

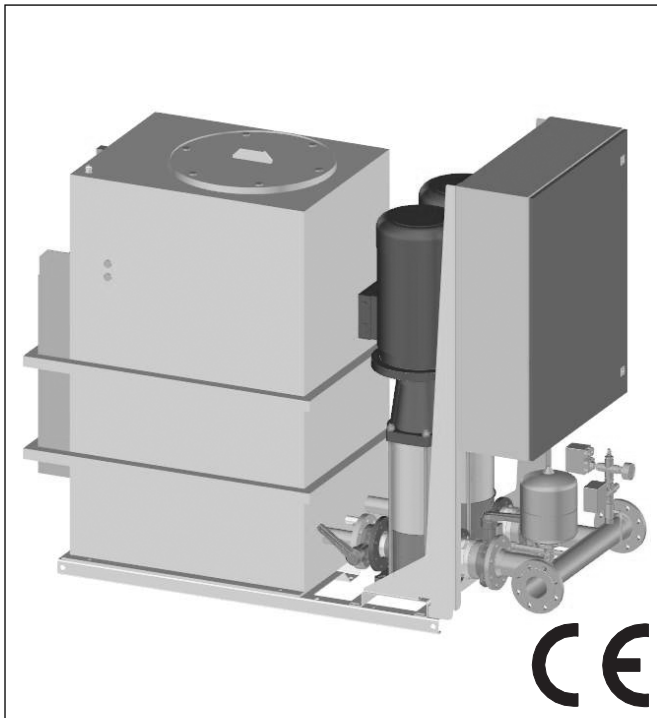
Braukmann

CBU145

Compact Booster Unit - double pump

To ensure the quality of potable water according to EN1717

Product specification sheet



Version

The Compact Buster Unit comprises the following modules, that can be disassembled (for example for transport purposes).

- The double pump booster unit has two pumps, a control unit, valves and connected piping. The pressure switch and temperature sensor are installed, wired and preset with standard default values in the factory.
- Buffer tank with inlet and flushing apparatus as well as level, overflow and dry running monitor. The components are assembled and preset in the factory. The electrical components are connected to the control unit of the booster station with plug connections. Thus if required an electric separation can be made.
- A common base frame for the double pump booster unit and the supply container that allows transportation with a standard pallet hand forklift. The pumps and base frame are equipped with vibration dampers.

Application

Resideo Compact Booster Unit - double pump CBU145 as a safety device to separate potable water from category 5 fluids according to DIN EN 1717 for fire extinguisher applications according to DIN 14462 and DIN1988-600 with free outlet type AB and vertical high-pressure pumps.

Fully automatic, fully wired Compact Booster Unit-double pump with modular design comprising a double pump system with redundant operation and a buffer tank for the hygienic separation of potable water and category 5 fluids according to DIN EN 1717, on a common base frame. The modular design makes it possible to disconnect modules for installation in buildings with limited space. The system is switched on and off regulated by pressure.

Special Features

- Highest protection level for category 5 fluids
- Compact Booster Unit - double pump with redundant operation
- Pre-assembled, ready for installation
- No risk of microbial contamination due to hygienic separation of potable water from non-potable water
- Hygienically non-hazardous due to DVGW-certified automatic flushing valve and refilling valve materials acc. KTW & W270
- Easy installation due to modular construction and draining with integrated siphon trap
- Reliable operation due to buffer tank with usable volume according to DIN 1988-500
- Safe operation in case of fire due to construction and function according to DIN 14462: 2011-08

Range of Application

Separation of systems as a means to protect potable water from being contaminated by fluids of the category 5 according to DIN EN 1717

Pump medium	Non-potable water Without aggressive, abrasive and solid components
Flow rate	max. 48 m ³ /h (13,3 l/s)
Pumping head	up to 125 m
Medium temperature	up to 30 °C
Ambient temperature	up to 40 °C
Pressure rating	PN16
Inlet pressure	
up to 18 m ³ /h	min. 1,5 bar, max. 8 bar
up to 36 m ³ /h	min. 3 bar, max. 8 bar
up to 48 m ³ /h	min. 4 bar, max. 8 bar
Supply voltage	2 x 3/N/PE, AC 400 V, 50 Hz

Structure

Double pump system with redundant operation, including back-up pump unit, made up of:

- two normal sucking, vertical high-pressure rotary pumps with all components in contact with the medium made of stainless steel
- Standard-motor each pump, energy efficiency class IE2
- Check valves for each pump
- Shut-off valves on the inlet and outlet sides of each pump
- Diaphragm expansion vessel on the outlet side as vessel
- Vibration damper for each pump
- Pressure gauge display
- Isolation valves, lockable
- Pump protection through temperature related minimum flow
- Piping made of chrom-nickel-steel alloy
- The system is connected to the installation pipeline with circular flanges
- Base frame made of coated steel

Two complete, electrically independant electrical switching apparatus each with an electro-mechanical control unit comprising:

- Power supply via 3/N/PE, 400V AC, 50Hz
- Main switch that is protected against unauthorised operation
- Control transformer 400V / 230V- 24V
- Green indicator light for standby
- Red indicator light for water shortage
- Yellow indicator light for malfunction
- White indicator light for operation on demand
- Manual/automatic switch
- Timer for 24 hour functional operation and weekly flushing cycle
- Remote on/off, protected against wire breakage and short circuit
- Phase monitor relays with rotation monitoring and phase failure protection
- Smooth operated start-up
- Motor protection device, in case of failure only indicates an alarm
- Terminal strip with markings for all connections
- Plug connectors for easy connection of electrical equipment on the buffer tank

Terminal strip for potential-free contact for time-delayed potable water separation (adjustable)

- Control voltage 230V, AC 6A

Buffer tank made of polyethylene with:

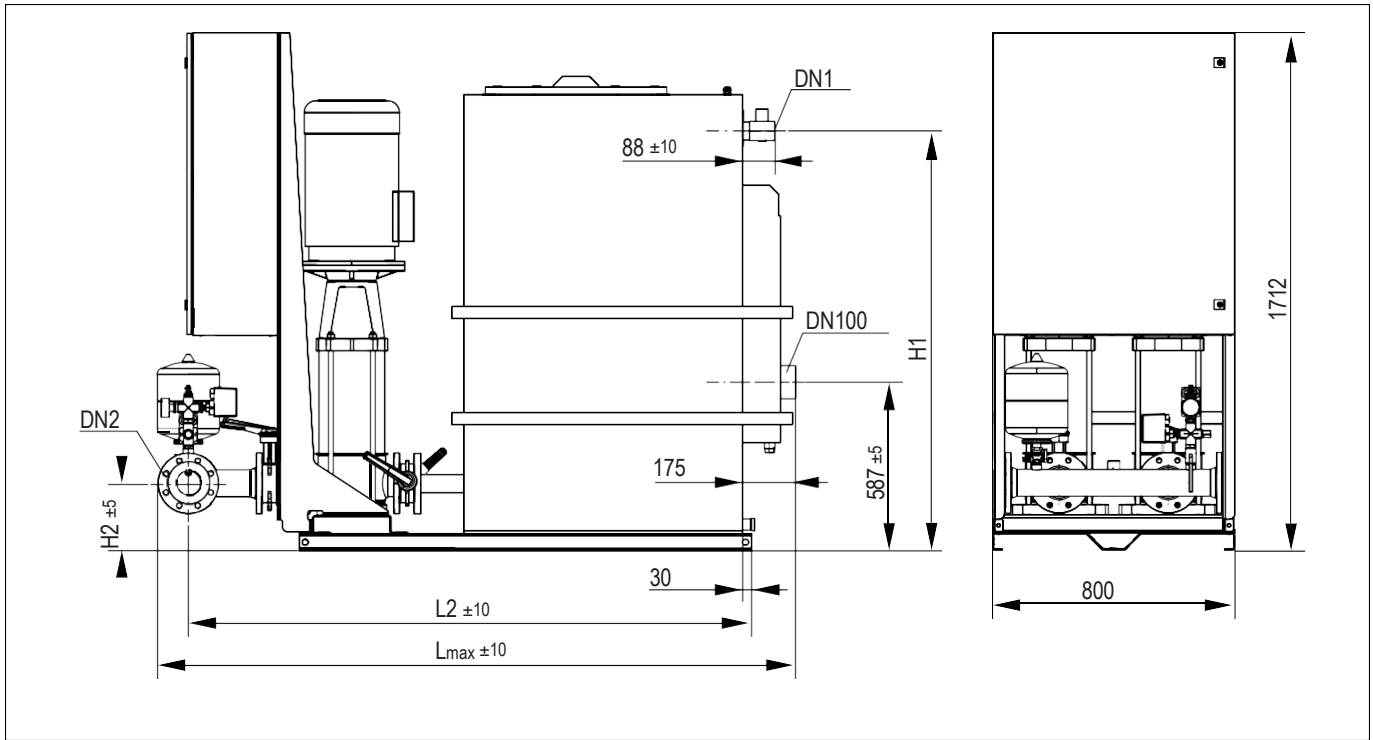
- Non-circular, free overflow according to DIN EN 13077, Type AB
- Drainage connection DN 100 (nozzles) with integrated siphon trap
- Usable volume 540 litres
- Refilling of potable water via float valve
- Automatic flushing device via solenoid valve
- Sensors for monitoring of dry running and overflow

Options

CBU145-50A-...	refer to technical data for type selection
CBU145-65A-...	refer to technical data for type selection
CBU145-80B-...	refer to technical data for type selection

Technical data

Type	Volumetric flow rate Q design	Pumping head	Connection		Switch-on pressure p _E and maximum pressure increase Δp up to switch-off pressure p _A						Nominal performance	Nominal current 3~400 V
					18 m ³ /h (5,0 l/s)			36 m ³ /h (10,0 l/s)				
	[m ³ /h]	[m]	Inlet	Pump	p _E [bar]	Δp [bar]	p _A [bar]	p _E [bar]	Δp [bar]	p _A [bar]	P ₂ [kW]	[A]
CBU145-50A-042	18	42	G2	DN50	4,2	1,3	5,5	-	-	-	4	7,29
CBU145-50A-052	18	52	G2	DN50	5,2	1,7	6,9	-	-	-	5,5	10,07
CBU145-50A-063	18	63	G2	DN50	6,3	2,1	8,4	-	-	-	5,5	10,07
CBU145-50A-074	18	74	G2	DN50	7,4	2,4	9,8	-	-	-	7,5	13,6
CBU145-50A-085	18	85	G2	DN50	8,5	2,7	11,2	-	-	-	7,5	13,6
CBU145-50A-095	18	95	G2	DN50	9,5	3,2	12,7	-	-	-	11	19,47
CBU145-50A-105	18	105	G2	DN50	10,5	3,6	14,1	-	-	-	11	19,47
CBU145-65A-128	18	125	G2	DN65	12,5	1,5	14	-	-	-	15	26,7
CBU145-80B-052	36	51	G2 1/2	DN80	-	-	-	5,1	1	6,1	11	19,47
CBU145-80B-063	36	62	G2 1/2	DN80	-	-	-	6,2	1,1	7,3	11	19,47
CBU145-80B-073	36	72	G2 1/2	DN80	-	-	-	7,2	1,3	8,5	15	26,35
CBU145-80B-084	36	82	G2 1/2	DN80	-	-	-	8,2	1,5	9,7	15	26,35
CBU145-80B-094	36	92	G2 1/2	DN80	-	-	-	9,2	1,8	11	18,5	32,1
CBU145-80B-104	36	102	G2 1/2	DN80	-	-	-	10,2	1,9	12,1	18,5	32,1
CBU145-80B-114	36	112	G2 1/2	DN80	-	-	-	11,2	2,2	13,4	18,5	32,1
CBU145-80B-125	36	122	G2 1/2	DN80	-	-	-	12,2	2,3	14,5	22	38,1



Dimensions

Type	DN1	DN2	H ₁	H ₂	L ₂	L _{max}	Weight [kg]
CBU145-50A-042	G2"	DN50	1372	208	1720	2000	404
CBU145-50A-052	G2"	DN50	1372	208	1720	2000	506
CBU145-50A-063	G2"	DN50	1372	208	1720	2000	508
CBU145-50A-074	G2"	DN50	1372	208	1720	2000	518
CBU145-50A-085	G2"	DN50	1372	208	1720	2000	523
CBU145-50A-095	G2"	DN50	1372	208	1720	2000	691
CBU145-50A-105	G2"	DN50	1372	208	1720	2000	693
CBU145-65A-128	G2"	DN65	1372	223	1860	2000	773
CBU145-80B-052	G2 1/2"	DN80	1425	257	1885	2095	665
CBU145-80B-063	G2 1/2"	DN80	1425	257	1885	2135	666
CBU145-80B-073	G2 1/2"	DN80	1425	257	1885	2135	675
CBU145-80B-084	G2 1/2"	DN80	1425	257	1885	2135	703
CBU145-80B-094	G2 1/2"	DN80	1425	257	1885	2135	748
CBU145-80B-104	G2 1/2"	DN80	1425	257	1885	2135	778
CBU145-80B-114	G2 1/2"	DN80	1425	257	1885	2135	783
CBU145-80B-125	G2 1/2"	DN80	1425	257	1885	2135	855

All dimensions in mm unless stated otherwise.

Function

The system comprises two multi-speed high-pressure rotary pumps with inlet and outlet shut-off valves. They can be locked with padlocks against unauthorised closing. They make it possible to disassemble the pumps or the check valves without having to empty the pipeline system. The check valve on the pumping side prevents liquid from backing up on the pump and flowing backwards through it, and it relieves the floating ring seal. The fully automatic Compact Booster Unit with compact design comprising:

- vertical high-pressure pumps
- electro-mechanical control unit to ensure the required supply pressure is provided for the consumers
- buffer tank with automatic refilling

construction and operation is according to DIN 1988, DIN 14462, EN 1717 and EN 13077.

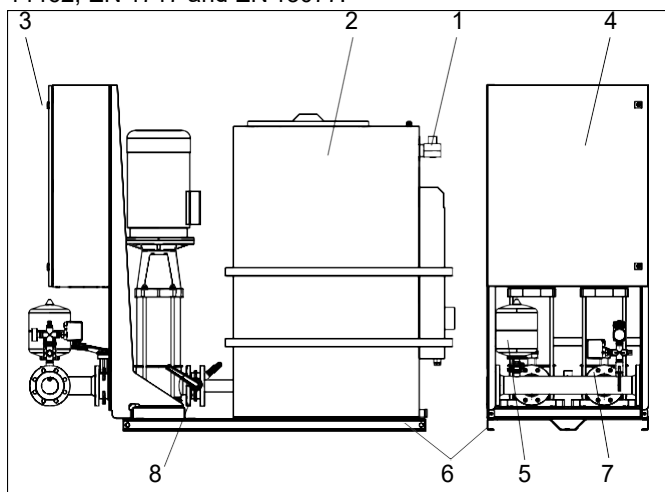


Figure 1: Structure

- | | |
|-----------------------|-------------------------|
| 1 Inlet | 2 Buffer tank |
| 3 Display | 4 Switch cabinet |
| 5 Pump | 6 Base frame |
| 7 Temperature monitor | 8 Outlet shut-off valve |
| 9 Bypass | |

Installation type

- Fixed installation

Inlet side

On the inlet side there is a buffer tank with a float valve to refill water. Additionally the Compact Booster Unit has a solenoid valve for hygienic flushing of the inlet pipe. In the buffer tank there are two float switches with which the water level is measured and in the case of water shortage and overflow messages are sent.

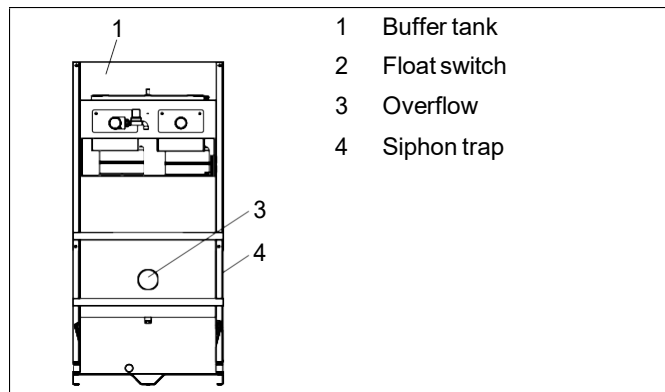


Figure 2: Inlet side

Outlet side

On the outlet side there is a diaphragm expansion vessel as well as two pressure switches and a pressure guage.

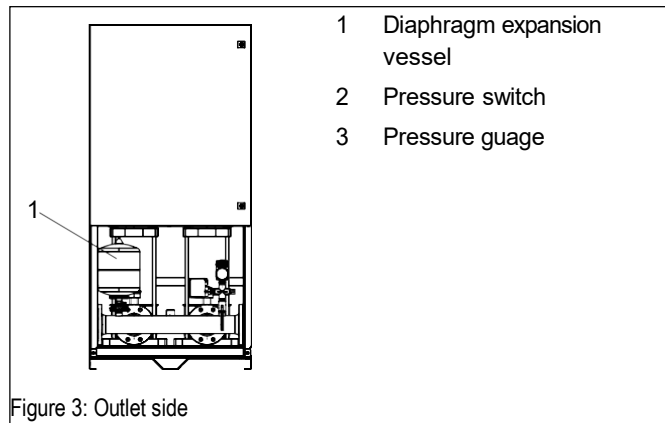


Figure 3: Outlet side

Switch cabinet

The switch cabinet is connected to the pump base frame and completely wired with the Compact Booster Unit. Power supply for water level measurement and solenoid valve is made possible via a plug connection to the switch cabinet.

Automation

- Electro-mechanical control unit
- Timer for 24 hour functional operation and weekly flushing cycle
- Manual/automatic switch
- Phase monitor relays with rotation monitoring and phase failure protection
- Protection against dry running and Motor protection switching, only as a message during automatic operating mode
- Terminal strip/clamps with labels for all connections
- Easy starter
- Remote on/off, protected against wire breakage and short circuit

Messages given out by indicator lights

- Red: Water shortage
- Yellow: Malfunction
- Green: Normal operation
- White: Operation triggered by remote on/off

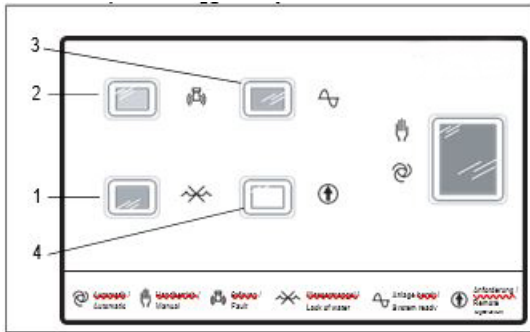


Figure 4: Indicator lights

- | | |
|--------------------|--|
| 1 Water shortage | 2 Malfunction |
| 3 normal operation | 4 Operation triggered by remote on/off |

Messages sent via potential-free terminal clamps to, for example, the central building control system

- Water shortage
- Switch to position manual/automatic
- Buffer tank overflow
- Remote actuation via remote on/off
- Collective error message
- Separation of potable water

Mode of operation

Mode of automatic operation

The system is switched on and off by a pressure regulated electro-mechanical control unit. If the preset pressure p_E is not reached, the pump is activated via the pressure switch. If water consumption decreases, the pump shuts off after a preset follow-up time (up to 10 minutes).

The system can be controlled by remote on/off independently of the pressure switch (for example by switches in wall hydrants for fire extinguisher systems). Pressure switch and remote on/off inputs are monitored for wire breakage and short circuits. If wire breakage or a short circuit is detected, the system is automatically turned on and the yellow indicator light signals a malfunction.

i In automatic mode, all system safety equipment (dry running protection, motor protection) are disabled because pumping has the priority during a fire. The motor is still monitored, but once the motor protection switch has been activated, the motor remains unmonitored in the network and an error message is displayed.

The required amount of water is fed into the system via the inlet valve. For this purpose, the float valve on the potable water inlet opens and closes fully automatically.

Mode of manual operation

Manual operation is also possible in addition to automatic mode as an exception.

A manual/automatic switch for the pump is on the switch cabinet. In the position Manual the pump is connected to the network, independent of the automatic mode (pressure switch or remote on/off).

i Manual operation is only for emergency! Continuous operation of the system in manual mode can lead to excessive water and energy consumption due to the bypass line.

To keep the pump and the pump medium from overheating during manual operation in the case of zero delivery, a minimum amount has to be pumped. If not, the magnetic valve in the bypass is opened when the pump mantle reaches a programmable temperature, in order to ensure that a minimum amount of medium is pumped.

Pump	Minimum amount discharged per pump for manual operation [l/h]
Movitec 15	2400
Movitec 25	2800
Movitec 40	4000

Mode of operation for testing

There is a digital timer in the switch cabinet with which testing is parametrised. In testing mode, the pump is connected to the network, independent of the automatic mode (pressure switch or remote on/off).

Mode of operation for protection against dry running

Protection against dry running is active in the manual and testing modes, as long as the pressure does not fall below the switch-on pressure p_E or the system is actuated by remote on/off, because the situation is interpreted as a case of fire that has to be extinguished and for which the system safety equipment has to be disabled. The connection for the dry running protection is a digital input. If it is open, the control unit registers dry running and shuts the system off after approx. 10s (default setting).

Mode of operation for temperature monitoring

There is a temperature monitor on the pump mantle that opens the magnetic valve on in the bypass, if a programmable temperature is registered (default 90 °C) to protect the pump against overheating when operated without a minimum amount discharge. Temperature monitoring is activated in the automatic and manual modes.

Mode of operation for refilling

Refilling is done automatically via a float valve. Water shortage and overflow are indicated as an error by the switch cabinet.

i Refilling has to be done with 25 m³/h (for design flow 18 m³/h) and with 50 m³/h (for design flow 36 m³/h and 48 m³/h) and system pressures of 1.5 bar (at 18 m³/h), 3.0 bar (at 36 m³/h) and 4.0 bar (at 48 m³/h) and a maximum of 8 bar.

The flow rate has to be set by a throttle valve on the system. If refilling works properly, the tank is filled up to just below the overflow hole in the middle after the refilling valve is closed. The overflow with integrated siphon trap is designed corresponding to the refilling. The system operator is responsible for ensuring the drain outlet lines are sufficiently dimensioned.

i According to DIN 1988-600, the maximum flow rate in a single inlet line to the extinguishing water transfer point may not exceed a calculated flow rate of 5 m/s.

Mode of operation for flushing

Flushing of the potable water pipeline connected upstream can be activated by setting the digital timer in the switching cabinet via the solenoid valve. The flushing water is discharged through the integrated overflow. The flushing time is estimated with respect to the required flushing volume (refer to the following figure). For larger flushing volumes (more than 200 l), it can be increased by 7 l (25 m³/h) and 14 l (50 m³/h) with each further second.

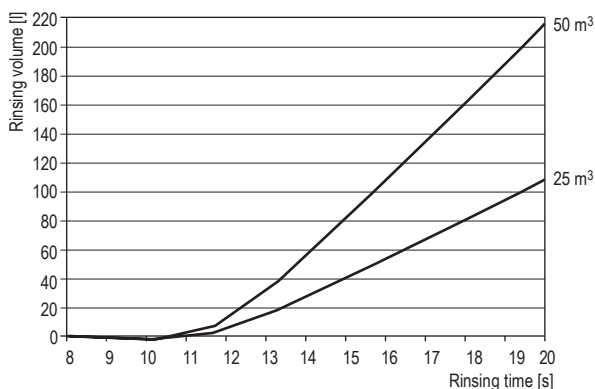


Figure 5: Determining the flushing time

Mode of operation for separation of potable water

The Compact Booster Unit can be supplied with water exclusively by sending a potential free message "potable water separation" to close the supply of potable water to other consumers at a branch upstream from the system. The message is sent with a time delay (default 30 s) when actuated by pressure switch of remote on/off.

Mode of operation in the event of power loss

In the event that the mains power supply of the entire system fails standby is no longer functional.

Materials

Pump

Part	Material
Inlet housing	Stainless steel
End housing	Stainless steel
Hydraulics	Stainless steel
Seal	FPM 80
Sliding bearing	Aluminium oxide
Floating ring seal	according to EN 12756
Floating ring	Silicon carbide
Counter ring	Hard coal
Elastomer	EPDM

Hydraulic components

Part	Material
Pipeline	Chrome steel
Switching device	Steel, lacquered
Control tank	Connection made of stainless steel
Membrane	Suitable for potable water

Shut-off valves

Part	Material
Housing	Spheroidal cast iron
Butterfly disc	Stainless steel
Bellows ring material	EPDM
Buffer tank	Polyethylene
Check valve	Cast steel

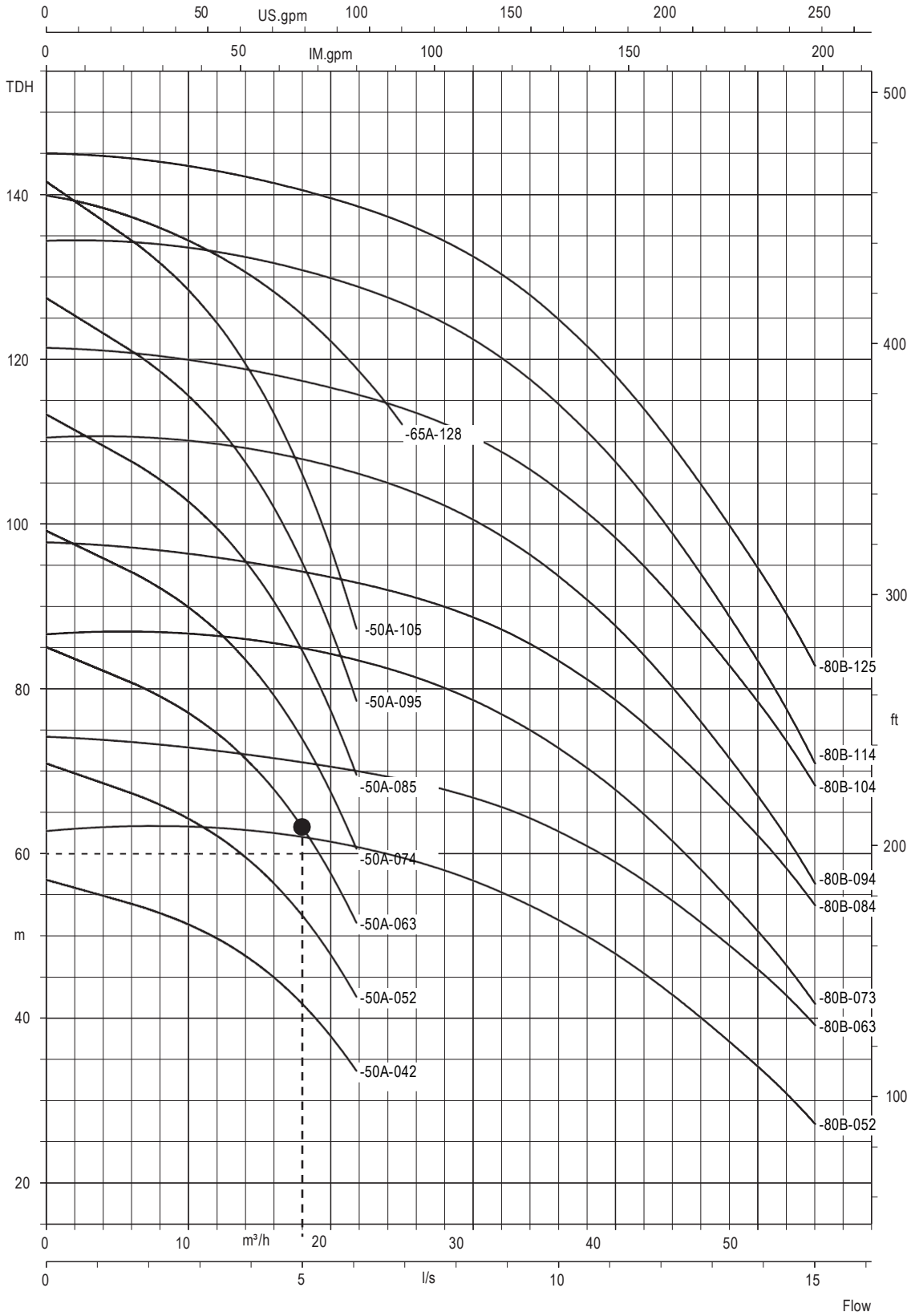
Selection of a CBU

Necessary pump head: Geodetic head + pressure loss in piping system + required pressure at point of use = 60 m

Necessary flow rate: 18 m³/h

Solution:

CBU145-50A-063



Design notes

Feed amount necessary: 25 m³/h at 18 m³/h design flow and 50 m³/h at 36 m³/h and 48 m³/h design flow

Switch-on pressure p_E 6,3 bar

Inlet pressure

Design flow 18 m³/h

1.5 bar min.

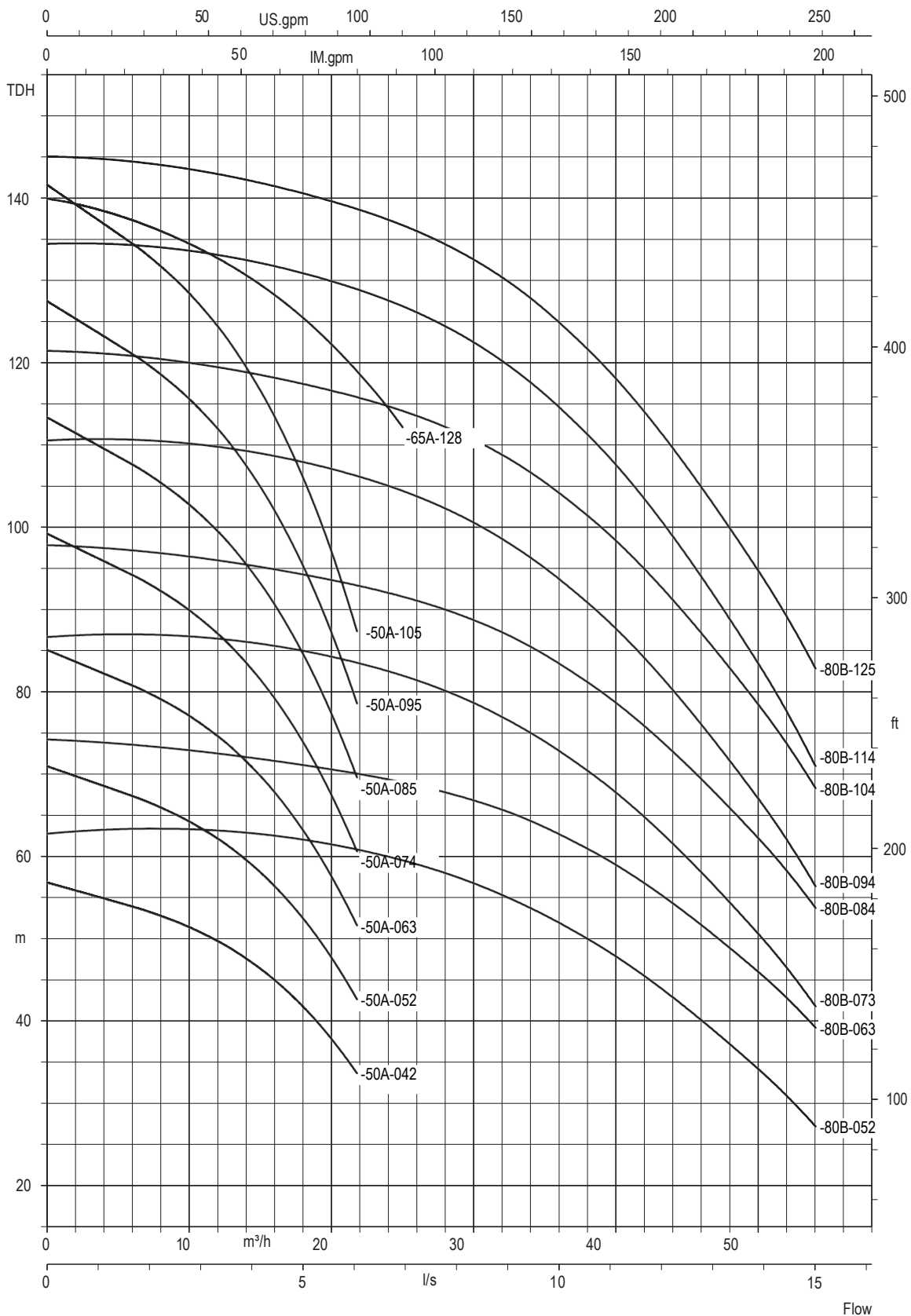
Design flow 36 m³/h

3 bar min.

Design flow 48 m³/h

4 bar min.

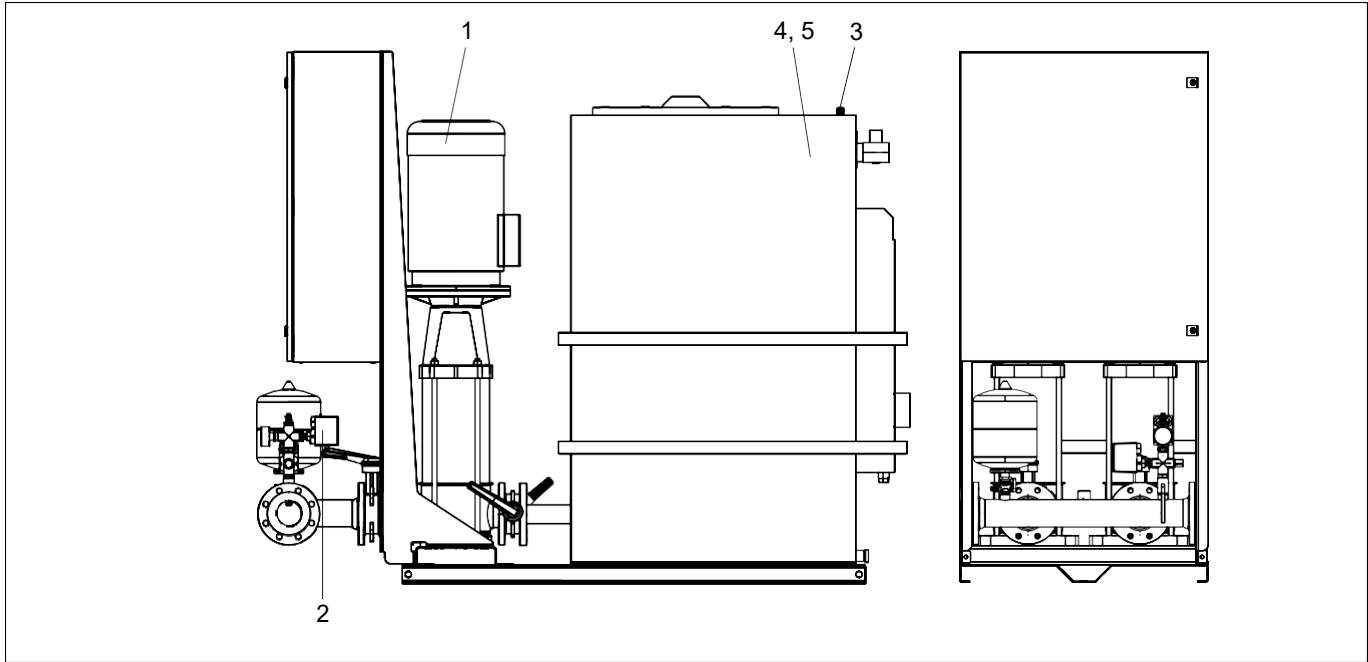
Characteristic curves



EN0H-1375GE23 R1020 • Subject to change

Spare parts

Parts index CBU145



CBU145 from 04/2014 onwards

Nr.	Ordering text	Nennweite	OS.-No.
1	Motitec 1504B	DN50	0904088
	Motitec 1505B	DN50	0904089
	Motitec 1506B	DN50	0904090
	Motitec 1507B	DN50	0904091
	Motitec 1508B	DN50	0904092
	Motitec 1509B	DN50	0904093
	Motitec 1510B	DN50	0904094
	Motitec 2507	DN65	0904095
	Motitec 4003-2	DN80	0904130
	Motitec 4003	DN80	0904131
	Motitec 4004-2	DN80	0904132
	Motitec 4004	DN80	0904133
	Motitec 4005-2	DN80	0904134
	Motitec 4005	DN80	0904135
	Motitec 4006-2	DN80	0904136
	Motitec 4006	DN80	0904137
2	Pressure switch MCS 22	alle	0904106
3	Solenoid valve 1/2"	alle	0904107

Nr.	Ordering text	Nennweite	OS.-No.
4	Float valve	DN50, DN65	VR170-2A
		DN80	VR170-21/2A
5	Float switch	alle	0904116

Spare parts for older models on request