



CYCLIC BATTERIES

TRACTION BATTERIES



2 VOLT TRACTION CELLS

2 volt traction cells are mainly used in heavy industrial electrical applications, such as: electric forklifts, electric trucks, large industrial cleaning machines, tower wagons etc.

The cells are composed of positive tubular plates and negative grid plates, which guarantee a higher capacity and longer life than the conventional batteries with flat plates.

The positive and negative plates are separated by a microporous separator in order to avoid mutual contact and short circuits.

The plates are packed in a polypropylene container that is resistant to vibrations. At the bottom of this container, there is a rest room to collect the precipitate and thus to prevent short circuits.

On top of the cells, there is a lid to prevent the coming-up of the separators by vibrations and shocks and causing a short circuit. The lid also protects against acid and protects the plates and the separators during filling.

The cells are standard equipped with manual filler caps and a little basket which simplifies the refilling (refill up to the bottom of the basket).



STANDARD



AQUA



THE CELLS ARE AVAILABLE IN FOLLOWING TYPES

DIN-series: DIN sizes, positive tubular plate diameter 8.7 mm (more active material!), specific gravity of the electrolyte 1.29kg/L.

BS-series: British Standard sizes, positive tubular plate diameter 8.7 mm, specific gravity of the electrolyte 1.29kg/L.

GEL-series: GEL 2V elements with positive tubular plates.

THE FOLLOWING VERSIONS ARE AVAILABLE



"S-version": the cells are linked by flexible screwed connections.

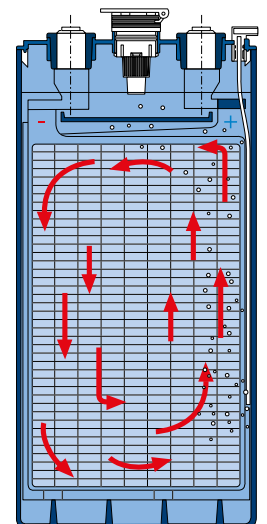
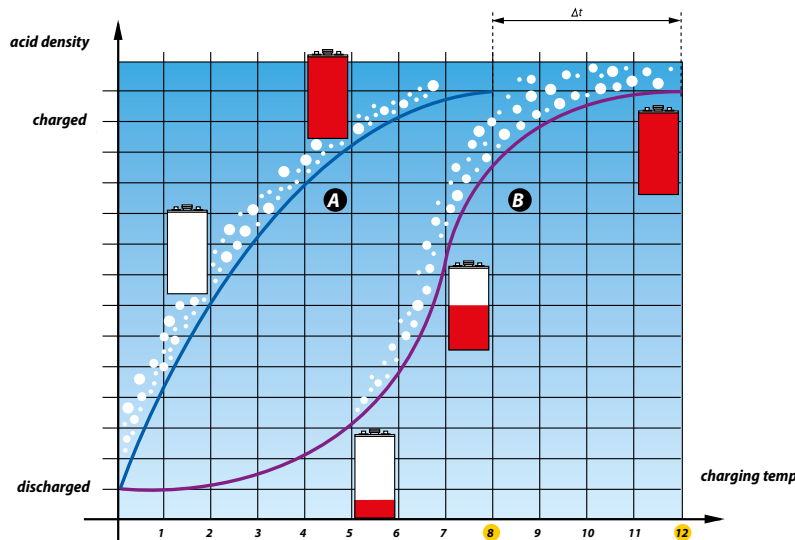


"A-version": automatic mobile filling system on the basis of filler caps and floats.
 Advantage: all cells are simultaneously refilled in an instant and without spilling up to the right level: time-saving!



"Z-version": Acid circulation version, cells with acid circulation. Every element contains a little tube in which the charger pumps a little quantity of air which makes the electrolyte circulate from the beginning of the charge (cf diagram)

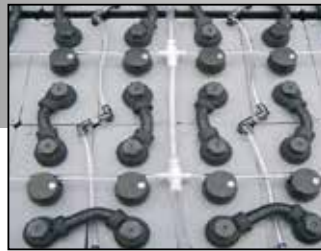
- A:** Traction battery "Z" acid circulation
- B:** Traditional traction battery





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A COUPLE OF TIPS FOR A LONGER BATTERY LIFE

- only refilling with demineralised water
- refilling after charge
- refilling up to the bottom side of the baskets: not higher!
- keep the upper side of the battery dry and clean
- use an adequate charger for battery & capacity
- avoid intermediate charges

HOW TO ORDER A TRACTION BATTERY?

- brand and type of the forklift truck
- type of the battery & reference of the elements
- voltage & Ah of the battery
- size of the outerbox or of the elements: X x Y x H
- how much time does one work with the battery: one shift,...
- options: autom. filling system, acid circulation
- type of the battery plug
- fill out the form on page 96 of this catalogue



OR CONTACT OUR SALES!

- Attention:
- Is my charger adapted to my battery?
 - How long do I have to charge?
 12 hours = Wa-charger
 8 hours = WoWa-charger
 < 8 hours = IUla-charger

ADVANTAGES

- thanks to the constant charge over the total surface of the plates, the charging time is considerably reduced by ± 2 hours
- lower charge factor: from 1,20 up to 1,05
- 15 % more energy saving
- lower battery temperature
- 75 % less water consumption

TIP

Acid circulation in combination with high frequency charger results in a battery with maximum usability and a minimum of maintenance!

PROTECTION MAT

Protects the floor from damages and pollution. Protects the battery from heavy shocks.

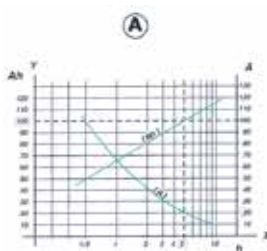


- **BAT/28351** : 120 x 100 x 2 mm - Soft finish
- **BAT/22978** : 106 x 100 x 2 mm - Soft finish
- **BAT/22979** : 120 x 80 x 2 mm - Soft finish

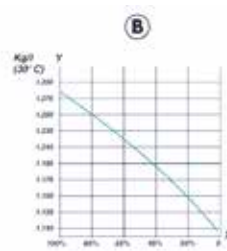
Other sizes are available upon request.



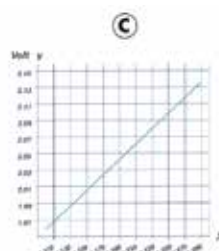
- **BAT/22980** - Protection blocks
- Protects the floor from damages and pollution. Protects the battery from heavy shocks. Can be built-in in forklift truck compartment.



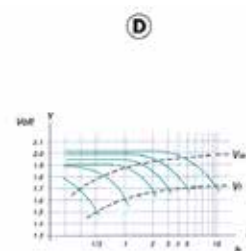
Capacity



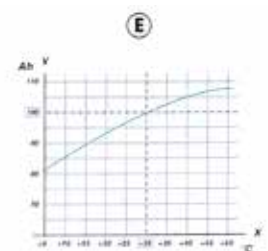
Density



Voltage



Voltage



Capacity



CELL TYPE	Ah/5h Capacity	A Dis-charge	Charging current		Weight kg		Dimensions			
			A Start	A End	Dry	Filled	X	Y	H	h
2 PzS 100	100	20	20	5	5,7	6,8	45	198	305	282
3 PzS 150	150	30	30	8	7,7	9,6	63	198	305	282
4 PzS 200	200	40	40	10	9,9	12,4	81	198	305	282
5 PzS 250	250	50	50	13	12,2	15,3	99	198	305	282
6 PzS 300	300	60	60	15	14,5	18,2	118	198	305	282
7 PzS 350	350	70	70	18	16,7	21,1	136	198	305	282
8 PzS 400	400	80	80	20	19,0	24,0	155	198	305	282
9 PzS 450	450	90	90	23	21,3	26,9	173	198	305	282
10 PzS 500	500	100	100	25	23,6	29,8	191	198	305	282
12 PzS 600	600	120	120	30	28,4	35,9	227	198	305	282
2 PzS 120	120	24	24	6	6,5	8,5	45	198	363	340
3 PzS 180	180	36	36	9	9,2	11,9	63	198	363	340
4 PzS 240	240	48	48	12	11,9	15,4	81	198	363	340
5 PzS 300	300	60	60	15	14,6	18,9	99	198	363	340
6 PzS 360	360	72	72	18	17,2	22,4	118	198	363	340
7 PzS 420	420	84	84	21	19,9	25,9	136	198	363	340
8 PzS 480	480	96	96	24	22,6	29,4	155	198	363	340
9 PzS 540	540	108	108	27	25,2	32,9	173	198	363	340
10 PzS 600	600	120	120	30	27,9	36,4	191	198	363	340
12 PzS 720	720	144	144	36	33,6	43,7	227	198	363	340
2 PzS 160	160	32	32	8	8,1	10,2	45	198	425	402
3 PzS 240	240	48	48	12	11,2	14,5	63	198	425	402
4 PzS 320	320	64	64	16	14,6	18,7	81	198	425	402
5 PzS 400	400	80	80	20	17,9	22,9	99	198	425	402
6 PzS 480	480	96	96	24	21,3	27,1	118	198	425	402
7 PzS 560	560	112	112	28	24,7	31,3	136	198	425	402
8 PzS 640	640	128	128	32	28,0	35,5	155	198	425	402
9 PzS 720	720	144	144	36	31,4	39,7	173	198	425	402
10 PzS 800	800	160	160	40	34,7	43,9	191	198	425	402
12 PzS 960	960	192	192	48	41,8	52,6	227	198	425	402
2 PzS 180	180	36	36	9	9,1	11,6	47	198	495	472
3 PzS 270	270	54	54	14	12,8	16,6	65	198	495	472
4 PzS 360	360	72	72	18	16,6	21,4	83	198	495	472
5 PzS 450	450	90	90	23	20,5	26,2	101	198	495	472
6 PzS 540	540	108	108	27	24,4	31,0	119	198	495	472
7 PzS 630	630	126	126	32	28,2	35,8	137	198	495	472
8 PzS 720	720	144	144	36	32,1	40,6	155	198	495	472
9 PzS 810	810	162	162	41	35,9	45,4	173	198	495	472
10 PzS 900	900	180	180	45	39,8	50,2	191	198	495	472
12 PzS 1080	1080	216	216	54	47,8	60,1	227	198	495	472
2 PzS 210	210	42	42	11	10,3	13,3	47	198	538	515
3 PzS 315	315	63	63	16	14,4	18,3	65	198	538	515
4 PzS 420	420	84	84	21	18,6	23,7	83	198	538	515
5 PzS 525	525	105	105	26	22,9	29,1	101	198	538	515
6 PzS 630	630	126	126	32	27,1	34,5	119	198	538	515

CELL TYPE	Ah/5h Capacity	A Dis-charge	Charging current		Weight kg		Dimensions			
			A Start	A End	Dry	Filled	X	Y	H	h
7 PzS 735	735	147	147	37	31,4	39,9	137	198	538	515
8 PzS 840	840	168	168	42	35,6	45,3	155	198	538	515
9 PzS 945	945	189	189	47	39,9	50,7	173	198	538	515
10 PzS 1050	1050	210	210	53	44,5	56,4	191	198	538	515
12 PzS 1260	1260	252	252	63	53,0	67,2	227	198	538	515
2 PzS 230	230	46	46	12	10,8	14,0	47	198	568	545
3 PzS 345	345	69	69	17	15,3	19,8	65	198	568	545
4 PzS 460	460	92	92	23	19,9	25,6	83	198	568	545
5 PzS 575	575	115	115	29	24,8	31,4	101	198	568	545
6 PzS 690	690	138	138	35	29,6	37,2	119	198	568	545
7 PzS 805	805	161	161	40	34,5	43,0	137	198	568	545
8 PzS 920	920	184	184	46	39,3	48,8	155	198	568	545
9 PzS 1035	1035	207	207	52	44,5	54,9	173	198	568	545
10 PzS 1150	1150	230	230	58	49,3	60,7	191	198	568	545
12 PzS 1380	1380	276	276	69	59,0	72,3	227	198	568	545
2 PzS 250	250	50	50	13	11,6	14,7	47	198	593	570
3 PzS 375	375	75	75	19	16,2	20,7	65	198	593	570
4 PzS 500	500	100	100	25	21,1	26,9	83	198	593	570
5 PzS 625	625	125	125	31	26,0	33,1	101	198	593	570
6 PzS 750	750	150	150	38	30,9	39,3	119	198	593	570
7 PzS 875	875	175	175	44	35,8	45,5	137	198	593	570
8 PzS 1000	1000	200	200	50	40,7	51,7	155	198	593	570
9 PzS 1125	1125	225	225	56	45,9	58,2	173	198	593	570
10 PzS 1250	1250	250	250	63	50,8	64,4	191	198	593	570
12 PzS 1500	1500	300	300	75	60,6	76,8	227	198	593	570
2 PzS 280	280	56	56	14	14,4	20,6	47	198	709	686
3 PzS 420	420	84	84	21	19,4	25,3	65	198	709	686
4 PzS 560	560	112	112	28	25,1	32,2	83	198	709	686
5 PzS 700	700	140	140	35	30,9	39,5	101	198	709	686
6 PzS 840	840	168	168	42	36,6	46,7	119	198	709	686
7 PzS 980	980	196	196	49	42,3	54,0	137	198	709	686
8 PzS 1120	1120	224	224	56	48,0	61,2	155	198	709	686
9 PzS 1260	1260	252	252	63	54,1	68,8	173	198	709	686
10 PzS 1400	1400	280	280	70	59,8	76,0	191	198	709	686
12 PzS 1680	1680	336	336	84	71,3	90,5	227	198	709	686
2 PzS 310	310	62	62	16	14,9	21,5	47	198	743	720
3 PzS 465	465	93	93	23	20,6	26,1	65	198	743	720
4 PzS 620	620	124	124	31	26,7	33,5	83	198	743	720
5 PzS 775	775	155	155	39	32,9	41,1	101	198	743	720
6 PzS 930	930	186	186	47	39,0	48,9	119	198	743	720
7 PzS 1085	1085	217	217	54	45,1	56,7	137	198	743	720
8 PzS 1240	1240	248	248	62	51,3	64,5	155	198	743	720
9 PzS 1395	1395	279	279	70	57,8	72,8	173	198	743	720
10 PzS 1550	1550	310	310	78	64,0	80,6	191	198	743	720
12 PzS 1860	1860	372	372	93	76,2	96,2	227	198	743	720



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BS (BRITISH STANDARD)

CELL TYPE	Ah/5h Capacity	A Dis-charge	Charging current		Weight kg		Dimensions			
			A Start	A End	Dry	Filled	X	Y	H	h
2PzB46	46	9,2	9	2,3	3	3,7	45	157,5	240	216
2PzB69	69	14	14	3,5	4,2	5,4	61	157,5	240	216
4PzB92	92	18	18	4,6	5,4	6,9	77	157,5	240	216
5PzB115	115	23	23	5,8	6,6	8,4	93	157,5	240	216
6PzB138	138	28	28	6,9	7,8	10	109	157,5	240	216
7PzB161	161	32	32	8,1	9	11,6	125	157,5	240	216
8PzB184	184	37	37	9,2	10,2	13,2	141	157,5	240	216
9PzB207	207	41	41	10	11,9	15,3	157	157,5	240	216
10PzB230	230	46	46	12	13,1	16,9	173	157,5	240	216
11PzB253	253	51	51	13	14,3	18,4	189	157,5	240	216
2PzB64	64	13	13	3,2	4	5,1	45	157,5	284	260
3PzB96	96	19	19	4,8	5,6	7,1	61	157,5	284	260
4PzB128	128	26	26	6,4	7,2	9,2	77	157,5	284	260
5PzB160	160	32	32	8,0	8,8	11,30	93	157,5	284	260
6PzB192	192	38	38	10	10,3	13,2	109	157,5	284	260
7PzB224	224	45	45	11	11,7	15	125	157,5	284	260
8PzB256	256	51	51	13	13,1	16,8	141	157,5	284	260
9PzB288	288	58	58	14	14,9	19,1	157	157,5	284	260
10PzB320	320	64	64	16	16,3	20,9	173	157,5	284	260
11PzB352	352	70	70	18	17,7	22,7	189	157,5	284	260
2PzB84	84	17	17	4,2	5,4	6,9	45	157,5	350	326
3PzB126	126	25	25	6,3	7,3	9,4	61	157,5	350	326
4PzB168	168	34	34	8,4	9,3	11,9	77	157,5	350	326
5PzB210	210	42	42	11	11,3	14,5	93	157,5	350	326
6PzB252	252	50	50	13	13,5	17,3	109	157,5	350	326
7PzB294	294	59	59	15	15,6	20	125	157,5	350	326
8PzB336	336	67	67	17	17,6	22,3	141	157,5	350	326
9PzB378	378	76	76	19	19,9	25,2	157	157,5	350	326
10PzB420	420	84	84	21	21,8	27,6	173	157,5	350	326
11PzB462	462	92	92	23	23,7	30	189	157,5	350	326
2PzB110	110	22	22	5,5	6,1	7,6	45	157,5	423	399
3PzB165	165	33	33	8,3	8,5	10,5	61	157,5	423	399
4PzB220	220	44	44	11	11	13,5	77	157,5	423	399
5PzB275	275	55	55	14	13,5	16,5	93	157,5	423	399
6PzB330	330	66	66	17	15,9	19,6	109	157,5	423	399
7PzB385	385	77	77	19	18,4	22,6	125	157,5	423	399
8PzB440	440	88	88	22	20,8	25,6	141	157,5	423	399
9PzB495	495	99	99	25	23,8	29,1	157	157,5	423	399
10PzB550	550	110	110	28	26,3	32,1	173	157,5	423	399
11PzB605	605	121	121	30	28,7	35,2	189	157,5	423	399
2PzB130	130	26	26	6,5	6,8	8,2	45	157,5	453	477
3PzB195	195	39	39	10	10,1	12	61	157,5	453	477
4PzB260	260	52	52	13	13	15,5	77	157,5	453	477
5PzB325	325	65	65	16	16,0	19	93	157,5	453	477
6PzB390	390	78	78	20	18,9	22,6	109	157,5	453	477

CELL TYPE	Ah/5h Capacity	A Dis-charge	Charging current		Weight kg		Dimensions			
			A Start	A End	Dry	Filled	X	Y	H	h
7PzB455	455	91	91	23	21,8	26,1	125	157,5	453	477
8PzB520	520	104	104	26	24,5	29,6	141	157,5	453	477
9PzB585	585	117	117	29	27,9	33,6	157	157,5	453	477
10PzB650	650	130	130	33	30,6	37,2	173	157,5	453	477
11PzB715	715	143	143	36	33,3	40,7	189	157,5	453	477
2PzB150	150	30	30	8	7,5	10	45	157,5	537	513
3PzB225	225	45	45	11	10,8	13,9	61	157,5	537	513
4PzB300	300	60	60	15	14,1	17,8	77	157,5	537	513
5PzB375	375	75	75	19	17,5	21,6	93	157,5	537	513
6PzB450	450	90	90	23	20,9	25,6	109	157,5	537	513
7PzB525	525	105	105	26	24,1	29,6	125	157,5	537	513
8PzB600	600	120	120	30	27,4	33,5	141	157,5	537	514
9PzB675	675	135	135	34	31,1	38,2	157	157,5	537	514
10PzB750	750	150	150	38	34,2	42,3	173	157,5	537	514
11PzB825	825	165	165	41	37,3	46,4	189	157,5	537	514
2PzB172	172	34	34	9	8,3	10,7	45	157,5	591	567
3PzB258	258	52	52	13	11,8	15	61	157,5	591	567
4PzB344	344	69	69	17	15,2	19,3	77	157,5	591	567
5PzB430	430	86	86	22	18,6	23,7	93	157,5	591	567
6PzB516	516	103	103	26	22	28,1	109	157,5	591	567
7PzB602	602	120	120	30	25,4	32,6	125	157,5	591	567
8PzB688	688	138	138	34	28,8	37,1	141	157,5	591	567
9PzB774	774	155	155	39	32,9	42,3	157	157,5	591	567
10PzB860	860	172	172	43	36,3	46,9	173	157,5	591	567
11PzB946	946	189	189	47	39,7	51,4	189	157,5	591	567
2PzB200	200	40	40	10	9,4	11,8	45	157,5	632	608
3PzB300	300	60	60	15	13,5	16,6	61	157,5	632	608
4PzB400	400	80	80	20	17,5	21,5	77	157,5	632	608
5PzB500	500	100	100	25	21,6	26,4	93	157,5	632	608
6PzB600	600	120	120	30	25,6	31,5	109	157,5	632	608
7PzB700	700	140	140	35	29,7	36,4	125	157,5	632	608
8PzB800	800	160	160	40	33,7	41,4	141	157,5	632	608
9PzB900	900	180	180	45	38,6	47,1	157	157,5	632	608
10PzB1000	1000	200	200	50	42,7	52	173	157,5	632	608
11PzB1100	1100	220	220	55	46,7	56,9	189	157,5	632	608
2PzB216	216	43	43	11	9,9	13,5	45	157,5	712	688
3PzB324	324	65	65	16	14,3	18,9	61	157,5	712	688
4PzB432	432	86	86	22	18,7	24,3	77	157,5	712	688
5PzB540	540	108	108	27	23,2	29,7	93	157,5	712	688
6PzB648	648	130	130	32	27,6	35,1	109	157,5	712	688
7PzB756	756	151	151	38	32,1	40,5	125	157,5	712	688
8PzB864	864	173	173	43	36,5	45,9	141	157,5	712	688
9PzB972	972	194	194	49	41,6	52	157	157,5	712	688
10PzB1080	1080	216	216	54	46	57,4	173	157,5	712	688
11PzB1188	1188	238	238	59	50,4	62,8	189	157,5	712	688



2 VOLT GEL TRACTION CELLS

Cell Type DIN						
CELL TYPE	Ah/5h Capacity	Weight Kg	X	Y	H	h
2 EPzV 110	110	9,3	198	45	350	340
3 EPzV 165	165	12,7	198	63	350	340
4 EPzV 220	220	16,5	198	81	350	340
5 EPzV 275	275	20,1	198	99	350	340
6 EPzV 330	330	23,8	198	118	350	340
7 EPzV 385	385	27,4	198	136	350	340
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2 EPzV 140	140	10,8	198	45	412	402
3 EPzV 210	210	15,5	198	63	412	402
4 EPzV 280	280	19,7	198	81	412	402
5 EPzV 350	350	24,2	198	99	412	402
6 EPzV 420	420	29,1	198	118	412	402
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2 EPzV 160	160	12,7	198	47	482	472
3 EPzV 240	240	18,1	198	65	482	472
4 EPzV 320	320	23,6	198	83	482	472
5 EPzV 400	400	29,0	198	101	482	472
6 EPzV 480	480	35,0	198	119	482	472
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2 EPzV 200	200	14,7	198	47	573	563
3 EPzV 300	300	21,6	198	65	573	563
4 EPzV 400	400	27,8	198	83	573	563
5 EPzV 500	500	34,3	198	101	573	563
6 EPzV 600	600	40,6	198	119	573	563
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2 EPzV 240	240	19,7	198	47	730	720
3 EPzV 360	360	27,4	198	65	730	720
4 EPzV 480	480	35,3	198	83	730	720
5 EPzV 600	600	42,1	198	101	730	720
6 EPzV 720	720	50	198	119	730	720
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2EPzV 260	260	19,2	198	47	740	713
3EPzV 390	390	27,3	198	65	740	713
4EPzV 520	520	35,5	198	83	740	713
5EPzV 650	650	43,5	198	101	740	713
6EPzV 780	780	51,7	198	119	740	713

Cell Type BS						
CELL TYPE	Ah/5h Capacity	Weight Kg	X	Y	H	h
2 PzVB 104	104	8,4	158	45	428	401
3 PzVB 156	156	11,5	158	61	428	401
4 PzVB 208	208	14,6	158	77	428	401
5 PzVB 260	260	17,8	158	93	428	401
6 PzVB 312	312	20,9	158	109	428	401
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2 PzVB 122	122	9,7	157,5	45	486	472
3 PzVB 183	183	13,5	157,5	61	486	472
4 PzVB 244	244	16,9	157,5	77	486	472
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2 PzVB 142	142	10,6	157,5	45	530	516
3 PzVB 213	213	14,8	157,5	61	530	516
4 PzVB 284	284	18,5	157,5	77	530	516
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2 PzVB 170	170	11,8	157,5	45	625	611
3 PzVB 255	255	16,1	157,5	61	625	611
4 PzVB 340	340	20,7	157,5	77	625	611

24 VOLT MONOBLOC TRACTION BATTERY

In a robust design polypropylene case, a 24V Monobloc DIN battery. Studied to reduce voltage drop by use of short inter cell connectors integrated under lid.



Cell Type DIN					
CELL TYPE	Ah/5h Capacity	Weight Kg	X	Y	H
MDL 2-160L	160	121	624	192	510
MDL 2-180L	180	135	624	192	510
MDL 2-180M	180	138	624	192	570
MDL 2-210M	210	154	624	192	570
MDL 2-210H	210	157	624	192	627
MDL 2-230H	230	166	624	192	627
MDL 2-250H	250	180	624	192	627
MBS2-130	130	110	641	141	500
MBS2-150	150	125	641	141	549
MBS2-200	200	160	641	141	660

PURE LEAD



- Resistant to extreme low & high temperatures: -40°C to +65°C
- Longer battery life : 3 times more cycles than standard AGM
- Maintenance free
- Five times faster recharging
- High performance
- Minimal gassing
- Low self discharge

OTHER TYPES AVAILABLE

More info: see page 26-31

Cell Type DIN						
BATTERY REFERENCE	Ah/C5 Capacity	Weight Kg	X	Y	H	
NSC 24V 192Ah/C5	192	180	500	220	605	-> framed insert

LITHIUM-ION 24V LiFePO4 PALLET TRUCK BATTERY

- 100% Maintenance free
- Up to 30% energy savings
- Opportunity charging = no need to have exchange battery
- Can be charged in 1 hour (with adapted charger)
- No acid or gasses
- Up to 2000 cycles at 80% DOD with 80% capacity granted

OTHER TYPES AVAILABLE

LI-ION TECHNOLOGY

More info: see page 42

Cell Type DIN						
BATTERY REFERENCE	Ah/C1 Capacity	Weight Kg	X	Y	H	
LIT/24-200	200	62	605	155	490	-> framed insert
LIT/24-300	300	150	600	213	537	-> framed insert
LIT/24-400	400	120	552	400	400	-> framed insert