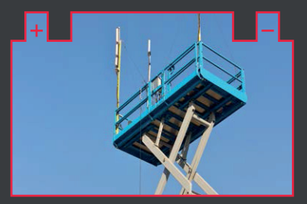
YİĞİTAKÜ
Moving Forward

TRACTION BATTERY

For forklift trucks operated by electric energy



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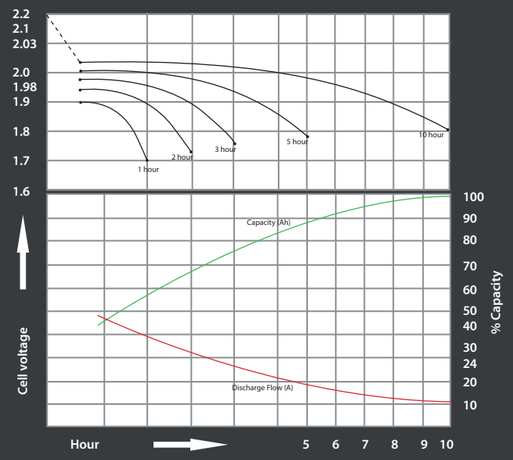
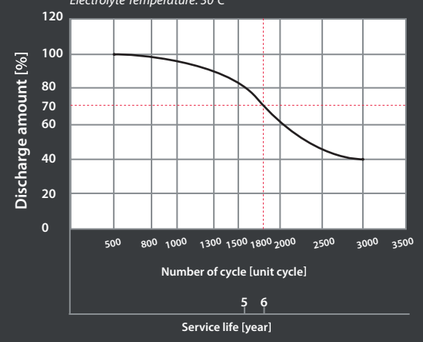
Voltage - Capacity - Flow curves [C5]



Laboratory Characteristics

Electrolyte Temperature: 30°C



1600 cycles [5 years] service life in use with 80% discharge
1800 cycles [6 years] service life win use with 70% discharge

Electrolyte density dependent on temperature

°C	g/cm³	°C	g/cm³	°C	g/cm³	°C	g/cm³
5	1.295	18	1.286	31	1.277	44	1.269
6	1.294	19	1.285	32	1.277	45	1.268
7	1.293	20	1.285	33	1.276	46	1.267
8	1.293	21	1.284	34	1.275	47	1.267
9	1.292	22	1.283	35	1.275	48	1.266
10	1.291	23	1.283	36	1.274	49	1.265
11	1.291	24	1.282	37	1.274	50	1.265
12	1.290	25	1.281	38	1.273	51	1.264
13	1.289	26	1.281	39	1.273	52	1.263
14	1.289	27	1.280	40	1.271	53	1.263
15	1.288	28	1.279	41	1.271	54	1.262
16	1.287	29	1.279	42	1.270	55	1.261
17	1.287	30	1.278	43	1.269	56	1.261

Traction batteries are used in forklift trucks operated by electric energy and used in indoor areas particularly.

They are high capacity and long-lasting batteries. Box and plates are made of polypropylene material and resistant against impact and acid. They are closed with hot adhesion method as being watertight. Used positive plates have tube structure. This structure is effective on service life and performance of battery.

While plugs with level indicators may be used, intercellular connections may be busbar welded or cable-connected according to the customer demand.

Electrolyte density of a fully charged battery should be 1,28 gr/cm3 at 27˚C, discharge end electrolyte density should be in range of 1,11-1,14 gr/cm³. This density is
80% discharge end density. During the use, paying attention to not exceed the 80% discharge will extend the battery life.

TECHNICAL DATA

Battery charge:

Standard charge

- Electrolyte level in cells are controlled. If it is below minimum level, pure water is added and level is complete up to maximum level

- Charging is started with 2,40 Volt constant voltage per cell. Flow given by rectifier will decrease as battery charges. When flow value decreases to 0,25*I5 value, voltage fixed previously is changed as 2,65 Volt and charging continues by fixing this value.

Sample: For Battery nominal capacity (C5) = 600 Ah,
it is calculated as I5=120 Ah and 0,25*I5 = 30 Ah.

1st step: Vconstant= 2,40 Volt , Icharge = variable
2nd step: "Icharge " flow is observed. When Icharge < 30 Ah:
Vconstant= 2,65 Volt is adjusted and charging continues.

- During the charging, above 50°C temperature is not allowed.
Charging is ceased at 45°C, it is restarted at 35°C.
- When water decreased, pure water is added and level is recompleted.
- In 3hours' sequential density and voltage controls made successively, if values remain constant, battery is fully charged.
- When electrolyte temperature decrease to 32 - 35 °C at the end of charge, voltage should be in range of 2,55 – 2,60.

- At the end of charge:

- If density is above 1,285 gr/cm³, a little acid is discharged, instead pure water is added and adjustment is made.
- If density is below 1,275 gr/cm³, a little acid is discharged, instead denser acid is added and adjustment is made.
- At the end of pure water or acid additions, additional 30 minutes' charging is made in order to make electrolyte homogenous in all over the cell.

* For vehicles discharging the battery in use, maximum charge voltage should be 2,37 volt/cell.

▪ Balancing charge

If intercells voltage difference is above 0,05 V value, balancing is applied.

At the end of standard charge, 10 h additional charge is made with 1/20 of charge flow.

Paying attention for the following points during use will prevent
the battery performance loss.

- More than 80% of battery capacity should not be used.
- Vehicle discharge cut voltage should be controlled two times in a year.
- Maximum charge voltage for vehicles charging its battery should be controlled two times in a year.
- Regardless of operating time of battery, it should be charged at the end of use period.
- Recommended use period is one time a day.
- When there is no need, it is avoided from balancing charge.
- Rectifier and used vehicle should be inspected for at least one time a year. Electrolyte level should be controlled regularly and levels should be completed.

	Cell Capacity C5[Ah]	Lenght [mm]	Width [mm]	Gate Over Height [mm]	Total Height [mm]	Dry Cell Weight [Kg]	Flooded and Charged Cell Weight [Kg]
Y50T							
2PzS	100	47	198	267	297	5,31	6,71
3 PzS	150	65	198	267	297	7,37	9,49
4 PzS	200	83	198	267	297	9,44	12,28
5 PzS	250	101	198	267	297	11,50	15,06
6 PzS	300	119	198	267	297	13,61	17,92
7 PzS	350	137	198	267	297	15,73	20,77
8 PzS	400	155	198	267	297	17,80	23,56
9 PzS	450	174	198	267	297	20,04	26,53
10 PzS	500	190	198	267	297	22,08	29,29
Y60T							
2 PzS	120	47	198	340	370	6,59	8,37
3 PzS	180	65	198	340	370	9,20	11,90
4 PzS	240	83	198	340	370	11,83	15,45
5 PzS	300	101	198	340	370	14,45	18,98
6 PzS	360	119	198	340	370	17,14	22,64
7 PzS	420	137	198	340	370	19,83	26,26
8 PzS	480	155	198	340	370	22,47	29,82
9 PzS	540	174	198	340	370	25,28	33,55
10 PzS	600	190	198	340	370	27,88	37,07
Y80T							
2 PzS	160	47	198	402	432	7,75	9,86
3 PzS	240	65	198	402	432	11,04	14,24
4 PzS	320	83	198	402	432	14,36	18,64
5 PzS	400	101	198	402	432	17,65	23,02
6 PzS	480	119	198	402	432	21,04	27,55
7 PzS	560	137	198	402	432	24,43	32,03
8 PzS	640	155	198	402	432	27,76	36,46
9 PzS	720	174	198	402	432	31,25	41,04
10 PzS	800	190	198	402	432	34,53	45,41
Y90T							
2 PzS	180	47	198	477	507	9,14	11,66
3 PzS	270	65	198	477	507	12,85	16,67
4 PzS	360	83	198	477	507	16,49	21,60
5 PzS	450	101	198	477	507	20,19	26,59
6 PzS	540	119	198	477	507	23,85	31,62
7 PzS	630	137	198	477	507	27,61	36,68
8 PzS	720	155	198	477	507	31,30	41,68
9 PzS	810	174	198	477	507	35,15	46,84
10 PzS	900	190	198	477	507	38,81	51,80

	Cell Capacity C5[Ah]	Lenght [mm]	Width [mm]	Gate Over Height [mm]	Total Height [mm]	Dry Cell Weight [Kg]	Flooded and Charged Cell Weight [Kg]
Y105T							
2 PzS	210	47	198	518	548	10,16	12,88
3 PzS	315	65	198	518	548	14,36	18,47
4 PzS	420	83	198	518	548	18,49	24,00
5 PzS	525	101	198	518	548	22,64	29,54
6 PzS	630	119	198	518	548	26,79	35,17
7 PzS	735	137	198	518	548	30,95	40,74
8 PzS	840	155	198	518	548	35,15	46,35
9 PzS	945	174	198	518	548	39,47	52,08
10 PzS	1050	190	198	518	548	43,63	57,64
Y115T							
2 PzS	230	47	198	545	575	10,72	13,54
3 PzS	345	65	198	545	575	15,22	19,49
4 PzS	460	83	198	545	575	19,67	25,40
5 PzS	575	101	198	545	575	24,19	31,37
6 PzS	690	119	198	545	575	28,67	37,39
7 PzS	805	137	198	545	575	33,25	43,43
8 PzS	920	155	198	545	575	37,78	49,43
9 PzS	1035	174	198	545	575	42,44	55,56
10 PzS	1150	190	198	545	575	46,87	61,46
Y125T							
2 PzS	250	47	198	577	607	11,56	14,41
3 PzS	375	65	198	577	607	16,41	20,75
4 PzS	500	83	198	577	607	21,23	27,06
5 PzS	625	101	198	577	607	26,10	33,41
6 PzS	750	119	198	577	607	30,97	39,85
7 PzS	875	137	198	577	607	35,90	46,28
8 PzS	1000	155	198	577	607	40,62	52,50
9 PzS	1125	174	198	577	607	45,81	59,19
10 PzS	1250	190	198	577	607	50,73	65,61
Y140T							
2 PzS	280	47	198	685	715	13,08	16,91
3 PzS	420	65	198	685	715	18,51	24,28
4 PzS	560	83	198	685	715	23,91	31,62
5 PzS	700	101	198	685	715	29,36	39,02
6 PzS	840	119	198	685	715	34,82	46,52
7 PzS	980	137	198	685	715	40,20	53,85
8 PzS	1120	155	198	685	715	45,64	61,24
9 PzS	1260	174	198	685	715	51,34	68,90
10 PzS	1400	190	198	685	715	56,75	76,27
Y155T							
2 PzS	310	47	198	722	752	13,87	17,69
3 PzS	465	65	198	722	752	19,85	25,63
4 PzS	620	83	198	722	752	25,75	33,50
5 PzS	775	101	198	722	752	31,81	41,52
6 PzS	930	119	198	722	752	37,60	49,38
7 PzS	1085	137	198	722	752	43,51	57,27
8 PzS	1240	155	198	722	752	49,40	65,14
9 PzS	1395	174	198	722	752	55,61	73,32
10 PzS	1550	190	198	722	752	61,54	81,240