

PNEUMATEX >

Pressurisation & Water Quality >

ENGINEERING ADVANTAGE

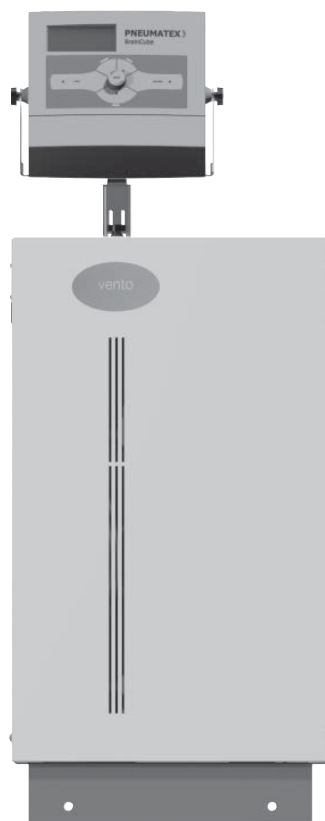
Vento

Montage | Betrieb | 1307

Montage | Exploitation | 1307

Installation | Operation | 1307

Montage | Werking | 1307



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› General information

Installation and operating personnel must have the appropriate knowledge and training. These installation instructions, particularly the safety instructions on page 30, must to be followed in all cases during installation and operation.

For your future reference, please record the following system information:

TecBox no.	.....
TecBox type	.....
Static height	HST mWs
Max. system temperature	t _{max} °C
Max. return temperature	t _R °C
Response pressure of safety valve at heat generator	PSV bar
Total water content of installation	VA m ³

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26	Water make-up through RS 485-1	• Set parameters on the BrainCube of Transfero, Compresso
	Operation	
27	Basic	
27	<i>auto</i>	• All functions activated Keep in <i>auto</i> mode all year round
27	<i>standby</i>	• Display active only Carrying out maintenance
27	<i>menu</i>	• Functions selectable, testable and modifiable
27	<i>check</i>	• Maintenance and functional test: Recommended once a year by TA Hydronics Customer Service
28	Messages	• Display, acknowledge Message list Correcting faults
29	Inspection Disassembly	• As required by regulations in the country concerned • First depressurise the installation and allow to cool!
30	Safety	
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	PowerCube PC2 wiring diagram	

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› Scope of delivery

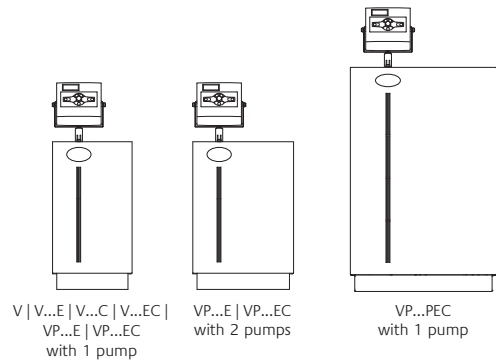
Scope of delivery is described on the delivery note and may include other products in addition to the Vento. Intermediate storage is required in a dry room protected from frost.

Basic equipment

Various Vento TecBoxes are available.

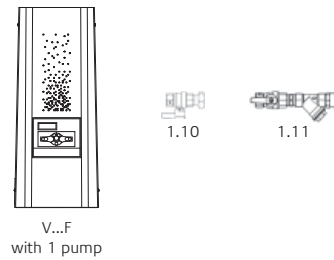
TecBox - Item 1

Vento V | V...E | V...C | V...EC | VP...E | VP...EC | VP...PEC
Floor standing.



Vento V...F

Wall-mounting with integrated bracket,
Includes inlet connection fitting GSE (1.11)
and outlet connection fitting GSA (1.10),
gaskets.



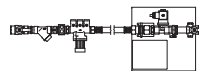
Additional equipment

The range of application and functionality of the Vento can be extended with additional equipment such as water make-up systems or control accessories.

⚠ Follow the special operating instructions!

Pleno P - Item 2

Not connected with VP.
Water make-up with back flow preventer, no control.



ComCube DCD - Item 3.1

Digital communication module
to extend the BrainCube control.



ComCube DCA - Item 3.2

Analogue communication module
to extend the BrainCube control.



Water softening - Item 4

Optional water softening cartridge for use with Pleno P
(supplied by on site personnel).



› Operating - Function

Vento is a pressure step degasser that uses the vacusplit principle. Gases are separated completely from the water by spray degassing in the special vacusplit vessel VG. It is used in heating, solar and chilled water systems to centralise the venting process and minimise corrosion.

TecBox

The TecBox (1)

Ready-to-operate unit, which is connected to the consumer system through the connecting pipes DN. The TecBox (1) includes base module V (degassing), BrainCube control (1.2) and, depending on type, module P (water make-up). Combinations are possible with suitable additional equipment, such as Pleno P water make-up (2).

BrainCube control (1.2)

For intelligent, secure system operation | monitoring of all processes – vacusplit, fillsafe | self-optimising with memory function | self-explanatory, user friendly menu layout.

vacusplit degassing with module V

Degassing of system water and make-up water by vacuum in special vacusplit vessel VG without oxygen ingress. vacusplit degassing is activated by operation of pump P and spill valve V. Vento dynamic spray degassing with swirl effect allows almost total separation of the gas from the water. At certain times, degassing can be deactivated from *menu - Parameter*.

The following degassing programs are available:

- eco-interval operation (V...F | V3) – 2 variants are available:
 - Interval degassing:** keeps the gas content in the system at a constant low level. Daily at multiple short intervals. Automatic starting after starting-up. The BrainCube (1.2) calculates the duration of degassing according to installation size.
 - Continuous degassing:** quickly reduces gas content in the system water. Activated from *menu - Parameter* in the BrainCube. The BrainCube (1.2) calculates the duration of degassing according to installation size. The time remaining is indicated on the BrainCube (1.2) (*menu - Info*). Switches automatically to interval degassing when continuous degassing is complete.
- eco-automatic operation (V...E | VP...E): optimised, gas content dependent degassing operation. PSeco is factory-set so that nitrogen content is kept below 8 ml/l. Changes to the PSeco settings should only be made after consultation with TA Hydronics Customer Service.
- Water make-up degassing: reduces gas content in the make-up water. Activated automatically at each water make-up sequence.

Daily vacuum test to ensure oxygen-tightness.

fillsafe water make-up FIQ

fillsafe water make-up FIQ ensures the maximum level of safety.

- Monitoring device as defined in EN 12828 4.7.4, with SVGW approval.
- 2 variants are available:
 - VP_ with integrated Module P, with pump and break tank AB as defined in EN 1717.
 - V_ + additional equipment Pleno P (2) without pump and with backflow preventer BA as defined in EN 1717.
- Water make-up controlled by contact water meter and electronic checking of water make-up quantity, time, and frequency.
- Either pressure-dependent (for example, with Statico) or content-dependent control (for example, with Compresso).
 - PIS – integrated pressure sensor.
 - LSext – external water make-up signal from a pressure maintenance station. The required digital input is integrated in the BrainCube. Alternatively, the RS 485-1 interface can also be used » terminal plan, pages 22 | 23.
- Uncontrolled water make-up, for example due to leakage, is detected and stopped.

For systems with water-glycol mixtures, note that the fillsafe water make-up system has no dosing function and may therefore affect the concentration.

- de
- fr
- en
- nl

› Operating - Function

Additional equipment

Pleno P water make-up

Pleno P (2) without pump and with back flow preventer BA as defined in EN 1717, inadmissible for chilled water systems. Can be used with optional water softening cartridge. To be operated with Vento V_.

- ›› Installation | Operation Pleno P
- ›› Installation | Operation water softening cartridge (optional and supplied by on site personnel)

ComCube DCD

The ComCube DCD communication module is connected to the BrainCube control through the RS 485-1 interface. This extends its functionality. There are also six digital inputs available for registering and displaying external volt-free signals, and nine volt-free, separately configurable digital outputs. These can be used, for example, to send selected parameters in a simple, clear form to the building management system.

- ›› Installation | Operation ComCube

ComCube DCA

The ComCube DCA communication module provides 2 DC-isolated 4-20 mA analogue outputs. These allow the PIS pressure signals to be sent in simple form to a building management system.

- ›› Installation | Operation ComCube

› Operating - Set-up

Vento TecBox for heating systems

	V...F 2	V 3	4	V...E 6 8 10			VP...E 4 6 8 10				VP...PE 13 19	
Module V - vacusplit degassing	•	•	•	•	•	•	•	•	•	•	•	•
Module P - fillsafe water make-up	-	-	-	-	-	-	•	•	•	•	•	•
Gas content dependent eco-automatic operation	-	-	•	•	•	•	•	•	•	•	•	•
2 pumps*, 1 of which is stand-by pump for water make-up	-	-	-	-	-	-	-	•	-	•	-	-
Additional equipment (option)												
Pleno P - fillsafe water make-up	•	•	•	•	•	•	-	-	-	-	-	-

* with VP 6.2 E | VP 10.2 E

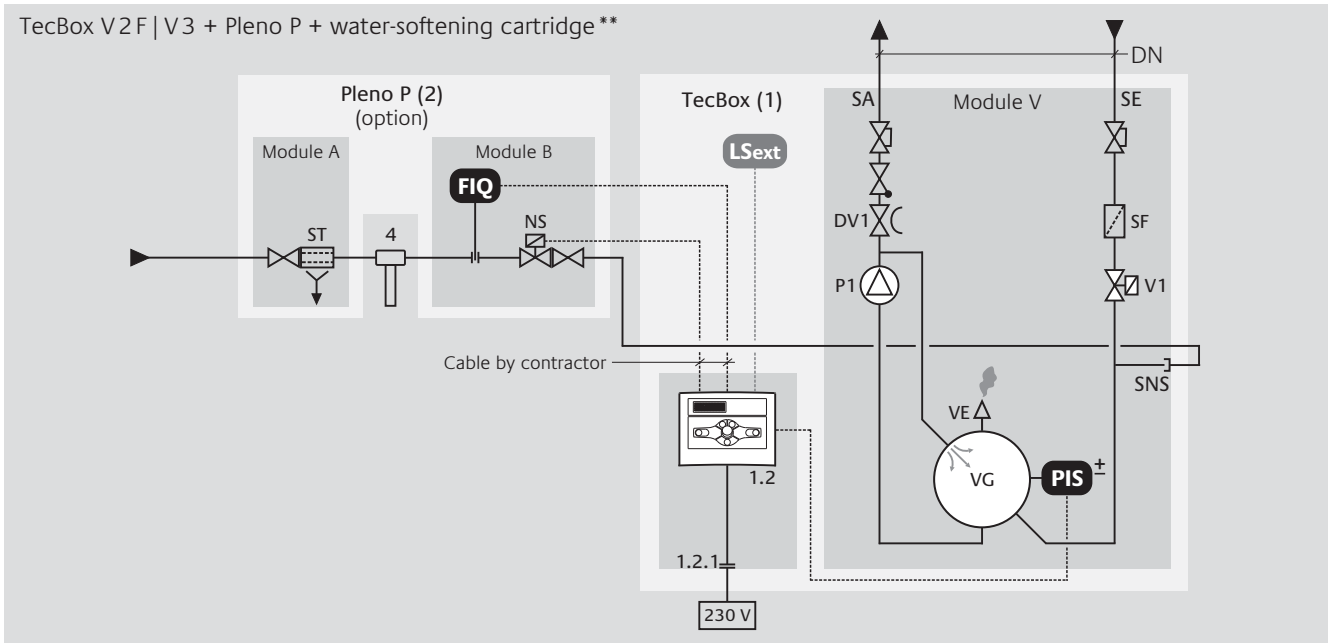
Vento TecBox for chilled water systems – Cooling Version insulated and vapour sealed

	V...C 3	4	V...EC 6 8 10			VP...EC 4 6 8 10				VP...PEC 13 19	
Module V - vacusplit degassing	•	•	•	•	•	•	•	•	•	•	•
Module P - fillsafe-Nachspeisung	-	-	-	-	-	•	•	•	•	•	•
Gas content dependent eco-automatic operation	-	•	•	•	•	•	•	•	•	•	•
2 pumps*, 1 of which is stand-by pump for water make-up	-	-	-	-	-	-	•	-	•	-	-

* with VP 6.2 EC | VP 10.2 EC

Operating - Set-up

Degassing + water make-up with Pleno P as additional equipment



Legend

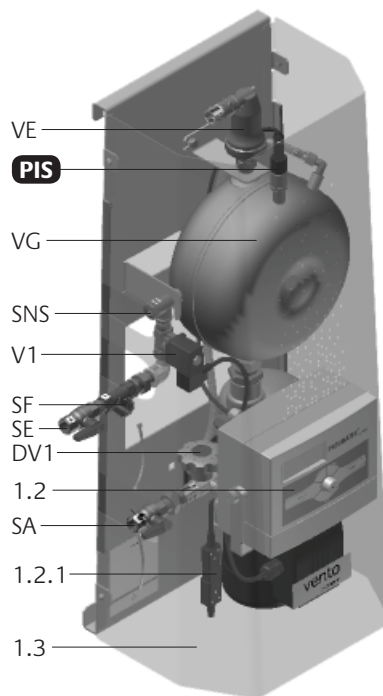
- 1 Vento TecBox
- 1.2 BrainCube control
- 1.2.1 Mains plug
- 1.3 Cover
- 1.3.1 Carrying handle
- 2 Pleno P water make-up
- 4 Water-softening cartridge **

- SA Outlet connection
- SE Inlet connection
- SNS Water make-up connection

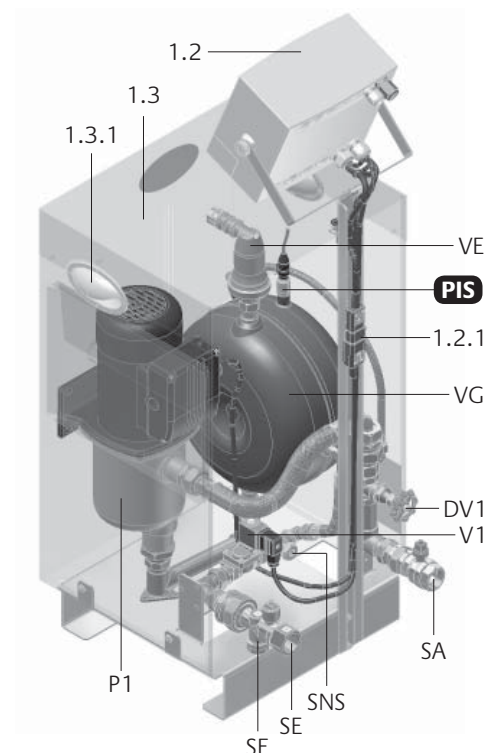
- DV1 Regulating valve
- NS Water make-up valve
- P1 Pump
- SF Strainer
- SE Inlet connection
- DV1 Regulating valve
- 1.2 BrainCube control
- SA Outlet connection
- 1.2.1 Mains plug
- 1.3 Cover

- FIQ Water meter, fillsafe water make-up
- PIS* Pressure sensor
- LSex* External water make-up signal

Vento V 2.1 F



Vento V 3.1

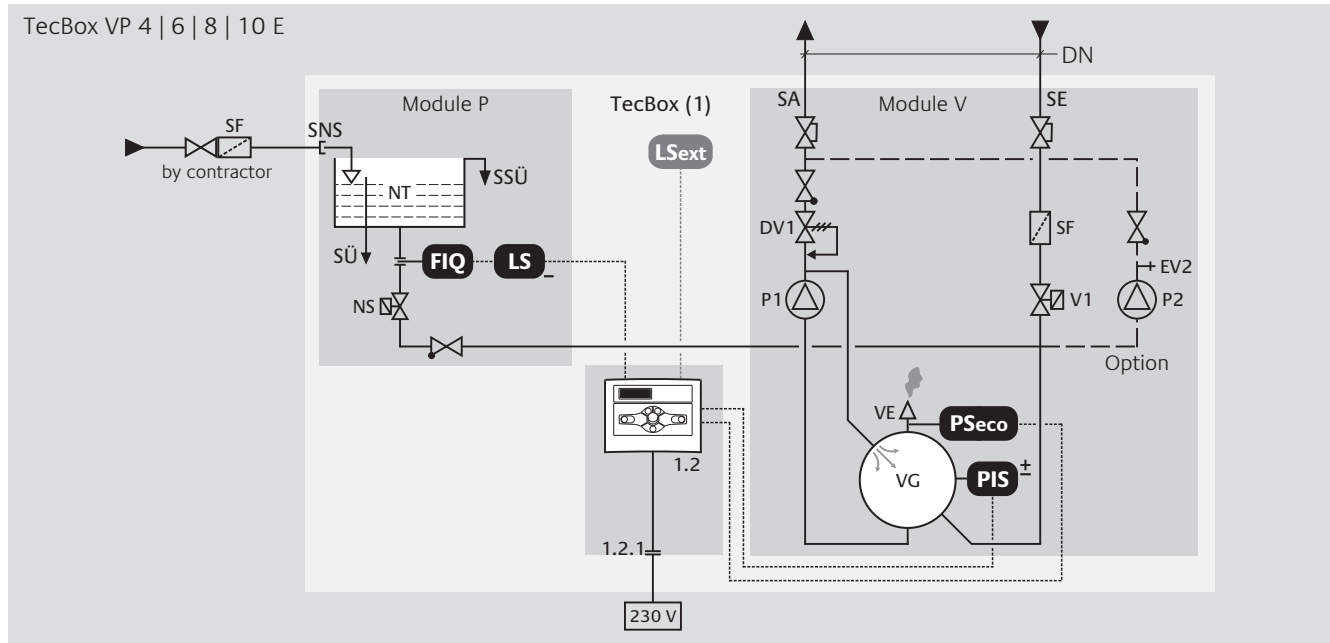


* Select desired mode ►► page 25

** Optional and supplied by on site personnel

Operating - Set-up

Degassing + water make-up with integrated module P



Legend

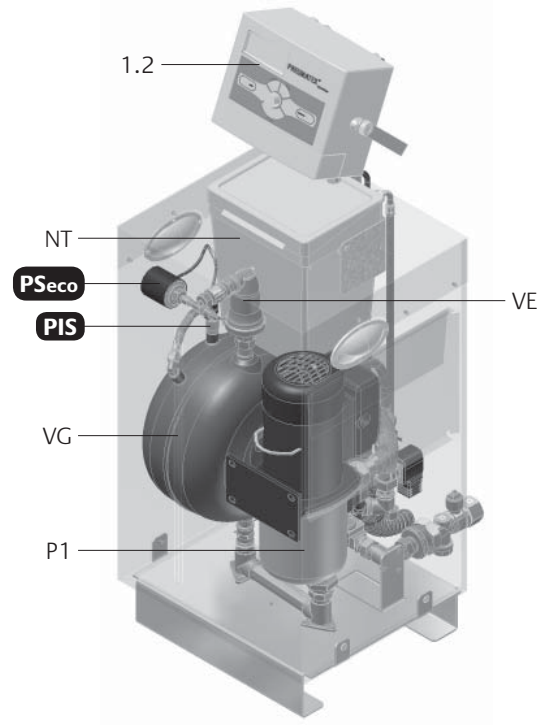
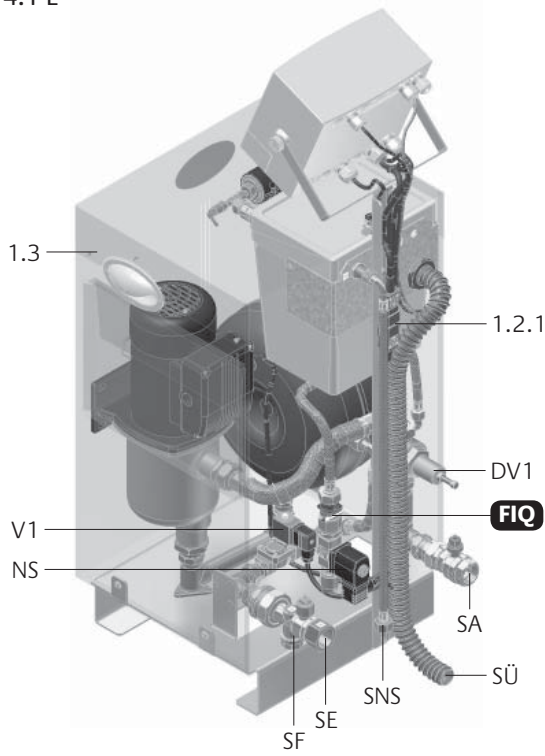
1	Vento TecBox	FIQ	Water meter, fillsafe water make-up
1.2	BrainCube control	LS_	Low water protection
1.2.1	Mains plug	PSeco	eco-automatic sensor
1.3	Cover with carrying handles	PIS*	Pressure sensor
SA	Outlet connection	LSext*	External water make-up signal
SE	Inlet connection		
SNS	Water make-up connection		
SÜ	Break tank overflow, di/da 20/25 mm		
SSÜ	Safety weir overflow, free water outlet		
DV1	Regulating valve		
EV2	Vent valve		
NS	Water make-up valve		
NT	Break tank		
P1	Pump		
P2	Stand-by pump for water make-up with VP_ .2		
SF	Strainer		
V1	Spill valve		
VE	vacusplit air vent		
VG	vacusplit vessel		

* Select desired mode ►► page 25

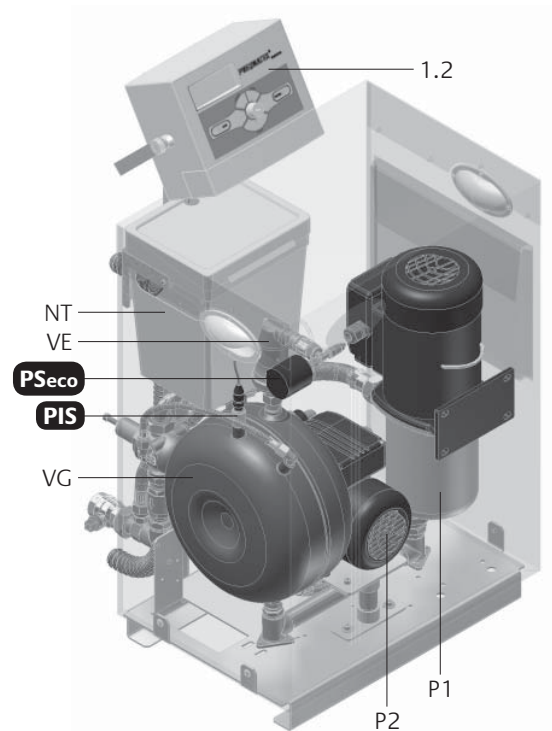
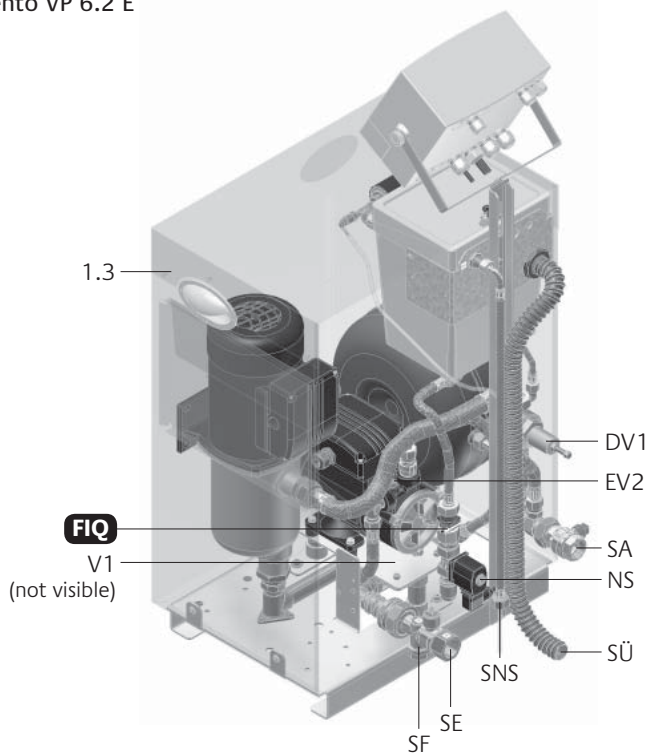
Operating - Set-up

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Vento VP 4.1 E



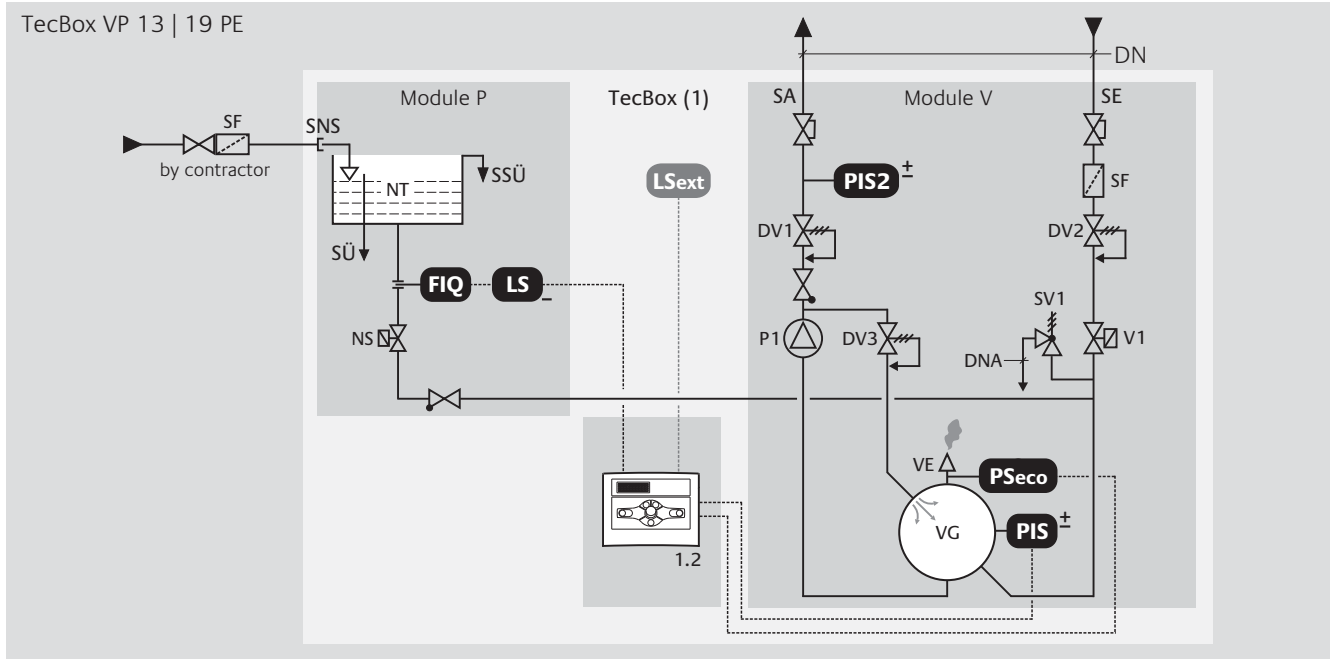
Vento VP 6.2 E



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Operating - Set-up

Degassing + water make-up with integrated module P for system pressure PS >10 bar



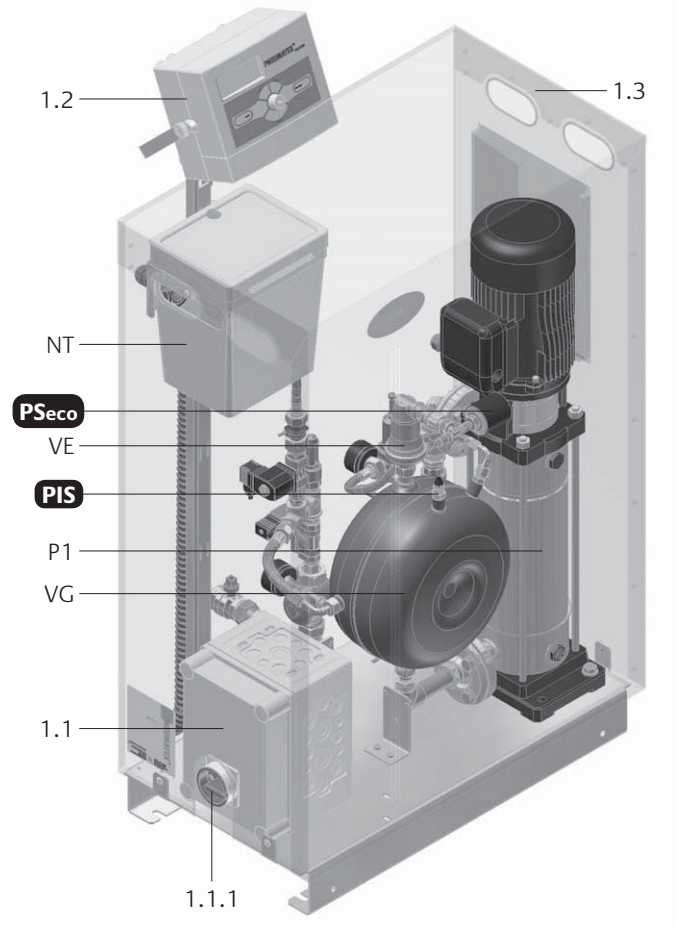
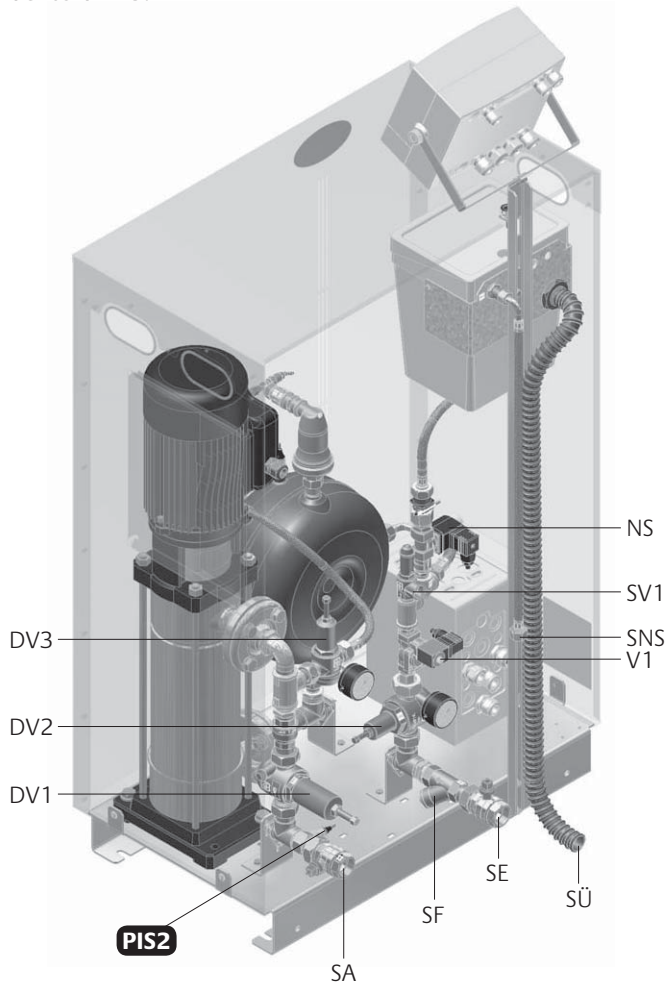
Legend

- | | | | |
|-------|--|--------|--|
| 1 | Vento TecBox | V1 | Spill valve |
| 1.1 | PowerCube PC2 | VE | vacusplit air vent |
| 1.1.1 | Mains isolator | VG | vacusplit vessel |
| 1.2 | BrainCube control | FIQ | Water meter,
fillsafe water make-up |
| 1.3 | Cover with carrying handles | LS_ | Low water protection |
| SA | Outlet connection | PSeco | eco-automatic sensor |
| SE | Inlet connection | PIS | vacusplit vessel pressure transducer |
| SNS | Water make-up connection | PIS2* | System pressure transducer |
| SÜ | Break tank overflow,
di/da 20/25mm | LSext* | External water make-up signal |
| SSÜ | Safety weir overflow,
free water outlet | | |
| DNA | Safety valve discharge,
by contractor (» page 16) | | |
| DV1 | Regulating valve | | |
| DV2 | Pressure reducing valve | | |
| DV3 | Pressure reducing valve | | |
| NS | Water make-up valve | | |
| NT | Break tank | | |
| P1 | Pump | | |
| SF | Strainer | | |
| SV1 | Safety valve,
internal protection
for modules P and VG | | |

* Select desired mode » page 25

Operating - Set-up


Vento VP 13.1 PE

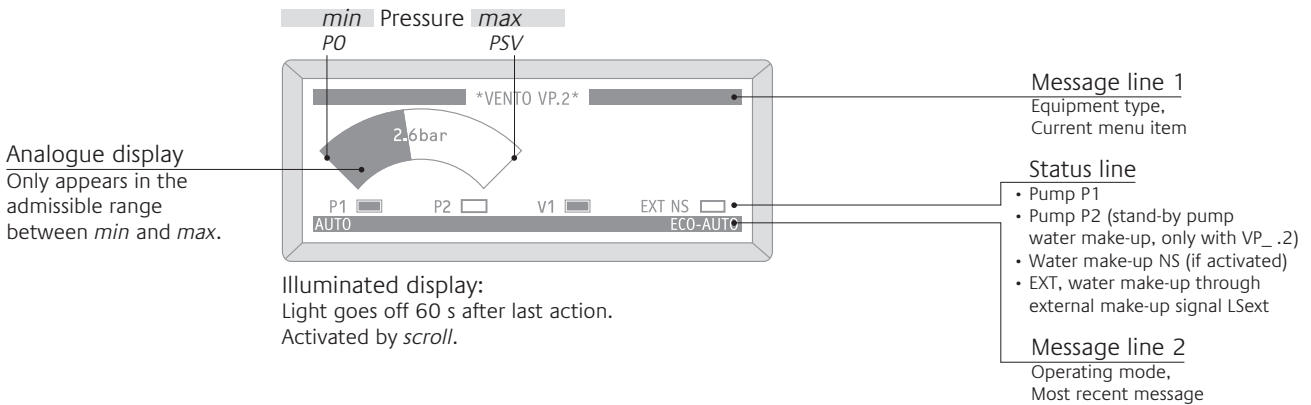
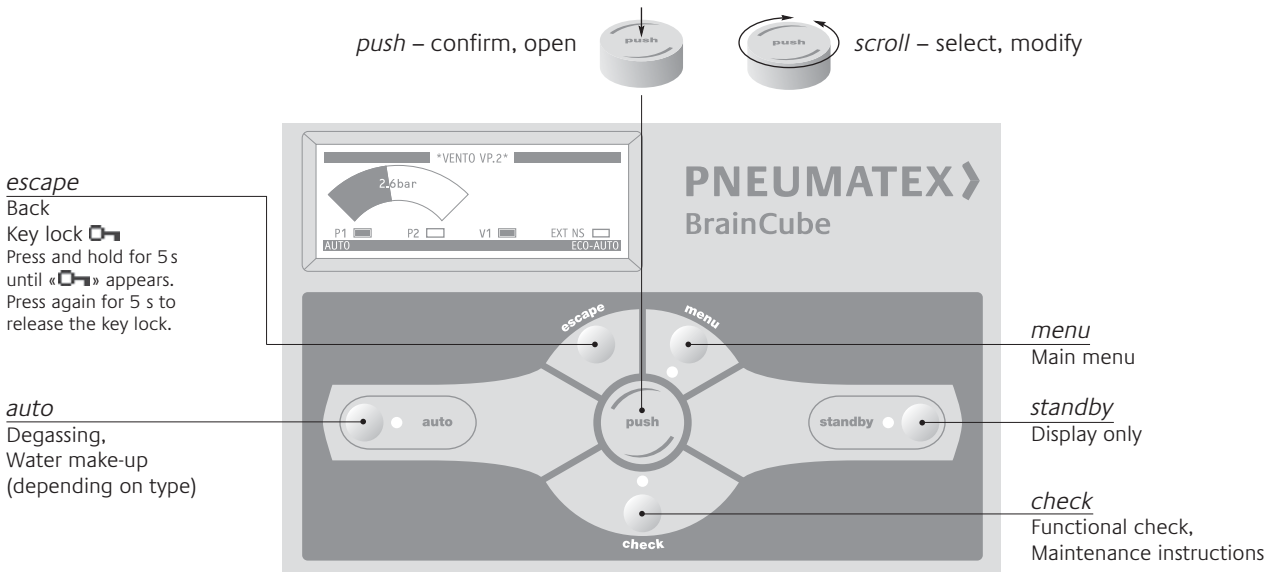


Operating - BrainCube control

Intelligent BrainCube control ensures secure operation.

Function

- Monitoring of all processes, self-optimising with memory function, self-explanatory, user friendly menu layout.
- Key lock  to prevent unauthorised access – automatic after 30 min or activate manually.
- Flexible mode of operation.
- fillsafe water make-up monitoring | Quantity, time and frequency checking.
- vacusplit spray degassing of system and make-up water.



Operating - BrainCube control

Setting BrainCube parameters

HST - Static height

Variant 1: Set the actual static height. If Vento is being operated with Compresso or Transfero pressure maintenance stations, the settings in the BrainCube controls must match:

$$HST_{Vento} = HST_{Compresso} \text{ OR } HST_{Vento} = HST_{Transfero}$$

Variant 2: You want to operate Vento with a Statico, for which pre-set pressure P_0 is already known. In this case, set the Vento static height as follows:

$$HST = (P_{0Statico} - 0.3 \text{ bar}) \cdot 10$$

This value must be at least equal to the actual static height.

Example:

Actual static height : $HST = 21 \text{ m}$

Statico pre-set pressure: $P_0 = 3.1 \text{ bar}$

Static height to be set : $HST = 28 \text{ m}$

$$HST = (3.1 - 0.3) \cdot 10 \text{ bar} = 28 \text{ m}$$

TAZ - Temperature limit in heat generator

PSV - Response pressure of safety valve at heat generator

If the heat generator is located h (m) below the pressure maintenance station, the BrainCube PSV setting value is calculated as follows: $PSV - h/10$, if it is higher: $PSV + h/10$.

BrainCube calculations and display

Min. pressure

$$P_0 = HST/10 + p_D(TAZ) + 0.3 \text{ bar}$$

If pressure maintenance station and Vento connected on suction side as shown.

$$P_0 = HST/10 + p_D(TAZ) + 0.3 \text{ bar} + \Delta p_P$$

If pressure maintenance station and Vento are connected on the pressure side, take account of circulation pump differential pressure Δp_P .

Initial pressure

$$p_a = P_0 + 0.3 \text{ bar}$$

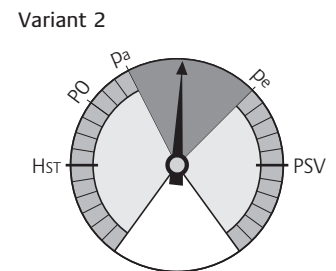
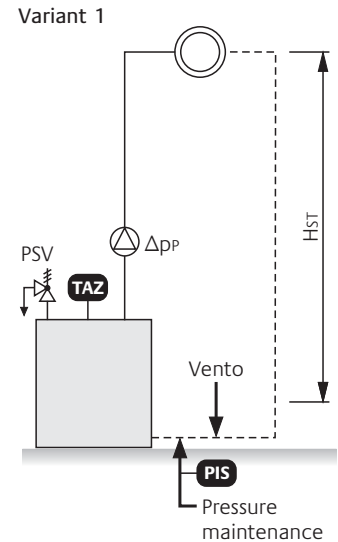
Final pressure

$$p_e = PSV - 0.5 \text{ bar} \quad (\text{for } PSV \leq 5.0 \text{ bar})$$

$$p_e = PSV \cdot 0.9 \quad (\text{for } PSV > 5.0 \text{ bar})$$

Max. pressure

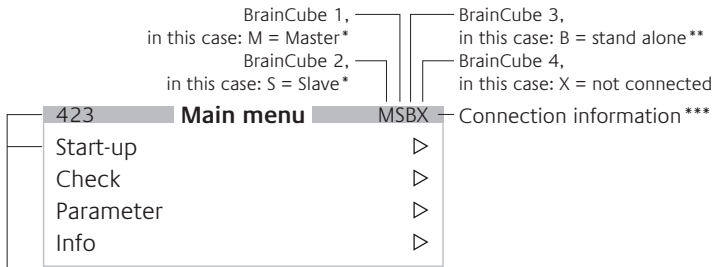
PSV



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Operating - BrainCube control

menu - Selected applications



To prevent unauthorised access, the «Start-up» menu item can be permanently hidden. It is displayed again in the same way:

1. press *menu*,
2. press *esc* and hold until 000 appears (at top left on message line 1),
3. keep holding *esc* and use *scroll* to enter the number 423 (4 × right, 2 × left, 3 × right),
4. release the *esc* key.

Start-up

» page 24

Check	
6), 12)	Tightness
12)	Check pumps/valves
12)	Check outputs
12)	Hydr. compensation P1
12)	Water make-up
	View check

» page 27

manual switching
manual switching
activate | deactivate | test

Info		
	Type	Vento VP.1
	Version	V2.20
8)	Degassing duration	21 h
	MinPressure PO	1.8 bar
17)	Initial pres. Pa	2.1 bar
17)	Final pres. Pe	2.5 bar
	Pressure VG	-0.8 bar
14)	NS sender BrainCube	1
	View messages	▷ last 20 messages
	View start-up	▷

continuous degassing remaining runtime
» page 13

current pressure in vacusplit vessel VG

last 20 messages

Parameter		
	Language selection	▷ standard: de, en, fr, nl
	Date	12.01.2007
	Time	15:38
	Stat. height HST	15 mWs
	T limiter TAZ	<100°C
	Safe. valve PSV	3.0 bar
7)	Primary vessel	200 l
	Degassing	Duration
11)	Water make-up quant.	▷
	Output 1	▷
1)	Output 2	▷ » page 15
	Night rest begin	20:00
	Night rest end	08:00
		no degassing
13)	Vacuum test	12.01.2012
	Contrast	120

continuous or interval degassing

» page 15

no degassing

* Master-slave parallel operation

** Single mode, e.g. Vento

*** If the RS 485-1 cabling has been completed correctly (» pages 20 | 23-24) and the signal is steady, e.g. MSBX appears continuously. If the display changes, for example from MSBX to SSBX or XXXX, then the interface signal is not stable and must be checked.

1) Standard: Output 1 = alarms | Output 2 = M01 min. pressure

2) Triggering of an external water make-up device.

3) » Terminal plan pages 22 | 23,

if selected, switches the Inverse output (NO → NC)..

4) Relevant only if «water make-up active».

5) For messages M27, M28, M30, ..., please contact the TA Hydronics customer service. The equipment may have a fault in the electronics and may not work correctly.

If message M29 appears when the equipment is first switched on or during entering of the parameters and subsequent power loss then the unit does not have a fault and M29 can be cancelled.

However if M29 appears during normal operation it may mean a fault with the electronics and the unit may not work correctly. Please contact the TA Hydronics customer service.

6) start → Start vacuum test,

on → Vacuum test in progress, please wait,

ok → Vacuum test completed successfully,

M24 → Vacuum test not successful,

check vacusplit air vent and replace if necessary.

7) Set nominal volume VN of primary vessel, or of Statico if water make-up is pressure-dependent. If more than one vessel: Set number · VN vessels.

8) Relevant for V 2|3 only: remaining runtime of continuous degassing:

V...E | VP...E: Degassing duration is calculated by eco-automatic system («eco-auto»).

9) With Vento VP_2 E only.

10) The max. make-up quantity calculated by the BrainCube has been exceeded. Risk of corrosion in the installation. Correct any leakages in the installation.

11) Display of:

- Total make-up quantity.

- Admissible make-up quantity during the monitoring period (factory setting: 12 months). If exceeded, message M14 is sent.

- Make-up quantity during monitoring period in previous months up to date.

Note: The admissible make-up quantity during the monitoring period can be changed manually. If set to 0 litres, the optimal value is calculated and set by the BrainCube.

Caution! If higher values are set, there is a risk of corrosion in the installation.

12) Not if key lock is activated » page 12.

13) If set to a future date, all automatic leak checks are disabled.

Air ingress is no longer detected in the Vento (M24 » page 15).

Caution! Risk of corrosion in the installation.

14) Only relevant if receiving external make-up signals though RS 485-1 interface. Display of BrainCube No. from which make-up signals are received.

Factory setting: BrainCube 1 (can be changed by TA Hydronics Customer Service to BrainCube 2, 3 or 4).

15) With VP_PE, the message text differentiates between the pressure transducers (PIS or PIS2).

16) Check the date and time and adjust if necessary.

17) Display for pressure-dependent water make-up only » page 25.

Operating - BrainCube control

Messages

Output 1/2

Alarms

All messages

Custom

Ext. water make-up

Inverse

If selected, messages are sent over the output.

Message list

	<input checked="" type="checkbox"/>	X	X
M01 Min pressure PIS	<input checked="" type="checkbox"/>	X	X
M02 Max pressure	<input checked="" type="checkbox"/>	X	
4) M05 Min contents LS	<input type="checkbox"/>	X	X
4) M06 Min contents LS	<input type="checkbox"/>	X	X
M07 Check recommended	<input checked="" type="checkbox"/>	X	
M09 Hydr.compens. P1/V1	<input type="checkbox"/>	X	
4) M11 Runtime FIQ	<input type="checkbox"/>	X	
4) M12 Leakages FIQ	<input type="checkbox"/>	X	
4) M13 NS leaky FIQ	<input type="checkbox"/>	X	X
4) M14 Max. quantity FIQ	<input type="checkbox"/>	X	
10) M15 Water meter FIQ	<input type="checkbox"/>	X	
15) M16 Press. sensor PIS	<input type="checkbox"/>	X	X
M18 Pump P/K1	<input type="checkbox"/>	X	X
9) M19 Pump P/K2	<input type="checkbox"/>	X	X
16) M21 Voltage loss	<input type="checkbox"/>	X	
M22 Standby	<input type="checkbox"/>	X	
M24 Vacuum	<input type="checkbox"/>	X	
5) M27 Internal BrainCube : messages	<input type="checkbox"/>	X	X

Example of
- custom selection
- Defined in BrainCube
- Defined in BrainCube

Factory settings messages

on	off
PIS < P0	PIS > P0 + 0.1 bar
PIS ≥ PSV – 0.2 bar (Vento 2 | ... | 10)	PIS < PSV – 0.3 bar (Vento 2 | ... | 10)
PIS > 9.0 bar (Vento 13 | 19)	Acknowledge (Vento 13 | 19)
PIS2 ≥ PSV – 0.2 bar (Vento 13 | 19)	PIS2 < PSV – 0.2 bar (Vento 13 | 19)
Insufficient flow to break tank	Acknowledge after correcting fault
No flow to break tank	Acknowledge after correcting fault
	Acknowledge after maintenance
Flushing pressure in vessel VG < 0.1 bar, for example because strainer SF1 full.	Automatic if <i>Check hydr. compensation P1</i> successful
60 min *	Acknowledge after correcting fault
4 make-up requests within 10 min after water make-up shut-off	Acknowledge after correcting fault
FIQ counting, although make-up not requested	Acknowledge after correcting fault
Yearly make-up quantity exceeded	Acknowledge after correcting fault
FIQ not counting	Acknowledge after correcting fault
Fault, for example cable defect	Acknowledge after correcting fault
Fuse or motor protection actuated	Acknowledge after correcting fault
Fuse or motor protection actuated	Acknowledge after correcting fault
Voltage loss for more than 8 h	Acknowledge
Standby for more than 30 min	Activate <i>auto</i>
Daily vacuum test has detected leakage in the vacuum (01:01 h). Air ingress during degassing cycle.	Automatic if <i>Tightness check</i> successful
Internal fault	Acknowledge

- Selected, output switches if message is present.
- Not selected.
- X Output switches if message present, not modifiable.
- * Water make-up switch-off point (20% LIS) was not reached after 60 min run time.

Installation - TecBox

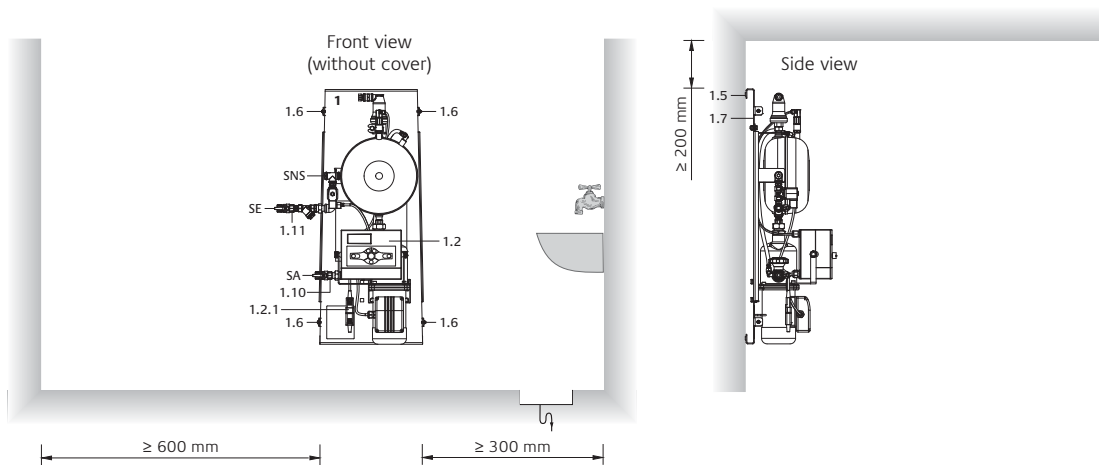
Assembly

- As the plant room, the place of installation is protected against unauthorized access, ventilated, and provides the required connections for mains water, waste water and electricity ►► page 19. Room temperature should be from 0 °C to 40 °C. The plant room must incorporate a floor drain.
- Safety instructions ►► see page 30.

Vento V2 F

- V 2.1 F is wall mounted and secured using the base plate (1.7). The wall must be able to take weight.
- Insert 2 screws in the wall at positions corresponding to the fixing slots (1.5).
- Loosen the 4 knurled screws (1.6) on the cover (1.3) and pull the cover forward.
- Attach the GSE (1.11) inlet connection and GSA (1.10) outlet connection to the TecBox.

⚠ Do not re-attach cover (1.3) until start-up procedure is finished.



Vento 3 | ... | 19

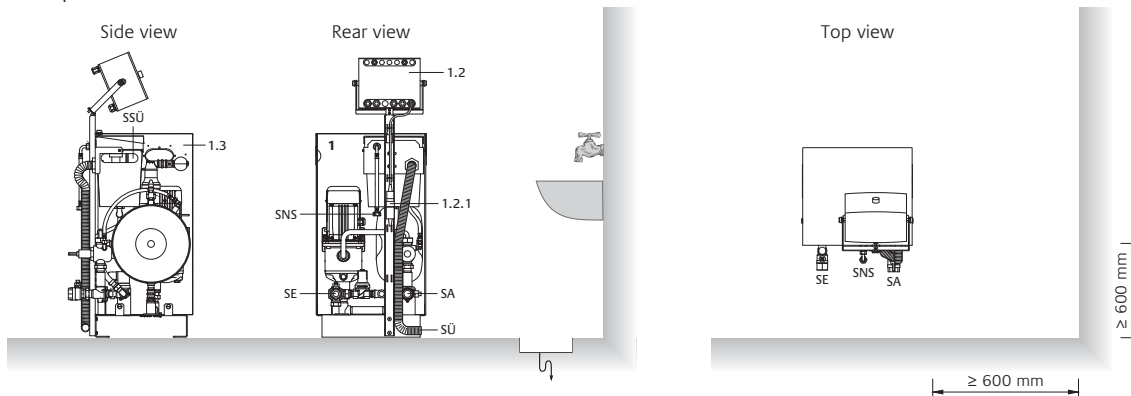
- Vertical installation on a level floor.
- When transporting, use the carrying handles on the cover (1.3).

⚠ Do not remove the cover (1.3) during installation.

⚠ Only remove the protective film from the cover (1.3) after all installation work is complete!

⚠ Discharge pipes for safety valves SV1 (only VP...PEC) and overflow SÜ are drained separately. The DNA discharge pipes are installed without blow down vessel.

Example: TecBox VP 4.1 E



Legend

1	Vento TecBox	SA	Outlet connection	SSÜ	Break tank with weir overflow (back-flow prevention), free water outlet, e.g. at backing-up in overflow SÜ	* customer waste water pipe
1.2	BrainCube control	SE	Inlet connection			
1.2.1	Mains plug	SNS	Water make-up connection			
1.3	Cover with carrying handles	SÜ*	Break tank overflow, di/da = 20/25 mm			Further details ►► pages 7 - 11

Installation - Connecting pipes DN

Connection

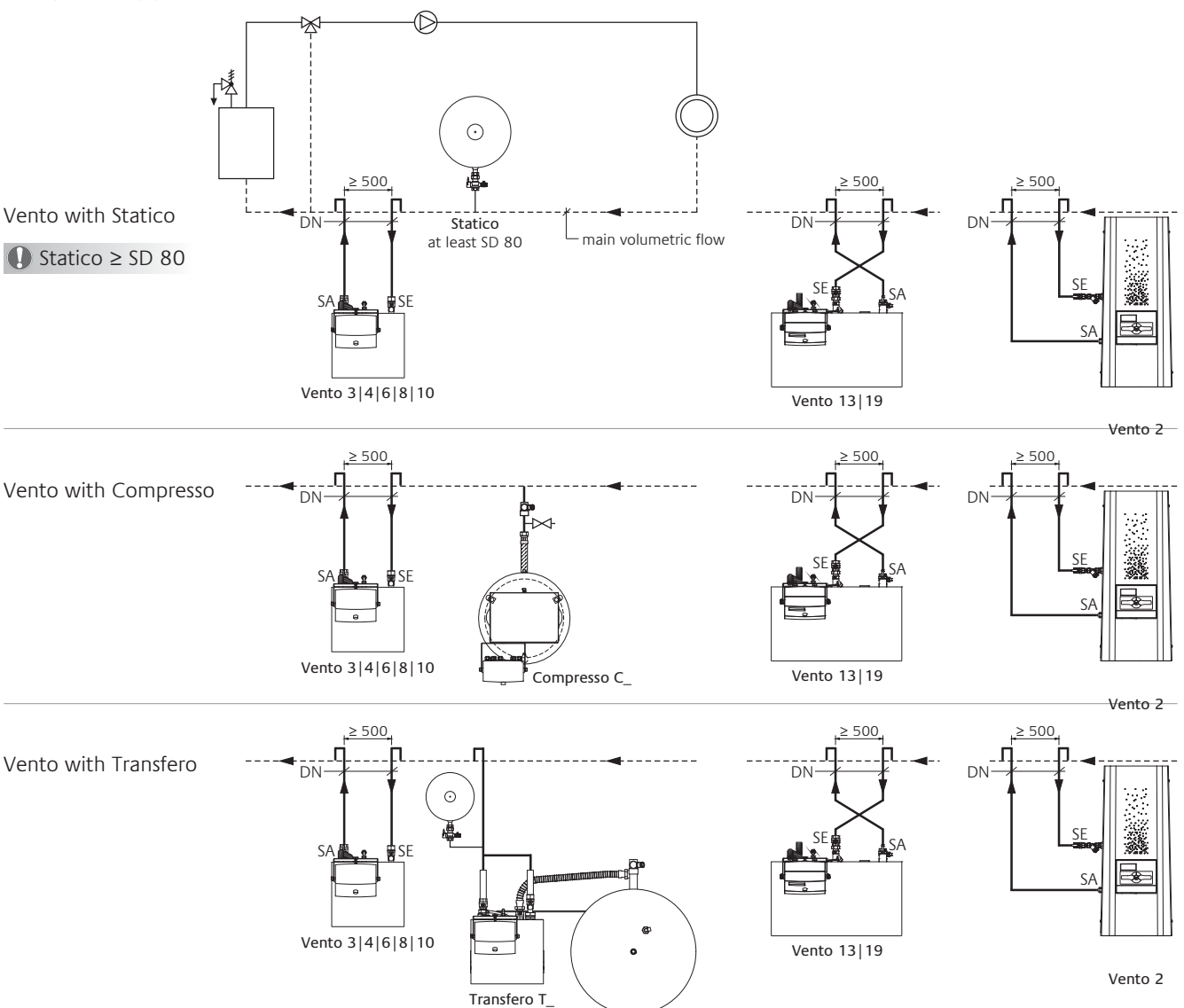
- Connected preferably on the suction side of the circulation pumps near the connection of the pressure maintenance station. In heating installations on the return.
- Vento must be connected to the main volumetric flow of the installation, otherwise degassing may be insufficient. In the direction of the main volumetric flow, the pipe to SE is connected first, then the pipe to SA.
- The connecting pipes DN have to be connected stress-free to the TecBox (1), and do not require additional lockable shut-off valves. The TecBox has integrated lock shield valves.
- In areas particularly sensitive to noise, we recommend fitting flexible hoses to connections SE and SA.

! Protect TecBox (1) from dirt » page 18!

Standard values for pipe connections DN for Vento

Length up to about	5 m	10 m	30 m
V 2 F	DN 15	DN 20	DN 25
V 3 | ... | 13	DN 20	DN 25	DN 32

Examples: DN pipe connections



Installation - Connecting pipes DN

V...F | V 3 | V...E without water make-up:

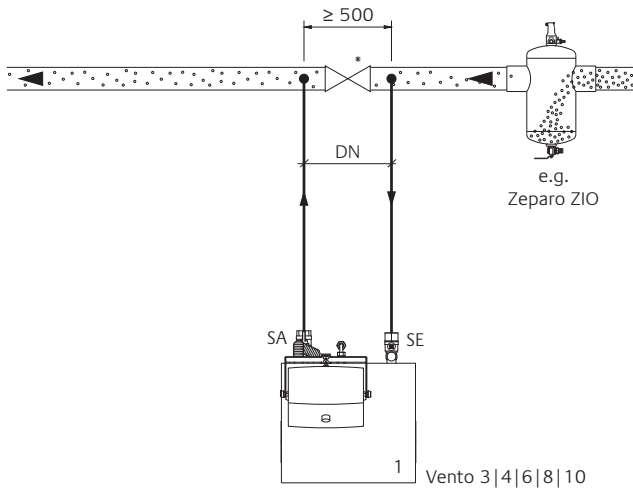
Water make-up is ready. The SNS nozzle is closed. The water make-up function is integrated in the BrainCube control.

V...F | V 3 | V...E + Pleno P with water make-up through backflow preventer ST:

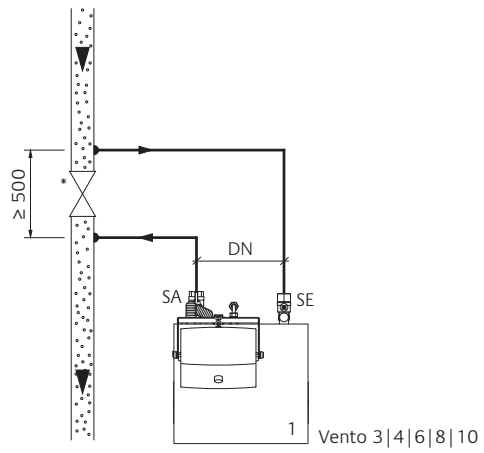
Pleno P (2) is to be connected to the SNS nozzle of the Vento TecBox (1). The solenoid valve on the Pleno P is actuated directly with 230 V from the BrainCube. » Terminal plan pages 22 | 23

VP...E with water make-up through break tank NT:

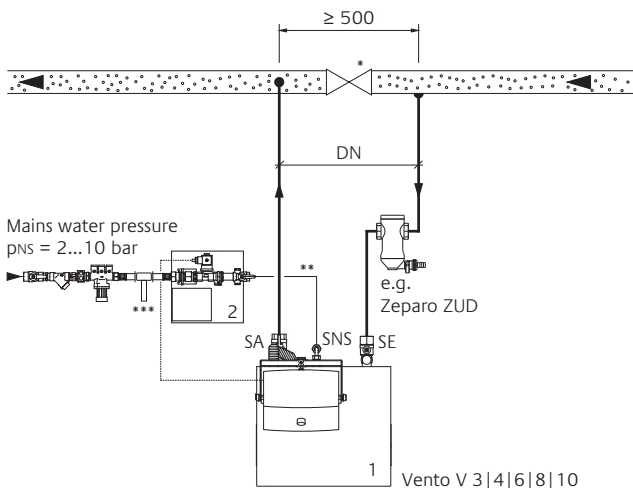
The contractor should install a strainer and shut-off valve upstream of the SNS connection, and an outlet for the break tank overflow.



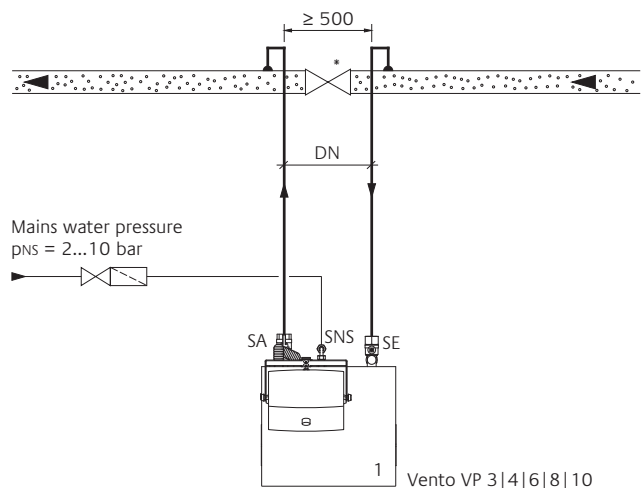
Zeparo in the horizontal main pipe.
Connecting pipes connected at side.



Connecting pipes connected to the vertical main flow pipe.



Zeparo on the inlet pipe.



Protection from coarse dirt:
Connecting pipes connected from the top.

We recommend protecting the TecBox (1) from dirt with a Zeparo separator for dirt particles.

- * Only required for degassing when the circulation pump is switched off, e.g. during the summer break.
- ** Use rigid pipes, no flexible hoses! The pipe is occasionally under negative pressure (for Vento vacuum test).
- *** Water softening cartridge (optional and supplied by on site personnel).

Installation - Electrical connection

The electrical connection work should be performed by a trained technician in accordance with the current local regulations.

With Vento 2|3|4|6|8|10, the BrainCube is equipped with a mains plug (1.2.1). The equipment is switched on as soon as the plug is inserted.

Vento 13|19 has a PowerCube PC2 panel (1.1) with a BrainCube control (1.2) electrically connected. Vento 13|19 is switched on using the mains isolator (1.1.1) on the PowerCube PC2 (I position) ►► PowerCube PC2 wiring diagram enclosed.

Requirements

! Before starting work, the installation must be made voltage-free. For Vento 2|3|4|6|8|10, pull out the mains plug (1.2.1), and for Vento 13|19, switch off the mains isolator (0 position). Disconnect any external voltages on outputs 1/2.

! Do not connect the equipment to the heating emergency off switch!

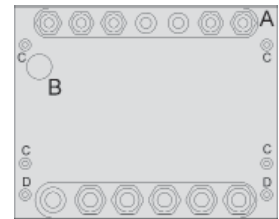
Mains power requirements:

- Connection voltage U : Vento 2|3|4|6|8|10: 230 V / 50 Hz;
Vento 13|19: 3 × 400 V / 50 Hz (3P+N+PE).
- Connected load PA : ►► Technical data page 31.
- Electrical protection by contractor: Vento 2|3|4|6|8|10: 16 A, FI protection switch;
Vento 13|19: 10 A;
follow the regulations applying in the country concerned.
- If installed in residential buildings, we recommend fitting a commercially available mains filter in the junction box.

Connections on BrainCube rear panel

A: Pleno P, extend the cable of contact water meter FIQ with 2 × 0.5 mm cable and connect to special screw connection (A).

B: Use the special adapter to run the software and language updates. This is to be done by TA Hydronics Customer Service only!



ATerminal box 230V connections – Cover 1

Volt-free outputs 1/2.

Terminal box SELV connections – Cover 2

- RS 485-1 ►► pages 20-23.
- Vento 2|3|4|6|8|10: If messages M18, M19 appear check fuses F200 and F201 (10 AT 5 × 20) and replace if necessary.
- Vento 13|19: If M18 message appears, check fuses F200 and F201 (10 AT 5 × 20) and replace if necessary, if the motor protection switch in PowerCube PC2 does not indicate a fault.

Terminal box SELV

Open cover 2:

1. Open cover 1.
2. Loosen the 4 torx screws (C).
3. Carefully pull cover 2 forward a few centimetres, until the plugs for the display and keyboard ribbon cables become accessible.
4. Snap the fastener for the «20 Display» and «14 Keyboard» plugs outwards.
5. Carefully pull cover 2 forward and remove.

Close cover 2:

1. Insert the plugs of the ribbon cables for the display and keyboard in the «20 Display» and «14 Keyboard» slots, and snap the fasteners in.
2. Push the cover into the guiding slots in the housing and fasten with the screws (C).

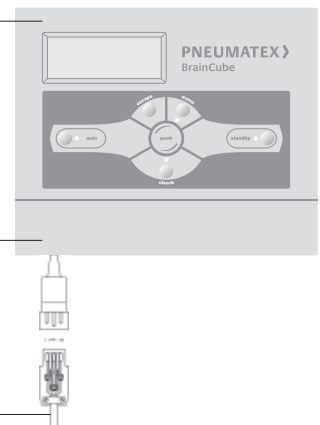
Terminal box 230 V

Open cover 1:

Unscrew the 2 torx screws (D), carefully pull the cover forward and remove.

Close cover 1:

Cover 2 must be closed.
Push cover 1 into the guiding slots in the housing and fasten with screws (D).



Vento 2|3|4|6|8|10: mains supply ►► pages 20|21

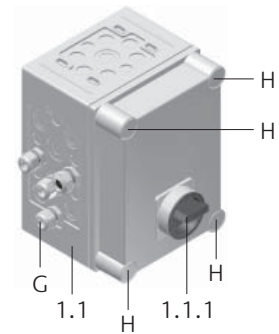
Installation - Electrical connection

Vento 2|3|4|6|8|10: Power supply connection through mains plug

- Pull out the mains plug (1.2.1) and unscrew.
- Connect PE, N, and L to the marked terminals and screw the mains plug back in.
- Re-connect the mains plug (1.2.1) only when starting-up.
- To prevent accidental loosening of the customer cable to the mains plug (1.2.1), fasten to the installation stand with cable ties.

Vento 13|19: Power supply connection to PowerCube PC2

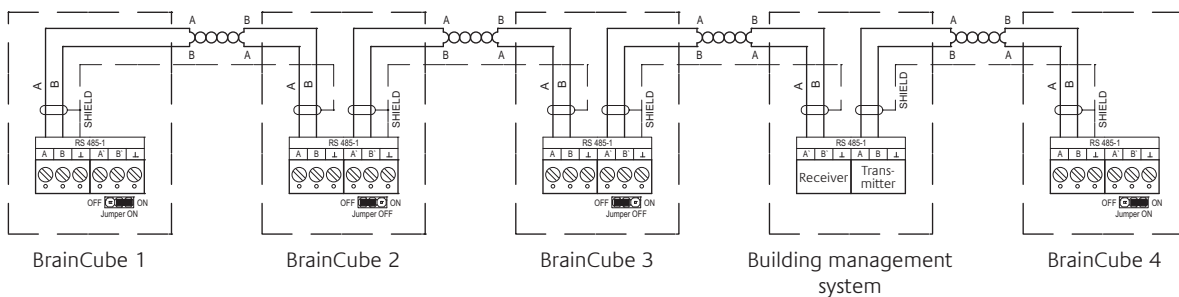
- Loosen screws H on the PowerCube PC2 cover and pull off the cover.
- Pass the (L1, L2, L3, N, PE) cable through screw connection G and connect to the terminals as shown in the PowerCube PC2 wiring diagram.
- Attach the PowerCube PC2 cover again and tighten screws H.
- Switch on mains isolator (1.1.1) again (I position) only when starting-up.



RS 485-1 interface

The RS 485-1 interface can be used to connect ComCube DCD communication modules and/or to receive water make-up signals (» pages 14 | 25). The interface can be read externally. TheTA Hydronics protocol can be supplied on request. The total length of the data link should be no more than 1,000 m. A twisted-pair shielded cable with wire diameter $\geq 0.5 \text{ mm}^2$ should be used (for example, Belden Type 9501). The RS 485-1 jumper in the final equipment on the data link must be set to «on», and the jumper on intermediate equipment to «off».

Example: Data link with 4 BrainCube and connection to the building management system through the RS 485-1



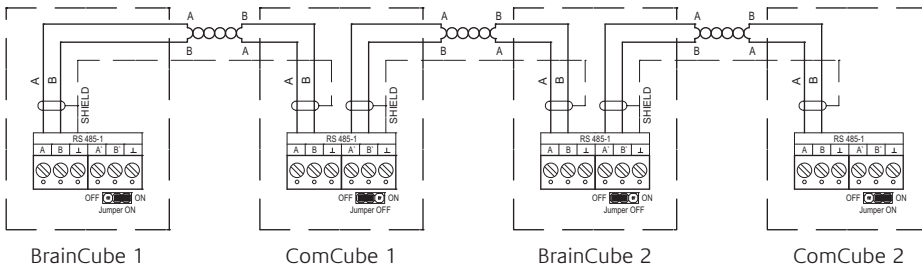
Installation - Electrical connection

ComCube DCD - Option

ComCube DCD should be wall-mounted. Several BrainCubes with ComCube can be connected through the RS 485-1 interface (»» page 20). Please read the notes concerning the connecting cables and jumper settings.

»» RS 485-1 interface and Installation | Operation ComCube

Example: Data network with 2 BrainCubes and 2 ComCube DCDs through the RS 485-1



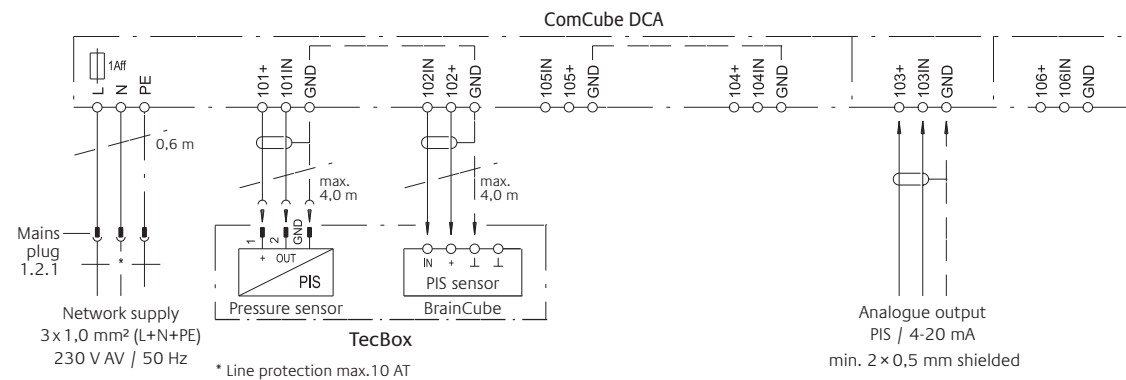
ComCube DCA - Option

ComCube DCA should be wall-mounted. For the building management system, the PIS pressure can be made available in the form of DC-isolated 4-20 mA signals through the ComCube DCA.

The existing PIS BrainCube cable connection must be removed and rewired to the ComCube DCA. The total length of the PIS BrainCube or PIS ComCube DCA cable connections should be no more than 4 m. A twisted-pair shielded cable with wire diameter $\geq 0.5 \text{ mm}^2$ should be used (for example, Belden Type 9501).

»» Installation | Operation ComCube

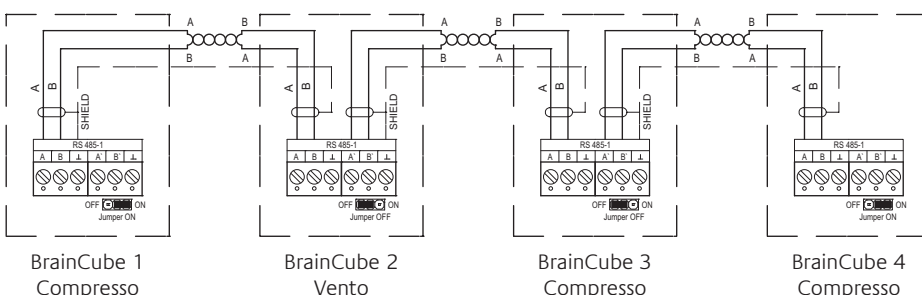
Example: Electrical connection BrainCube with ComCube DCA



Water make-up through RS 485-1 interface

The Vento can be networked through the RS 485-1 interface to receive water make-up signals from the Transfero and Compresso TecBoxes and switch the water make-up accordingly. Please read the notes concerning the connecting cables and jumper settings (»» page 20).

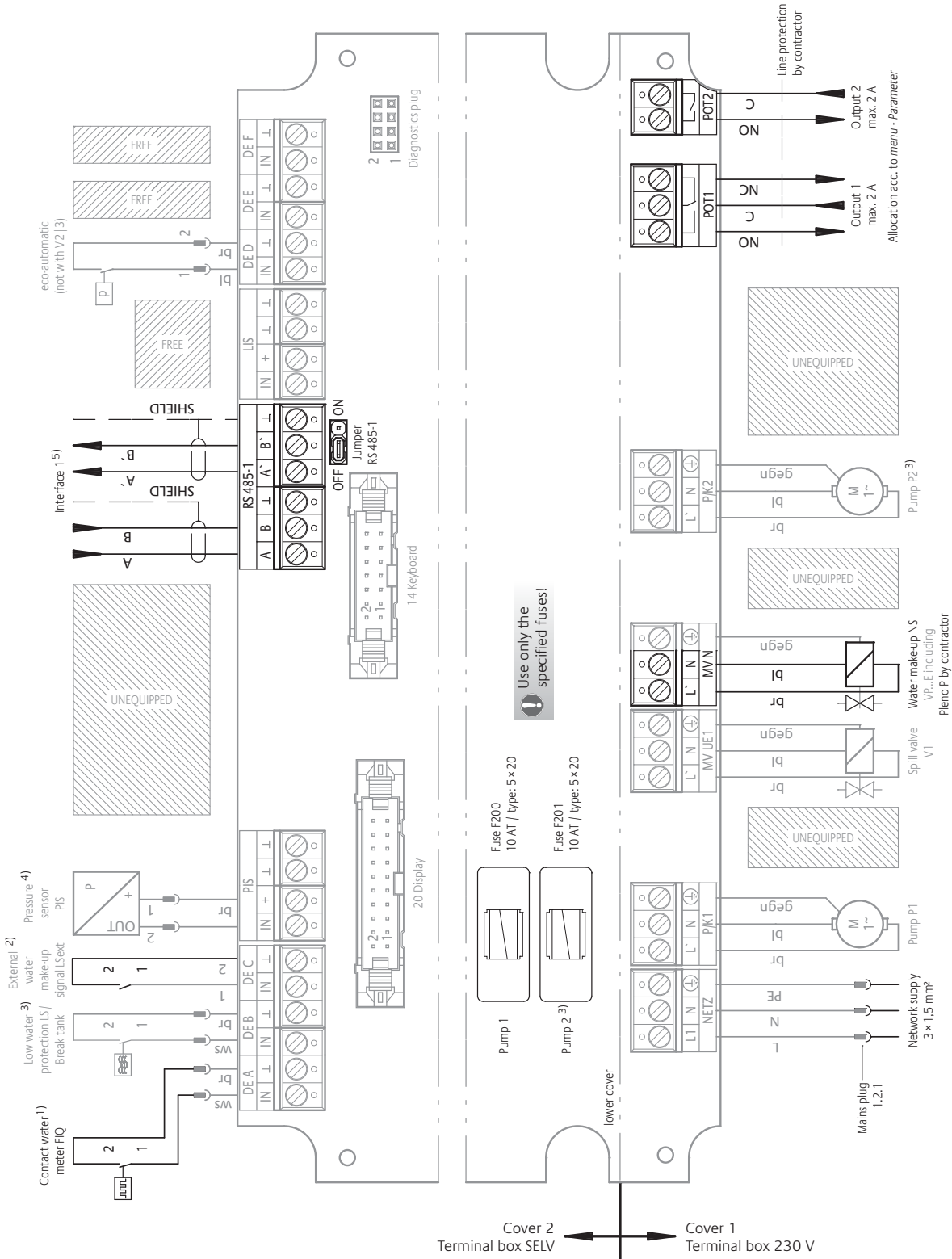
Example: 2 Vento BrainCubes networked with 2 Compresso BrainCubes



Installation - Terminal plan

BrainCube Vento 2 | 3 | 4 | 6 | 8 | 10

Connections shown grey = included in TA Hydronics delivery



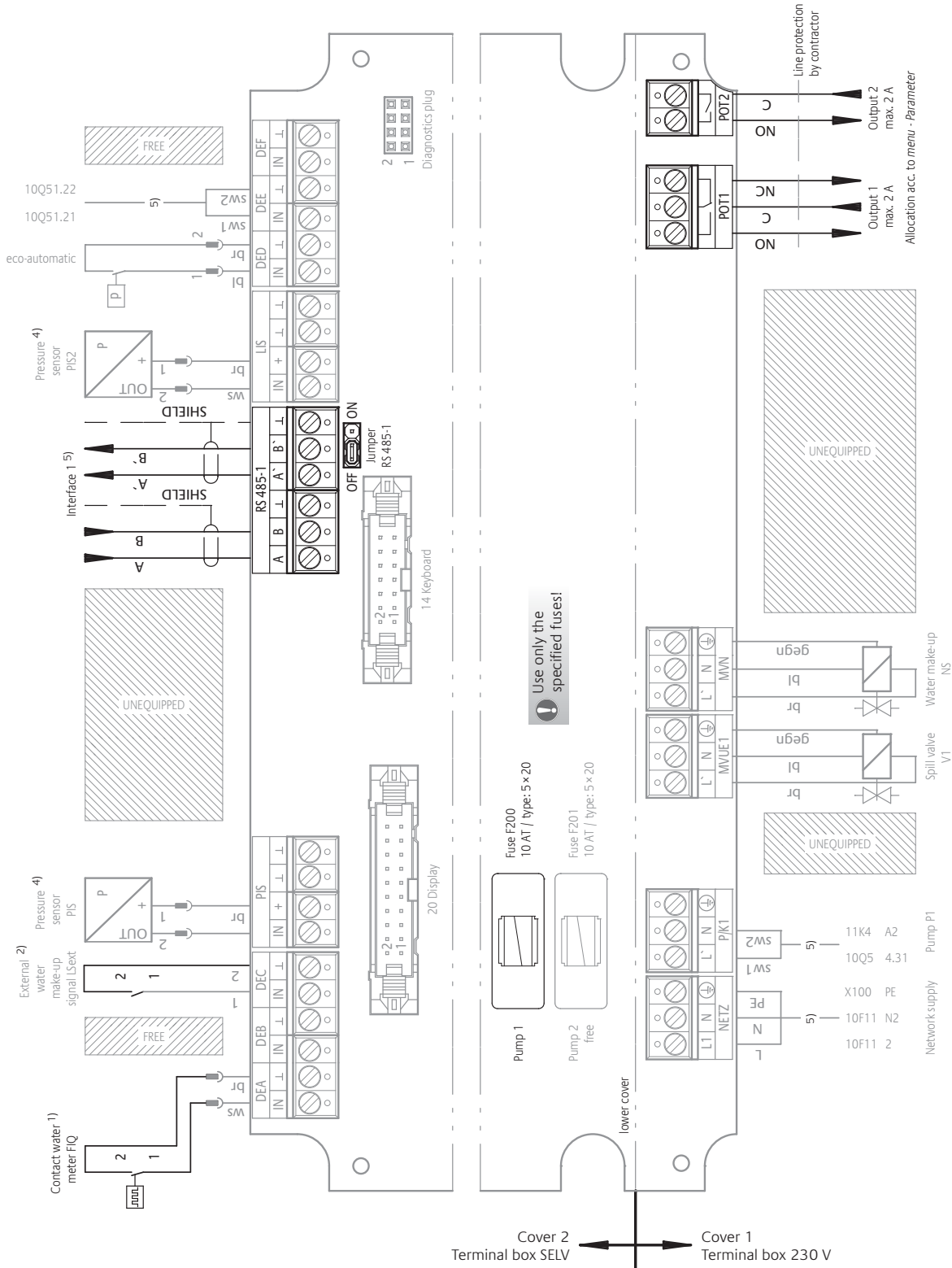
1) Included with VP...E; for Pleno P by contractor through connection A on rear of housing
 2) Water make-up ►► page 25

3) For Vento VP...2 E only
 4) Can be used with ComCube for remote indication ►► pages 20 | 26
 5) RS 485-1 interface ►► pages 20 | 21

Installation - Terminal plan

BrainCube Vento 13 | 19

Connections shown grey = included in TA Hydronics delivery



2) Water make-up ►► page 25

4) Can be used with ComCube for remote indication ►► pages 20 | 26

5) PowerCube PC2 terminals ►► PC2 wiring diagram enclosed

6) RS 485-1 interface ►► pages 20 | 21

- de
- fr
- en**
- nl

Start-up

We recommend having the start-up carried out by the nearest TA Hydraulics Customer Service. The start-up service must be ordered separately, and will be charged at the price specified in the pricelist for the country concerned. The scope of services are as described in this section.

Requirements

- The services described in the «Installation» section have been completed.
- Electrical power supply is available.
- **The connected consumer system is ready to operate, filled with water and vented.**
- The pressure maintenance station (e.g. Statico, Compresso, Transfero) is in operation.
- If the water make-up signals are to be evaluated through the RS 485-1 interface, the BrainCube of the sender (Transfero, Compresso) must be configured for parallel operation (»» page 26).
- Connecting pipes DN (»» pages 17 | 18) must be flushed out.
- Strainer SF in the Vento (»» pages 7 - 11) and Zeparo (»» page 18), or the customer strainer in the connecting pipes DN, must be cleaned.
- The cover (1.3) must be removed on Vento V...F to complete start-up.

BrainCube is self-explanatory

All start-up steps and processes are described on the BrainCube itself. Please follow the instructions given. The following notes are only intended to provide additional information.

Switching BrainCube on

Insert mains plug (1.2.1) or switch on mains isolator (1.1.1) (I position). The BrainCube is ready for start-up. At the initial start-up, it displays a «Welcome» message (if there is no operator action for 4 min., it automatically changes to *standby* with display function only, then to *menu - Start-up*).


«Welcome» at initial start-up

Welcome		
<ul style="list-style-type: none"> • Set language, date and time; standard languages: de, en, fr, nl; other languages on request. 		
Start-up		
Installat. check	»	<ul style="list-style-type: none"> • Check the installation.
System parameters	»	<ul style="list-style-type: none"> • Set the desired parameters. »» BrainCube pages 13 | 14 • The BrainCube calculates minimum pressure P0 of the system and the resulting switching points for the TecBox. • Safety valve PSV response pressure is checked for plausibility. • Set BrainCube minimum pressure P0 on the Statico, or the Statico as pre-set pressure P0 at the heat generators.
Pump IBN	»	<ul style="list-style-type: none"> • Pump P1 is vented automatically. • Pump P2 (water make-up standby pump, for VP_ .2 E only) must be vented manually at vent valve EV2 »» pages 8 | 9.
Hydr. compensation P1	»	<ul style="list-style-type: none"> • Pump and overflow rates must be adjusted so as to set the calculated flush pressure. The adjustment is made at regulating valve DV1, and for Vento 13 | 19 also at pressure reducing valves DV2 and DV3. • If the adjustment is insufficient, the BrainCube indicates that further adjustment is required.

Start-up

Start-up																					
Water make-up	<ul style="list-style-type: none"> • Activate/deactivate water make-up, select switching points for water make-up. Water make-up is checked automatically. • Possible settings: <table border="1"> <thead> <tr> <th></th> <th>A</th> <th>B</th> <th>C</th> <th>D</th> </tr> </thead> <tbody> <tr> <td>Automatic water make-up</td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>External make-up signal</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>Through RS 485-1</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> </tbody> </table> <ul style="list-style-type: none"> • Setting A: Automatic water make-up is deactivated. • Setting B: Automatic water make-up is activated, integrated pressure transducer PIS (Vento 2 3 4 6 8 10) or PIS2 (Vento 13 19) determines the switching points. • Setting C: Automatic water make-up is activated, external make-up signal L_{Sext} on DEC » pages 22 23 determines the switching points. • Setting D: Automatic water make-up is activated, external make-up signal L_{Sext} through RS 485-1 interface » pages 20-23 determines the switching points. The top message line on the display continuously shows network information, e.g. MSBX (» page 14). 		A	B	C	D	Automatic water make-up	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	External make-up signal	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Through RS 485-1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	A	B	C	D																	
Automatic water make-up	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>																	
External make-up signal	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>																	
Through RS 485-1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>																	
IBN complete	<ul style="list-style-type: none"> • The system can only go into operation after all start-up steps have been completed and confirmed. 																				
<i>standby or auto</i>	<ul style="list-style-type: none"> • <i>standby:</i> Select this if the Vento is not to go into operation yet, but the display function is to remain active. • <i>auto:</i> Select this if all requirements for start-up have been fulfilled and the Vento is to go into operation. <ul style="list-style-type: none"> On the V2 3, eco-interval operation starts now. With V...E VP...E, the eco-automatic operation is active. • In <i>menu - Parameter</i> with the V2 3, you can switch between interval degassing and continuous degassing. 																				

After *auto* operation has started, note the following:

- Key lock  automatic after 30 min, or activate manually. [»](#) page 12
- When *auto* mode is started, the analogue pressure indication must be visible on the display. This appears initially in the range from *min* (P0) to *max* (PSV). [»](#) page 13

Start-up is now complete. Vento works automatically.

- To prevent unauthorised access, the *menu - Start-up* can be permanently hidden. [»](#) page 14

Just after start-up, the strainer SF [»](#) pages 7 - 11 and Zeparo [»](#) page 18, if installed, shall be checked then cleaned if necessary. Repeat this one week later, then at least once a year during overall maintenance work

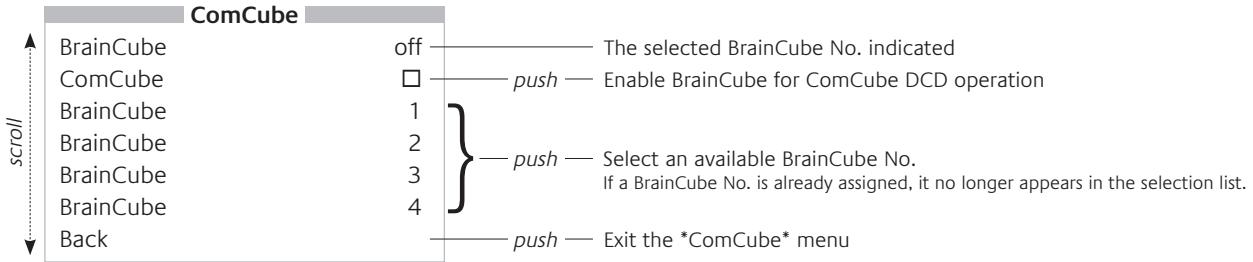
de
fr
en
nl

Start-up

BrainCube with ComCube DCD - Option

Up to four BrainCube controls can be operated with one or more ComCube DCD communication modules. Besides the cabling work (»» Electrical connection pages 20 | 21), the following parameter settings are required on the BrainCube:

- Open *ComCube* menu: press *menu*, then press *esc + push* at the same time.
- Make the settings in the *ComCube* menu:



- »» page 14 *menu* Parallel operation display
- »» Installation | Operation ComCube

BrainCube with ComCube DCA - Option

The PIS pressure can be made available to the building management system in the form of a DC-isolated 4-20 mA signal through ComCube DCA (»» Electrical connection pages 20 | 21). Parameter settings must not be made on the BrainCube. Conversion of the PIS 4-20 mA signal is provided by the customer.

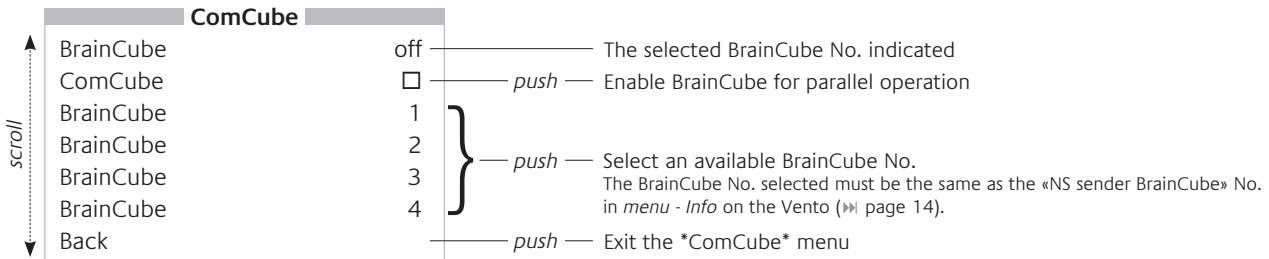
Pressure sensor PIS	Measurement range	→	Signal
Vento (all types)	-1 – 10 bar	→	4 – 20 mA

- »» Installation | Operation ComCube

Water make-up through RS 485-1 interface

The Vento can be networked through the RS 485-1 interface to receive water make-up signals from the Transfero and Compresso TecBoxes and switch the water make-up accordingly. Besides the cabling work (»» Electrical connection pages 20 | 21), the following parameter settings are required on the BrainCube of the sender (Compresso, Transfero):

- Open *ComCube* menu: press *menu*, then press *esc + push* at the same time.
- Make the settings in the *ComCube* menu:



- »» page 14 *menu* Parallel operation display

› Operation - Operating modes

Basic principles

Vento is designed, as far as possible, to be maintenance-free. Operation is controlled and monitored by the BrainCube (» pages 12 | 13). Operating states and deviations from normal operation are displayed and can if necessary be sent to the building management system over the digital outputs or through ComCube communication modules.

In general, *auto* operating mode is distinguished from *standby* mode. To ensure safety at work, the Vento should be assumed to be in operation when in either operating mode.



Before working on the electrical system, the Vento should be shut down. Pull out the mains plug (1.2.1) or switch off the mains isolator (1.1.1) at Vento 13 | 19 (0 position). The BrainCube must be voltage free.
 Important: Output POT1 | POT2 » Terminal plan pages 22 | 23.

auto

After start-up is completed successfully, Vento remains in *auto* mode all year round. If the circulation pump of the connected consumer system is switched off, please read the notes on page 18.

In *auto* mode, all functions are performed and monitored automatically.

standby

This operating mode is particularly suitable for maintenance work.

standby mode can be selected manually. In this case, degassing and water make-up are switched off, and error messages are not displayed or registered.

The pressure indication » page 12 with Vento 2|3|4|6|8|10 in *standby* mode corresponds to the current pressure in vacusplit vessel VG.

menu

All Vento functions can be selected, tested and modified from the main menu.

check

We recommend carrying out preventive maintenance and a functional check once per year. TA Hydronics Customer Service can provide these services for you at a cost.

All the main services are listed and described in the special *check* menu. You can obtain more details through direct dialog with the BrainCube.

auto mode is deactivated in the *check* menu when a check item is selected. Messages that occur during functional tests are stored in the message list.

Besides the *check* maintenance instructions, the following operations/checks are either required or recommended:

Safety valve

Vent the safety valve SV1 of the TecBox with Vento V 13 | 19 (» pages 10 | 11). The valve must blow off.

Please follow the local maintenance regulations and the maintenance instructions for the installation concerned!

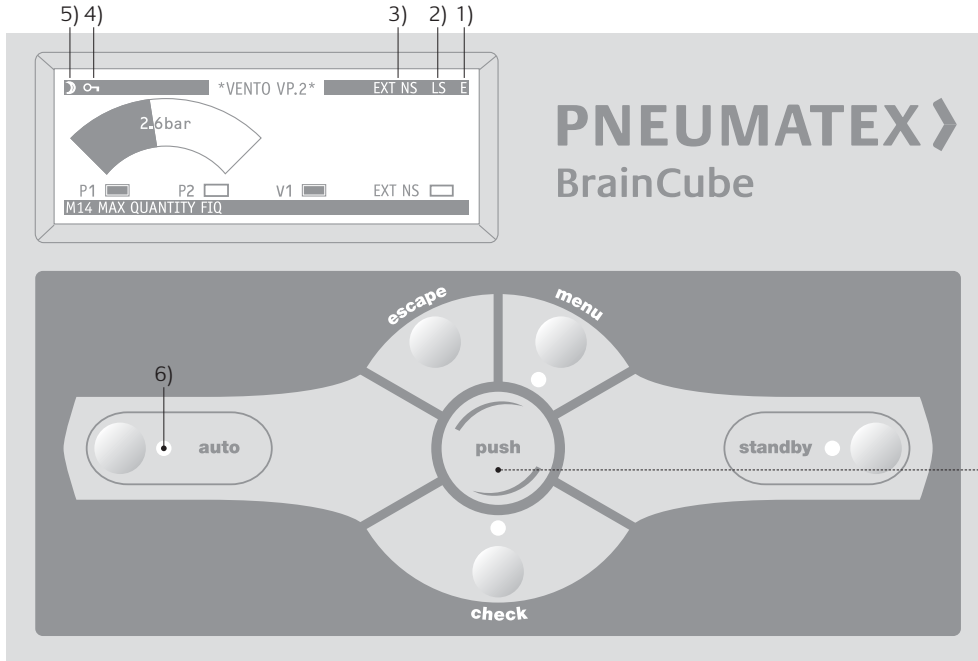
After maintenance work is completed, *auto* mode must be activated again.

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Operation - Messages

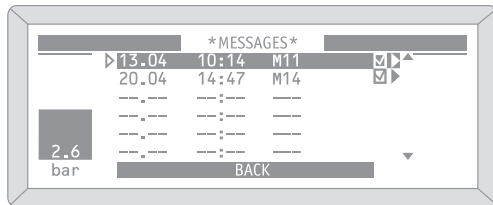
View and acknowledge messages

Deviations from selected parameter settings and from the parameters calculated by BrainCube, but operating information is also shown as codes on the bottom line of the display. If a current message is present, use **push** to open the message list.



- 1) Pressure switch PSeco has been actuated. Gas discharge is registered.
- 2) Low water protection LS_ has been actuated (only for VP .2).
» M05, M06 page 15
- 3) External make-up signal LSex is registered.
- 4) Key lock activated.
» page 12
- 5) Night rest activated.
» page 14
- 6) LED flashes if messages present

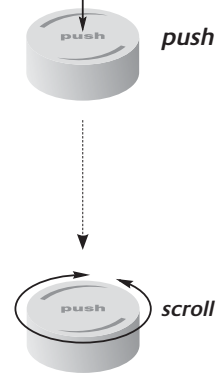
Use **push** to open the message list.



The last 20 messages are displayed. The message list can also be opened from *menu - Info*.

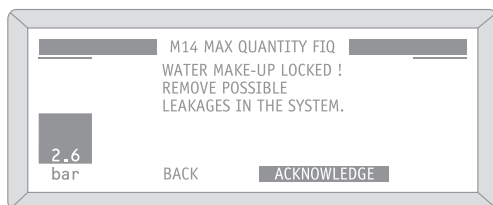
Use **scroll** to select messages.

Use **push** to open the Help text, and acknowledge with **push** if prompted.



Fault messages

Please refer to the terminal plan, particularly for fault messages M15-M19 » pages 22 | 23. Are all devices connected correctly, are the fuses ok?



If there is a fault, certain functions may be locked. After the fault is corrected, the message is either acknowledged automatically, or you are prompted to acknowledge it. Correct all faults, otherwise problems may occur.

If you are unable to restore full functionality, please contact TA Hydronics Customer Service.

› Operation - Inspection

There are no unified international regulations applying to the commissioning acceptance test or periodic inspections. Please follow the test regulations applicable at the place where the Vento is installed.

› Operation - Disassembly

Before inspection or disassembly, the Vento TecBox must be depressurised and allowed to cool.



Operate the vent and drain valves slowly and carefully. The water is pressurised!

1. Vento on *standby*.
2. Shut down the Vento TecBox by pulling out the mains plug (1.2.1) or by switching off the mains isolator (1.1.1). Place BrainCube off circuit. Important: Shut off any external voltage at the output POT1 | POT2 (» terminal plan pages 22 | 23).
3. Disconnect the Vento TecBox from the installation:
Close the lock shield valves at the TecBox SE and SA connections, and the customer shut-off valve at the SNS connection.

› Safety

⚠ Appliance

Vento is a modular-design pressure step degasser for closed heating, solar and chilled water systems. Applications other than the ones described require prior agreement with TA Hydronics. A declaration of conformity is included and certifies compliance with EU directives. Follow the particular regulations applicable at the place where Vento is installed.

⚠ Follow the instructions

Installation, operation, maintenance, and disassembly must be performed as described in these instructions, and according to the state of the art. If anything is unclear, please contact the TA Hydronics Customer Service. The required commissioning tests and periodic inspections must be carried out according to the regulations applying in the country where the equipment is installed and operated. Before disassembling pressure-carrying parts, the TecBox must be depressurised.

⚠ Personnel

Installation and operating personnel must possess the appropriate knowledge and training.

⚠ Place of installation

Access to the place of installation must be restricted to trained and specialised personnel. The floor statics must be able to support the maximum operating and installation conditions. The connections for electricity, mains water, and waste water must be appropriate for the requirements of the equipment. The room must be ventilated. The Plant room must incorporate a floor drain. The local legislation in the case of a fire must be observed.

⚠ Quality of equipment and materials

The equipment and materials used must comply with current regulations and must not have visible damage, particularly in the case of pressurised components. No welding work is allowed on pressurised components, or modifications to the electrical circuits. Only the manufacturer's original parts must be used.

⚠ Observe the parameters

Details of manufacturer, year of construction, serial number and technical data can be found on the type plates on the TecBox and expansion vessels. The regulation measures must be taken to provide temperature and pressure protection, i.e. to ensure that the installation does not exceed or fall below the maximum and minimum operating parameters respectively.

⚠ Protection against accidental contact

when high temperatures are present. Caution! Higher temperatures can occur under the TecBox cover in normal operating conditions. The level of protection from accidental contact as defined in EN 60529 is indicated by the IP code on the type plate.

⚠ Water quality

Vento is designed for use in closed heating, solar and cooling installations with water that contains no aggressive or toxic agents. The entire system must be dimensioned and operated in such a way as to minimise the amount of oxygen admitted through the make-up water or through permeable components. Water treatment systems are to be dimensioned, installed, and operated according to the current state of the art.

⚠ Electrical connection

Electrical wiring and connections must be carried out by a trained professional in accordance with current local regulations. The installation must be shut down before working on any of the electrical components.

Failure to follow these instructions, in particular the safety instructions, may result in loss of functionality, faults or even serious damage to the Vento, and may also cause physical injury. If there has been a failure to follow these instructions, the manufacturer can no longer accept liability or claims under warranty.

Technical data

The data on the TecBox type plate and the data given below should be compared with the design and system parameters. There should be no inadmissible deviations. Full technical information is available in the Datasheet **Vento** (print) and on the internet at www.tahydraulics.com.

Terms

PED/DEP 97/23/EC

PS	:	..... bar	Max. admissible pressure, as on type plate
TS	:	..... °C	Max. admissible temperature, as on type plate
TU	:	40 °C	Max. admissible ambient temperature
TW	:	30 °C	Max. admissible temperature for water make up, with Vento VP_ only

EN 60335

PA/U/F	:	..... kW / V / Hz	Electrical load/Voltage/Frequency, as on type plate
IP	:	.....	EN 60529 degree of protection of TecBox, as on type plate

Applications

- Degassing, heating, solar and chilled water systems
- Addition of antifreeze agent up to 50%

Working pressure range DP_P

Vento TecBoxes should be operated only within the stated working pressure range DP_P.

Type	DP _P [bar]
V 2.1 F	1.0 – 2.5
V 3.1 | V 3.1 C	1.0 – 3.0
V 4.1 E | V 4.1 EC	1.0 – 3.0
V 6.1 E | V 6.1 EC	1.5 – 4.5
V 8.1 E | V 8.1 EC	2.0 – 5.7
V 10.1 E | V 10.1 EC	3.5 – 7.5
VP 4.1 E | VP 4.1 EC	1.0 – 3.0
VP 6.1 E | VP 6.1 EC	1.5 – 4.5
VP 8.1 E | VP 8.1 EC	2.0 – 5.7
VP 10.1 E | VP 10.1 EC	3.5 – 7.5
VP 13.1 PE | VP 13.1 PEC	4.0 – 10.0
VP 19.1 PE | VP 19.1 PEC	5.0 – 16.0
VP 6.2 E | VP 6.2 EC	1.5 – 4.5
VP 10.2 E | VP 10.2 EC	3.5 – 7.5

› C E Konformität | Conformité | Conformity | Conformiteit

de

fr

en

nl

2006/95/EG | 2006/95/CE | 2006/95/EC | 2006/95/EG
 2004/108/EG | 2004/108/CE | 2004/108/EC | 2004/108/EG

Hersteller: TA Hydronics Switzerland AG, Mühlerainstrasse 26, CH-4414 Füllinsdorf
 erklärt hiermit, dass die Produkte

Vento

mit den folgenden EG-Richtlinien, einschliesslich der letzten Änderungen sowie mit den entsprechenden Rechtsakten zur Umsetzung der Richtlinien in nationales Recht übereinstimmen:

2006/95/EG Niederspannungsrichtlinie und
 2004/108/EG Richtlinie über die elektromagnetische Verträglichkeit (EMV),

und dass folgende harmonisierten Normen zur Anwendung gelangten:

EN 61000-6-2: 2005, EN 61000-3-2: 2006 + A1: 2009 + A2: 2009, EN 61000-3-3: 2008,
 EN 55011: 2009 + A1: 2010,
 EN 60335-1: 2002.

Constructeur : TA Hydronics Switzerland AG, Mühlerainstrasse 26, CH-4414 Füllinsdorf
 déclare par la présente que

Vento

est conforme aux dispositions des directives CE suivantes, y compris les dernières modifications, et à la législation nationale appliquant ces directives :

2006/95/CE Directive basse tension et
 2004/108/CE Directive compatibilité électromagnétique (CEM),

et que les normes harmonisées suivantes ont été appliquées :

EN 61000-6-2: 2005, EN 61000-3-2: 2006 + A1: 2009 + A2: 2009, EN 61000-3-3: 2008,
 EN 55011: 2009 + A1: 2010,
 EN 60335-1: 2002.

Manufacturer: TA Hydronics Switzerland AG, Mühlerainstrasse 26, CH-4414 Füllinsdorf
 herewith declares that the products

Vento

are in conformity with the provisions of the following EC directives, including the latest amendments, and with national legislation implementing these directives:

2006/95/EC Low voltage guideline and
 2004/108/EC Electromagnetic compatibility guideline,

and that the following harmonized standards have been applied:

EN 61000-6-2: 2005, EN 61000-3-2: 2006 + A1: 2009 + A2: 2009, EN 61000-3-3: 2008,
 EN 55011: 2009 + A1: 2010,
 EN 60335-1: 2002.

Fabrikant: TA Hydronics Switzerland AG, Mühlerainstrasse 26, CH-4414 Füllinsdorf
 verklaart hiermede dat

Vento

voldoet aan de bepalingen van de volgende EG-richtlijnen, de laatste wijzigingen inbegrepen, en met de nationale wetgeving die deze richtlijnen van toepassing stelt:

2006/95/EG Laagspanningsrichtlijn en
 2004/108/EG Richtlijn electromagnetische compatibiliteit (EMC),

en dat de volgende geharmoniseerde normen zijn toegepast:

EN 61000-6-2: 2005, EN 61000-3-2: 2006 + A1: 2009 + A2: 2009, EN 61000-3-3: 2008,
 EN 55011: 2009 + A1: 2010,
 EN 60335-1: 2002.



Christian Müller
 Managing Director



Asger Andersen
 R & D Manager

