

# FUKUDA

## STATIONARY LEAD - CALCIUM BATTERIES



FUKUDA STORAGE BATTERY CO., LTD

# FUKUDA

## STATIONARY LEAD - CALCIUM BATTERIES

Lead-calcium batteries display very important features such as longer service life and easier maintenance when they are put into service as stationary type. The sophisticated and difficult lead-calcium batteries constructions have been solved by our reliable manufacturer after many years of research and development efforts. This means better performance from your FUKUDA® Stationary Lead-Calcium Batteries.

The information contained herein is the profile of FUKUDA® Stationary Lead-Calcium Batteries.

### 1. Construction and Materials

Although structurally similar as conventional pasted type stationary lead-acid batteries, in which the plate grids, posts and terminals are made from lead-antimony alloy, these batteries feature lead-calcium alloy grids. Although lead-calcium is difficult to handle, the lead-calcium used in our batteries are uniform in quality, which is achieved by a special

process and constantly upgraded facilities. The use of lead-calcium alloy in component parts has already brought many outstanding design features into new batteries, listed below as a stationary type.

### 2. Features

#### 1) Long Life

While lead-calcium batteries are floated, they are kept in a charged condition at extremely small float charging current as compared to the conventional lead-acid types.

Further, unlike lead-antimony types, they show no increase of current reading with the lapse of years placed in service and they flow a small current while keeping it constant throughout their entire life. This also ensures little corrosion in the plate grids.

Life of lead-calcium types is approximately 1.5 – 2 times longer than the life of lead-antimony types. In turn, this results in a dramatic improvement of conventional battery viability.

#### 2) Markedly Time Saving for Water Addition

Keeping float charge current low and stabilizing leads to reduce water loss in the electrolyte. Usually, conventional types (vented lead-antimony batteries) require water additions every 6 or 12 months. Calcium types require them every 3 to 5 years. This contributes greatly to man power saving.

#### 3) No Need to Give Equalizing Charge Ever

Proper float charge voltage of calcium types is 2.17 VPC. In this case, the batteries require gives an equalizing charge of 2.3 to 2.4 VPC every 3 – 6 months. If they have a float voltage set up at a little higher voltage, i.e. approximately 2.25 VPC, they require no equalizing charge. This is recommended if a higher float voltage is permitted by the system equipment.

#### 4) Less Self-Discharge

The self-discharge capacity of lead-calcium types is below one-fifth of that of conventional types. Furthermore, it is stabilized throughout the period of its entire life.

This type is best suited to applications such as buoy lights which discharge continuously for an extremely long period of time at a minute current. In addition, applications for solar photovoltaic and wind conversion systems for natural energy storage in which self-discharge are particularly required to be the minimum.

# 3. General Data

**Low-rate Discharge Type Main Applications:** Power Station, Sub Station, Communication Equipment and Emergency Power Source

Battery Type	Nominal Voltage (V)	Capacity (Ah)	Dimensions (mm)				Weight (kg)		Electrolyte Volume (ℓ)
			Width	Length	Height	T. Height	Unfilled	Filled	
PS2-2S	2	24	131	67	185	229	2.0	3.2	1.0
PS3-2S	2	36	131	67	185	229	3.0	4.1	0.9
PS4-2S	2	48	132	102	185	229	3.5	5.2	1.4
PS5-2S	2	60	132	102	185	229	4.5	6.1	1.3
PS6-2S	2	72	132	102	185	229	5.0	6.5	1.2
PS7-2S	2	84	133	154	185	229	6.0	8.7	2.2
PS8-2S	2	96	133	154	185	229	6.5	9.2	2.2
PS9-2S	2	108	133	154	185	229	7.0	9.6	2.1
PS-190S	2	190	170	120	325	380	13.3	17.5	3.4
PS-340S	2	340	170	195	325	380	21.1	28.0	5.6
PS-450S	2	450	170	285	325	380	31.1	42.0	9.0
PS-600S	2	600	170	391	325	380	44.4	59.0	12.0
PS-840S	2	840	170	515	325	380	56.6	76.0	16.0
PS-1000S	2	1000	300	280	640	710	89.0	128.0	32.0
PS-1320S	2	1320	300	280	640	710	110.0	144.0	28.0
PS-1600S	2	1600	300	390	640	710	138.5	192.0	44.0
PS-1980S	2	1980	300	390	640	710	157.4	206.0	40.0

Note: S.G of electrolyte : 1.215 @ ambient conditions  
 Floating Charge Voltage : 2.17 VPC

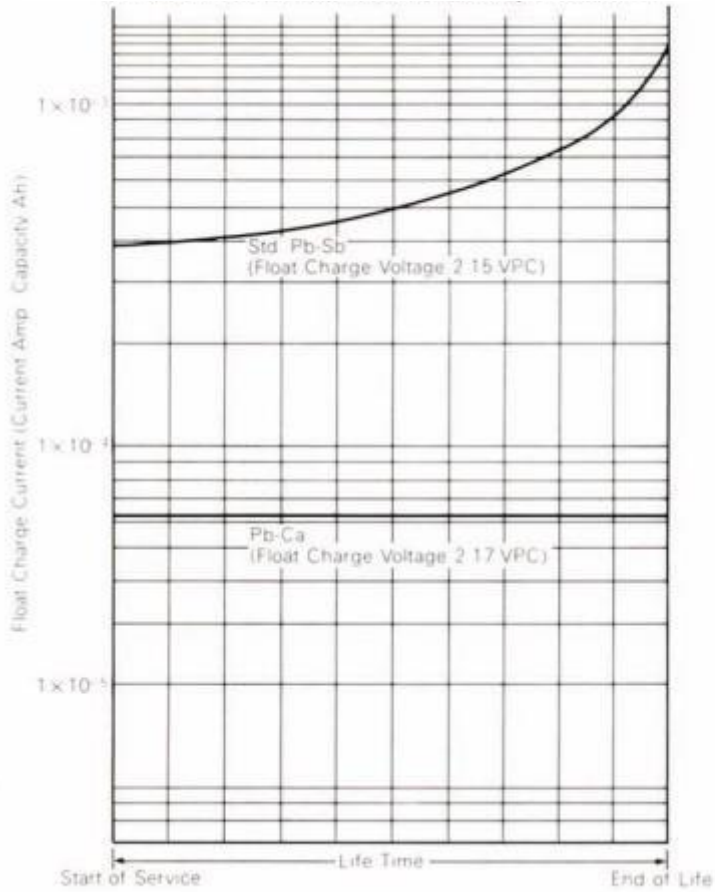
**High-rate Discharge Type Main Application :** U.P.S and Engine Starting

Battery Type	Nominal Voltage (V)	Capacity (Ah)		Dimensions				Weight (kg)		Electrolyte Volume (ℓ)
		1 Hr	Nominal Capacity	Width	Length	Height	T. Height	Unfilled	Filled	
HS-30S	2	18	30	131	67	185	229	2.2	3.2	0.8
HS-40S	2	24	40	131	67	185	229	2.5	3.5	0.8
HS-50S	2	30	50	131	67	185	229	3.0	4.0	0.8
HS-60S	2	36	60	132	102	185	229	3.5	5.0	1.2
HS-80S	2	48	80	132	102	185	229	4.5	6.0	1.2
HS-100S	2	60	100	133	154	185	229	5.5	8.0	1.9
HS-120S	2	72	120	133	154	185	229	6.5	9.0	1.9
HS-150S	2	90	150	170	120	325	380	8.5	13.0	3.8
HS-200S	2	120	200	170	120	325	380	11.0	15.5	3.6
HS-250S	2	150	250	170	120	325	380	13.0	17.5	3.5
HS-300S	2	180	300	170	195	325	380	16.0	24.0	6.5
HS-400S	2	240	400	170	195	325	380	19.5	27.0	6.0
HS-500S	2	300	500	170	285	325	380	22.0	32.0	8.5
HS-600S	2	360	600	170	285	325	380	25.0	35.0	8.0
HS-700S	2	420	700	170	390	325	380	29.0	48.0	13.0
HS-800S	2	480	800	170	390	325	380	36.0	51.0	12.5
HS-900S	2	540	900	170	390	325	380	40.0	55.0	12.0
HS-1000S	2	600	1000	170	515	325	380	51.0	70.0	15.5
HS-1200S	2	720	1200	170	515	325	380	57.0	76.0	15.0
HS-1500S	2	900	1500	653	280	333	421	77.0	125.0	39.0
HS-2000S	2	1200	2000	653	280	333	421	100.0	145.0	36.0
HS-2500S	2	1500	2500	653	280	333	421	123.0	165.0	34.0

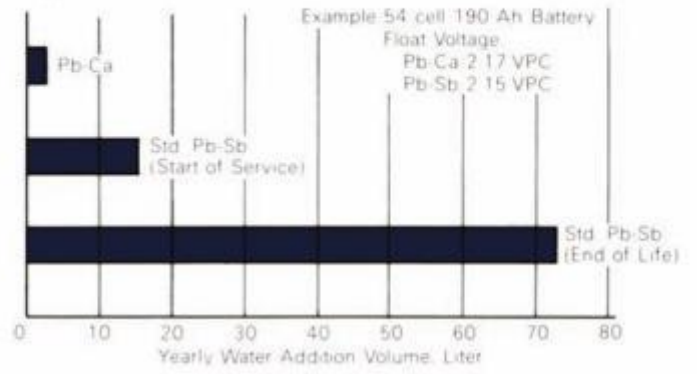
Note: S.G of electrolyte : 1.240 @ ambient conditions  
 Floating Charge Voltage : 2.20 VPC

Divide 25.39 for (mm) conversion to (in)  
 Divide 0.455 for (kg) conversion to (lb)

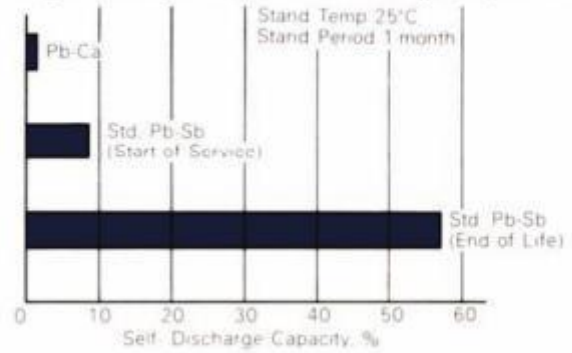
**Fig. 1 -Float Charge Current Strength of Lead-Calcium & Lead-Antimony Batteries**



**Fig.2—Yearly Water Addition Volume Comparisons**



**Fig.3—Comparative Self-Discharge Capacities**



**MECTRA**  
 S Y N E R G Y

**MECTRA SYNERGY (M) SDN BHD**  
 B-13-11, Menara Prima,  
 Jalan PJU 1/39 Dataran Prima,  
 47301 Petaling Jaya,  
 Selangor Darul Ehsan,  
 Office : +603-7886 1732  
 H/P : +6010-201 6466  
 Email : sales@mectra.com.my

ICR  
 ANAB  
 IAF  
 ISO 9001:2015 - Q217917  
 ISO 14001:2015 - E102717  
 ISO 18001:2007 - DSH058