

# 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, marine 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 micro-porous 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





## 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.

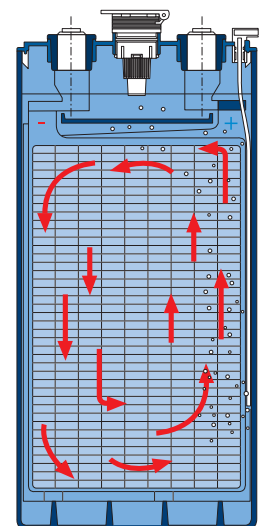
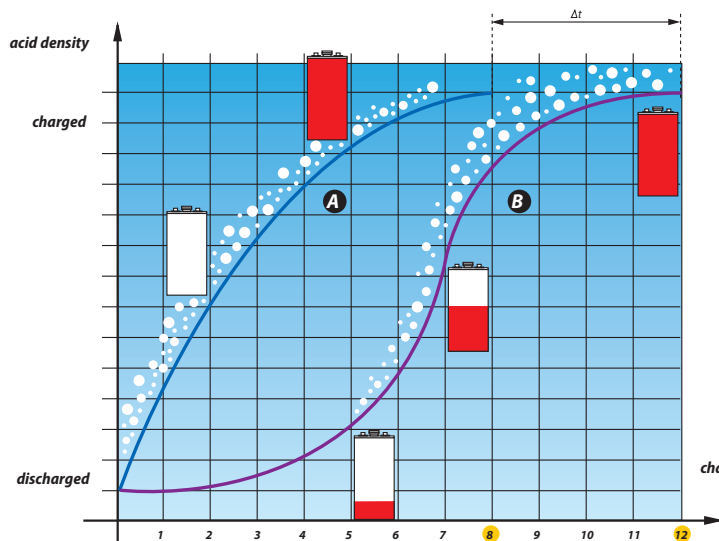


**"A-version":** automatic mobile filling system on the basis of filler caps and floats. Advantage: alle cells are simultaneously refilled in an instant and without spilling up to the right level: time-saving!



**"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





# TRACTION BATTERIES



## ADVANTAGES

- thanks to the constant charge over the total surface of the plates, the charging time is considerably reduced by  $\pm 2$  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!

## 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

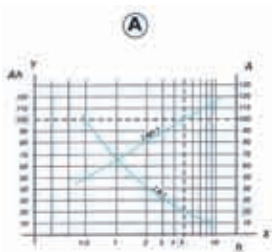
## HOW TO ORDER A TRACTION BATTERY?

- 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

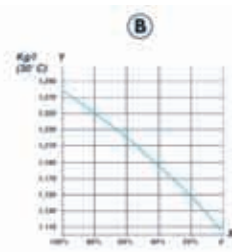


## OR CONTACT OUR SALES!

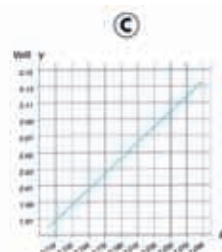
- Attention:
- Is my charger adapted to my battery?
  - How much time do I have to charge?  
 12 hours = Wa-charger  
 8 hours = WoWa-charger  
 < 8 hours = IU1a-charger



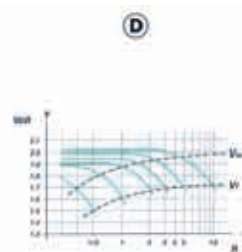
Capacity



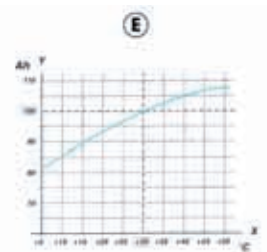
Density



Voltage



Voltage



Capacity



CELL TYPE	Ah/5h Capacity	A Dis-charge	Charging current		Weight kg		Dimensions (mm)			
			A Start	A End	Dry	Filled	X	Y	H	h
2 PzS 120L	120	24	19	5	6,8	8,2	45	196	370	335
3 PzS 180L	180	36	29	7	9,6	11,8	63	197	370	335
4 PzS 240L	240	48	38	10	12,1	15,1	81	197	370	335
5 PzS 300L	300	60	48	12	14,8	18,5	99	197	370	335
6 PzS 360L	360	72	58	14	17,7	22,2	118	197	370	335
7 PzS 420L	420	84	67	17	20,9	25,8	136	197	370	335
8 PzS 480L	480	96	77	19	23,3	28,9	154	197	370	335
9 PzS 540L	540	108	86	22	26,6	33,3	172	197	370	335
10 PzS 600L	600	120	96	24	28,8	36,8	190	197	370	335
2 PzS 140L	140	28	22	6	8,3	10,3	45,0	196,0	440	405
3 PzS 210L	210	42	34	8	11,9	14,6	63,0	197,0	440	405
4 PzS 280L	280	56	45	11	15,1	19,0	81,0	197,0	440	405
5 PzS 350L	350	70	56	14	18,6	23,2	99,0	197,0	440	405
6 PzS 420L	420	84	67	17	21,9	27,6	118,0	197,0	440	405
7 PzS 490L	490	98	78	20	26,2	32,0	136,0	197,0	440	405
8 PzS 560L	560	112	90	22	29,0	36,0	154,0	197,0	440	405
9 PzS 630L	630	126	101	25	32,7	41,0	172,0	197,0	440	405
10 PzS 700L	700	140	112	28	36,5	45,5	190,0	197,0	440	405
2 PzS 160L	160	32	26	6	8,6	10,4	45	196	440	405
3 PzS 240L	240	48	38	10	12,2	14,8	63	197	440	405
4 PzS 320L	320	64	51	13	15,3	19,2	81	197	440	405
5 PzS 400L	400	80	64	16	19,2	23,4	99	197	440	405
6 PzS 480L	480	96	77	19	22,3	27,8	118	197	440	405
7 PzS 560L	560	112	90	22	26,4	32,3	136	197	440	405
8 PzS 640L	640	128	102	26	29,1	36,2	154	197	440	405
9 PzS 720L	720	144	115	29	33,5	41,3	172	197	440	405
10 PzS 800L	800	160	128	32	37,5	45,7	190	197	440	405
2 PzS 180L	180	36	29	7	9,6	12,2	46,5	197,5	500	465
3 PzS 270L	270	54	43	11	13,5	17,5	64,5	197,5	500	465
4 PzS 360L	360	72	58	14	17,6	22	82,5	197,5	500	465
5 PzS 450L	450	90	72	18	21,9	26,7	100,5	197,5	500	465
6 PzS 540L	540	108	86	22	25,5	31,9	118,5	197,5	500	465
7 PzS 630L	630	126	101	25	29,5	36,7	136,5	197,5	500	465
8 PzS 720L	720	144	115	29	34	41,4	154,5	197,5	500	465
9 PzS 810L	810	162	130	32	38,4	47,9	172,5	197,5	500	465
10 PzS 900L	900	180	144	36	43,4	52,6	190,5	197,5	500	465
2 PzS 210L	210	42	34	8	11,2	13,6	46,5	197,5	550	515
3 PzS 315L	315	63	50	13	15,8	19,6	64,5	197,5	550	515
4 PzS 420L	420	84	67	17	20,2	24,7	82,5	197,5	550	515
5 PzS 525L	525	105	84	21	24,8	30,3	100,5	197,5	550	515
6 PzS 630L	630	126	101	25	29,8	36,1	118,5	197,5	550	515

CELL TYPE	Ah/5h Capacity	A Dis-charge	Charging current		Weight kg		Dimensions (mm)			
			A Start	A End	Dry	Filled	X	Y	H	h
7 PzS 735L	735	147	118	29	35	42,3	136,5	197,5	550	515
8 PzS 840L	840	168	134	34	39,8	47,8	154,5	197,5	550	515
9 PzS 945L	945	189	151	38	43,5	53,9	172,5	197,5	550	515
10 PzS 1050L	1050	210	168	42	49,3	60	190,5	197,5	550	515
2 PzS 230L	230	46	37	9	11,6	14,4	46,5	197,5	570	535
3 PzS 345L	345	69	55	14	16,5	20,1	64,5	197,5	570	535
4 PzS 460L	460	92	74	18	21	26,1	82,5	197,5	570	535
5 PzS 575L	575	115	92	23	26	32,2	100,5	197,5	570	535
6 PzS 690L	690	138	110	28	30,3	37,3	118,5	197,5	570	535
7 PzS 805L	805	161	129	32	36,1	43,9	136,5	197,5	570	535
8 PzS 920L	920	184	147	37	40,9	50,2	154,5	197,5	570	535
9 PzS 1035L	1035	207	166	41	45,8	56,3	172,5	197,5	570	535
10 PzS 1150L	1150	230	184	46	50,3	61,8	190,5	197,5	570	535
2 PzS 250L	250	50	40	10	12,4	15,1	46,5	197,5	605	570
3 PzS 375L	375	75	60	15	17,2	21,4	64,5	197,5	605	570
4 PzS 500L	500	100	80	20	22,3	27,4	82,5	197,5	605	570
5 PzS 625L	625	125	100	25	28,3	33,9	100,5	197,5	605	570
6 PzS 750L	750	150	120	30	32,5	40,4	118,5	197,5	605	570
7 PzS 875L	875	175	140	35	38,3	47,4	136,5	197,5	605	570
8 PzS 1000L	1000	200	160	40	43,5	53,7	154,5	197,5	605	570
9 PzS 1125L	1125	225	180	45	49,7	59	172,5	197,5	605	570
10 PzS 1250L	1250	250	200	50	54,3	65,6	190,5	197,5	605	570
2 PzS 280L	280	56	45	11	14,7	18,2	46,5	197,5	730	695
3 PzS420L	420	84	67	17	21,5	26,2	64,5	197,5	730	695
4 PzS 560L	560	112	90	22	26,8	33,8	82,5	197,5	730	695
5 PzS 700L	700	140	112	28	33,3	41,3	100,5	197,5	730	695
6 PzS 840L	840	168	134	34	40	49,3	118,5	197,5	730	695
7 PzS 980L	980	196	157	39	46,8	58,3	136,5	197,5	730	695
8 PzS 1120L	1120	224	179	45	53,3	65,7	154,5	197,5	730	695
9 PzS 1260L	1260	252	202	50	60,4	73,9	172,5	197,5	730	695
10 PzS 1400L	1400	280	224	56	63,6	79,6	190,5	197,5	730	695
2 PzS 310L	310	62	50	12	15,7	18,9	46,5	197,5	730	695
3 PzS 465L	465	93	74	19	21,9	26,9	64,5	197,5	730	695
4 PzS 620L	620	124	99	25	28	34,8	82,5	197,5	730	695
5 PzS 775L	775	155	124	31	34,5	42,5	100,5	197,5	730	695
6 PzS 930L	930	186	149	37	41,2	50,3	118,5	197,5	730	695
7 PzS 1085L	1085	217	174	43	48,6	58,8	136,5	197,5	730	695
8 PzS 1240L	1240	248	198	50	56,6	66,9	154,5	197,5	730	695
9 PzS 1395L	1395	279	223	56	59,3	73	172,5	197,5	730	695
10 PzS 1550L	1550	310	248	62	65,1	81,6	190,5	197,5	730	695



# TRACTION BATTERIES



## BS (BRITISH STANDARD)

CELL TYPE	Ah/5h Capacity	A Dis-charge	Charging current		Weight kg					
			A Start	A End	Dry	Filled	X	Y	H	h
2PzB46	46	9,2	7	2	3,3	4,2	45	157,5	240	215
2PzB47	47	9,4	8	2	4,3	5,2	46	157,5	240	215
4PzB92	92	18,4	15	4	5,5	7,0	77	157,5	240	215
5PzB115	115	23	18	5	6,7	8,6	93	157,5	240	215
6PzB138	138	27,6	22	6	8,2	10,5	109	157,5	240	215
7PzB161	161	32,2	26	6	9,4	12,0	125	157,5	240	215
8PzB184	184	36,8	29	7	10,6	13,5	141	157,5	240	215
2PzB64	64	12,8	10	3	4,2	5,4	45	157,5	285	260
3PzB96	96	19,2	15	4	5,7	7,3	61	157,5	285	260
4PzB128	128	25,6	20	5	7,3	9,3	77	157,5	285	260
5PzB160	160	32	26	6	8,6	11,0	93	157,5	285	260
6PzB192	192	38,4	31	8	10,5	13,4	109	157,5	285	260
7PzB224	224	44,8	36	9	11,9	15,2	125	157,5	285	260
8PzB256	256	51,2	41	10	13,4	17,1	141	157,5	285	260
2PzB84	84	16,8	13	3	5,5	7,0	45	157,5	350	325
3PzB126	126	25,2	20	5	7,4	9,5	61	157,5	350	325
4PzB168	168	33,6	27	7	9,2	11,8	77	157,5	350	325
5PzB210	210	42	34	8	11,2	14,3	93	157,5	350	325
6PzB252	252	50,4	40	10	13,5	17,2	109	157,5	350	325
7PzB294	294	58,8	47	12	15,5	19,8	125	157,5	350	325
8PzB336	336	67,2	54	13	17,6	22,5	141	157,5	350	325
2PzB110	110	22	18	4	6,5	8,3	45	157,5	425	400
3PzB165	165	33	26	7	9,0	11,5	61	157,5	425	400
4PzB220	220	44	35	9	11,4	14,6	77	157,5	425	400
5PzB275	275	55	44	11	14,0	17,9	93	157,5	425	400
6PzB330	330	66	53	13	16,4	21,0	109	157,5	425	400
7PzB385	385	77	62	15	18,8	24,0	125	157,5	425	400
8PzB440	440	88	70	18	21,2	27,1	141	157,5	425	400
2PzB130	130	26	21	5	7,4	9,5	45	157,5	479	454
3PzB195	195	39	31	8	10,5	13,4	61	157,5	479	454
4PzB260	260	52	42	10	13,3	17,0	77	157,5	479	454
5PzB325	325	65	52	13	16,0	20,4	93	157,5	479	454
6PzB390	390	78	62	16	18,7	23,9	109	157,5	479	454
7PzB455	455	91	73	18	21,5	27,5	125	157,5	479	454
8PzB520	520	104	83	21	24,4	31,2	141	157,5	479	454
2PzB150	150	30	24	6	8,5	10,8	45	157,5	539	514
3PzB225	225	45	36	9	11,7	15,0	61	157,5	539	514
4PzB300	300	60	48	12	14,7	18,8	77	157,5	539	514
5PzB375	375	75	60	15	18,0	23,0	93	157,5	539	514
6PzB450	450	90	72	18	21,5	27,5	109	157,5	539	514
7PzB525	525	105	84	21	24,6	31,4	125	157,5	539	514

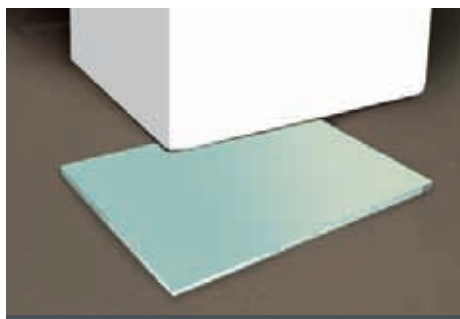
CELL TYPE	Ah/5h Capacity	A Dis-charge	Charging current		Weight kg					
			A Start	A End	Dry	Filled	X	Y	H	h
8PzB600	600	120	96	24	27,8	35,5	141	157,5	539	514
2PzB190	190	38	30	8	10,0	12,8	45	157,5	638	613
3PzB285	285	57	46	11	13,7	17,5	61	157,5	638	613
4PzB380	380	76	61	15	17,6	22,5	77	157,5	638	613
5PzB475	475	95	76	19	21,5	27,5	93	157,5	638	613
6PzB570	570	114	91	23	25,4	32,5	109	157,5	638	613
7PzB665	665	133	106	27	29,0	37,1	125	157,5	638	613
8PzB760	760	152	122	30	33,3	42,5	141	157,5	638	613
2PzB200	200	40	32	8	11,4	14,5	45	157,5	715	715
3PzB300	300	60	48	12	15,7	20,0	61	157,5	715	715
4PzB400	400	80	64	16	20,3	25,9	77	157,5	715	715
5PzB500	500	100	80	20	24,7	31,5	93	157,5	715	715
6PzB600	600	120	96	24	29,0	37,1	109	157,5	715	715
7PzB700	700	140	112	28	33,8	43,2	125	157,5	715	715
8PzB800	800	160	128	32	38,4	49,0	141	157,5	715	715





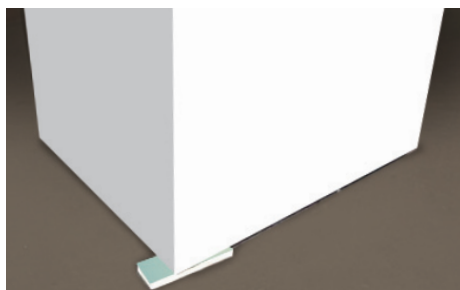
## PROTECTION MAT

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 - Hard finish

Other sizes are available on demand.



- **BAT/22980** - Protection blocks

Protects the floor from damages and pollution. Protects the battery from heavy shocks. Can be built-in in fork-lift truck compartment.

## 2 VOLT GEL TRACTION CELLS

Cell Type DIN						
CELL TYPE	Ah/5h Capacity	Weight Kg	X	Y	H	h
2 EPzV 110	110	9,5	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
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
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
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
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	50,0	198	119	730	720

Cell Type BS						
CELL TYPE	Ah/5h Capacity	Weight Kg	X	Y	H	h
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
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
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