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#### Head Office:

Industrial Battery and Charger Services Ltd Unit 2 Eden Close Hellaby Industrial Estate | Rotherham | South Yorkshire | S66 8RW

# The Intelligent Choice TO KEEP YOUR BUSINESS MOVING

APPLICATIONS: FORKLIFTS | CLEANING MACHINES | ACCESS PLATFORMS | ELECTRIC TOW TRACTORS | ELECTRIC VEHICLES

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# **Traction Batteries** and Cells



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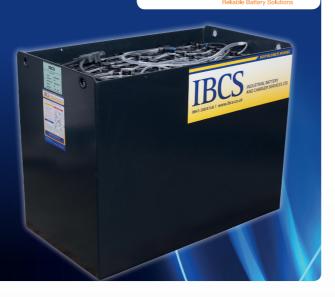
Established in 1984 Industrial Battery and Charger Services Ltd (IBCS) is one of the largest independent specialist battery and charger companies in the UK. With over 30 years experience we provide a rapid and dependable sales and service facility for all users of batteries and chargers within the TRACTION and STANDBY POWER industry.

**One of the fastest growing companies** in our field of work we have become the sensible option to support your business. Our brands include **Sunlight, Eternity** and **GNB.** Applications range from simple cleaning machines to submarine.

#### SUNLIGHT BATTERIES

Available in a wide range of capacity and size options the batteries meet international DIN and BS standards.

Fully integrated state of the art manufacturing processes which start with the production of lead oxide and red lead (100%) at Sunlight's industrial facilities, pass through fully automated production facilities including the use of cast on straps and finish with the activation of the cells through a modern jar formation facility. This ensures a value added product with high energy density, performance and durability.



SUNLIGHT

SS ETERNITY®

#### **ETERNITY TECHNOLOGY BATTERIES**



Although Eternity Technologies is the newest and most vibrant Motive Power battery company in the world it derives its heritage from over 100 years of developments in lead acid battery technology.

This know how has designed and built the most modern and up to date Motive Power manufacturing facility in the world. Eternity specialise in the manufacture and supply of industry leading high performance Tubular Technology Motive Power cells. Utilising the latest manufacturing techniques in plate making, cell assembly and formation which when combined with the best design, to deliver the high quality and performance demanded by the Materials Handling market as well as other Motive Power applications.

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## CELLS

#### **BOTTOM BAR** 5

#### Ultrasonic welding

- ✓ More secure fitment with gauntlet
- cavity is easily accommodated
- Retains active material on the spines

#### POSITIVE PLATE

- Tubular plate design
- Alloy with optimised Sb
- (antimony) concentration
- Red Lead in-house production by Pure Lead 99.99% Dry Filling with Red Lead
- Increased gauntlet diameter
- Stable cycling performance and longer service life
- Lower water consumption, lower temperature increase, high and stable final charging voltage, less corrosion
- 100% of nominal capacity in the first 3-5 cycles
- Increased capacity

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#### NEGATIVE PLATE

- Pasted lead grid & advanced Negative Active Mass (NAM) composition Alloy with optimised Sb (antimony)
- concentration
- Stable cycling performance Lower water consumption

#### SEPARATOR

- Polyethylene roll separator with high porosity grade material envelopes the positive plates
- Electrical resistance improved by up to 20% over conventional separators
- High porosity enables superior battery capacity
- Acid displacement decreased by 15% resulting in higher capacity
- High oxidation resistance and high porosity ensures longer service life
- Short circuits avoided

#### GAUNTLET

- Reinforced non-woven polyester material with high fibres bonding and smaller pores size
- Better utilisation of active material
- Eliminates active mass shedding
- Reduces corrosion of spine
- (Longer service life

✓ Growth of positive spine into bottom bar's

#### **CELL CONTAINER**

- Polypropylene (PP) Lid welding, trimming and tightness control
- Boxes and lids are resistant and thermowelded to prevent electrolyte leakage

#### VENT PLUG 8

Electrolyte basket level marking, specially designed lid, anti-surge baffle

#### AUTOMATIC WATER FILLING PLUG

- The plug consists of a float and a shut-off valve, with white level indicator
- Ensures the optimum electrolyte level in the battery
- No need of removing plugs and topping up the cells manually
- Reduces excessive labour cost
- Eliminates the risk of direct contact with battery acid

#### POLE TERMINAL

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- Advanced design of pole post and its sealing to the lid. Rubber ring with optimised hardness and acid resistance
- ✓ Operational safety
- Perfect sealing
- Low maintenance requirements
- Better current conductivity
- Positive plates expansion is safely absorbed
- Prevention of top lid cracks and acid
- leakages

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#### POLE BRIDGE

- Terminal bridge manufactured with Cast
- Consistent and uniform pole bridge composition
- Increased robustness and durability
- Perfect connection for poles-bridge-plate block as a whole

SEDIMENT SPACE

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✓ Longer service life

Optimised height to prevent short circuits

# SUNLIGHT DIN STANDARD

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# SUNLIGHT BRITISH STANDARD

Cell Type	Length (b)	Width (I)	Height 1	Height 2	Weight	Cell Type	Length (b)	Width (I)	Height 1	Height 2	Weight	Cell Type	Length (b)	Width (I)	Height 1	Height 2	Weig
2PZS120	198	47	343	370	8.3	2PZS230	198	47	548	575	13.4	2PZB84	158	45	331	358	6.9
3PZS180	198	65	343	370	11.7	3PZS345	198	65	548	575	19.2	3PZB126	158	61	331	358	9.4
4PZS240	198	83	343	370	15.2	4PZS460	198	83	548	575	24.9	4PZB168	158	77	331	358	11.
5PZS300	198	101	343	370	18.8	5PZS575	198	101	548	575	30.7	5PZB210	158	93	331	358	14
6PZS360	198	119	343	370	22.4	6PZS690	198	119	548	575	36.4	6PZB252	158	109	331	358	17
7PZS420	198	137	343	370	26.0	7PZS805	198	137	548	575	42.1	7PZB294	158	125	331	358	19
8PZS480	198	155	343	370	29.6	8PZS920	198	155	548	575	48.0	8PZB336	158	141	331	358	22
9PZS540	198	174	343	370	33.2	9PZS1035	198	174	548	575	53.6						
10PZS600	198	192	343	370	36.8	10PZS1150	198	192	548	575	59.4						
Coll Turne	Longth (b)		Lleight 1	Lleight 2	Meight	Cell Turne	Longth (b)	Midth (I)	Lloight 1	Lloight 2	Weight	Coll Turno	Longth (b)	\A/idth /I\	Lloight 1		Mai
Cell Type	Length (b)	Width (I)	Height 1	Height 2	Weight	Cell Type	Length (b)	Width (I)	Height 1	Height 2	Weight	Cell Type	Length (b)	Width (I)	Height 1	Height 2	Wei
2PZS160	198	47	408	435	9.7	2PZS250	198	47	568	595	14.1	2PZB110	158	45	401	428	8.4
3PZS240	198	65	408	435	13.8	3PZS375	198	65	568	595	20.2	3PZB165	158	61	401	428	11.
4PZS320	198	83	408	435	18.0	4PZS500	198	83	568	595	26.3	4PZB220	158	77	401	428	14
5PZS400	198	101	408	435	22.2	5PZS625	198	101	568	595	32.5	5PZB275	158	93	401	428	17
6PZS480	198	119	408	435	26.4	6PZS750	198	119	568	595	38.6	6PZB330	158	109	401	428	20
7PZS560	198	137	408	435	30.6	7PZS875	198	137	568	595	44.7	7PZB385	158	125	401	428	24
8PZS640 9PZS720	198	155	408	435	34.9	8PZS1000	198	155	568	595	50.8	8PZB440	158	141	401	428	27
9PZ5720 10PZS800	198 198	174 192	408 408	435 435	39.2 43.5	9PZS1125 10PZS1250	198 198	174 192	568 568	595 595	57.0 63.2	9PZB495 10PZB550	158 158	157 173	401 401	428 428	30
10P23600	190	192	400	455	45.5	10PZ31230	190	192	000	292	05.2	10P2D550	100	175	401	420	33.
Cell Type	Length (b)	Width (I)	Height 1	Height 2	Weight	Cell Type	Length (b)	Width (I)	Height 1	Height 2	Weight	Cell Type	Length (b)	Width (I)	Height 1	Height 2	Weig
Cell Type 2PZS180	Length (b) 198	<b>Width (I)</b> 47	Height 1 478	Height 2 505	Weight 11.9	Cell Type 2PZS280	<b>Length (b)</b> 198	<b>Width (I)</b> 47	Height 1 688	Height 2 715	Weight 18.9	Cell Type 2PZB130	Length (b) 158	<b>Width (I)</b> 45	Height 1 457	Height 2 484	
			-	-						-							9.6
2PZS180	198	47	478	505	11.9	2PZS280	198	47	688	715	18.9	2PZB130	158	45	457	484	9.0 13.
2PZS180 3PZS270	198 198	47 65	478 478	505 505	11.9 16.7	2PZS280 3PZS420	198 198	47 65	688 688	715 715	18.9 26.0	2PZB130 3PZB195	158 158	45 61	457 457	484 484	9.0 13. 16.
2PZS180 3PZS270 4PZS360	198 198 198	47 65 83	478 478 478 478	505 505 505	11.9 16.7 21.3	2PZS280 3PZS420 4PZS560	198 198 198	47 65 83	688 688 688	715 715 715 715	18.9 26.0 33.1	2PZB130 3PZB195 4PZB260	158 158 158	45 61 77	457 457 457	484 484 484	9.0 13 16 20
2PZS180 3PZS270 4PZS360 5PZS450	198 198 198 198	47 65 83 101	478 478 478 478 478	505 505 505 505 505	11.9 16.7 21.3 26.0	2PZS280 3PZS420 4PZS560 5PZS700	198 198 198 198	47 65 83 101	688 688 688 688 688	715 715 715 715 715	18.9 26.0 33.1 40.2	2PZB130 3PZB195 4PZB260 5PZB325	158 158 158 158	45 61 77 93	457 457 457 457	484 484 484 484	9.6 13. 16. 20. 24.
2PZS180 3PZS270 4PZS360 5PZS450 6PZS540	198 198 198 198 198 198	47 65 83 101 119	478 478 478 478 478 478	505 505 505 505 505 505	11.9 16.7 21.3 26.0 30.7	2PZ5280 3PZ5420 4PZ5560 5PZ5700 6PZ5840	198 198 198 198 198	47 65 83 101 119	688 688 688 688 688 688	715 715 715 715 715 715	18.9 26.0 33.1 40.2 47.5	2PZB130 3PZB195 4PZB260 5PZB325 6PZB390	158 158 158 158 158	45 61 77 93 109	457 457 457 457 457	484 484 484 484 484	9.0 13 16 20 24 27
2PZ5180 3PZ5270 4PZ5360 5PZ5450 6PZ5540 7PZ5630	198 198 198 198 198 198 198	47 65 83 101 119 137	478 478 478 478 478 478 478 478	505 505 505 505 505 505 505	11.9 16.7 21.3 26.0 30.7 35.4	2PZ5280 3PZ5420 4PZ5560 5PZ5700 6PZ5840 7PZ5980 8PZ51120 9PZ51260	198 198 198 198 198 198 198	47 65 83 101 119 137	688 688 688 688 688 688 688 688	715 715 715 715 715 715 715 715	18.9 26.0 33.1 40.2 47.5 54.8	2PZB130 3PZB195 4PZB260 5PZB325 6PZB390 7PZB455	158 158 158 158 158 158 158	45 61 77 93 109 125	457 457 457 457 457 457 457	484 484 484 484 484 484 484	Weig 9.6 13. 16. 20. 24. 27. 31. 35.
2PZS180 3PZS270 4PZS360 5PZS450 6PZS540 7PZS630	198 198 198 198 198 198 198 198	47 65 83 101 119 137 155	478 478 478 478 478 478 478 478 478	505 505 505 505 505 505 505 505	11.9 16.7 21.3 26.0 30.7 35.4 40.1	2PZ5280 3PZ5420 4PZ5560 5PZ5700 6PZ5840 7PZ5980 8PZ51120	198 198 198 198 198 198 198 198	47 65 83 101 119 137 155	688 688 688 688 688 688 688 688 688	715 715 715 715 715 715 715 715 715	18.9 26.0 33.1 40.2 47.5 54.8 62.2	2PZB130 3PZB195 4PZB260 5PZB325 6PZB390 7PZB455 8PZB520	158 158 158 158 158 158 158 158	45 61 77 93 109 125 141	457 457 457 457 457 457 457 457	484 484 484 484 484 484 484 484	9.6 13. 16. 20. 24. 27. 31.
2PZS180 3PZS270 4PZS360 5PZS450 6PZS540 7PZS630 8PZS720 9PZS810	198 198 198 198 198 198 198 198 198	47 65 83 101 119 137 155 174	478 478 478 478 478 478 478 478 478 478	505 505 505 505 505 505 505 505 505	11.9 16.7 21.3 26.0 30.7 35.4 40.1 44.8	2PZ5280 3PZ5420 4PZ5560 5PZ5700 6PZ5840 7PZ5980 8PZ51120 9PZ51260	198 198 198 198 198 198 198 198 198	47 65 83 101 119 137 155 174	688 688 688 688 688 688 688 688 688 688	715 715 715 715 715 715 715 715 715 715	18.9 26.0 33.1 40.2 47.5 54.8 62.2 69.8	2PZB130 3PZB195 4PZB260 5PZB325 6PZB390 7PZB455 8PZB520 9PZB585	158 158 158 158 158 158 158 158 158	45 61 77 93 109 125 141 157	457 457 457 457 457 457 457 457 457	484 484 484 484 484 484 484 484 484 484	9.0 13 16 20 24 27 31 35 38
2PZS180 3PZS270 4PZS360 5PZS450 6PZS540 7PZ5630 8PZS720 9PZS810 10PZS900	198 198 198 198 198 198 198 198 198 198	47 65 83 101 119 137 155 174 192	478 478 478 478 478 478 478 478 478 478	505 505 505 505 505 505 505 505 505	11.9 16.7 21.3 26.0 30.7 35.4 40.1 44.8 49.6	2PZS280 3PZS420 4PZS560 5PZS700 6PZS840 7PZS980 8PZS1120 9PZS1260 10PZS1400	198 198 198 198 198 198 198 198 198 198	47 65 83 101 119 137 155 174 192	688 688 688 688 688 688 688 688 688 688	715 715 715 715 715 715 715 715 715 715	18.9 26.0 33.1 40.2 47.5 54.8 62.2 69.8 77.4	2PZB130 3PZB195 4PZB260 5PZB325 6PZB390 7PZB455 8PZB520 9PZB585 10PZB650	158 158 158 158 158 158 158 158 158 158	45 61 77 93 109 125 141 157 173	457 457 457 457 457 457 457 457 457 457	484 484 484 484 484 484 484 484 484 484	9.6 13. 16. 20. 24. 27. 31. 35.
2PZS180 3PZS270 4PZS360 5PZS450 6PZS540 3PZS630 9PZS810 10PZS900	198 198 198 198 198 198 198 198 198 198	47 65 83 101 119 137 155 174 192 Width (I)	478 478 478 478 478 478 478 478 478 478	505 505 505 505 505 505 505 505 505	11.9 16.7 21.3 26.0 30.7 35.4 40.1 44.8 49.6 Weight	2PZS280 3PZS420 4PZS560 5PZS700 6PZS840 7PZS980 8PZS1120 9PZS1260 10PZS1400	198 198 198 198 198 198 198 198 198 198	47 65 83 101 119 137 155 174 192 Width (I)	688 688 688 688 688 688 688 688 688 688	715 715 715 715 715 715 715 715 715 715	18.9 26.0 33.1 40.2 47.5 54.8 62.2 69.8 77.4 Weight	2PZB130 3PZB195 4PZB260 5PZB325 6PZB390 7PZB455 8PZB520 9PZB585 10PZB650 Cell Type	158 158 158 158 158 158 158 158 158 158	45 61 77 93 109 125 141 157 173 Width (I)	457 457 457 457 457 457 457 457 457 457	484 484 484 484 484 484 484 484 484 484	9.0 13 16 20 24 27 31 35 38 Wei 10
2PZS180 3PZS270 4PZS360 6PZS540 7PZS630 8PZS720 9PZS810 10PZS900	198 198 198 198 198 198 198 198 198 <b>Length (b)</b>	47 65 83 101 119 137 155 174 192 Width ()) 47	478 478 478 478 478 478 478 478 478 478	505 505 505 505 505 505 505 505 505 505	11.9 16.7 21.3 26.0 30.7 35.4 40.1 44.8 49.6 Weight 12.9	2PZ5280 3PZ5420 4PZ5500 5PZ5700 6PZ5840 7PZ5980 8PZ51120 9PZ51260 10PZ51400	198 198 198 198 198 198 198 198 198 <b>Length (b)</b>	47 65 83 101 119 137 155 174 192 Width (I) 47	688 688 688 688 688 688 688 688 688 688	715 715 715 715 715 715 715 715 715 715	18.9 26.0 33.1 40.2 47.5 54.8 62.2 69.8 77.4 Weight 19.1	2PZB130 3PZB195 4PZB260 5PZB325 6PZB320 7PZB455 8PZB520 9PZB580 10PZB650	158 158 158 158 158 158 158 158 158 158	45 61 77 93 109 125 141 157 173 Width (1)	457 457 457 457 457 457 457 457 457 457	484 484 484 484 484 484 484 484 484 484	9.6 13. 16. 20. 24. 27. 31. 35. 38. Wei
2PZ5180 3PZ5270 4PZ5360 6PZ540 7PZ5630 8PZ5720 9PZ5810 10PZ5900 <b>Cell Type</b> 2PZ5210 3PZ5315	198 198 198 198 198 198 198 198 198 <b>Length (b)</b> 198	47 65 83 101 119 137 155 174 192 Width () 47 65	478 478 478 478 478 478 478 478 478 478	505 505 505 505 505 505 505 505 505 Height 2 541	11.9 16.7 21.3 26.0 30.7 35.4 40.1 44.8 49.6 Weight 12.9 18.4	2PZ5280 3PZ5420 4PZ5560 5PZ5700 6PZ5840 7PZ5980 8PZ51120 9PZ51260 10PZ51400 <b>Cell Type</b> 2PZ5310 3PZ5465	198 198 198 198 198 198 198 198 198 <b>Length (b)</b> 198	47 65 83 101 119 137 155 174 192 Width (I) 47 65	<ul> <li>688</li> <li>713</li> <li>713</li> </ul>	715 715 715 715 715 715 715 715 715 715	18.9 26.0 33.1 40.2 47.5 54.8 62.2 69.8 77.4 Weight 19.1 26.5	2PZB130 3PZB195 4PZB260 5PZB325 6PZB390 7PZB455 8PZB520 9PZB585 0PZB585 0 9PZB585 2 9PZB52 7 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	158 158 158 158 158 158 158 158 158 158	45 61 77 93 109 125 141 157 173 Width (I) 45 61	457 457 457 457 457 457 457 457 457 457	484 484 484 484 484 484 484 484 484 484	9.0 13 16 20 24 27 31 35 38 Wei 10 14 19
<ul> <li>2PZS180</li> <li>3PZS270</li> <li>4PZS360</li> <li>6PZS450</li> <li>6PZS70</li> <li>7PZS630</li> <li>9PZS810</li> <li>10PZS900</li> <li>Cell Type</li> <li>3PZS210</li> <li>3PZS210</li> <li>4PZS420</li> </ul>	198 198 198 198 198 198 198 198 198 Length (b) 198 198 198	47 65 83 101 119 137 155 174 192 Width () 47 65 83	478 478 478 478 478 478 478 478 478 478	505 505 505 505 505 505 505 505 505 505	11.9 16.7 21.3 26.0 30.7 35.4 40.1 44.8 49.6 Weight 12.9 18.4 23.9	2PZ5280 3PZ5420 4PZ5500 6PZ5840 7PZ5980 8PZ51120 9PZ51260 10PZ51400 <b>Cell Type</b> 2PZ5310 3PZ5465 4PZ5620	198 198 198 198 198 198 198 198 198 198	47 65 83 101 119 137 155 174 192 Width (I) 47 65 83	<ul> <li>688</li> <li>713</li> <li>713</li> <li>713</li> <li>713</li> </ul>	715 715 715 715 715 715 715 715 715 715	18.9 26.0 33.1 40.2 47.5 54.8 62.2 69.8 77.4 Weight 19.1 26.5 33.9	2PZB130       3PZB195       4PZB260       5PZB325       6PZB390       7PZB455       8PZB520       9PZB585       10PZB650       2PZB150       3PZB150       4PZB300       3PZB355       4PZB300       5PZB355       6       6       7       7       8       8       9    <	158 158 158 158 158 158 158 158 158 <b>Length (b)</b> 158 158 158	45 61 77 93 109 125 141 157 173 Width () 45 61	457 457 457 457 457 457 457 457 457 457	484 484 484 484 484 484 484 484 484 484	9. 13 16 20 24 27 31 35 38 Wei 10 14 19 23
2PZS180       3PZS270       4PZS360       5PZ5450       6PZS540       7PZ5630       9PZ5810       10PZ5900       2PZ5210       2PZ5210       3PZ5315       4PZ5420       5PZ5420	198 198 198 198 198 198 198 198 198 <b>Length (b)</b> 198 198 198 198	47 65 83 101 119 137 155 174 192 Width (I) 47 65 83 101	478 478 478 478 478 478 478 478 478 478	505 505 505 505 505 505 505 505 505 505	11.9 16.7 21.3 26.0 30.7 35.4 40.1 44.8 49.6 Weight 12.9 18.4 23.9 29.4	2PZ5280 3PZ5420 4PZ5560 5PZ5700 6PZ5840 7PZ5980 8PZ51120 9PZ51260 10PZ51400 <b>Cell Type</b> 2PZ5310 3PZ5465 4PZ5620 5PZ5775	<ul> <li>198</li> </ul>	47 65 83 101 119 137 155 174 192 <b>Width (I)</b> 47 65 83 101	<ul> <li>688</li> <li>713</li> </ul>	<ul> <li>715</li> <li>740</li> </ul>	18.9 26.0 33.1 40.2 47.5 54.8 62.2 69.8 77.4 Weight 19.1 26.5 33.9 42.0	2PZB130 3PZB195 4PZB260 5PZB325 6PZB300 7PZB455 8PZB520 9PZB585 10PZB585 10PZB585 2PZB150 2PZB150 3PZB225 3PZB225 4PZB300	158 158 158 158 158 158 158 158 158 158	45 61 77 93 109 125 141 157 173 <b>Width ()</b> 45 61 77 93	457 457 457 457 457 457 457 457 457 457	484 484 484 484 484 484 484 484 484 484	9.0 13 16 20 24 27 31 35 38 Wei 10 14 19 23 27
2PZ5180       3PZ5270       4PZ5360       6PZ540       6PZ540       9PZ5810       9PZ5810       10PZ590       2PZ5210       3PZ5210       3PZ5315       6PZ540       9PZ5810       10PZ590	<ul> <li>198</li> </ul>	47 65 83 101 119 137 155 174 192 Width () 47 65 83 101 119	478 478 478 478 478 478 478 478 478 478	505 505 505 505 505 505 505 505 505 505	11.9 16.7 21.3 26.0 30.7 35.4 40.1 44.8 49.6 Weight 12.9 18.4 23.9 29.4 35.0	2PZ5280 3PZ5420 4PZ5500 5PZ5700 6PZ5840 7PZ5980 8PZ51120 9PZ51260 10PZ51400 10PZ51400 2PZ5310 3PZ5465 4PZ5620 5PZ5775 6PZ5930	198 198 198 198 198 198 198 198 198 198	47 65 83 101 119 137 155 174 192 Width (I) 47 65 83 101 119	<ul> <li>688</li> <li>713</li> </ul>	715       740       740       740       740       740	18.9 26.0 33.1 40.2 47.5 54.8 62.2 69.8 77.4 Weight 19.1 26.5 33.9 42.0	2PZB130 3PZB195 4PZB260 6PZB390 7PZB455 8PZB520 9PZB585 0 9PZB585 0 9PZB585 2 9PZB50 3 9ZB25 3 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	158 158 158 158 158 158 158 158 158 158	45 61 77 93 109 125 141 157 173 <b>Width (1)</b> 45 61 77 93 109	457 457 457 457 457 457 457 457 457 457	484 484 484 484 484 484 484 484 484 484	9.0 13 16 20 24 27 31 35 38 Wei 10 10
2PZS180       3PZS270       4PZS360       5PZS40       6PZS540       7PZS630       9PZS810       10PZS90       2PZS210       3PZS315       4PZS420       6PZS540       1000000000000000000000000000000000000	<ul> <li>198</li> </ul>	47 65 83 101 119 137 155 174 192 Width (1) 47 65 83 101 119 119 137	478 478 478 478 478 478 478 478 478 478	505 505 505 505 505 505 505 505 505 505	11.9 16.7 21.3 26.0 30.7 35.4 40.1 44.8 49.6 Weight 12.9 18.4 23.9 29.4 35.0 40.5	2PZ5280 3PZ5420 4PZ5500 5PZ5700 6PZ5840 7PZ5980 8PZ51120 9PZ51260 10PZ51400 2PZ5310 3PZ5465 4PZ5620 5PZ5775 6PZ5930 7PZ51085	<ul> <li>198</li> </ul>	47 65 83 101 119 137 155 174 192 Width () 47 65 83 101 119 119	<ul> <li>688</li> <li>688</li> <li>688</li> <li>688</li> <li>688</li> <li>688</li> <li>688</li> <li>688</li> <li>688</li> <li>713</li> </ul>	<ul> <li>715</li> <li>715</li></ul>	18.9 26.0 33.1 40.2 47.5 54.8 62.2 69.8 77.4 <b>Weight</b> 19.1 26.5 33.9 42.0 50.0	2PZB130       3PZB195       4PZB260       5PZB325       6PZB300       7PZB455       8PZB520       9PZB585       10PZB602       2PZB150       3PZB252       4PZB300       5PZB355       6PZB300       6PZB450       6PZB450       6PZB450       6PZB450       6PZB450       6PZB450       6PZB450       6PZB450	<ul> <li>158</li> </ul>	45 61 77 93 109 125 141 157 173 <b>Width ()</b> 45 61 45 61 77 93 109 125	457 457 457 457 457 457 457 457 457 457	484 484 484 484 484 484 484 484 484 484	9.0 13. 16. 20. 24. 27. 31. 35. 38. Wei 10. 14. 19. 23. 27. 31. 35. 38. 23. 24. 27. 31. 35. 38. 24. 27. 31. 35. 38. 24. 27. 31. 35. 38. 24. 27. 31. 35. 38. 24. 27. 31. 35. 38. 24. 27. 31. 35. 38. 24. 27. 31. 35. 38. 24. 27. 31. 35. 38. 24. 27. 31. 35. 38. 24. 27. 31. 35. 38. 27. 27. 27. 27. 27. 27. 27. 27
2PZS180       3PZS270       4PZS360       6PZS40       6PZS40       7PZ5630       9PZS810       0PZS900       2PZS210       4PZS210       9PZS810       6PZS90       9PZS810       9PZS810       6PZS90       9PZS90       9PZS90    <	<ul> <li>198</li> </ul>	47 65 83 101 119 137 155 174 192 <b>Width ()</b> 47 65 83 101 119 119 137 155	478 478 478 478 478 478 478 478 478 478	505 505 505 505 505 505 505 505 505 505	11.9 16.7 21.3 26.0 30.7 35.4 40.1 44.8 49.6 Weight 12.9 18.4 23.9 29.4 35.0 40.5 46.0	2PZ5280 3PZ5420 4PZ5500 5PZ5700 6PZ5840 7PZ5980 8PZ51120 9PZ51260 10PZ51400 Cell Type 2PZ5310 3PZ5465 4PZ5620 5PZ5775 6PZ5930 7PZ51085 8PZ51240	<ul> <li>198</li> </ul>	47 65 83 101 119 137 155 174 192 <b>Width (I)</b> 47 65 83 47 65 83 101 119 137 155	<ul> <li>688</li> <li>713</li> </ul>	<ul> <li>715</li> <li>740</li> <li>740</li></ul>	18.9 26.0 33.1 40.2 47.5 54.8 62.2 69.8 77.4 <b>Weight</b> 19.1 26.5 33.9 42.0 50.0 58.1 66.2	2PZB130       3PZB195       4PZB260       5PZB325       6PZB390       7PZB455       8PZB520       9PZB585       10PZB600       2PZB150       2PZB150       3PZB325       4PZB300       5PZB375       6PZB450       7PZB455       8PZ8600	<ul> <li>158</li> </ul>	45 61 77 93 109 125 141 157 173 <b>Width (1)</b> 45 61 77 93 109 125 141	457 457 457 457 457 457 457 457 457 514 514 514 514 514 514 514 514	484 484 484 484 484 484 484 484 484 484	9,0 13 16 20 24, 27 31 35 38 Wei 10 14 19 23 27 31 35 37 31 35 38

APPLICATIONS: FORKLIFTS | CLEANING MACHINES | ACCESS PLATFORMS | ELECTRIC TOW TRACTORS | ELECTRIC VEHICLES

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#### **KEEP BUSINESS MOVING**



Cell Type	Length (b)	Width (I)	Height 1	Height 2	Weight
2PZB170	158	45	570	597	12.3
3PZB255	158	61	570	597	17.0
4PZB340	158	77	570	597	21.6
5PZB425	158	93	570	597	26.3
6PZB510	158	109	570	597	30.9
7PZB595	158	125	570	597	35.6
8PZB680	158	141	570	597	40.4
9PZB765	158	157	570	597	44.8
10PZB850	158	173	570	597	49.7

Cell Type	Length (b)	Width (I)	Height 1	Height 2	Weight
2PZB200	158	45	606	633	12.9
3PZB300	158	61	606	633	17.7
4PZB400	158	77	606	633	22.6
5PZB500	158	93	606	633	27.5
6PZB600	158	109	606	633	32.4
7PZB700	158	125	606	633	37.3
8PZB800	158	141	606	633	42.2
9PZB900	158	157	606	633	46.8
10PZB850	158	173	570	597	49.7



# **ETERNITY DIN STANDARD**

IBCS

# **ETERNITY BRITISH STANDARD**

Cell Type	Length (b)	Width (I)	Height 1	Height 2	Weight	Cell Type	Length (b)	Width (I)	Height 1	Height 2	Weight	Cell Type	Length (b)	Width (I
2PZS120	198	47	334	364	8.4	2PZS230	198	47	542	572	14.1	2PZB110	158	47
3PZS180	198	65	334	364	11.8	3PZS345	198	65	542	572	18.7	3PZB165	158	63
4PZS240	198	83	334	364	15.3	4PZS460	198	83	542	572	25.1	4PZB220	158	78
5PZS300	198	101	334	364	18.7	5PZS575	198	101	542	572	30.2	5PZB275	158	94
6PZS360	198	119	334	364	22.3	6PZS690	198	119	542	572	35.4	6PZB330	158	110
7PZS420	198	137	334	364	25.8	7PZS805	198	137	542	572	41.3	7PZB385	158	126
8PZS480	198	155	334	364	29.3	8PZS920	198	155	542	572	47.0	8PZB440	158	142
9PZS540	198	173	334	364	32.7	9PZS1035	198	173	542	572	52.3	9PZB495	158	158
10PZS600	198	191	334	364	36.2	10PZS1150	198	191	542	572	58.2	10PZB550	158	174
												11PZB605	158	190
Cell Type	Length (b)	Width (I)	Height 1	Height 2	Weight	Cell Type	Length (b)	Width (I)	Height 1	Height 2	Weight	12PZB660	158	206
2PZS160	198	47	397	427	10.0	2PZS250	198	47	569	599	14.8			
3PZS240	198	65	397	427	14.3	3PZS375	198	65	569	599	20.4	Cell Type	Length (b)	Width (I
4PZS320	198	83	397	427	18.6	4PZS500	198	83	569	599	26.4	2PZB130	158	47
5PZS400	198	101	397	427	22.9	5PZS625	198	101	569	599	32.7	3PZB195	158	63
6PZS480	198	119	397	427	27.3	6PZS750	198	119	569	599	39.1	4PZB260	158	78
7PZS560	198	137	397	427	31.6	7PZS875	198	137	569	599	43.6	5PZB325	158	94
8PZS640	198	155	397	427	36.0	8PZS1000	198	155	569	599	51.4	6PZB390	158	110
9PZS720	198	173	397	427	40.2	9PZS1125	198	173	569	599	57.1	7PZB455	158	126
10PZS800	198	191	397	427	44.6	10PZS1250	198	191	569	599	63.3	8PZB520	158	142
C 117						C 117		14.5 Int 10				9PZB585	158	158
Cell Type	Length (b)	Width (I)	Height 1	Height 2	Weight	Cell Type	Length (b)	Width (I)	Height 1	Height 2	Weight	10PZB650	158	174
2PZS180	198	47	464	494	11.8	2PZS280	198	47	683	713	16.0	11PZB715	158	190
3PZS270	198	65	464	494	16.7	3PZS420	198	65	683	713	23.0	12PZB780	158	206
4PZS360	198	83	464	494	21.5	4PZS560	198	83	683	713	30.1	CellTana	Low alls (b)	
5PZS450	198	101	464	494	26.5	5PZS700	198	101	683	713	37.0	Cell Type	Length (b)	Width (l
6PZS540	198	119	464	494	31.2	6PZS840	198	119	683	713	44.7	2PZB150	158	47
7PZS630	198	137	464	494	36.0	7PZS980	198	137	683	713	50.7	3PZB225	158	63
8PZS720	198	155	464	494	41.1	8PZS1120	198	155	683	713	58.0	4PZB300	158	78
9PZS810	198	173	464	494	45.9	9PZS1260	198	173	683	713	64.7	5PZB375	158	94
10PZS900	198	191	464	494	50.9	10PZS1400	198	191	683	713	72.0	6PZB450	158	110
Cell Type	Length (b)	Width (I)	Height 1	Height 2	Weight	Cell Type	Length (b)	Width (I)	Height 1	Height 2	Weight	7PZB525	158	126
Сентуре	Lenguit(D)	viluir(i)	neight i	neight 2	weight	Cell Type	Lengui (D)	vvidu i (i)	neight i	Height 2	vveigni	8PZB600	158	142
2PZS210	198	47	511	541	13.2	2PZS310	198	47	714	744	17.5	9PZB675	158	158
3PZS315	198	65	511	541	18.7	3PZS465	198	65	714	744	25.5	10PZB750	158	174
4PZS420	198	83	511	541	24.3	4PZS620	198	83	714	744	33.8	11PZB825	158	190
5PZS525	198	101	511	541	29.7	5PZS775	198	101	714	744	39.6	12PZB900	158	206
6PZS630	198	119	511	541	35.3	6PZS930	198	119	714	744	48.0			
7PZS735	198	137	511	541	40.8	7PZS1085	198	137	714	744	55.6			
	100	155	E11	F/ 1	100	007010/0	100	455		7//	620			
8PZS840	198		511	541	46.3	8PZS1240	198	155	714	744	63.0			
8PZS840 9PZS945 10PZS1050	198 198 198	173 191	511 511 511	541 541 541	46.3 51.8 57.3	9PZS1240 9PZS1395 10PZS1550	198	155 173 191	714 714 714	744 744 744	70.2 78.3			

APPLICATIONS: FORKLIFTS | CLEANING MACHINES | ACCESS PLATFORMS | ELECTRIC TOW TRACTORS | ELECTRIC VEHICLES

Height 1 Height 2 Weight ר) ר 7.7 402 432 432 10.7 402 402 432 13.7 402 432 16.8 402 432 19.8 402 432 22.8 432 402 25.8 402 432 29.0 432 32.1 402 402 432 35.1 432 38.1 402

Cell Type	Length (b)	Width (I)	Height 1	Height 2	Weight
2PZB130	158	47	454	484	8.9
3PZB195	158	63	454	484	12.4
4PZB260	158	78	454	484	15.8
5PZB325	158	94	454	484	19.3
6PZB390	158	110	454	484	22.7
7PZB455	158	126	454	484	26.1
8PZB520	158	142	454	484	29.7
9PZB585	158	158	454	484	33.2
10PZB650	158	174	454	484	36.8
11PZB715	158	190	454	484	40.3
12PZB780	158	206	454	484	43.7

Cell Type	Length (b)	Width (I)	Height 1	Height 2	Weight
2PZB150	158	47	515	545	9.6
3PZB225	158	63	515	545	13.3
4PZB300	158	78	515	545	17.1
5PZB375	158	94	515	545	20.8
6PZB450	158	110	515	545	24.5
7PZB525	158	126	515	545	28.2
8PZB600	158	142	515	545	32.0
9PZB675	158	158	515	545	35.8
10PZB750	158	174	515	545	39.6
11PZB825	158	190	515	545	43.4
12PZB900	158	206	515	545	47.1

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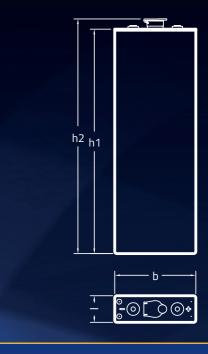
#### **KEEP BUSINESS MOVING**





Cell Type	Length (b)	Width (I)	Height 1	Height 2	Weight
2PZB172	158	47	568	598	11.2
3PZB258	158	63	568	598	15.6
4PZB344	158	78	568	598	20.1
5PZB430	158	94	568	598	24.5
6PZB516	158	110	568	598	29.0
7PZB602	158	126	568	598	33.3
8PZB688	158	142	568	598	37.8
9PZB774	158	158	568	598	42.4
10PZB860	158	174	568	598	46.9
11PZB946	158	190	568	598	51.3
12PZB1032	158	206	568	598	55.7

Cell Type	Length (b)	Width (I)	Height 1	Height 2	Weight
2PZB200	158	47	600	630	11.9
3PZB300	158	63	600	630	16.7
4PZB400	158	78	600	630	21.5
5PZB500	158	94	600	630	26.2
6PZB600	158	110	600	630	30.9
7PZB700	158	126	600	630	35.7
8PZB800	158	142	600	630	40.5
9PZB900	158	158	600	630	45.3
10PZB1000	158	174	600	630	50.1
11PZB1100	158	190	600	630	54.9
12PZB1200	158	206	600	630	59.6







# **Traction Battery** Chargers



# The Intelligent Choice TO KEEP YOUR BUSINESS MOVING

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## **INDUSTRIAL BATTERY** AND CHARGER SERVICES LTD



# SELECTIVA

# **IBCS** 0845 208 8748 | www.ibcs.co.uk

## INDUSTRIAL BATTERY AND CHARGER SERVICES LTD

The importance of matching the correct charger with the battery cannot be underestimated as using an incorrect charger will inevitably result in premature battery failure. At Industrial Battery and Charger Services we have a complete range of chargers to suit all motive power applications. We are able to offer help and advice on all aspects of battery charging and our service engineers are able to repair and maintain all types of battery chargers in use today.

#### **OUR BRANDS**



APPLICATIONS: FORKLIFTS | CLEANING MACHINES | ACCESS PLATFORMS | ELECTRIC TOW TRACTORS | ELECTRIC VEHICLES



#### SHIFTING THE LIMITS

**Fronius Selectiva charging systems** are highly intelligent. Charging systems for drive batteries need a special type of intelligence. Since every battery is different, the Selectiva series automatically recognises age and charge level to provide a precise charge. This increases the service life and efficiency of the battery and reduces the amount of maintenance. It is a question of **intelligent technology**. The proven Selectiva series with four power classes and housing versions offers a complete product range for 12, 24, 36, 48, 72 and 80 volt batteries.



Due to its **efficiency of up to 96%**, every seventh charge is free. The Selectiva charger with Active Inverter Technology gently charges your batteries and may increase their **service life by up to 25%**.



The successful Active Inverter Technology with the **revolutionary Ri-charging process** adapts itself to the requirements of the battery and only charges the battery with the current that it actually needs.

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#### **Battery Charging Systems for Intralogistics**



The tried and tested range for medium to large forklift batteries with power output of 3 kW. Compact design, simple handling and the especially effective Active Inverter Technology make Selectiva Plus devices **attractive to intralogistics professionals**.



The **successful Active Inverter Technology** with the revolutionary Ri-charging process adapts itself to autoselect battery capacity and battery voltage.

The proven Selectiva series with four power classes and housing versions offers a complete product range for 12, 24, 36, 48, 72 and 80 volt forklift batteries.



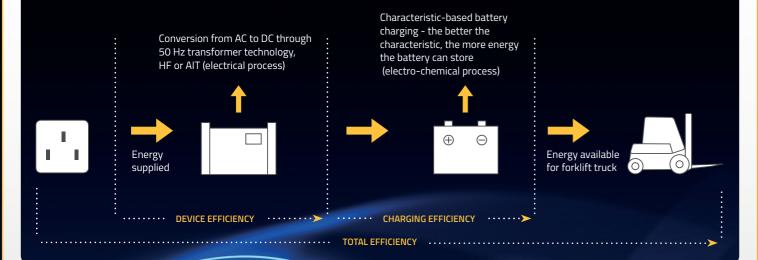
#### **MAXIMUM ENERGY EFFICIENCY**

When charging a traction battery, the flow of energy from the socket via the charger to the battery is represented in the form of total efficiency.

As a first step, the energy coming from the socket into the battery charger is converted from AC to DC. What is important here is the battery charging technology that the charger employs.

This electrical process determines the device efficiency. This is followed by an electrochemical process in which the battery is charged by means of a charging characteristic, which is referred to as charging efficiency.

Multiplying both processes together gives the total efficiency.



TECHNOLOGY	DEVICE EFFICIENCY	CHARGING EFFICIENCY	TOTAL EFFICIENCY
50 Hz	80%	70%	56%
HF	90%	75%	68%
Fronius AIT	92%	80%	74%
Fronius AIT with Ri	93%	90%	84%

APPLICATIONS: FORKLIFTS | CLEANING MACHINES | ACCESS PLATFORMS | ELECTRIC TOW TRACTORS | ELECTRIC VEHICLES

#### **RI CHARGING PROCESS**

The RI charging process adapts to the demands on each battery and only charges the battery with the current that it really needs according to its age and state of charge. Gassing and/or battery warming is therefore minimised resulting in maximum battery service life.

#### **SELECTION TABLE**

				WET B	ATTERIE	S (PzS)				VR	LA BATTI	ERY		COMPARATIVE	POWER	
BATTERY VOLTAGE	6h	7h	8h	9h	10h	11h	12h	13h	14h	10h	12h	14h	DEVICE TYPE	TABLE FOR NOMINAL	SUPPLY VOLTAGE	HOUSING
						CAPACI	TY (Ah)							VOLTAGE	CURRENT	
	110	135	165	195	225	250				120	140	160	Selectiva 1020	12V - 25A	E230V/2A	1
12V	160	190	240	300	345	375				180	200	220	Selectiva 1030	12V - 40A	E230V/2A	1
	52	65	80	95	110	125				55	70	85	Selectiva 2010	24V - 15A	E230V/2A	1
	80	100	125	150	170	185				80	105	120	Selectiva 2015	24V - 20A	E230V/2A	1
	110	135	165	195	225	250				120	140	160	Selectiva 2020	24V - 25A	E230V/2A	1
	180	210	260	320	360	400				190	205	220	Selectiva 2032	24V - 40A	E230V/4A	1
	200	230	290	345	395	440				220	250	280	Selectiva 2040	24V - 45A	E230V/7A	1
	185	240	290	345	395	445	495	545	595	220	250	280	Selectiva Plus 2035	24V - 45A	E230V/6A	2
	280	365	440	520	595	675	750	825	900	280	330	420	Selectiva Plus 2050	24V - 60A	E230V/7A	2
	365	470	575	680	775	875	980	1070	1170	360	430	540	Selectiva Plus 2065	24V - 80A	E230V/9A	2
24V	450	580	710	830	950	1075	1200	1320	1440	440	530	670	Selectiva Plus 2080	24V - 100A	E230V/11A	2
	560	730	880	1040	1190	1350	1500	1650	1800	560	670	835	Selectiva Plus 2100	24V - 120A	E230V/16A	2
	560	730	880	1040	1190	1350	1500	1650	1800	560	670	835	Selectiva 2100	24V - 120A	400V/6A	3
	670	870	1060	1250	1430	1600	1800	1980	2160	670	800	1000	Selectiva 2120	24V - 145A	400V/7A	3
	800	1000	1240	1450	1680	1880	2100	2310	2520	780	930	1170	Selectiva 2140	24V - 170A	400V/8A	3
	930	1150	1420	1650	1920	2140	2400	2640	2880	900	1170	1350	Selectiva 2160	24V - 190A	400V/9A	3
	1010	1305	1595	1875	2150	2407	2700	2970	3240				Selectiva 2180	24V - 220A	400V/11A	3
	1120	1450	1770	2080	2390	2675	3000	3300	3600				Selectiva 2200	24V - 240A	400V/12A	3
	140	180	220	260	300	335	375	410	450	140	170	210	Selectiva Plus 4025	48V - 30A	E230V/7A	2
	185	240	290	345	395	445	495	545	595	220	250	280	Selectiva Plus 4035	48V - 45A	E230V/10A	2
	280	365	440	520	595	675	750	825	900	280	330	420	Selectiva Plus 4050	48V - 60A	E230V/16A	2
	340	440	530	620	720	800	900	990	1080	340	400	505	Selectiva 4060	48V - 70A	400V/8A	3
36V/48V	420	545	660	780	890	1015	1125	1240	1350	420	490	620	Selectiva 4075	48V - 90A	400V/9A	3
	505	655	795	935	1075	1200	1350	1485	1620	505	600	750	Selectiva 4090	48V - 110A	400V/10A	3
	670	870	1060	1250	1430	1600	1800	1980	2160	670	800	1000	Selectiva 4120	48V - 145A	400V/13A	3
	800	1000	1240	1450	1680	1880	2100	2310	2520	780	930	1170	Selectiva 4140	48V - 170A	400V/15A	3
	870	1085	1345	1575	1825	2040	2280	2508	2740	850	1010	1270	Selectiva 4160	48V - 190A	400V/15A	3
	225	290	355	415	480	535	600	660	720	225	265	335	Selectiva 8040	80V - 50A	400V/8A	3
	340	440	530	620	720	800	900	990	1080	340	400	505	Selectiva 8060	80V - 70A	400V/11A	3
	420	545	660	780	890	1015	1125	1240	1350	420	490	620	Selectiva 8075	80V - 90A	400V/13A	3
	495	635	770	910	1040	1170	1300	1430	1570	480	580	720	Selectiva 8090	80V - 110A	400V/15A	3
80V/72V	670	870	1060	1250	1430	1600	1800	1980	2160	670	800	1000	Selectiva 8120	80V - 145A	400V/22A	4
	800	1000	1240	1450	1680	1880	2100	2310	2520	780	930	1170	Selectiva 8140	80V - 170A	400V/25A	4
	930	1150	1420	1650	1920	2140	2400	2640	2880	900	1170	1350	Selectiva 8180	80V - 190A	400V/28A	4
	1000	1250	1550	1790	2090	2330	2610	2870	3130	970	1260	1460	Selectiva 8180	80V - 220A	400V/30A	4

APPLICATIONS: FORKLIFTS | CLEANING MACHINES | ACCESS PLATFORMS | ELECTRIC TOW TRACTORS | ELECTRIC VEHICLES

#### LESS MAINTENANCE

Charging processes that are adapted to the demands of the battery prevent uncontrolled overloads and decrease maintenance requirements (less water required, less work). The service life of the battery increases as a result.

It is possible to recover / recharge deeply discharged, and sulphated batteries, using one of the unique charging profiles that are pre-programmed into the Selectiva Plus models.



#### Forklift and Traction Battery HF Modular Chargers

Since its establishment in 1991, **AXIMA** has experienced strong growth through **high-quality products** and engineers. In house development of battery chargers is based not only on the latest trends and innovations, but more importantly on the needs and requirements of our customers. This has led to **worldwide success** with blue chip companies such as BMW, Airbus, Volkswagen, Dachser and Škoda.

#### FORTIS MINI HF BATTERY CHARGER

Small but powerful the FORTIS MINI has simple and fully automatic traction battery charging capabilities.

Optimised HF charging technology accelerates charging, prolongs working life of batteries and saves energy.

This is a fully automatic battery charger which is simple and easy to use.



#### FORTIS HF MODULAR BATTERY CHARGER



#### **FLEXIS HF BATTERY CHARGER**

FLEXIS is a fully programmable, high-frequency charger of traction and stationary batteries.

Optimised charging technology prolongs the working life of a battery, accelerates charging and saves energy. FLEX

48-150



**IP54-RATED WEATHERPROOF CHARGER** 

APPLICATIONS: FORKLIFTS | CLEANING MACHINES | ACCESS PLATFORMS | ELECTRIC TOW TRACTORS | ELECTRIC VEHICLES

#### FORTIS MINI HF BATTERY CHARGER

# Small <sup>but</sup>POWERFUL

Small but powerful the **FORTIS MINI** with simple and fully automatic traction battery charging.

Optimised HF charging technology accelerates charging, prolongs working life of batteries and saves energy.

This is a fully automatic battery charger which is simple and easy to use.

#### SELECTION TABLE SINGLE PHASE

Output Voltage (VDC)	Max. Output Current	Туре	Mains (VAC)	Mains Protection (A)	Case	Range of Capacities (Ah)
	20	FORTIS Mini 24E20		6	S	65-210
	40	FORTIS Mini 24E40		10	М	135-375
24	60	FORTIS Mini 24E60	1ph 230	10	L	270-620
	80	FORTIS Mini 24E80		16	L	375-840

#### SETTING THE CHARGER

_	Battery capacity setting (Ah) - Count of blinks of green LED										
Туре	1	2	3	4	5	6	7	8	9		
FORTIS Mini 24E20	65	75	85	105	120	135	150	180	210		
FORTIS Mini 24E40	135	150	180	210	240	270	300	345	375		
FORTIS Mini 24E60	270	300	345	375	420	465	500	560	620		
FORTIS Mini 24E80	375	420	465	500	560	620	675	750	840		
	<u>/</u>	8 Hours				8 - 10 Hours			10 - 12 Hours		

Tura	Charging curve setting - Count of blinks of red LED								
Туре	1	2	3	4	5				
FORTIS Mini all types	IUIa dU	IUIa CF	IUIa GEL 2,65	IUIa GEL Ex	IUa				

APPLICATIONS: FORKLIFTS | CLEANING MACHINES | ACCESS PLATFORMS | ELECTRIC TOW TRACTORS | ELECTRIC VEHICLES

#### **KEEP BUSINESS MOVING**



#### FORTIS MINI HF BATTERY CHARGER



#### **TECHNICAL DATA**

Input voltage range-10 %, +15%Recommended protectionCircuit breaker with C or D characteristicsEfficiencyup to 94%Power factor0.98 (single-phase power supply)Output voltage tolerance±1%Output current tolerance±2%Safety (LVD)EN 60950-1EMC resistanceEN 61000-6-2EMC emissionEN 61000-6-4Protection classIDegree of protectionIP20Coolingforced ventilationWorking environment-10 °C to +40 °C, max. relative humidity 95%, non condensatingStoragein dry areas -25 °C to +80 °C, max. relative humidity 95%		
Efficiencyup to 94%Power factor0.98 (single-phase power supply)Output voltage tolerance±1%Output current tolerance±2%Safety (LVD)EN 60950-1EMC resistanceEN 61000-6-2EMC emissionEN 61000-6-4Protection classIDegree of protectionIP20Coolingforced ventilationWorking environment-10 °C to +40 °C, max. relative humidity 95%, non condensating	Input voltage range	-10 %, +15%
Power factor0.98 (single-phase power supply)Output voltage tolerance±1 %Output current tolerance±2 %Safety (LVD)EN 60950-1EMC resistanceEN 61000-6-2EMC emissionEN 61000-6-4Protection classIDegree of protectionIP20Coolingforced ventilationWorking environment-10 °C to +40 °C, max. relative humidity 95%, non condensating	Recommended protection	Circuit breaker with C or D characteristics
Output voltage tolerance±1 %Output current tolerance±2 %Safety (LVD)EN 60950-1EMC resistanceEN 61000-6-2EMC emissionEN 61000-6-4Protection classIDegree of protectionIP20Coolingforced ventilationWorking environment-10 °C to +40 °C, max. relative humidity 95%, non condensating	Efficiency	up to 94%
Output current tolerance±2 %Safety (LVD)EN 60950-1EMC resistanceEN 61000-6-2EMC emissionEN 61000-6-4Protection classIDegree of protectionIP20Coolingforced ventilationWorking environment-10 °C to +40 °C, max. relative humidity 95%, non condensating	Power factor	0.98 (single-phase power supply)
Safety (LVD)EN 60950-1EMC resistanceEN 61000-6-2EMC emissionEN 61000-6-4Protection classIDegree of protectionIP20Coolingforced ventilationWorking environment-10 °C to +40 °C, max. relative humidity 95%, non condensating	Output voltage tolerance	±1 %
EMC resistanceEN 61000-6-2EMC emissionEN 61000-6-4Protection classIDegree of protectionIP20Coolingforced ventilationWorking environment-10 °C to +40 °C, max. relative humidity 95%, non condensating	Output current tolerance	±2 %
EMC emission       EN 61000-6-4         Protection class       I         Degree of protection       IP20         Cooling       forced ventilation         Working environment       -10 °C to +40 °C, max. relative humidity 95%, non condensating	Safety (LVD)	EN 60950-1
Protection class     I       Degree of protection     IP20       Cooling     forced ventilation       Working environment     -10 °C to +40 °C, max. relative humidity 95%, non condensating	EMC resistance	EN 61000-6-2
Degree of protection     IP20       Cooling     forced ventilation       Working environment     -10 °C to +40 °C, max. relative humidity 95%, non condensating	EMC emission	EN 61000-6-4
Cooling     forced ventilation       Working environment     -10 °C to +40 °C, max. relative humidity 95%, non condensating	Protection class	I
Working environment     -10 °C to +40 °C, max. relative humidity 95%, non condensating	Degree of protection	IP20
	Cooling	forced ventilation
Storage in dry areas -25 °C to +80 °C, max. relative humidity 95%	Working environment	-10 °C to +40 °C, max. relative humidity 95%, non condensating
-	Storage	in dry areas -25 °C to +80 °C, max. relative humidity 95%

#### DIMENSIONS

Туре	Case	н	w	D
FORTIS mini 24E20	S	200	148	77
FORTIS mini 24E40	М	234 (280)*	174	90
FORTIS mini 24E60	L	349 (395)*	243	90
FORTIS mini 24E80	L	349 (395)*	243	90

\*With mounting brackets.

APPLICATIONS: FORKLIFTS | CLEANING MACHINES | ACCESS PLATFORMS | ELECTRIC TOW TRACTORS | ELECTRIC VEHICLES

#### FORTIS HIGH FREQUENCY MODULAR CHARGER

# Traction Battery CHARGER

The Fortis traction battery charger range is user friendly with high reliability. It's robust design makes it suitable for hard working environments.

High stability and efficiency helps to save operating costs.

#### **PRECISE CHARGE**



Operational stages are signalled by three big LED lights, status of charging is visible from long distance. Output current is adjustable to battery capacity, operating stages are shown by three LED lights. FORTIS chargers comply with European standards of using PFC at electronic devices.

For further information on the Flexis HF Battery Charger and the IP54-Rated Weatherproof Charger please contact us on 0845 2088748

APPLICATIONS: FORKLIFTS | CLEANING MACHINES | ACCESS PLATFORMS | ELECTRIC TOW TRACTORS | ELECTRIC VEHICLES

ALL ENQUIRIES: 0845 208 8748 | www.ibcs.co.uk

#### **KEEP BUSINESS MOVING**



- EXTREMELY RELIABLE
- SHORT CIRCUIT PROOF OUTPUT
- SAVES OPERATING EXPENSES
- MODULAR SYSTEM
- PRESET CHARGING CURVES
- Efficiency up to 94%, power factor cos ~1
- Active PFC and softstart
- Verification of connected battery
- Galvanic separated mains output
- Regeneration charging desulphation and equalisation
- Short circuit and reverse polarity proof output
- Optimised HF charging technology accelerates charging, prolongs working life of batteries and saves energy
- 'Fortis battery chargers are made to meet the hard requirements of a three shift operation
- Operates in industrial areas

#### **OPTIONAL EQUIPMENT**

- External signaling signal column / alarm
- Two digital inputs for remote control
- Temperature sensor compensation of charging voltage according to battery temperature
- Two potential-free outputs

Temperature sensor

Outputs for external signaling

#### SELECTION TABLE

Туре	Output	Max. Output	Mains (VAC)	Input current (A)	Mins	Case	Charging time/ ba capacity (Ah ma		
	Voltage (V)	current (A)			protection (A)		8hrs		12hrs
24E60		60	230	8.7	10	FF130	445	630	815
24E100		100	230	14.1	16	FF130	630	900	1160
24D100	24	100	3X400	4.9	6	FF130	630	900	1160
24D200		200	3X400	9.8	10	FF250	1265	1800	2320
48E40		40	230	12.4	13	FF130	240	320	500
48E50		50	230	14.1	16	FF130	315	450	580
48D50		50	3X400	4.9	6	FF130	315	450	580
48D100	48	100	3X400	8.0	10	FF250	580	825	1065
48D150		150	3X400	12.9	16	FF250	900	1275	1645
48D200		200	3X400	16.0	20	FF250	1160	1650	2130
80E25		25	230	14.1	16	FF130	160	225	290
80D25		25	3X400	4.9	6	FF130	160	225	290
80D50		50	3X400	8.0	10	FF130	315	450	580
80D75		75	3X400	12.9	16	FF250	47	680	870
80D100		100	3X400	16.0	20	FF250	360	900	1160
80D125	80	125	3X400	20.9	25	FF330	790	1130	1450
80D150		150	3X400	24.0	32	FF330	950	1350	1740
80D175		175	3X400	28.9	32	FF550	1100	1575	2035
80D200		200	3X400	32.0	40	FF550	-	-	-
80D225		225	3X400	36.9	40	FF720	-	-	-

#### \*Intended also for 96V and 110V Batteries. Other types on request

Efficiency	Up to 94%
Output voltage stability	plus1%
Cooling	Forced ventilation

Degree of protection	IP20			
Operating conditions	minus 10oc to plus 40oc			
protection class	I			

Case	н	w	D	Х*	<b>Y</b> *
FF130	477	302	135	230	515
FF170	477	302	169	230	515
FF250	477	302	254	230	515
FF330	477	302	339	230	515
FF550	477	547	339	499	515
FF720	477	712	339	669	515

Dimensions in mm \* Fastening holes spacing

APPLICATIONS: FORKLIFTS | CLEANING MACHINES | ACCESS PLATFORMS | ELECTRIC TOW TRACTORS | ELECTRIC VEHICLES



POWERGEN s.r.l.

#### CEMB

The **CEMB 3000 series** is designed to recharge small to medium sized traction batteries.

With proven 50 Hz technology this robust charger technology is suitable for a wide range of applications.

#### REVOLUTION

The battery chargers of the **REVOLUTION series** are designed to recharge medium – large capacity lead acid traction batteries. They have been developed using over forty-years technical experience of the founding family.



APPLICATIONS: FORKLIFTS | CLEANING MACHINES | ACCESS PLATFORMS | ELECTRIC TOW TRACTORS | ELECTRIC VEHICLES

Established in 1932 by the founding family members, Powergen produce a range of robust and functional battery chargers suitable for rugged industrial environments.



#### COMPACT

The battery chargers of the **COMPACT series** are designed to recharge medium and large capacity lead acid traction batteries.

#### **CEMB SELECTION TABLE - SINGLE PHASE**

Туре	Output Voltage	Output	Mains (VAC)	Input current	Dimensions	Charging time/ battery capacity (Ah max.)		
	(V)	Current		(A)		8hrs	10hrs	12hrs
24v20a-01-PG		20	240	3	L280 W330 H200	-	110	140
24v25a-01-PG		25	240	4	L280 W330 H200	-	150	175
24v30a-01-PG		30	240	5	L280 W430 H300	-	180	210
24v40a-01-PG	24	40	240	6	L280 W430 H300	-	220	280
24v50a-01-PG		50	240	8	L280 W430 H300	-	300	340
24v60a-01-PG		60	240	9	L280 W430 H300	-	Pacity (Ah max.           10hrs           110           150           180           220	400
36v15a-01-PG		15	240	4	L280 W330 H200	-	90	105
36v20a-01-PG		20	240	5	L280 W430 H300	-	110	140
36v25a-01-PG	36	25	240	6	L280 W430 H300	-	150	175
36v30a-01-PG	1	30	240	7	L280 W430 H300	-	180	210
36v40a-01-PG		40	240	9	L280 W430 H300	-	220	280

#### **REVOLUTION SELECTION TABLE - SINGLE PHASE**

Туре	Туре	Output	Mains (VAC)	Input current	Dimensions	Charging time/ battery capacity (Ah max.)		
.,,-	- 11	Current		(A)		8hrs	10hrs	12hrs
24v60a-01-PG		60A	240	9	L580 W365 H450	330	350	400
24v80a-01-PG		80A	240	13	L580 W365 H450	440	480	550
24v100a-01-PG	24	100A	240	16	L580 W365 H450	550	610	680
24v120a-01-PG		120A	240	19	L580 W365 H450	660	750	800
36v60a-01-PG		60A	240	16	L580 W365 H450	330	360	390
36v80a-01-PG	36	80A	240	25	L580 W365 H450	440	480	520
36v100a-01-PG		100A	240	32	L580 W365 H450	550	600	650
48v60a-01-PG		60A	240	19	L580 W365 H450	330	350	400
48v80a-01-PG	48	80A	240	25	L580 W365 H450	440	480	550
48v100a-01-PG		100A	240	31	L580 W365 H450	550	610	680
72v60a-01-PG		60A	240	28	L580 W365 H450	330	350	400
72v80a-01-PG	72	80A	240	38	L580 W365 H450	440	480	550
80v60a-01-PG		60A	240	31	L580 W365 H450	330	350	400
80v80a-01-PG	80	80A	240	42	L580 W365 H450	440	480	550

APPLICATIONS: FORKLIFTS | CLEANING MACHINES | ACCESS PLATFORMS | ELECTRIC TOW TRACTORS | ELECTRIC VEHICLES

#### **REVOLUTION SELECTION TABLE - THREE PHASE**

Туре	Туре	Output Current	Mains (VAC)	Input current (A)	Dimensions	Charging time/ battery capacity (Ah max.)		
						8hrs	10hrs	12hrs
24v60a-03-PG	24	60A	400	4	L580 W365 H450	330	360	390
24v80a-03-PG		80A	400	5	L580 W365 H450	440	480	520
24v100a-03-PG		100A	400	6	L580 W365 H450	550	600	650
24v120a-03-PG		120A	400	19	L580 W365 H450	660	720	780
36v60a-03-PG	36	60A	400	5	L580 W365 H450	330	360	390
36v80a-03-PG		80A	400	7	L580 W365 H450	440	480	520
36v100a-03-PG		100A	400	9	L580 W365 H450	550	600	650
36v120a-03-PG		120A	400	11	L580 W365 H450	660	720	780
48v60a-03-PG	48	60A	400	7	L580 W365 H450	330	360	390
48v80a-03-PG		80A	400	10	L580 W365 H450	440	480	520
48v100a-03-PG		100A	400	12	L580 W365 H450	550	600	650
72v60a-03-PG	72	60A	400	11	L580 W365 H450	330	360	390
72v80a-03-PG		80A	400	14	L580 W365 H450	440	480	520
80v60a-03-PG	80	60A	400	12	L580 W365 H450	330	360	390
80v80a-03-PG		80A	400	16	L580 W365 H450	440	480	520

#### **COMPACT SELECTION TABLE - SINGLE PHASE**

Туре	Туре	Output Current	Mains (VAC)	Input current (A)	Dimensions	Charging time/ battery capacity (Ah max.)		
						8hrs 1	10hrs	12hrs
24v140a-01-PG	24	140A	230	28	L470 W465 H700	770	910	960
48v120a-01-PG	- 48	120A	230	38	L470 W465 H700	660	750	800
48v140a-01-PG		140A	230	50	L470 W465 H700	715	910	960
80v100a-01-PG	80	100A	230	63	L470 W465 H700	550	610	680

#### **COMPACT SELECTION TABLE - THREE PHASE**

Туре	Туре	Output Current	Mains (VAC)	Input current (A)	Dimensions	Charging time/ battery capacity (Ah max.)		
						8hrs	10hrs	12hrs
24v140a-03-PG	24	140A	400	8	L470 W465 H700	770	840	910
24v160a-03-PG		160A	400	9	L470 W465 H870	880	960	1040
48v120a-03-PG	48	120A	400	13	L470 W465 H870	660	720	780
48v140a-03-PG		140A	400	15	L470 W465 H870	770	840	910
48v160a-03-PG		160A	400	16	L470 W465 H870	880	960	1040
72v100a-03-PG	72	100A	400	17	L470 W465 H870	550	600	650
72v120a-03-PG		120A	400	20	L470 W465 H870	660	720	780
80v100a-03-PG	80	100A	400	20	L470 W465 H870	550	600	650
80v120a-03-PG		120A	400	24	L470 W465 H870	660	720	780
80v140a-03-PG		140A	400	28	L470 W465 H870	770	840	910
80v160a-03-PG		160A	400	32	L565 W500 H960	880	960	1040

APPLICATIONS: FORKLIFTS | CLEANING MACHINES | ACCESS PLATFORMS | ELECTRIC TOW TRACTORS | ELECTRIC VEHICLES





# The Complete **Service Solution**

# The Intelligent Choice TO KEEP YOUR BUSINESS MOVING

APPLICATIONS: FORKLIFTS | CLEANING MACHINES | ACCESS PLATFORMS | ELECTRIC TOW TRACTORS | ELECTRIC VEHICLES



## **THE COMPLETE SERVICE SOLUTION**

IBCS can offer **nationwide service** by **fully trained battery and charger engineers**, with same or next day response to ensure our customer's equipment is kept moving, minimising disruption to their business.

There's a **wealth of experience on hand**, which means we can offer assistance, and provide independent advice to our customers. We have recently increased our salesforce to cope with demand, and further **develop our business.** 

#### NATIONWIDE COVERAGE

IBCS is one of the very few companies that offer a rapid nationwide service throughout the week, with an option to provide a bespoke 24 hour, 7 day a week plan. This is recognition that customer's need prompt individual attention at all times.

Nationwide coverage coupled with local expert knowledge and technical after-sales support is an essential element of the IBCS strategy to, 'Keep Business Moving'.

The IBCS package provides a bespoke single source for battery, charger and accessory installation, maintenance and repair.

# Whatever your industry IBCS is the intelligent nationwide choice



**BCS NATIONWIDE** CARE & SERVICE

APPLICATIONS: FORKLIFTS | CLEANING MACHINES | ACCESS PLATFORMS | ELECTRIC TOW TRACTORS | ELECTRIC VEHICLES

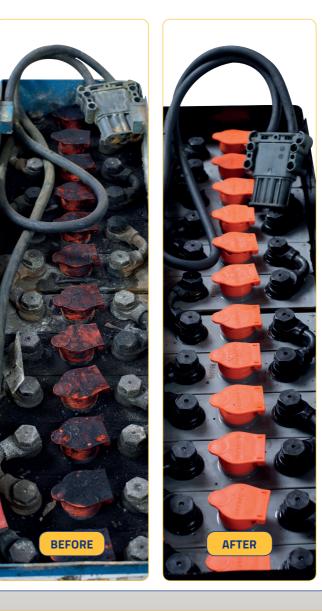
#### **ALL MAKES SERVICE PLAN**

IBCS engineers are all highly skilled and trained in the repair, servicing and maintenance of all types of battery and charger products. With over 30 years of industry experience IBCS engineers can service and maintain all types of battery and charger products.

#### **BATTERY STRIP & REFIT**

With the cost of batteries increasing, and the need to ensure valuable assets are properly maintained, IBCS offer a strip and refit service to ensure batteries are kept in optimum condition.

Our engineers remove the cells from the tank, clean and paint the battery tank and refit the cells. Acid levels are checked and specific gravity is adjusted to ensure the battery is operating as efficiently as possible.



APPLICATIONS: FORKLIFTS | CLEANING MACHINES | ACCESS PLATFORMS | ELECTRIC TOW TRACTORS | ELECTRIC VEHICLES

#### **CHARGER INSTALLATION**

Not only do IBCS supply a comprehensive range of quality chargers, a complete installation service is available using our team of qualified engineers



#### **BATTERY CARE AND TRAINING**

The effective training of operators and fork lift drivers in the safe use and maintenance of fork lift batteries is paramount. IBCS offer comprehensive training on battery care and maintenance. This can be completed on the customers site, or at our facility in Rotherham. This is essential in today's Health and Safety environment.



#### **REAL TIME DATA**

Our service engineers are equipped with the latest mobile devices. This allows our service team to gather and communicate information and images in real time.

The ability to provide completed service sheets with photographs promptly on completion of work is a great benefit to our customers.

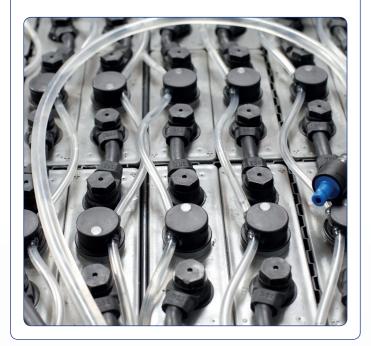
#### MAINTENANCE AND TOPPING UP CONTRACTS

Contracts can be extended to cover maintenance and topping up of batteries.

### SERVICES AND ACCESSORIES

#### **BATTERY WATERING SYSTEMS**

IBCS offer a complete range of battery filling systems including, the BFS and Aquajet systems.



#### **DEIONNISER UNIT**

IBCS offer a complete range of deionising units including Purite and Philadelphia Scientific.

Our De-Ionizer reduces the high price of buying bottled water and it's more convenient as well. Each disposable cartridge purifies about 600 gallons of water and the purity light will tell you exactly when the cartridge is used up.

#### **TROLLEYS AND GUNS**

No battery room should be without this essential battery maintenance tool. Simply connect the watering gun to a standard hose or the Philadelphia Scientific Water Deioniser. Insert the tip of the watering gun in the cell and pull the ergonomic trigger. The watering gun automatically shuts off at exactly the right level. The Philadelphia Scientific Watering Gun dramatically speeds up the process of watering industrial batteries and improves operator safety.



#### **REPLACEMENT CARTRIDGES PS600 CARTRIDGE**

HydroPure Deionizer cartridge, 600 gallon.



APPLICATIONS: FORKLIFTS | CLEANING MACHINES | ACCESS PLATFORMS | ELECTRIC TOW TRACTORS | ELECTRIC VEHICLES

## SERVICES AND ACCESSORIES

#### MANUAL TOPPING UP BOTTLE



#### **BATTERY MANAGEMENT SYSTEMS**

IBCS offer a number of battery management solutions from a range of manufacturers to enable a solution specific to our customers' requirements.



#### **BATTERY ACCESSORIES: CONNECTORS, PLUGS AND CABLES**

IBCS uses its worldwide base of industry contacts to source the best quality tried and tested battery connectors and accessories available.

Customers can be sure that 30 years purchasing experience maintains their position as battery industry leaders.

Connectors and accessories for linking batteries together is a q core requisite for ensuring everything works together.



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ALL ENQUIRIES: 0845 208 8748 | www.ibcs.co.uk

#### LEVEL INDICATORS

A low electrolyte level in your battery will cause permanent damage to the cells. By fitting a Blinky or Smart Blinky you can help ensure your electrolyte levels are never low.



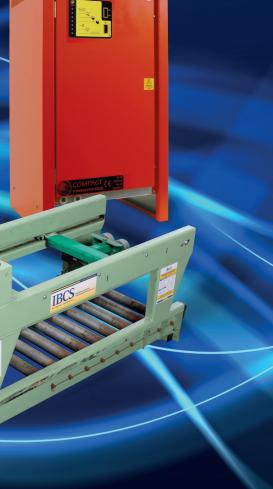




# The Total **Hire Solution**



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## INDUSTRIAL BATTERY AND CHARGER SERVICES LTD



Fronius

#### We can provide both forklift truck batteries and chargers on short or long term hire.

- Fully flexible hire terms (No minimum required)
- Covers all products Including; Cells, Batteries, Chargers, Battery Handling, and Watering Systems
- A wide range of stock always available
- Nationwide service coverage
- Maintained or non-maintained service contracts

SELECTIVA

 Rent to buy option means ownership of goods once rental period finishes

Fronius

- Normal or HF chargers including installation
- Free quotation with no obligation



We can provide both forklift truck batteries and chargers on short or long term hire. We have a large fleet of batteries and chargers for immediate delivery.

As an independent supplier of traction batteries from the world's leading manufacturers IBCS is able to provide a complete solution for all forklift and traction battery requirements.



#### **ROLLER BEDS**

Forklift battery roller bed hire offers an efficient and cost effective solution to handling batteries. They are the ideal solution for those in need of fast battery changing to help keep uptime to its maximum level.

Designed to handle a wide variety of batteries and roll-off heights. These versatile roller beds can even be flipped upside down allowing lower roll-off heights making them even more universal.



#### **BATTERY TUGGERS**

IBCS offer some of the best handling equipment on the market today. Options ranging from a single roller stand right through to a fully automated bespoke system, we have you covered. Call us to discuss your requirements.



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#### **CHARGER HIRE**

At IBCS we have a complete range of chargers for hire to suit all motive power applications. We are able to offer help and advice, on all aspects of battery charging.

Our service engineers are able to repair and maintain all types of battery chargers in use today.





Used for applications that require a non-conductive beam such as lifting industrial fork lift truck batteries. Lightweight units are available for hire and models are available for handling batteries of equal length or of different lengths.



#### **The Intelligent Choice**

Industry Leading Warranty - IBCS provide an industry leading 5 year warranty on their products that is clear and precise with no ambiguity. It provides a full 5 year guarantee for their Motive Power Batteries against faulty workmanship and materials outlined in their customer contracts. How can they offer this superb warranty? This is linked to a powerful set of business ethics based on:

#### ISO 9001 AND RIGHT FIRST TIME

IBCS's Right First Time Quality management system works on the following principle. Defect prevention is more advantageous and cost effective than defect detection and associated re-work.

Certified to ISO 9001 IBCS has a top quality management team to maintain and develop the system so that the standards are at a continually high level. It is brought about by strict and consistent commitment to achieve uniformity of a product in order to satisfy specific customer or user requirements.

As quality managers, IBCS instil the ISO 9001 quality philosophy into the wider organisation, with simple techniques that everyone can use. 'Right first time', also provides a methodology that is easy to apply and can empower people to systematically improve performance.

## STAFF TRAINING INCLUDING APPRENTICESHIP SCHEME

Training is a continuous process for the company and its employees. In house technical training coupled with external supplier product support ensures that the IBCS team is fine tuned to



pass on all the latest market developments to its customers.

Many of the team have been employed by the company for many years and clearly understand the technical requirements to build and maintain product to the highest possible level.

There is an apprenticeship scheme that combines practical training whilst studying towards a related qualification. It is supported by working alongside experienced staff to gain job-specific skills and also supports local youth employment.

IBCS also offer bespoke training packages for customers by request.



#### **HEALTH & SAFETY POLICIES**

IBCS has a clear health and safety policy that commits them rigorous internal and external standards. An Internal policy document sets out our approach and identifies individual responsibilities to control main hazards from risk assessment.

The policy is reviewed regularly if work process, staff, plant or equipment is changed or modified.

For customers the effective training of operators and forklift truck drivers on the safe and proper use and maintenance is essential in today's Health & Safety conscious environment. Our external training also covers; general health and safety, battery maintenance and care, battery handling and handling scrap.

#### **ECO COMMITMENT**

IBCS are fully aware of environmental responsibilities of their business. Working with chemicals and toxic materials needs a good understanding of the industrial battery market. The movement and disposal of waste or scrap batteries, is strictly governed by special waste legislation, and must only be carried out by licensed carriers and disposers. Industrial Battery and Charger Services are continuing to work very closely with the Environment Agency to ensure we are able to provide safe and environmentally sound methods of waste movement and disposal.



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#### NOTES


#### **KEEP BUSINESS MOVING**

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