



BWT PERMAQ[®]
COMPACT 41
Reverse Osmosis Plant

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1 GENERAL INFORMATION

This assembly and maintenance instruction applies to BWT PERMAQ® Compact 41 total desalination plants.

The assembly and maintenance instruction contains important information about the correct installation and operation of the BWT PERMAQ® Compact 41.

1. Enclosed "Start-up test"- (section 13.4) shall be completed and filed together with the operating journal.
2. Operating journal shall be updated as described in "Operating journal" (section 13.5).
3. Floor drain must be available in the immediate vicinity of the plant.
4. The BWT PERMAQ® Compact 41 plant removes more than 98 % of all salts, and that is why you need to be alert to possible post-treatment with mixed bed or similar, if a better water quality is requested.
5. The authorised agent takes on full responsibility without costs for BWT who, however, grants a 12 months guarantee inclusive of replacement of defective spare parts, on condition that the parts are returned to BWT along with a specification of the fault and stating production month /year (plant no.).
6. The warranty becomes invalid, if the plant is not commissioned by an authorised BWT service technician.
7. The warranty becomes invalid, if maintenance intervals are not met.

Your BWT PERMAQ® Compact 41 plant is equipped with a 11

litres pressure tank with a capacity of max 3.5 litres for every flush cycle and with a pressure as that of a general waterworks.

Your BWT PERMAQ® Compact 41 plant, with its compact and finished design, is also easy to install since all internal installations have been pre-assembled in our factory.

Your BWT PERMAQ® Compact 41 plant is furnished with rollers in a stainless frame, i.e. the plant can easily be placed under a table and pulled out for easy and unproblematic servicing.

Your BWT PERMAQ® Compact 41 plant is designed for minimum maintenance and a long and unproblematic operation.

This, however, is on condition that you install and maintain the plant correctly.

Always read this instruction prior to use.

2 EXPLANATION OF WORDS

There will be a few technical explanations in this manual, which we describe below:

Permeate	The treated, totally desalinated water which is produced by the RO plant and is then supplied to the storage basin.
Concentrate	The water that is led to outlet. This water contains the salts and minerals which have been removed from the raw water.
Raw water	The water that is led to the RO plant and which

will be desalinated in the RO plant

TDS Totally dissolved salts, measured in mg/l

Conductivity A designation for the conductivity of the treated water; the lower value, the better water quality

Membranes The filters of the plant which at high pressure and flow are capable of desalinating the raw water

RO The abbreviation of Reverse Osmosis

Softening plant A pre-treatment plant for softening the raw water (removes hardness from the raw water)

3 POSITIONNING OF THE PLANT

The plant has to be placed in a non-freezing environment on a plane surface with a drain nearby.

The foundation must be able to withstand a weight load of 50 kg in total which is the approximate weight of the RO plant in operation.

The plant is equipped with rollers, so in case the location of the plant requires that the plant be moved, the surface must be plane and solid.

The outside measures of the BWT PERMAQ® Compact 41 plant are WxDxH: 295x570x445 mm, but on placing the plant, please con-

sider that the cover of the plant must be de-mountable for easy servicing of the plant. Ensure that the plant can easily be pulled out for servicing.

You should also make room on the back of the plant for the water installation; especially you should take into account the outlet hose from the plant. The hose may never be bent!

If there is no floor drain near the plant, installing the plant is at your own risk.

4 WATER QUALITY

The raw water, which is to be treated in the BWT PERMAQ® Compact 41 plant, must be drinking water quality with maximum 500 mg/l TDS.

Max. raw water temperature is 25 °C. The plant is adjusted at 10 °C in our factory.

The raw water may maximum contain:

* Fe:	0.05 mg/l
* Mn:	0.02 mg/l
* Cl:	0.1 mg/l
* Turbidity:	1.0 NTU
* SDI:	3.0 %/min
* KMnO ₄ :	10 mg/l

If there are doubts about the raw water composition, a water analysis must be made. The plant must be connected to a raw-water pressure of minimum 2 bar and maximum 7 bar. The quality of the treated water will be less than 50 µS/cm at 10 °C.

5 WATER CONNECTIONS

Note: All water connections of the plant must be made in compliance with local regulations.

5.1 Connection of raw-water (inlet water)

BWT keeps a complete assembly kit for the BWT PERMAQ® Compact 41 in stock.

At the inlet side of the plant a ball valve must be installed to provide for the disconnection of raw water upon servicing the plant.

Connect the ¾" flexible pressure hose supplied with the plant to inlet raw water at the back of the plant. Connect the other end of the hose to the raw-water supply.

The best operating result will be obtained by connecting to minimum ¾" raw-water pipes, as using a smaller pipe dimension might increase the risk of inadequate operating pressure and consequent drop-outs of the plant, e.g. during flushing of membranes by start-up.

5.2 Connection of permeate (treated water)

Connect a minimum ¾" flexible pressure hose to outlet permeate at the back of the plant. The other end of the hose must be connected to the consumer or a subsequent pipe connection for further transport to the consumer of the treated water.

Note: totally desalinated water might accelerate corrosion. Therefore always use corrosion proof piping for the treated water, e.g. stainless steel or PVC.

5.3 Connection of outlet hose

Start by dismantling the "bent" blue hose which is fitted on the outlet valve).

Install the supplied 10 mm plastic hose to outlet. It is important that the hose is pressed all the way in.

The opposite end shall be connected to outlet. The hose may not be led down into the outlet water, though, since the water may risk getting sucked back into the plant during standstill. Note! The outlet hose may never be bent or in any other way obstructed, as this would damage the plant membrane.

6 ELECTRICAL CONNECTIONS

Note! The electrical connections must be made in compliance with local regulations.

The electrical connection to the BWT PERMAQ® Compact 41 plant must be as follows:

*Voltage:	230 Volt-50 Hz
*Fuse:	10 Amp
*Max. power consumption:	1.0 kW

Colour code of power cable:

Blue wire:	N
Brown wire:	L
Yellow/green wire:	PE

All internal connections in the plant like e.g. pump control and level control are pre-assembled in our factory. This means that only the supplied power cable which is connected to the control box must be connected to a power plug or hard wired.

If for some reason you need to change the factory-mounted power cable, please cf. Annex – 13.3 Wiring Diagrams.

7 COMMISSIONING OF PLANT

Check prior to commissioning that all water and electrical connections have been made as described in the previous sections and are in compliance with local regulations.

- Supply raw water to the plant.
- Check that all water connections are tight.
- Before connecting the plant to your dishwashing machine, lead the permeate hose to drain.
- Completely open the concentrate valve V02 (Section 10.2, Fig 2) and close the recirculation valve V01 tightly. (Section 10.2, Fig 2)
- Now switch on the power supply and the main switch of the plant located in the control box.
- The plant must operate and flush to drain for 20-30 minutes before readjusting the concentrate/recirculation valve.
- After flushing, readjust the concentrate valve V02 and recirculation valve V01. Read below paragraph carefully before commissioning the plant.

REMEMBER: Under all circumstances please observe the following:

- Maximum amount of permeate: 130 l/h, 10-25 °C
- Operating pressure: 14-16 bar
- Maximum pressure: 16 bar

The permeate amount and maximum pressure must never exceed the above-mentioned values. If they do, the membranes of the plant will be damaged.

7.1 Adjustment of concentrate amount

Important: Read the entire chapters 7.1, 7.2 and 7.3 before adjusting.

The outlet amount has to be adjusted and whichever outlet amount is most suitable for your plant depends on the inlet water quality. A too high water utilisation will damage the membranes

of the plant. Provided that the raw water complies with the demands on the water quality, the plant will be able to operate with a water utilisation of 40, i.e. the recovery of the plant is 40 % (surface water 50 %). Using softened inlet water a recovery 70 to 80 % is obtainable depending among other things on the amount of organic material in the water.

An easy way of checking the outlet amount of the plant is:

$$\text{Outlet amount (l/h)} = \frac{100 \times \text{permeate capacity (l/h)}}{\text{recovery (\%)}} - \text{permeate capacity (l/h)}$$

Ex.: BWT PERMAQ® Compact 41 with 40 % recovery:

$$\text{Outlet amount} = \frac{100 \times 130}{40} - 130 = 195 \text{ l/h}$$

BWT PERMAQ® Compact model	Permeate capacity (l/h)	Outlet amount (l/h)	
		Ground water (40% recovery)	Softened water (75% recovery)
41	130	195	43

When the requested amount of outlet water has been obtained, tighten the lock nuts on the outlet valve so that it is locked. It is important to check the outlet amount after the lock nuts have been tightened to make sure that the valve has not moved. Both lock nuts must be tightened.

Important! The outlet valve must be locked on the prescribed outlet amounts. If the outlet valve is closed so that the outlet amount is reduced, then the plant membranes will become damaged.

7.2 Adjustment of recirculation amount

Afterwards the recirculation amount shall be adjusted by loosening the lock nut on the recirculation valve V01. Adjustments shall be performed keeping the amount of permeate at maximum 130 l/h and at a temperatures between 10-25 °C.

If the temperature is below 10 °C, then the capacity must be approx. 3 % lower than the normal capacity for each degree below 10 °C.

To reach a normal permeate capacity the pressure shown on the manometer must be approx. 14,5 to 16 bar P11. (Section 10.2, Fig. 1)

When the requested pressure and permeate capacity has been obtained, please check again if the outlet amount has been adjusted correctly. (We recommend loosening the lock nut while fine-adjusting the valves).

When both valves have been adjusted they are to be locked by means of the lock nuts. Be careful not to move the valve when tightening the nuts.

Note: After the valves have been locked, the plant must be started and stopped 3 times and then the flow must be checked again. Readjust the valves if necessary. Now check the quality of the treated water at the permeate outlet (Section 10.2, Fig. 3).

to see if the conductivity is below the 50 µS/cm.

The plant operating pressure can be read on high-pressure manometer P11, 14,5-16 bar.

Check that the RO plant stops automatically in case of too low

raw-water pressure or lacking raw-water supply. This is done by slowly shutting off the raw-water supply while the RO plant is still operating. When the water supply has been interrupted, the RO plant should stop automatically within 10 seconds, depending on the settings.

To put the RO plant back into operation the water must be re-established and the power of the plant must be disconnected for 5 seconds and subsequently reconnected, upon which the RO plant will be operating normally.

7.3 Setting permeate outlet pressure

When opening consumption of permeate, it will, to begin with, be supplied at a pressure of approx. 4.2 bar and then it drops to approx. 2.0 bar over a period of 15 seconds. If e.g. the demand is 2.2 bar for the entire period, then it may be adjusted by throttling the permeate valve V03 (Section 10.2, Fig. 3)., however this prolongs the period in which the water is supplied.

The plant is now operating and ready for use.

7.4 Use of by-pass

Furthermore the plant is supplied with a bypass for raw water, e.g. if for some reason the plant is exposed to operational disturbances, you will be able to open this valve and thus gain access to the raw-water outlet for consumption. Turn the switch on the back to "by-pass".

IMPORTANT! When the plant is restarted, you must remember to close the by-pass valve again, otherwise you will get a mixture of permeate and raw water on the outlet.

8 AUTOMATIC FUNCTIONS

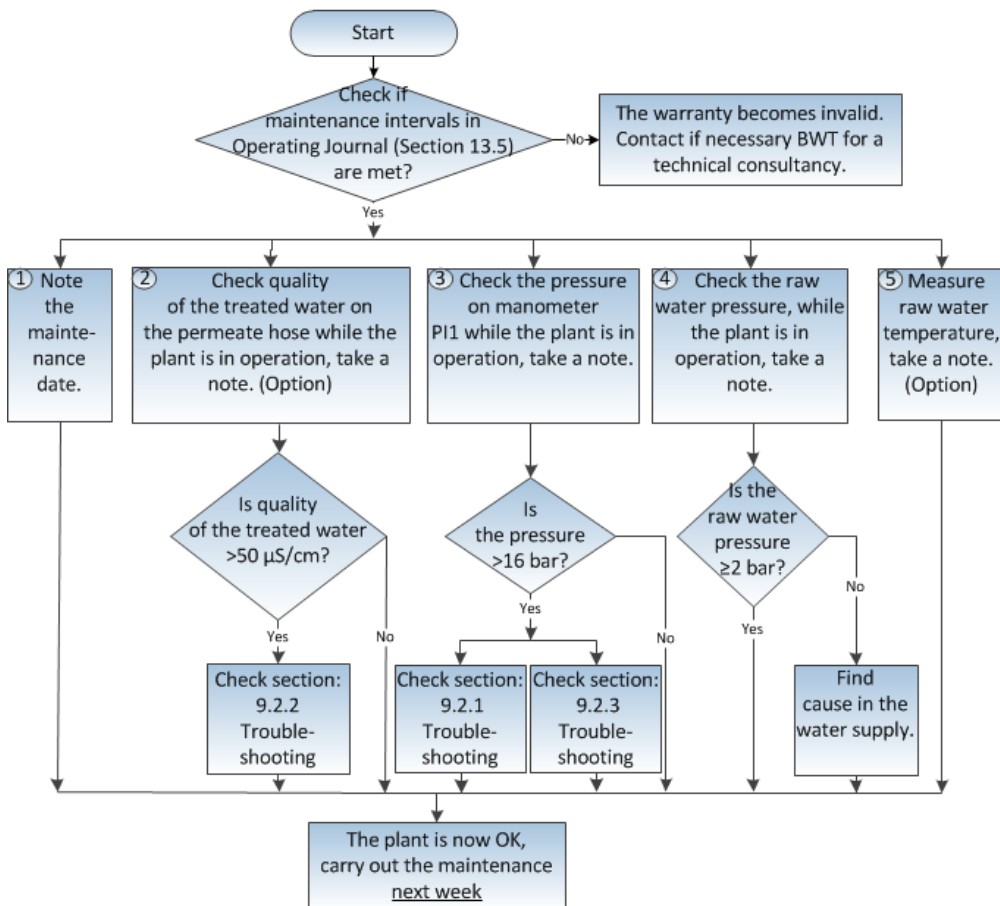
The BWT PERMAQ® Compact 41 plant comes with a control box with following built-in functions:

- Time delay on raw water pressure switch (P1): 2 seconds
- Time delay on permeate pressure switch (P2): 2 seconds
- Solenoid valve controls raw water inlet
- The pressures switch stops the plant in case of too low raw-water pressure < 0.5 bar for more than 2 min. A red lamp on the control panel indicates failure on the RO plant.
- Pressure switch control of the pressure tank. The high-pressure pump stops when the pressure in the pressure tank reach 5.2 bar, the RO flushes and the pressure drops to 4.2 bar. The high-pressure pump starts again when the pressure reach 3.0 bar.
- Alarm will go off if pump has been running for more than 20 min
- Discontinuation of pump will be delayed by 10 seconds.
- Alarm conditions and DIP-switch, se section 9.2.10 and 9.2.11.

9 MAINTENANCE AND TROUBLE-SHOOTING

9.1 Maintenance

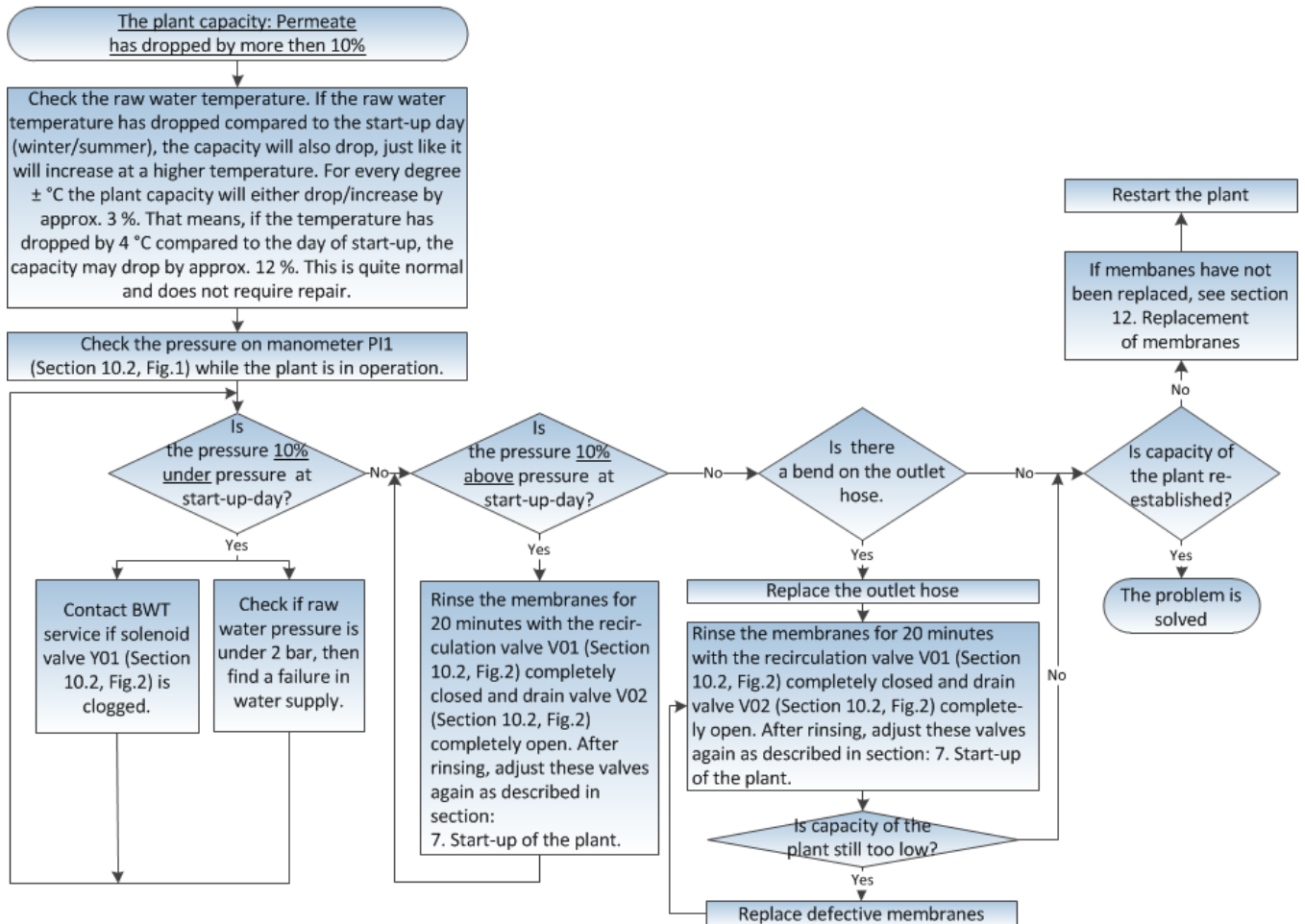
The BWT PERMAQ® Compact 41 plant is produced and designed for a minimum of servicing and maintenance. However, there are certain functions which should be checked regularly. Maintenance intervals should be performed once a week – read section 13.5 Operating Journal.



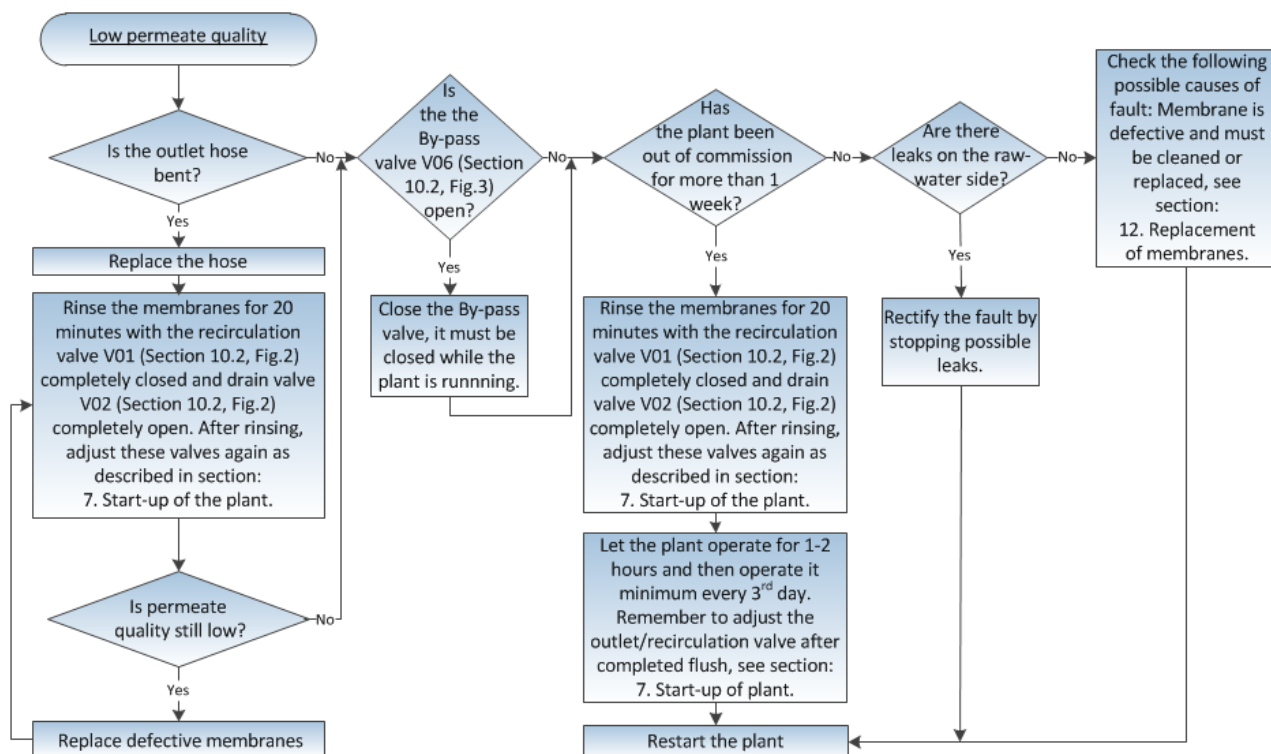
9.2 Trouble-Shooting

This section deals with the problems that may arise on the plant.

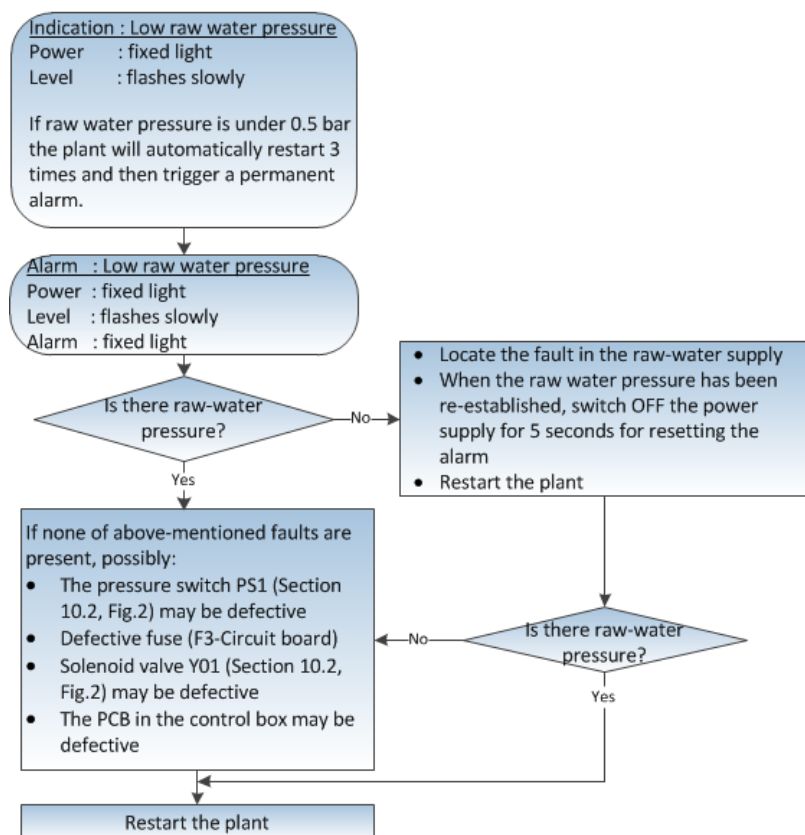
9.2.1 The plant capacity has dropped



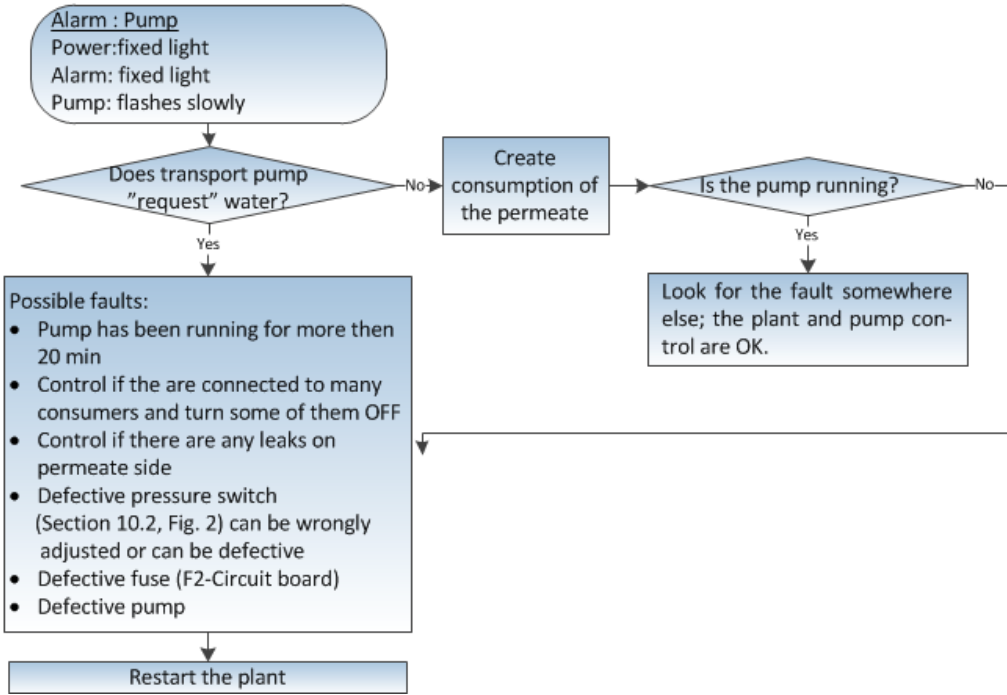
9.2.2 The quality of the treated water is higher than 50 µS/cm



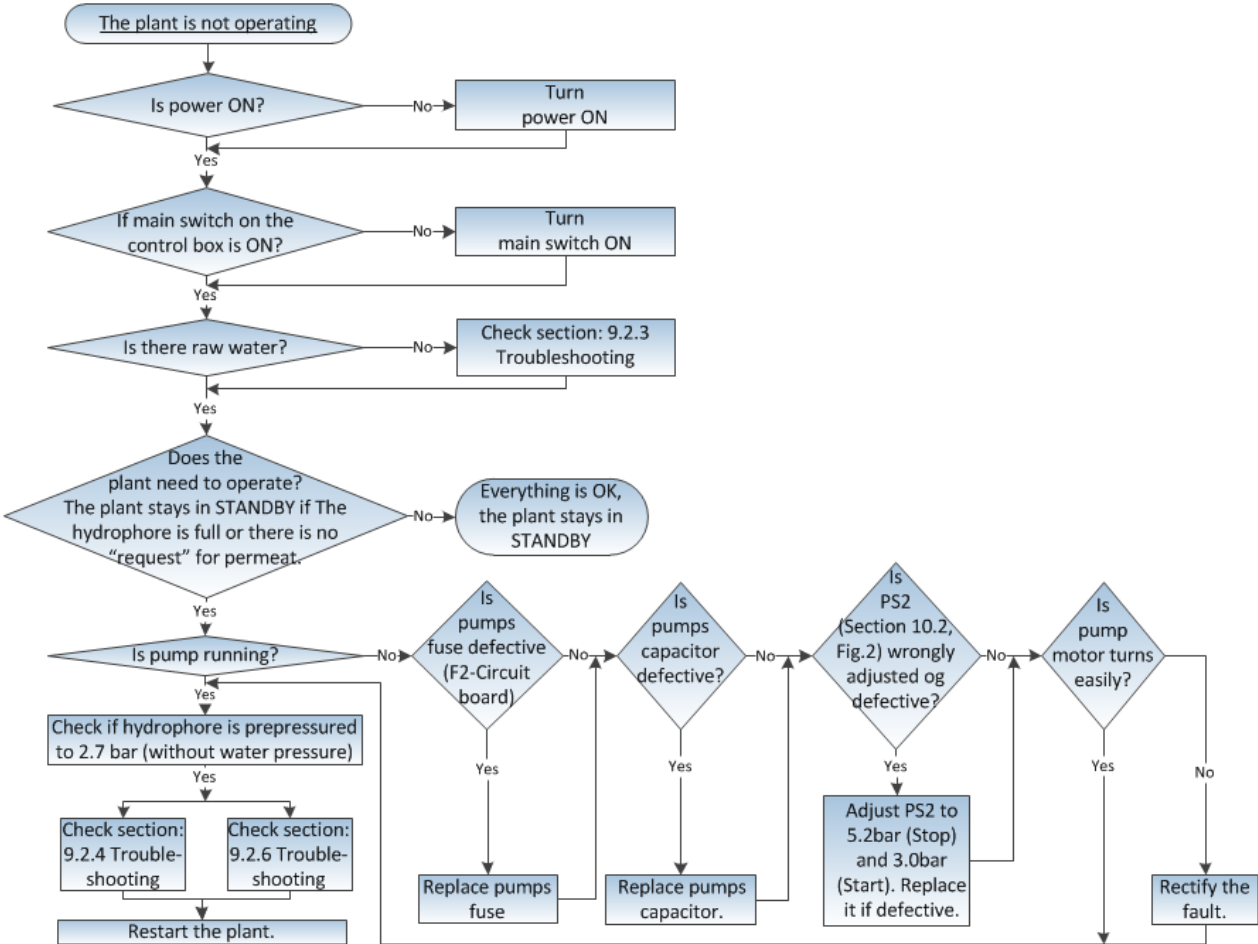
9.2.3 Alarm: Low water pressure



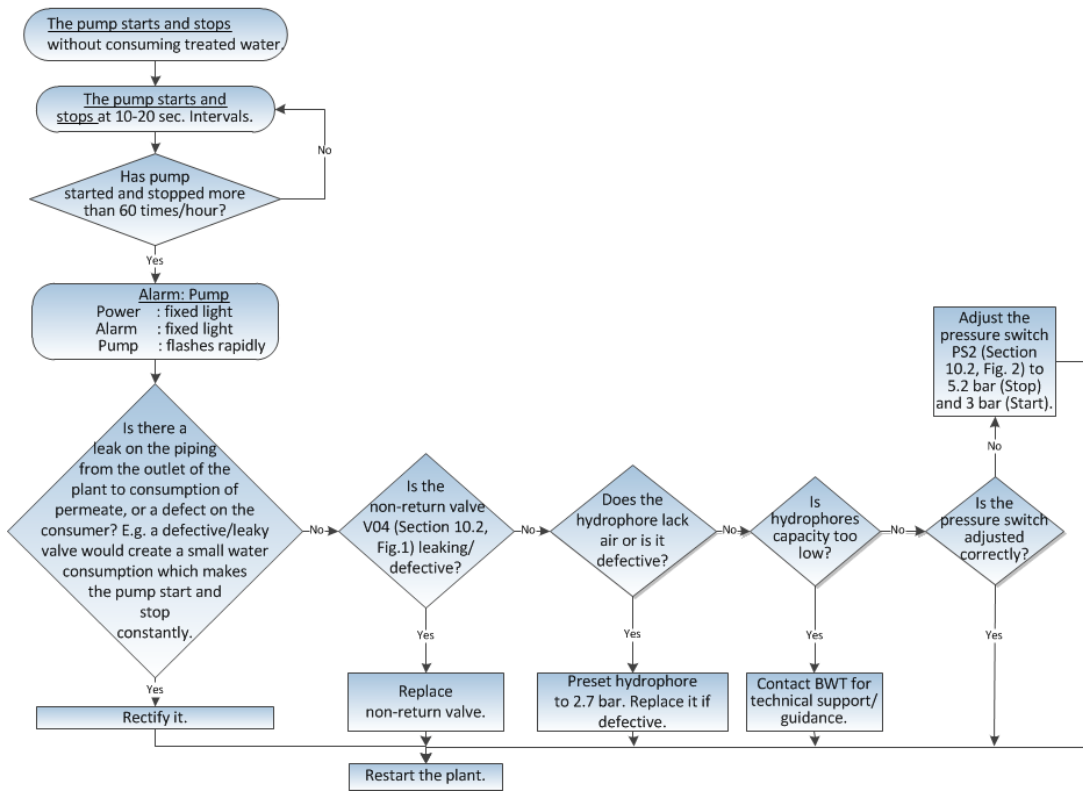
9.2.4 Alarm: Pump



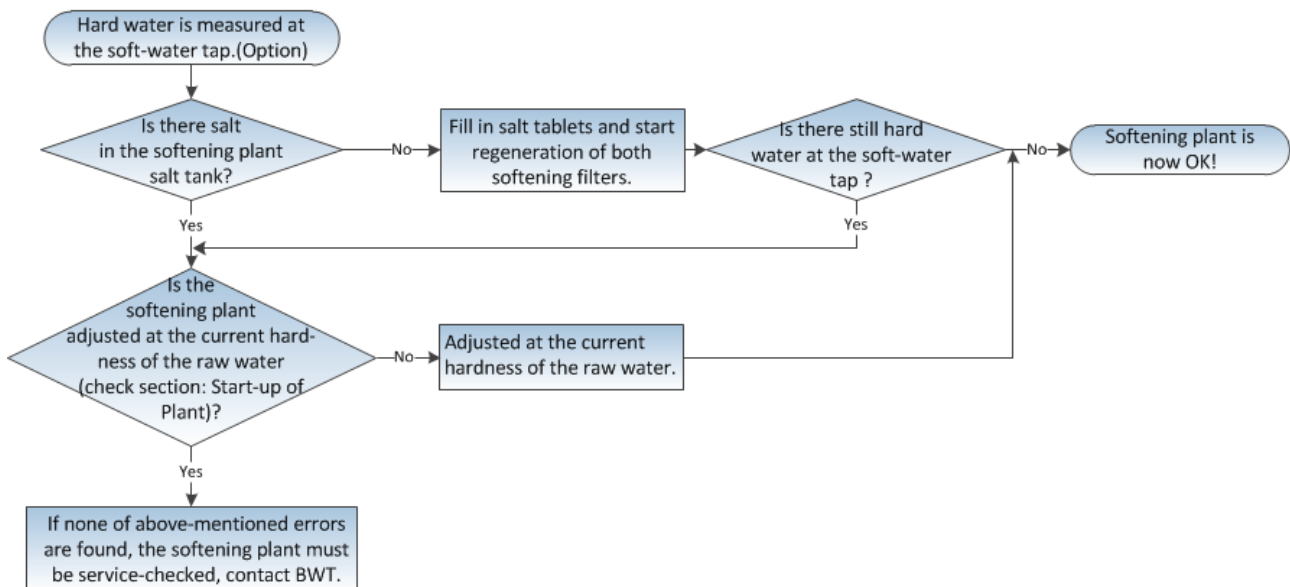
9.2.5 The plant is not operating



9.2.6 Alarm: The pump starts and stops



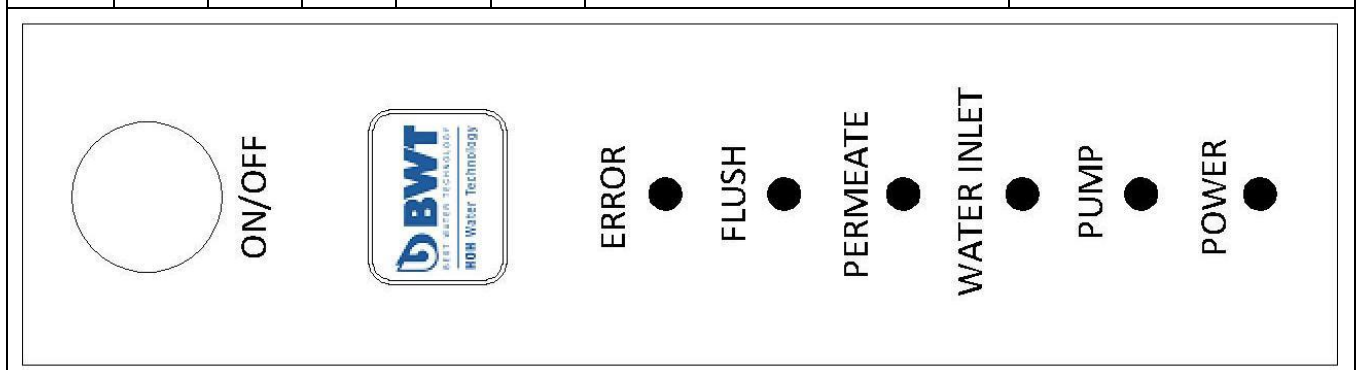
9.2.7 Hard water is measured at soft-water tap (option)



9.3 Overview of the alarm conditions

LED function: In normal operation the LED's are lit corresponding to the components they represent.

						External stop: (Nothing is working)	Remove the cause to external stop signal
						Too low inlet pressure: (Pump stopped)	Automatic restart (3 times) if raw water pressure is <0.5 bar
						ALARM - Too low raw water pressure: (Nothing is working – permanent condition)	See Section 9.2.3
						ALARM - Too long runtime pump: (Nothing is working – Permanent condition)	Pump has been running continuously for more than 20 min. See Section 9.2.4
						“Re-start ALARM” on pump: (Nothing is working – permanent condition)	To many Start and Stop. Check if permeate pipe or hydrophore is leaking. See Section 9.2.6
						Flushing membrane	
						RO Plant is running, everything OK	
						RO Plant is on Standby	
ERROR	FLUSH	PERMEAT	WATER INLET	PUMP	POWER	Description of alarm- and fault conditions	Trouble-shooting/ comments



LED's are lit	LED's flashes slowly (1/2 Hz)	LED's flashes rapidly (5 Hz)

The plant emits beep tone at Alarm condition (Nothing is working), which can only be neutralised by rectifying the fault, then switching the plant OFF for 5 seconds and switching ON again.

9.4 Settings

It is possible to change the various time settings for Start, Stop, flush time and Alarm, plus delayed start-up of pumps.

Use of DIP-switch:

- No. 1 Pump
- No. 2 Pump
- No. 3 Selection of BWT PERMAQ® Compact 41 model
- No. 4-8 Flush time (The seconds added together gives the flush time)

FACTORY SETTING

DEL / OFF 2 SECONDS	1	<input checked="" type="checkbox"/>	NO		DEL / ON 10 SECONDS
ALARM / OFF NO ALARM	2	<input checked="" type="checkbox"/>			ALARM / ON STOP AFTER 20 MINUTES
MODEL / OFF PERMAQ COMPACT 41	3	<input checked="" type="checkbox"/>			MODEL / ON PERMAQ COMPACT 51
	4	<input checked="" type="checkbox"/>			2 SECONDS
	5	<input checked="" type="checkbox"/>			4 SECONDS
	6	<input checked="" type="checkbox"/>			8 SECONDS
	7	<input checked="" type="checkbox"/>			16 SECONDS
	8	<input checked="" type="checkbox"/>			32 SECONDS

10 TECHNICAL SPECIFICATIONS

10.1 Technical data

BWT PERMAQ® Compact 41	Units	Values
Capacity *	l/h	130
Maximum water recovery	%	40-75
Hydrophore (total volume/capacity at 2.7 bar)	l	11 / 3.5
Salt retention	µS/cm	>98
Conductivity	µS/cm	< 50
Electrical connection: Electrical frequency/ Hz	V / Hz	230 / 50
Electricity consumption maximum	kW	1.0
Pipe inlet	inch	¾"
Concentrate outlet, diameter	mm	10
Permeate outlet pipe	inch	¾"
Height x Length x Width	mm x mm x mm	445 x 570 x 295
Water temperature (Min. / Max.)	°C	5 / 25
Water pressure (Min. / Max.)	bar	2 / 7
Weight (empty/full)	kg	42 / 45
Number of membranes	pcs	1

* At drinking water quality 10°C, 3 bar, max. 500 mg/l total salt content.

10.2 Technical specifications

Signature	Designation	Type/data
P1	High-pressure pump	1x230V, 0.64kW
PI1	Manometer	0-25 bar, 1/4"
PI2	Manometer	0-6 bar, 1/4"
PS 1	Pressure switch NO	1/4", 0.5 bar
PS 2	Pressure switch NC	1/4", 5.2 bar
V01	Needle valve (Recirculation)	Brass
V02	Needle valve (Concentrate)	Brass
V03	Needle valve (Permeate)	Brass
V04	Non-return valve	Brass
V05	Non-return valve	Brass
V06	By-pass	Brass
Y01	Solenoid valve NC	POM
Y02	Solenoid valve NC	POM

Figure 1 – Front side

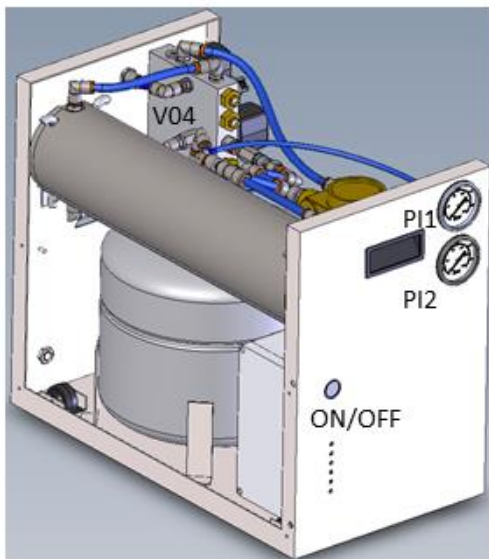


Figure 2 – Manifold block

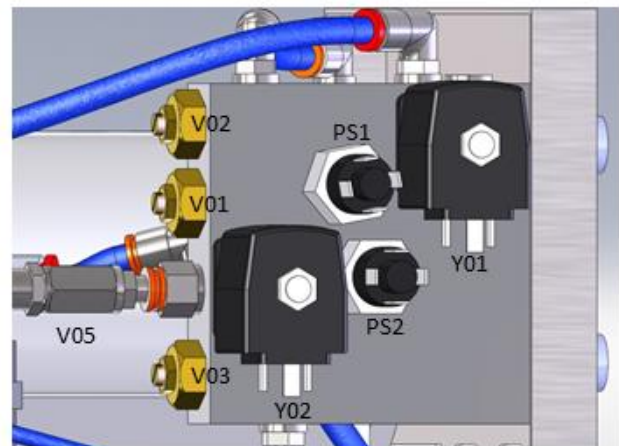
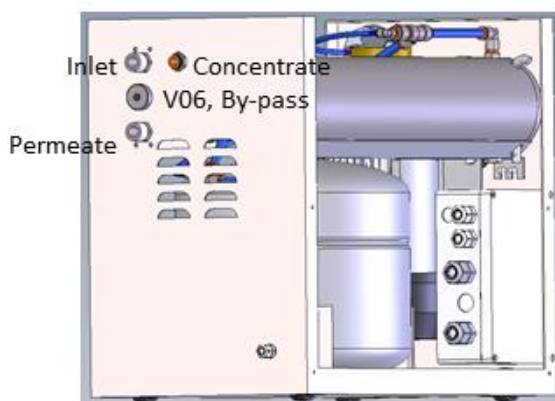


Figure 3 – Back side



11 FUNCTIONAL DESCRIPTION

The raw water that is led to the plant must be of drinking water quality and must not contain residual chlorine. If the content of free chlorine in the raw water is > 0.1 mg/l, then a carbon filter has to be fitted ahead of the plant.

The stated capacities and quality are based on a salt content in the raw water of maximum 500 mg/l TDS and 10 °C. In case of another raw-water quality, contact the supplier. (See also chapter regarding water quality).

The desalinated water passes the RO membranes and is subsequently collected in the pressure storage tank. The water containing concentrated salts (concentrate) is led through the RO module(s) and further on to the sewer. The permeate/drain proportion is manually adjusted by means of a needle valve.

A pressure switch at the raw-water inlet will stop the raw-water pump in case of too low inlet pressure (< 0.5 bar). In case of a short-time pressure drop on the raw-water inlet, control of the plant will perform an automatic restart. An LED on the controls will flash during the automatic restart. By permanently low pressure the plant will stop and the LED will be on. To restart the plant you have to disconnect and subsequently reconnect the power (disconnect for approx. 5 seconds). The desalinated water automatically is led to consumption. The consumption amount is limited however, by both the permeate capacity of the plant and by the size of the pressure tank (3.5 litres).

The plant is provided with rollers and should be installed with flexi-

ble connections. The plant can be placed under a standard table and simply pulled out for servicing.

Under normal operating conditions the RO membranes have a long lifetime. But even with good water quality, a coating of impurities will – to some extent – take place and this will cause a gradual reduction of the permeate capacity. When the capacity has been reduced by 10 %, the membranes must be cleaned. If regular cleaning is carried out at the correct intervals, the original capacity can be easily restored.

Note: The permeate capacity is also directly dependent on the raw-water pressure and the water temperature. Poorer pressure and temperature will reduce the capacity, and increasing pressure and temperature will increase the capacity.

In case of reduced capacity, the raw-water pressure and temperature must be checked before proceeding to the membrane replacement procedure.

12 REPLACEMENT OF PLANT MEMBRANES

Before cleaning, please follow below procedure:

1. Switch off the power to the plant.
2. Dismount the plastic pipe located at the end of the membrane housing. Please note the exact location/connection of the pipe since on re-fitting the pipe; it must be placed in the exact same location. The pipe can be pulled out by pressing down the ring located on the stainless fitting. When pressing down the fitting as far as

it goes, the pipe can be pulled out.

3. Dismount the lock placed at the end of the membrane pipe. (The lock keeps the membrane end plate in place).
4. The end plate can now be pulled out of the membrane pipe by wriggling the end plate from side to side and pulling upwards at the same time.
5. Now pull the membrane up and out of the membrane pipe. Note at which end the large, black V-cup seal ring is placed on the outside of the membrane. On fitting the new membrane, it must be placed at the same end of the membranes as the old one, i.e. if the old V-cup seal ring was placed at the top of the membrane pipe, then the new V-cup seal ring must be placed in such a way that it will also end up being placed at the top when the membrane is re-fitted in the membrane pipe.
6. When the membrane has been replaced and the end plates refitted with the lock inserted, then all pipes must be reattached. Note: On re-establishing the pipe connection, the "ring" must be pushed down entirely and the pipe must be pushed down hard as far as it will go.
7. When all connections have been re-established and end plates have been properly secured with the lock, the plant must be restarted.
8. Reconnect the raw water to the plant.
9. Open the outlet valve V02 completely.
10. Close the recirculation valve V01 tightly.

11. Dismount the permeate hose and lead it to drain.
12. Reconnect power to the plant.
13. The plant will now be operating. Let the plant flush this way for 20 or 30 minutes.
14. Adjust the outlet valve V02 and the recirculation valve V01, see section regarding commissioning of plant.
15. Check that the operating pressure of the plant, displayed on the manometer, is 14.5 to 16 bar which is the normal operating pressure.
16. Check that the water quality is $< 50 \mu\text{S}/\text{cm}$.

Write in the operating journal:

1. Date of replacement of membranes
2. New capacity of plant
3. Water quality ($\mu\text{S}/\text{cm}$)
4. Plant operating pressure
5. Raw water pressure
6. Raw water temperature

13 VARIOUS ENCLOSURES

13.1 P&I diagram

13.2 Layout drawing

13.3 Wiring diagram

13.4 PCB

13.5 Start-up test

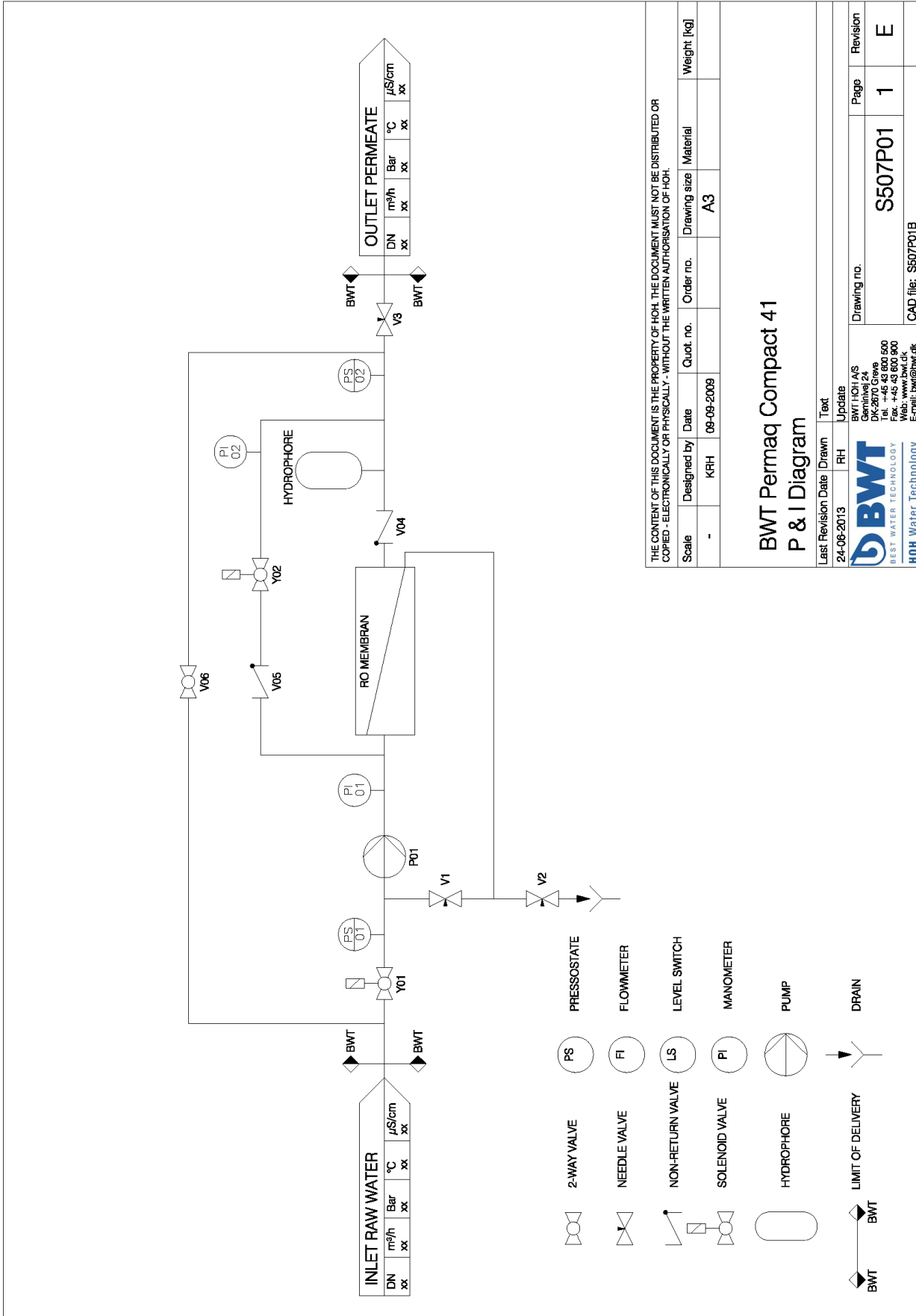
13.6 Operating journal

13.7 Spare-parts list BWT PERMAQ[®] Compact 41

13.8 Spare-parts drawing

13.9 Declaration of conformity

13.1 P&I diagram



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Scale	Designed by	Date	Quot. no.	Order no.	Drawing size	Material	Weight [kg]
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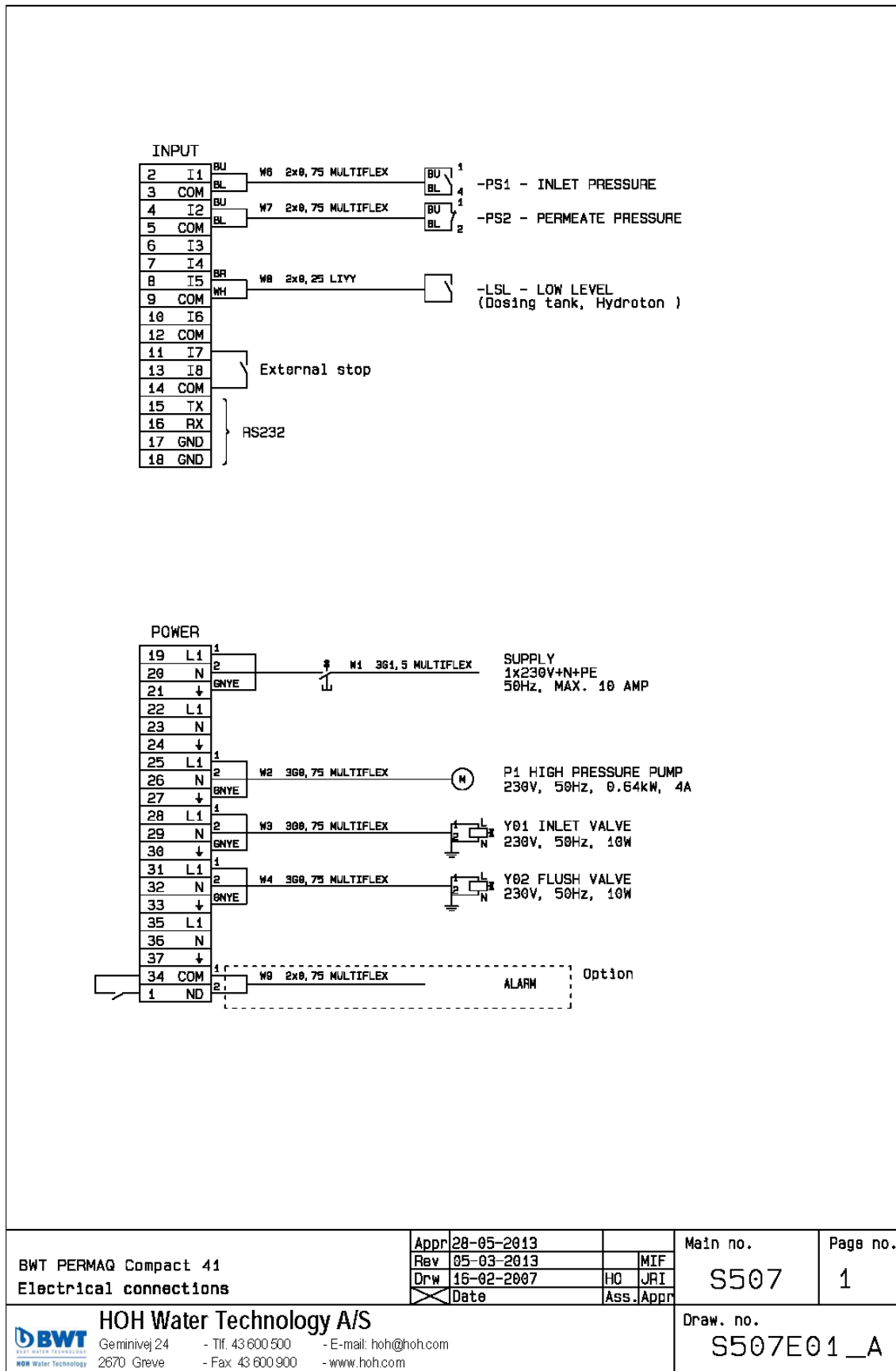
BWT Permaq Compact 41
P & I Diagram

Last Revision	Date	Drawn	Update	Text
24-08-2013		RH		

		BWT HOH AS Berlinweg 24 12555 Berlin Tel: +49 30 600 500 Fax: +49 30 600 500 Web: www.bwt.dk E-mail: bwt@bwt.dk	
HOH Water Technology		Drawing no. S507P01	
		Page	Revision
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13.3 Wiring diagram



BWT PERMAQ Compact 41
Electrical connections

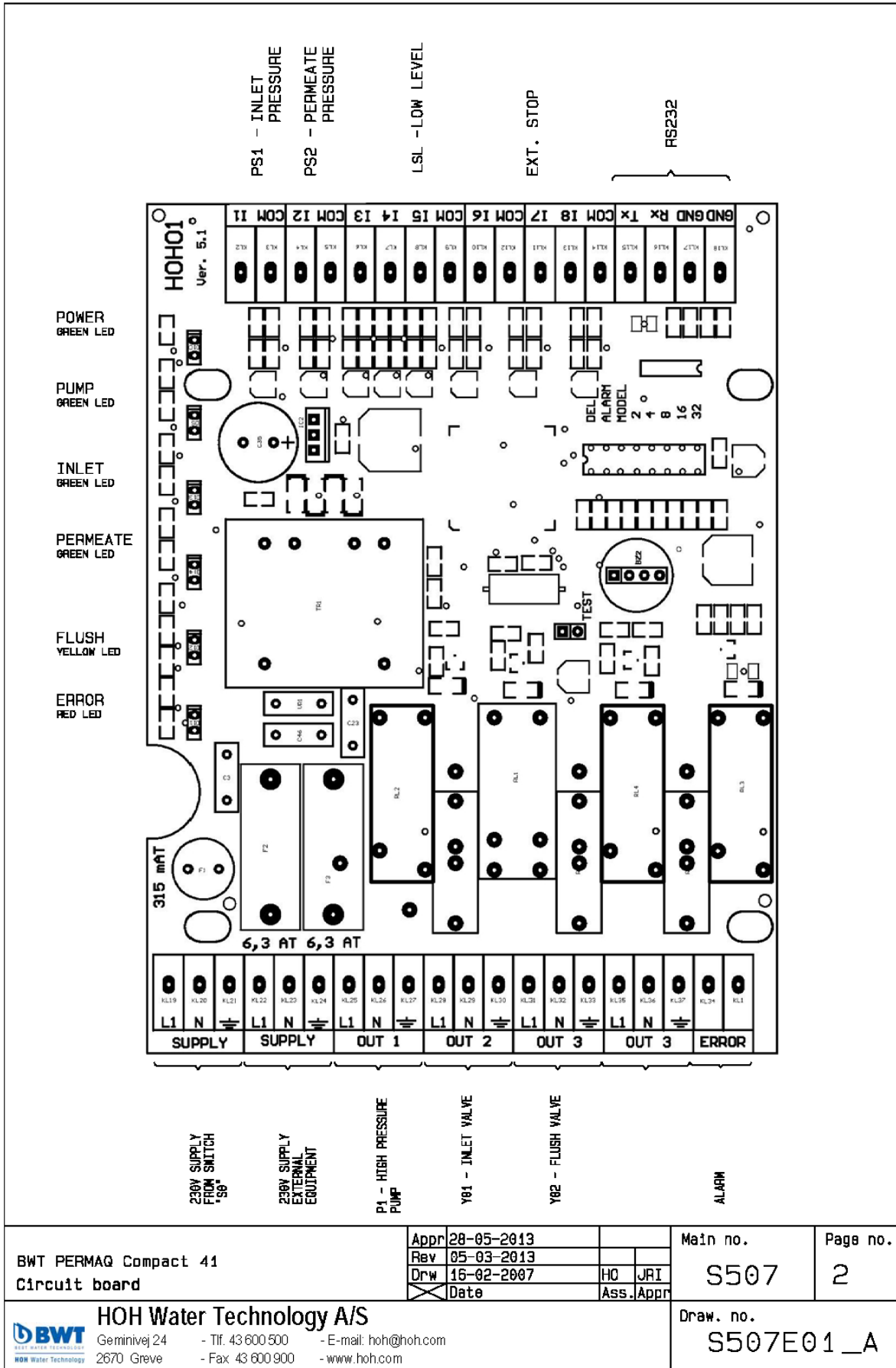
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Rev	05-03-2013	MIF
Drw	16-02-2007	HO JRI
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S507	1

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Draw. no.
S507E01_A

13.4 PCB



13.5 Start-up test

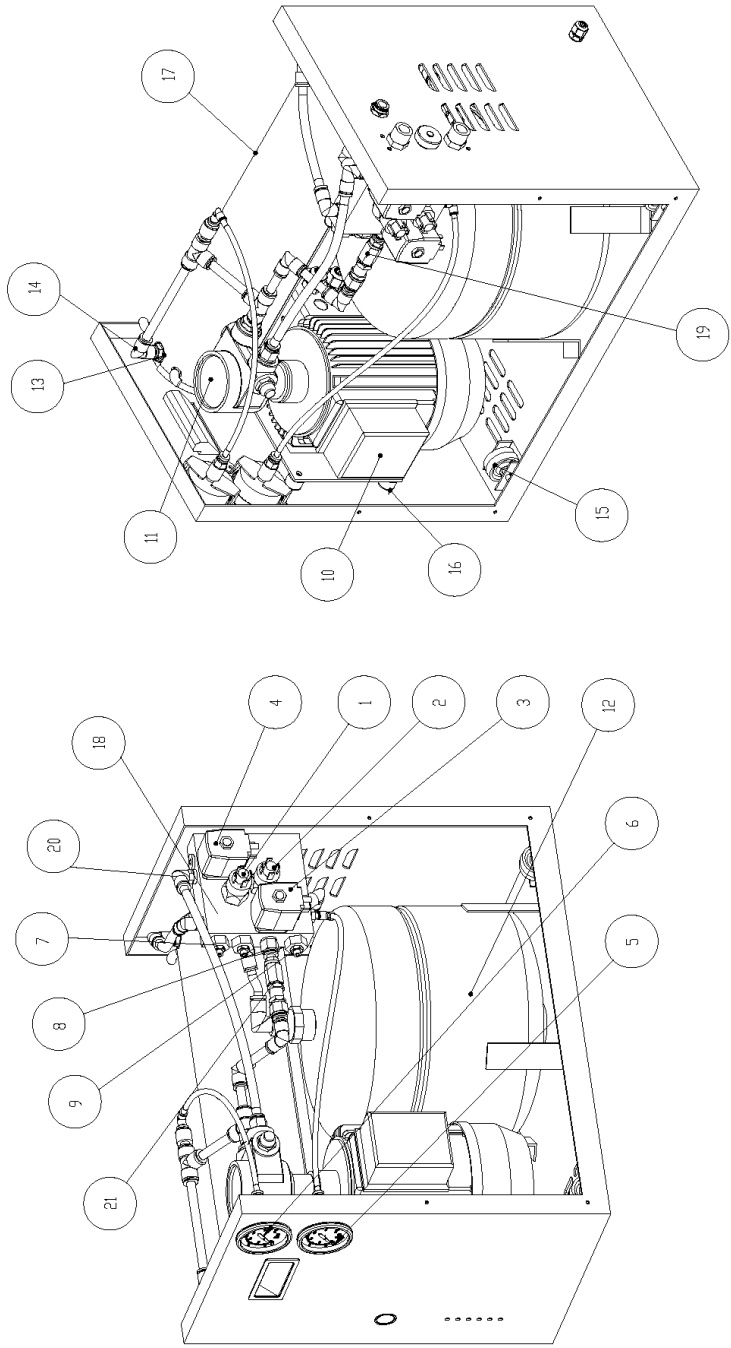
Start-up test			
The start-up test sheet must be completed and filed together with the operating journal.			
Name of customer:		Plant number:	Work-sheet number:
Test of raw water			
Temperature [°C]:	Conductivity [µS/cm]:	Hardness [°dH]:	Inlet pressure [bar]:
Softening unit (Option)			
Type of plant:		Hardness [°dH] after softening:	
Tick if "yes"			
<input type="checkbox"/> Time-controlled	<input type="checkbox"/> Quantity-controlled	<input type="checkbox"/> Dimensioned correctly for RO	
<input type="checkbox"/> New	<input type="checkbox"/> Old	<input type="checkbox"/> Plant and salt valve set at the correct hardness	
RO-plant			
Type of plant:	Raw-water pressure [bar]:	Outlet press., high-press. pump [bar]:	Conductivity, permeate [µS/cm]:
Permeate flow [l/h]:	Concentrate flow [l/h]:	Outlet press., permeate [l/h]:	
<input type="checkbox"/> Inlet press. switch PS1 is OK <input type="checkbox"/> Pressure switch PS2 (Start/Stop of pump) is OK <input type="checkbox"/> Pre-pressured hydrophore is OK			
Permeate tank (Option)			
Type of plant:			
<input type="checkbox"/> Pre-pressured hydrophore is OK		<input type="checkbox"/> Pressure switch start/stop, transport pump is OK	
<input type="checkbox"/> Level switch have the right length for the tank		<input type="checkbox"/> Drainage protection, transport pump is OK	
Status on start-up			
<input type="checkbox"/> Start-up by BWT		<input type="checkbox"/> Start-up by dealer, specify dealer _____	
Problems on start-up			
<input type="checkbox"/> YES, there were problems at start-up		<input type="checkbox"/> NO, there were no problems at start-up	
<i>In case of problems, please fill in the problem report</i>			
Problem report			
Can the problem be related to the manufacturing?			
<input type="checkbox"/> YES, the problem can be related to the manufacturing		<input type="checkbox"/> NO, the problem cannot be related to the manufacturing	
Can the problem be related to the plant or the installation?			
<input type="checkbox"/> YES, the problem only concerns the plant		<input type="checkbox"/> YES, the problem only concerns the installation	
<input type="checkbox"/> YES, the problem concerns both the plant and the installation		<input type="checkbox"/> NO, the problem does not concerns the plant or the installation	
The plant - we mean only the part of the whole installation which was delivered by BWT (i.e only the plant). The installation - we mean the piping etc. leading to the plant.			
Can the problem be related to the sales department?			
<input type="checkbox"/> YES, the customer was misinformed		<input type="checkbox"/> NO, the customer had been well-informed	
Description, please describe the problem			
Signature			
Name/initials of technician:		Date:	Time consumption for the start-up [hours]:

13.7 Spare-parts list BWT PERMAQ® Compact 41

Pos. No.	Product Description	Recommended spare parts	Spare part No.	Recommended replacement frequency
1	Pressure switch 0.5 bar	1	452550003	
2	Pressure switch 5.2 bar	1	452550052	
3,4	Solenoid valve	1	200757140	
5	Manometer 0-6 bar	1	452271000	
6	Manometer 0-25 bar	1	452271100	
7	Needle valve (Concentrate)	1	451404681	
8,9	Needle valve (Permeate, Recirculation)	1	451404680	
10	High pressure motor		*	
11	High pressure pump		451202490	
12	Hydrophore		451404576	3-5 years
13	Push-in fitting, 10x3/8", base (membran)		454065011	3 years
14	Push-in fitting, 10 mm angle	1	454090010	3 years
15	Wheels		403899020	
16	Vibration damper		451202306	5 years
17	Pressure vessel		451404077	
18	Manifold block		451404670	
19	Non-return valve		200729002	
20	Push-in fitting, 1/4" x 10 mm base	1	454065010	3 years
21	Push-in fitting, 10x1/2", elbow	1	454091010	3 years
	End plate	1	451404098	3-5 years
	Control box complete		451404416	
	PCB	1	506708233	
	Membrane	1	451404956	*
	V-Cup seal for membrane		451404208	
	O-ring external (large)	4	451404211	2 years
	O-ring internal (small)	4	451404215	2 years
	Coupling for high-pressure pump		451202485	
Miscellaneous				
	6 mm plastic hose	1 m.	454001006	3 years
	10 mm plastic hose	1 m.	454001010	3 years
	16 µF capacitor (High pressure motor)	1	750001860	
Options				
	Assembly kit for water supply		656525100	
	Filter housing 10" complete		321401000	
	Filter wrench		321417100	
	Carbon filter 10"		321413000	1/2 year
	Softening plant		*	

* Contact your local BWT dealer for detailed information.

13.8 Spare-parts drawing



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Step:	Design date:	Drawn by:	Checked by:	Project no.:	Project name:	Project stage:
18.5	10/09/2019					28.3

BWT PERMAQ Compact 41

Spare parts drawing

Part no.:	Part name:	Part description:	Part status:

Part no.:	Part name:	Part description:	Part status:
5507M01_2	2/3	E	

BWT
 WATER TECHNOLOGY
 WATER FILTRATION
 WATER PURIFICATION
 WATER TREATMENT

EC Declaration of Conformity for Machinery
Directive 2006/42/EC, Annex II, A
Low Voltage Directive
EMC Directive



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herewith declares that:

- BWT PERMAQ® Compact 41
- is in conformity with the provisions of the Machinery Directive (directive 2006/42/EC)
- is in conformity with the provisions of the following other EC directives
- Low Voltage Directive (2006/95/EC)
- EMC Directive (2004/108/EC)

- Place: Greve, Denmark

- Date: 30-08-2013

Lars Jensen
Head of Product Management



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