KOBE

HV POWER CONCEPTS
integrating innovations

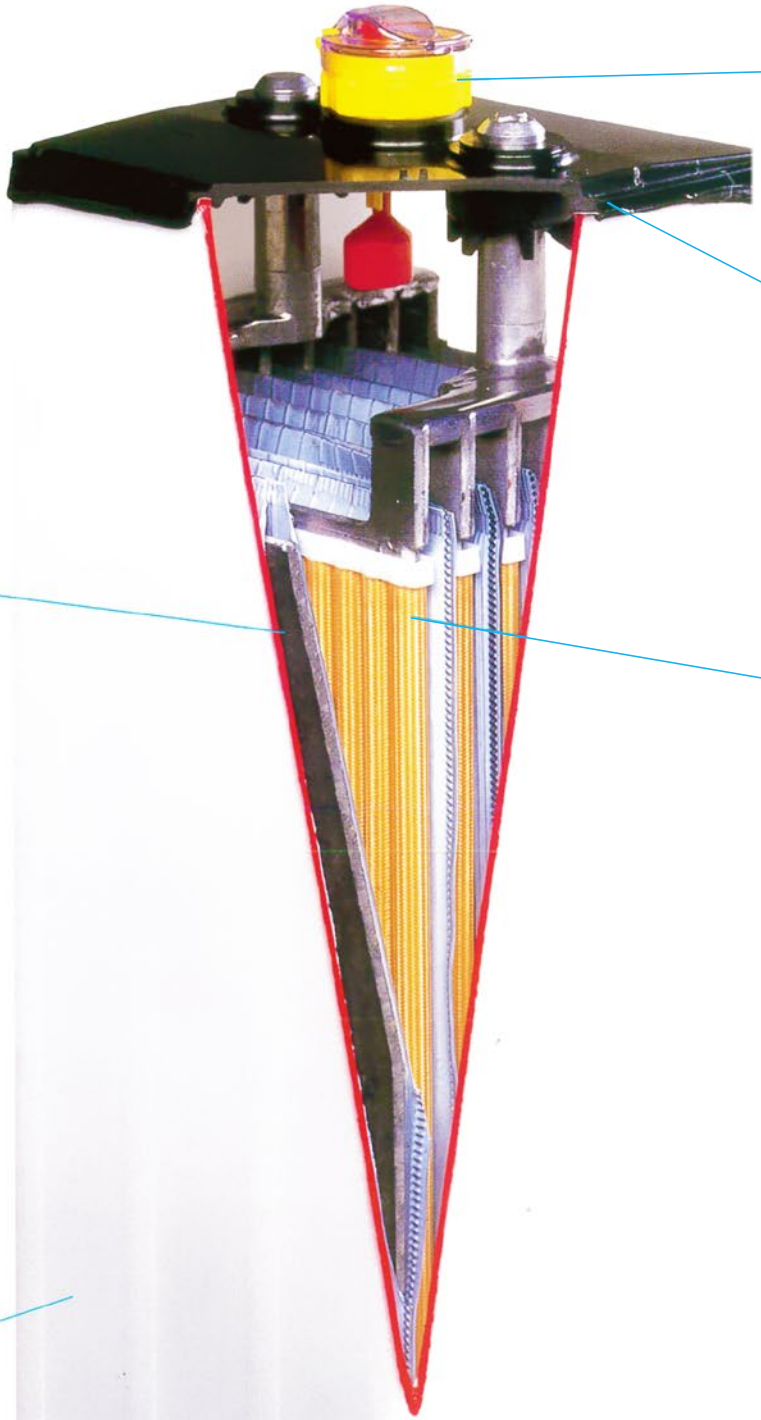
Kobe Traction Batteries
SUPER《LIFT TOP》

(032) 231.1004 | SALES@HVPOWERCONCEPTS.COM | WWW.HVPOWERCONCEPTS.COM

UNIT 107 THE ORIENT BLDG., ECHAVEZ ST., CEBU CITY 6000

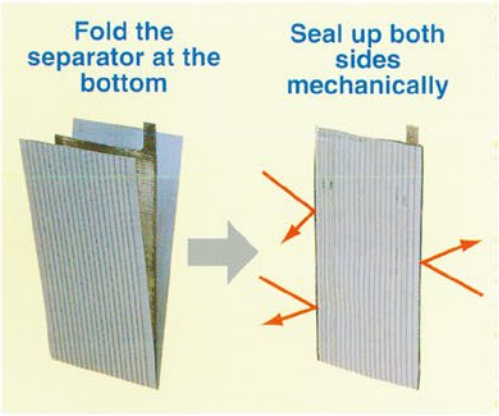
Traction Battery
SUPER ≪LIFT TOP≫

KOBE traction batteries are based on various high technologies and these technologies are being improved everyday. Envelope type polyethylene separators, a lead powder ball mill exclusively controlled for traction batteries, high pressure casting non-porous grids, glass fiber tubes having mechanical, chemical and thermal strength..... all these excellent features are only for KOBE traction battery SUPER ≪LIFT TOP≫ series.



Seal-up structure

A negative plate is put in the doubled separator and both sides are pasted completely. Insulation improves and prevents the falling off of active materials, thereby can keep long life.



Separator

Separator is made of high polymer polyethylene which has good performance to keep the electrolyte unalloyed as the elution of oil in the separator is less.

PP materials is used for container and cover

Polypropylene materials is used for container and cover, which is excellent in heat resistance, hot weather, oil resistance and impact resistance.

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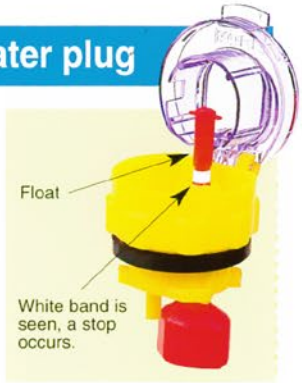
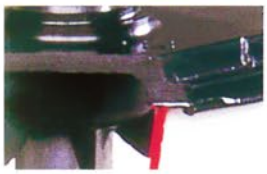
Float mounted water plug

Water filling is easy from wide spout and being prevented from overflow with visible indicator.(Show page 7)



Heat sealing



The container and cover are heat-sealed completely to keep sealing reliability.

Positive plate

Unique technology made excellent positive plates with finer crystal structure grid(spine) by using a pressure casting method and sealing to prevent active materials not to leakage from tube by bonding plastic part and tube.

Positive plate active materials

Active materials of unique lead powder produce high capacity and long life.

Connector cover

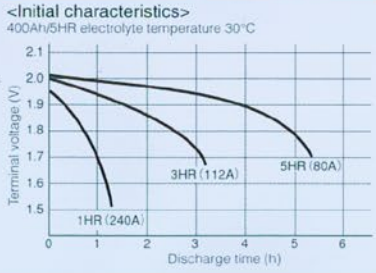
Battery assembly

For standing type forklift

For seat type forklift

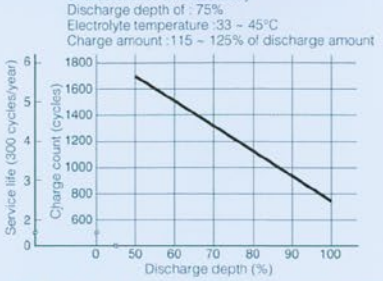
Standard discharge characteristic (one example)

Battery capacity changes with the amount of discharge current. For example, in 1-HR discharge, battery capacity is reduced to approximately 60 ~ 65% of the 5-HR discharge capacity (rated). Moreover, when electric discharge is applied by high current, not only the quantity of electricity that can be taken out may be reduced but also the life may be shortened.



Relationship between the depth of discharge and battery life (one example)

Battery life is affected by mostly discharge amount i.e. operating conditions, vibration, temperature and regular maintenance working level etc. and if the deep discharge is repeated, its life may be reduced rapidly.



100% discharge, approximately 750 cycles (2 years and half)
75% discharge, approximately 1,200 cycles (4 years)

Range and specification

Type	Voltage (V)	5-hour rate capacity (A h)	External dimensions (mm)				Electrolyte-contained weight (approximate kg)	Amount of electrolyte (approximate L)
			Length (L)	Width (W)	Box height (h)	Total height (H)		
VSB4	2	160	90	158	320	352	11.4	2.6
VSB4Z	〃	195	90	158	320	352	12.7	2.4
VSB5	〃	200	109	158	320	352	13.8	3.2
VSB6	〃	240	128	158	320	352	16.2	3.8
VSB7	〃	280	148	158	320	352	18.7	4.5
VSB8	〃	320	167	158	320	352	21.1	5.0
VSB400MZ	〃	400	177	158	320	352	24.4	5.0
VSC3M	2	129	58	158	350	382	8.8	1.7
VSC4	〃	172	90	158	350	382	12.0	2.9
VSC5	〃	215	109	158	350	382	14.5	3.6
VSC6	〃	258	128	158	350	382	17.0	4.2
VSC7	〃	301	148	158	350	382	19.6	4.9
VSC344	〃	344	148	158	350	382	20.9	4.7
*VSC10	〃	430	206	158	350	382	28.3	7.0
*VSC12	〃	516	244	158	350	382	33.3	8.3
VSDH3M	2	164	58	158	395	427	10.2	1.9
VSDH4N	〃	208	81	158	395	427	13.6	2.8
VSDH160A	〃	160	90	158	395	427	12.5	3.6
VSDH250	〃	250	90	158	395	427	15.8	2.9
VSDH390L	〃	390	148	158	380	412	23.0	5.2
VSDH450L	〃	450	148	158	380	412	24.6	4.8
VSDH480M	〃	480	161	158	395	427	27.7	5.6
VSDH480L	〃	480	186	158	380	412	29.3	6.6
VSDH9	〃	490	186	158	395	427	29.7	7.0
VSDH560	〃	560	186	158	395	427	33.0	6.3
VSDX165MH	2	165	58	158	410	442	10.8	1.9
VSDX330	〃	330	128	158	395	427	20.9	4.6
VSDX360	〃	360	128	158	395	427	22.6	4.2
VSDX330M	〃	330	144	158	395	427	22.2	5.5
VSDX400M	〃	400	144	158	395	427	24.0	5.2
VSDX470M	〃	470	144	158	395	427	25.7	4.8
VSDX485MH	〃	485	144	158	410	442	26.0	5.1
VSDX450M	〃	450	161	158	395	427	26.9	5.7
VSDX540M	〃	540	161	158	395	427	28.7	5.4
VSDX545MH	〃	545	161	158	410	442	29.2	5.7
VSDX560M	〃	560	177	158	395	427	30.1	6.4
VSDX565MH	〃	565	177	158	410	442	30.5	6.6
VSDX600MH	〃	600	177	158	410	442	32.2	6.3
VSDX620	〃	620	186	158	395	427	34.6	6.5
*VSDX690	〃	690	206	158	395	427	37.8	6.9
*VSDX700H	〃	700	206	158	410	442	38.1	7.3

Note) 1. A type symbol and a numeric value indicate the following:
V : For electric vehicle B,C,DH,DX,FL,IL,I,H : Distinction by container height
Numeric value : Size of container and capacity
2. Mark * Double pole type storage battery
3. Design and specifications may be partially changed without notice

Range and specification

Type	Voltage (V)	5-hour rate capacity (A h)	External dimensions (mm)				Electrolyte-contained weight (approximate kg)	Amount of electrolyte (approximate L)
			Length (L)	Width (W)	Box height (h)	Total height (H)		
VSFL201M	2	201	58	158	490	522	12.6	2.3
VSFL268M	〃	268	75	158	490	522	16.3	3.2
VSFL210A	〃	210	90	158	490	522	15.6	4.6
VSFL280	〃	280	90	158	490	522	17.6	4.2
VSFL320	〃	320	90	158	490	522	19.7	3.8
VSFL5	〃	335	109	158	490	522	21.2	5.0
VSFL390	〃	390	109	158	490	522	23.5	4.8
VSFL6	〃	402	128	158	490	522	25.0	6.0
VSFL545	〃	545	148	158	490	522	30.8	6.6
*VSFL9ZD	〃	670	186	158	490	522	39.2	8.5
*VSFL10	〃	670	206	158	490	522	41.0	9.8
*VSFL11	〃	737	225	158	490	522	44.7	10.7
*VSFL858	〃	858	225	158	490	522	48.7	10.0
VSIL220ML	2	220	58	158	490	522	13.2	2.2
VSIL300NL	〃	300	81	158	490	522	17.5	3.4
VSIL445L	〃	445	109	158	490	522	24.3	4.4
VSIL515L	〃	515	128	158	490	522	28.2	5.3
VSIL545ML	〃	545	144	158	490	522	31.9	5.9
VSIL730ML	〃	730	177	158	490	522	39.5	7.3
*VSIL865L	〃	865	206	158	490	522	47.1	8.5
*VSIL935L	〃	935	225	158	490	522	51.0	9.4
VSIL225M	2	225	58	158	520	552	13.6	2.4
VSIL288M	〃	288	75	158	520	552	17.5	3.2
VSIL280N	〃	280	81	158	520	552	18.2	3.7
VSIL4	〃	312	90	158	520	552	19.1	4.4
VSIL370	〃	370	90	158	520	552	21.3	4.0
VSIL435	〃	435	109	158	520	552	25.1	4.8
VSIL6	〃	468	128	158	520	552	27.0	6.3
VSIL510	〃	510	128	158	520	552	29.2	5.8
VSIL7	〃	536	148	158	520	552	31.1	7.3
VSIL580	〃	580	148	158	520	552	33.3	6.8
VSIL8	〃	612	167	158	520	552	35.0	8.2
VSIL9	〃	702	186	158	520	552	39.4	9.2
*VSIL10	〃	780	206	158	520	552	44.2	10.2
*VSIL11	〃	858	225	158	520	552	48.2	11.2
*VSIL12	〃	936	244	158	520	552	52.3	12.2
VSI240M	2	240	58	158	520	552	14.2	2.3
VSI340N	〃	340	81	158	520	552	18.6	3.6
VSI470	〃	470	109	158	520	552	25.8	4.7
VSI565	〃	565	128	158	520	552	30.1	5.8
VSI645	〃	645	148	158	520	552	34.2	6.6
VSI725M	〃	725	161	158	520	552	37.9	7.1
*VSI845	〃	845	186	158	520	552	42.7	8.5
*VSI925	〃	925	206	158	520	552	49.3	9.1
*VSI1080	〃	1080	244	158	520	552	57.6	10.9
VCH280M	2	280	57	158	700	732	20.4	3.1
VCH3	〃	300	70	158	700	732	20.9	4.5
VCH360	〃	360	70	158	700	732	25.9	3.9
VCH420	〃	420	89	158	700	732	31.2	5.4
VCH5	〃	525	108	158	700	732	34.5	6.8
VCH600M	〃	600	113	158	700	732	37.0	6.8
VCH700	〃	700	128	158	700	732	43.0	8.1
VCH7	〃	735	147	158	700	732	43.7	8.9

New Water Filling System 《New Quick Filler》

Filling spout is widened and its operation time shortened greatly. The performance of automatic cut-off also improved.

Prevent explosion

The mechanism of seal portion stops entering gas generated during charge into water filling hose, so that there is no fear of explosion.

Automatic cutoff structure

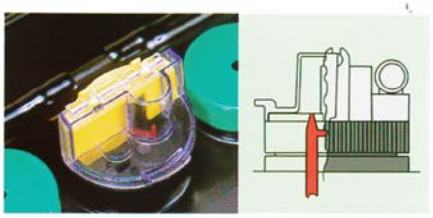
Water is filled up to normal electrolyte level, the float rises and cutoff valve works automatically.

Conventional Plug cap is unnecessary

Water can be filled to each battery by connecting hose from main tank at once. It saves operating time greatly.

Easy and accurate to control the electrolyte

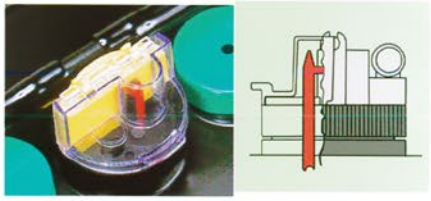
The position of red level indicator clearly shows when electrolyte is shortage and gravity measurement also can be performed easily from its wide spout.



(a) Check of electrolyte level : When the red level indicator bar sinks(goes down), it requires to fill water.

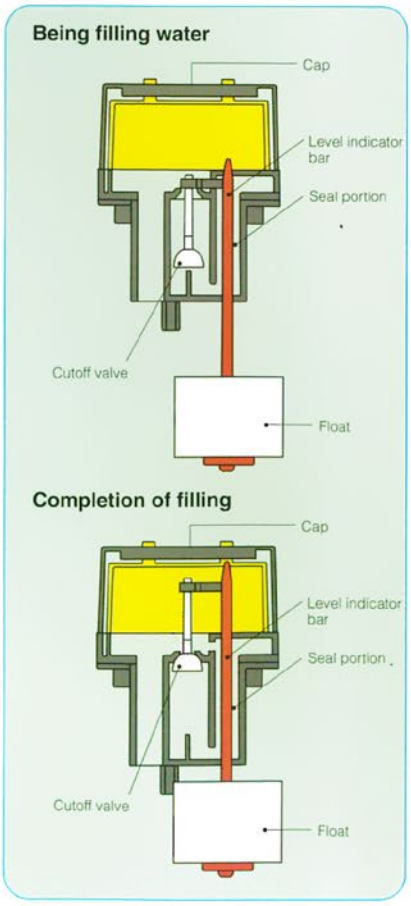
(b) Preparation for water filling : Connect hoses of each battery and main tank using joints.
※Please wear rubber gloves in actual works.

(c) Start filling water : Cocks of all are opened and start filling automatically.
※Please wear rubber gloves in actual works.



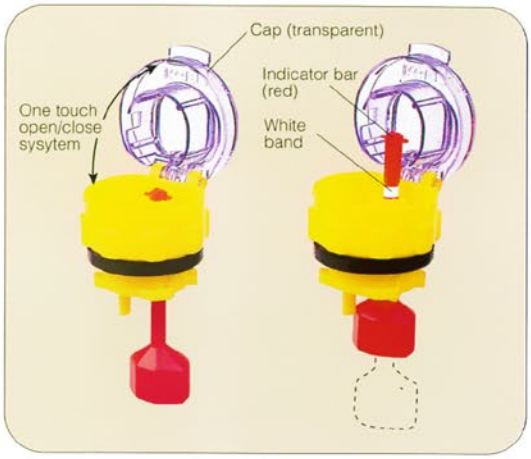
(d) Completion : When the portion of red level indicator bar floats to the normal level, stop filling automatically. Close cocks and remove joints.

■ Structure



※Water means pur:Fied water

Float mounted water plug



Easy water filling
The spout is wide and it is easy to fill water.

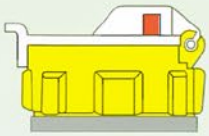
Over filling is prevented
When the white portion of the indicator bar is seen, it is completed. Therefore, proper amount of electrolyte can be maintained.

Simplified replacement
The plug can be mounted and dismounted easily with quarter turn rotation structure.

Control of electrolyte level is performed accurately

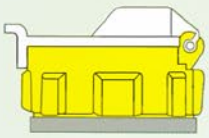
Normal electrolyte level

The indicator bar(red) is floating.



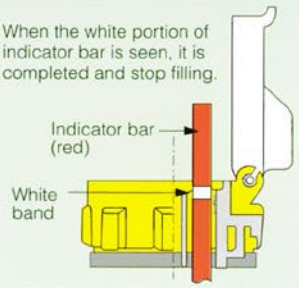
Shortage of electrolyte

When the indicator bar sinks(goes down), water filling is necessary.



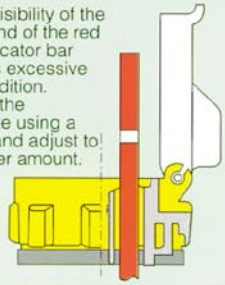
Completion

When the white portion of indicator bar is seen, it is completed and stop filling.



Excessive water addition

Perfect visibility of the white band of the red level indicator bar indicates excessive water addition. Remove the electrolyte using a syringe and adjust to the proper amount.



- If an insufficient electrolyte occurs, add water until water addition is complete.
- Note that you may damage the float mounted type water addition plug if you put pressure on its cap or drop an object on it.
- If the float mounted type water addition plug is dirty, remove and wash it with water.

Level meter《SUPER DELSIGN》

Easy-to-see alarm display
Usually, the green lamp is lighting continuously and the red lamp flashes when it is the time to fill water.

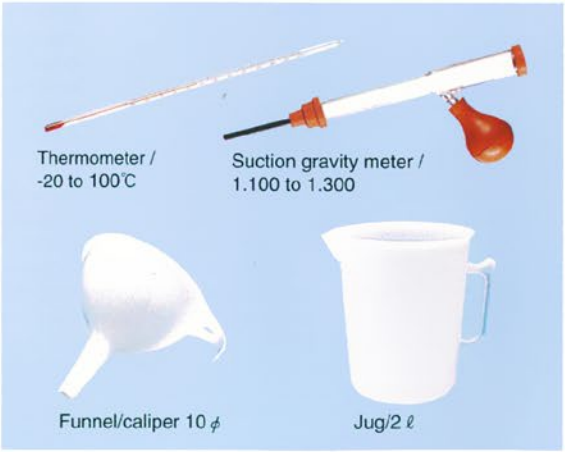
Easy installation on the specified side of iron box
Adhesive agent is adhered on the rear side of the panel. Remove its seal and mount.

Both a sensor and a power supply can be mounted easily.

Float mounted type water addition plug with sensor

Samples

Support tools



Battery connector

SB350.6320 SB175.6325

■External dimensions
SB350.6320...182.6 length × 70 wide × 33(mm) high
SB175.6325...134.5 length × 55 wide × 26(mm) high

Handling Precautions

⚠ DANGER

Operating Environment

● The battery generates hydrogen gas. Thus, using or charging the battery in the following environments is strictly prohibited. Otherwise property damage, fire hazards, or explosions due to flashing can result.
Places where fire is used
Closed or ill-ventilated places
Your special attention is required while charging and for 30 minutes following charging.

Cleaning the Battery

● As mentioned above, the battery generates hydrogen gas. It is therefore requested that you observe the following rules when cleaning the battery. Otherwise explosions due to flashing can result.
(a) Don't try to connect the + end and - end of the battery using a tool or the like.
(b)Whenever cleaning the battery, make sure to use a piece of wet cloth. Use of dry cloth must be avoided.

● The battery surface or connections must be protected from stains or contamination by foreign substances. Otherwise electric leakage can result, leading to fire hazards or explosions due to flashing. Be sure to maintain a clean, dry battery by removing stains and foreign substances using wet cloth.

Disconnecting the Plug

● Whenever disconnecting the plug, make sure to turn off the vehicle's key switch as well as the charger's switch. Otherwise explosions due to flashing can result from the sparks.

If Battery Electrolyte Get into your Eyes

● Should you get battery electrolyte in your eyes, wash your face with a large quantity of fresh water and then get a checkup by an ophthalmologist. Otherwise, your eyesight can be damaged or lost.

⚠ WARNING

When Installing the Battery

● Battery installation work must not be allowed by those who are not familiar with the handling and hazardous nature of batteries. Otherwise personal injury or battery damage can result.

● Whenever connecting the cable, you must make sure that the + end and - end are correctly connected. Otherwise damage or burnout of electronic parts can result.

When Charging

● Be sure to use only a designated charger or a charger compatible with the battery's rated capacity and voltage. Otherwise insufficient charging, electrolyte leakage, or abnormal heating can result.

● Changing the tap voltage of a charger without prior consent from the maker is prohibited. The battery can be overcharged if the input voltage becomes significantly higher than the tap voltage, resulting in abnormal heating or burnout.

● Don't try to charge the battery in a clean room or in the vicinity of an air inlet where fresh air is required. Otherwise corrosion due to acid mist can result.

● Don't allow electrolyte temperature to go above 60°C while charging. Otherwise electrolyte leakage or personal injury can result. Special attention is required on this point during the summer or during the day.

Handling

● Don't allow children to touch the battery. Otherwise electric shock, burns, or loss of sight due to diluted sulfuric acid can result.

● Don't try to place the battery in fire or heat it. Otherwise electrolyte leakage, fuming, or battery damage can result.

● Make sure before charging or using the battery that the + end and - end are connected properly (not connected in reverse). Otherwise abnormal heating, ignition, fuming, or explosions due to flashing can result.

● Don't try to overhaul the battery. Otherwise personal injury or explosions due to flashing can result.

● Make sure that the electric current used for charging is within twice the battery rating. Otherwise the battery's inside can melt down, leading to explosions.

Maintenance and Inspection

● Before starting maintenance or inspection work, make sure to wear protective gear including protective goggles, rubber gloves, and rubber-soled shoes. Otherwise electric shock can result when you touch a conductive part.

● Be sure to maintain the electrolyte volume above the lower limit level. Otherwise the battery can be heated or burnt out.

● If any of the following trouble is found, stop using the battery. Otherwise generation of sparks, battery burnout, or explosions due to flashing can result.
(a) The terminal fastening bolt on the battery is loosened.
(b) The wire caulking portion is damaged.
(c) The wire is corroded at the portion where it is united with the terminal.
(d) The plug is deformed or carries traces of overheating.

● Before starting inspection or cleaning the battery, be sure to eliminate static electricity by, for instance, touching a metal part distant from the battery. Touching the battery with a charged body can generate sparks, potentially leading to explosions due to flashing.

Storage over a Long Period of Time

● When storing the battery over a long period of time, be sure to avoid storing it in an ill-ventilated place or a place where fire is used.

Diluted Sulfuric Acid is Used as Electrolyte

● Diluted sulfuric acid is used for the battery electrolyte. If your skin, body, or clothing is contaminated by electrolyte, rinse them off with a large quantity of water and then clean the contaminated portion using soap. Otherwise burns can result.

● When you have accidentally swallowed electrolyte, gargle immediately a number of times with water and then drink a large quantity of water or milk. Then consult a doctor at the earliest possible chance. Swallowed electrolyte can cause burns.

- This catalog is prepared based on information available as of Sep. 2009.
- Descriptions in this catalog are based on our tests conducted under due attention. This catalog, however, does not necessarily warrant that the same results as in the descriptions are obtainable in your actual operations.
- Photos and illustrations used to explain sample applications of the product may not represent parts and equipment currently used.
- The maker does not warrant that using this product, or products or devices equipped with this product, are free from conflict with the industrial property rights owned by a third party.
- Specifications as well as the external appearance of the product are subject to change without prior notice.
- Please be advised that the product photos may not faithfully represent the actual colors of the product because of printing limitations.
- Be sure to read the instruction manual before using the product.

When Placing Orders:

When placing an order, please provide us with the following information:

- **Information on the battery-driven forklift or carrier**
  (a) Maker name (b) Model name (c) Weight (tonnage)
- **On the battery (if a battery is used)**
  (a) Maker name (b) Model name (c) Capacity (d) Voltage (e) Battery part number (indicated on nameplate)

Manufacture and Exporter
Shin-Kobe Electric Machinery Co., Ltd.
Address: St.Luke's Tower 8-1, Akashi-cho, Chuo-ku, Tokyo 104-0044 Japan
Telephone: +81-3-6811-2251 Facsimile: +81-3-5565-5771
URL:http://www.shinkobe-denki.co.jp/

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