



EXIDE
GenX

TRACTION BATTERIES



Extra Capacity, Extra Life

EXIDE
INDUSTRIAL

Extra Capacity, Extra Life

ADVANTAGE **EXIDE** |

- **Technology** : Exide Traction batteries have their spines or the positive plate support cast at high pressure (100 bar) in imported "HADI" machine to ensure uniform micro-hardness, uni-directional grain orientation and zero voids and hence provide longer life to the battery.
- **Experience** : Over 50 years of accumulated experience in Research & Development, Manufacturing and Field Operations.
- **Manufacturing Base** : The only company with multi-locational manufacturing units spread across the country and equipped with world's latest and most advanced machineries.
- **Network** : Easy accessibility with 4 Regional offices, 24 Branch offices, 30 Exide Power Centres & over 500 Industrial dealers spread all over the country. Trained and experienced manpower at each location ensuring immediate service and zero downtime.



Research & Development Centre



Haldia, West Bengal

- **One-stop Shop** : Exide offers total solution including equipment selection, installation, operation and maintenance, all under one roof.
- **R&D Centre** : Exide R&D Centre, set up in 1976, is counted among the premier battery research facilities in the world and is recognised by the Department of Scientific & Industrial Research under Ministry of Science & Technology, Govt. of India.
- **Global Quality** : ISO 9001 certification by RWTUV of Germany.
- **Eco-friendly** : ISO 14001 certification ensuring eco-friendly production process. The used batteries are taken back for re-cycling at approved smelter premises to avoid environmental damage.



STRENGTH OF **EXIDE GenX** |

- **Extra Capacity** : Upto 15% additional capacity within the same dimensions.
- **Higher Reliability** : **TORR TUBULAR**® for longer life and higher reliability.
- **Maximum Strength** : Gauntlets with increased diameter to accommodate optimum active material and hence provide maximum strength.
- **Longer Life** : Specially designed grid for negative plate for better active material retention.
- **Leak Proof** : Heat Sealed Polypropylene cell box and lid to ensure no leakage.
- **Better Insulation** : Special polyethylene envelope separator to eliminate short circuits.
- **Smooth Operation** : Special Cell boxes to match with higher capacity plates and ensure smooth operation of the battery.
- **Global Quality** : Conforms to the internationally accepted IEC 60254 standards.
- **Compatibility** : Compatible with latest automatic chargers that are designed to save on electricity.
- **Extended Warranty** : Unique 5-year* warranty to ensure complete peace of mind.

*Please see the inside back page for details

*Conditions apply

Features

Total Sealing

The lids are sealed to the container under heat and pressure, thus ensuring complete protection from acid leakage and terminal corrosion.

Special Tray Liners

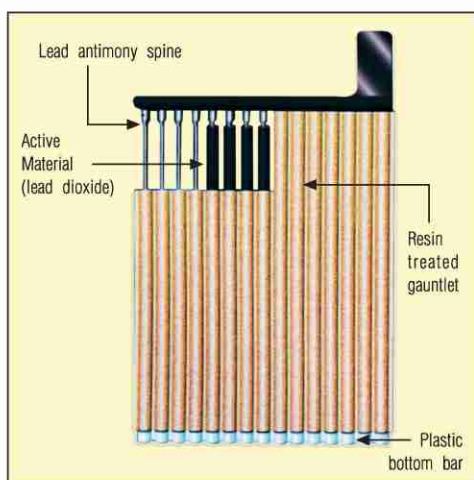
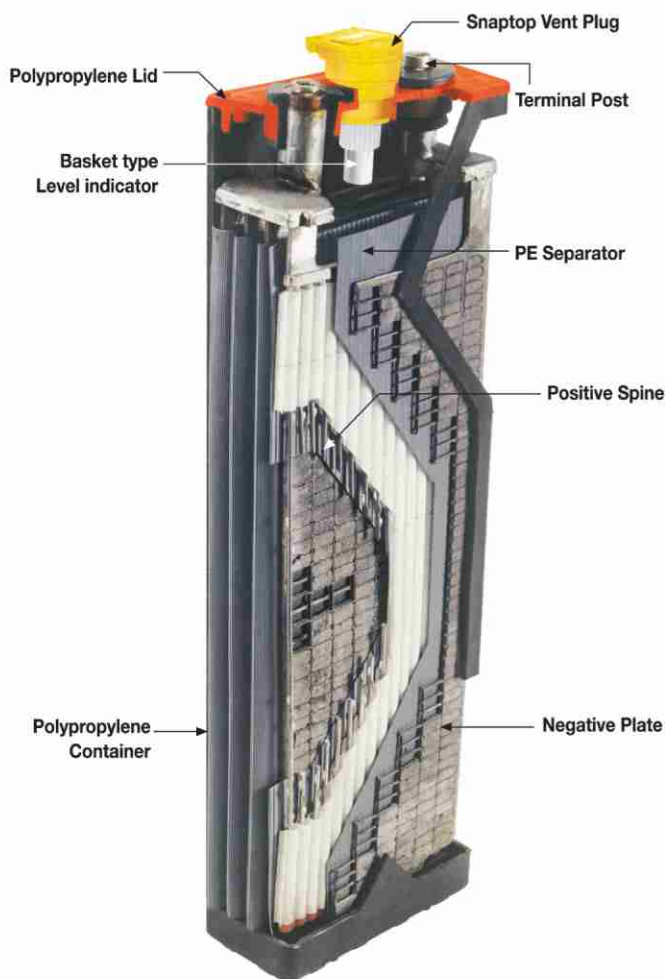
The special liner material within the battery trays provide improved insulation and act as shock absorbers. This ensures tight fitment of individual cells in the battery tray.

Polypropylene Construction

Both cell-box and lid are made of impact resistant polypropylene which are able to withstand shock and abuse during service. Polypropylene has both acid resistant and good insulation properties.

Special Polyethylene Separators

Flexible Polyethylene separators are made into envelopes preventing possibility of side short circuits. These separators have low electrical resistance, smaller pore size, higher volume porosity and very high compressive strength and thus help to extend the life of the battery.



View of Positive Plate



New Design Snaptop Vent Plug

The snaptop vent plug or the Flip Top Vent Plug saves time while filling and topping-up of cells. Basket-type level indicator also serves as separator guard.



High Grade Plastic Shrouds

High grade plastic shrouds on inter-cell connectors and terminal take-offs prevent accidental short-circuiting and provide protection from corrosion.

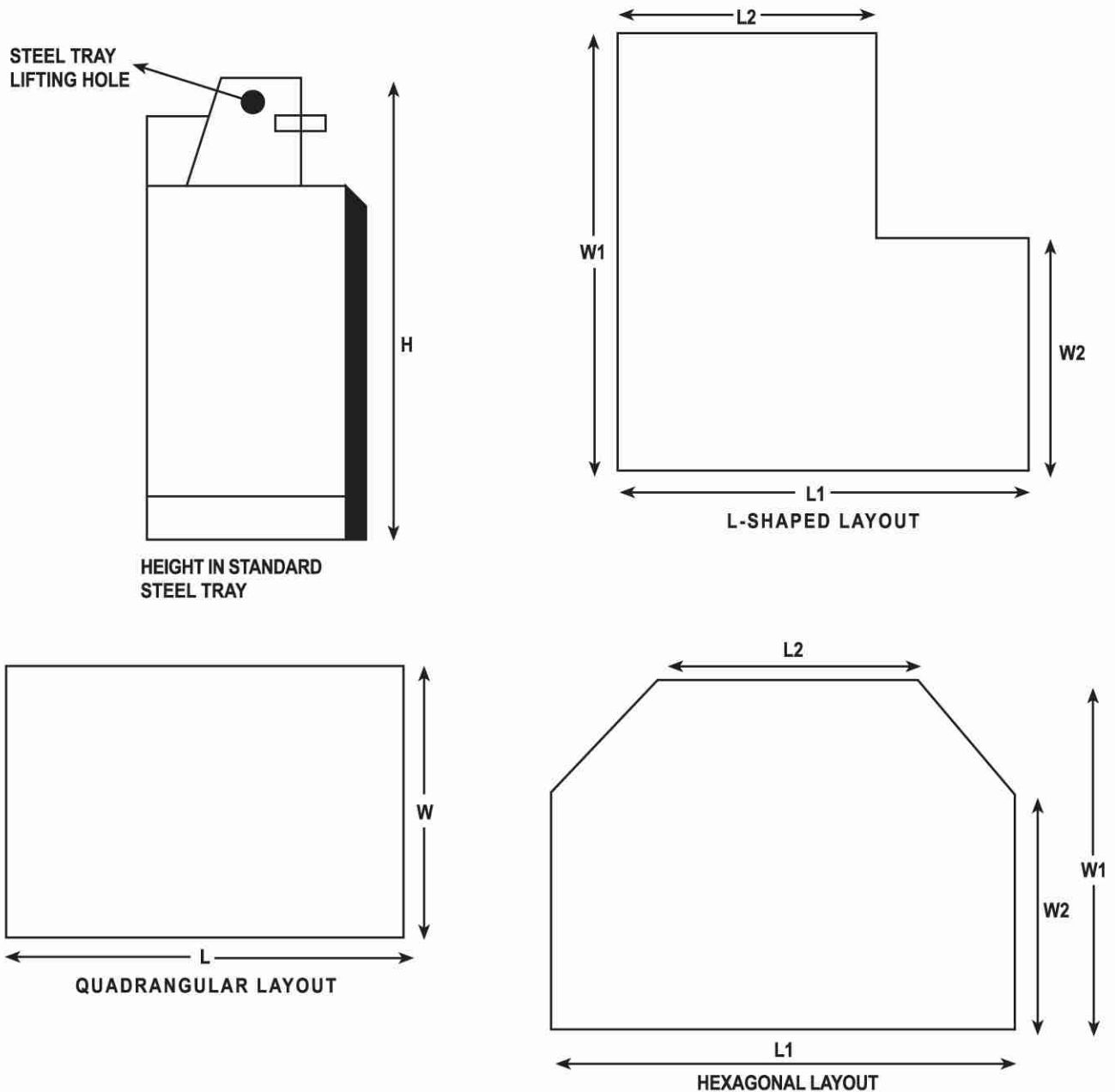
Selecting Your Battery

If Truck make & Model is known please refer to "Replacement Chart".

Otherwise please provide

1. Capacity of battery at 5 hour rate of discharge and battery voltage
2. Number of cells per battery
3. Clear inside dimensions of battery compartment
4. Overall maximum dimensions of existing / required battery. Please provide a handsketch of the battery
5. Terminal positions and cell layout
6. Detail on position of studs (if any)

Following is the schematic diagram of Traction batteries :



REPLACEMENT CHART 

BAKA

Sl. No.	Truck Model	Battery Type	Volts	Rating	Max. Overall Dimensions (mm) Tolerance = +3 mm, - 3 mm		
					Length	Width	Height
1	EGV Stacker	12 EXWCF 7	24V	270 Ah	792	220	570
2	EGU Pallet	12 EXTHF 7	24V	225 Ah	723	220	560

FTS / FTE

1	Power Pallet Truck (1.0, 1.5 & 2.0 MT)	12 EXTLF 7	24V	195 Ah	723	221	533
2	Power Pallet Truck (3.0 & 4.0 MT)	12 EXTHF 7	24V	225 Ah	723	221	533
3	Stacking Truck (1.0 MT & 1.25 MT)	12 EXIMF 13	24V	252 Ah	699	335	440
4	Pedestrian Electric Fork Trucks (0.5, 0.75 & 1.0 MT)	12 EXIMF 13	24V	252 Ah	518	468	392
5	Rider Electric Fork Lift Truck - 1 MT	24 EXIMF 17	48V	336 Ah	902	718	518
6	Rider Electric Fork Lift Truck - 1.5 MT	24 EXILF 17	48V	440 Ah	902	718	518
7	Rider Electric Fork Lift Truck - 2 MT	24 EXTLF 17	48V	520 Ah	902	718	518
8	Rider Electric Fork Lift Truck - 2.5 MT	36 EXIMF 17	72V	336 Ah	1022	914	637
9	Rider Electric Fork Lift Truck - 3 MT	36 EXILF 17	72V	440 Ah	1022	914	637
10	Rider Electric Platform Truck - 2 MT	18 EXIMF 11	36V	210 Ah	1022	914	637
11	Rider Electric Platform Truck - 3 MT	18 EXIMF 17	36V	336 Ah	1000	474	400
12	Rider Electric Platform Truck - 4 MT	24 EXIMF 17	48V	336 Ah	902	718	518

GODREJ

1	G050E / G075E	18 EXIMF 17	36V	336 Ah	L1 : 830 L2 : 500	W1 : 630 W2 : 470	400
2	G075E / G100E (S)	18 EXILF 17	36V	440 Ah	L1 : 830 L2 : 500	W1 : 630 W2 : 470	495
3	G100E(S)	18 EXTLF 17	36V	520 Ah	L1 : 830 L2 : 500	W1 : 630 W2 : 470	533
4	G100E (L)	18 EXTLF 17	36V	520 Ah	825	611	537
5	G150E	18 EXTLF 17	36V	520 Ah	990	475	540
6	G200E	18 EXILF 25	36V	660 Ah	990	675	533
7	EC40	18 EXTLF 25	36V	780 Ah	860	827	534
8	EC40	18 EXTLF 25	36V	780 Ah	990	641	533
9	EC70 (3T)	36 EXTLF 17	72V	520 Ah	1000	892	533
10	GX150E / GX200E	24 EXTLF 17	48V	520 Ah	1020	700	570
11	Crown SC 1.6	24 EXWFF 9	48V	500 Ah	820	518	625
12	Crown ESR 1.4	24 EXWFF 7	48V	465 Ah	1220	280	790
13	Crown SC 1.25	24 EXWFF 7	48V	375 Ah	830	412	625
14	G150E 1.5 T	18 EXTLF 19	36V	585 Ah	1000	499	520
15	G200E2.0T / GX250E / GX300E	24 EXTLF 21	48V	650 Ah	1000	735	560
16	Crown WE2000	12 EXWFF 7	24V	375 Ah	820	215	625
17	G200E (Old)	18 EXTLF 23	36V	715 Ah	990	700	550

REPLACEMENT CHART 

JALDOOT

Sl. No.	Truck Model	Battery Type	Volts	Rating	Max. Overall Dimensions (mm) Tolerance = +3 mm, - 3 mm		
					Length	Width	Height
1	3 Wheeler Platform	15 EXILF 13	30V	330 Ah	856	355	504
2	3 Wheeler Platform	15 EXILF 9	30V	220 Ah	856	355	504
3	Pallet Truck	12 EXTHF 7	24V	225 Ah	723	221	600
4	Pallet Truck	12 EXTLF 7	24V	195 Ah	723	221	533
5	4 Wheeler Platform	18 EXIMF 17	36V	336 Ah	1000	467	395
6	Platform Truck (SFPT)	15 EXWBF 9 (2 containers)	30V	320 Ah	780	270	450

JOSTS

1	2T, 3-Wheeler Platform (Jumboelectric)	15 EXILF 9	30V	220 Ah	856	355	504
2	2T, 3-Wheeler Platform (Jumboelectric)	15 EXILF 13	30V	330 Ah	856	355	504
3	2T, 4-Wheeler Platform (Josts Truck)	18 EXIMF 17	36V	336 Ah	1000	474	400
4	PIGMY	2 x 6 EXILF 7	24V	165 Ah	402	178	475
5	Pallet Truck	12 EXTHF 7	24V	225 Ah	664	221	600
6	Stacker	12 EXWEF 7	24V	375 Ah	820	215	625

MACNEILL

1	Ranger 1010	24 EXIMF 17	48V	336 Ah	902	718	518
2	Ranger 1015	24 EXILF 17	48V	440 Ah	902	718	518
3	Ranger 1020	24 EXTLF 17 OR 24 EXTHF 17	48V	520 Ah	902	718	518
			48V	600 Ah	902	718	625
4	Ranger 1025	36 EXIMF 17 OR 36 EXILF 17	72V	336 Ah	1022	914	637
			72V	440 Ah	1022	914	637
5	Ranger 1030	36 EXILF 17 (with counter wt.) OR 36 EXTLF 17	72V	440 Ah	1022	914	637
			72V	520 Ah	1022	914	637
6	Transloader (TL-2140)	2 x 12 EXIMF 17	48V	336 Ah	965	345	450
7	Transloader (TL-2040)	24 EXIMF 17	48V	336 Ah	997	733	435
8	Towmaster (TM-2040)	24 EXXVF 13	48V	192 Ah	972	524	463
9	HI - STACK (HS-1010)	12 EXIMF 13	24V	252 Ah	518	468	392
10	HI-LIFT 1005 / HI - STACK 1110	12 EXIMF 13	24V	252 Ah	699	335	440
11	HI-LIFT 1008	12 EXIMF 13	24V	252 Ah	699	335	440
12	HI-LIFT 1008 (Tilting)	2 x 6 EXIMF 13	24V	252 Ah	363	338	400
13	Commuter	12 EXTLF 7	24V	195 Ah	723	221	533
14	Hi Reach	8 EXTHF 11/21	24V	750 Ah	L1 : 497 L2 : 271	W1 : 464 W2 : 287	838
15	R 5010	24 EXILF 11	48V	275 Ah	920	528	448
16	R 1020	24 EXTLF 21	48V	650 Ah	921	884	572
17	HDC 1.0	12 EXTHF 7	24V	225 Ah	723	220	600
18	HDC 1.25 / HDC 1.5	12 EXTHF 9	24V	300 Ah	660	260	592
19	HDC 1.75	12 EXILF 13	24V	330 Ah	696	340	480
20	HR 1015	12 EXWFF 11	24V	775 Ah	L1 : 497 L2 : 271	W1 : 464 W2 : 287	838
21	HDS 1.25	12 EXTHF 7	24V	225 Ah	723	220	600
22	HDS 1.5	12 EXTHF 9	24V	300 Ah	660	260	592

REPLACEMENT CHART 

MACRO TECH

Sl. No.	Truck Model	Battery Type	Volts	Rating	Max. Overall Dimensions (mm) Tolerance = +3 mm, - 3 mm		
					Length	Width	Height
1.	Battery Operated Pallet Truck (1 & 2 MT)	12 EXTLF 7	24V	195 Ah	723	221	533
2	Battery Operated Pallet Truck (3 MT)	12 EXTHF 7	24V	225 Ah	723	220	600
3	Battery Operated Stacker	12 EXIMF 13	24V	252 Ah	518	468	392
4	Fork Lift Truck - 1 MT (MT 1010)	24 EXIMF 17	48V	336 Ah	902	718	518
5	Fork Lift Truck - 1.5 MT (MT 1015)	24 EXILF 17	48V	440 Ah	902	718	518
6	Fork Lift Truck - 2 MT (MT 1020)	24 EXTLF 17	48V	520 Ah	902	718	518
7	Straddle Type Stacking Truck	12 EXIMF 13	24V	252 Ah	699	335	600

MAINI

1	SE5 / EPT	2x6 EXXVF 15	24V	224 Ah	510	275	330
2	Stacker	2x6 EXTLF 7	24V	195 Ah	428	175	520
3	Tow Tractors (Old)	12 EXTHF 13	24V	450 Ah	680	330	590
4	SE50T (Old)	12 EXWAF 9	24V	240 Ah	620	365	400
5	SL22SPL (Old)	12 EXTLF 7	24V	195 Ah	800	177	525
6	SPI6	2x6 EXWBF 5	24V	160 Ah	298	212	466
7	ST - 15 / SC - 18	12 EXWEF 7	24V	375 Ah	795	210	615
8	ST - 10	12 EXWEF 7	24V	375 Ah	795	210	615
9	ST - 10	12 EXWBF 7	24V	240 Ah	792	210	510
10	TGT - 20 / 50	24 EXWBF 7	48V	240 Ah	794	415	480

PUMA

1	PES	12 EXTLF 7	24V	195 Ah	800	177	525
2	PET	2x6 EXTLF 7	24V	195 Ah	428	175	520

SWARAJ

1	FB Fork Lift	24 EXTLF 21	48V	650 Ah	1000	825	580
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VOLTAS

1	1.5 Ton	18 EXTLF 21	36V	650 Ah	990	641	533
2	2.0 Ton	18 EXTLF 23	36V	715 Ah	990	641	533
3	2.0 Ton (Old)	18 EXTLF 25	36V	780 Ah	990	641	533
4	2.5 Ton (Old)	18 EXTHF 23	36V	825 Ah	990	665	575
5	2.5 Ton	18 EXTHF 25	36V	900 Ah	990	665	575
6	5 Ton	36 EXTHF 25	72V	900 Ah	1285	1000	600
7	2 Ton (New) / EVX 15 / EVX 20 / EVX 25	24 EXTLF 17	48V	520 Ah	902	718	518
8	2.5 Ton (New) / EVX 25 / EVX 30	24 EXTHF 17	48V	600 Ah	902	718	625
9	3 Ton / EVX 30	24 EXTHF 25	48V	900 Ah	990	865	600
10	BT Truck	24 EXWFF 9	48V	620 Ah	1208	579	905

Extra Capacity, Extra Life

BS Range of Cells (158mm wide)

Type of Cell	Ah @ C5 at 30°C	Length (mm) +/-2mm	Width (mm) +/-2mm	Overall Height (mm) +/-5mm	Height upto lid top (mm) +/-5mm	Dry Weight (Kg.) +/-5%	Acid Volume (Ltr.)	Filled Weight (Kg.) +/-5%	Charging Current				
									Taper Charging-Single Step Charger at 2.1 vpc		Equalising Rate (Amps.)	Constant Current Charging rate (Amps.)	
									Taper 2:1 (Amps.)	Taper 1.7:1 (Amps.)			at 2.5 vpc (Amps.)
EXXVF5	64	47	158	294	264	4.3	1.0	5.5	8.0	7.2	4.8	1.9	3.8
EXXVF7	96	61	158	294	264	5.9	1.3	7.6	12.0	10.8	7.2	2.9	5.8
EXXVF9	128	77	158	294	264	7.5	1.7	9.8	16.0	14.4	9.6	3.8	7.7
EXXVF11	160	93	158	294	264	9.2	2.1	11.8	20.0	18.0	12.0	4.8	9.6
EXXVF13	192	109	158	294	264	10.8	2.5	14.0	24.0	21.6	14.4	5.8	11.5
EXXVF15	224	125	158	294	264	12.5	2.8	16.1	28.0	25.2	16.8	6.7	13.4
EXXVF17	256	141	158	294	264	14.1	3.2	18.3	32.0	28.8	19.2	7.7	15.4
EXXVF19	288	157	158	294	264	16.4	3.6	21.0	36.0	32.4	21.6	8.6	17.3
EXXVF21	320	173	158	294	264	18.0	4.0	23.1	40.0	36.0	24.0	9.6	19.2
EXXVF23	352	189	158	294	264	19.7	4.4	25.3	44.0	39.6	26.4	10.6	21.1
EXXVF25	384	205	158	294	264	21.3	4.7	27.4	48.0	43.2	28.8	11.5	23.0
EXXVF27	416	221	158	294	264	22.9	5.1	29.5	52.0	46.8	31.2	12.5	25.0
EXIMF5	84	47	158	353	323	5.3	1.3	6.9	10.5	9.5	6.3	2.5	5.0
EXIMF7	126	61	158	353	323	7.4	1.8	9.7	15.8	14.2	9.5	3.8	7.6
EXIMF9	168	77	158	353	323	9.5	2.3	12.5	21.0	18.9	12.6	5.0	10.1
EXIMF11	210	93	158	353	323	11.6	2.8	15.2	26.3	23.6	15.8	6.3	12.6
EXIMF13	252	109	158	353	323	13.7	3.3	18.0	31.5	28.4	18.9	7.6	15.1
EXIMF15	294	125	158	353	323	15.8	3.8	20.7	36.8	33.1	22.1	8.8	17.6
EXIMF17	336	141	158	353	323	18.0	4.3	23.6	42.0	37.8	25.2	10.1	20.2
EXIMF19	378	157	158	353	323	20.7	4.8	26.9	47.3	42.5	28.4	11.3	22.7
EXIMF21	420	173	158	353	323	22.8	5.3	29.7	52.5	47.3	31.5	12.6	25.2
EXIMF23	462	189	158	353	323	24.9	5.8	32.4	57.8	52.0	34.7	13.9	27.7
EXIMF25	504	205	158	353	323	27.0	6.3	35.3	63.0	56.7	37.8	15.1	30.2
EXIMF27	546	221	158	353	323	29.1	6.8	37.9	68.3	61.4	41.0	16.4	32.8
EXILF5	110	47	158	430	400	6.4	1.6	8.4	13.8	12.4	8.3	3.3	6.6
EXILF7	165	61	158	430	400	9.0	2.2	11.8	20.6	18.6	12.4	5.0	9.9
EXILF9	220	77	158	430	400	11.6	2.8	15.3	27.5	24.8	16.5	6.6	13.2
EXILF11	275	93	158	430	400	14.5	3.4	18.8	34.4	30.9	20.6	8.3	16.5
EXILF13	330	109	158	430	400	17.1	4.0	22.3	41.3	37.1	24.8	9.9	19.8
EXILF15	385	125	158	430	400	19.8	4.6	25.7	48.1	43.3	28.9	11.6	23.1
EXILF17	440	141	158	430	400	22.5	5.3	29.3	55.0	49.5	33.0	13.2	26.4
EXILF19	495	157	158	430	400	25.7	5.9	33.3	61.9	55.7	37.1	14.9	29.7
EXILF21	550	173	158	430	400	28.3	6.5	36.7	68.8	61.9	41.3	16.5	33.0
EXILF23	605	189	158	430	400	31.1	7.1	40.3	75.6	68.1	45.4	18.2	36.3
EXILF25	660	205	158	430	400	33.7	7.7	43.7	82.5	74.3	49.5	19.8	39.6
EXILF27	715	221	158	430	400	36.4	8.3	47.1	89.4	80.4	53.6	21.5	42.9
EXTLF5	130	47	158	480	450	7.2	1.8	9.5	16.3	14.6	9.8	3.9	7.8
EXTLF7	195	61	158	480	450	10.2	2.4	13.4	24.4	21.9	14.6	5.9	11.7
EXTLF9	260	77	158	480	450	13.3	3.1	17.4	32.5	29.3	19.5	7.8	15.6
EXTLF11	325	93	158	480	450	16.4	3.7	21.2	40.6	36.6	24.4	9.8	19.5
EXTLF13	390	109	158	480	450	19.4	4.5	25.2	48.8	43.9	29.3	11.7	23.4
EXTLF15	455	125	158	480	450	22.5	5.1	29.1	56.9	51.2	34.1	13.7	27.3
EXTLF17	520	141	158	480	450	25.6	5.9	33.2	65.0	58.5	39.0	15.6	31.2
EXTLF19	585	157	158	480	450	29.2	6.5	37.7	73.1	65.8	43.9	17.6	35.1
EXTLF21	650	173	158	480	450	32.2	7.2	41.5	81.3	73.1	48.8	19.5	39.0
EXTLF23	715	189	158	480	450	35.4	7.9	45.6	89.4	80.4	53.6	21.5	42.9
EXTLF25	780	205	158	480	450	38.4	8.6	49.5	97.5	87.8	58.5	23.4	46.8
EXTLF27	845	221	158	480	450	41.5	9.2	53.4	105.6	95.1	63.4	25.4	50.7

Extra Capacity, Extra Life

BS Range of Cells (158mm wide) contd.

Type of Cell	Ah @ C5 at 30°C	Length (mm) +/-2mm	Width (mm) +/-2mm	Overall Height (mm) +/-5mm	Height upto lid top (mm) +/-5mm	Dry Weight (Kg.) +/-5%	Acid Volume (Ltr.)	Filled Weight (Kg.) +/-5%	Charging Current				
									Taper Charging-Single Step Charger			Equalising Rate (Amps.)	Constant Current Charging rate (Amps.)
									at 2.1 vpc		at 2.5 vpc		
									Taper 2:1 (Amps.)	Taper 1.7:1 (Amps.)	(Amps.)		
EXTHF5	150	47	158	539	509	8.2	2.0	10.7	18.8	16.9	11.3	4.5	9.0
EXTHF7	225	61	158	539	509	11.7	2.7	15.1	28.1	25.3	16.9	6.8	13.5
EXTHF9	300	77	158	539	509	15.1	3.5	19.7	37.5	33.8	22.5	9.0	18.0
EXTHF11	375	93	158	539	509	18.6	4.2	24.0	46.9	42.2	28.1	11.3	22.5
EXTHF13	450	109	158	539	509	22.0	5.0	28.5	56.3	50.6	33.8	13.5	27.0
EXTHF15	525	125	158	539	509	22.5	5.7	32.8	65.6	59.1	39.4	15.8	31.5
EXTHF17	600	141	158	539	509	29.0	6.5	37.5	75.0	67.5	45.0	18.0	36.0
EXTHF19	675	157	158	539	509	33.0	7.2	42.5	84.4	75.9	50.6	20.3	40.5
EXTHF21	750	173	158	539	509	36.4	8.0	46.7	93.8	84.4	56.3	22.5	45.0
EXTHF23	825	189	158	539	509	40.0	8.8	51.3	103.1	92.8	61.9	24.8	49.5
EXTHF25	900	205	158	539	509	43.4	9.5	55.7	112.5	101.3	67.5	27.0	54.0
EXTHF27	975	221	158	539	509	46.8	10.3	60.1	121.9	109.7	73.1	29.3	58.5
EXTOF5	172	47	158	597	567	8.8	2.2	11.7	21.5	19.4	12.9	5.2	10.3
EXTOF7	258	61	158	597	567	12.8	3.0	16.7	32.3	29.0	19.4	7.7	15.5
EXTOF9	344	77	158	597	567	16.7	3.9	21.7	43.0	38.7	25.8	10.3	20.6
EXTOF11	430	93	158	597	567	20.6	4.7	26.6	53.8	48.4	32.3	12.9	25.8
EXTOF13	516	109	158	597	567	24.5	5.6	31.7	64.5	58.1	38.7	15.5	31.0
EXTOF15	602	125	158	597	567	28.4	6.4	36.7	75.3	67.7	45.2	18.1	36.1
EXTOF17	688	141	158	597	567	32.4	7.3	41.9	86.0	77.4	51.6	20.6	41.3
EXTOF19	774	157	158	597	567	36.9	8.1	47.4	96.8	87.1	58.1	23.2	46.4
EXTOF21	860	173	158	597	567	40.7	9.0	52.3	107.5	96.8	64.5	25.8	51.6
EXTOF23	946	189	158	597	567	44.7	9.9	57.5	118.3	106.4	71.0	28.4	56.8
EXTOF25	1032	205	158	597	567	48.6	10.7	62.5	129.0	116.1	77.4	31.0	61.9
EXTOF27	1118	221	158	597	567	52.6	11.5	67.5	139.8	125.8	83.9	33.5	67.1
ELXTEF5	200	47	158	634	604	9.6	2.4	12.6	25.0	22.5	15.0	6.0	12.0
ELXTEF7	300	61	158	634	604	13.9	3.3	18.1	37.5	33.8	22.5	9.0	18.0
ELXTEF9	400	77	158	634	604	18.2	4.2	23.6	50.0	45.0	30.0	12.0	24.0
ELXTEF11	500	93	158	634	604	22.4	5.0	28.9	62.5	56.3	37.5	15.0	30.0
ELXTEF13	600	109	158	634	604	26.7	6.0	34.5	75.0	67.5	45.0	18.0	36.0
ELXTEF15	700	125	158	634	604	31.0	6.9	39.8	87.5	78.8	52.5	21.0	42.0
ELXTEF17	800	141	158	634	604	35.3	7.9	45.5	100.0	90.0	60.0	24.0	48.0
ELXTEF19	900	157	158	634	604	40.1	8.8	51.5	112.5	101.3	67.5	27.0	54.0
ELXTEF21	1000	173	158	634	604	44.3	9.7	56.8	125.0	112.5	75.0	30.0	60.0
ELXTEF23	1100	189	158	634	604	48.7	10.6	62.4	137.5	123.8	82.5	33.0	66.0
ELXTEF25	1200	205	158	634	604	52.9	11.5	67.8	150.0	135.0	90.0	36.0	72.0
ELXTEF27	1300	221	158	634	604	57.2	12.4	73.2	162.5	146.3	97.5	39.0	78.0
EXTEF5	216	47	158	708	678	10.7	2.6	14.1	27.0	24.3	16.2	6.5	13.0
EXTEF7	324	61	158	708	678	15.5	3.6	20.2	40.5	36.5	24.3	9.7	19.4
EXTEF9	432	77	158	708	678	20.3	4.7	26.3	54.0	48.6	32.4	13.0	25.9
EXTEF11	540	93	158	708	678	25.0	5.6	32.3	67.5	60.8	40.5	16.2	32.4
EXTEF13	648	109	158	708	678	29.8	6.7	38.4	81.0	72.9	48.6	19.4	38.9
EXTEF15	756	125	158	708	678	34.5	7.6	44.4	94.5	85.1	56.7	22.7	45.4
EXTEF17	864	141	158	708	678	39.4	8.8	50.7	108.0	97.2	64.8	25.9	51.8
EXTEF19	972	157	158	708	678	44.7	9.7	57.3	121.5	109.4	72.9	29.2	58.3
EXTEF21	1080	173	158	708	678	49.3	10.7	63.2	135.0	121.5	81.0	32.4	64.8
EXTEF23	1188	189	158	708	678	54.3	11.8	69.5	148.5	133.7	89.1	35.6	71.3
EXTEF25	1296	205	158	708	678	59.0	12.8	75.6	162.0	145.8	97.2	38.9	77.8
EXTEF27	1404	221	158	708	678	63.8	13.7	81.6	175.5	158.0	105.3	42.1	84.2

Extra Capacity, Extra Life

DIN Range of Cells (198mm wide)

Type of Cell	Ah @ C5 at 30°C	Length (mm) +/-2mm	Width (mm) +/-2mm	Overall Height (mm) +/-5mm	Height upto lid top (mm) +/-5mm	Dry Weight (Kg.) +/-5%	Acid Volume (Ltr.)	Filled Weight (Kg.) +/-5%	Charging Current				
									Taper Charging-Single Step Charger			Equalising Rate (Amps.)	Constant Current Charging rate (Amps.)
									at 2.1 vpc		at 2.5 vpc		
									Taper 2:1 (Amps.)	Taper 1.7:1 (Amps.)	(Amps.)		
ELXWAF5	100	47	198	309	279	5.6	1.2	7.1	12.5	11.3	7.5	3.0	6.0
ELXWAF7	150	65	198	309	279	8.0	1.9	10.4	18.8	16.9	11.3	4.5	9.0
ELXWAF9	200	83	198	309	279	10.3	2.5	13.5	25.0	22.5	15.0	6.0	12.0
ELXWAF11	250	101	198	309	279	12.7	3.0	16.6	31.3	28.1	18.8	7.5	15.0
ELXWAF13	300	119	198	309	279	15.0	3.7	19.8	37.5	33.8	22.5	9.0	18.0
ELXWAF15	350	137	198	309	279	17.4	4.3	22.8	43.8	39.4	26.3	10.5	21.0
ELXWAF17	400	155	198	309	279	19.8	4.9	26.0	50.0	45.0	30.0	12.0	24.0
ELXWAF19	450	173	198	309	279	22.1	5.5	29.2	56.3	50.6	33.8	13.5	27.0
ELXWAF21	500	191	198	309	279	24.5	6.1	32.3	62.5	56.3	37.5	15.0	30.0
EXWAF5	120	47	198	362	332	6.6	1.4	8.4	15.0	13.5	9.0	3.6	7.2
EXWAF7	180	65	198	362	332	9.5	2.2	12.3	22.5	20.3	13.5	5.4	10.8
EXWAF9	240	83	198	362	332	12.3	3.0	16.1	30.0	27.0	18.0	7.2	14.4
EXWAF11	300	101	198	362	332	15.1	3.6	19.8	37.5	33.8	22.5	9.0	18.0
EXWAF13	360	119	198	362	332	17.9	4.4	23.6	45.0	40.5	27.0	10.8	21.6
EXWAF15	420	137	198	362	332	20.8	5.1	27.3	52.5	47.3	31.5	12.6	25.2
EXWAF17	480	155	198	362	332	23.6	5.8	31.1	60.0	54.0	36.0	14.4	28.8
EXWAF19	540	173	198	362	332	26.4	6.6	35.0	67.5	60.8	40.5	16.2	32.4
EXWAF21	600	191	198	362	332	29.3	7.3	38.6	75.0	67.5	45.0	18.0	36.0
EXWBF5	160	47	198	430	400	8.8	1.7	11.0	20.0	18.0	12.0	4.8	9.6
EXWBF7	240	65	198	430	400	12.5	2.7	16.0	30.0	27.0	18.0	7.2	14.4
EXWBF9	320	83	198	430	400	16.2	3.6	20.8	40.0	36.0	24.0	9.6	19.2
EXWBF11	400	101	198	430	400	19.9	4.4	25.6	50.0	45.0	30.0	12.0	24.0
EXWBF13	480	119	198	430	400	23.6	5.4	30.5	60.0	54.0	36.0	14.4	28.8
EXWBF15	560	137	198	430	400	27.3	6.2	35.3	70.0	63.0	42.0	16.8	33.6
EXWBF17	640	155	198	430	400	31.0	7.1	40.1	80.0	72.0	48.0	19.2	38.4
EXWBF19	720	173	198	430	400	34.7	8.0	45.0	90.0	81.0	54.0	21.6	43.2
EXWBF21	800	191	198	430	400	38.4	8.8	49.8	100.0	90.0	60.0	24.0	48.0
EXWCF5	180	47	198	490	460	9.3	2.0	11.9	22.5	20.3	13.5	5.4	10.8
EXWCF7	270	65	198	490	460	13.5	3.1	17.6	33.8	30.4	20.3	8.1	16.2
EXWCF9	360	83	198	490	460	17.6	4.2	23.0	45.0	40.5	27.0	10.8	21.6
EXWCF11	450	101	198	490	460	21.8	5.1	28.4	56.3	50.6	33.8	13.5	27.0
EXWCF13	540	119	198	490	460	26.0	6.2	34.0	67.5	60.8	40.5	16.2	32.4
EXWCF15	630	137	198	490	460	30.1	7.2	39.4	78.8	70.9	47.3	18.9	37.8
EXWCF17	720	155	198	490	460	34.3	8.2	44.9	90.0	81.0	54.0	21.6	43.2
EXWCF19	810	173	198	490	460	38.4	9.3	50.4	101.3	91.1	60.8	24.3	48.6
EXWCF21	900	191	198	490	460	42.6	10.2	55.8	112.5	101.3	67.5	27.0	54.0
EHXWCF5	210	47	198	540	510	10.5	2.2	13.4	26.3	23.6	15.8	6.3	12.6
EHXWCF7	315	65	198	540	510	15.3	3.5	19.7	39.4	35.4	23.6	9.5	18.9
EHXWCF9	420	83	198	540	510	19.9	4.6	25.9	52.5	47.3	31.5	12.6	25.2
EHXWCF11	525	101	198	540	510	24.6	5.7	32.0	65.6	59.1	39.4	15.8	31.5
EHXWCF13	630	119	198	540	510	29.3	6.9	38.2	78.8	70.9	47.3	18.9	37.8
EHXWCF15	735	137	198	540	510	34.0	8.0	44.3	91.9	82.7	55.1	22.1	44.1
EHXWCF17	840	155	198	540	510	38.7	9.1	50.5	105.0	94.5	63.0	25.2	50.4
EHXWCF19	945	173	198	540	510	43.4	10.3	56.8	118.1	106.3	70.9	28.4	56.7
EHXWCF21	1050	191	198	540	510	48.1	11.4	62.9	131.3	118.1	78.8	31.5	63.0

Extra Capacity, Extra Life

DIN Range of Cells (198mm wide) contd.

Type of Cell	Ah @ C5 at 30°C	Length (mm) +/-2mm	Width (mm) +/-2mm	Overall Height (mm) +/-5mm	Height upto lid top (mm) +/-5mm	Dry Weight (Kg.) +/-5%	Acid Volume (Ltr.)	Filled Weight (Kg.) +/-5%	Charging Current				
									Taper Charging-Single Step Charger			Equalising Rate (Amps.)	Constant Current Charging rate (Amps.)
									at 2.1 vpc		at 2.5 vpc		
									Taper 2:1 (Amps.)	Taper 1.7:1 (Amps.)	(Amps.)		
ELXWEF5	230	47	198	565	535	11.1	2.3	14.1	28.8	25.9	17.3	6.9	13.8
ELXWEF7	345	65	198	565	535	16.1	3.7	20.9	43.1	38.8	25.9	10.4	20.7
ELXWEF9	460	83	198	565	535	21.1	4.9	27.4	57.5	51.8	34.5	13.8	27.6
ELXWEF11	575	101	198	565	535	26.1	6.0	33.8	71.9	64.7	43.1	17.3	34.5
ELXWEF13	690	119	198	565	535	31.0	7.3	40.4	86.3	77.6	51.8	20.7	41.4
ELXWEF15	805	137	198	565	535	36.0	8.4	46.8	100.6	90.6	60.4	24.2	48.3
ELXWEF17	920	155	198	565	535	41.0	9.6	53.4	115.0	103.5	69.0	27.6	55.2
ELXWEF19	1035	173	198	565	535	46.0	10.9	60.0	129.4	116.4	77.6	31.1	62.1
ELXWEF21	1150	191	198	565	535	51.0	12.0	66.4	143.8	129.4	86.3	34.5	69.0
EXWEF5	250	47	198	601	571	11.9	2.5	15.1	31.3	28.1	18.8	7.5	15.0
EXWEF7	375	65	198	601	571	17.3	3.9	22.4	46.9	42.2	28.1	11.3	22.5
EXWEF9	500	83	198	601	571	22.7	5.2	29.4	62.5	56.3	37.5	15.0	30.0
EXWEF11	625	101	198	601	571	28.0	6.4	36.2	78.1	70.3	46.9	18.8	37.5
EXWEF13	750	119	198	601	571	33.4	7.8	43.4	93.8	84.4	56.3	22.5	45.0
EXWEF15	875	137	198	601	571	38.7	9.0	50.3	109.4	98.4	65.6	26.3	52.5
EXWEF17	1000	155	198	601	571	44.1	10.3	57.3	125.0	112.5	75.0	30.0	60.0
EXWEF19	1125	173	198	601	571	49.4	11.6	64.4	140.6	126.6	84.4	33.8	67.5
EXWEF21	1250	191	198	601	571	54.8	12.8	71.3	156.3	140.6	93.8	37.5	75.0
ELXWFF5	280	47	198	715	685	13.8	3.0	17.7	35.0	31.5	21.0	8.4	16.8
ELXWFF7	420	65	198	715	685	20.2	4.7	26.2	52.5	47.3	31.5	12.6	25.2
ELXWFF9	560	83	198	715	685	26.4	6.3	34.5	70.0	63.0	42.0	16.8	33.6
ELXWFF11	700	101	198	715	685	32.7	7.7	42.6	87.5	78.8	52.5	21.0	42.0
ELXWFF13	840	119	198	715	685	38.9	9.3	51.0	105.0	94.5	63.0	25.2	50.4
ELXWFF15	980	137	198	715	685	45.2	10.8	59.1	122.5	110.3	73.5	29.4	58.8
ELXWFF17	1120	155	198	715	685	51.5	12.3	67.4	140.0	126.0	84.0	33.6	67.2
ELXWFF19	1260	173	198	715	685	57.8	14.0	75.8	157.5	141.8	94.5	37.8	75.6
ELXWFF21	1400	191	198	715	685	64.1	15.4	83.9	175.0	157.5	105.0	42.0	84.0
EXWFF5	310	47	198	742	712	14.8	3.2	18.9	38.8	34.9	23.3	9.3	18.6
EXWFF7	465	65	198	742	712	21.5	4.9	27.8	58.1	52.3	34.9	14.0	27.9
EXWFF9	620	83	198	742	712	28.0	6.5	36.5	77.5	69.8	46.5	18.6	37.2
EXWFF11	775	101	198	742	712	34.6	8.1	45.0	96.9	87.2	58.1	23.3	46.5
EXWFF13	930	119	198	742	712	41.1	9.8	53.8	116.3	104.6	69.8	27.9	55.8
EXWFF15	1085	137	198	742	712	47.7	11.3	62.3	135.6	122.1	81.4	32.6	65.1
EXWFF17	1240	155	198	742	712	54.3	12.9	71.0	155.0	139.5	93.0	37.2	74.4
EXWFF19	1395	173	198	742	712	60.9	14.6	79.8	174.4	156.9	104.6	41.9	83.7
EXWFF21	1550	191	198	742	712	67.5	16.1	88.3	193.8	174.4	116.3	46.5	93.0

Extra Capacity, Extra Life

NEW CELL TYPES

Cell type	Ah @ C5 at 30 deg. C	Length (+/-2 mm)	Dry weight (kg.) +/-5%	Acid volume (ltr.)	Filled weight (kg.) +/-5%	
Positive plate capacity 140 Ah						
WELD-ON Type: Overall Height 715 +/-5 mm. Height upto Lid Top 685 +/-5 mm						
BOLT-ON Type: Overall Height 713.5 +/-5 mm. Height upto Lid Top 683.5 +/-5 mm						
2 IPzS 280	SLXWFF5	280	47	12.9	3	16.8
3 IPzS 420	SLXWFF7	420	65	18.7	4.7	24.7
4 IPzS 560	SLXWFF9	560	83	24.5	6.3	32.6
5 IPzS 700	SLXWFF11	700	101	30.2	7.7	40.1
6 IPzS 840	SLXWFF13	840	119	36	9.3	48.0
7 IPzS 980	SLXWFF15	980	137	41.7	10.8	55.6
8 IPzS 1120	SLXWFF17	1120	155	47.5	12.3	63.3
9 IPzS 1260	SLXWFF19	1260	173	53.2	14	71.2
10 IPzS 1400	SLXWFF21	1400	191	59	15.4	78.8

Cell type	Ah @ C5 at 30 deg. C	Length (+/-2 mm)	Dry weight (kg.) +/-5%	Acid volume (ltr.)	Filled weight (kg.) +/-5%	
Positive plate capacity 55 Ah						
WELD-ON Type: Overall Height 431 +/-5 mm. Height upto Lid Top 401 +/-5 mm						
BOLT-ON Type: Overall Height 429.5 +/-5 mm. Height upto Lid Top 399.5 +/-5 mm						
2 IPzB 110	SXILF5	110	45	5.6	1.6	7.7
3 IPzB 165	SXILF7	165	61	7.9	2.2	10.7
4 IPzB 220	SXILF9	220	77	10.2	2.8	13.8
5 IPzB 275	SXILF11	275	93	12.5	3.4	16.9
6 IPzB 330	SXILF13	330	109	14.7	4	19.8
7 IPzB 385	SXILF15	385	125	17.0	4.6	22.9
8 IPzB 440	SXILF17	440	141	19.2	5.3	26.0
9 IPzB 495	SXILF19	495	157	21.5	5.9	29.1
10 IPzB 550	SXILF21	550	173	23.6	6.5	32.0
11 IPzB 605	SXILF23	605	189	26.0	7.1	35.2
12 IPzB 660	SXILF25 (D)	660	205	29.0	7.7	38.9
13 IPzB 715	SXILF27 (D)	715	221	31.3	8.3	42.0

Cell type	Ah @ C5 at 30 deg. C	Length (+/-2 mm)	Dry weight (kg.) +/-5%	Acid volume (ltr.)	Filled weight (kg.) +/-5%	
Positive plate capacity 65 Ah						
WELD-ON Type: Overall Height 480 +/-5 mm. Height upto Lid Top 450 +/-5 mm						
BOLT-ON Type: Overall Height 478.5 +/-5 mm. Height upto Lid Top 448.5 +/-5 mm						
2 IPzB 130	SXTLF5	130	45	6.3	1.8	8.6
3 IPzB 195	SXTLF7	195	61	9	2.4	12.1
4 IPzB 260	SXTLF9	260	77	11.6	3.1	15.6
5 IPzB 325	SXTLF11	325	93	14.2	3.7	19.0
6 IPzB 390	SXTLF13	390	109	16.7	4.5	22.5
7 IPzB 455	SXTLF15	455	125	19.3	5.1	25.9
8 IPzB 520	SXTLF17	520	141	22	5.9	29.6
9 IPzB 585	SXTLF19	585	157	24.5	6.5	32.9
10 IPzB 650	SXTLF21	650	173	26.9	7.2	36.2
11 IPzB 715	SXTLF23	715	189	29.6	7.9	39.8
12 IPzB 780	SXTLF25 (D)	780	205	33	8.6	44.1
13 IPzB 845	SXTLF27 (D)	845	221	35.6	9.2	47.4

Applications

EXIDE GenX range of Traction batteries are most suitable for the following applications :

ELECTRIC FORK-LIFT TRUCKS

EXIDE GenX batteries are the best choice for all major Electric Fork Lift Truck manufacturers in India – Godrej, Macneill, Maini, Josts, Voltas, Jaldoot and others. The recommended Replacement Charts indicate relevant details pertaining to fitment of batteries in the commonly used trucks. Exide Traction batteries are also suitable for fitment to imported trucks like Komatsu, Yale, Still, Linde, Crown, Jungheinrich and other makes.



NAVAL APPLICATIONS

EXIDE GenX batteries are also suitable for various applications in ships like corvettes, towing tugs etc. These batteries are assembled in wooden trays.



MINING LOCOMOTIVES

EXIDE GenX batteries are the best choice for providing propulsion power in Mining Locomotives – Ventra, Gem, Clayton, Sig & Skoda used in underground mines of coal, copper, manganese, zinc, gold and other metals. The battery voltages range from 60 volts to 120 volts and the batteries are assembled in several trays as per make of locomotives.



ELECTRIC VEHICLES

Higher energy density of **EXIDE GenX** batteries make these most suitable for Electric vehicles and ensure longer run per charge.

EXIDE Autofil System

Topping up of large number of cells manually is difficult and time consuming. It also causes spillage of water and acid and spoils environment. Exide Autofil System is an intelligent and efficient alternative where replenishment of water is done automatically without manual intervention.

Unique Features

- Can sense the electrolyte level of each cell in a battery bank and top it up accurately
- Requires no manual intervention
- Easy to install
- Operates under gravity and no electricity / other auxiliaries are involved

EXIDE Autofil Operation

Through a process of gravity the water flows out from the PVC tank, through a tap and a nozzle connected by a 10 mm diameter polythene pipe.

The water first passes through a flow indicator. The rotating fins indicate unidirectional flow of water which basically indicates that the battery topping up is on.

The filter cartridge in the system filters out all contamination in the water, thereby bringing the water up to the specified grade for topping up.

The 10mm inlet pipe now bifurcates into two 6mm sub pipes, through which water is distributed as per exact requirement. Water flows sequentially through the rows of cells. The sequence is generally applicable whether the battery is 24, 36, 48 volts or higher. The 6mm pipe terminates at the end pit to avert spillage.

Why Autofil ?

1. It prevents "Under-watering"

Water is lost from the electrolyte primarily through evaporation and electrolysis (gassing) during charging. Due to this water loss there is a chance of the plate being exposed to air, which in turn over a period of time shall lead to hard sulphate formation on the plate, reducing life and capacity.

Autofil ensures accurate and timely topping up with no "Under-watering".

2. It ensures no "Over-watering"

When a battery is over filled, it leads to loss of electrolyte because of over flow and also, dilution of electrolyte which may develop a leakage path between connectors and ground and messy battery top.

Only Autofil ensures accurate topping up with no "Over-watering"

3. It uses only Battery Grade Water

Autofil prevents multiple sources of water input thus helping in maintaining the quality of topping up water.

Only Autofil ensures 100% Battery Grade Water.

Basic Precautions

- Use battery grade water as per IS : 1069
- Ensure that the filter is connected between the main connector and the vent plug
- When topping up is complete, remove the connector and fix the dust cap. This is to stop any possibility of contamination entering the system.

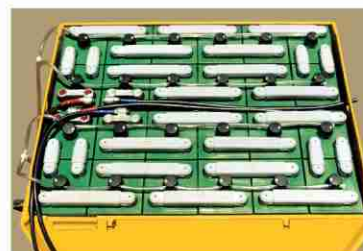
Components of Autofil System

- The Flow Indicator to show the direction of the water flow during topping up (Optional)
- Filter Cartridge for filtration of water (Optional)
- A float operated Autofil plug
- Hoses in transparent PVC
- Dust Cap (Optional)
- Hose Clamp to ensure 100% fitment of the hosepipe with the Autofil Cap. These block entry of air into the battery system
- Male Female Connector (Optional)



Advantages

- Generally one person is engaged for topping up of the cells in a battery bank. This person can be withdrawn and engaged elsewhere
- 100% absence of manual labour eliminates human error
- No chance of contamination



Autofil system with **EXIDE GenX** Traction Battery

- 20% increase in battery life
- Finally, the Autofil system makes a battery system totally maintenance free in terms of water topping up

Do's and Don'ts for **EXIDE GenX** Traction Battery

Do's

1. Check the electrolyte level before charging and top it up with proper battery grade water as per BIS specification no. 1069 up to maximum level of basket type level indicator or slightly above the separators. For quick and safe top up, use Exide Autofil System.
2. Match the battery to the correct charger and have it checked periodically to avoid improper charging.
3. Recharge the battery daily unless the battery has been lightly discharged through under-utilisation.
4. Give equalizing charge to the battery once in a week after normal charge.
5. Lift the battery compartment lid while charging, wherever possible, to assist ventilation and air-cooling.
6. Keep the battery top and tray clean and dry at all times.
7. Keep all intercell connections and bolted terminals tight and covered with a film of petroleum jelly.
8. Check the condition of charging plug, socket and cable to avoid damage of insulation and burning of contacts. Refurbish or replace as necessary.
9. Maintain regular reading of specific gravity, voltage and temperature of pilot cells in Record Book. Reading of all cells should be recorded once in a month.
10. For storage of batteries in dry and uncharged condition, plug all vent holes making them airtight.
11. For storage of batteries in charged condition, disconnect main cables connected to it and ensure that freshening charge is given to the battery once in a month.
12. Battery charging room should be well ventilated preferably with air exhaust system to prevent the battery from over heating.

Don'ts

1. Never leave the battery in a discharged state for more than a day.
2. **NEVER TOP UP THE CELLS WITH ACID.**
3. Do not maintain electrolyte level high above the separator level. This may cause the acid spill out during charging.
4. **Never use tap water for battery top up.** Impurities in tap water can shorten the life of a battery.
5. Never over charge the battery by recharging more frequently or longer periods than necessary to restore the capacity used. Over charging spoils the battery and shortens its life drastically.
6. **Avoid naked flames, sparks and smoking near a battery.**
7. Never use non-insulated tools while working on batteries. Do not wear wrist chains or loose metal bands. This is necessary to avoid any short circuit or sparks.
8. Never keep charged battery directly under sunlight or in any heated place.
9. Never use metal vessels or jug to store battery water or acid.
10. Never allow electrolyte temperature to exceed 50 C. The charging must be suspended if it is found to exceed 50 C

Most Important

- After charging, the battery should be allowed some time to cool down.
- Battery should not be kept in discharged condition.
- Use battery grade water only for topping up.

Initial Charging

Initial charging of all traction cells shall be done in Constant Current mode at currents indicated in the table with a minimum Ah input of 5 to 5.5 times of rated C5 capacity. Charging should be continued even after the minimum Ah has been delivered till three consecutive hourly readings of Voltage and specific Gravity are observed to be constant.

TRAC-MOBILE SERVICE VAN



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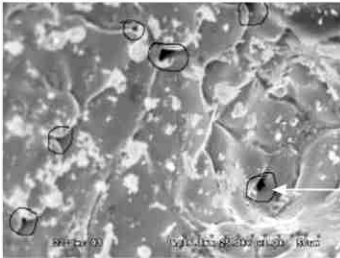
Extra Capacity, Extra Life



Tubular batteries are the most popular choice for Traction Batteries all over the world for its superior performance in frequent cycling applications. While all tubular batteries behave similarly in the beginning, the strength of their guts and their life, especially in heavy duties, is determined by the way their spines are cast.

There are three standard casting practices : 1. Gravity Casting 2. Low Pressure Casting 3. High Pressure Casting by "HADI" machine.

1. Gravity Casting (SEM Picture of plate)

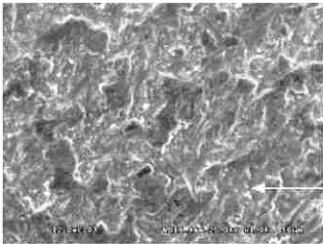


Exide Traction Batteries have the Torr Tubular spines or the positive plate support made by High Pressure Casting Process (100 Bar operating pressure) by imported "HADI" machine which can protect the lead plate support from anodic corrosion. The Scanning Electron Microscope (SEM) study reveals the weakness of the plate support made by other processes.

Big voids Non uniform micro hardness

Machine Cost : Rs. 50,000/-

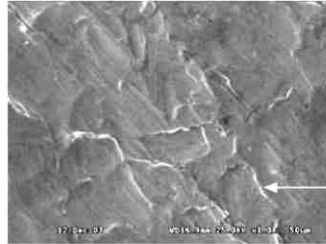
2. Low Pressure Casting (10 Bar) (SEM Picture of plate)



Small voids very low micro hardness

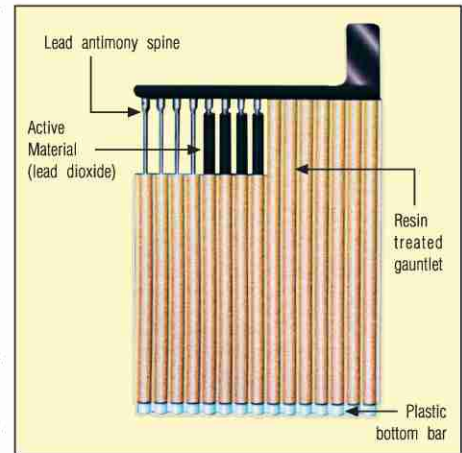
Machine Cost : Rs. 2 lakhs

3. High Pressure Casting (100 Bar) with "HADI" machine used by Exide (SEM Picture of plate)



No voids Uniform micro hardness

Machine Cost : Rs. 2.5 crores



Tubular Plate and its various components



100 Bar High Pressure Die casting machine from HADI GMBH, Austria costing Rs. 2.5 crores

Both the low pressure casting and the gravity casting which is used for flat plate manufacturing process show inconsistency in the grain orientation which can lead to failure by the process known as creep which happens when the plate grows in the charging cycle. Moreover these two casting processes generate casting with open pores. The corrosion process penetrates in the cross section of the plate and leads to far early failure compared to situation where the corrosion is limited to the surface.

Product Comparison by Scanning Electron Microscope Study**

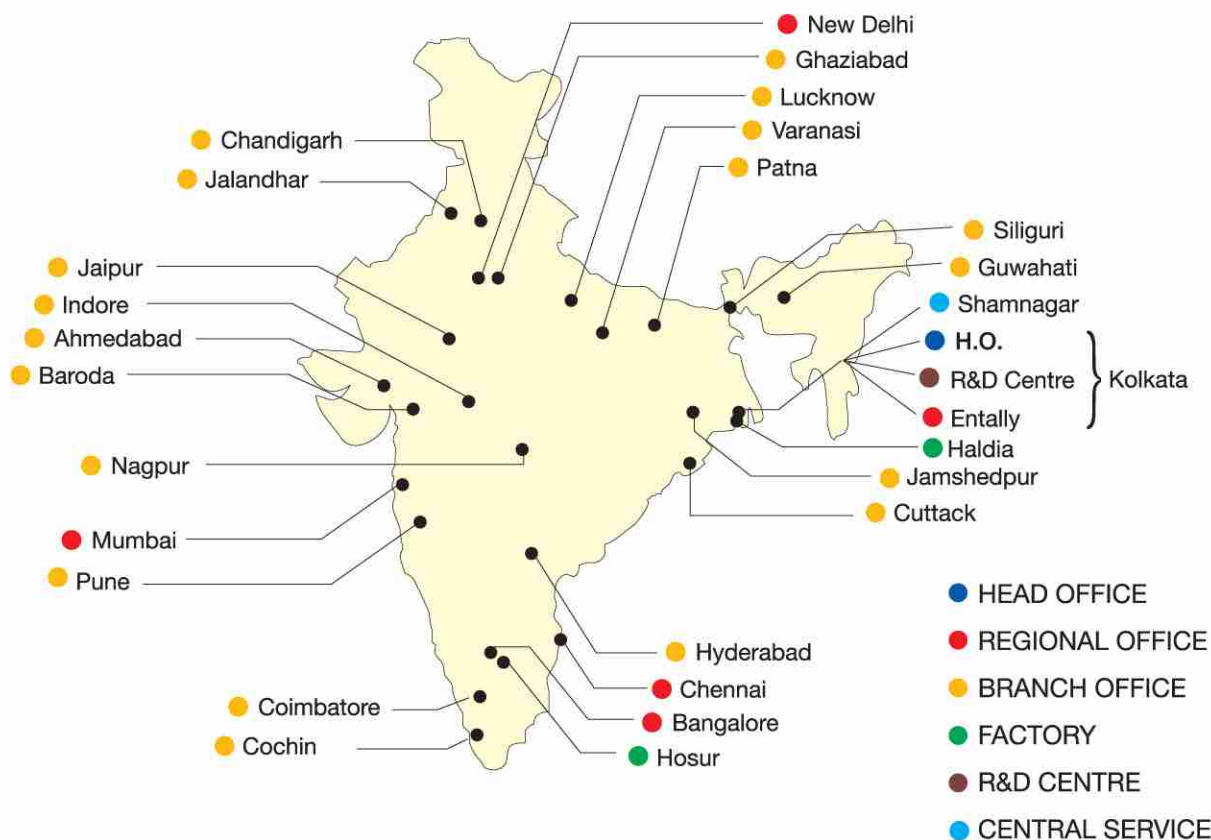
Properties	Gravity	Low Pressure (10 Bar)	High Pressure Casting (100 Bar) with HADI machine used by Exide
Micro hardness (Vicker hardness HV)	Micro hardness is very low compared to the other two types varying from 17.5 to 18.2	Micro hardness is not uniform varying from 21.5 to 28.4	Uniform micro hardness of 24.3 throughout the sample
Grain size	Inconsistent grain size	Combination of coarse and fine	Consistent
Grain orientation	Random orientation	Random orientation	Grains are oriented in single direction
Surface condition	Voids are seen and bigger than low pressure casting	Voids are seen (Small black spots)	No voids

TORR TUBULAR means longer life. **TORR TUBULAR** means higher reliability.

**Basis CECRI Report

*Applied for

NETWORK



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