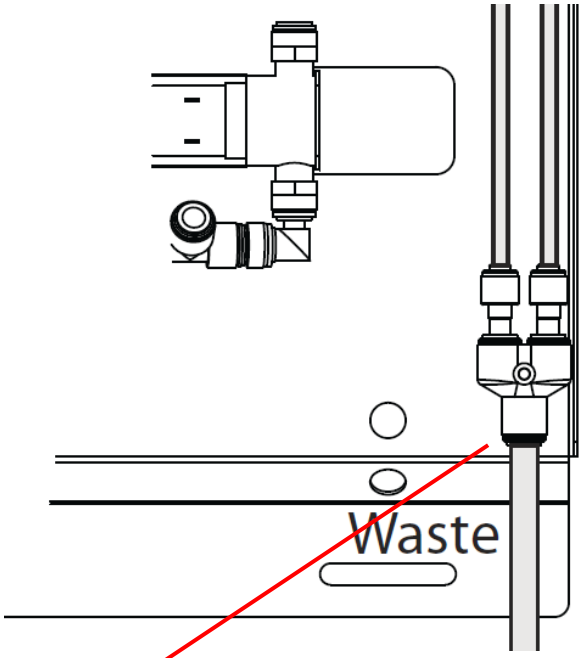
Bypass kit

A bypass kit is part of the supplied equipment – inside the plastic bag with spares and service manual

.

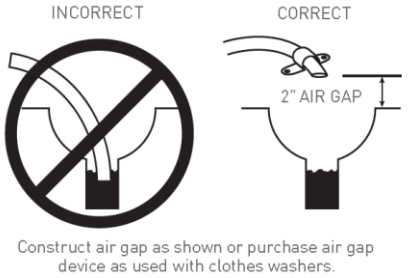
Connecting to “concentrate” the water waste





Respect the local installation regulations !

Do NOT connect the drain valve together with the waste line towards the waste!



Construct air gap as shown or purchase air gap device as used with clothes washers.

Connection

Valve open!

Valve closed !

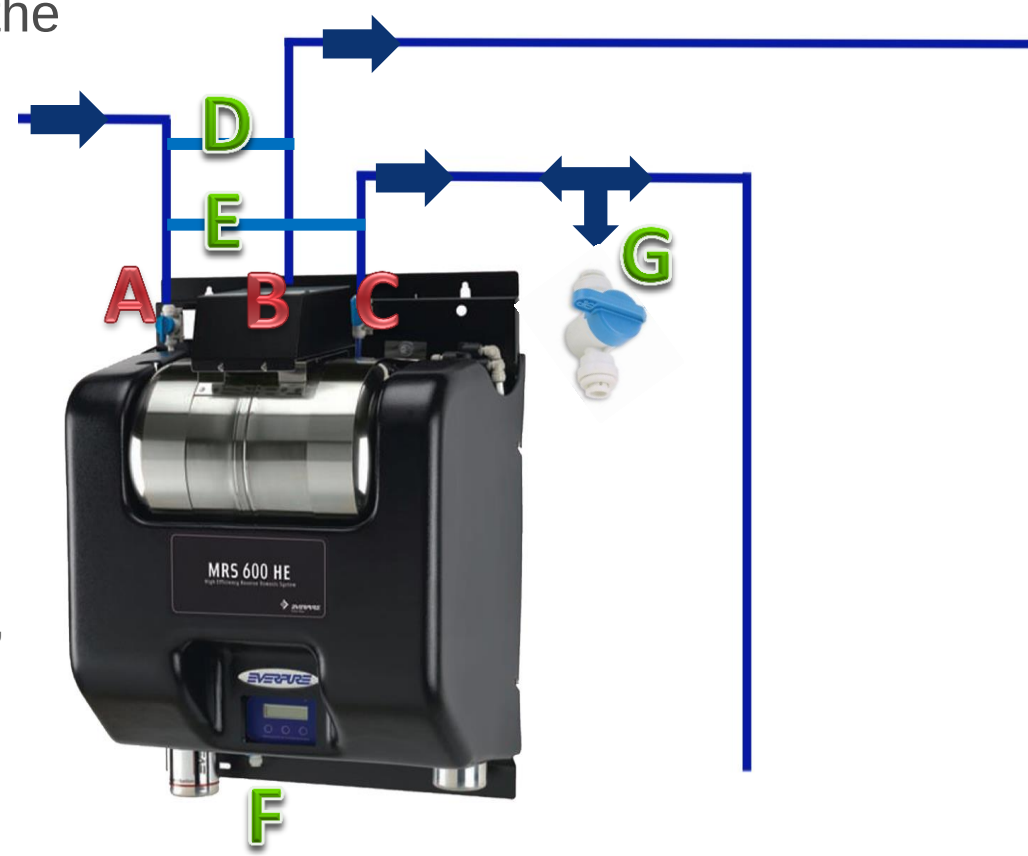
Plan the water line connections to the equipment.

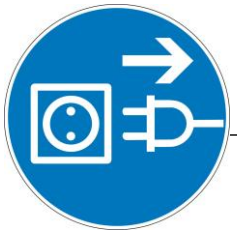
All JG valves on the MRS system should be closed (A) (B) (C)

Bypass valves closed (D) (E)

Flush valve closed (F)

Plan Sample valve ! (G) on the “coffee” water line to ease blend adjustments





Power connection OUT !

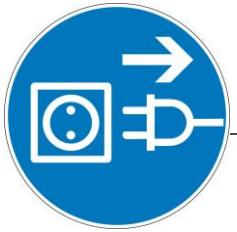
Activation of the pre filtration

Install the 4FC Cartr.:

New filter : remove the protective plastic.
Position in the filter head, push upwards while ¼ turning to the right. (A)

Open water supply
= handle (B) down

Flush the filter through the flushing valve (C)



Power connection OUT !

Storage tank

Valve open!

Storage tank:

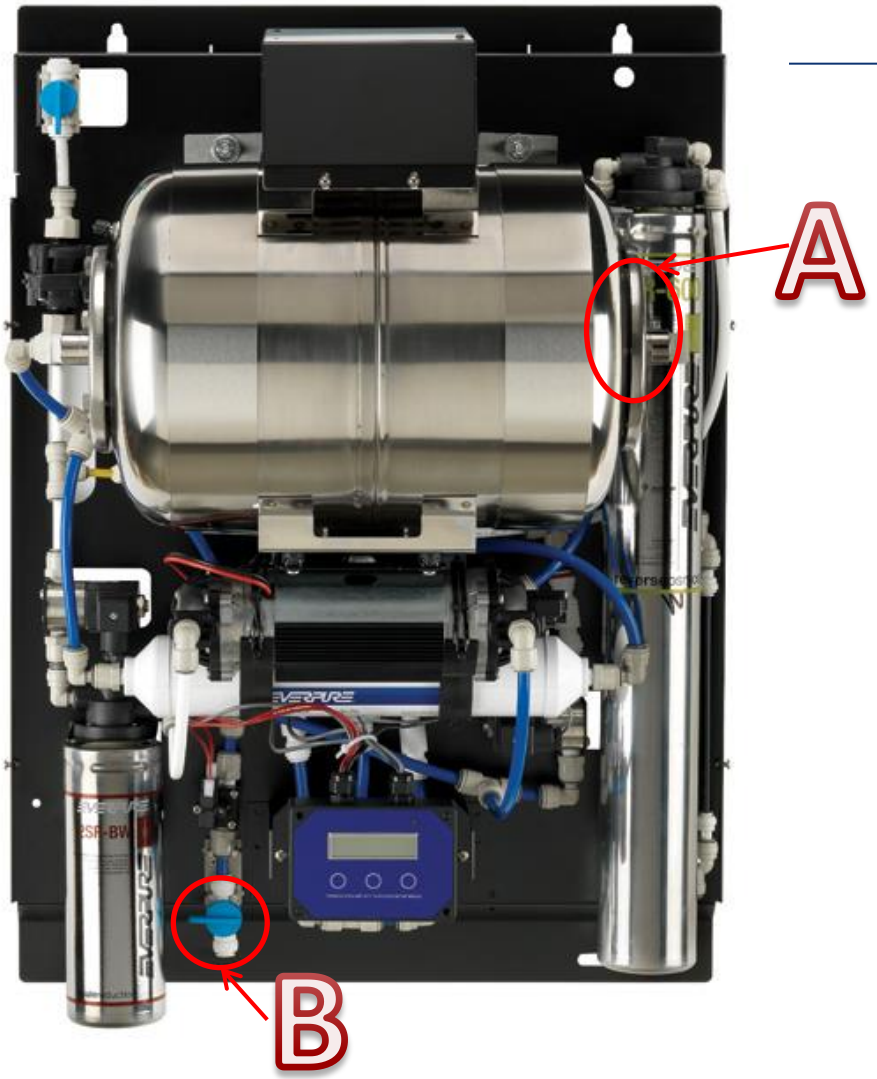
Remove (unscrew) the air membrane protective cover. (A)

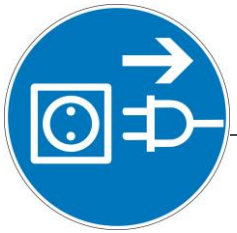
Check the pressure (A) on an empty tank with the flush valve (B) open.

The air pressure should be set at
55 psi / 3,3 bar.

Put back the air membrane cover (A) and close the flushing valve. (B)

NOTE: this should be checked with every maintenance service , at least once a year.





Power connection OUT !

Valve open!

Installing 2SR-BW filter (A) :

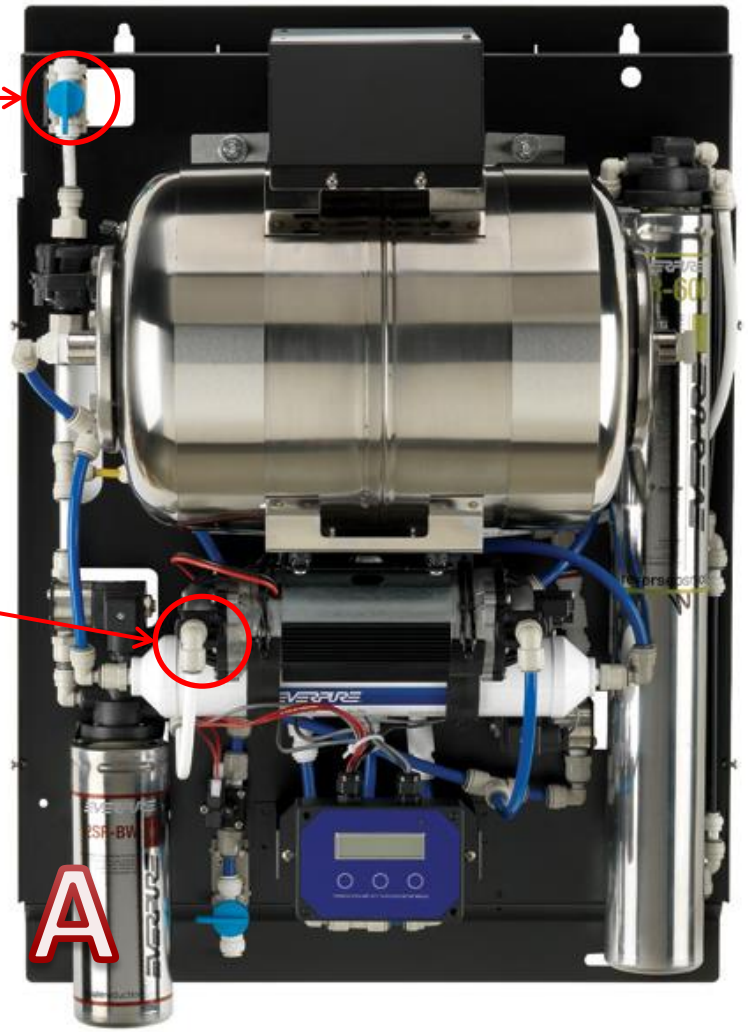
Remove plastic protection of the 2SR-BW Filter cartridge. Position in the filter head, push upwards while ¼ turning to the right. (A)

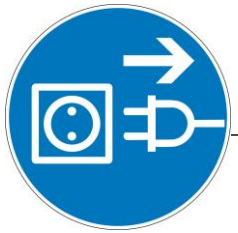
Remove quick connect (B) on the motor

Open the water supply on the MRS (C)

Activate the system by plugging the power line. The electronic inlet valve will open, wait till water is coming out the tube / quick connect

Unplug the system and put the quick connect back in place on the motor (B)





Power connection IN to activate during test

OUT when test competed !

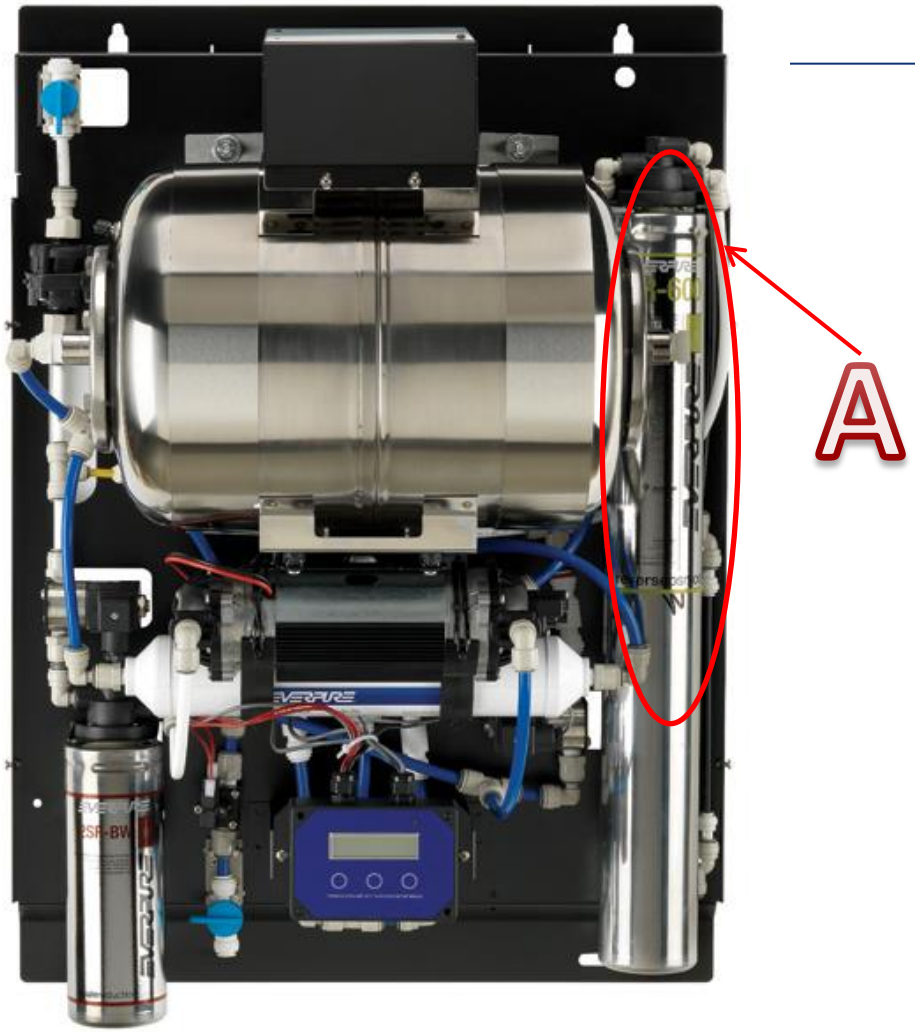
Osmosis membrane

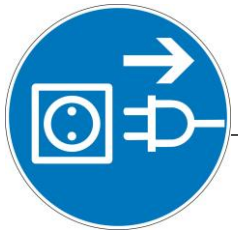
Installing the Osmosis membrane

New filter : remove the protective plastic.

Position the Osmoses membrane (A) in the filter head, push upwards while ¼ turning to the right

ATTENTION : do not damage the head of the filter cartridge or the entire membrane cartridge will be lost !





Power connection OUT !

Start-up the system

Double check all connections.

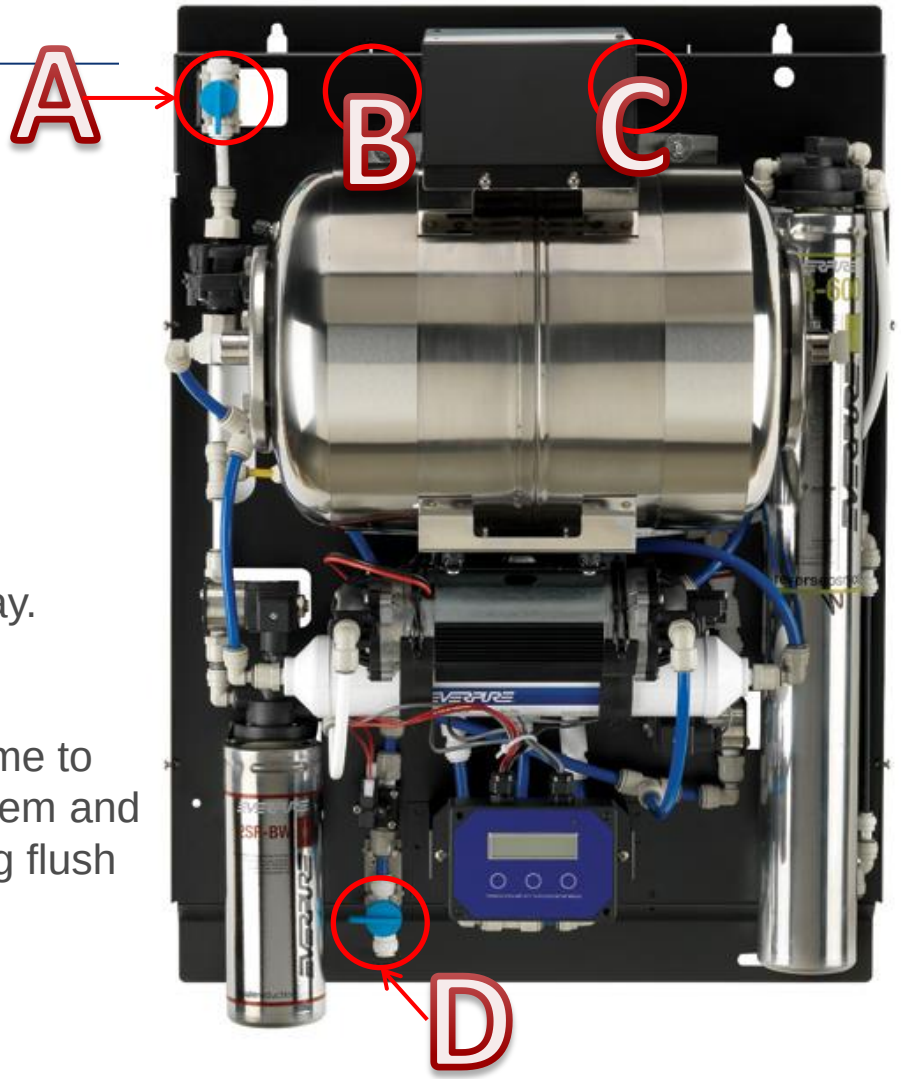
Valves OPEN: (A)

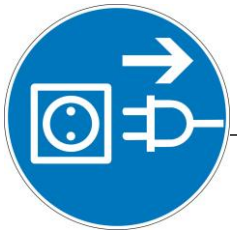
Valves CLOSED (B) (C) (D)

System Bypass Valves : CLOSED

Activate :plug the power line.
- Check pressure build-up on display.
- Check water waste (intense)

Have the system running for some time to flush the membrane. Unplug the system and let the storage tank empty by opening flush valve (D)





Power connection IN to activate during test

OUT when test competed !

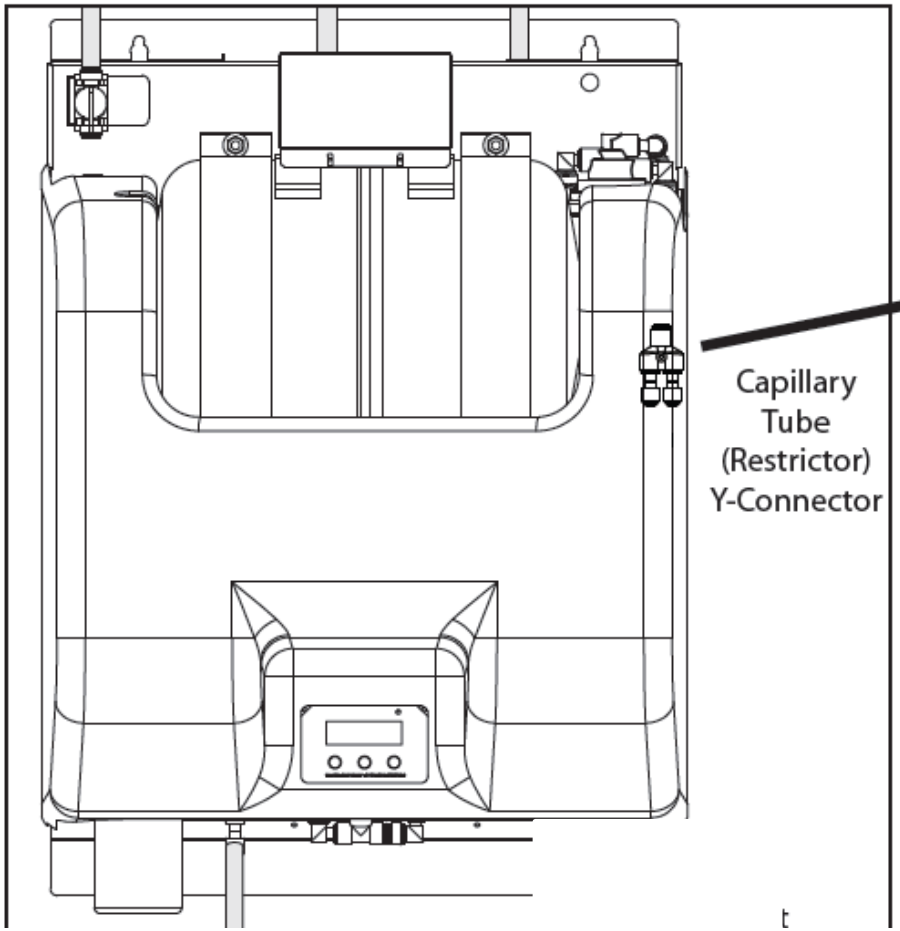
Evaluating the restrains on waste water

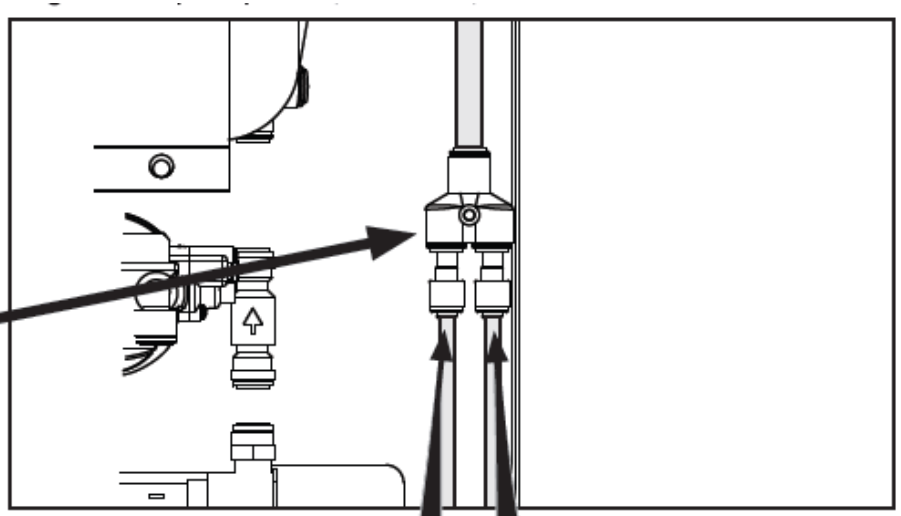
Raw (Feed) Water TDS		Maximum Recovery	Ratio			Permeate & Reject Volumes at Specified Recovery*			
						Permeate (Blue Line)		Reject (Black Line)	
Soft Water (less than 1 gpg/17.1 ppm)	Hard Water (1 gpg/17.1 ppm or greater)		Permeate	to	Reject	Ounces	Milliliters	Ounces	Milliliters
0-1,000	0 - 200	80.0%	1	to	0.25	80.0	800	20.0	200
	201 - 250	77.4%	1	to	0.29	77.4	774	22.6	226
	251 - 300	72.8%	1	to	0.37	72.8	728	27.2	272
	301 - 350	68.3%	1	to	0.46	68.3	683	31.7	317
	351 - 400	63.8%	1	to	0.57	63.8	638	36.2	362

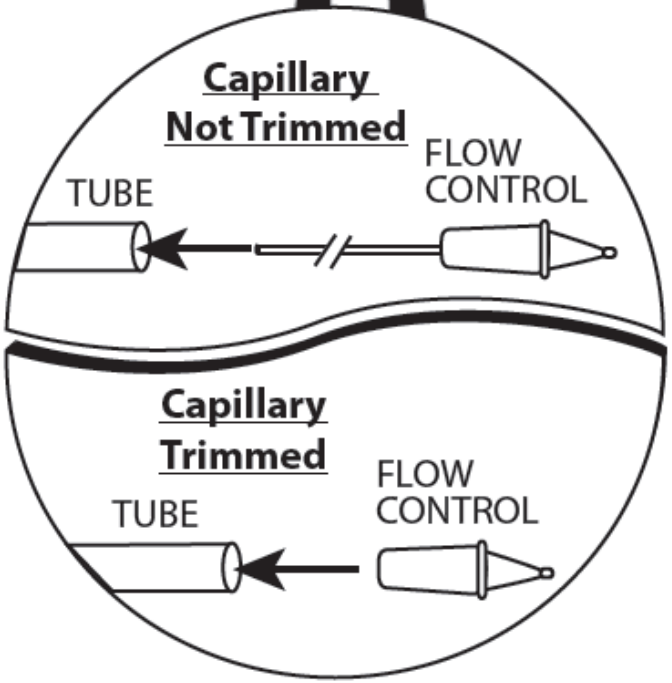
Example : a hardness up to 300 mg/l or about 17° dH

1,5 - 2 litres/min production = +/- (1,75 x 270) ml waste = +/- 470 ml to drain

Reject Volume per Minute		Capillary Tube		Flush Time in Seconds
Ounces	Milliliters	#1	#2	
0.0 - 6.1	0 - 179	Red	PLUG	840
6.1 - 14.0	180 - 414	Brown - Trimmed	PLUG	360
14.0 - 20.1	415 - 593	Brown - Trimmed	Red	255
20.1 - 25.9	594 - 766	Green	PLUG	200
25.9 - 31.9	767 - 945	Green	Red	160
31.9 - 40.1	946 - 1186	Blue - Trimmed	PLUG	125







Trimmed = cut extension with a SHARP KNIFE !

Remove the RO membrane and store secure.
Disconnect the 2 small capillary tubes ¼" - they will have grey flow restrictors : remove these (pull them out) !
Insert the new restrictors – free choice which capillary tube.
Put the capillary tubes back in the system.
Put the RO membrane back in the system.
Activate the system – RO water production.

Rinsing the Post filter

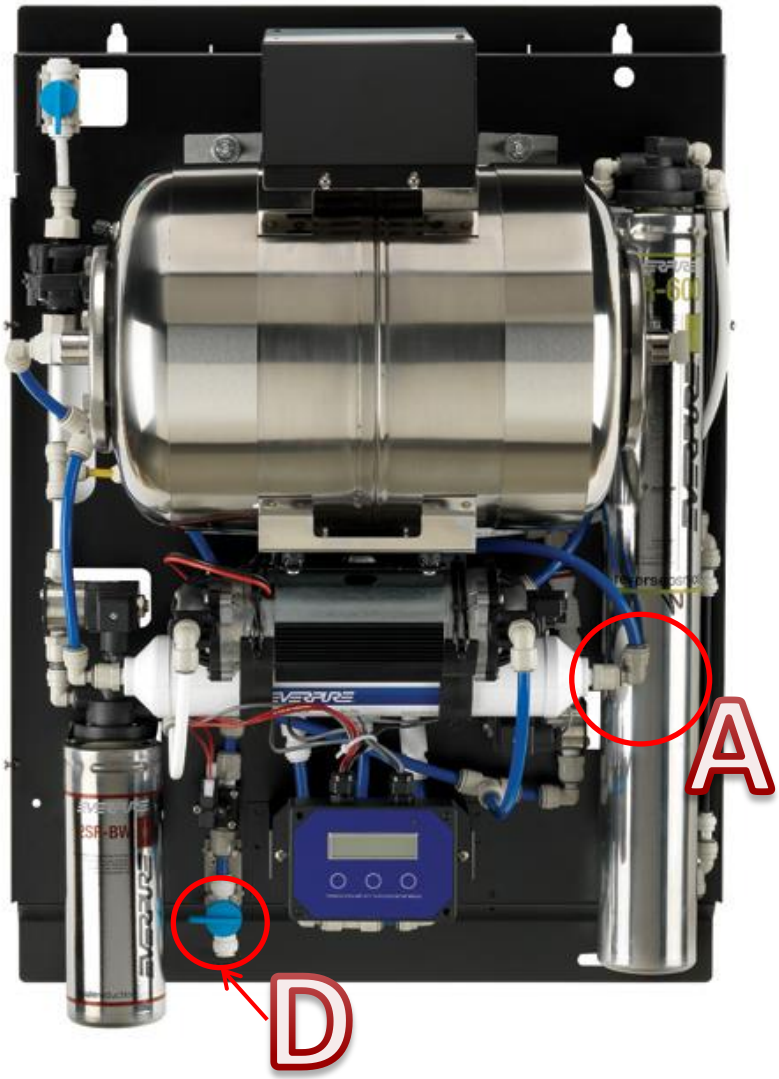
After previous production run unplug and empty storage tank through the drain (D).

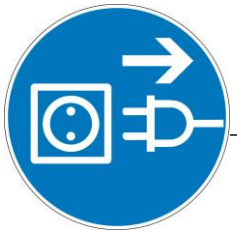
Disconnect the JG tubing on the right side of the In-line post filter (A) and attach JG tubing to waste / recipient.

Activate the RO system with flush valve (D) closed.

Let RO water production flush the In-line post filter till clean water is coming out of the filter. (no more black fines)

Unplug the system and connect the In-line filter back to original tubing





Power connection IN to activate during test

OUT when test competed !

First full run

Valve open!

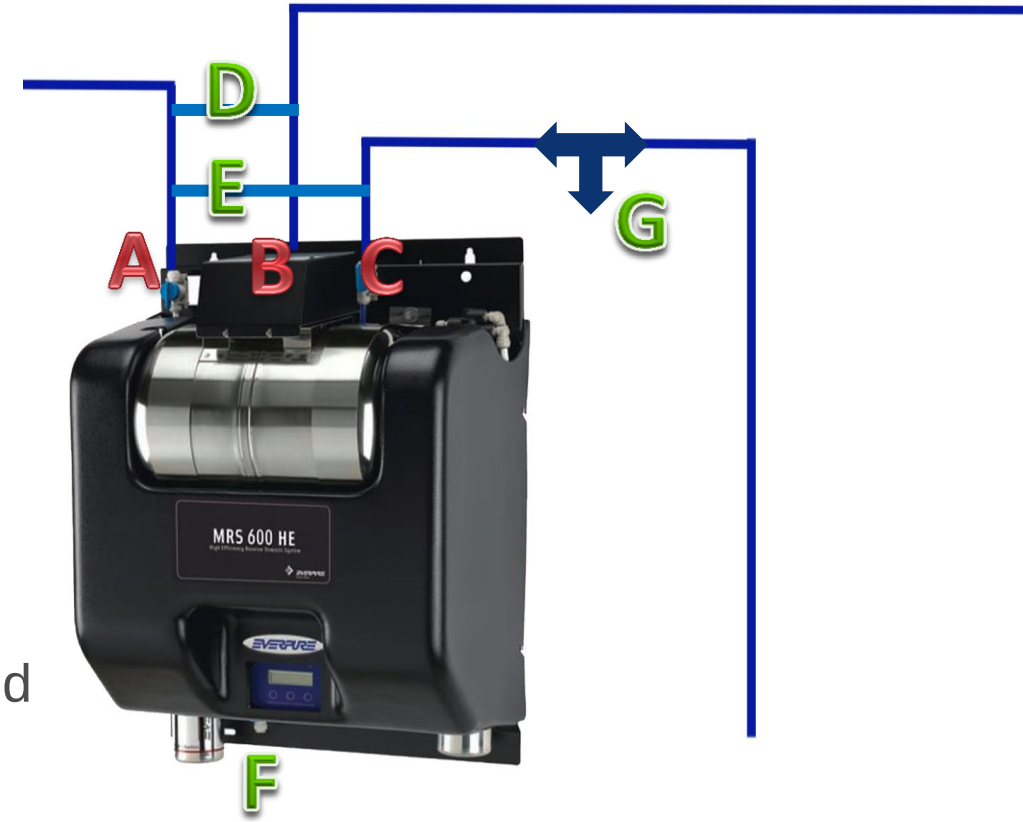
Valve closed !

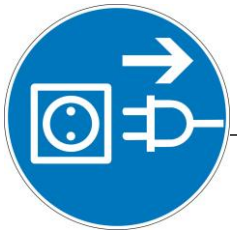
Have the system running – full pressure buildup.

When storage tank is fully loaded, open valve (C) – Coffee line

Let some water run away through sample valve (G).
Take water sample on (G) and evaluate the TDS.

Lett some flow go through again and check TDS.





Power connection IN to activate during test

OUT when test competed !

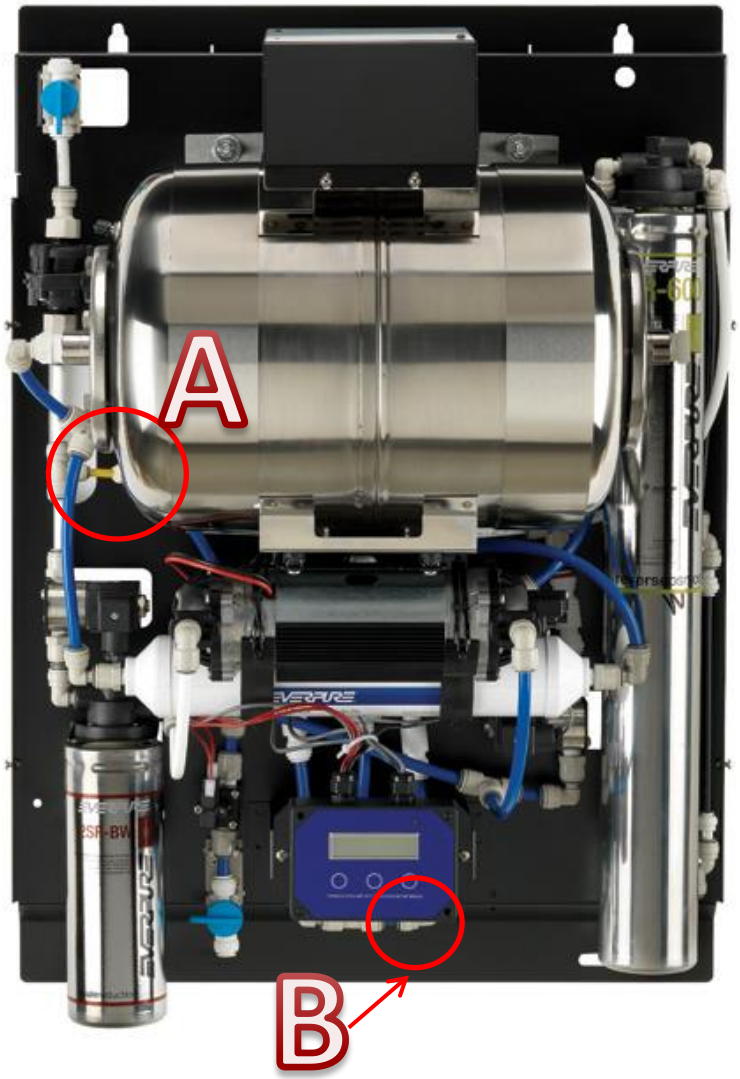
Adjusting TDS on coffee

Higher TDS = open needle valve on the yellow bypass line (A) or close needle valve on the RO water (B) to reduce RO water flow.

Lower TDS = close needle valve on the yellow bypass line (A) or open needle valve on the RO water (B) to increase RO water.

IF YOU NEED TO CLOSE ALMOST ENTIRELY THE RO WATER VALVE IN ORDER TO REACH TDS LEVEL, CHECK INCOMING WATER PRESSURE. IT WILL BE TO LOW AND NO BLEND STABILITY CAN BE GUARANTEED.

Check pre-filter flow and/or evaluate the potential to install a water booster before the system. This will enhance stability on the blend and support the booster motor and entire MRS system.



Power connection IN to activate during test

Check the controller box

From now on the system can stay connected
Ready for service

Check the settings on the controller box in accordance with the service manual

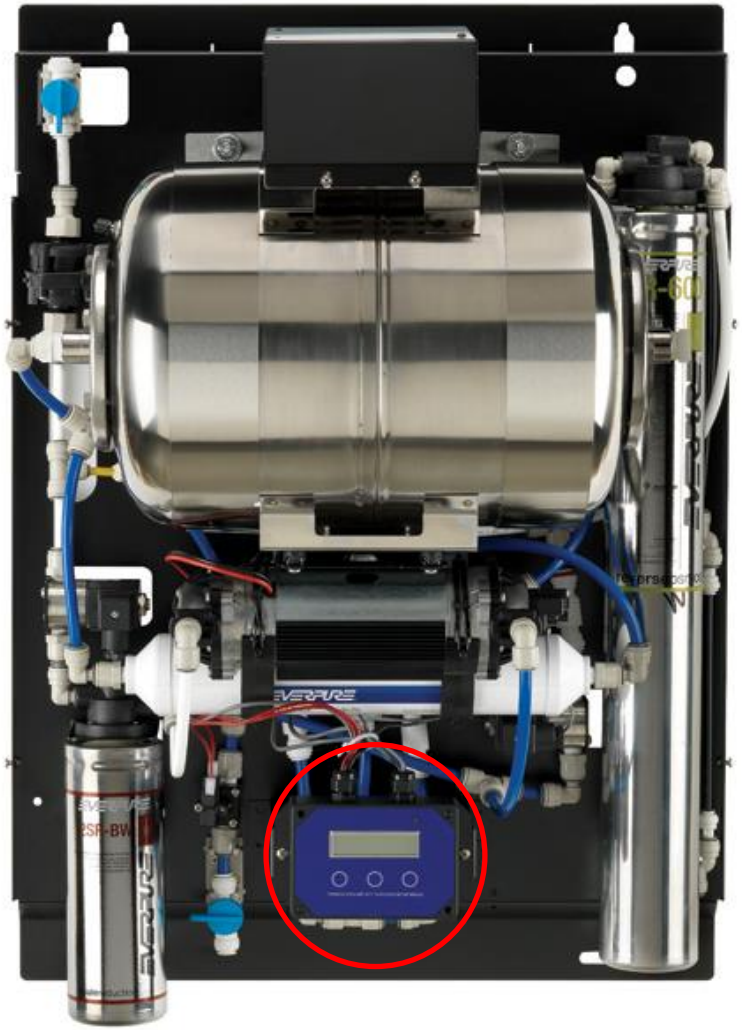
Some standard references:

Tank full: 100 psi
Start diff: 20 psi
Flush diff: 20 psi

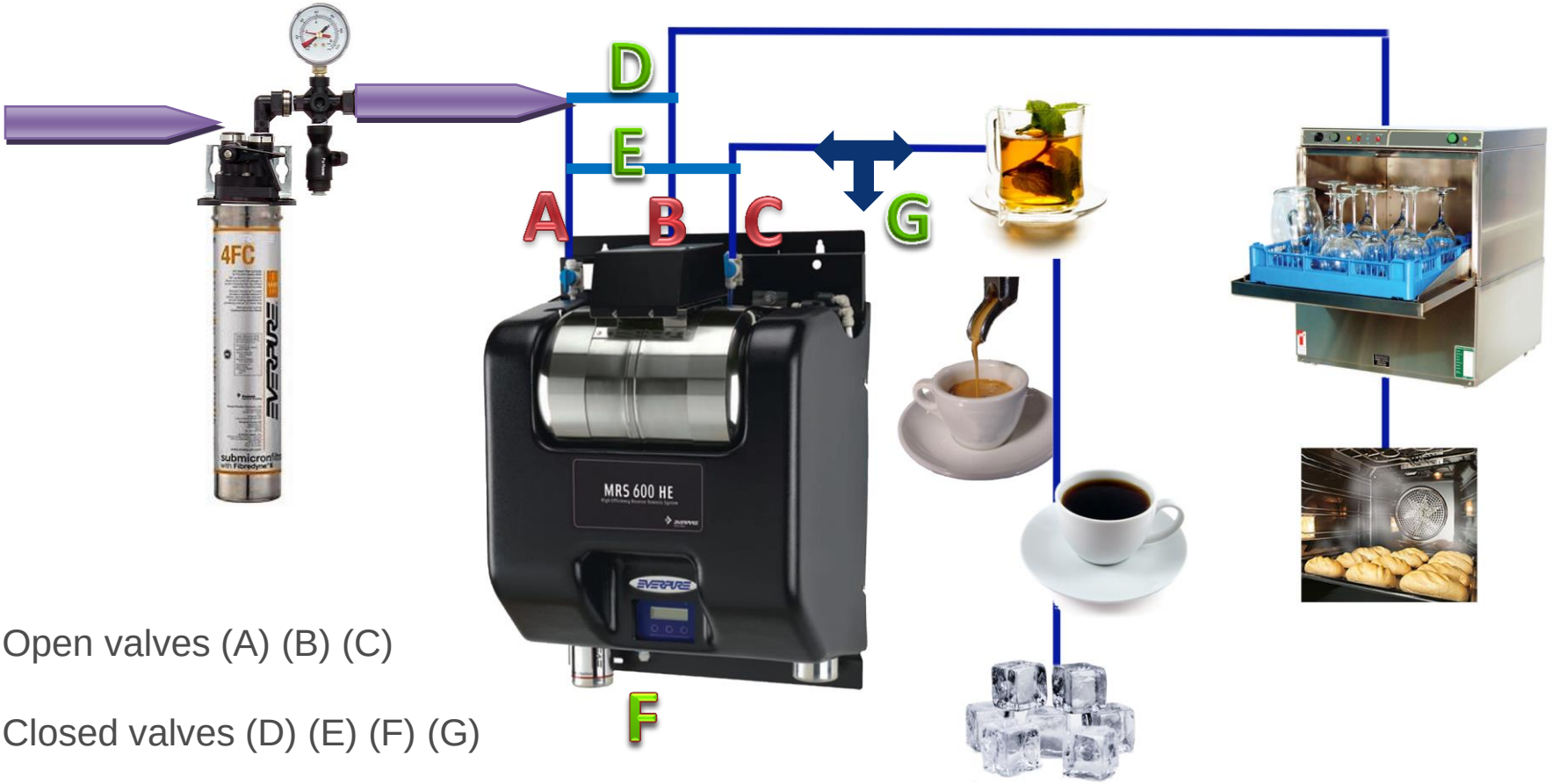
FLUSH TIME: XXX S whereby
Brown trimmed + red = 255 s (ref. table)

FLUSH INT: X.X H = 1.5 H

For optimal coffee blend AND equipment protection a TDS setting in the range 70 – 100 ppm can be used.
A higher TDS will have increased scaling potential.



Up and running – equipment connected



Open valves (A) (B) (C)

Closed valves (D) (E) (F) (G)

Valve open!

Valve closed !

Wellmate extra storage

Every system has it's limitation:

Reverse Osmosis is a "continuous" process, not able to provide 20 Liters at once.

Example the MRS600-HE can produce effectively
up to > 2000 liters / day or 90 liters / hour
Running at +/- 1.5 liters / minute.

Therefore it is important to know the REAL production capacity of your system and provide storage capacity in accordance to the peek demand.

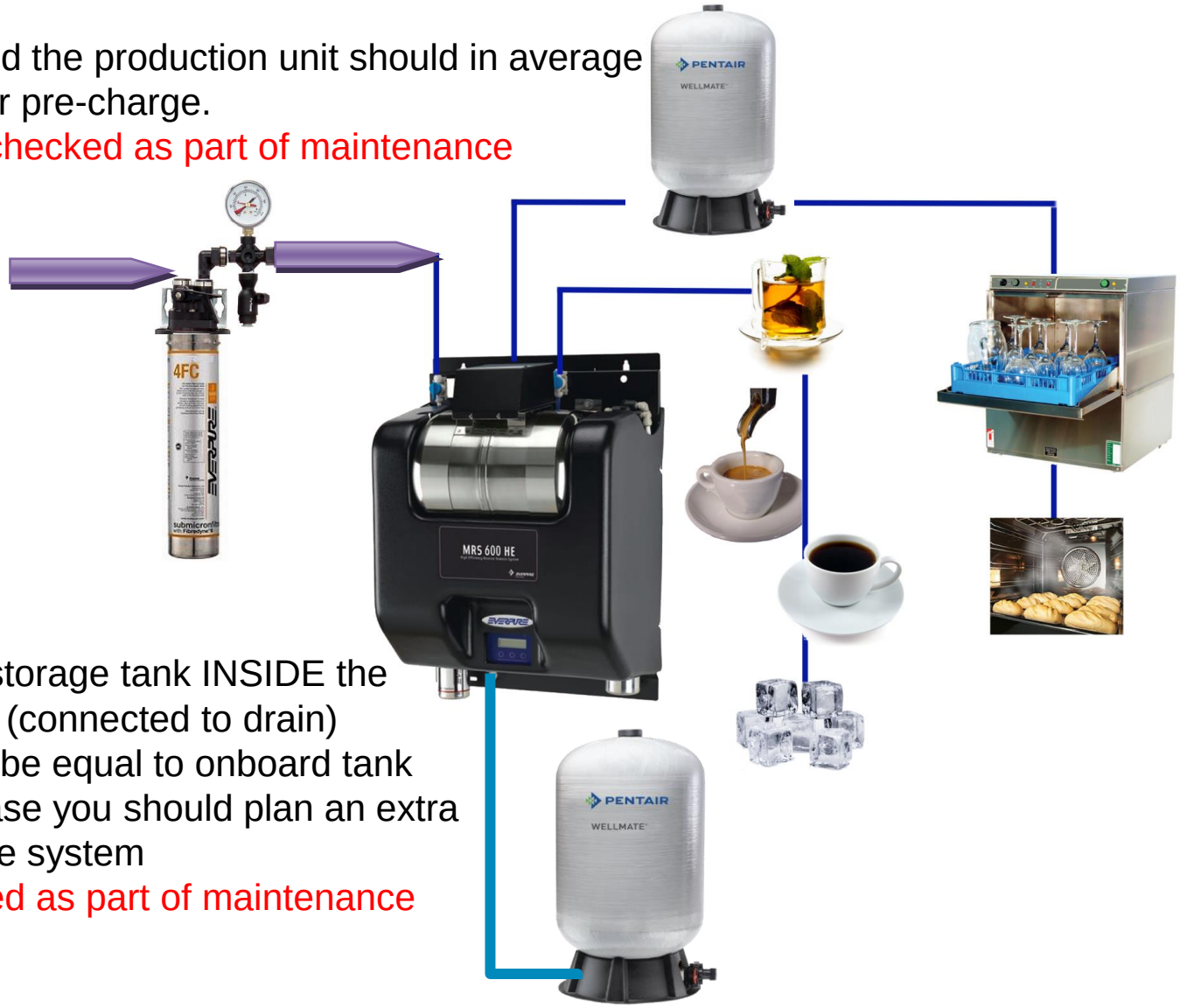
NOTICE, a storage tank under pressure has in average 50% water on board, the rest of it's volume filled with air !

Planning an extra shutoff valve close to the storage tank (B) can be of help if ever required to disconnect the tank without the need to empty the tank

PENTAIR

If multiple equipment is connected you might plan for an extra Wellmate water buffer support (can also always be added later)

A storage tank behind the production unit should in average have a +/- 1.5 Bar air pre-charge.
! Air pressure to be checked as part of maintenance



Should you plan an extra storage tank INSIDE the System production activity (connected to drain)
The air pre-charge should be equal to onboard tank 55 psi / 3,3 Bar. In such case you should plan an extra drain valve for servicing the system
! Air pressure to be checked as part of maintenance

Service & maintenance on MRS600-HE system

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Should you notice an error or issue, missing item,… please let me know so I can update

Thx,

Billemon Ronny (07/11/2016)

WHILE PERFORMING SERVICE YOU CAN SET THE SYSTEM ON BYPASS ALLOWING THE BUSINESS TO KEEP ON RUNNING

Maintenance on the MRS600-HE system:

Annual inspection of the equipment:

Check for leaks
Check the air pressure in the tank(s)
Replacement pre filter EV969221 4FC Cartridge *(or similar)*
Replacement EV962714 2SR-BW Cartridge
Replacement post filter EV962715 GS-215RO-H In-Line Filter Kit

Checking the proper functioning osmosis membrane and
replace if insufficient EV962713 MRS 600 GPD RO BW cartr.

Check performances and eventual replacement of booster motor.
8008-992-388 Pump, twin head - MRS600-HE

Check water quality (TDS) osmosis water & Coffee blend
Disinfection of the system and storage tanks

WHILE PERFORMING SERVICE YOU CAN SET THE SYSTEM ON BYPASS ALLOWING THE BUSINESS TO KEEP ON RUNNING

Maintenance on the MRS600-HE system:

Annual inspection of the equipment:

IF this is a normal preventive maintenance service
YOU might check the coffee blend setting first.
(while the system is in normal activity setup)

If the TDS is OK, no need to handle
If the coffee blend setting is fine now, you can expect
it should be OK at the end of the service as well.
If the TDS is out of range… you might consider correct the setting
once you have changed the pre-filter as pressure drop at this stage
can have an impact on blend

…and while you are flushing water from this sampling valve,
YOU might consider flushing the IN-line filter
At this time a lot easier to perform and again will save you service time later.

Step 1

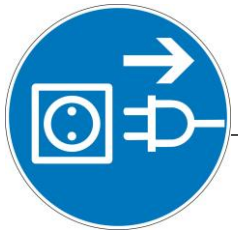
Valve closed !

Replacement pre-filtration:

Close water supply line

Remove pressure through flush valve

Remove active cartridge ¼ turn to the left and pull down the filter cartridge



Power connection OUT !

Meanwhile all lines to the equipment can stay connected. The water storage on board of the MRS600-HE system can temporary supply the demand – briefly with reduced blend

Step 1

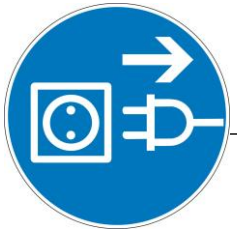
Valve closed !

Install the 4FC Cartr.:

New filter : remove the protective plastic.
Position in the filter head, push upwards while ¼ turning to the right. (A)

Open water supply
= handle (B) down

Flush the filter through the flushing valve (C)



Power connection OUT !

Meanwhile all lines to the equipment can stay connected. The water storage on board of the MRS600-HE system can temporary supply the demand – briefly with reduced blend

Bypass position

Valve open!

Valve closed !

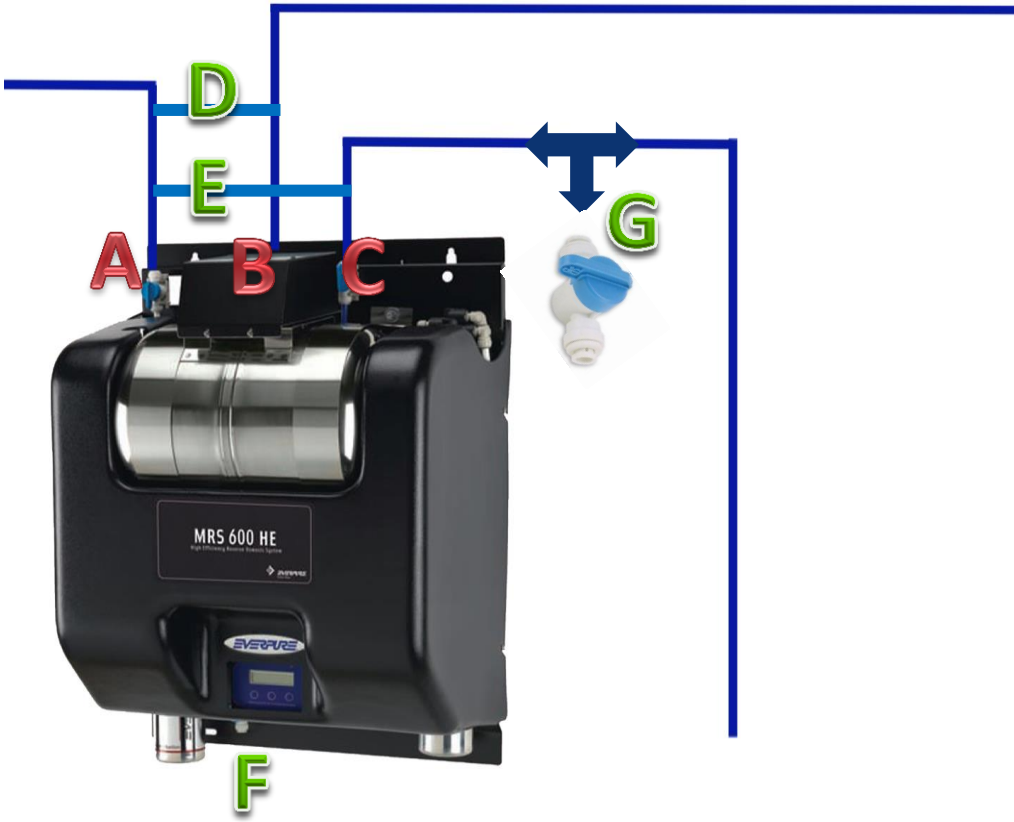
To allow the site full operational, put the system in bypass during maintenance.

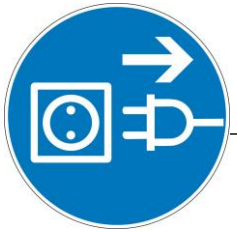
Valves on the MRS system should be closed (A) (B) (C)

Bypass valves OPEN (D) (E)

Flush valve closed (F)
Sample valve closed (G)

The site can temporary keep on working with filtered water quality





Power connection OUT !

Bypass position

Valve open!

Valve closed !

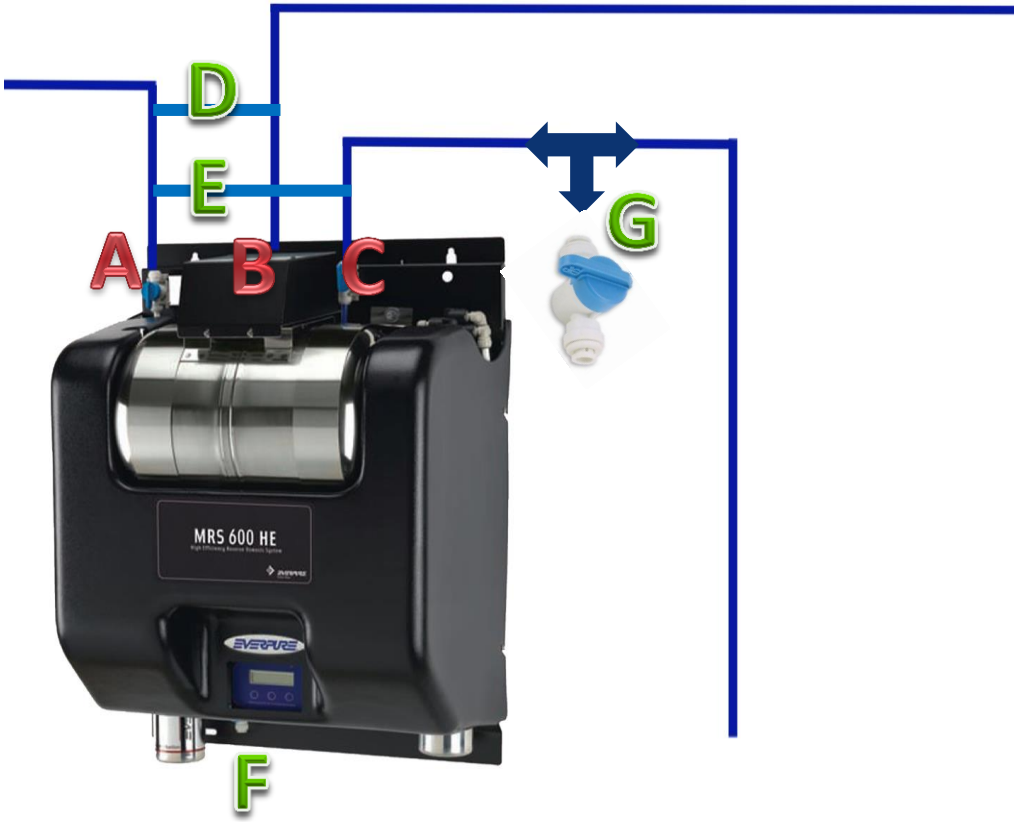
DRAIN all water out of the system

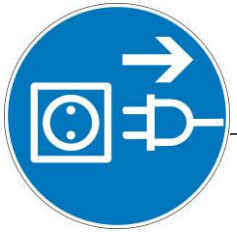
UNPLUG the power first !

Connect service tubing to Flush valve (F)

Open Flush valve (F) and release all water in a bucket or drain.

NOTICE: this water (+/- 10 litres) comes out with up to > 6 Bar pressure !





Power connection OUT !

Storage tank

Valve open!

Storage tank:

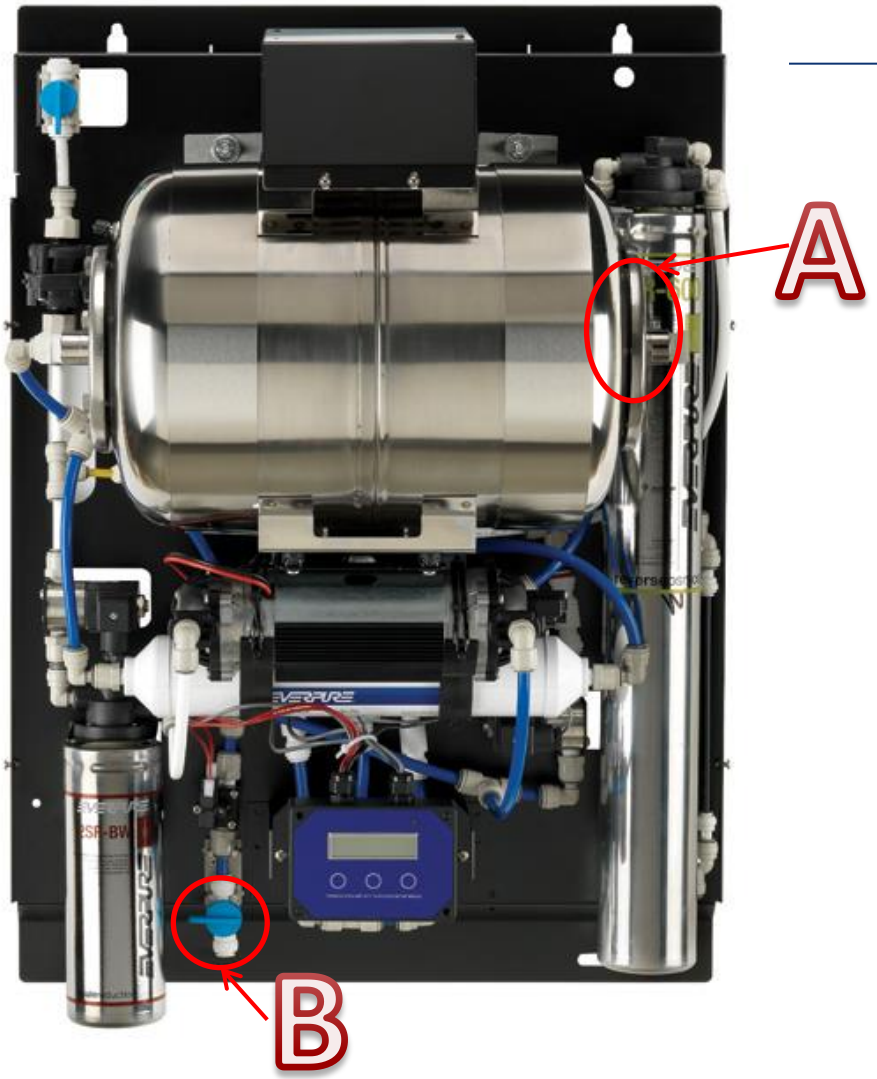
Check the pressure (A) on an empty tank with the flush valve (B) open.

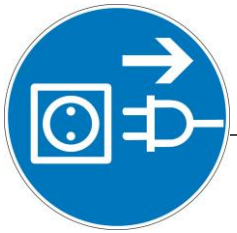
Remove (unscrew) the air membrane protective cover. (A)

The air pressure should be set at
55 psi / 3,3 bar.

Put back the air membrane cover (A) and close the flushing valve. (B)

NOTE: this should be checked with every maintenance service, at least once a year.





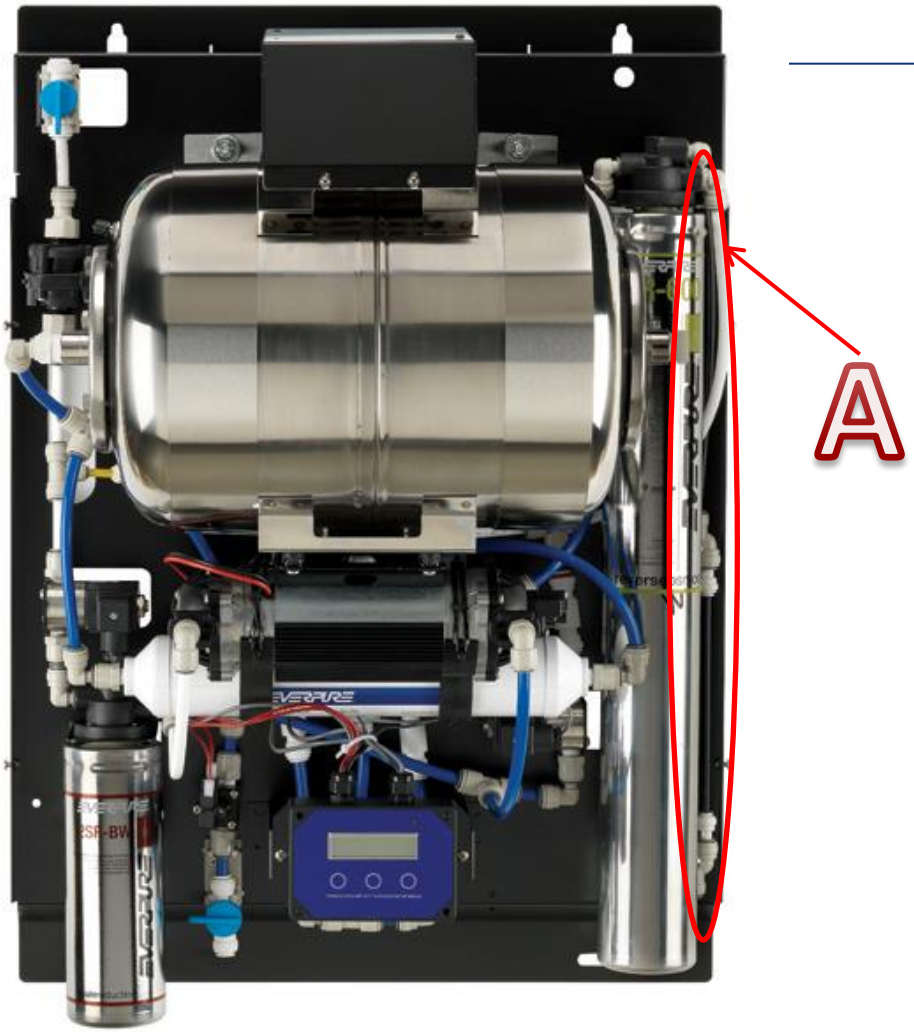
Power connection OUT !

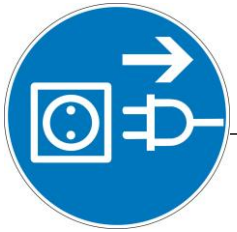
Osmosis membrane

Check the water waste water line for eventual deposit, this line should be clean (black tubing) (A)

Check entire water line to the drain

During the maintenance service: when the system is in production mode, it is also recommended to evaluate the water flow going to the drain

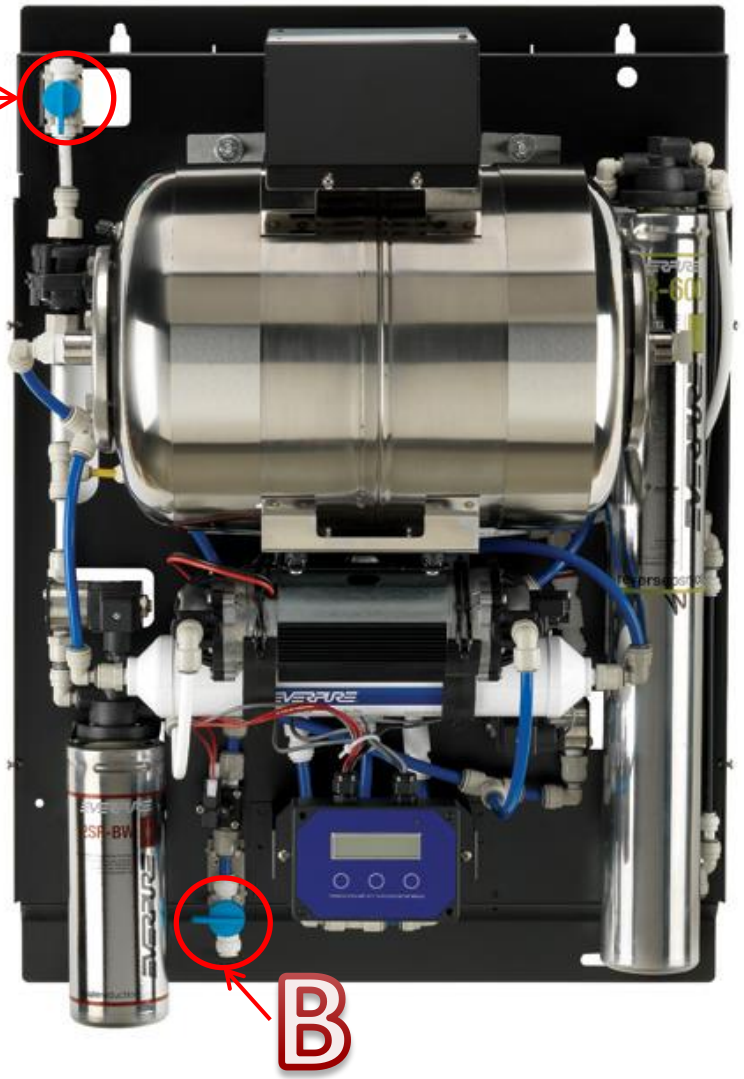




Power connection OUT !

Production

Valve open!



Check Production rate of the membrane:

Open the water supply on the MRS (C)
Open the flush valve (B) and position a measuring recipient below the valve.

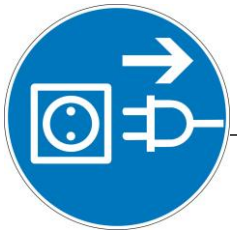
Activate the system by plugging the power line.

Once full production is running, evaluate the water volume produced in 1 minute.

If less 1 liter / minute, the membrane is clogging, should be replaced.

A good performing system should produce > 1 liter, optimal 1,5 up to 2 liters / minute.
Colder water = less production

Unplug the system, close flush valve (B)



Power connection IN to activate during test
OUT when test competed !

Osmosis membrane

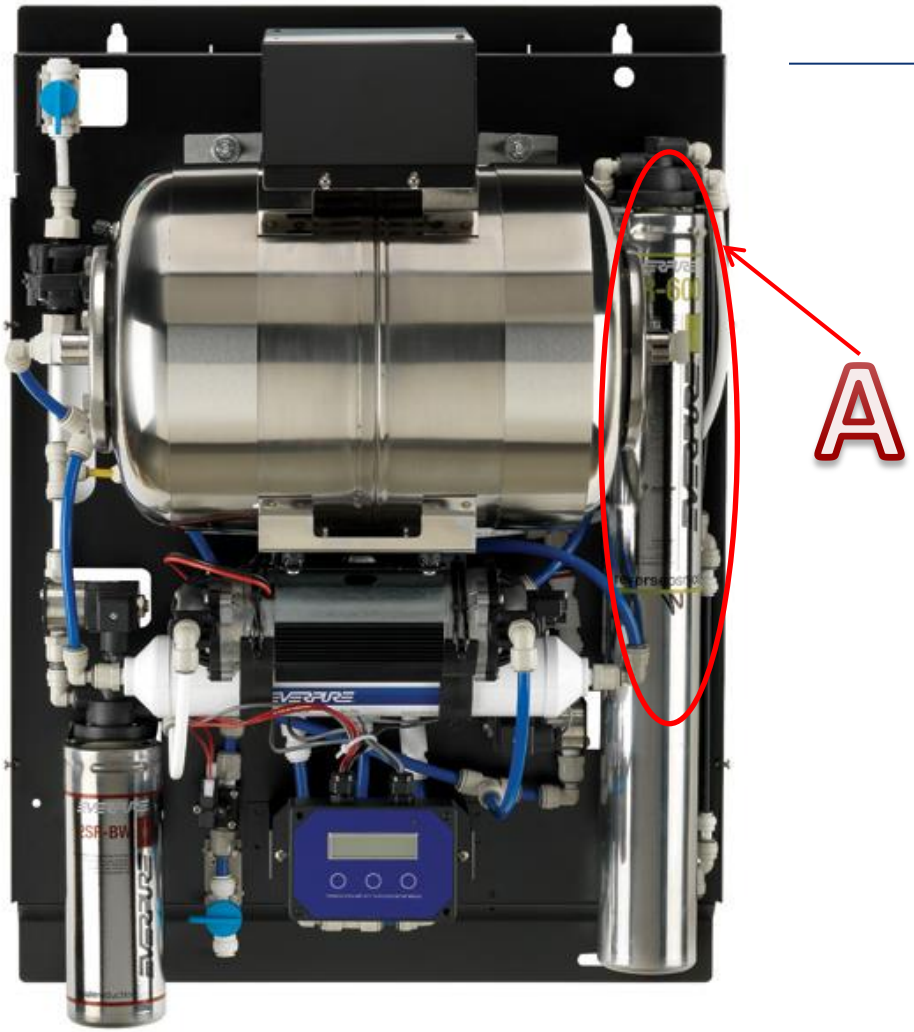
IF NEW Osmosis membrane needed :

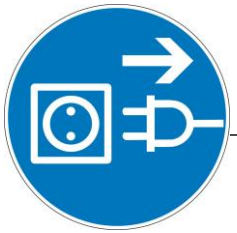
Remove old RO membrane cartridge similar way as pre-filter.

New filter : remove the protective plastic.

Position the Osmoses membrane (A) in the filter head, push upwards while ¼ turning to the right

ATTENTION : do not damage the head of the filter cartridge or the entire membrane cartridge will be lost !





Power connection OUT !

Osmosis membrane

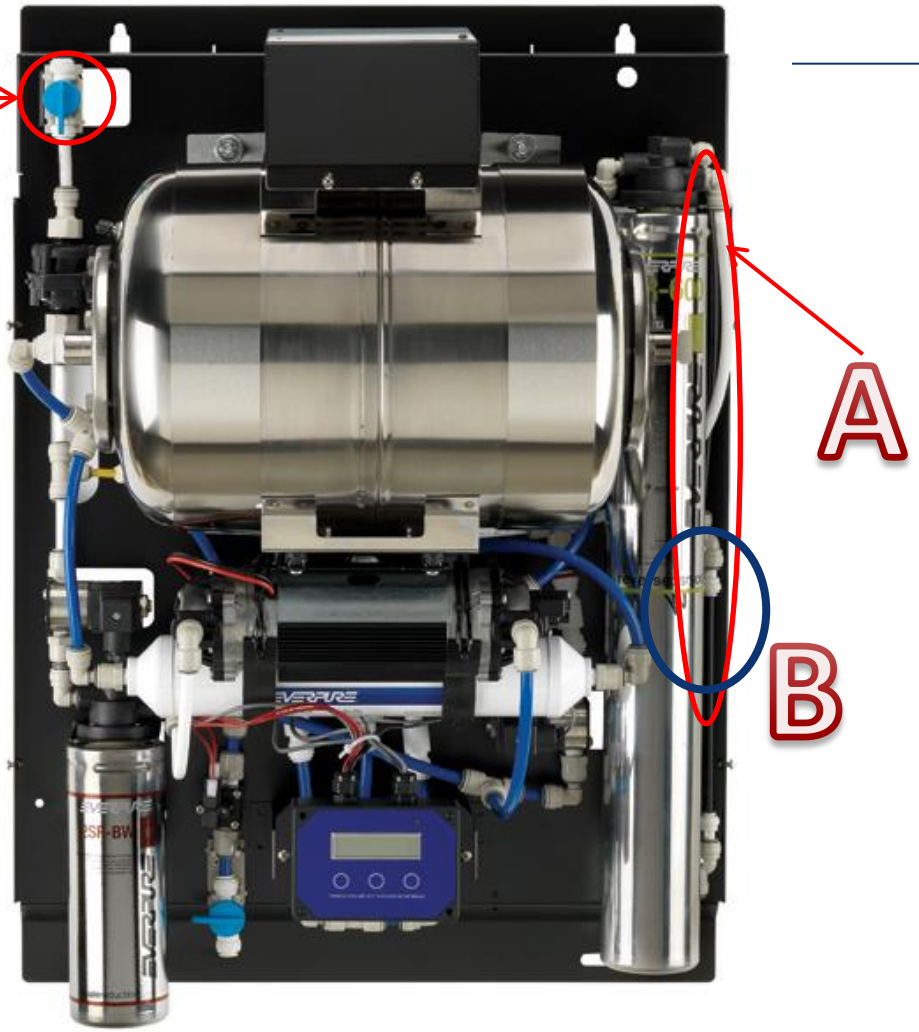
IF NEW Osmosis membrane needed :

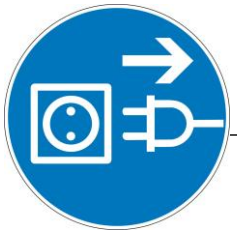
Check the water waste water line for eventual deposit, this line should be clean (black tubing) (A)

Remove both restainers out of the waste line (B) and put the tubes without restrainer back in the line. (B)

Open the water supply on the MRS (C)

Activate the system by plugging the power line and have it running for a few minutes to rinse the membrane





Power connection IN to activate during test

OUT when test competed !

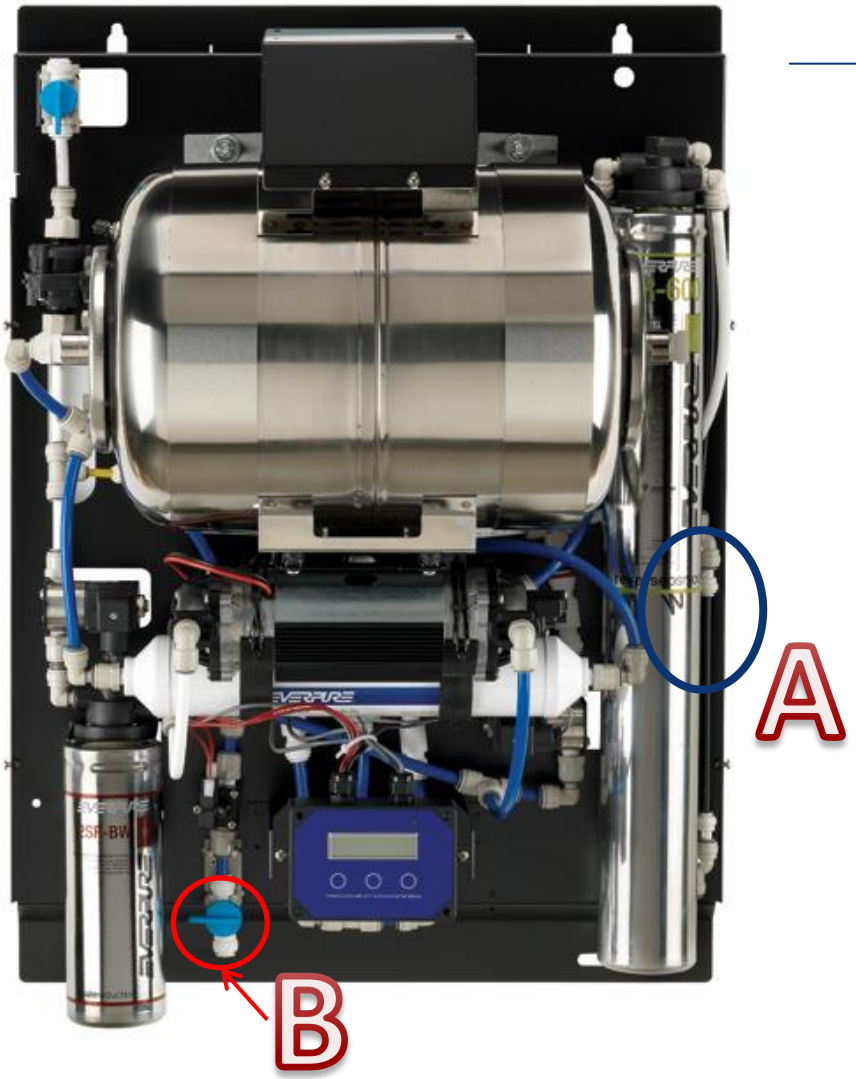
Osmosis membrane

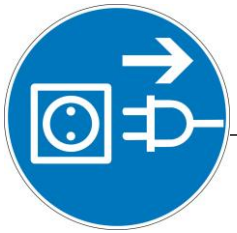
IF NEW Osmosis membrane needed :

Put NEW restrainers (similar combination as initial) back into the waste line (A).

Empty the storage tank through the drain valve (B)

Startup the system again and check the production rate of the membrane as explained previously.

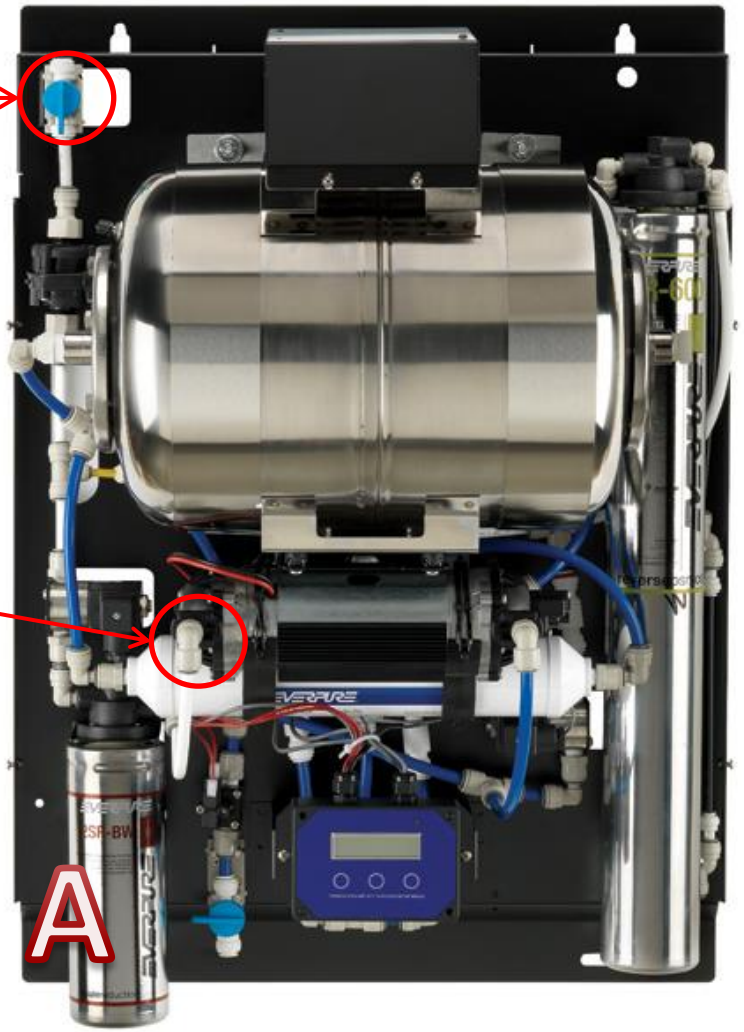




Power connection IN to activate during test

OUT when test competed !

Valve open!



Replacing 2SR-BW filter (A) :

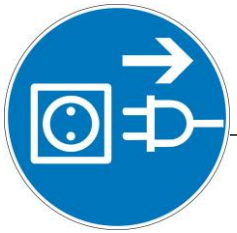
Remove plastic protection of the new 2SR-BW Filter cartridge. Remove old cartridge similar way as pre-filter. Position the new cartridge in the filter head, push upwards while ¼ turning to the right. (A)

Remove quick connect (B) on the motor

Open the water supply on the MRS (C)

Activate the system by plugging the power line. The electronic inlet valve will open, wait till water is coming out the tube / quick connect

Unplug the system and put the quick connect back in place on the motor (B)



Power connection IN to activate during test

OUT when test competed !

IN-line Post filter

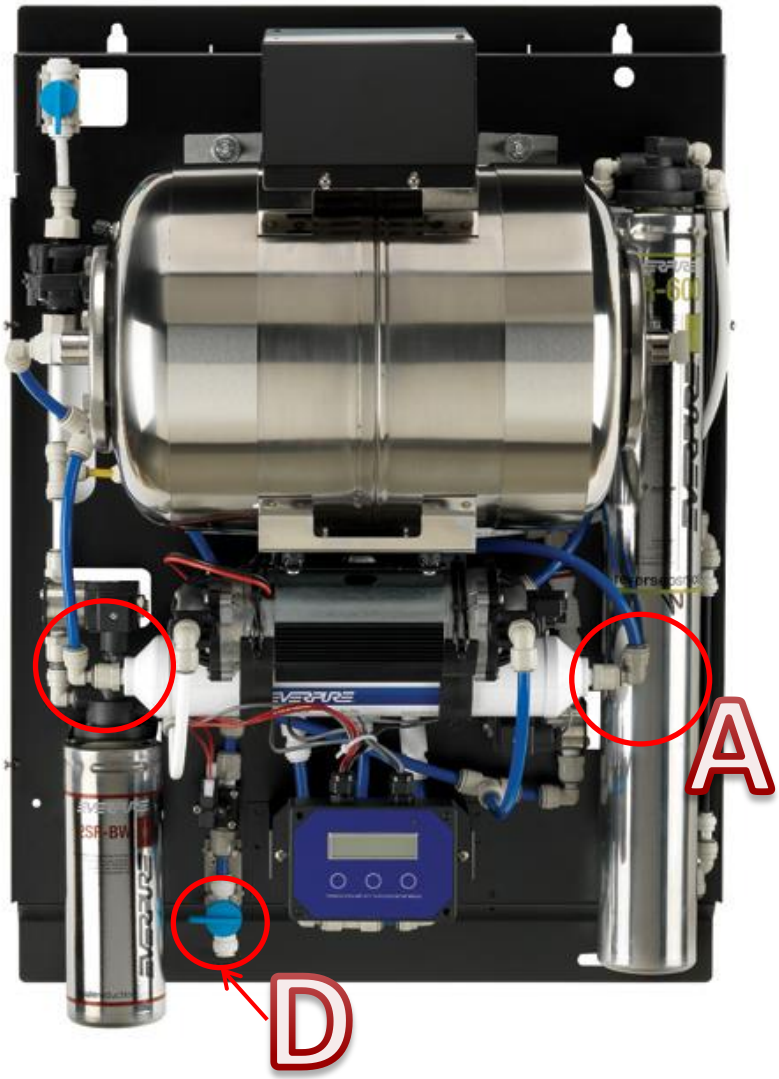
System still disconnected, storage tank empty. IF new filter is already pre-rinsed.

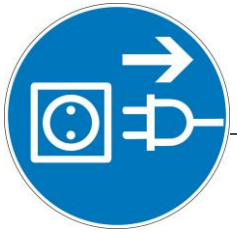
Disconnect the JG elbows on both sides of the In-line post filter (A) cut both tie rips and remove the old cartridge.

The new filter is supplied with new tie rips.

Fix the new filter (Water flow direction to the right - ARROW) in the clips and fix with the new tie rips.

Connect both sides with the JG elbow elements.





Power connection IN to activate during test

OUT when test competed !

IN-line Post filter

System still disconnected, storage tank empty. IF new filter is NOT pre-rinsed

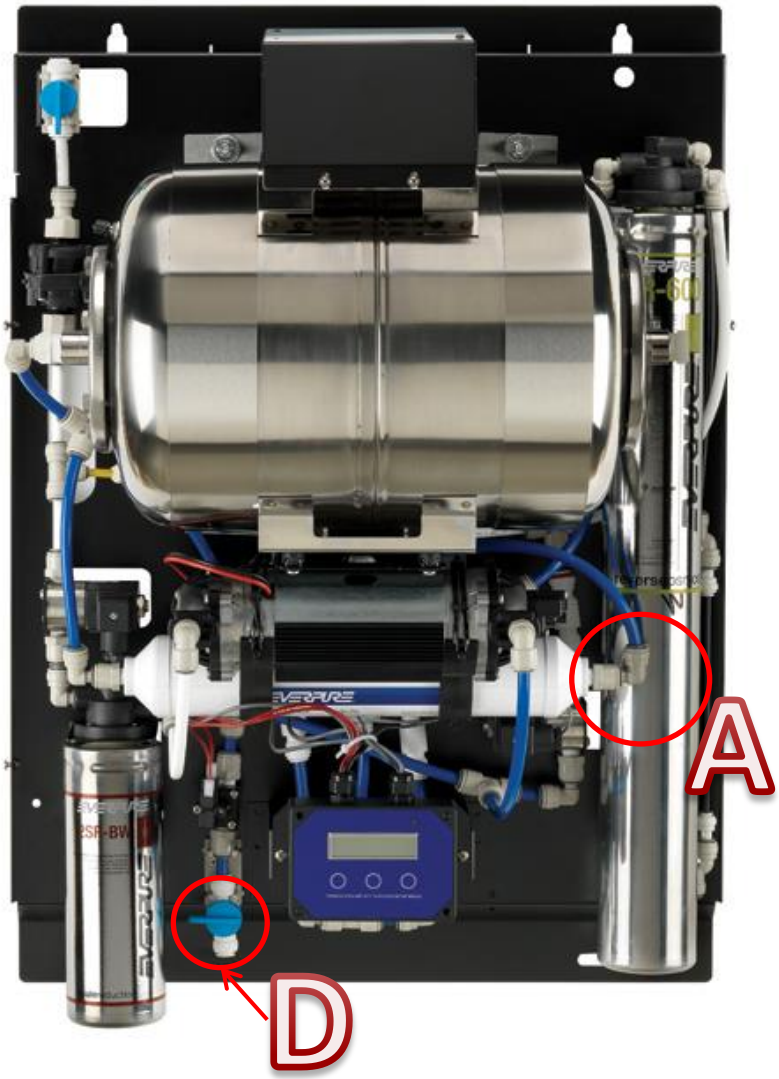
PERFORM AS PREVIOUS SLIDE +

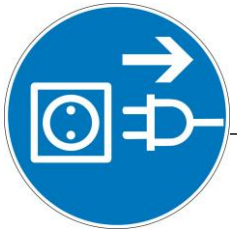
Disconnect the JG tubing right side of the cartridge (A) and attach JG tubing to waste / recipient.

Activate the RO system with flush valve (D) closed.

Let RO water production flush the In-line post filter till clean water is coming out of the filter. (no more black fines)

Unplug the system and connect the In-line filter back to original tubing





Power connection IN to activate during test

OUT when test competed !

First full run

Valve open!

Valve closed !

Have the system running – full pressure buildup. Valve (A) open. Flush valve (F) Closed

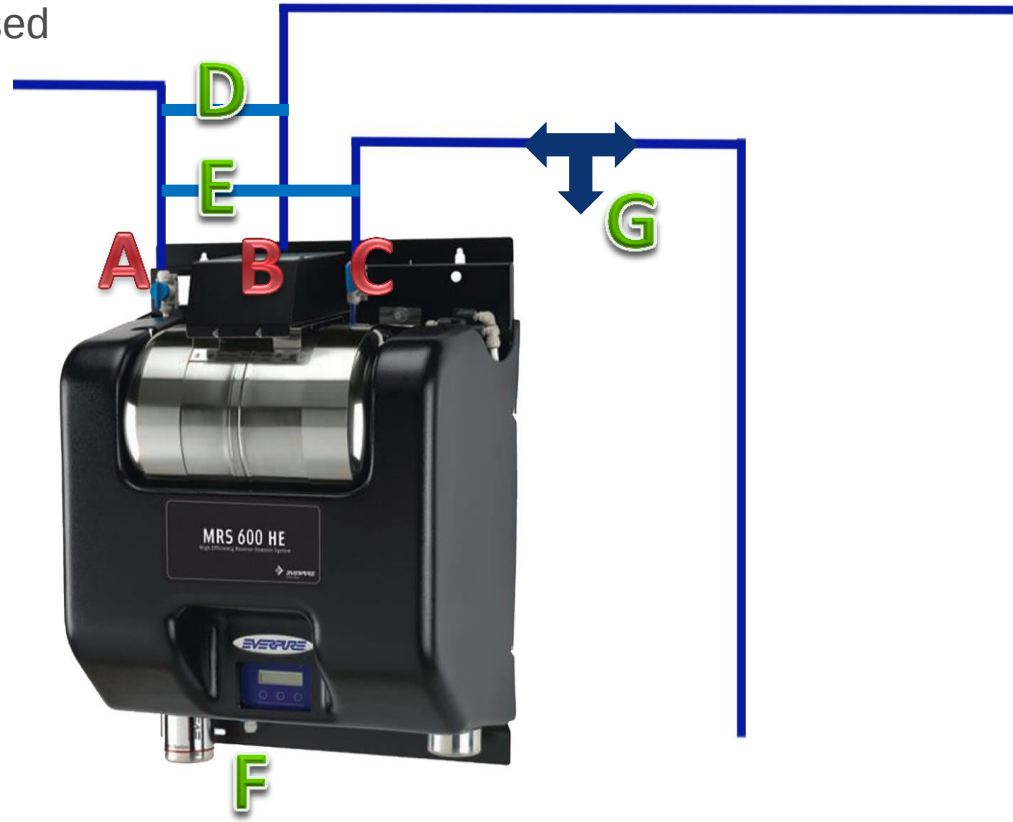
When storage tank is fully loaded,
open valves (B) & (C)
Close bypass valves (D) & (E)

Let some water run away through sample valve (G).

Take water sample on (G) and evaluate the TDS. *(perform TDS check while motor is NOT running)*

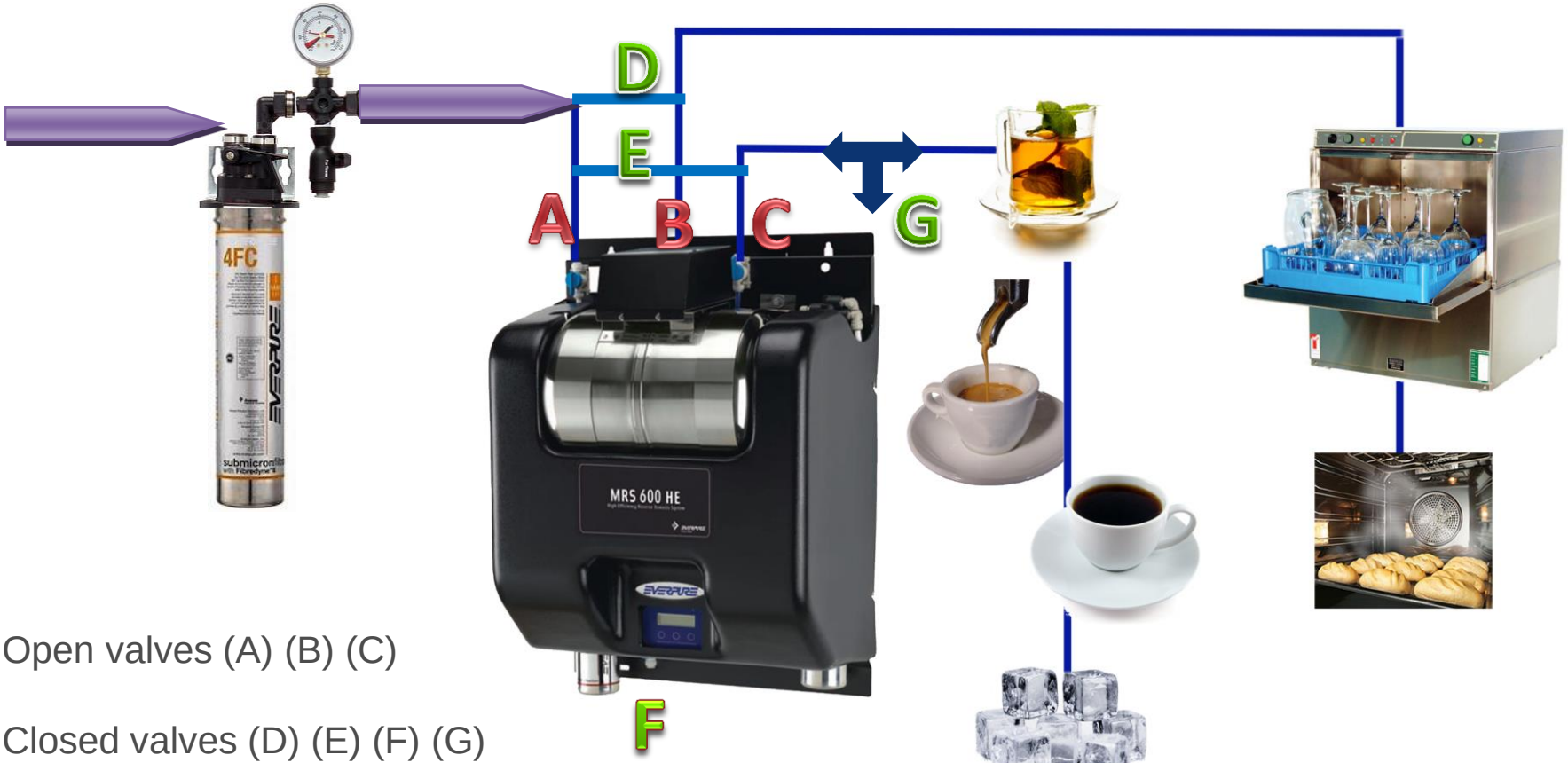
Lett some flow go through again and check TDS.

System UP and running



Power connection IN – System UP and running

Up and running – equipment connected



Open valves (A) (B) (C)

Closed valves (D) (E) (F) (G)

Valve open!

Valve closed !

Replacement of booster motor.:

8008-992-388 Pump, twin head - MRS600-HE

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It does not replace the service manual !

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Should you notice an error or issue, missing item,… please let me know so I can update

Thx,

Billemon Ronny (07/11/2016)

WHILE PERFORMING SERVICE YOU CAN SET THE SYSTEM ON BYPASS ALLOWING THE BUSINESS TO KEEP ON RUNNING

Bypass position

Valve open!

Valve closed !

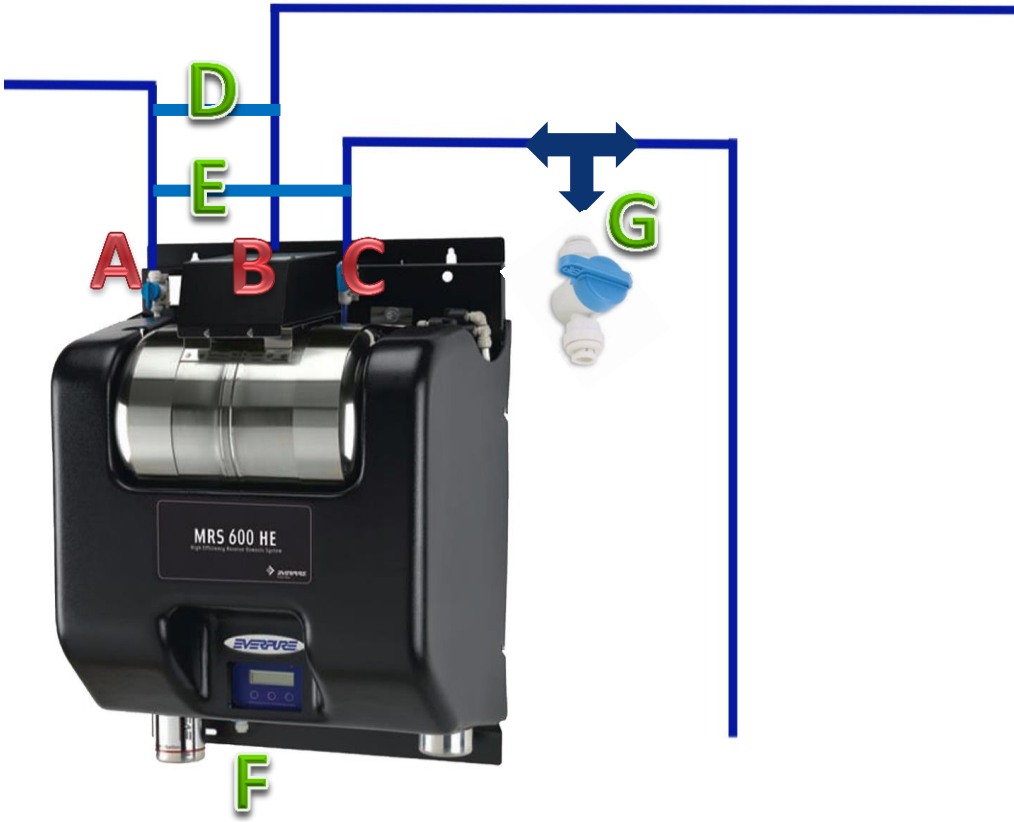
To allow the site full operational, put the system in bypass during maintenance.

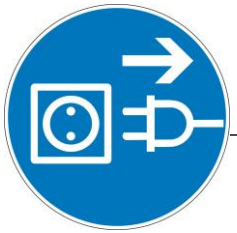
JG valves on the MRS system should be closed (A) (B) (C)

Bypass valves OPEN (D) (E)

Flush valve closed (F)
Sample valve closed (G)

The site can temporary keep on working with filtered water quality





Power connection OUT !

WHILE PERFORMING SERVICE YOU CAN SET THE SYSTEM ON BYPASS ALLOWING THE BUSINESS TO KEEP ON RUNNING

Bypass position

Valve open!

Valve closed !

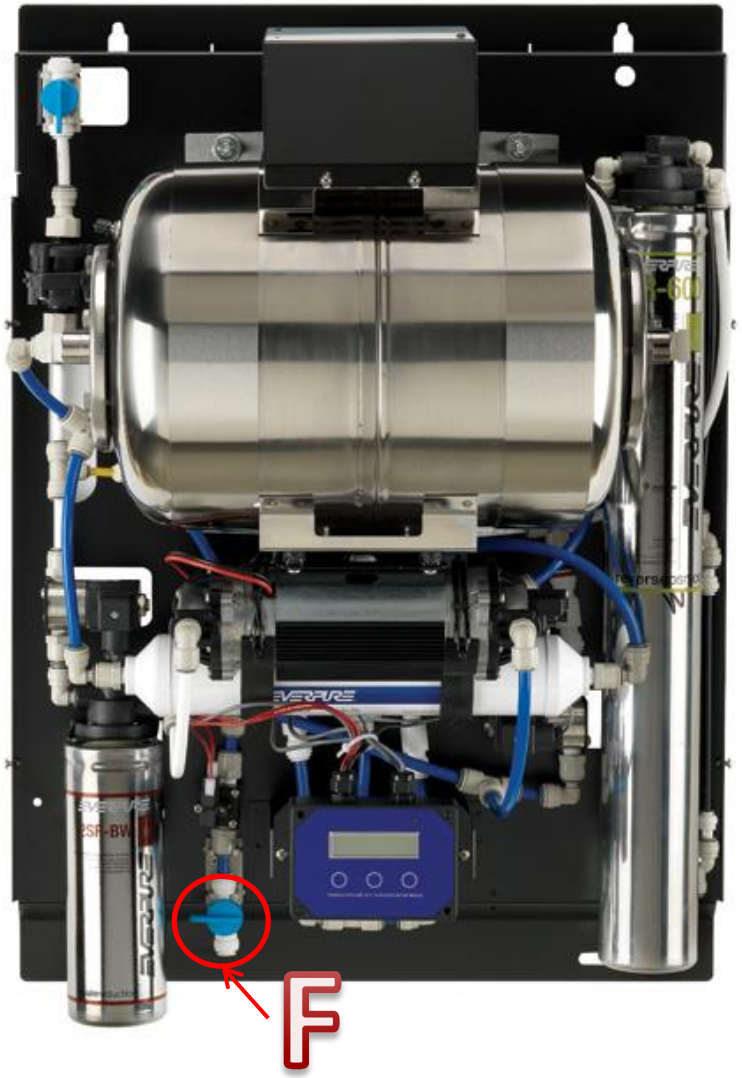
DRAIN all water out of the system

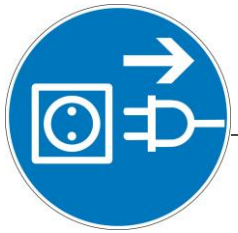
UNPLUG the power first !

Connect service tubing to Flush valve (F)

Open Flush valve (F) and release all water in a bucket or drain.

NOTICE: this water (+/- 10 litres) comes out with up to > 6 Bar pressure !





Power connection OUT !

Bypass position

Valve open!

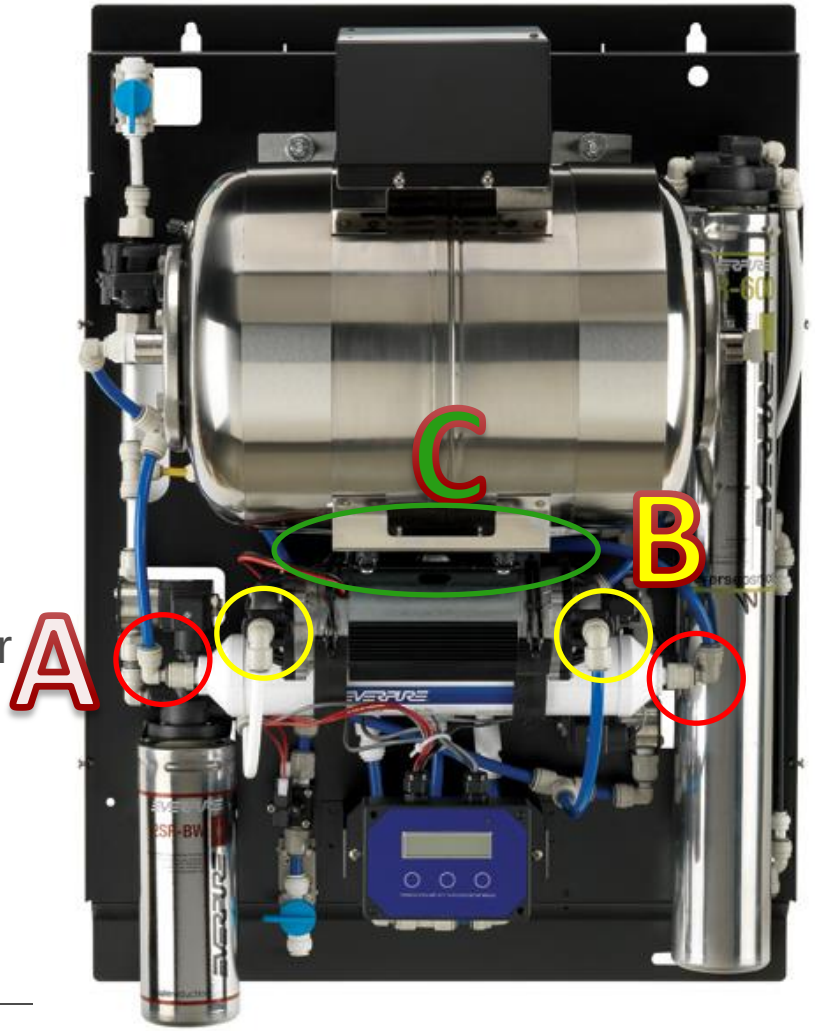
Valve closed !

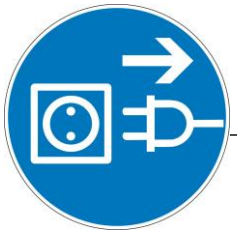
Disconnect the motor power supply cable (quick connect)

Disconnect the IN-line post filter Quick connect JG / tubing (A)

Disconnect the 4 Quick connect water connections (front & back) on the motor (B)

Unscrew the 4 screws fixing the motor to the storage tank (C)





Power connection OUT !

Bypass position

Valve open!

Valve closed !

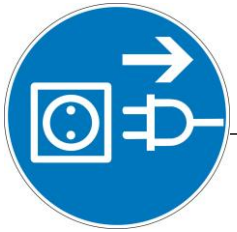
Now you have motor and post filter separated from the system

Cut tie rips fixing the post-filter clips on the motor and remove from the motor.

If the post-filter needs to be changed, now is the time…

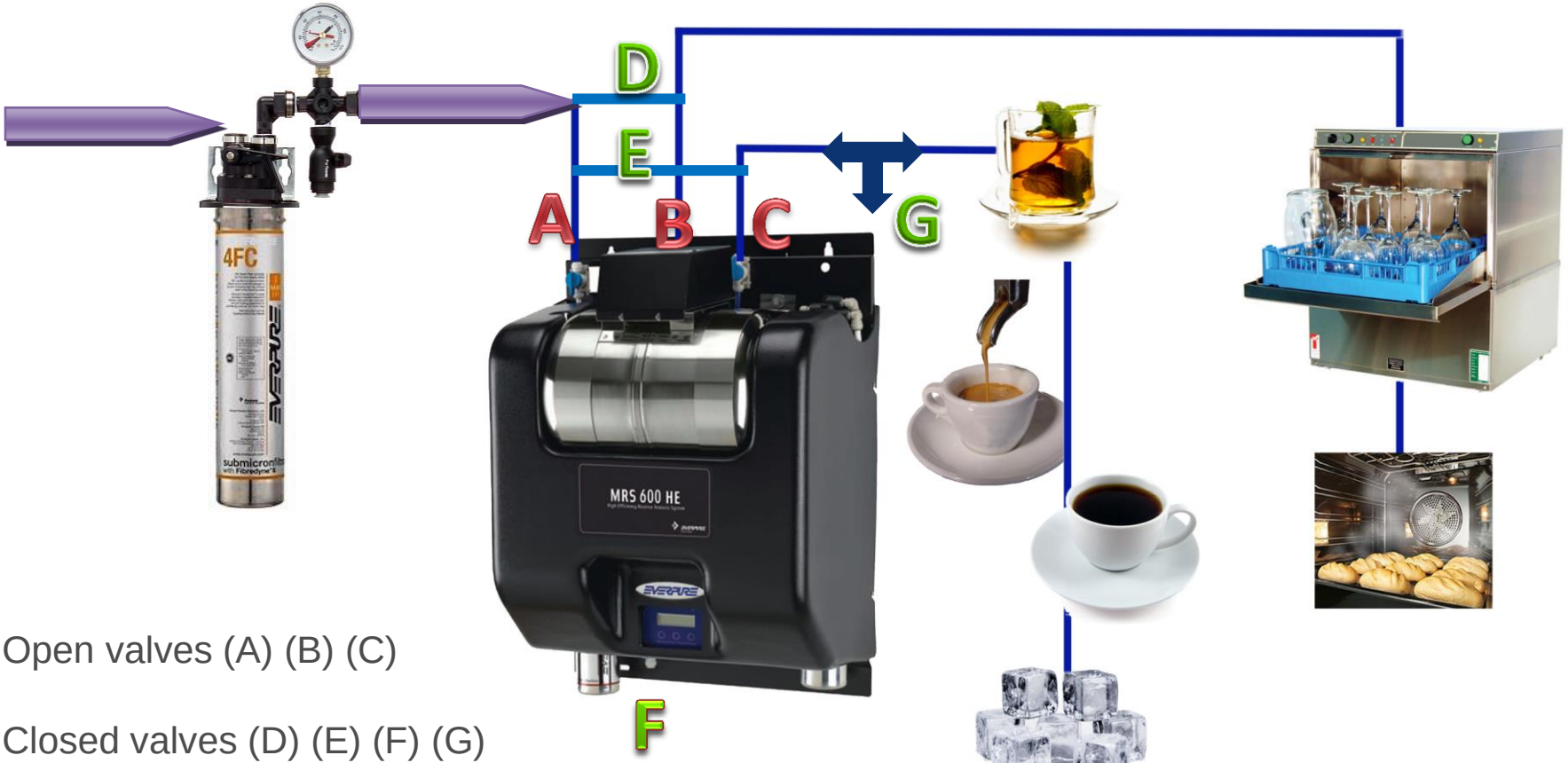
Fix the clips & post filtration onto the new motor. (check flow direction on the post filter !)

Fix the motor back in place and connect water and power lines



Power connection OUT !

Up and running – equipment connected



Open valves (A) (B) (C)

Closed valves (D) (E) (F) (G)

Valve open!

Valve closed !

Replacement of Osmosis Membrane:

EV962713 MRS 600 GPD RO BW Replacement Cartridge

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Bypass position

Valve open!

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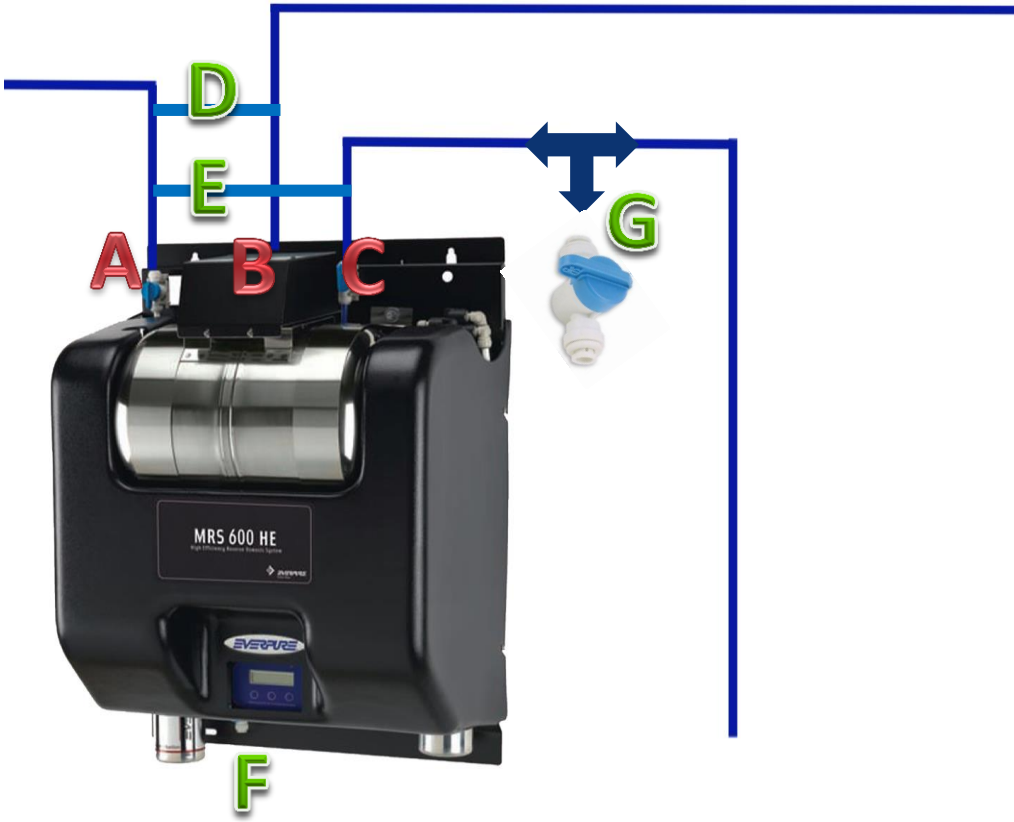
To allow the site full operational, put the system in bypass during maintenance.

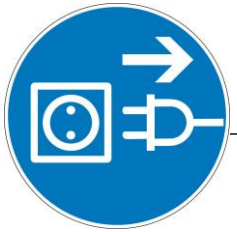
JG valves on the MRS system should be closed (A) (B) (C)

Bypass valves OPEN (D) (E)

Flush valve closed (F)
Sample valve closed (G)

The site can temporary keep on working with filtered water quality





Power connection OUT !

WHILE PERFORMING SERVICE YOU CAN SET THE SYSTEM ON BYPASS ALLOWING THE BUSINESS TO KEEP ON RUNNING

Bypass position

Valve open!

Valve closed !

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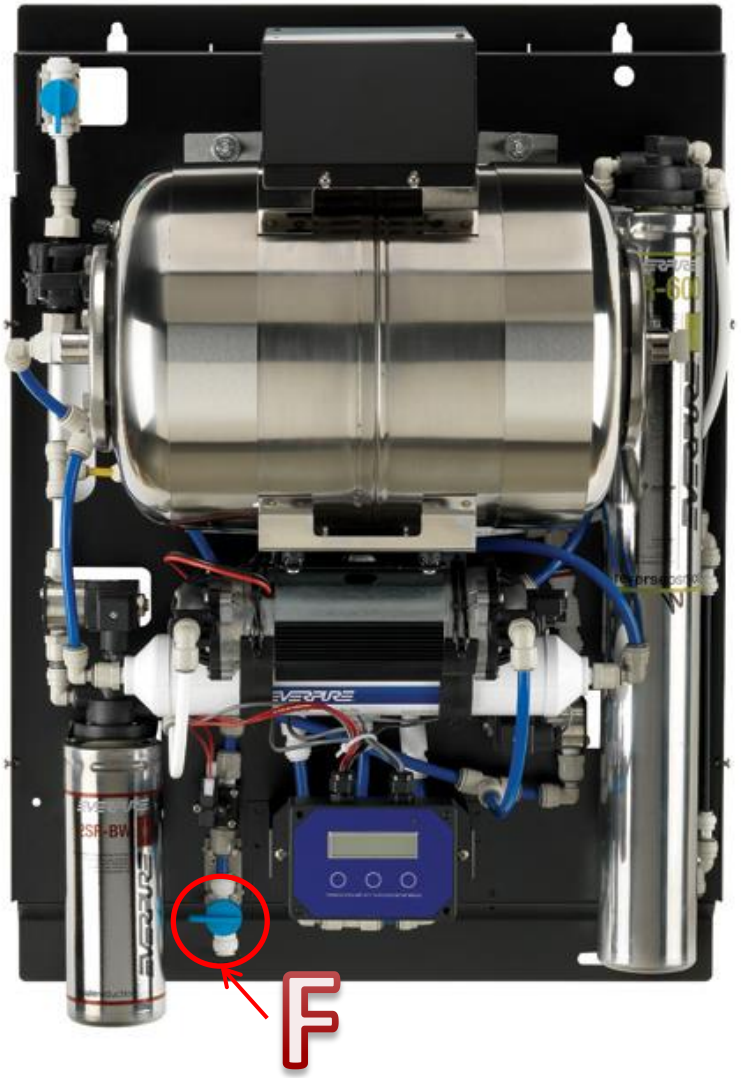
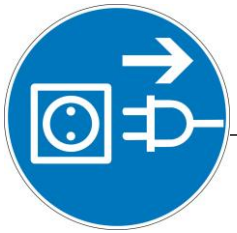
Connect service tubing to Flush valve (F)

Open Flush valve (F) and release all water in a bucket or drain.

NOTICE: this water (+/- 10 litres) comes out with up to > 6 Bar pressure !





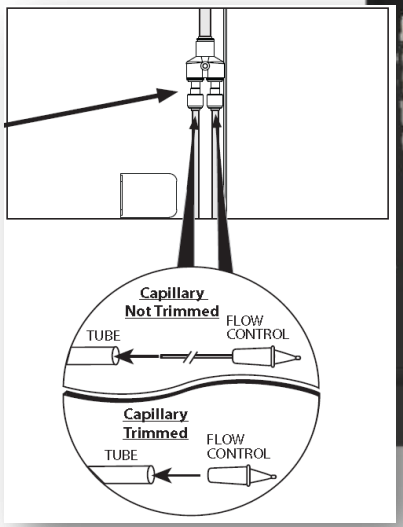
Power connection OUT !

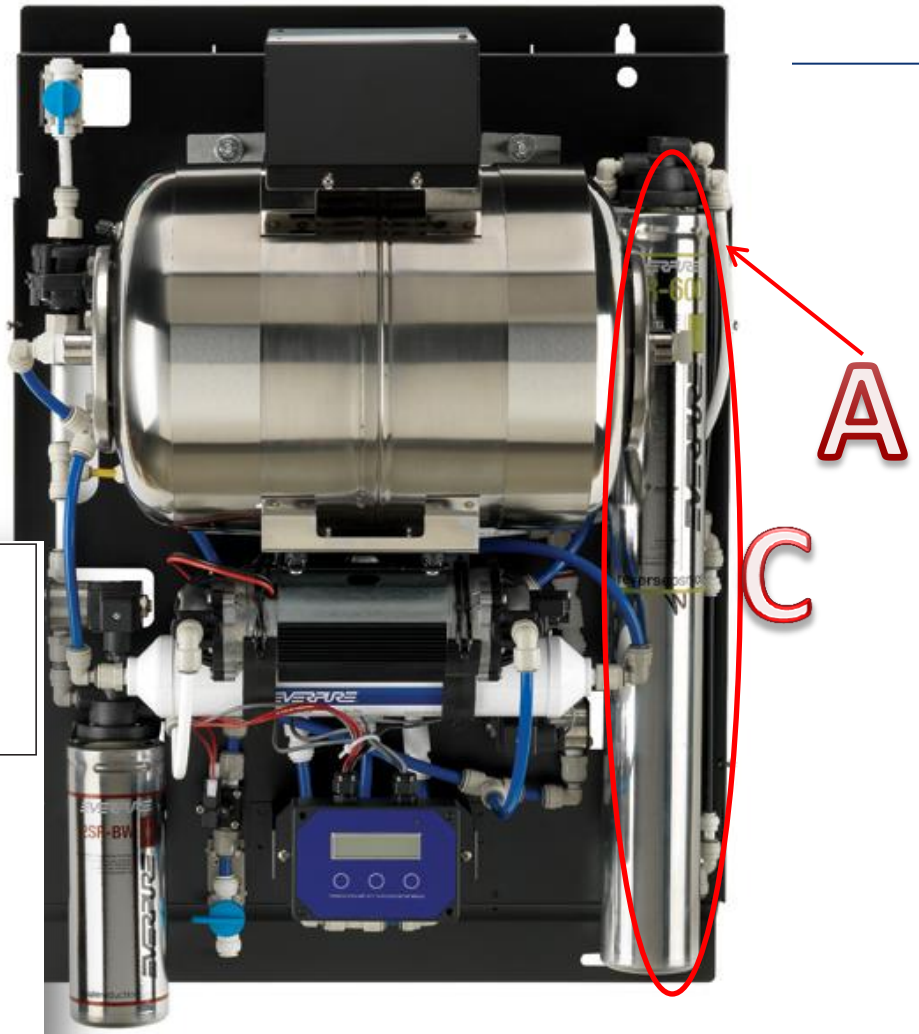
Osmosis membrane

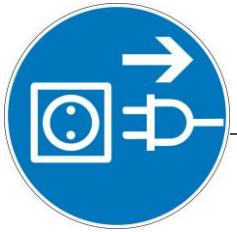
Remove old RO membrane cartridge (A)

Check the water waste water line for eventual deposit, this line should be clean (black tubing) (A)

Remove both restainers out of the waste line (C) and put the tubes without restrainer back in the line.







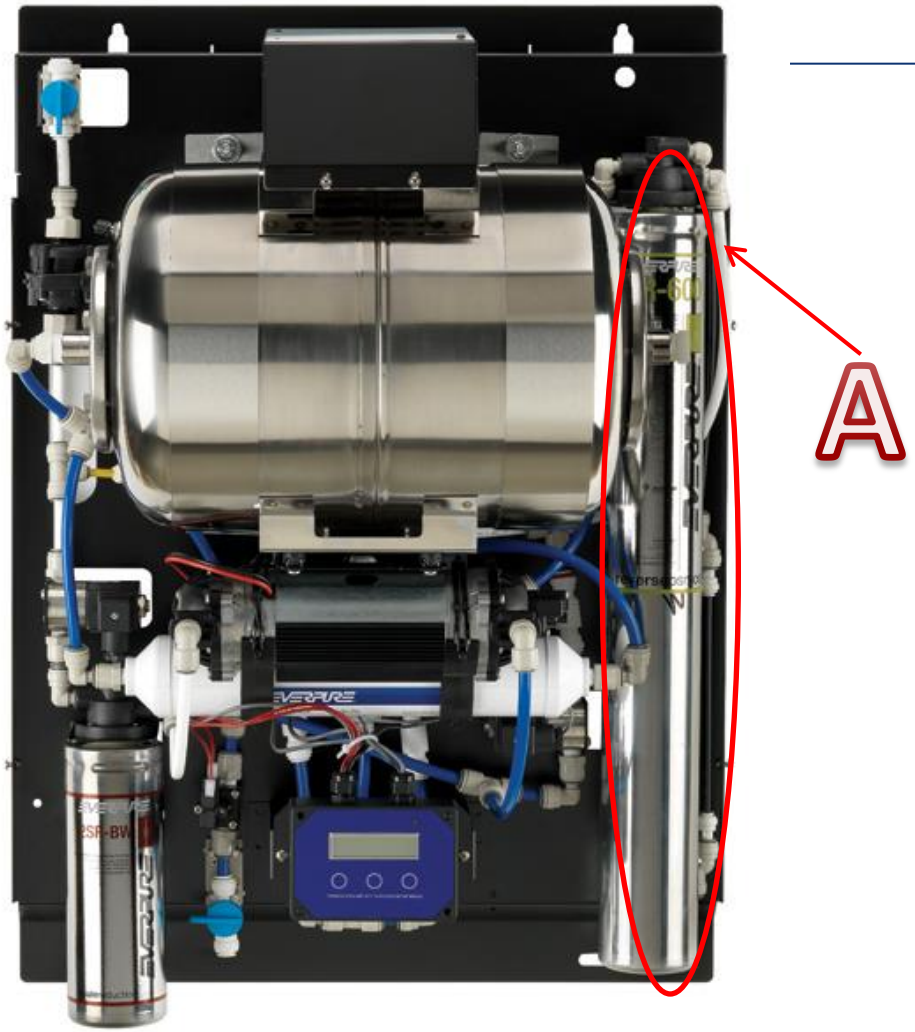
Power connection OUT !

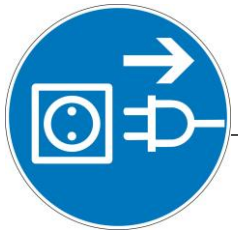
Osmosis membrane

New filter : remove the protective plastic.

Position the Osmoses membrane (A) in the filter head, push upwards while ¼ turning to the right

ATTENTION : do not damage the head of the filter cartridge or the entire membrane cartridge will be lost !





Power connection OUT !

Osmosis membrane

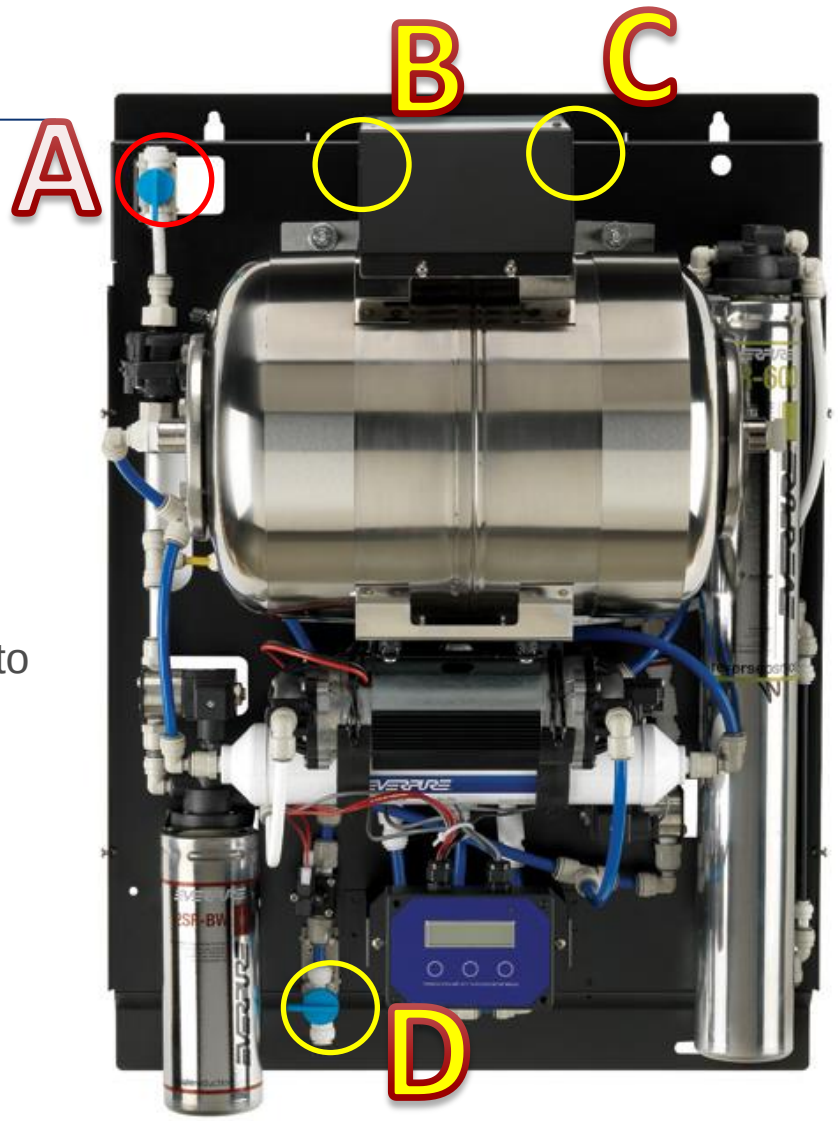
Double check all connections.

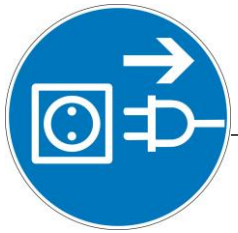
Valves OPEN (A) water inlet
Valves CLOSED (B) (C) (D)

Activate :plug the power line.
Check pressure build-up on display.
Check water waste (intense)

Have the system running for some time to flush the membrane.Unplug the system and drain the storage tank through flush valve (F)

Insert new restrainers in the waste line.





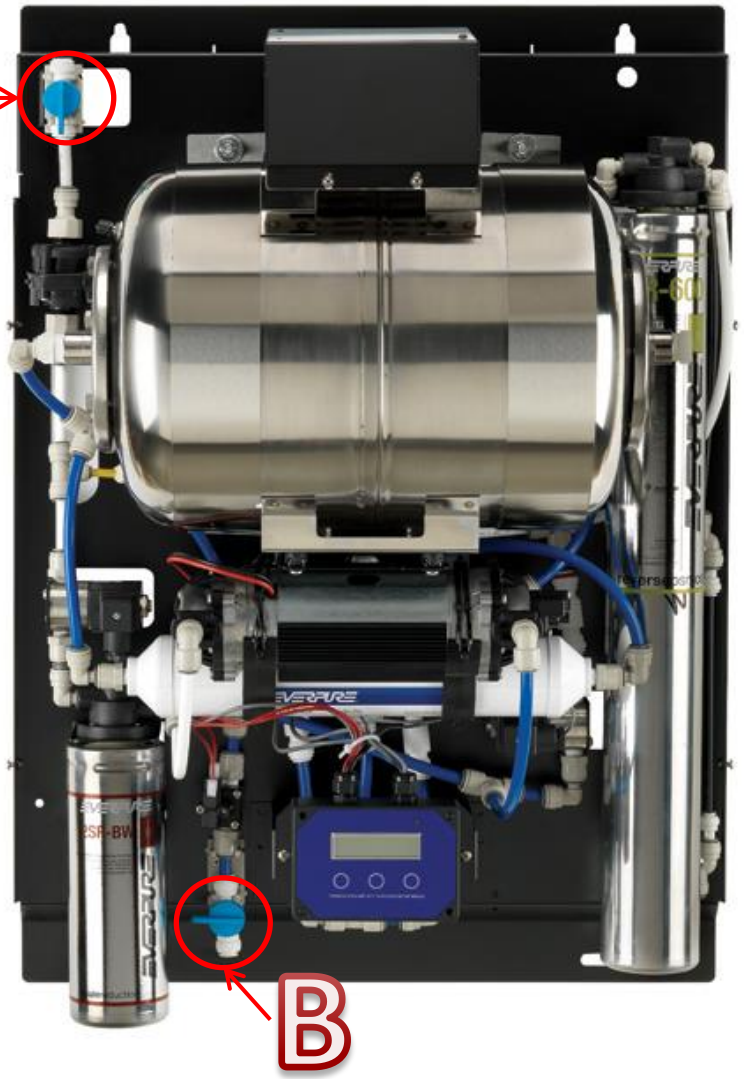
Power connection IN to activate during test
OUT when test competed !

Valve open!

Valve closed !

Production

Valve open!



Check Production rate of the membrane:

Open the water supply on the MRS (C)
Open the flush valve (B) and position a measuring recipient below the valve.

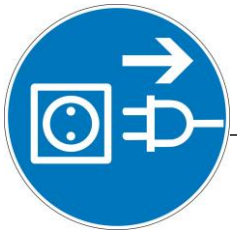
Activate the system by plugging the power line.

Once full production is running, evaluate the water volume produced in 1 minute.

If less 1 liter / minute, the membrane is clogging, should be replaced.

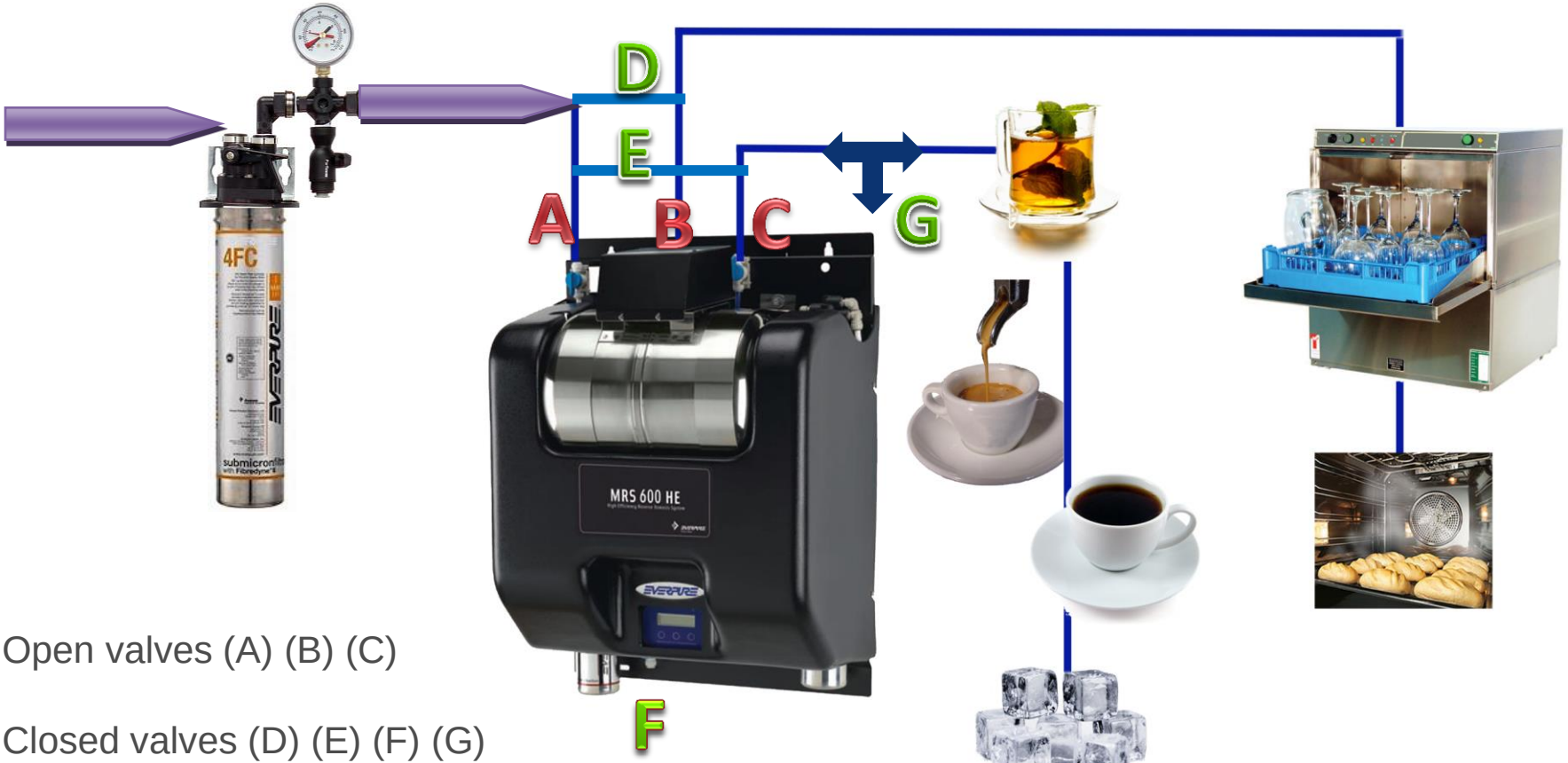
A good performing system should produce > 1 liter, optimal 1,5 up to 2 liters / minute.
Colder water = less production

Unplug the system, close flush valve (B)



Power connection IN to activate during test
OUT when test competed !

Up and running – equipment connected



Open valves (A) (B) (C)

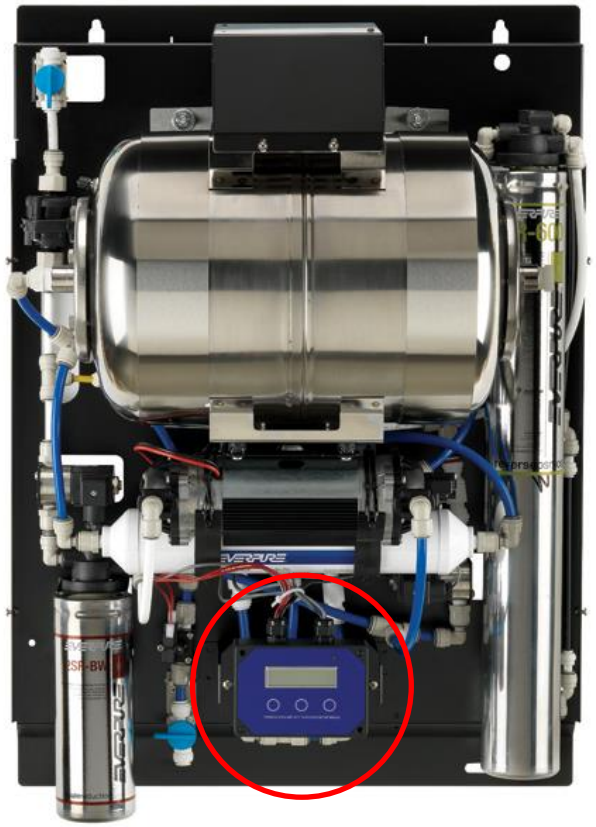
Closed valves (D) (E) (F) (G)

Valve open!

Valve closed !

Controller box replacement

EV314317 MRS 600 Controller Service Kit



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WHILE PERFORMING SERVICE YOU CAN SET THE SYSTEM ON BYPASS ALLOWING THE BUSINESS TO KEEP ON RUNNING

Bypass position

Valve open!

Valve closed !

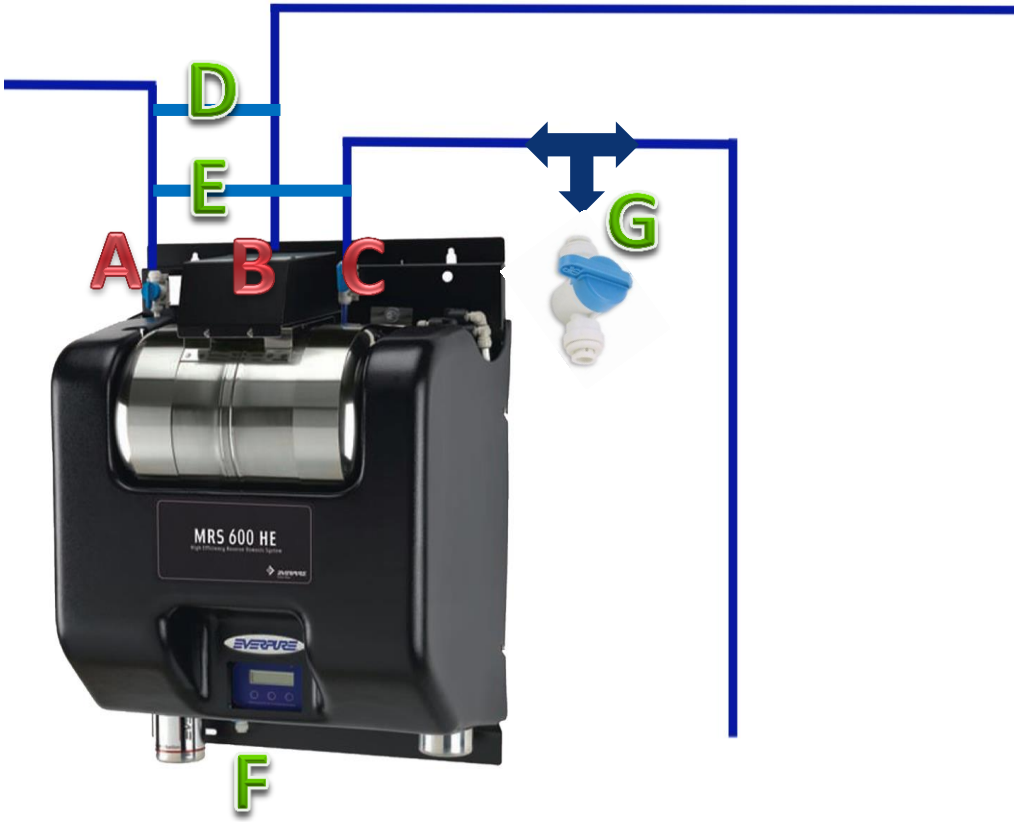
To allow the site full operational, put the system in bypass during maintenance.

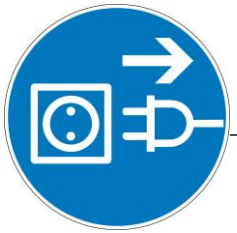
JG valves on the MRS system should be closed (A) (B) (C)

Bypass valves OPEN (D) (E)

Flush valve closed (F)
Sample valve closed (G)

The site can temporary keep on working with filtered water quality





Power connection

OUT !

WHILE PERFORMING SERVICE YOU CAN SET THE SYSTEM ON BYPASS ALLOWING THE BUSINESS TO KEEP ON RUNNING

Bypass position

Valve open!

Valve closed !

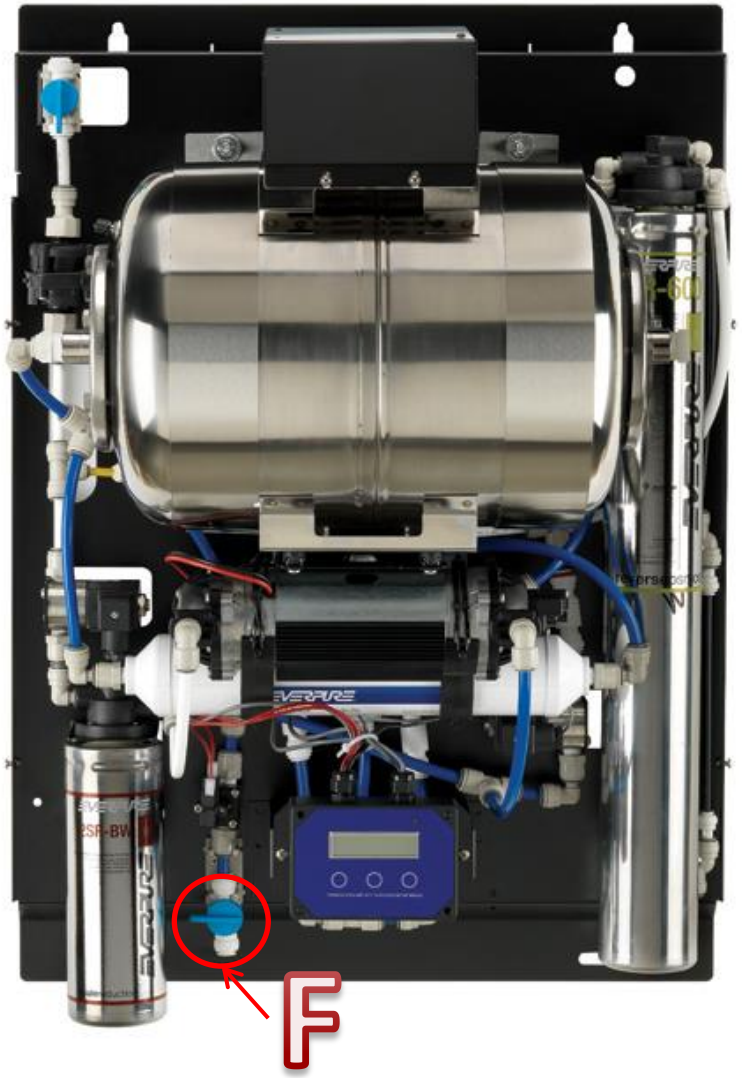
DRAIN all water out of the system

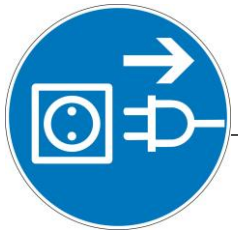
UNPLUG the power first !

Connect service tubing to Flush valve (F)

Open Flush valve (F) and release all water in a bucket or drain.

NOTICE: this water (+/- 10 litres) comes out with up to > 6 Bar pressure !





Power connection OUT !

Bypass position

Valve open!

Valve closed !

Unscrew 2 screws fixing the controller box to the frame. (A)

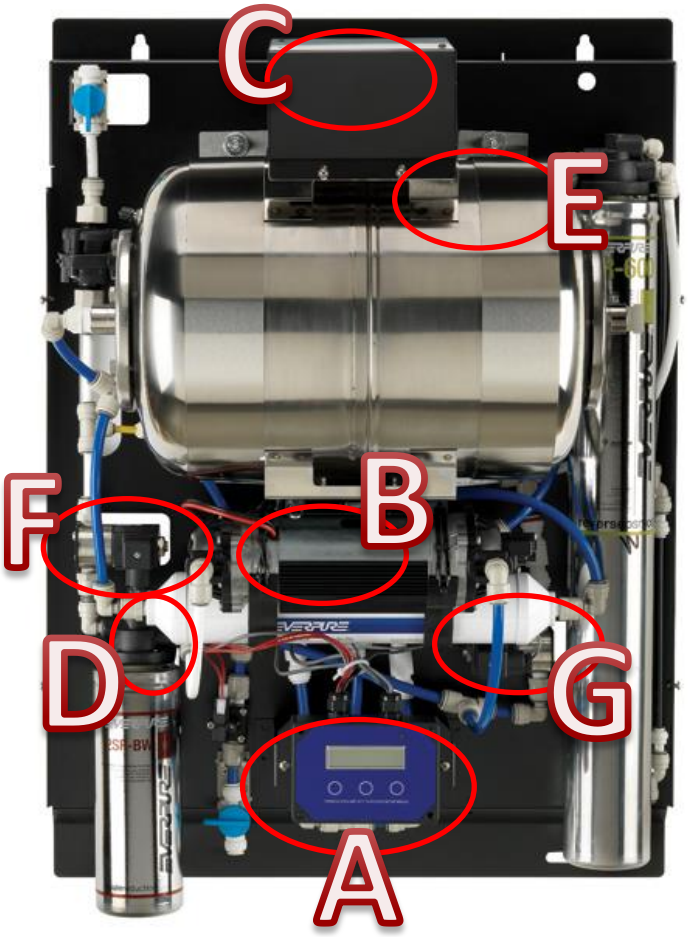
Follow the cabling towards

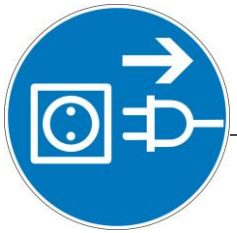
- Quick connect on motor (B)
- Quick connect Power adaptor (C)
- Quick connect pressure transducer (D)

- In-line TDS probe (E) (behind storage tank)
  NOTICE, this is JG connection which cannot be removed as long as there is pressure on the water line

- Electro valves IN (F) & FLUSH (G)
  Unscrew the screw in the middle of the connector box and remove the box entirely

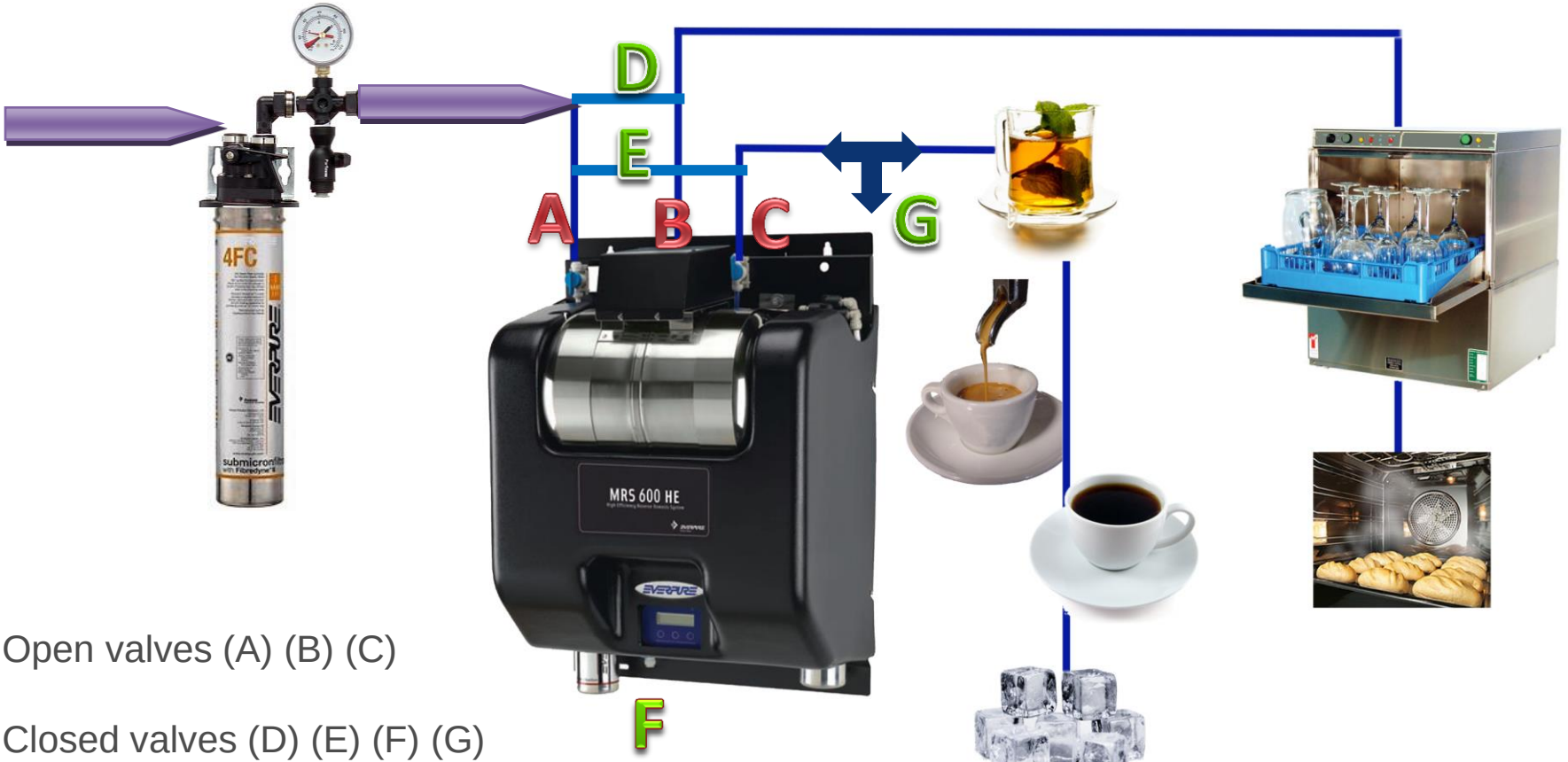
Install the new controller box the same way inversed.
NOTICE connector lines to the electro valves do have a label indication IN & FLUSH. Make sure to connect those correct t





Power connection OUT !

Up and running – equipment connected



Open valves (A) (B) (C)

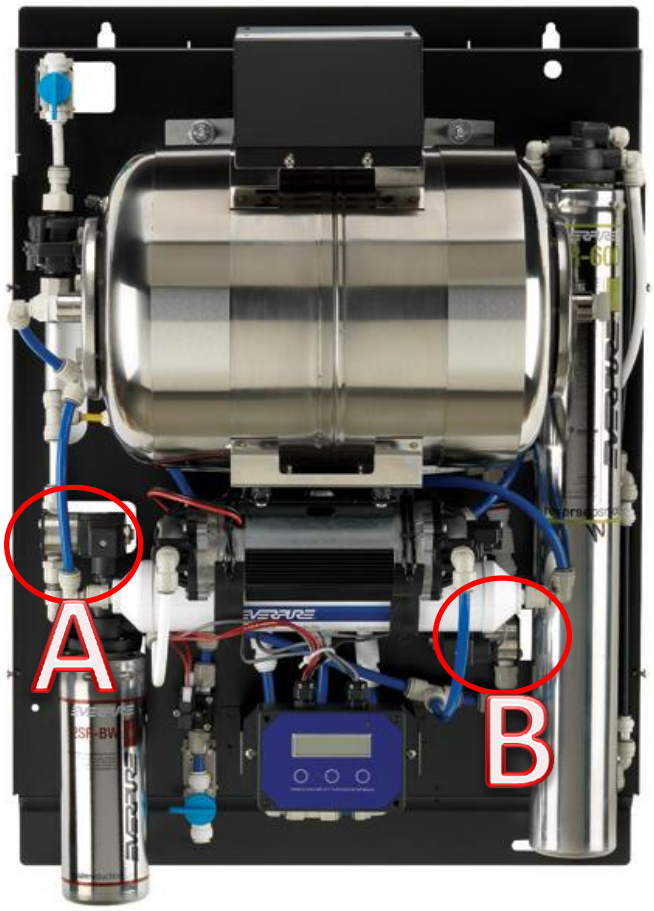
Closed valves (D) (E) (F) (G)

Valve open!

Valve closed !

Electro valves replacement

EV312808 Valve Solenoid - IN (A)
EV312808 Valve Solenoid - FLUSH (B)



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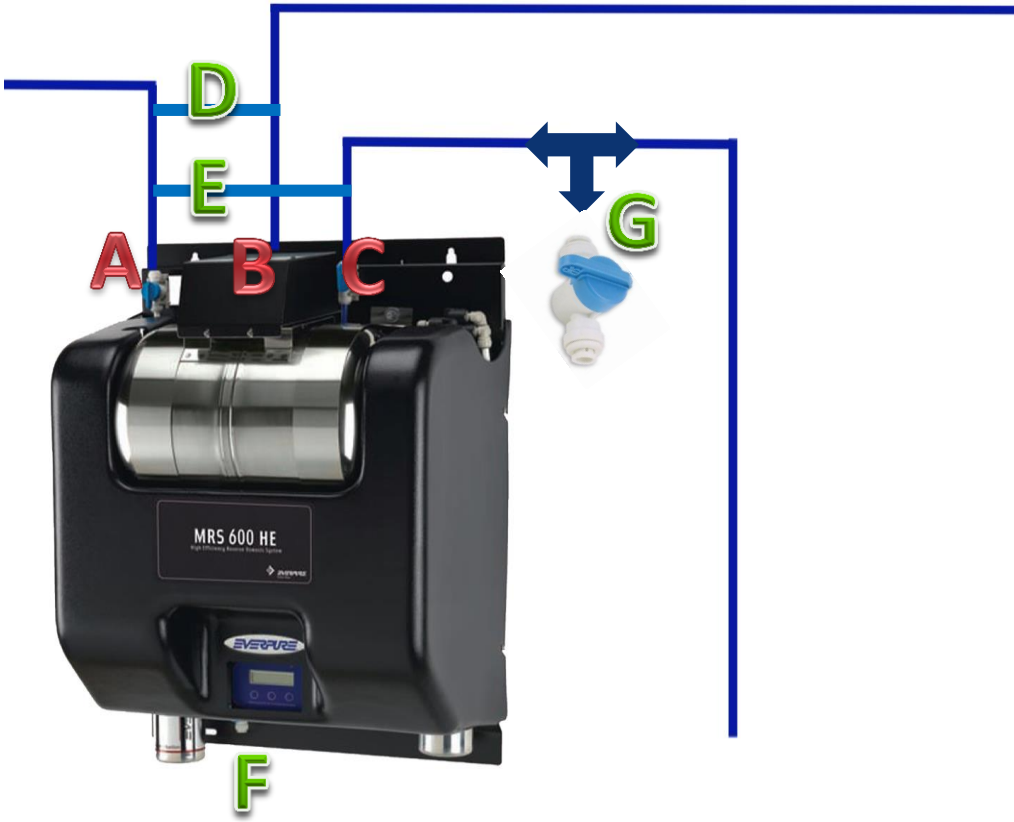

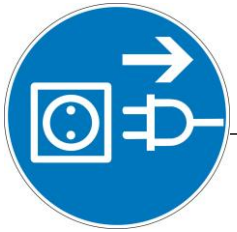

Power connection OUT !

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Bypass position

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Valve closed !

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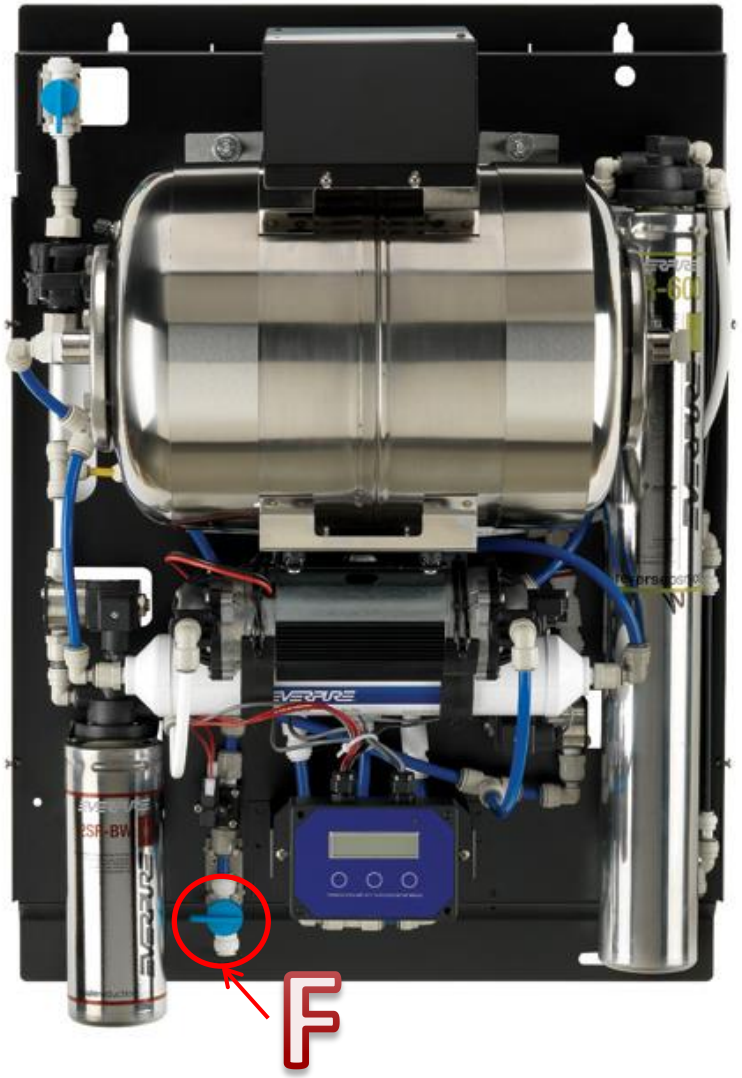
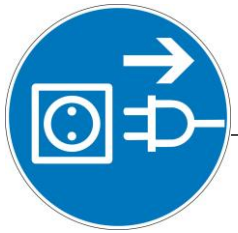




Power connection OUT !

Removing electro valves

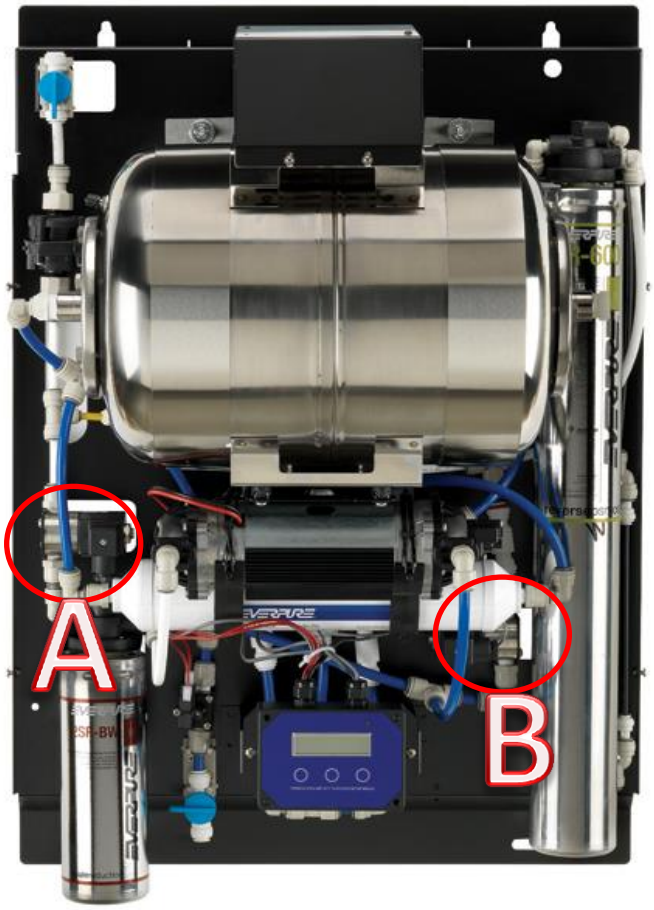
The HE system has 2 Electro.

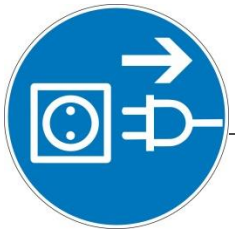
Left side = IN-coming water
Right side = FLUSH (positioned behind motor)
- used for membrane cleaning cycle

Those valves are identical, to replace unscrew the power connection on the valve. Unscrew the valve from the frame and remove quick connects.

Fit the new valve inverse way.

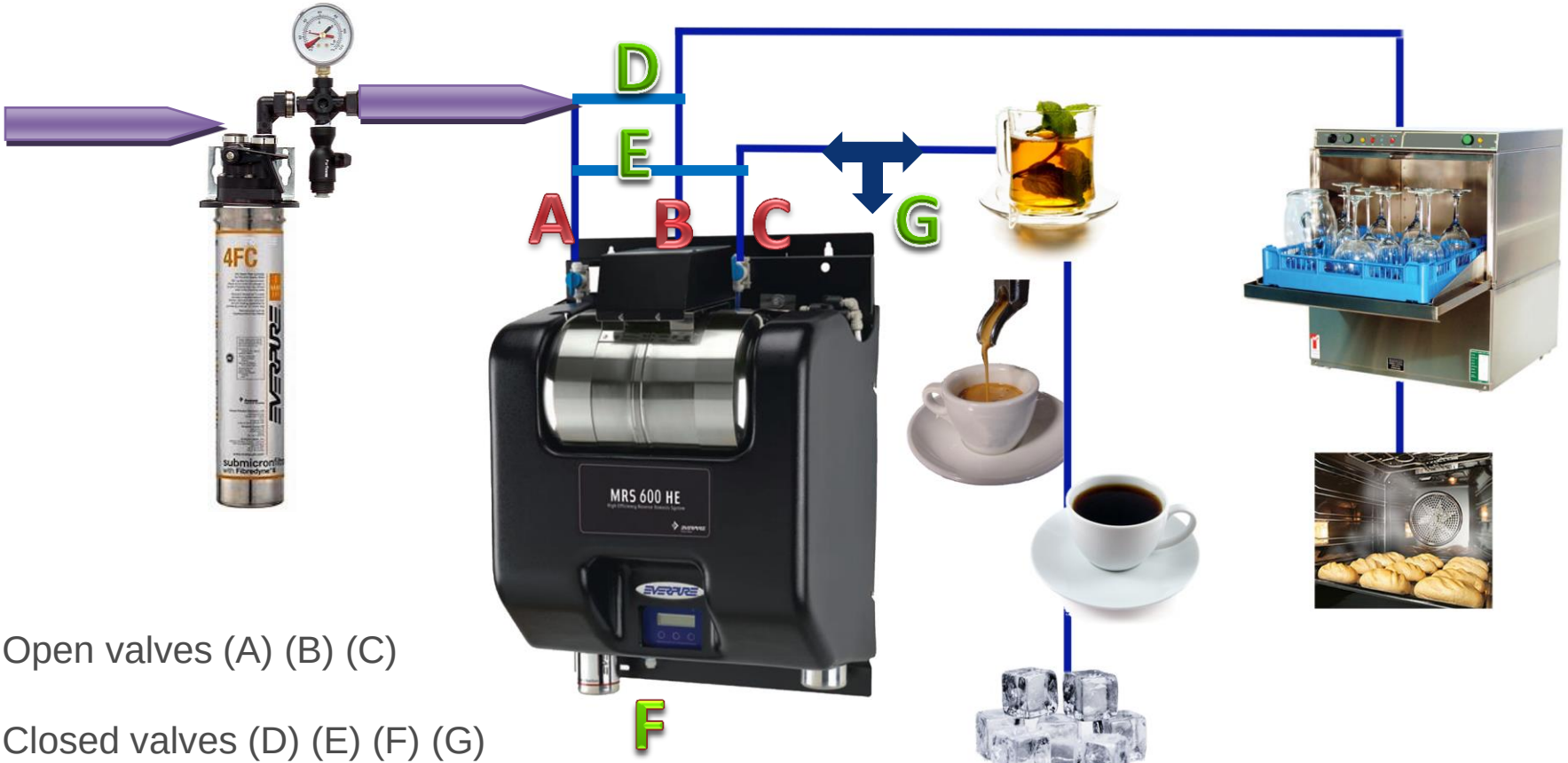
Note: Should the IN valve fail and you haven't got a spare valve, yet the system needs to be up and running… You might consider to swap out both valves. This way the syst can work and you can come back ASAP to fit a new valve on the Flush side.





Power connection OUT !

Up and running – equipment connected



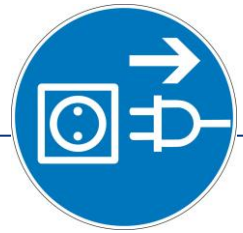
Open valves (A) (B) (C)

Closed valves (D) (E) (F) (G)

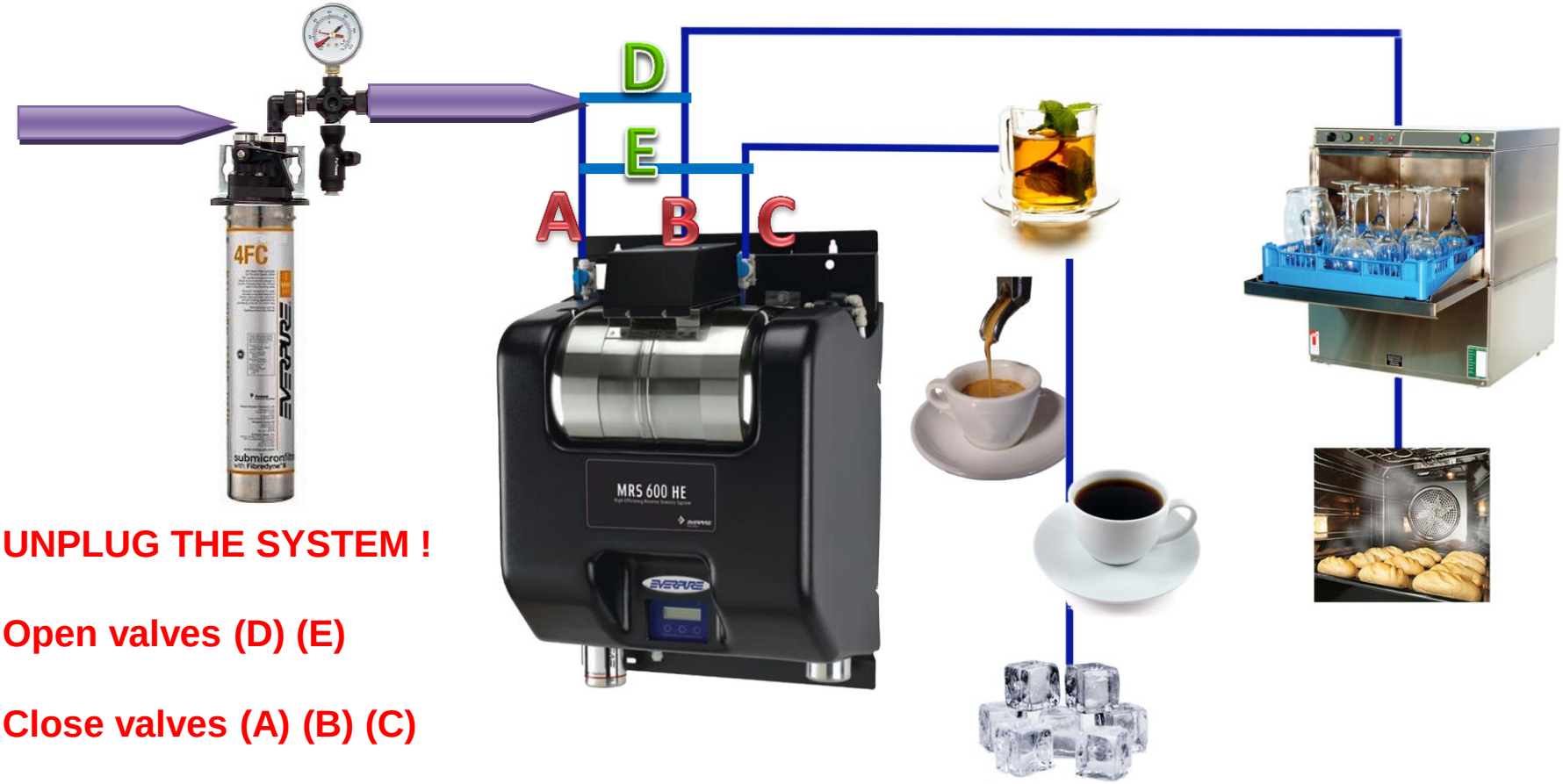
Valve open!

Valve closed !

IN CASE OF EMERGENCY



Power connection OUT !



UNPLUG THE SYSTEM !

Open valves (D) (E)

Close valves (A) (B) (C)

CALL FOR SERVICE – Store can keep on running on filtered water

Valve open!

Valve closed !

Installing and servicing the MRS600-HE system

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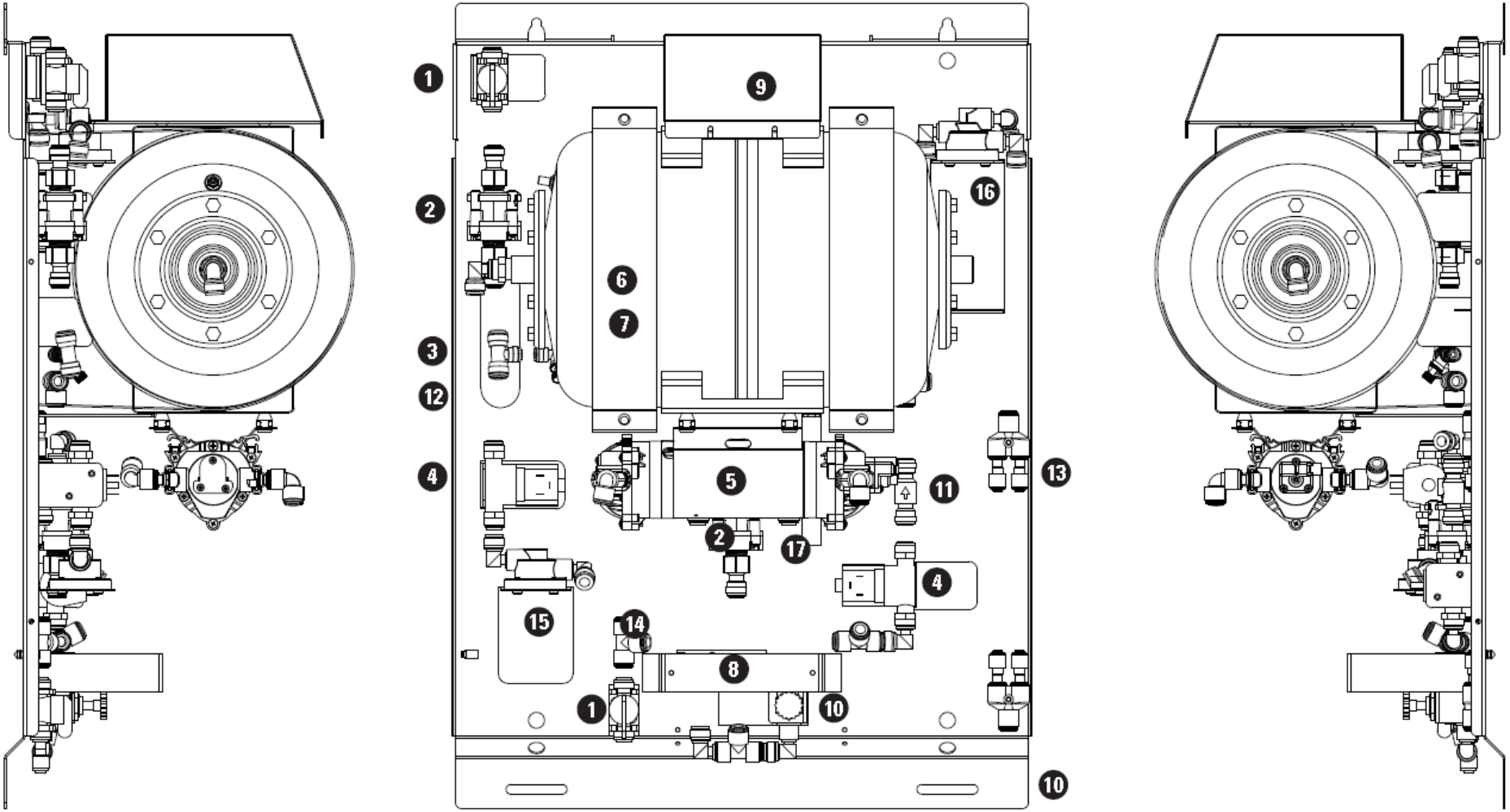
MRS600HE Overview Spare parts



MRS600HE Overview Spare parts

KEY	PART NO.	DESCRIPTION
1	EV311192	Valve, Ball, 3/8" PI x 3/8" PI
2	183-151-00	Pressure Reducing Valve
3	EV312839	Valve, 1/4" Control - TWBV
4	EV312808	Valve, Solenoid (metal body)
	EV313304	Valve, Solenoid (plastic body)
5	EV312818	Pump, dual head
6	EV313537	Accumulator Tank with Bladder
7	41-230-00	Replacement Bladder Only, 1 pack
	94-697-00	Replacement Bladder Only, 25 pack
8	EV312817	Controller with Pressure Switch Inputs (Systems mfg. on or before 1/2010)
	EV313144	Controller with Transducer Input (Systems mfg. 2/2010 to present)
9	EV313034	Power Supply - Switching *(European systems) (US, China & Australia systems mfg. 3/2012 to present)*
	EV312815	Power Supply - Non Switching *(US, China & Australia systems mfg. on or before 2/2012)*

KEY	PART NO.	DESCRIPTION
10	EV311161	Valve, 3/8" Needle - DWBV & Reject Calibration
11	EV310391	Check Valve, 3/8"
12	EV312840	Check Valve, 1/4"
13	EV312827	Restrictor, Blue, 735 ml/min
	EV312828	Restrictor, White, 1052 ml/min
	EV312829	Restrictor, Grey, 1577 ml/min
	EV312830	Restrictor, Red, 125 ml/min
	EV312831	Restrictor, Brown, 189 ml/min
	EV312832	Restrictor, Green, 525 ml/min
	EV312833	Plug, 1/4" OD
14	84-2040-60	Pressure Switch - Flush Operation (Systems mfg. on or before 1/2010)
	EV312952	Pressure Transducer (Systems mfg. 2/2010 to present)

REPLACEMENT CARTRIDGES

KEY	PART NO.	DESCRIPTION
15	EV962714	Cartridge, 2SR-BW, 1 pack
16	EV962713	Cartridge, MR-600, 1 pack
17	EV962715	In-line Filter, GS-215RO-H, 1 pack

Basic comparison between MRS600-HE and MRS600-HE-II

MRS600-HE-I

Nominal production capacity : up to 2.400 Liter / day
+/- 90 liter / hour +/- 1,5 liter / minute

Single water supply (IN-coming water)

Outgoing - RO water
- Coffee blend water

22 Liter RO storage tank on board (+/- 10 Liter water)

Internal pressure development up to 100 psi
Outgoing & Blend pressure 55 psi / 3,5 Bar

MRS600-HE-II

Nominal production capacity : up to 2.400 Liter / day
+/- 90 liter / hour +/- 1,5 liter / minute

Double water supply Hard water IN
Soft water IN (support RO membrane)

Outgoing - Coffee blend water

NO storage tank onboard, requires extra storage

Internal pressure development up to 90 psi
Outgoing & Blend pressure 65 psi / 4,5 Bar

Basic comparison between MRS600-HE and MRS600-HE-II

MRS600-HE-I

NO pre-filtration onboard, requires extra pre-filtration on sediment and chlorine.

Post-filtration: GAC – In-line filter onboard

Single Twin head booster motor

MRS600-HE-II

Triple cartridge pre-filtration onboard
Cartridges with sequestering technology

Post-filtration: Twin cartridge fine filtration onboard

Booster motor Inlet
Booster motor Permeate

Common spares MRS600-HE and MRS600-HE-II

EV962713 MRS 600 GPD RO BW replacement Cartridge
EV312808 Valve Solenoid
EV314317 MRS 600 Controller Service Kit
EV313034 Power Supply - Switching (European systems)

EV311161 B Valve, needle, PVC, 3/8" PI
EV312827 Restrictor Blue 735 ml/min
EV312828 Restrictor White 1052 ml/min
EV312829 Restrictor Grey 1577 ml/min
EV312830 Restrictor Red 125 ml/min
EV312831 Restrictor Brown 189 ml/min
EV312832 Restrictor Green 525 ml/min
EV312952 Transducer

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