

**Climate
Control**

IMI Pneumatex

Pleno Refill



Pressure control and water make-up system

Softening and demineralisation modules
for make-up water

Pleno Refill

Modules for the softening or demineralisation of make-up water according to VDI 2035 Bl. 1 / SWKI-BT-102-1 / ÖNORM H5195-1 to protect heat generators and waterborne heating systems without aluminium components from calcium deposits. For systems with aluminium components a version with full demineralisation is available. Pre-mounted unit features a softening device filled with a high-grade ion exchange resin, and a 25 µm fine filter.



Key features

Easy installation

Compact pre-mounted unit for use with all types of systems. Can be connected quickly to a backflow preventer and a TecBox with flexible hoses. Easily exchanged once lifetime has elapsed.

Filter with transparent enclosure

Visible filter with 25 µm mesh size prevents dirt and resin from entering the system.

Energy savings due to reduction in calcium deposits

Less scale deposits on the hottest surfaces in the system lead to increased boiler efficiency and thus lower energy use.

Make-up water limitation

Automatic limitation of make-up water with the help of the PNEUMATEX BrainCube Connect control unit.

Technical description

Application:

For systems with media according to VDI 2035-1, SWKI-BT-102-1 or ONORM H5195-1.

Functions:

Softening/demineralisation of the make-up water and filtering.

Dimensions:

All models: DN 20

Connection:

Inlet:
3/4" swivelling nut, flat gasket
Outlet:
3/4" external thread, flat gasket

Pressure:

Nominal pressure: PN 8
Max. pressure of supply water: 8 bar
Min. pressure of supply water: 2 bar (above system pressure)

Temperature:

Max. admissible temperature, t_{Smax} : 45°C
Min. admissible temperature, t_{Smin} : 5°C

Max. flow:

Demin 2000/4000 and Softening
6000/12000: 240 l/h limited by orifice
Refill 16000 = 1500 l/h
Refill 36000 = 1900 l/h
Refill 48000 = 2800 l/h
Refill Demin 13500 = 1000 l/h
Refill Demin 18000 = 1800 l/h

Material:

Pleno Refill 6000/12000,
Pleno Refill Demin 2000/4000:
Filter Head and Nut: Reinforced PP
Filter Bowl: PET
Screw Socket: Brass
Cardridge: PS
Filter Insert 25µm: PP
Connecting Elements: Brass
O-Rings and Seals: EPDM

Pleno Refill 16000/36000/48000,
Pleno Refill Demin 13500/18000:
Tank: HDPE, FRP, Nylon, PP
Head: PVC-U
Filter Head and Nut: Reinforced PP
Filter Bowl: PET
Screw Socket: Brass
Filter Insert 25µm: PP
Connecting Elements: Brass
O-Rings and Seals: EPDM

Cartridge capacity:

Softening:

6000 l x °dH 10680 l x °fH
12000 l x °dH 21360 l x °fH
16000 l x °dH 28500 l x °fH
36000 l x °dH 64000 l x °fH
48000 l x °dH 85000 l x °fH

Demineralisation:

2000 l x °dH 3560 l x °fH
4000 l x °dH 7120 l x °fH
13500 l x °dH 24000 l x °fH
18000 l x °dH 32000 l x °fH

Marking:

IMI Pneumatex Pleno Refill

Colour:

Body: blue
Cartridge cover: transparent

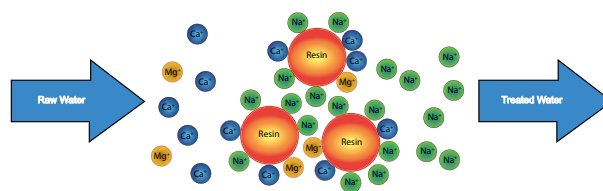
Accessories:

Safety valve 8 bar (approval code letter "F") for self-protection.

Operating Principle

Softening

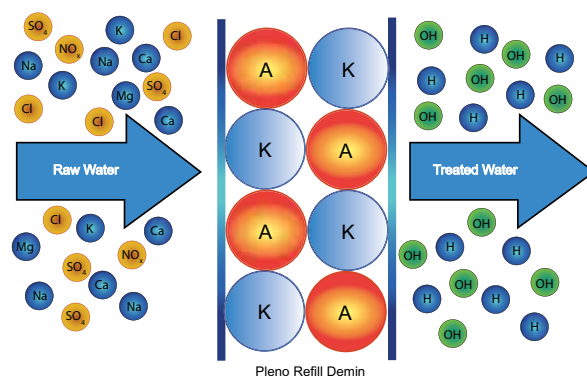
In the softening process, water is passed through an ion exchanger. The resin contained therein absorbs Calcium and Magnesium ions from the water and exchanges them for Sodium ions. Unlike Calcium and Magnesium, Sodium is not a hardener. While the resulting water still tends to have a certain hardness, that does not lead to limestone formation. Throughout the process, the conductivity of water remains virtually unchanged.



Demineralisation

Demineralisation refers to the removal of all salts from the water. This also reduces electrical conductivity, effectively preventing corrosion. To remove these dissolved (dissociated) ions, special cation and anion exchange resins are used. These absorb the ions dissolved in the water and release equivalent amounts of identically charged ions to the water.

Cations dissolved in the water (e.g. Mg^{++} , Ca^{++} , Na^{+} , and K^{+}) are exchanged by the cation exchange resin for H^{+} ions, whereas anions (e.g. Cl^{-} , NO^{-} , and SO_4^{-}) are exchanged by the anion exchange resins for OH^{-} groups. The result is pure, fully desalinated water.



Saturated (exhausted) exchange resins can be re-activated by reversing the filling process with suitable regenerating agents at the manufacturer.

Refill tank

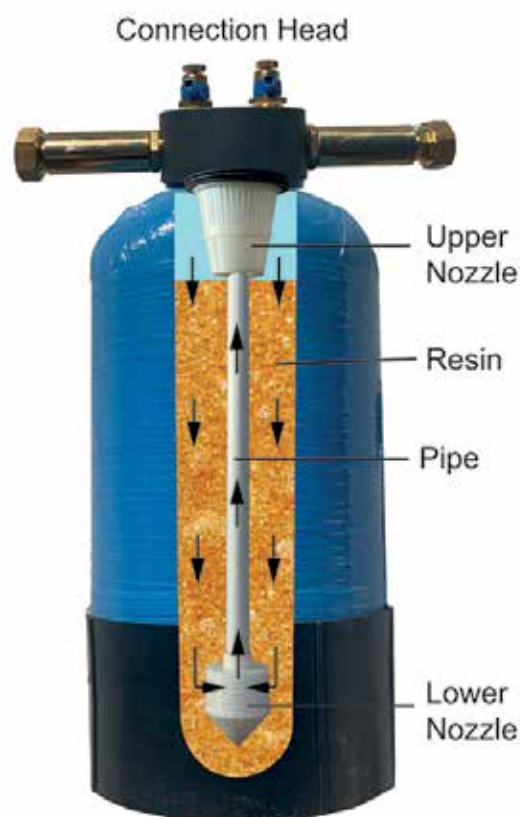
Fitted inside the Pleno Refill tank are an upper resin nozzle, and a pipe with a lower resin nozzle at the bottom. The upper resin filter is screwed into the tank, and centres the pipe along with the lower resin nozzle.

The make-up water is introduced at the top of the tank by the upper nozzle, and then flows down through the resin towards the lower nozzle. The lower nozzle ensures that no resin gets flushed into the system.

Water then flows back upwards inside the vertical pipe and into the connection head. After the Refill tank a separate filter is situated with a mesh size of $25\ \mu m$. A requirement under certain national standards, this filter can prevent resins from getting flushed into the system even when the vertical pipe is not correctly mounted.

On top of the connection head, water can be sampled via probe valves on the inlet and treated outlet for testing purposes.

In the Transfero, Vento, Compresso and Pleno units, the capacity of the Refill tank is controlled by the BrainCube Connect. It checks with the help of a water meter the amount of make-up water, calculates capacity based on raw water hardness, and gives an alarm when full capacity is reached. If the BrainCube is connected to the IMI Web-Interface, email reminders can also be sent out whenever a resin change is required. For smaller Refill units (types 2000/4000/6000/12000), changing the resin is done by replacing the cartridge itself, while for the larger units there are two options. It is possible to either replace the entire tank or, for the demineralisation units (types 13500/18000), use packaged resin only, thereby reducing waste.



Dimensioning Pleno Refill softening modules

In accordance with VDI 2035 Bl. 1, the maximum hardness for heating water is determined in relation to the power and the specific volume of the system.

Total hardness [°dH] in relation to specified system volume vA (system volume/smallest boiler power)

Total heating output (kW)	Total hardness mol/m ³ (°dH) [fH]		
	Specific system volume l/kW heating output		
	≤ 20	> 20 to ≤ 40	> 40
≤ 50 kW specific water content heat generator ≥ 0,3 kW	None	≤ 3,0 mol/m ³ ≤ 16,8 °dH ≤ 30 °fH	< 0,05 mol/m ³ < 0,3 °dH < 5 °fH
≤ 50 kW specific water content heat generator < 0,3 kW	≤ 3,0 mol/m ³ ≤ 16,8 °dH ≤ 30 °fH	≤ 1,5 mol/m ³ ≤ 8,4 °dH ≤ 15 °fH	
> 50 kW to ≤ 200 kW	≤ 2,0 mol/m ³ ≤ 11,2 °dH ≤ 20 °fH	≤ 1,0 mol/m ³ ≤ 5,6 °dH ≤ 10 °fH	
> 200 kW to ≤ 600 kW	≤ 1,5 mol/m ³ ≤ 8,4 °dH ≤ 15 °fH	≤ 0,05 mol/m ³ ≤ 0,3 °dH ≤ 5 °fH	
> 600 kW	≤ 0,05 mol/m ³ ≤ 0,3 °dH ≤ 5 °fH		

When calculating specific system volume for systems fitted with multiple heat generators, the lowest individual heating output is to be used. In systems where specific water content varies between heat generators, the lowest specific water content will apply. Full softening is not recommended for systems containing aluminium alloys.

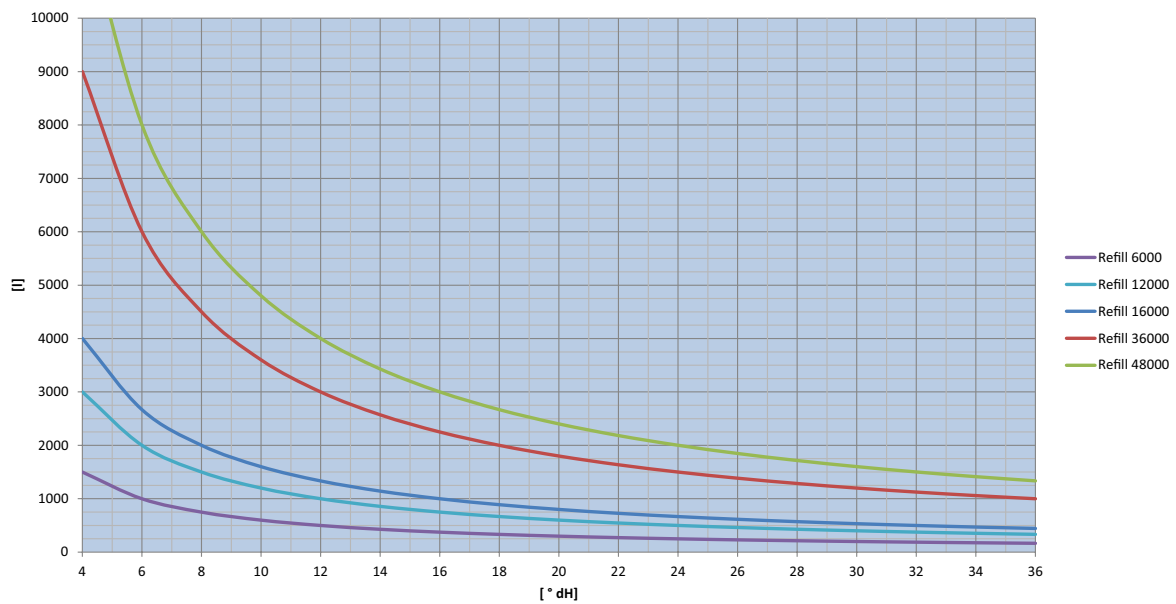
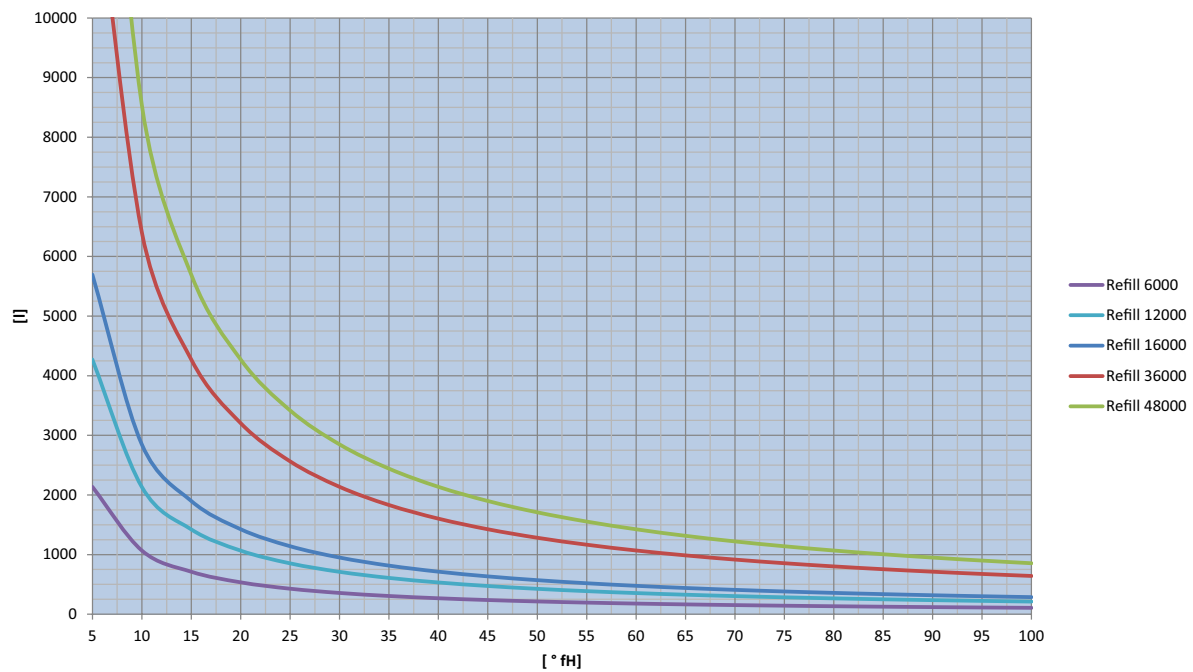
Refill softening modules deliver the following overall amount of make-up water [l] at different levels of hardness of the supply water. Once this limit is reached, the cartridge must be replaced. Water hardness in °dH or ppm CaCO₃.

Amount of make-up water = Capacity of module / Supply water hardness

Water hardness raw water		Water hardness make-up water ≤ 16,8 °dH					Water hardness make-up water ≤ 11,2 °dH					Water hardness make-up water ≤ 8,4 °dH					Water hardness make-up water ≤ 0,3 °dH				
°dH	ppm CaCO ₃	Refill 6000	Refill 12000	Refill 16000	Refill 36000	Refill 48000	Refill 6000	Refill 12000	Refill 16000	Refill 36000	Refill 48000	Refill 6000	Refill 12000	Refill 16000	Refill 36000	Refill 48000	Refill 6000	Refill 12000	Refill 16000	Refill 36000	Refill 48000
10	178											3750	7500	10000	22500	30000	619	1237	1649	3711	4948
12	214						7500	15000	20000	45000	60000	1667	3333	4444	10000	13333	513	1026	1368	3077	4103
14	249						2143	4286	5714	12857	17143	1071	2143	2857	6429	8571	438	876	1168	2628	3504
16	285						1250	2500	3333	7500	10000	789	1579	2105	4737	6316	382	764	1019	2293	3057
18	320	5000	10000	13333	30000	40000	882	1765	2353	5294	7059	625	1250	1667	3750	5000	339	678	904	2034	2712
20	356	1875	3750	5000	11250	15000	682	1364	1818	4091	5455	517	1034	1379	3103	4138	305	609	812	1827	2437
22	392	1154	2308	3077	6923	9231	556	1111	1481	3333	4444	441	882	1176	2647	3529	276	553	737	1659	2212
24	427	833	1667	2222	5000	6667	469	938	1250	2813	3750	385	769	1026	2308	3077	253	506	675	1519	2025
26	463	652	1304	1739	3913	5217	405	811	1081	2432	3243	341	682	909	2045	2727	233	467	623	1401	1868
28	498	536	1071	1429	3214	4286	357	714	952	2143	2857	306	612	816	1837	2449	217	433	578	1300	1733
30	534	455	909	1212	2727	3636	319	638	851	1915	2553	278	556	741	1667	2222	202	404	539	1212	1616
32	570	395	789	1053	2368	3158	288	577	769	1731	2308	254	508	678	1525	2034	189	379	505	1136	1514
34	605	349	698	930	2093	2791	263	526	702	1579	2105	234	469	625	1406	1875	178	356	475	1068	1424
36	641	313	625	833	1875	2500	242	484	645	1452	1935	217	435	580	1304	1739	168	336	448	1008	1345

Water hardness raw water		Water hardness make-up water ≤ 30 °fH					Water hardness make-up water ≤ 20 °fH					Water hardness make-up water ≤ 15 °fH					Water hardness make-up water ≤ 0,5 °fH				
°fH	ppm CaCO ₃	Refill 6000	Refill 12000	Refill 16000	Refill 36000	Refill 48000	Refill 6000	Refill 12000	Refill 16000	Refill 36000	Refill 48000	Refill 6000	Refill 12000	Refill 16000	Refill 36000	Refill 48000	Refill 6000	Refill 12000	Refill 16000	Refill 36000	Refill 48000
5	50																2373	4747	6329	14240	18987
10	100																1124	2248	2998	6745	8994
15	150																737	1473	1964	4419	5892
20	200											2136	4272	5696	12816	17088	548	1095	1461	3286	4382
25	250						2136	4272	5696	12816	17088	1068	2136	2848	6408	8544	436	872	1162	2616	3487
30	300						1068	2136	2848	6408	8544	712	1424	1899	4272	5696	362	724	965	2172	2896
35	350	2136	4272	5696	12816	17088	712	1424	1899	4272	5696	534	1068	1424	3204	4272	310	619	826	1857	2477
40	400	1068	2136	2848	6408	8544	534	1068	1424	3204	4272	427	854	1139	2563	3418	270	541	721	1622	2163
45	450	712	1424	1899	4272	5696	427	854	1139	2563	3418	356	712	949	2136	2848	240	480	640	1440	1920
50	500	534	1068	1424	3204	4272	356	712	949	2136	2848	305	610	814	1831	2441	216	432	575	1295	1726
60	600	356	712	949	2136	2848	267	534	712	1602	2136	237	475	633	1424	1899	179	359	479	1077	1436
70	700	267	534	712	1602	2136	214	427	570	1282	1709	194	388	518	1165	1553	154	307	410	922	1229
80	800	214	427	570	1282	1709	178	356	475	1068	1424	164	329	438	986	1314	134	269	358	806	1075
90	900	178	356	475	1068	1424	153	305	407	915	1221	142	285	380	854	1139	119	239	318	716	955
100	1000	153	305	407	915	1221	134	267	356	801	1068	126	251	335	754	1005	107	215	286	644	859

Max. amount of make-up water [l] with 0 °dH
Supply water hardness [°dH]



Example:

At a hardness level of 20 °dH the amount of make-up water that can be decalcified using a Pleno Refill 16000 is determined as follows: $16000 \text{ [l} \times \text{°dH]} / 20 \text{ °dH} = 800 \text{ l}$

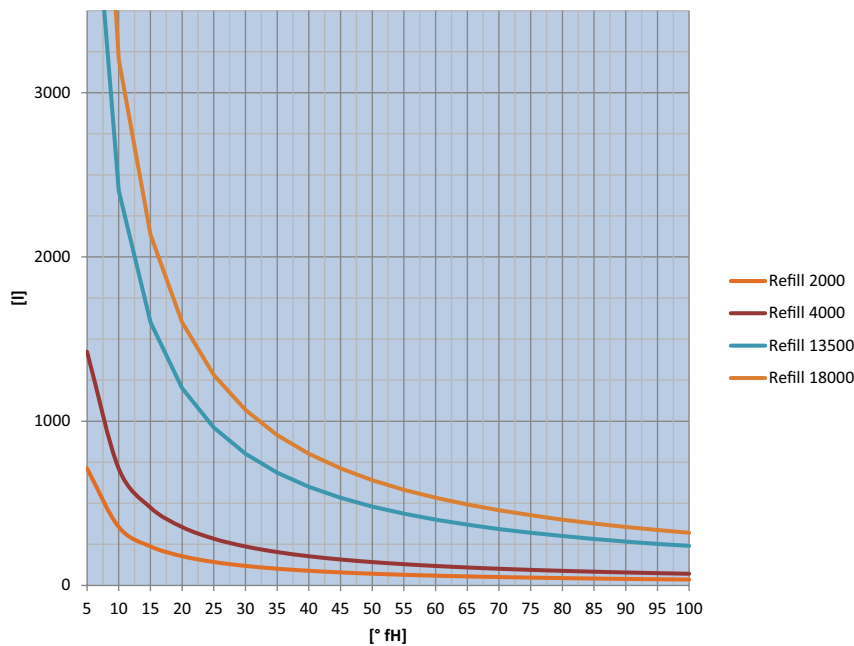
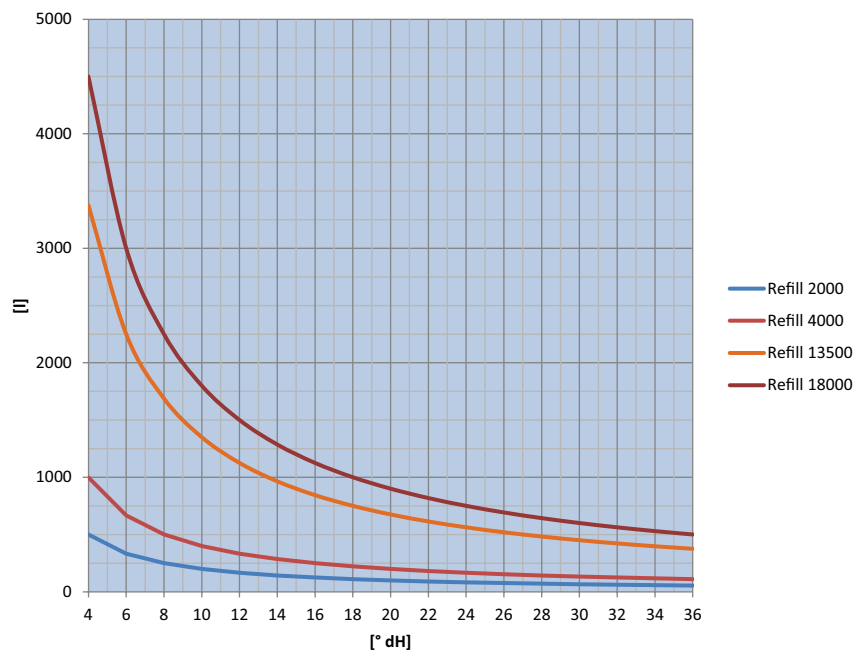
Dimensioning Pleno Refill demineralisation modules

In systems that need to be operated at low salt content, the make-up water must also be demineralised. All corresponding requirements and instructions for systems filled with demineralised water must be strictly followed. The system must be completely degassed with the help of a vacuum pressure-step degasser, such as the Vento Connect. The pH value must be checked and adjusted where necessary. Refill demineralisation modules are only designed for make-up water and not for the initial filling of the system. For the primary filling the capacity of the Refill unit must be observed.

Amount of make-up water = Capacity of module / Supply water hardness

Water hardness °dH	ppm CaCO ₃	Refill Demin 2000	Refill Demin 4000	Refill Demin 13500	Refill Demin 18000
4	70	500	1000	3375	4500
6	106	333	667	2250	3000
8	142	250	500	1688	2250
10	178	200	400	1350	1800
12	214	167	333	1125	1500
14	249	143	286	964	1286
16	285	125	250	844	1125
18	320	111	222	750	1000
20	356	100	200	675	900
22	392	91	182	614	818
24	427	83	167	563	750
26	463	77	154	519	692
28	498	71	143	482	643
30	534	67	133	450	600
32	570	63	125	422	563
34	605	59	118	397	529
36	641	56	111	375	500

Water hardness °fH	ppm CaCO ₃	Refill 2000	Refill 4000	Refill 13500	Refill 18000
5	50	712	1424	4806	6408
10	100	356	712	2403	3204
15	150	237	475	1602	2136
20	200	178	356	1202	1602
25	250	142	285	961	1282
30	300	119	237	801	1068
35	350	102	203	687	915
40	400	89	178	601	801
45	450	79	158	534	712
50	500	71	142	481	641
55	550	65	129	437	583
60	600	59	119	401	534
65	650	55	110	370	493
70	700	51	102	343	458
75	750	47	95	320	427
80	800	45	89	300	401
85	850	42	84	283	377
90	900	40	79	267	356
95	950	37	75	253	337
100	1000	36	71	240	320



Operation Mode	Electrical Conductivity (uS/cm)
Low Salt	> 10 to ≤ 100
Containing Salt	> 100 to ≤ 1500
	Appearance
	Clear, free of sediments
Materials in the system	pH Value
without aluminium alloys	8,2 to 10,0
with aluminium alloys	8,2 to 9,0

A single cartridge is sufficient for demineralising the following amount of make-up water:

Example:
At a hardness level of 15 °dH the amount of make-up water that can be decalcified using a Pleno Refill Demin 13500 is determined as follows:

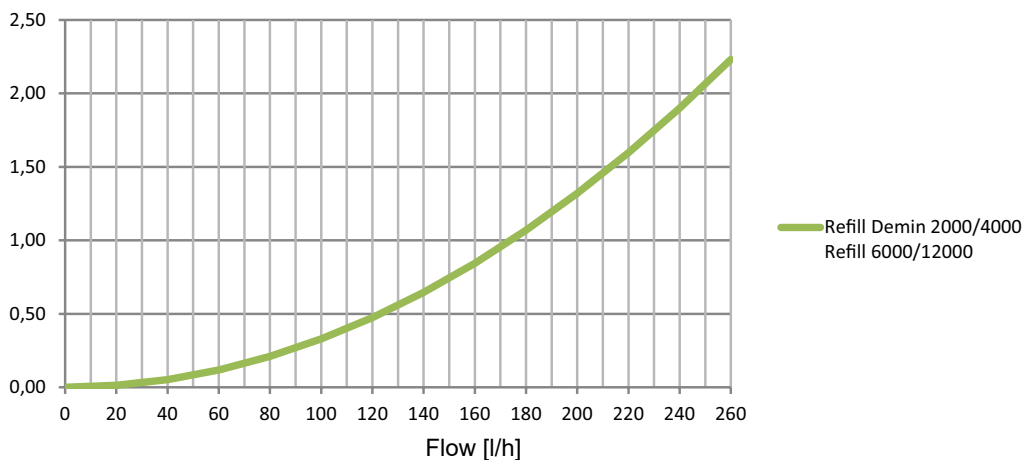
$$13500 \text{ [l} \times \text{°dH]} / 15 \text{ °dH} = 900 \text{ l}$$

Under SWKI-BT-102-1 Art. 4.2.2, the make-up water must be demineralised.
Total hardness < 1 °fH
Conductivity < 100 µS/cm
pH Value between 6,0 - 8,5

Pressure drop and maximum flow curves Pleno Refill incl. filter

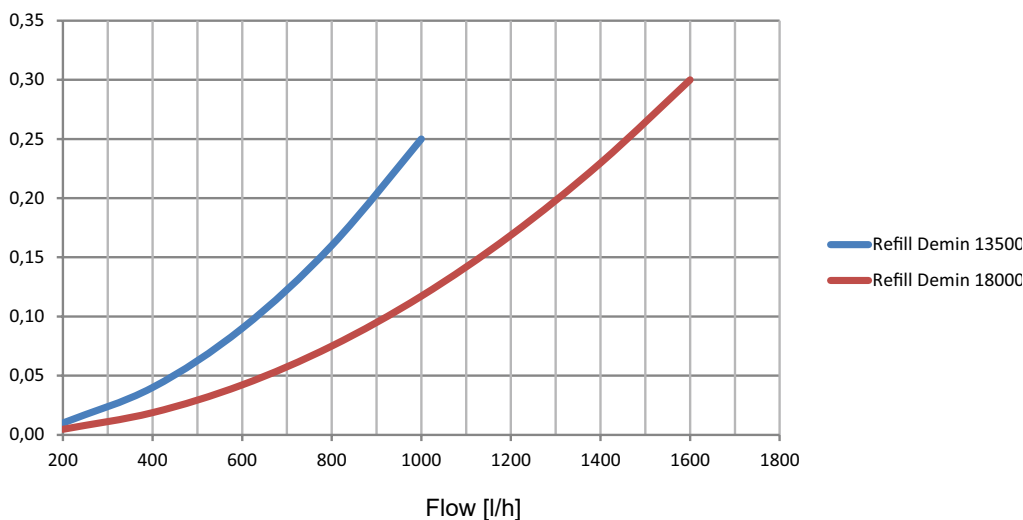
Refill Demin 2000/4000, Refill 6000/12000

Pressure drop [bar]



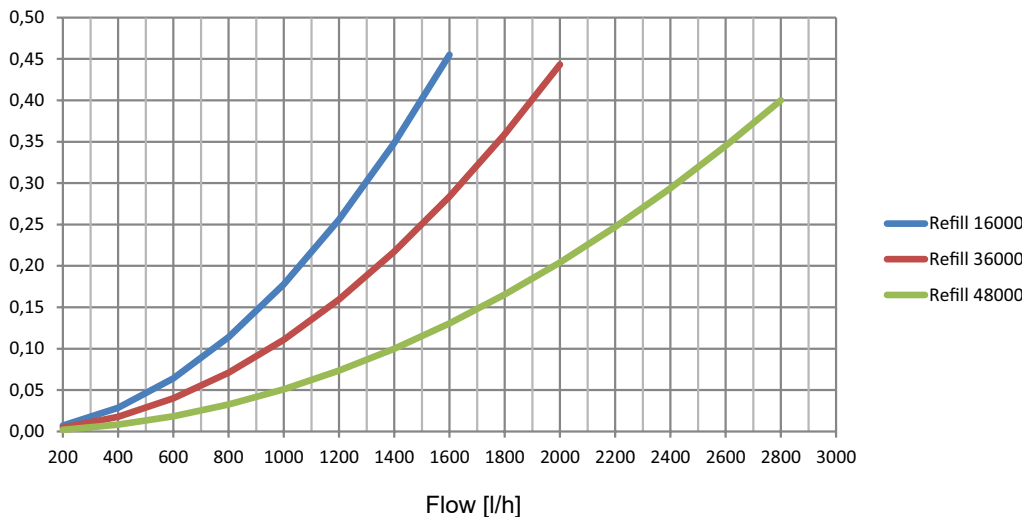
Refill Demin 13500/18000

Pressure drop [bar]



Refill 13500/16000/18000/36000/48000

Pressure drop [bar]



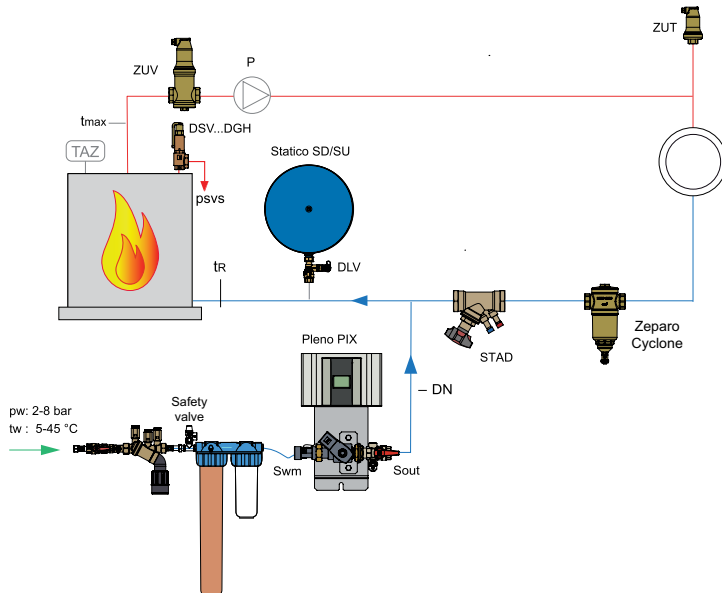
Application examples

Pleno Refill 6000 with filter

water treatment with Statico pressurisation and Pleno PIX water make-up unit

For heating systems up to approx. 100 kW

(May require changes to meet local legislation)



Pleno PIX water make-up and pressure maintenance monitoring device according to EN 12828.

Zeparo Cyclone for the central separation of sludge and magnetite.

Zeparo ZUT for automatic venting during filling and during draining.

Zeparo ZUV for automatic air (microbubble) separation.

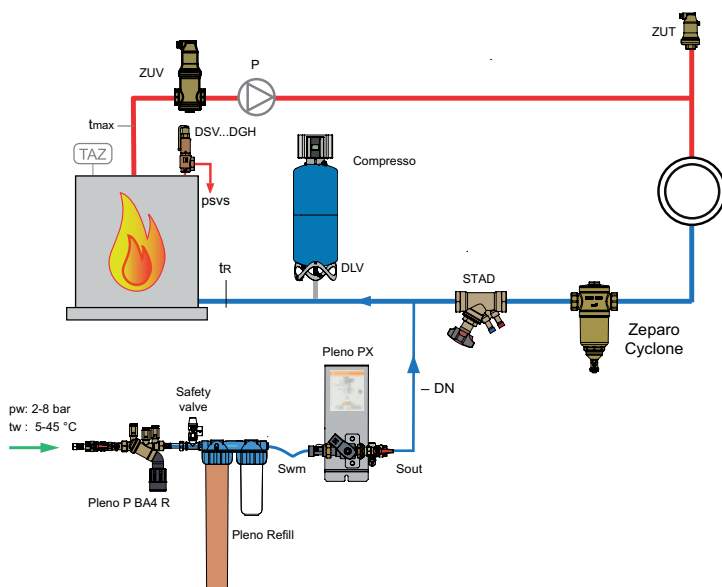
Further accessories, product and selection details: Datasheets Pleno Connect, Zeparo and Accessories.

Pleno Refill 12000 with filter

water treatment with Compresso C10.1F pressurisation and Pleno PX water make-up unit

For heating systems up to approx. 2 000 kW

(May require changes to meet local legislation)



Pleno PX water make-up and pressure maintenance monitoring device according to EN 12828.

Zeparo Cyclone for the central separation of sludge and magnetite.

Zeparo ZUT for automatic venting during filling and during draining.

Zeparo ZUV for automatic air (microbubble) separation.

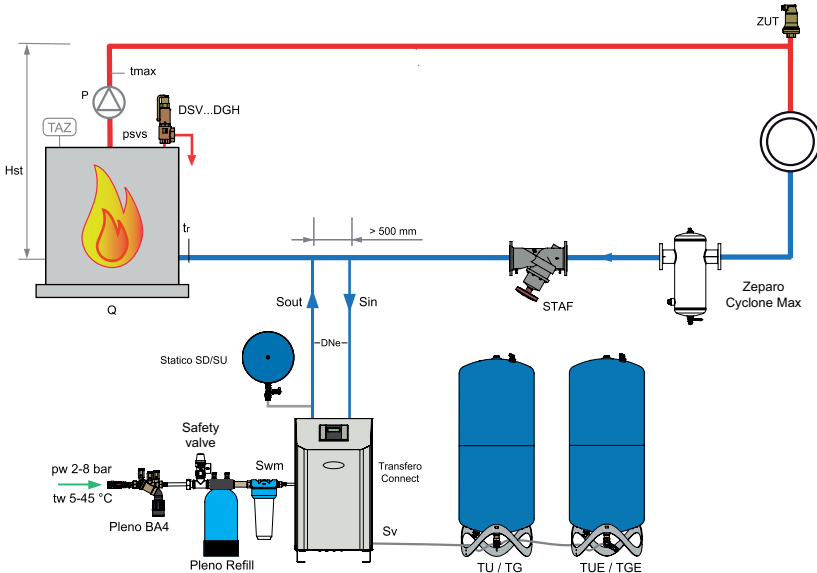
Further accessories, product and selection details, see: Datasheet Pleno Connect, Zeparo and Accessories.

Pleno Refill 48000 with filter

water treatment with Transfero TV.2 EH Connect pressurisation and Pleno P BA4R water make-up unit

Example for heating systems up to approx. 10 000 kW

(May require changes to meet local legislation)



Transfero Connect pressurisation system with vacuum degassing.

Zeparo Cyclone Max for the central separation of sludge and magnetite.

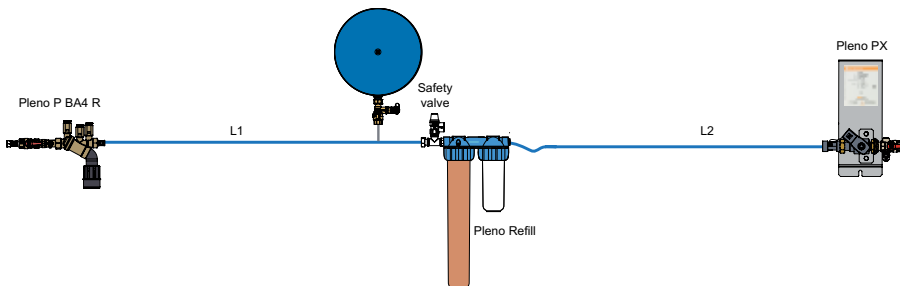
Zeparo ZUT for automatic venting during filling and during draining.

Further accessories, product and selection details, see: Datasheet Pleno Connect, Zeparo and Accessories.

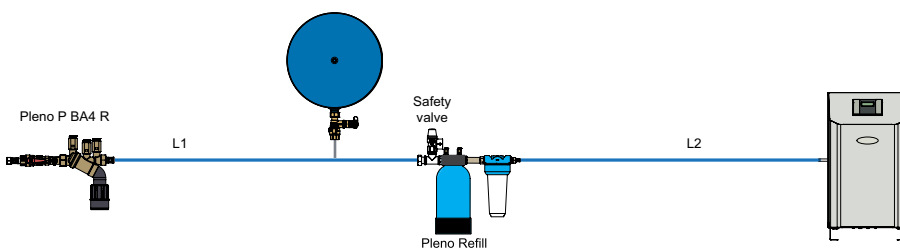
Pleno Refill with on-site pipe extensions

If an on-site line extension is to be installed between the system separator and Refill or between Refill and the subsequent TecBox, the following must be observed: for DN25 lines with $2\text{m} < L1 + L2 < 30\text{m}$, a PN10 bar pressure accumulator suitable for make-up water (e.g. Aquapresso AD) with nominal volume $VN \geq 1$ litre must be provided. The inlet pressure must be set to 1,5 bar. This sufficiently compensates for possible expansion volume due to heating of the cold make-up water to the maximum permissible ambient temperature. For longer or larger pipes, these pressure accumulators must be determined individually.

Example for Pleno Refill 2000 - 12000 with Pleno P BA4R + Pleno PX TecBox



Example for Pleno Refill 16000 - 48000 with Pleno P BA4R + Transfero/Vento TecBox



Pleno Refill 6000, 12000 / Pleno Refill Demin 2000, 4000

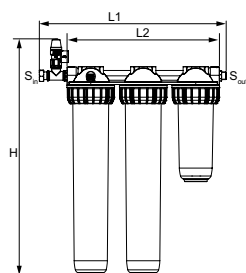
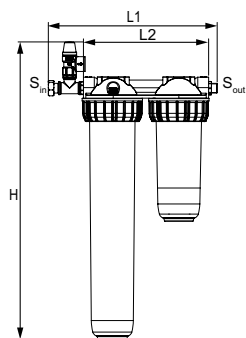
Pleno Refill

Hydraulic unit for water softening together with Vento/Transfero Connect Tec Boxes. Filter with 25 µm mesh size to protect the hydronic system. Softening bottle filled with high grade resin. Designed for plug&play mounting together with Transfero/Vento Connect.

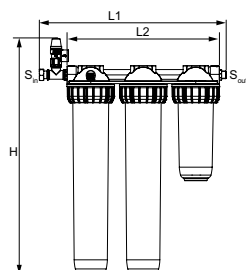
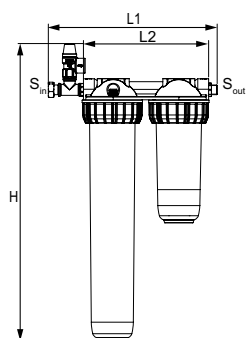
Units for all applications including Transfero Connect and Vento Connect with the use of a flow throttle that is included with each Transfero/Vento Connect.

Softening unit with wall mounting bracket and 25 µm filter

3/4" swivelling nut, 3/4" external thread suitable for flat gasket, with flow limiter.



Type	Capacity l x °dH	S _{in}	S _{out}	H	L1	L2	m [kg]	EAN	Article No
Refill 6000 filter	6000	G3/4	G3/4	644	366	271	4,6	7640153570864	813 3010
Refill 12000 filter	12000	G3/4	G3/4	644	513	420	8,3	7640161631946	813 3011



Demineralisation unit with wall mounting bracket and 25 µm filter

3/4" swivelling nut, 3/4" external thread suitable for flat gasket, with flow limiter. In compliance with SWKI-BT-102-1.

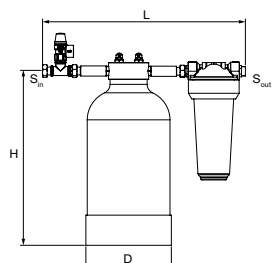
Type	Capacity l x °dH	S _{in}	S _{out}	H	L1	L2	m [kg]	EAN	Article No
Refill Demin 2000 filter	2000	G3/4	G3/4	644	366	271	4,6		813 3015
Refill Demin 4000 filter	4000	G3/4	G3/4	644	513	420	8,3		813 3016

Pleno Refill 16000, 36000, 48000 / Pleno Refill Demin 13500, 18000

Pleno Refill

Hydraulic unit for water softening together with Vento/Transfero Connect Tec Boxes. Filter with 25 µm mesh size to protect the hydronic system. Softening bottle filled with high grade resin.

Designed for plug&play mounting together with Transfero/Vento Connect.



Softening unit

3/4" swivelling nut, 3/4" external thread suitable for flat gasket.

Nominal pressure: PS 8

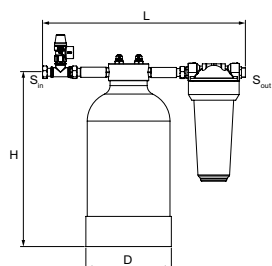
Max. working temperature: 45°C

Min. working temperature: > 4°C

Type	Capacity l x °dH	S _{in}	S _{out}	D	H	L	m [kg]	EAN	Article No
Refill 16000	16000	G3/4	G3/4	195	383	455	9,1	7640161630475	813 3210
Refill 36000	36000	G3/4	G3/4	220	466	455	13	7640161630482	813 3220
Refill 48000	48000	G3/4	G3/4	270	458	455	16,2	7640161630499	813 3230

Pleno Refill Demin

Hydraulic unit for water demineralisation together with Vento/Transfero Connect Tec Boxes. Filter with 25 µm mesh size to protect the hydronic system. Desalination bottle filled with high grade resin.



Demineralisation unit

3/4" swivelling nut, 3/4" external thread suitable for flat gasket.

Nominal pressure: PS 8

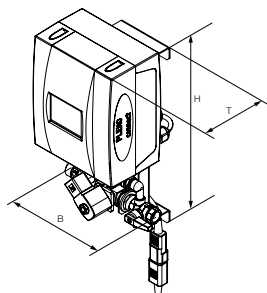
Max. working temperature: 45°C

Min. working temperature: > 4°C

In compliance with SWKI-BT-102-1.

Type	Capacity l x °dH	S _{in}	S _{out}	D	H	L	m [kg]	EAN	Article No
Refill Demin 13500	13500	G3/4	G3/4	220	466	455	13	7640161630505	813 3260
Refill Demin 18000	18000	G3/4	G3/4	270	458	455	16,2	7640161630512	813 3270

Pleno P/PI for Pleno Refill



Pleno PIX Connect

Control unit TecBox. Water make-up without pumps. 1 solenoid valve, 1 electronic water meter, connection for Pleno P BA4 R, BrainCube control.

Connection in (Swm): G3/4.

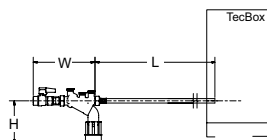
Connection out (Sout): G1/2.

Type	PS [bar]	B	H	T	m [kg]	Pel [kW]	Kvs	EAN	Article No
PIX	10	198	392	190	4,3	0,04	1,4	5901688829851	30106020001

T = Depth of the device

Pel = Electric load

Pleno P water make-up modules



Pleno P BA4 R

Hydraulic unit for water make-up operation with Vento/Transfero Connect, Pleno PX/PIX, Simply Compresso C 2.1-80 SWM, and in combination with Pleno Refill modules. Features a shut off valve, check valve, filter and a type BA backflow preventer (protection class 4) according to EN 1717.

Connection (Swm): G1/2

Type	PS [bar]	W	L	H	m [kg]	qwm [l/h]	EAN	Article No
BA4 R	10	210	1300	135	1,1	350*	7640161630147	813 3310
						250**		
						50***		
						q(pw-pout) ****		

qwm = make-up water flow

T = Depth of the device

* maximum average value for make-up water degassing with Vento V/VI and Transfero TV/TVI

** maximum average value for make-up water degassing with Vento Compact

*** when using flow limiter for operation with low flow water treatment cartridges

**** for combination with Pleno PX/PIX see see q(pw-pout) diagram in Pleno Connect datasheet

Pleno PX

Hydraulic unit for water make-up operation with Compresso Connect. Water make-up without pumps. 1 solenoid valve, 1 electronic water meter, connection for Pleno P BA4 R.

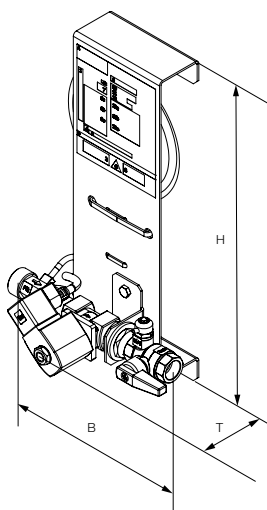
Connection in (Swm): G3/4.

Connection out (Sout): G1/2.

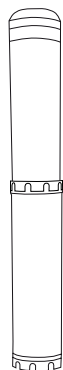
Type	PS [bar]	B	H	T	m [kg]	Pel [kW]	Kvs	EAN	Article No
PX	10	198	356	150	1,5	0,02	1,4	7640161641792	30106010011

T = Depth of the device

Pel = Electric load



Spare cartridges for replacement



Spare cartridge for softening module 6000/12000

for type 12000 units two cartridges are needed.

Function: Softening

Type	Color	Length	EAN	Article No
6000	Transparent	510	7640153570895	813 3101

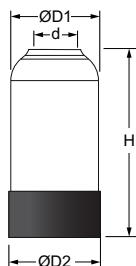


Spare cartridge for demineralisation module 2000/4000

for type 4000 units two cartridges are needed.

Function: Demineralisation

Type	Color	Length	EAN	Article No
2000 Demin	Blue/transparent	510	7640153570901	813 3102

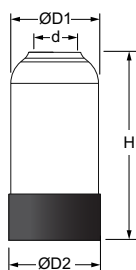


Spare cartridge for softening module 16000/36000/48000

For the exchange of the softening cartridge when capacity limit is reached or after 2 years of use.

Function: Softening

Type	Capacity l x °dH	d	D1	D2	H	m [kg]	EAN	Article No
Refill 16000	16000	G2 1/2	188	195	346	6,7	7640161630567	813 3211
Refill 36000	36000	G2 1/2	212	220	442	10,6	7640161630574	813 3221
Refill 48000	48000	G2 1/2	264	270	428	13,8	7640161630604	813 3231

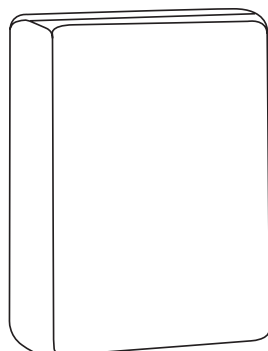


Cartridge for full desalination for modules 13500/18000

For the exchange of the desalination cartridge when capacity limit is reached or after 2 years of use.

Function: Demineralisation

Type	Capacity l x °dH	d	D1	D2	H	m [kg]	EAN	Article No
Refill 13500	13500	G2 1/2	212	220	442	10,6	7640161630611	813 3261
Refill 18000	18000	G2 1/2	264	270	428	13,8	7640161630550	813 3271

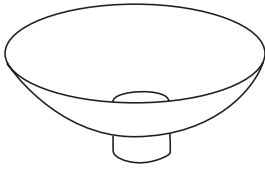


Resin in bags for Refill Demin 13500/18000

For the exchange of resin after 2 years of use or whenever capacity limit is reached.

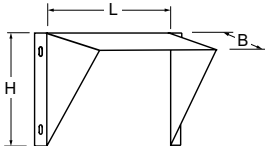
Function: Demineralisation

Type	Capacity l x °dH	L	B	H	m [kg]	EAN	Article No.
Resin 13500	13500	480	330	110	6,75	5902276806964	30401070103
Resin 18000	18000	480	330	130	9,0	5902276806971	30401070104

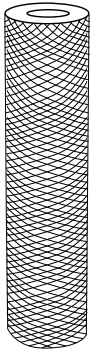
**Funnel for demineralisation module**

Ensuring a spill-free resin exchange and refill in the 13500/18000 Demin units.

Type	EAN	Article No.
Funnel	5902276806988	30401070105

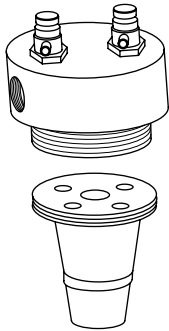
Accessories**Wall-mounting bracket**

Type	L	H	B	m [kg]	EAN	Article No
CW	300	200	300	1,3	7640161631823	813 3113

**Spare filter cartridge**

Function: Filtering

Type	Mesh size	Length	EAN	Article No
25	25 µm	250	7640161631809	813 3111

**Spare head for Pleno Refill**

Featuring an upper sieve. To upgrade to the new head version where required.

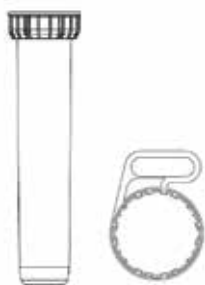
Type	EAN	Article No.
Pleno Refill	5902276806957	30401070102

**10" Spare Part Kit**

For the 2000, 4000, 6000 and 12000 filter units.

Kit includes: 10" bowl and O-ring, nut (blue), key (black).

Type	D	H	m [kg]	EAN	Article No
Pleno Refill kit 10"	132	240	0,9	5902276822872	813 3115

**20" Spare Part Kit**

For the 2000, 4000, 6000 and 12000 filter units.

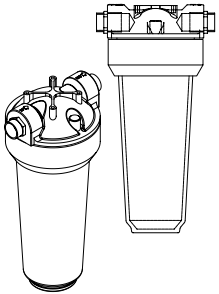
Kit includes: 20" bowl and O-ring, nut (blue), key (black).

Type	D	H	m [kg]	EAN	Article No
Pleno Refill kit 20"	132	495	1,1	5902276822889	813 3116

**1/2" Safety Valve**

8 bar safety valve, complete with fittings as seen on illustration.

Type	EAN	Article No
1/2" Safety Valve	5902276822896	813 3117

**Complete Filter unit**

For the 16000, 36000, 48000, and Demin 13500 and 18000 models.

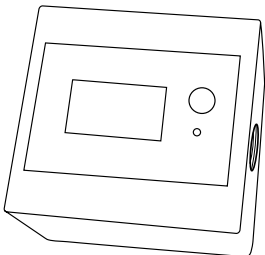
Type	D	H	m [kg]	EAN	Article No
Filter 3/4" - 25 µm	140	315	1,1	5902276895876	813 3110

**Total hardness measuring equipment**

For approx. 100 measurements.

Function: Determination of water hardness in °dH.

Type	EAN	Article No
GH 100	7640153570932	813 3120

**Electronic water meter with countdown function for manual make up**

The meter counts down from the set value to 0, after which the display flashes and a warning beep sounds. 24V signal output to the BMS. Can also display negative values.

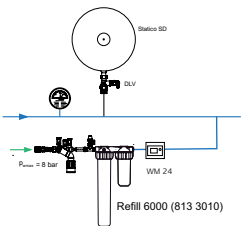
Setting range: 0 - 99999 l

Flow range: 2 - 15 l/min

Type	Voltage	Connection	EAN	Article No
WM 24 V	24 V DC	3/8"	7640153570949	813 3121

Power supply 230V, 24V DC

Type	Input	Output	Power	EAN	Article No
NG	230 V AC	24 V DC	15 Watt	7640153570963	813 3123

**Manual make-up with electronic water meter**

The ball valve must be opened manually when the pressure in the system decreases beyond the minimum value. The max. make-up volume of the cartridge must be entered into the water meter. When the max. make-up water amount is reached an alarm signal can be heard and the display starts to flash, at which point it is necessary to exchange the cartridge.