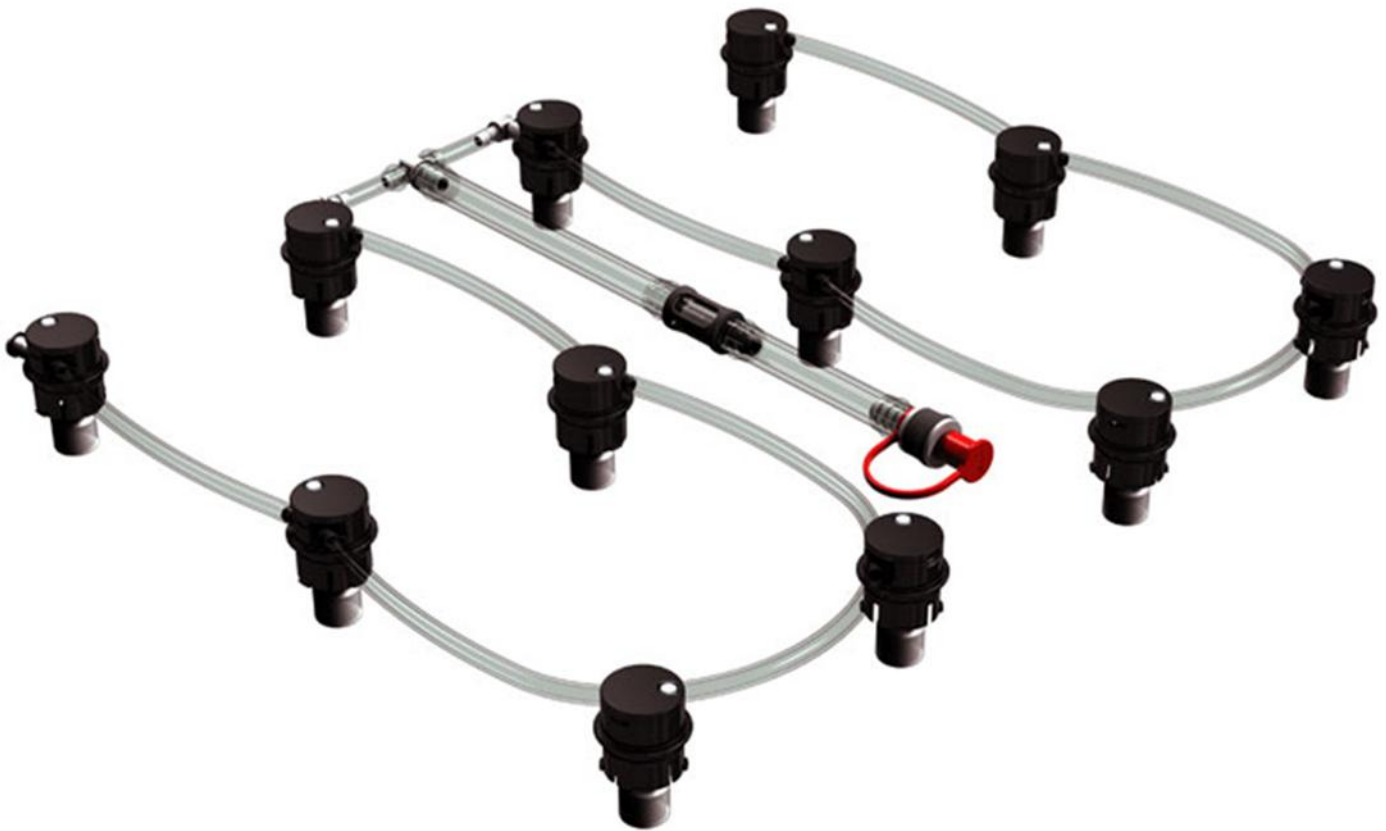





BFS Battery Filling System





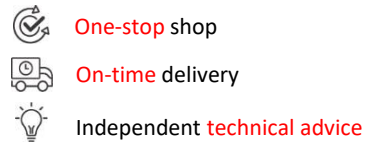
-  One-stop shop
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BFS BATTERY WATERING SYSTEM



BFS is a robust, family-owned enterprise that has been developing and producing battery watering systems for lead-acid batteries for more than 30 years. Today, BFS's products are the acme of quality and reliability. Every year more than 11 million plugs are produced, sold and used around the globe. The company has been a world market leader in battery watering systems for many years.



BFS BATTERY WATERING SYSTEM

The BFS System:

A Synthesis of Technology and Design.

Battery service and care can be a complicated and time-consuming process that is not without its dangers. An automatic battery watering system is the best alternative – for several reasons:

Efficient – You don't need to remove caps by hand and water cells manually.

Precise – Electrolyte is reliably filled to exactly the same level.

Safe – No risk of injuring yourself with battery acid.

Time-saving – The time required to water a battery is reduced significantly.

Cost-saving – Saving time means saving money.





One-stop shop



On-time delivery



Independent technical advice



Push-in Plugs

			
	Push-in Plug III A51000	Push-in Plug IV A4N000	Push-in Plug IV with float housing A4N 540/580/620/660/700/780/860
Vent Size Battery	35 mm (S35)		
Construction Height	21 mm	20 mm	20 mm
Min Casing Depth	46 mm	44 mm	60 mm
Float Stroke	4 mm		
Valve Stroke	1,6 mm		
Leverage	2,4:1		
Min. Filling Pressure	0,2 bar		
Max. Filling Pressure	3,8 bar		
Flow Rate at 0,3 Bar	1650 ml/min	2050 ml/min	2050 ml/min
Flow Rate at 0,4 Bar	2030 ml/min	2540 ml/min	2540 ml/min
Flow Rate at 0,5 Bar	2420 ml/min	3150 ml/min	3150 ml/min
Flow Rate at 1,0 Bar	3600 ml/min	5100 ml/min	5100 ml/min
Flow Rate at 3,0 bar	6750 ml/min	8700 ml/min	8700 ml/min



One-stop shop



On-time delivery



Independent technical advice



Bayonet Plugs

					
	Bayonet Plug III B51000	Bayonet Plug IV B4N100	4-Bayonet Plug III H51000	4-Bayonet Plug IV H4N000	Tall Bayonet Plug III G51000
Vent Size Battery (bayonet)	24 mm (European std)		29 mm (Asian std)		24 mm (European std)
Construction Height	34 mm	21 mm	32 mm	21 mm	45 mm
Min Casing Depth	32 mm	43mm	34 mm	43 mm	21 mm
Float Stroke	4 mm				
Valve Stroke	1,6 mm				
Leverage	2,4:1				
Min. Filling Pressure	0,2 bar				
Max. Filling Pressure	3,8 bar				
Flow Rate at 0,3 Bar	1650 ml/min	2050 ml/min	1650 ml/min	2050 ml/min	1650 ml/min
Flow Rate at 0,4 Bar	2030 ml/min	2540 ml/min	2030 ml/min	2540 ml/min	2030 ml/min
Flow Rate at 0,5 Bar	2420 ml/min	3150 ml/min	2420 ml/min	3150 ml/min	2420 ml/min
Flow Rate at 1,0 Bar	3600 ml/min	5100 ml/min	3600 ml/min	5100 ml/min	3600 ml/min
Flow Rate at 3,0 bar	6750 ml/min	8700 ml/min	6750 ml/min	8700 ml/min	6750 ml/min

Threaded Plugs					
					
	Threaded Plug III M27 C51000	Threaded Plug IV M27 C4N000	Threaded Plug III M30 D51000	Threaded Plug III C35 E51000	Threaded Plug III M36 F51000
Vent Size Battery (thread)	M27		M30 x 2	C35	M36
Construction height	31 mm	20 mm	31 mm	31 mm	31 mm
Min Casing Depth	35 mm	44 mm	35 mm	35 mm	35 mm
Float Stroke	4 mm				
Valve Stroke	1,6 mm				
Leverage	2,4:1				
Min. Filling Pressure	0,2 bar				
Max. Filling Pressure	3,8 bar				
Flow Rate at 0,3 Bar	1650 ml/min	2050 ml/min	1650 ml/min	1650 ml/min	1650 ml/min
Flow Rate at 0,4 Bar	2030 ml/min	2540 ml/min	2030 ml/min	2030 ml/min	2030 ml/min
Flow Rate at 0,5 Bar	2420 ml/min	3150 ml/min	2420 ml/min	2420 ml/min	2420 ml/min
Flow Rate at 1,0 Bar	3600 ml/min	5100 ml/min	3600 ml/min	3600 ml/min	3600 ml/min
Flow Rate at 3,0 bar	6750 ml/min	8700 ml/min	6750 ml/min	6750 ml/min	6750 ml/min



One-stop shop



On-time delivery



Independent technical advice



Clip-in Plugs

						
	Clip-in Plug III I51000	Clip-in Plug IV I4N000	Clip-in Plug IV for 4-Bayonet I4NV00	Clip-in Plug IV I4N260	Clip-in Plug IV I4N330	Clip-in Plug IV I4N420
Vent Size Battery (bayonet)	24 mm (European std)		29 mm (Asian std)	24 mm (European std)		
Construction Height	34 mm	21 mm	21 mm	21 mm	21 mm	21 mm
Min Casing Depth	32 mm	43mm	43mm	55 mm	62 mm	71 mm
Float Stroke	4 mm					
Valve Stroke	1,6 mm					
Leverage	2,4:1					
Min. Filling Pressure	0,2 bar					
Max. Filling Pressure	3,8 bar					
Flow Rate at 0,3 Bar	1650 ml/min	2050 ml/min	2050 ml/min	2050 ml/min	2050 ml/min	2050 ml/min
Flow Rate at 0,4 Bar	2030 ml/min	2540 ml/min	2540 ml/min	2540 ml/min	2540 ml/min	2540 ml/min
Flow Rate at 0,5 Bar	2420 ml/min	3150 ml/min	3150 ml/min	3150 ml/min	3150 ml/min	3150 ml/min
Flow Rate at 1,0 Bar	3600 ml/min	5100 ml/min	5100 ml/min	5100 ml/min	5100 ml/min	5100 ml/min
Flow Rate at 3,0 bar	6750 ml/min	8700 ml/min	8700 ml/min	8700 ml/min	8700 ml/min	8700 ml/min

Plugs with Central Degassing

			
	Push-in Plug III with Central Degassing A51220	Bayonet Plug III with Central Degassing B51220	Threaded Plug III with Central Degassing C/D/E/F51220
Vent Size Battery	35 mm (S35)	24 mm (bayonet, European std)	Thread C: M27, D: M30x2, E: C35, F: M36
Construction Height	21 mm	34 mm	31 mm
Min Casing Depth	46 mm	32 mm	35 mm
Float Stroke	4 mm		
Valve Stroke	1,6 mm		
Leverage	2,4:1		
Min. Filling Pressure	0,2 bar		
Max. Filling Pressure	3,8 bar		
Flow Rate at 0,3 Bar	1650 ml/min	1650 ml/min	1650 ml/min
Flow Rate at 0,4 Bar	2030 ml/min	2030 ml/min	2030 ml/min
Flow Rate at 0,5 Bar	2420 ml/min	2420 ml/min	2420 ml/min
Flow Rate at 1,0 Bar	3600 ml/min	3600 ml/min	3600 ml/min
Flow Rate at 3,0 bar	6750 ml/min	6750 ml/min	6750 ml/min




Special Plugs				
				
	Plug with Security Valve A31000*	Plug with Flame Arrestor I51FOV**	Special Plug IV V4N000***	Triple Unit X4N320
Vent Size Battery	35 mm (S35)	24 mm (bayonet, European std)	Bayonet R16	19mm size and a hole separation of 41.25 mm
Construction height	21 mm	34 mm	48 mm	29,5 mm
Min Casing Depth	46mm	32 mm	45 mm	50 mm
Float stroke	4 mm			
Valve stroke	1,6 mm			
Leverage	2,4:1			
Min. Filling Pressure	0,25 bar	0,2 bar		
Max. Filling Pressure	3,8 bar	3,8 bar	0,6 bar	1,5 bar
Flow Rate at 0,3 Bar	1650 ml/min	1650 ml/min	2050 ml/min	2050 ml/min
Flow Rate at 0,4 Bar	2030 ml/min	2030 ml/min	2540 ml/min	2540 ml/min
Flow Rate at 0,5 Bar	2420 ml/min	2420 ml/min	3150 ml/min	3150 ml/min
Flow Rate at 1,0 Bar	3600 ml/min	3600 ml/min	-	5100 ml/min
Flow Rate at 3,0 bar	6750 ml/min	6750 ml/min	-	-

*Plug with Security Valve : is predominantly used in explosion hazard zones, such as in mining. It has an additional check valve for the water intake.

**Plug with Flame Arrestor: is predominantly used in automatic battery watering for electric vehicles. Degassing of this plug has been designed in such a way that the only place for battery gasses to escape is the inspection opening below the plug's lid. This opening is equipped with a flame-proof filter that prevents flashovers from the outside into the plug and therefore into the cell.

***Special Plug IV: developed specifically to water batteries with 16 mm bayonet openings, for example, the VARTA UPS H series. The adaptor plug is equipped with a float 14 mm in diameter.



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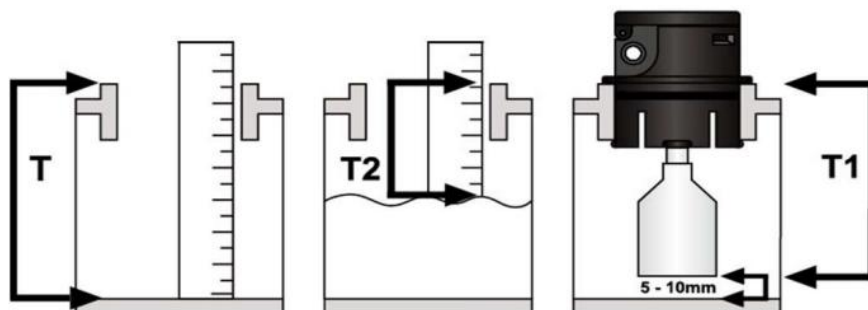
Calculation of float size for traction batteries (T1) and stationary batteries (T2)

Type plug	Push-in				Bayonet/Clip-in				Threaded			
	A51000		A4N000		B51000 I51000		B4N000 I4N000		C/D/E/F 51000		C4N000	
Batterie	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
↓ Ordering code float ↓	mm		mm		mm		mm		mm		mm	
BFS-072214	41	29	-	-	28	14	40	26	31	17	41	27
BFS-072220	48	34	45	32	35	19	44	31	37	23	45	32
BFS-072224	52	38	49	36	39	22	48	36	41	26	59	35
BFS-072229	57	42	54	40	44	26	53	39	46	31	54	40
BFS-072234	62	46	59	44	49	31	58	43	51	35	59	44
BFS-072239	67	50	64	48	54	35	63	48	56	39	64	48
BFS-072244	72	55	69	53	59	39	68	52	61	44	69	53
BFS-072249	77	59	74	57	64	43	73	56	66	48	74	57
BFS-072259	87	67	84	65	74	52	83	65	76	57	84	65
BFS-071922	49	34	47	31	36	20	46	30	38	22	47	31
BFS-071926	53	37	51	34	40	23	50	34	42	26	51	35
BFS-071930	56	40	55	38	43	26	54	37	46	29	55	38
BFS-071934	60	44	58	41	46	30	57	40	49	32	58	41
BFS-071938	64	47	63	44	51	33	62	44	54	35	63	45
BFS-071942	68	50	67	48	55	36	66	47	58	39	67	48
BFS-071950	76	56	75	54	63	42	74	53	66	45	75	54
BFS-071958	84	63	83	61	71	49	82	60	74	52	83	61
BFS-071726	52	36	51	33	40	22	50	32	42	25	51	33
BFS-071733	59	41	58	39	46	27	57	38	49	30	58	39
BFS-071742	68	47	67	45	55	33	66	44	58	36	67	45
BFS-071432	58	35	-	-	46	23	56	34	49	26	57	33
BFS-071441	67	39	-	-	54	25	65	38	56	28	66	39

T = top of cell to top of separator

T1 = top of cell to base of float

T2 = top of cell to top of electrolyte level



The filling level T2 on the list is an average with a tolerance of +/- 2,0mm (0.075").
For stationary batteries mainly T2 is deciding!

Floats



	Ordering code	Diameter	Height
	BFS-071432	14 mm	32 mm
	BFS-071441	14 mm	41 mm
	BFS-071726	17 mm	26 mm
	BFS-071733	17 mm	33 mm
	BFS-071742	17 mm	42 mm
	BFS-071922	19 mm	22 mm
	BFS-071926	19 mm	26 mm
	BFS-071930	19 mm	30 mm
	BFS-071934	19 mm	34 mm
	BFS-071938	19 mm	38 mm



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	BFS-071942	19 mm	42 mm
	BFS-071950	19 mm	50 mm
	BFS-071958	19 mm	58 mm
	BFS-072214	22 mm	14 mm
	BFS-072220	22 mm	20 mm
	BFS-072224	22 mm	24 mm
	BFS-072229	22 mm	29 mm
	BFS-072234	22 mm	34 mm
	BFS-072239	22 mm	39 mm
	BFS-072244	22 mm	44 mm
	BFS-072249	22 mm	49 mm
	BFS-072259	22 mm	59 mm

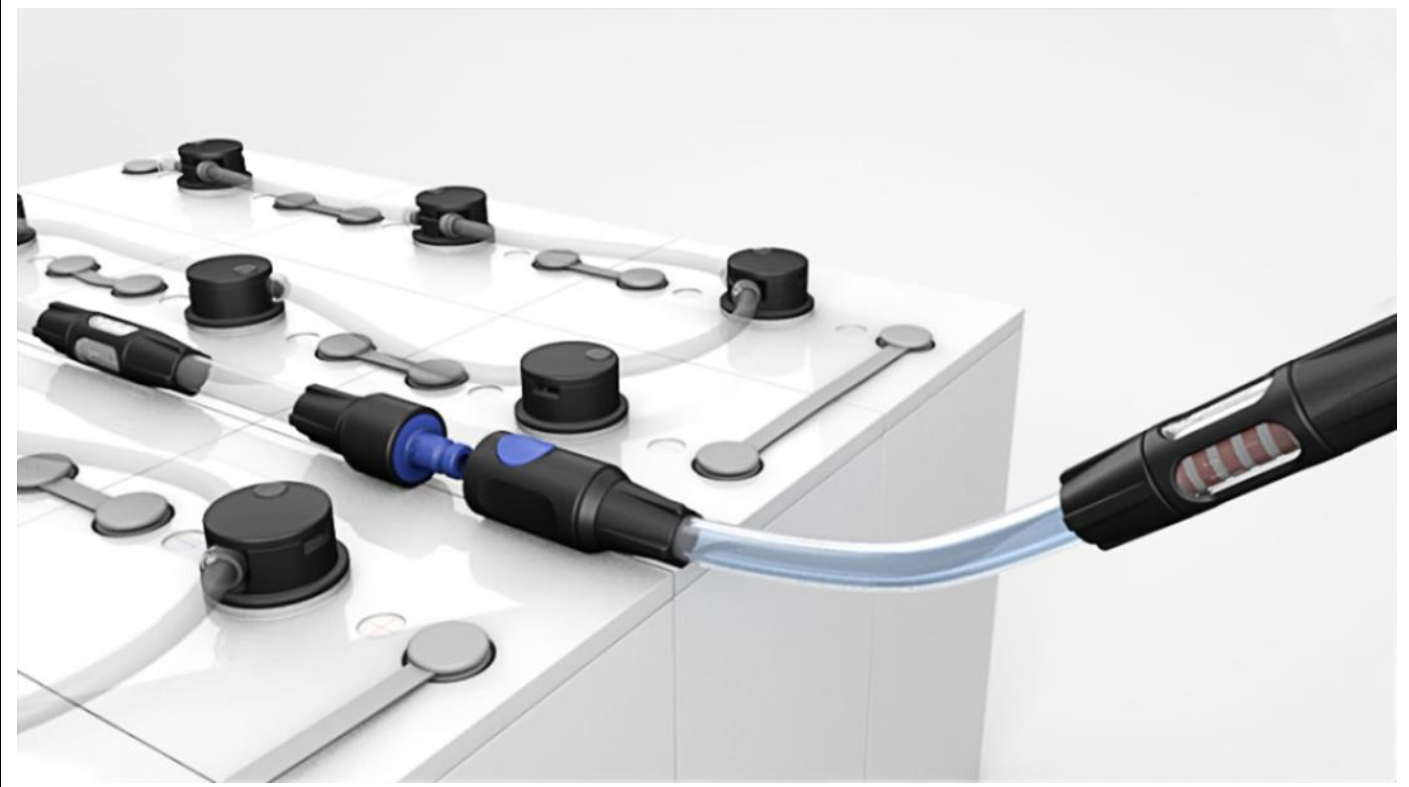
Manual Plugs*




					
	Manual Push-in Plug MAA000**	Manual Bayonet Plug MB0000	Manual Threaded Plug M27/M30/C35/ M36 MC/D/E/F000	Manual Tall Bayonet Plug MG0000	Manual 4-Bayonet Plug MH0000
Vent size battery	35 mm (S35)	24 mm (bayonet, European std)	Thread C: M27, D: M30x2, E: C35, F: M36	24 mm (bayonet, European std)	29 mm (bayonet, Asian std)
Construction height	21 mm	34 mm	31 mm	45 mm	21 mm
Min Casing Depth	43 mm	-	-	-	-



























*All manual plugs have a patented “brush” that is built into the lid. This ensures that as much of the (evaporated) battery fluid as possible passes back into the cell.

**The MAA000 has a sliding basket which is adjustable in height (min 43 mm and max 72 mm casing depth)

Spare Parts – Accessories – Tools



	Ordering code	Description	For
	09DI10	Gasket for plug – 1,0 mm	B4N100 / I4Nxxx
	09DI30	Gasket for plug – 3,0 mm	B51000 / G51000 I51000
	09RI45	Gasket for plug – 4,5 mm	H4N000 / H51000 I4NV00
	FRSCH06	PVC hose 6 x 1,5 mm	
	FRSCH10	PVC hose 10 x 14 mm	
	08KLE1	Hose Clamp NW10	
	08KLE6	Hose clamp NW6	
	08END6	End Piece NW6	

	09KUV1B	Quick coupling male NW10 (08KLE1B included)	
	09KUM1B	Quick coupling female NW10 (08KLE1B included)	
	09KUV6B	Quick coupling male NW6 (08KLE6B included)	
	09KUM6B	Quick coupling female NW6 (08KLE6B included)	
	09BKM6B	Quick coupling female NW6 (Air)	
	09BKV6B	Quick coupling male NW6 (Air)	
	09BKM1B	Quick coupling female NW10 (Air)	
	09BKV1B	Quick coupling male NW10 (Air)	
	08KLE6B	Hose clamp NW6 (for 09KUM6B and 09KUV6B)	
	08KLE1B	Hose clamp NW10 (for 09KUM1B and 09KUV1B, 09FIL1B and 09FLI1B)	
	K6	Coupling Female K6 - Blue, without valve - 6 mm - Water inlet	
	K10	Coupling Female K10 - Blue, without valve - 10 mm - Water inlet	
	KV6	Coupling Female KV6 - Grey, with valve - 6 mm - Water inlet	
	KV10	Coupling Female KV10 - Grey, with valve - 10 mm - Water inlet	
	S6	Coupling Male S6 - Blue, without valve - 6 mm - Battery	
	S10	Coupling Male S10 - Blue, without valve - 10 mm - Battery	
	SV6	Coupling Male SV6 - Grey, with valve - 6 mm - Battery	
	SV10	Coupling Male SV10 - Grey, with valve - 10 mm - Battery	



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	09FIL1B	Filter cartridge NW10 (2x 08KLE1B included)	
	09FL1B	Flow indicator NW10 (2x 08KLE1B included)	
	FLFI06	Flow indicator with Filter NW6	
	FLFI10	Flow indicator with Filter NW10	
 Integrated filter	AIO-C-F-1NW10	Coupling All-In-One Female 1xNW10 (shown in picture)	
	AIO-C-F-1NW06	Coupling All-In-One Female 1xNW6	
	AIO-C-F-2NW06	Coupling All-In-One Female 2xNW6	
 Integrated filter and flow indicator	AIO-C-M-1NW10	Coupling All-In-One Male 1xNW10	
	AIO-C-M-1NW06	Coupling All-In-One Male 1xNW06	
	AIO-C-M-2NW06	Coupling All-In-One Male 2xNW06 (shown in picture)	
	09STAC	Dust cap C	
	09MOD6	Tool for hose clamp 08KLE6B To ease and quicken the assembly of the bfs twist clamps NW6	
	09MOD1	Tool for hose clamp 08KLE1B To ease and quicken the assembly of the bfs twist clamps NW10	
	09WE16	Slide tool The mounting tool can be used to make the mounting of hose clamps 08KLE1 and 08KLE6 easier.	
	09KSCH	Sliding tool for clamps NW6	
	09LEHR	Slide ruler for T1 Caliper to determine the length of the float T1: see table "Calculation of float size for traction batteries (T1) and stationary batteries (T2)"	
	09STHE	Removal tool for push-in plug (plastic) The removal tool for plugs was specifically developed for maintenance and service use. Placed under the flange of the bfs push-in plug, the plug can easily be levered out of the cell opening	
	AQF-R-TOOL	Removal tool for push-in plug (metal) The removal tool for plugs was specifically developed for maintenance and service use. Placed under the flange of the bfs push-in plug, the plug can easily be levered out of the cell opening.	



One-stop shop
















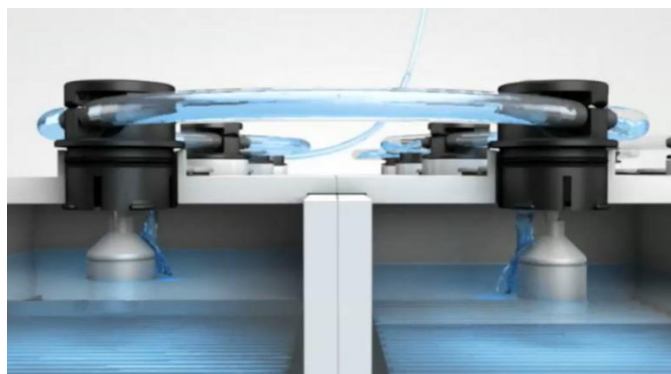
On-time delivery






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	09MOWE	Assembly tool To ease and quicken the assembly of a bfs plug in adapter versions such as bayonet adapters or threaded adapters.
	09FEX1	Filter EX for central degassing
	08T616	T-piece 6/10/6
	08T111	T-piece 10/10/10
	08T161	T-piece 10/6/10
	08T666	T-piece 6/6/6
	08WI11	Elbow fitting 10/10
	08WI16	Elbow fitting 10/6
	08WI66	Elbow fitting 6/6
	08KR11	Cross fitting 10/10/10/10
	08KR61	Cross fitting 6/10/6/10
	08KR66	Cross fitting 6/6/6/6
	08RED6	Reducer 10/6





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Ordering code for Aqua-fill sets

Example:
AQBCA-48V-BC-NF34

AQ – Aqua-fill set

Type of kit: _____

- F – Fully Assembled (layout battery needed)
- P – Partially Assembled (layout battery needed)
- B – Basic Kit (not assembled)

Type of tube: _____

- B – Black tube
- P – PVC hose without clamps
- C – PVC hose with clamps (standard)

Plug type: _____

- | | | | | | | |
|--------------------|------------|------------|-----------------------|------------|------------|------------|
| Push-in: | A – A51000 | B – A4N000 | BB – A4N with housing | | | |
| Bayonet: | C – H4N000 | D – H51000 | E – B4N100 | F – B51000 | K – G51000 | |
| Clip-in: | G – I4N000 | H – I4NV00 | I – I4N260 | J – I4N420 | N – I51000 | Q – I4N330 |
| Treaded: | O – C51000 | P – C4N000 | R – D51000 | S – E51000 | T – F51000 | |
| Central degassing: | U – F51220 | V – E51220 | W – D51220 | X – C51220 | Y – A51220 | Z – B51220 |

Battery Voltage: _____

For example 48V

Coupling inlet: _____

- B – BFS
- C – CPC
- F – Frötek

Dust cap (09STAC): _____

- N – No Cap
- C – With Cap

Flow Indicator (09FLI1B): _____

- N – No Flow Indicator
- I – With Flow indicator

Filter (09FIL1B): _____

- N – No Filter
- F – With Filter

Float - to be determined via table “calculation of float size”: _____

Example: 34 = BFS-072234