

FIRST NATIONAL
batteryTM
WORLD CLASS BATTERY MANUFACTURER

**SURFACE
MOTIVE POWER
BATTERIES**



POSITIVE PLATE

The tubular plate construction incorporates low antimonial lead alloy spines in complete contact with the active material, which is retained by an outer gauntlet. This enables the electrolyte to penetrate freely, ensuring a high power output per unit volume.

NEGATIVE PLATE

The negative plate is of a highly porous paste on a lead alloy grid. This compliments the positive plate construction, providing a balanced performance and superior life.

WRAP-AROUND SLEEVE SEPARATORS

Separators are manufactured from microporous polyethylene. They are impervious to acid attack. The sleeve separator prevents short-circuiting caused by mossing. Extended battery life is achieved using sleeved plates.

MUD TRAP

Prevents possible shorting between plates due to active material shedding during the life of the cell.

CONTAINER AND LID

The cell container and lid are of polypropylene. The lid is heat-sealed to the container ensuring a homogeneous bond. This is vital to mechanical strength and safety.

FORPRENE® CONNECTORS

- Made of thermoplastic rubber
- Acid resistant
- Abrasion resistant
- Fatigue resistant
- More flexible than PVC cable
- Exceptional moulding bond eliminates contamination
- Built in "O" rings
- Easy and simple to connect

Positive Plate
(Tubular)

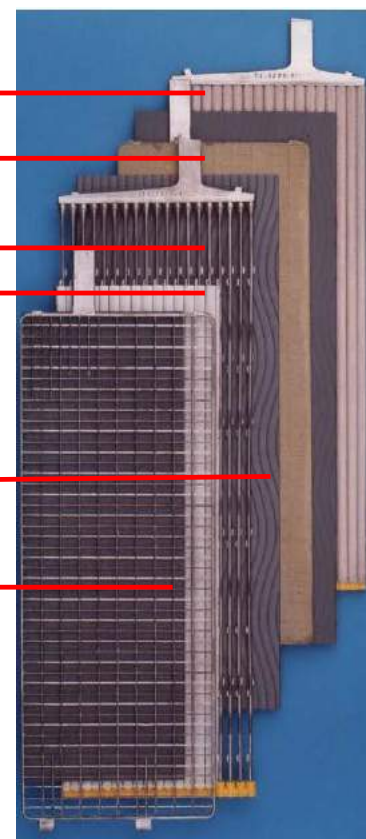
Negative Plate
(pasted)

Positive Spines

Gauntlet

Sleeve Separator

Negative Grid



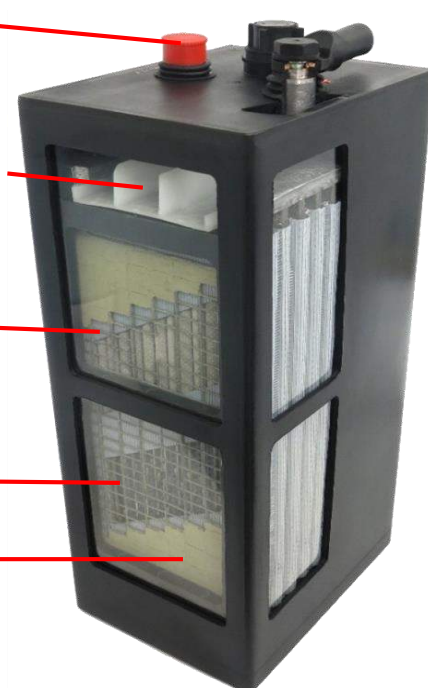
Terminal Cap

Separator Guard
MMP cell only

Negative Grid

Positive Spines

Negative Plate



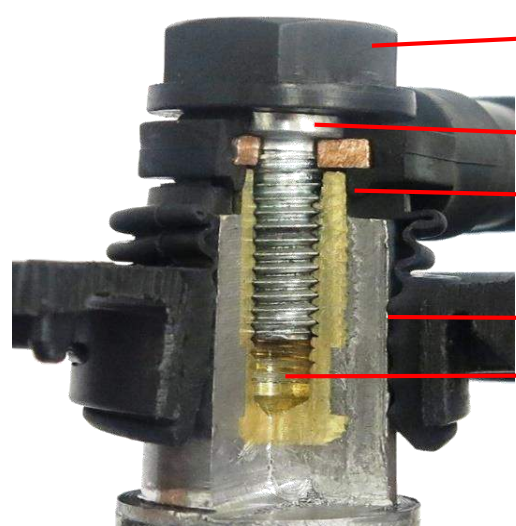
Moulded Plastic Bolt
Head

Steel Bolt

Moulded O-Ring

Grommet Seal

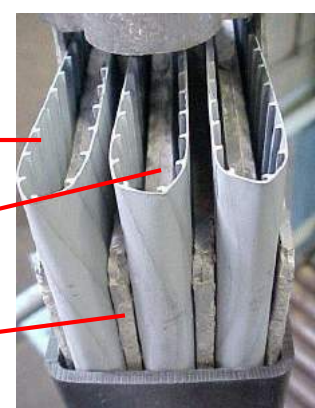
Threaded brass
insert maximizes
Terminal to
connector
conductivity



Wrap
Around Sleeve
Separator

Positive
Plate

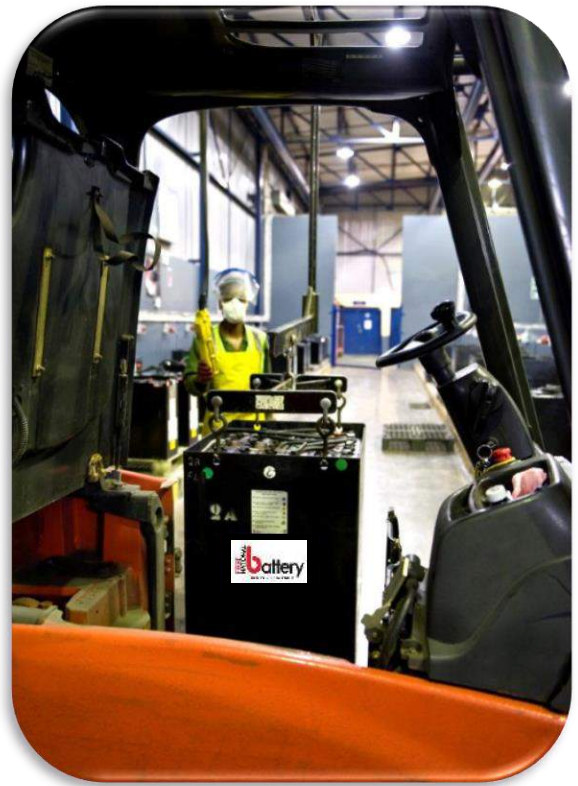
Negative
Plate



TERMINAL SEAL

The new grommet style terminal assembly allows the terminal to slide upwards as the plate grows with age.

The tight seal prevents electrolyte spillage.



VENT CAPS

All cells supplied by First National Battery are fitted with push in type vent plugs with "flip top" lids



Level Indicator

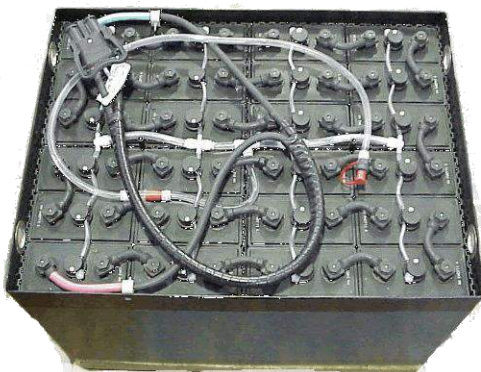
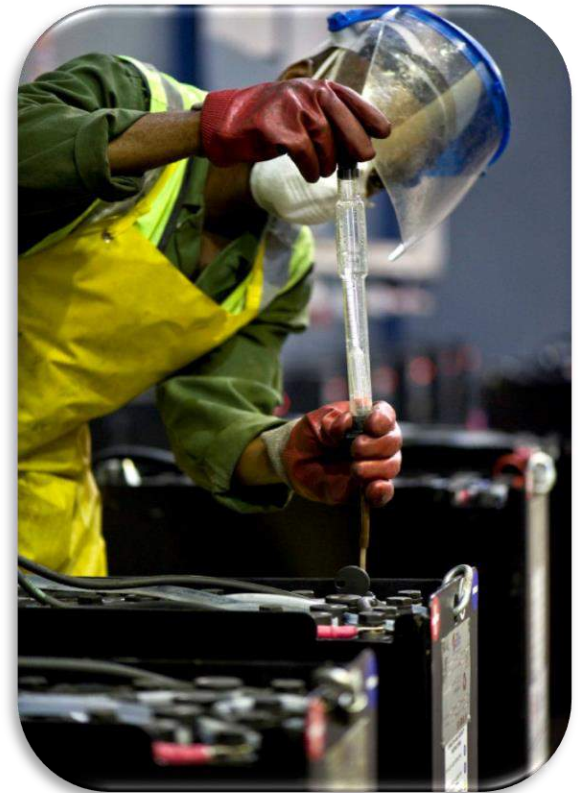
BATTERY FILLING SYSTEM

All batteries supplied by First National Battery can have battery filling systems fitted as an optional extra.

These systems allow for topping up of batteries in an efficient and trouble free manner. Electrolyte levels are easily monitored via the visual float level indicator.

All vent plugs allow for easy specific gravity checks once the lid is lifted.

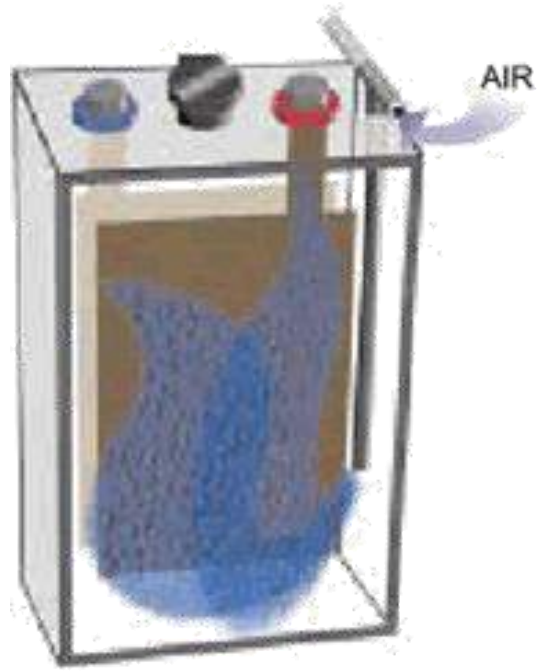
A comprehensive range of accessories is also available.



ELECTROLYTE AGITATION (OPTIONAL – LIMITED RANGE)

Frequent cycling of batteries can cause electrolyte stratification. By circulating air through the electrolyte during charging this problem can be eliminated with the following benefits:

- Less gassing and therefore reduced water loss during the charging cycle.
- Temperatures during charging are lower, thus extending battery life.
- Charge acceptance is maximised.
- Reduced maintenance.



DIN TANKS

All complete batteries supplied by First National Battery are assembled in tanks which comply with DIN specifications.

- The battery tank is sand blasted and treated with an acid resistant epoxy powder coating.
- Take off cables are anchored according to DIN requirements.
- Drain tubes are fitted to allow for rinse water extraction via a suction device. (Optional)
- Packing pieces are used where necessary to ensure snug fit of cells.
- VA-4 stainless steel rings to lifting holes.
- Each tank will have a multilingual safety label, an identification label specifying DIN requirements and battery performances. Additional signs indicate positive and negative take-offs as well as lifting hook points.

DIN Cell Type	FNB Cell Type	C5 @ 30°C	Cell Dimensions (mm)			Cell Installed Height	Weight (kg) ± 5%	
			Length "L"	Width "W"	Height "H"		Dry	Wet
60 Ampere Hour Positive Plate								
2 PzS 120	DWAF 5	120	47	198	336	364	6.3	8.3
3 PzS 180	DWAF 7	180	65	198	336	364	9.7	12.4
4 PzS 240	DWAF 9	240	83	198	336	364	12.7	16.2
5 PzS 300	DWAF 11	300	101	198	336	364	14.8	19.1
6 PzS 360	DWAF 13	360	119	198	336	364	17.6	22.7
7 PzS 420	DWAF 15	420	137	198	336	364	21.2	27.0
8 PzS 480	DWAF 17	480	155	198	336	364	25.1	31.7
9 PzS 540	DWAF 19	540	173	198	336	364	29.0	36.4
10 PzS 600	DWAF 21	600	191	198	336	364	32.8	41.0
80 Ampere Hour Positive Plate								
2 PzS 160	DWBF 5	160	47	198	396	424	8.5	11.0
3 PzS 240	DWBF 7	240	65	198	396	424	12.0	15.5
4 PzS 320	DWBF 9	320	83	198	396	424	15.5	20.0
5 PzS 400	DWBF 11	400	101	198	396	424	18.5	24.0
6 PzS 480	DWBF 13	480	119	198	396	424	22.7	29.0
7 PzS 560	DWBF 15	560	137	198	396	424	26.7	34.0
8 PzS 640	DWBF 17	640	155	198	396	424	30.6	39.0
9 PzS 720	DWBF 19	720	173	198	396	424	34.6	44.0
10 PzS 800	DWBF 21	800	191	198	396	424	38.6	49.0
90 Ampere Hour Positive Plate								
2 PzS 180	DWCF 5	180	47	198	464	492	8.8	11.5
3 PzS 270	DWCF 7	270	65	198	464	492	13.5	17.2
4 PzS 360	DWCF 9	360	83	198	464	492	17.7	22.5
5 PzS 450	DWCF 11	450	101	198	464	492	20.6	26.5
6 PzS 540	DWCF 13	540	119	198	464	492	24.6	31.5
7 PzS 630	DWCF 15	630	137	198	464	492	29.6	37.5
8 PzS 720	DWCF 17	720	155	198	464	492	35.0	44.0
9 PzS 810	DWCF 19	810	173	198	464	492	40.4	50.5
10 PzS 900	DWCF 21	900	191	198	464	492	45.8	57.0
120 Ampere Hour Positive Plate								
2 PzS 240 LL	LDWEF 5	240	47	198	540	568	11,9	14,9
3 PzS 360 LL	LDWEF 7	360	65	198	540	568	17,3	21,6
4 PzS 480 LL	LDWEF 9	480	83	198	540	568	22,2	27,8
5 PzS 600 LL	LDWEF 11	600	101	198	540	568	28,0	35,0
6 PzS 720 LL	LDWEF 13	720	119	198	540	568	33,0	41,2
7 PzS 840 LL	LDWEF 15	840	137	198	540	568	37,9	47,4
8 PzS 960 LL	LDWEF 17	960	155	198	540	568	42,0	52,5
9 PzS 1080 LL	LDWEF 19	1080	173	198	540	568	46,9	58,7
10PzS1200 LL	LDWEF 21	1200	191	198	540	568	51,9	64,9
120 Ampere Hour Positive Plate								
2 PzS 240	DWEF 5	240	47	198	568	596	12,4	15,5
3 PzS 360	DWEF 7	360	65	198	568	596	18,2	22,7
4 PzS 480	DWEF 9	480	83	198	568	596	22,2	27,8
5 PzS 600	DWEF 11	600	101	198	568	596	27,2	34,0
6 PzS 720	DWEF 13	720	119	198	568	596	33,0	41,2
7 PzS 840	DWEF 15	840	137	198	568	596	37,9	47,4
8 PzS 960	DWEF 17	960	155	198	568	596	42,9	53,6
9 PzS 1080	DWEF 19	1080	173	198	568	596	47,8	59,7
10 PzS 1200	DWEF 21	1200	191	198	568	596	52,8	66,0
150 Ampere Hour Positive Plate								
2 PzS 300	DWFF 5	300	47	198	710	738	14,0	17,5
3 PzS 450	DWFF 7	450	65	198	710	738	20,6	25,8
4 PzS 600	DWFF 9	600	83	198	710	738	28,0	35,0
5 PzS 750	DWFF 11	750	101	198	710	738	33,8	42,2
6 PzS 900	DWFF 13	900	119	198	710	738	42,0	52,5
7 PzS 1050	DWFF 15	1050	137	198	710	738	47,8	59,7
8 PzS 1200	DWFF 17	1200	155	198	710	738	54,4	68,0
9 PzS 1350	DWFF 19	1350	173	198	710	738	61,0	76,2
10 PzS 1500	DWFF 21	1500	191	198	710	738	67,6	84,5

BS BOLT – ON CELLS

Note: Operating S.G. = 1.295 ± 0.005

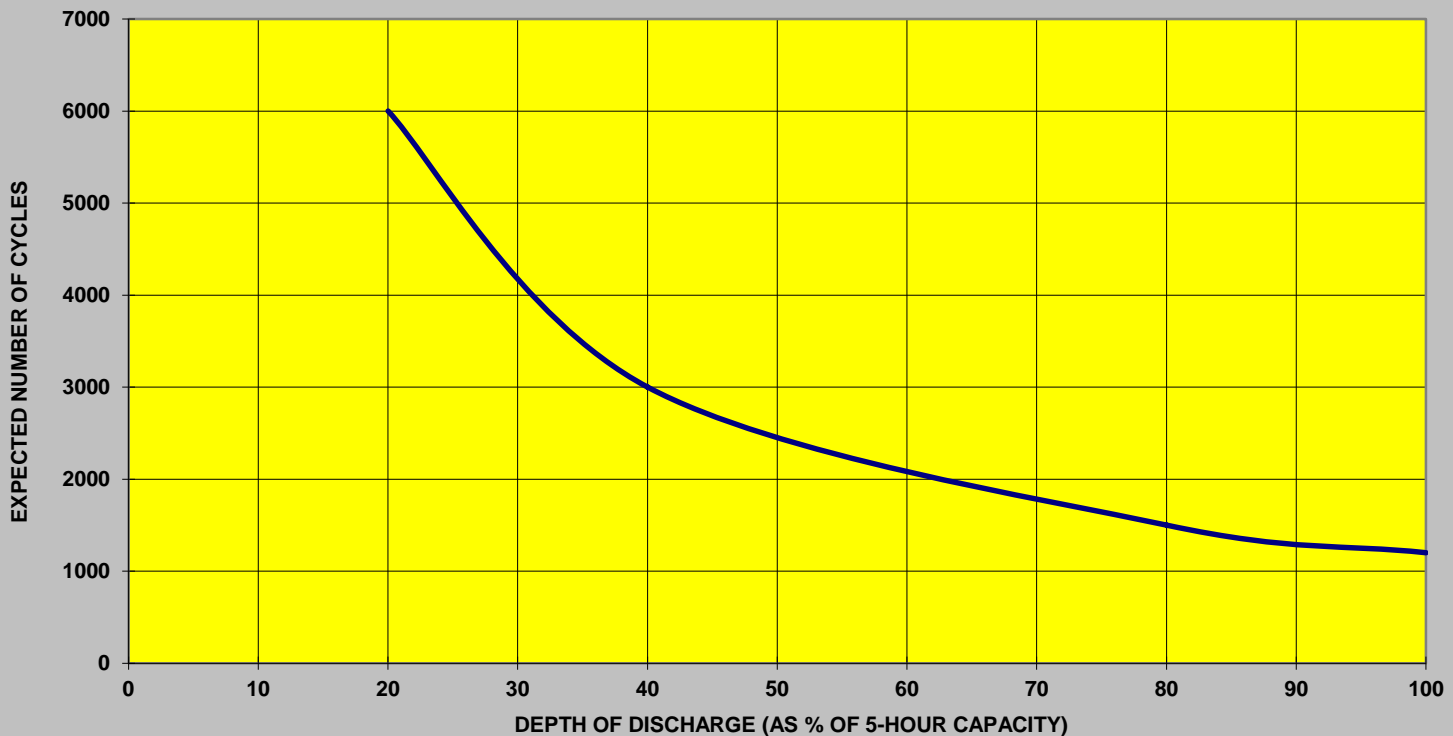
BS Cell Type	FNB Cell Type	C5 @ 30°C	Cell Dimensions (mm)			Cell Installed Height	Weight (kg) ±	
			Width "W"	Length "L"	Height "H"		5%	
							Dry	Wet
20 Ampere Hour Positive Plate								
2 PzB 40	BIKR 5	40	45	158	235	262	3.6	4.4
3 PzB 60	BIKR 7	60	61	158	235	262	5.0	6.2
4 PzB 80	BIKR 9	80	77	158	235	262	6.3	7.9
5 PzB 100	BIKR 11	100	93	158	235	262	7.8	9.7
6 PzB 120	BIKR 13	120	109	158	235	262	9.1	11.4
7 PzB 140	BIKR 15	140	125	158	235	262	10.5	13.2
8 PzB 160	BIKR 17	160	141	158	235	262	12.0	15.0
9 PzB 180	BIKR 19	180	157	158	235	262	13.3	16.7
10 PzB 200	BIKR 21	200	173	158	235	262	14.7	18.5
11 PzB 220	BIKR 23	220	189	158	235	262	16.1	20.2
12 PzSB 240	BIKR 25	240	205	158	235	262	17.5	22.0
13 PzB 260	BIKR 27	260	221	158	235	262	19.0	23.8
14 PzSB 280	BIKR 29	280	237	158	235	262	20.3	25.5
40 Ampere Hour Positive Plate								
2 PzB 80	BIMF 5	80	45	158	324	351	4.5	6.0
3 PzB 120	BIMF 7	120	61	158	324	351	6.4	8.5
4 PzB 160	BIMF 9	160	77	158	324	351	8.2	11.0
5 PzB 200	BIMF 11	200	93	158	324	351	10.1	13.5
6 PzB 240	BIMF 13	240	109	158	324	351	12.1	18.0
7 PzB 280	BIMF 15	280	125	158	324	351	13.9	18.5
8 PzB 320	BIMF 17	320	141	158	324	351	15.7	21.0
9 PzB 360	BIMF 19	360	157	158	324	351	17.7	23.5
10 PzB 400	BIMF 21	400	173	158	324	351	19.6	26.0
11 PzB 440	BIMF 23	440	189	158	324	351	21.4	28.5
12 PzSB 480	BIMF 25	480	205	158	324	351	23.4	31.0
13 PzB 520	BIMF 27	520	221	158	324	351	25.2	33.5
14 PzSB 560	BIMF 29	560	237	158	324	351	27.1	36.0
58 Ampere Hour Positive Plate								
2 PzB 116	BILF 5	116	45	158	402	429	6,5	8,1
3 PzB 174	BILF 7	174	61	158	402	429	9,1	11,4
4 PzB 232	BILF 9	232	77	158	402	429	11,7	14,6
5 PzB 290	BILF 11	290	93	158	402	429	14,3	17,9
6 PzB 348	BILF 13	348	109	158	402	429	16,9	21,1
7 PzB 406	BILF 15	406	125	158	402	429	19,5	24,4
8 PzB 464	BILF 17	464	141	158	402	429	22,2	27,7
9 PzB 522	BILF 19	522	157	158	402	429	24,7	30,9
10 PzB 580	BILF 21	580	173	158	402	429	27,4	34,2
11 PzB 638	BILF 23	638	189	158	402	429	29,9	37,4
12 PzSB 696	BILF 25	696	205	158	402	429	32,6	40,7
13 PzB 754	BILF 27	754	221	158	402	429	35,2	44,0
14 PzSB 812	BILF 29	812	237	158	402	429	37,8	47,2
65 Ampere Hour Positive Plate								
2 PzB 130	BTLF 5	130	45	158	454	481	7,2	9,0
3 PzB 195	BTLF 7	195	61	158	454	481	10,1	12,6
4 PzB 260	BTLF 9	260	77	158	454	481	13,0	16,2
5 PzB 325	BTLF 11	325	93	158	454	481	15,8	19,7
6 PzB 390	BTLF 13	390	109	158	454	481	18,6	23,3
7 PzB 455	BTLF 15	455	125	158	454	481	21,5	26,9
8 PzB 520	BTLF 17	520	141	158	454	481	24,4	30,5
9 PzB 585	BTLF 19	585	157	158	454	481	27,3	34,1
10 PzB 650	BTLF 21	650	173	158	454	481	30,1	37,6
11 PzB 715	BTLF 23	715	189	158	454	481	33,0	41,2
12 PzSB 780	BTLF 25	780	205	158	454	481	35,8	44,8
13 PzB 845	BTLF 27	845	221	158	454	481	38,7	48,4
14 PzSB 910	BTLF 29	910	237	158	454	481	41,6	52,0

BS BOLT – ON CELLS

Note: Operating S.G. = 1.295 ± 0.005

BS Cell Type	FNB Cell Type	C5 @ 30°C	Cell Dimensions (mm)			Cell Installed Height	Weight (kg) ± 5%	
			Width "W"	Length "L"	Height "H"		Dry	Wet
76 Ampere Hour Positive Plate								
2 PzB 152	BTHF 5	152	45	158	515	542	8,2	10,2
3 PzB 228	BTHF 7	228	61	158	515	542	11,4	14,3
4 PzB 304	BTHF 9	304	77	158	515	542	14,6	18,3
5 PzB 380	BTHF 11	380	93	158	515	542	18,0	22,5
6 PzB 456	BTHF 13	456	109	158	515	542	21,2	26,5
7 PzB 532	BTHF 15	532	125	158	515	542	24,5	30,6
8 PzB 608	BTHF 17	608	141	158	515	542	27,8	34,7
9 PzB 684	BTHF 19	684	157	158	515	542	31,0	38,7
10 PzB 760	BTHF 21	760	173	158	515	542	34,2	42,8
11 PzB 836	BTHF 23	836	189	158	515	542	37,5	46,9
	BTHF 23 DP	836	205	158	515	542	37,6	47,0
12 PzSB 912	BTHF 25	912	205	158	515	542	40,8	51,0
13 PzB 988	BTHF 27	988	221	158	515	542	44,1	55,1
14 PzSB 1064	BTHF 29	1064	237	158	515	542	47,3	59,1
102 Ampere Hour Positive Plate								
2 PzB 204	BTEF 5	204	45	158	692	719	11,1	13,9
3 PzB 306	BTEF 7	306	61	158	692	719	15,6	19,5
4 PzB 408	BTEF 9	408	77	158	692	719	20,0	25,0
5 PzB 510	BTEF 11	510	93	158	692	719	24,5	30,6
6 PzB 612	BTEF 13	612	109	158	692	719	29,0	36,2
7 PzB 714	BTEF 15	714	125	158	692	719	33,4	41,7
8 PzB 816	BTEF 17	816	141	158	692	719	37,8	47,3
9 PzB 918	BTEF 19	918	157	158	692	719	42,2	52,8
10 PzB 1020	BTEF 21	1020	173	158	692	719	46,7	58,4
11 PzB 1122	BTEF 23	1122	189	158	692	719	51,2	64,0
12 PzSB 1224	BTEF 25	1224	205	158	692	719	55,6	69,5
13 PzB 1326	BTEF 27	1326	221	158	692	719	60,1	75,1
14 PzSB 1428	BTEF 29	1428	237	158	692	719	64,5	80,6

CYCLE LIFE vs DEPTH OF DISCHARGE

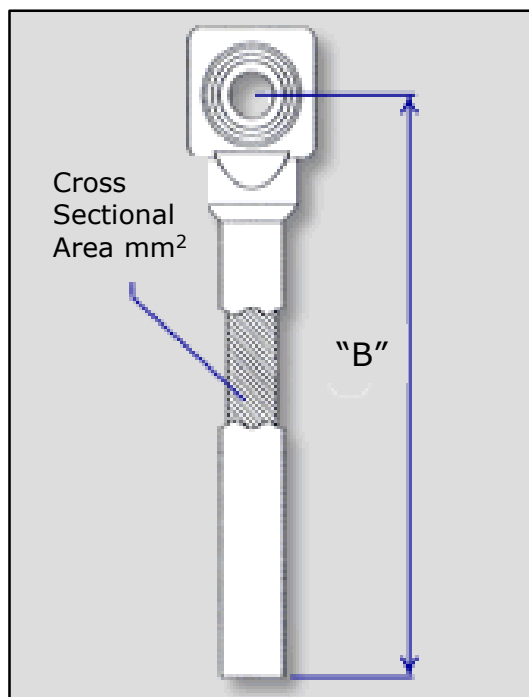
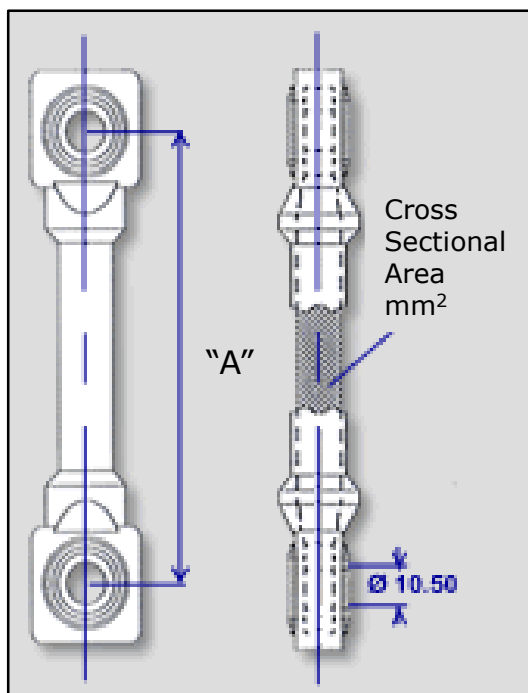




CELL LIFTER

To facilitate easy removal of cells from tanks, or shipping crates, this cell lifter is designed to ensure no damage occurs.

CELLS	CATEGORY NUMBER
DIN 5-21	R10
BS 5-15	R11
BS 17-29	R12



TAKE-OFF CONNECTORS CATALOGUE NUMBERS

CABLE LENGTH "B" mm	CROSS SECTION AREA				
	25mm ²	35mm ²	50mm ²	70mm ²	95mm ²
115 ± 2.0	CB 518	CB 524	CB 529	CB 535	CB 541
500 ± 5.0	CB 519	CB 525	CB 530	CB536	CB 542
1200 ± 5.0	CB 520	CB 526	CB 531	CB 537	CB 543
1500 ± 5.0	CB 521	CB 527	CB 532	CB 538	CB 544
2000 ± 5.0	CB 522	CB 552	CB 553	CB 554	
2500 ± 5.0					CB 565
4800 ± 5.0			CB 533	CB 539	CB 545

BS BOLT – ON CONNECTORS CATELOGUE NUMBERS

Cell Type	CABLE LENGTH "A" mm	CROSS SECTION AREA				
		25mm ²	35mm ²	50mm ²	70mm ²	95mm ²
5 Plate F-F	75 ± 1.5	CB 457		CB 482		
7 Plate F-F	75 ± 1.5	CB 457		CB 482		
9 Plate F-F	95 ± 1.5	CB 458	CB 471	CB 483	CB 497	CB 509
11 Plate F-F	110 ± 2.0	CB 460	CB 473	CB 485	CB 498	CB 510
13 Plate F-F	130 ± 2.0	CB 461	CB 474	CB 486	CB 548	
15 Plate F-F	150 ± 2.0	CB 462	CB 475	CB 487	CB 499	
17 PlateF-F	150 ± 2.0	CB 462	CB 475	CB 487	CB 499	
19 PlateF-F	170 ± 2.0	CB 463	CB 476	CB 488	CB 500	CB 511
21 PlateF-F	190 ± 2.0	CB 464	CB 477	CB 489	CB 501	CB 512
23 Plate F-F	210 ± 3.0	CB 465	CB 478	CB 490	CB 502	CB 513
25 Plate F-F	225 ± 3.0	CB 466	CB 479	CB 491	CB 503	
27 Plate F-F	250 ± 3.0	CB 467	CB 480	CB 492	CB 504	CB 514
29 Plate F-F	250 ± 3.0	CB 467	CB 480	CB 492	CB 504	CB 514
5-29 Plate E-E	95 ± 1.5	CB 458	CB 471	CB 483	CB 497	CB 509

DIN BOLT – ON CONNECTORS CATELOGUE NUMBERS

Cell Type	CABLE LENGTH "A" mm	CROSS SECTION AREA				
		25mm ²	35mm ²	50mm ²	70mm ²	95mm ²
5 Plate F-F	75 ± 1.5	CB 457		CB 482		
7 Plate F-F	95 ± 1.5	CB 458	CB 471	CB 483	CB 497	CB 509
9 Plate F-F	95 ± 1.5	CB 458	CB 471	CB 483	CB 497	CB 509
11 Plate F-F	110 ± 2.0	CB 460	CB 473	CB 485	CB 498	CB 510
13 Plate F-F	150 ± 2.0	CB 462	CB 475	CB 487	CB 499	
15 Plate F-F	150 ± 2.0	CB 462	CB 475	CB 487	CB 499	
17 PlateF-F	170 ± 2.0	CB 463	CB 476	CB 488	CB 500	CB 511
19 PlateF-F	190 ± 2.0	CB 464	CB 477	CB 489	CB 501	CB 512
21 PlateF-F	210 ± 3.0	CB 465	CB 478	CB 490	CB 502	CB 513
5-21 Plate E-E	110 ± 2.0	CB 460	CB 473	CB 485	CB 498	CB 510

BRIDGING CONNECTORS

DIN 48V –C IRCUIT B	300 ± 3.0	CB 469	CB 481	CB 494	CB 506	CB 516
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BS CONNECTOR CROSS SECTIONAL AREA MM² SMP

Cell Type	BIKR	BIMF	BILF	BTLF	BTHF	BTEF
5 Plate	25	25	25	25	25	25
7 Plate	25	25	25	25	25	25
9 Plate	25	25	25	25	25	25
11 Plate	25	25	25	25	25	35
13 Plate	25	25	25	25	35	50
15 Plate	25	25	25	35	35	50
17 Plate	25	25	35	35	50	70
19 Plate	25	25	35	50	50	70
21 Plate	25	25	50	50	50	70
23 Plate	25	35	50	50	70	95
25 Plate	25	35	50	50	70	95
27 Plate	25	35	50	70	70	95
29 Plate	25	50	70	70	70	95

DIN CONNECTOR CROSS SECTIONAL AREA MM² SMP

Cell Type	DWAF	DWBF	DWCF	LDWEF	DWEF	DWFF
5 Plate	25	25	25	25	25	25
7 Plate	25	25	25	25	25	35
9 Plate	25	25	25	35	35	50
11 Plate	25	25	35	50	50	50
13 Plate	25	35	35	50	50	70
15 Plate	35	50	50	70	70	70
17 Plate	35	50	50	70	70	95
19 Plate	35	50	70	70	70	95
21Plate	50	50	70	95	95	95

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**SANS IEC 60254-1: 2005
SANS IEC 60254-2: 2008**

**For More Information Contact:
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www.battery.co.za**

MotivePower: September 2018