GS YUASA

Creating the Future of Energy

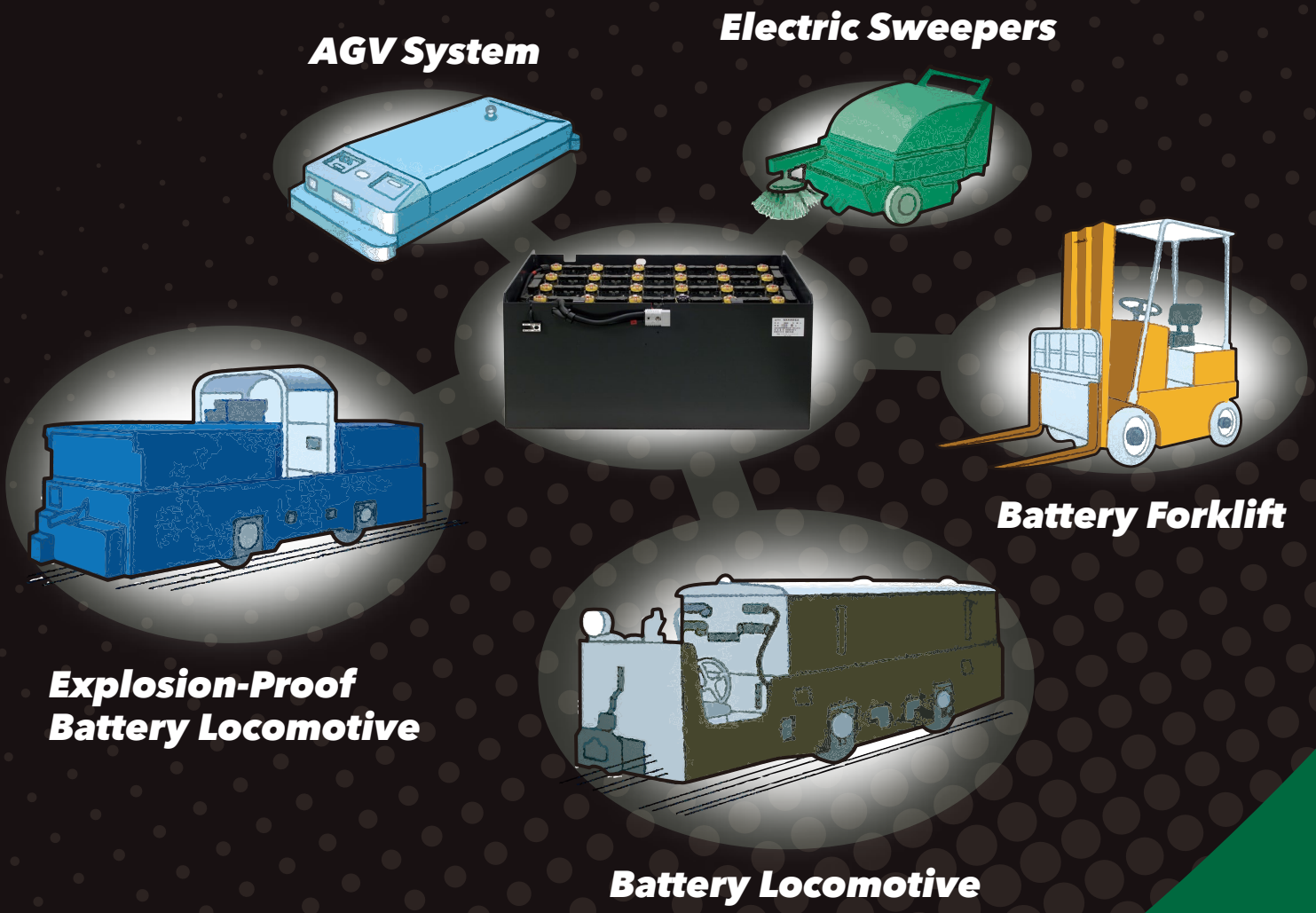
MOTIVE POWER TRACTION BATTERY

GS Yuasa Multi-Purpose Traction Battery

Traction batteries have a wide range of applications!

Traction batteries are used to propel battery-powered electric vehicles such as forklifts, electric golf carts, ride-on floor scrubbers, mining locomotives and a whole host of other vehicles.

Our traction batteries are some of the highest quality batteries to be found worldwide. The technology, designed by GS Yuasa, employs our original glass fiber tubes and is a unique differentiator, while still meeting our customers' more basic requirements of a long service life, stable quality and of course, easy maintenance.



V Series Batteries

V series batteries are GS Yuasa's best-sellers and are well known for their high performance and unsurpassed long service life.

Not only forklift manufacturers, but also battery dealers choose our products based on the specific demands of end users in the market.
GS Yuasa makes both JIS type and DIN type batteries.

GY JIS (*1) **:** Widely accepted by global forklift manufacturers for its quality.

GY DIN (*2) **:** Popular for tubular type DIN with a long cycle life.

(*1) JIS: D_5303-1(2004)
(*2) DIN: IEC60254-1,-2

Vent plugs are not just "caps" anymore!

Vent plugs are the caps on each individual battery cell, they are used to secure the electrolyte and replenish the distilled water.

We've made improvements by adding floats inside the plugs which indicate to our customers the current level of electrolyte.

The mechanism is very simple.
If there is enough electrolyte in the cell, the indicators will pop up when the customer opens the transparent cover.
But if the indicator does not appear, then the customer will need to add more water.

At GS Yuasa, we're not only trying to extend the life of our batteries but we're also trying to improve the general usability of our products.

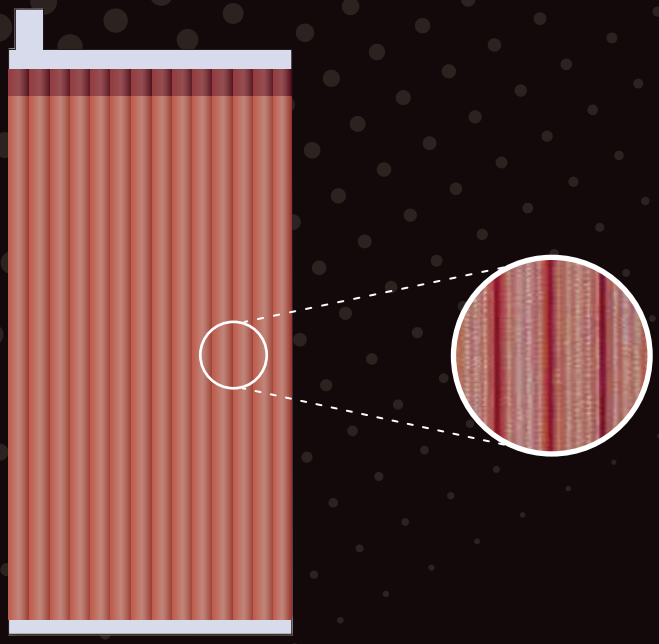
Tubular Plates Prolong Your Battery Life!

Traction batteries are used in harsh environments with extremes of high and low temperatures, and sometimes under heavy duty.

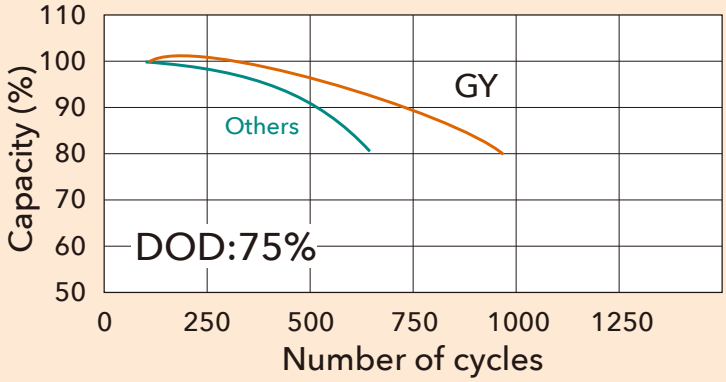
Despite this, GS Yuasa has succeeded in extending the battery life by adopting glass fiber tubes for the positive plates.

We use glass fiber because this keeps the active material leakage to a minimum.

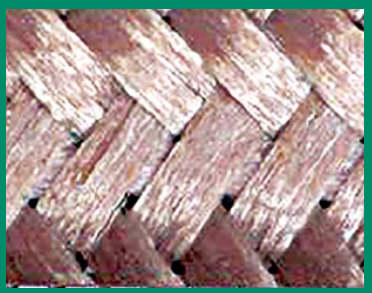
We also carried out cycle life tests on our batteries at high temperature (60°C) and confirmed that our products have a cycle life over 250 higher than other manufacturers' batteries under identical conditions.



High Temperature Cycle-Life Test Results at 60°C

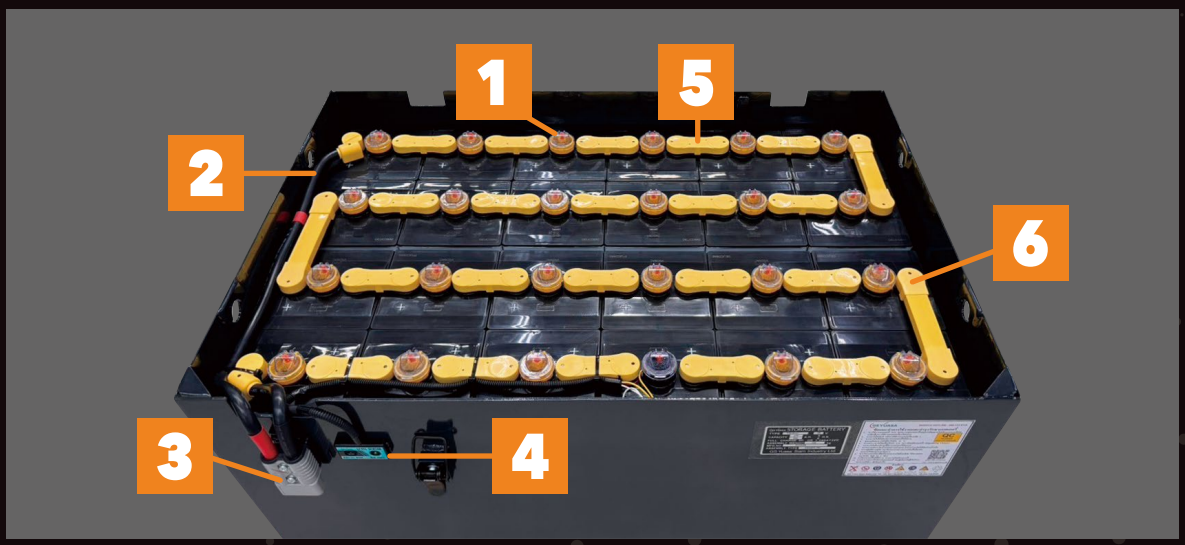


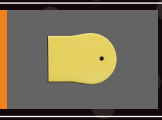
GS Yuasa Glass Fiber Tube



- Higher quality
- Less leakage

Introduction of GS Yuasa Traction Battery Parts



1		**Vent Plugs** Caps of the cells and users are able to see the electrolyte level by checking the float on the plug.
2		**Lead cables** Cables that connect the cells and plugs.
3		**Plugs** Parts that connect the batteries and electric vehicles.
4		**Level sensors** Sensors that indicate the electrolyte level.
5		**Connectors** Parts used to connect the cells with each other. *Connector in the picture is for JIS battery.
6		**Connector Covers** Parts used to cover the connector.

Easy Watering Device “10L Watering Tank”

Easy and Convenient Watering! (10L Water Tank)

1. Watering:

Open the cap when the float of the liquid inlet plug is lowered and water.

2. Watering Complete:

If the white line on the float of the liquid inlet plug is visible, it is complete.

10L Watering Tank

Watering is complete when the white line is visible.

Easily water with one hand.

Liquid Level Sensor

The sensor detects the status of the liquid level and notifies with LED indicators.

Key Features:

- High-reliability circuit with a simple design.
- Cost-effective.
- Low power consumption due to the use of LEDs.
- There are also models available for water supply systems.

[Display]

Red LED Green LED

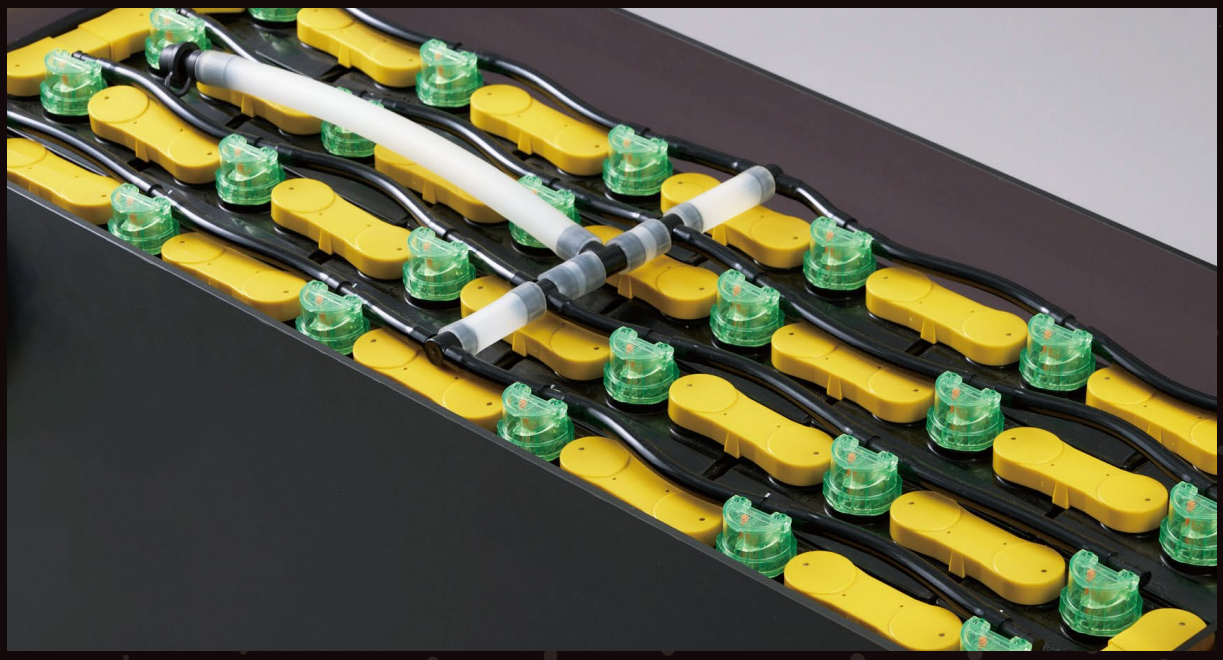
[Green LED On]

The liquid level is normal.

[Red LED Flashing]

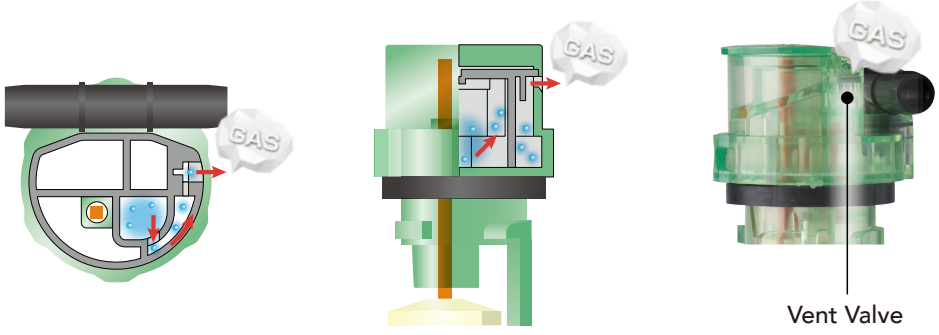
Watering is required.

F88A auto filling system

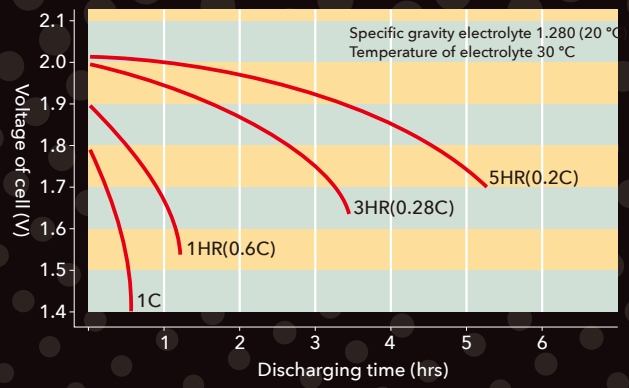


- **Next generation of F88 auto filling system**
- **Water stopping structure**
  Stable water stopping at any point of the filling system.
- **High visibility**
  Able to check the float height with transparent vent plug.
- **Anti droplet structure (Figure1)**
  Able to emit the gas only and avoid splashing during charge.

Figure1

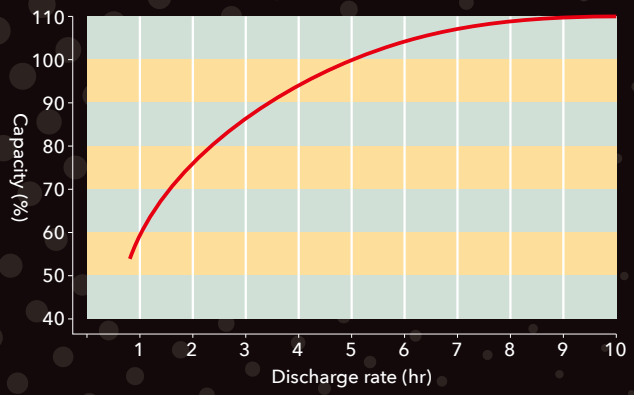


Discharge Characteristics of a Forklift Truck Storage Battery



Each hour rate (for example) Just after fully charging, Battery temperature: 30°C, Discharge rate C: Rated one.

Relationship between Discharge rate and Capacity

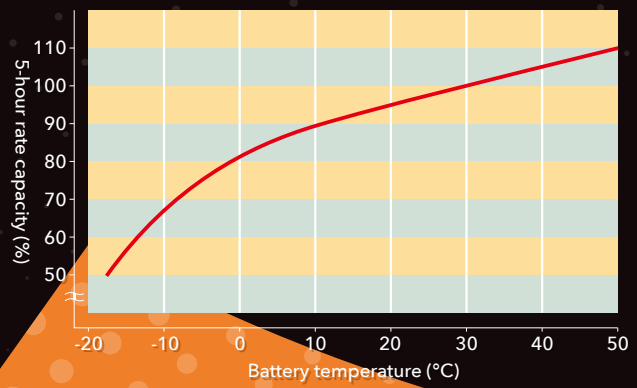


From the diagram above, the value of current (A) for different discharge rates of a storage battery with a 5-hour rate capacity of 400 Ah is shown below:

5-hour rate (5 HR) = 400Ah/5 = 80 A
3-hour rate (3 HR) = 400Ah x 0.85/3 = 113A
2-hour rate (2 HR) = 400Ah x 0.7512 = 150A
1-hour rate (1 HR) = 400Ah x 0.6/1 = 240A

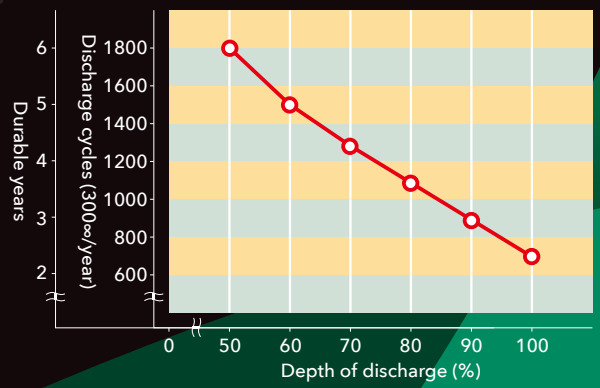
As you can see from the above description, the more often the forklift is used for lifting or the more often it's operated at high speed, the shorter the available working time of the storage battery becomes.

Relationship between Temperature and Battery Capacity



As you can see from the diagram above, the actual available working time of a forklift truck battery is shorter in winter than in summer. This is especially true in a refrigerated warehouse, where the actual available working time of the battery is noticeably shortened due to the high frequency of lifting (which required a great deal of electric current).
To counteract this problem, we recommend charging any battery which will be used in winter or will be used in a refrigerated warehouse to a slightly overcharged condition and to also warm up its temperature in advance (the most suitable battery temperature in this case seems to be about 30°C).

Life of a Clad-Type Storage Battery for a Forklift Truck



Although it depends on the specific use case and the operating conditions of each forklift truck, the life of the storage battery is in most cases described by its number of durable years of use or by the number of charging and discharging cycles it is capable of before the battery capacity decreases to between 60% and 80% of the original rating.
Although the life of a storage battery depends heavily on these conditions, it can be expected to be as long as up to about 4 years of use or up to about 1,200 charging and discharging cycles in normal use, whichever comes first.

DIN Cell Types
BS Cell Types

The batteries provide energy all over the world with Japanese technology, widespread service network and long-lasting products.

BOLT
Anti-self loosening the stainless bolt.

PLUG
For standard applications, specially designed plug for adequate degassing with the filter that prevents extraneous objects inside the cell. As optional, aquamatic plugs stop water flow automatically with floats inside.

AIRMIX FUNNEL
Ready for air-mix conversion at any time with the standard implementation.

POSITIVE PLATE
Tubular grid with high corrosion resistance.

NEGATIVE PLATE
Special flat grid design with high electrical conductivity.

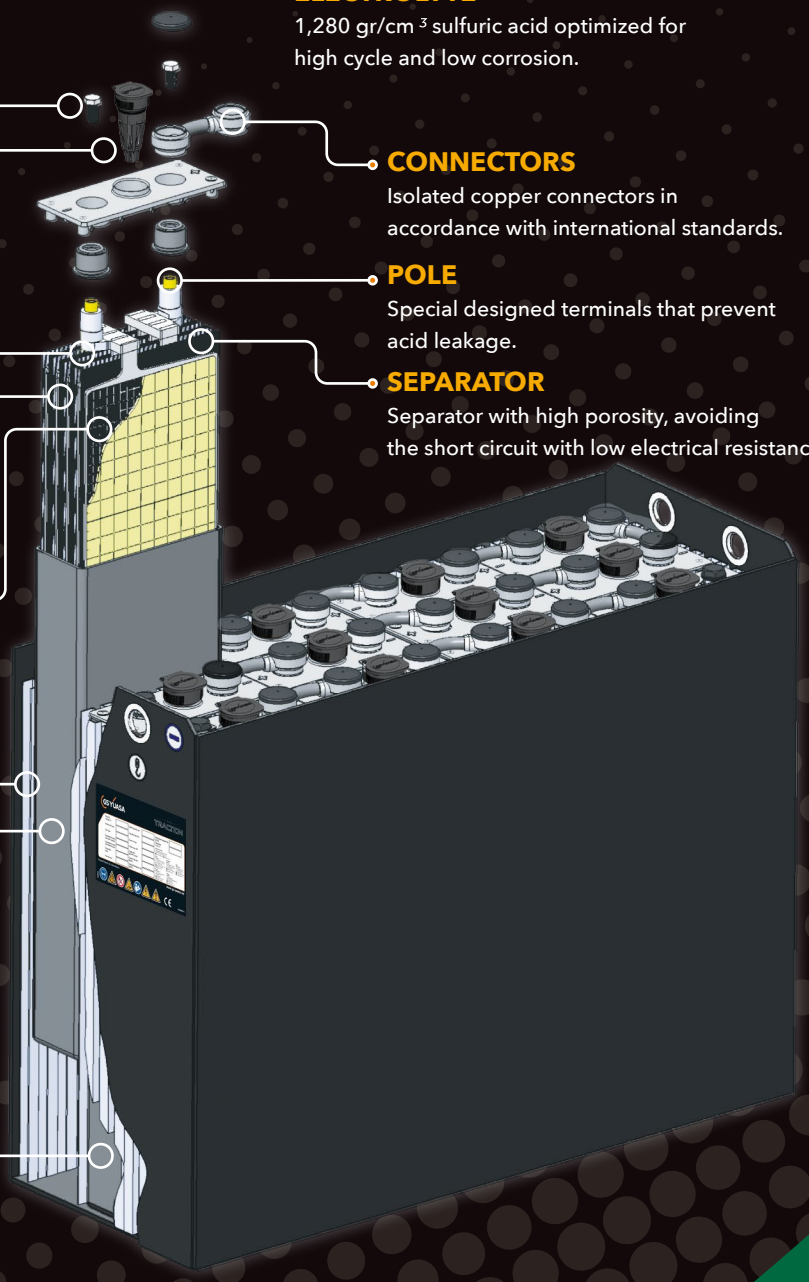
SPACER
Creating space between cells to enable heat transfer.

CELL
DIN and BS Cells in accordance with DIN/EN 60254 Standards

PRISM
Prevents short circuit due to active material cumulation in the bottom of cells.

BOX AND LID
That are resistant against heat and impacts.

TRAY
Specially produced durable tray painted with dipping technique.



ELECTROLYTE
1,280 gr/cm ^{3} sulfuric acid optimized for high cycle and low corrosion.

CONNECTORS
Isolated copper connectors in accordance with international standards.

POLE
Special designed terminals that prevent acid leakage.

SEPARATOR
Separator with high porosity, avoiding the short circuit with low electrical resistance.

Positive Plate

1. Product Features / Product Benefits

» Tubular positive plates produced with "Specially Designed Gauntlet and Bottom Plastic". • Providing long life and high protection against short circuits by minimizing the loss of active material. • Usage of active material made with a special formulation. • High Capacity.

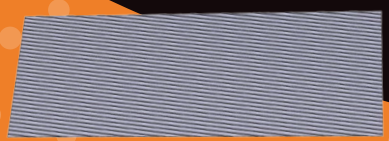
» Tubular grids are inserted into gauntlets that are acid resistant and have low electrical resistance and high permeability. The active material is filled into the gauntlet. • Non-woven Gauntlet prevents the loss of active material and capacity. • Positive active material that is produced from high purity lead oxides. • Minimum water loss.

Negative Plate

2. Product Features / Product Benefits

» Special flat plate and material formulation.

» Special negative active material for a long life.

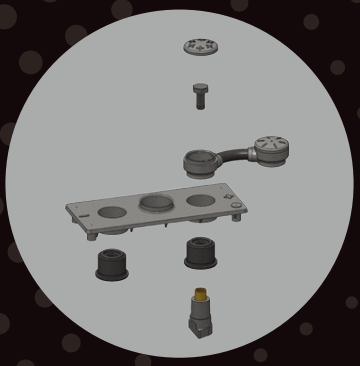


Separators

3. Product Features / Product Benefits

» Separators with high conductivity, minimum internal resistance, mechanically and chemically resistant.

» High protection against short circuits.



Pole

4. Product Features / Product Benefits

» Special designed pole and lids with grommet.

» No acid leakage. Easy to service by unscrewing stainless bolts.

A: Filtered Plugs B: Float Plugs

A » Plug filter prevents extraneous objects inside the cell. • With special top cover, density and heat controls can be done. • Enable the Hydrogen and Oxygen degassing safely while charging.

B » Special design for aquamatic systems. • Aquamatic system stops water flow automatically at the max electrolyte level and prevents overflow.

Electrolyte

5. Product Features / Product Benefits

• 1,28 electrolyte density.

• High performance with long life comparing to standard batteries.

SPEC Sheet for V Series Produced in Japan

GS YUASA TRACTION BATTERIES Made in Japan

(JIS TYPE/2V)

Welding type

MODEL	Nominal Capacity (Ah/5HR)	Dimensions (mm) (L)	(W)	(h)	(H)	Acid (L)	Weight with Acid (kg)	Q'ty per Pallet
VSA5	180	109				2.5	11.0	54
VSA6	210	128	158	280	311	3.0	13.0	48
VSA7	250	148				3.5	15.0	36
VSB7	310	144				3.9	17.5	42
VSB8	350	148	158	320	351	3.9	19.0	36
VSB10	440	206				5.7	25.0	30
VSC6	275	128		350	381	3.9	16.0	48
VSC8	360	144	158	350	381	4.4	19.5	36
VSC8A	385	148		362	393	4.5	22.0	36
VSC12	550	244		350	381	7.8	31.0	24
VSD320	320	128				4.2	18.0	48
VSD360	360	128	158	376	407	4.1	19.5	48
VSD8D	390	148				4.8	22.5	36
VSD3A	170	60				1.9	9.5	96
VSD4B	225	94				3.2	13.0	60
VSD5A	265	94				3.2	15.0	60
VSD7C	340	144				5.5	19.5	42
VSD8AC	435	144	158	395	426	4.8	22.5	42
VSD9AC	475	161				5.4	25.0	36
VSD10AC	540	177				6.1	28.0	30
VSD11	560	186				6.4	31.5	30
VSF3A	210	60				2.4	12.0	96
VSF3C	225	90				4.1	14.5	66
VSF4	290	90				3.9	16.5	66
VSF340	340	90				3.7	18.5	66
VSF5A	350	99	158	490	521	4.0	19.0	60
VSF5	360	109				4.7	20.0	54
VSF6A	420	109				4.5	22.0	54
VSF8	545	144				6.1	29.0	42
○ VSF10A	700	177				7.7	36.5	30
VSI3A	240	60				2.5	12.5	96
VSI3D	230	78				3.6	14.0	78
VSI4A	300	78				3.4	16.0	78
VSI4	320	90				4.0	19.0	66
VSI7C	505	128	158	519	550	5.9	26.5	48
VSI8	635	161				7.4	33.0	36
○ VSI9	720	186				8.8	38.0	30
○ VSI11	935	225				10.7	47.5	24
VSH3A	315	60				3.4	20.0	96
VSH4S	375	70				3.6	23.0	78
VSH4A	420	78				4.6	25.5	66
VSH4	510	90	158	700	731	4.9	30.5	40
VSH5A	525	94				5.5	30.5	40
VSH6A	630	109				6.5	36.5	40
VSH7A	735	128				7.7	42.5	40
VGC225	225	90	158	350	381	2.7	14.0	60
VGC520	520	186				5.6	30.5	30

○ : DOUBLE POLE

(JIS TYPE/2V)

Welding type

MODEL	Nominal Capacity (Ah/5HR)	Dimensions (mm) (L)	(W)	(h)	(H)	Acid (L)	Weight with Acid (kg)	Q'ty per Pallet
VGD165	165	57				1.9	10.0	96
VGD205	205	69				2.2	12.5	78
VGD255	255	81				2.6	15.5	72
VGD340	340	109				3.8	19.0	54
VGD415	415	128	158	395	426	4.3	24.0	48
VGD470	470	144				4.8	27.0	42
VGD575	575	177				6.1	33.0	30
VGD620	620	186				6.3	35.5	30
VGD485	485	144				5.1	27.5	42
VGD545	545	161				5.7	30.5	36
VGD565	565	177	158	410	441	6.6	32.0	30
VGD600	600	177				6.5	33.5	30
○ VGD700	700	206				7.4	40.0	30
VGE245	245	75				2.9	15.0	78
VGE305	305	90	158	447	478	3.5	18.0	66
VGE700	700	186				7.2	40.5	30
VGF201	201	57				2.4	12.5	96
VGF220	220	60	158	490	521	2.5	13.0	96
VGF260	260	69				2.9	15.0	78
VGF280	280	75	158	512	543	3.4	17.0	78
VGF370	370	99				4.4	21.0	60
VGF445	445	109				4.8	24.0	54
VGF530	530	128				5.4	30.5	48
VGF605	605	148	158	490	521	6.4	34.5	36
VGF730	730	177				7.6	42.0	30
○ VGF785	785	186				7.9	45.0	30
○ VGF865	865	206				8.9	49.5	30
○ VGF935	935	225				9.8	53.5	24
VGI240	240	60				2.6	13.5	96
VGI285	285	69				3.0	16.5	78
VGI370	370	90				4.1	21.0	66
VGI440	440	109				5.1	25.5	54
VGI470	470	109				5.0	27.5	54
VGI565	565	128				5.7	32.0	48
VGI645	645	148	158	519	550	6.8	36.5	36
VGI725	725	161				7.3	40.0	36
○ VGI845	845	186				8.4	48.0	30
○ VGI930C	930	206				9.4	52.0	30
○ VGI1005	1005	225				10.4	56.5	24
○ VGI1080	1080	244				11.4	60.5	24

SPEC Sheet for V Series Produced in Thailand

GS YUASA TRACTION BATTERIES Made in Thailand

(JIS TYPE/2V)

	MODEL	Nominal Capacity (Ah/5HR)	Dimensions (mm) (L)	(W)	(h)	(H)	Acid (L)	Weight with Acid (kg)	Q'ty per Pallet
Welding type	VSD3A	170	60	158	395	426	1.7	9.5	96
	VSD4B	225	94	158	395	426	3.2	13.0	66
	VSD5A	265	94	158	395	426	3.2	15.0	66
	VSD6	335	128	158	395	426	4.2	19.0	42
	VSD7C	340	144	158	395	426	5.5	19.5	42
	VSD8AC	435	144	158	395	426	4.6	23.0	42
	VSD9AC	475	161	158	395	426	5.1	25.5	36
	VSD10AC	540	177	158	395	426	5.6	28.5	30
	VSD12AC	645	206	158	395	426	6.4	34.0	24
	VSF3A	210	60	158	490	521	2.1	12.0	96
	VSF270	270	72	158	490	521	2.8	15.0	84
	VSF3C	225	90	158	490	521	3.6	14.5	66
	VSF4	290	90	158	490	521	3.5	17.0	66
	VSF340	340	90	158	490	521	3.3	18.5	66
	VSF5A	350	99	158	490	521	3.8	19.5	60
	VSF6A	420	109	158	490	521	4.1	22.5	54
	VSF8	545	144	158	490	521	6.6	30.5	42
	○ VSF10A	700	177	158	490	521	7.7	38.0	30
	VSI2C	150	46	158	519	550	1.6	10.0	126
	VSI3A	240	60	158	519	550	2.3	13.5	96
	VSI3C	270	72	158	519	550	2.8	15.5	84
	VSI4C	350	90	158	519	550	3.7	19.0	66
	VSI6C	435	109	158	519	550	4.2	24.5	54
	VSI7C	510	126	158	519	550	4.9	28.0	48
	VSI8C	580	142	158	519	550	5.5	32.0	42
	VSI9C	655	158	158	519	550	6.2	36.0	36
	○ VSI9D	715	171	158	519	550	6.7	40.0	30
	○ VSI11C	865	206	158	519	550	8.1	47.5	24
	VCH3C	300	60	158	700	731	3.0	18.0	78
	VCH4C	400	78	158	700	731	4.1	23.0	60
	VCH5C	490	94	158	700	731	5.1	28.0	48
	VCH6C	580	109	158	700	731	5.9	33.0	42
	VCH7C	680	126	158	700	731	6.9	38.0	36
	○ VCH8C	770	142	158	700	731	7.7	43.5	30
	○ VCH9C	870	158	158	700	731	8.7	48.5	30
	○ VCH10C	950	171	158	700	731	9.3	53.0	24
	VGD485	485	144	158	410	441	5.1	27.5	42
	VGD545	545	161	158	410	441	5.7	30.5	36
	VGD565	565	177	158	410	441	6.6	32.0	30
	VGD600	600	177	158	410	441	6.5	33.5	30
	○ VGD700	700	206	158	410	441	7.4	40.0	24
	VGE245	245	75	158	447	478	2.6	14.0	78
	VGE305	305	90	158	447	478	3.5	17.5	66
	VGI370	370	90	158	519	550	4.1	21.0	66
	VGI470	470	109	158	519	550	5.0	25.5	54
	VGI565	565	128	158	519	550	5.7	32.0	48
	VGI645	645	148	158	519	550	6.8	36.5	42
	VGI725	725	161	158	519	550	7.3	40.0	36
	VGF220	220	60	158	490	521	2.5	12.5	96
	VGF445	445	109	158	490	521	4.8	23.5	54
	VGF530	530	128	158	490	521	5.4	29.5	48
	VGF730	730	177	158	490	521	6.5	41.0	30
Bolt	VSF3AS	210	60	158	490	521	2.1	12.0	96

(BS TYPE/2V)

Weld	VGL300H	300	60	158	609	640	2.4	17.0	78
	VGL400H	400	78	158	609	640	3.5	22.0	66

○ : DOUBLE POLE

(DIN TYPE/2V)

	MODEL	Nominal Capacity (Ah/5HR)	Dimensions (mm) (L)	(W)	(h)	(H)	Acid (L)	Weight with Acid (kg)	Q'ty per Pallet
Welding type	2DCJ230A (2PzS230)	230	47	198	545	575	2.3	14.0	95
	3DCJ345A (3PzS345)	345	65	198	545	575	3.3	19.5	65
	4DCJ460A (4PzS460)	460	83	198	545	575	4.3	26.5	50
	5DCJ575A (5PzS575)	575	101	198	545	575	5.2	32.5	40
	2DCM250A (2PzS250)	250	47	198	575	605	2.7	14.5	95
	3DCM375A (3PzS375)	375	65	198	575	605	3.9	21.0	65
	4DCM500A (4PzS500)	500	83	198	575	605	5.0	27.5	50
	5DCM625A (5PzS625)	625	101	198	575	605	6.2	33.5	40
	6DCM750A (6PzS750)	750	119	198	575	605	7.3	40.0	35
	2DCP280A (2PzS280)	280	47	198	685	715	2.9	18.0	80
	3DCP420A (3PzS420)	420	65	198	685	715	4.5	26.0	50
	4DCP560A (4PzS560)	560	83	198	685	715	5.7	33.0	40
	5DCP700A (5PzS700)	700	101	198	685	715	7.2	41.0	30
	2DCS310A (2PzS310)	310	47	198	720	750	3.0	18.5	80
	3DCS465A (3PzS465)	465	65	198	720	750	4.5	26.2	50
	4DCS620A (4PzS620)	620	83	198	720	750	6.0	34.5	40
	5DCS775A (5PzS775)	775	101	198	720	750	7.4	42.1	30
	6DCS930A (6PzS930)	930	119	198	720	750	8.7	51.0	30
Bolt on terminal	2DCJ230 (2PzS230)	230	47	198	545	575	2.3	14.0	95
	3DCJ345 (3PzS345)	345	65	198	545	575	3.3	19.5	65
	4DCJ460 (4PzS460)	460	83	198	545	575	4.3	26.5	50
	5DCJ575 (5PzS575)	575	101	198	545	575	5.2	32.5	40
	2DCM250 (2PzS250)	250	47	198	575	605	2.7	14.5	95
	3DCM375 (3PzS375)	375	65	198	575	605	3.9	21.0	65
	4DCM500 (4PzS500)	500	83	198	575	605	5.0	27.5	50
	5DCM625 (5PzS625)	625	101	198	575	605	6.2	33.5	40
	6DCM750 (6PzS750)	750	118.5	198	575	605	7.3	40.0	35
	2DCP280 (2PzS280)	280	47	198	685	715	2.9	18.0	80
	3DCP420 (3PzS420)	420	65	198	685	715	4.5	26.0	50
	4DCP560 (4PzS560)	560	83	198	685	715	5.7	33.0	40
	5DCP700 (5PzS700)	700	101	198	685	715	7.2	41.0	30
	2DCS310 (2PzS310)	310	47	198	720	750	3.0	18.5	80
	3DCS465 (3PzS465)	465	65	198	720	750	4.5	26.2	50
	4DCS620 (4PzS620)	620	83	198	720	750	6.0	34.5	40
	5DCS775 (5PzS775)	775	101	198	720	750	7.4	42.1	30
	6DCS930 (6PzS930)	930	119	198	720	750	8.9	51.0	30

SPEC Sheet for V Series Produced in Turkey

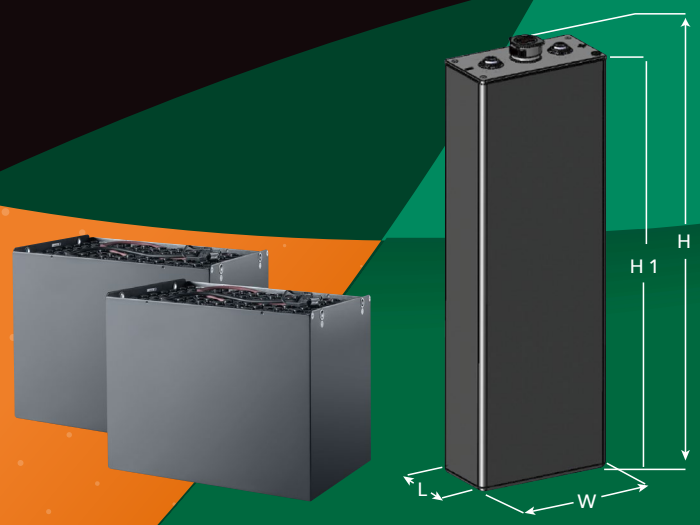
GS YUASA TRACTION BATTERIES Made in Turkey

(DIN CELL TYPES)

CELL TYPE	PLATE TYPE	Cell Size (mm) ±2				Weight(Kg) (±%5)
		Length (mm)	Width (mm)	Height(mm) H1	Height(mm) H2	
2 PzS 120	PzS 60 Ah	47	198	342	370	8.5
3 PzS 180		65				12.0
4 PzS 240		83				15.0
5 PzS 300		101				19.0
6 PzS 360		119				22.0
7 PzS 420		137				25.0
8 PzS 480		155				29.0
9 PzS 540		174				32.4
10 PzS 600		192				35.9
2 PzS 160	PzS 80 Ah	47	198	402	430	9.7
3 PzS 240		65				14.0
4 PzS 320		83				18.0
5 PzS 400		101				22.1
6 PzS 480		119				26.2
7 PzS 560		137				30.7
8 PzS 640		155				34.5
9 PzS 720		174				38.6
10 PzS 800		192				42.6
2 PzS 180	PzS 90 Ah	47	198	477	505	11.4
3 PzS 270		65				16.4
4 PzS 360		83				21.5
5 PzS 450		101				26.4
6 PzS 540		119				31.4
7 PzS 630		137				36.4
8 PzS 720		155				41.4
9 PzS 810		174				36.4
10 PzS 900		192				51.4
2 PzS 210	PzS 105 Ah	47	198	527	555	13.1
3 PzS 315		65				18.7
4 PzS 420		83				24.1
5 PzS 525		101				30.5
6 PzS 630		119				35.4
7 PzS 735		137				41.0
8 PzS 840		155				46.5
9 PzS 945		174				52.1
10 PzS 1050		192				57.4
2 PzS 230	PzS 115 Ah	47	198	547	575	13.8
3 PzS 345		65				19.8
4 PzS 460		83				25.8
5 PzS 575		101				31.7
6 PzS 690		119				38.3
7 PzS 805		137				43.9
8 PzS 920		155				49.7
9 PzS 1035		174				55.6
10 PzS 1150		192				61.6
2 PzS 250	PzS 125 Ah	47	198	567	595	14.6
3 PzS 375		65				20.7
4 PzS 500		83				27.4
5 PzS 625		101				33.1
6 PzS 750		119				39.4
7 PzS 875		137				45.4
8 PzS 1000		155				51.9
9 PzS 1125		174				58.1
10 PzS 1250		192				64.5
2 PzS 280	PzS 140 Ah	47	198	687	715	16.9
3 PzS 420		65				24.7
4 PzS 560		83				30.9
5 PzS 700		101				38.3
6 PzS 840		119				44.9
7 PzS 980		137				52.7
8 PzS 1120		155				60.0
9 PzS 1260		174				67.2
10 PzS 1400		192				74.4
2 PzS 310	PzS 155 Ah	47	198	722	750	18.1
3 PzS 465		65				25.6
4 PzS 620		83				34.3
5 PzS 775		101				42.2
6 PzS 930		119				49.2
7 PzS 1085		137				56.2
8 PzS 1240		155				63.8
9 PzS 1395		174				71.5
10 PzS 1550		192				79.2

(BS CELL TYPES)

CELL TYPE	PLATE TYPE	Cell Size (mm) ±2				Weight(Kg) (±%5)
		Length (mm)	Width (mm)	Height(mm) H1	Height(mm) H2	
2 PzB 110	PzB 55 Ah	45	158	402	432	7.9
3 PzB 165		61				11.0
4 PzB 220		77				14.0
5 PzB 275		93				17.1
6 PzB 330		109				20.1
7 PzB 385		125				23.2
8 PzB 440		141				26.2
9 PzB 495		157				29.2
10 PzB 550		173				32.3
2 PzB 130	PzB 65 Ah	45	158	457	487	8.5
3 PzB 195		61				12.2
4 PzB 260		77				15.4
5 PzB 325		93				18.9
6 PzB 390		109				22.5
7 PzB 455		125				26.0
8 PzB 520		141				29.5
9 PzB 585		157				33.4
10 PzB 650		173				37.0
2 PzB 150	PzB 75 Ah	45	158	513	543	9.6
3 PzB 225		61				13.9
4 PzB 300		77				17.4
5 PzB 375		93				21.0
6 PzB 450		109				26.0
7 PzB 525		125				30.0
8 PzB 600		141				33.5
9 PzB 675		157				31.1
10 PzB 750		173				42.2
2 PzB 170	PzB 85 Ah	45	158	570	600	10.6
3 PzB 255		61				14.7
4 PzB 340		77				19.5
5 PzB 425		93				23.8
6 PzB 510		109				28.0
7 PzB 595		125				32.5
8 PzB 680		141				37.0
9 PzB 765		157				38.1
10 PzB 850		173				46.8
2 PzB 200	PzB 100 Ah	45	158	608	638	12.1
3 PzB 300		61				16.8
4 PzB 400		77				21.5
5 PzB 500		93				26.1
6 PzB 600		109				30.8
7 PzB 700		125				36.2
8 PzB 800		141				40.1
9 PzB 900		157				47.0
10 PzB 1000		173				52.1



EB Series (Made in Japan)

The most omnipotent item in our lineup.

(EB TYPE/12V)

MODEL	Nominal Capacity (Ah/5HR)	Dimensions (mm)				Acid (L)	Weight with Acid (kg)	Q'ty per Pallet
		(L)	(W)	(h)	(H)			
EB25TE	25	197	129	202	227	2.1	11.5	40
EB35TE	35	238	129	202	227	3.0	14.0	28
EB35LE/LER	35	238	129	202	237	3.0	14.0	28
EB50TE	50	260	173	202	225	3.8	20.5	20
EB50LE	50	260	173	202	236	3.8	20.5	20
EB65TE	65	305	173	205	228	4.1	24.5	18
EB65LE/LER	65	305	173	205	237	4.1	24.5	18
EB100TE/LE/LER	100	409	173	212	244	6.7	34.5	15
EB120TE/LE/LER	120	504	182	212	258	9.0	41.0	10
EB130TE/LE/LER	130	504	182	212	258	8.8	45.5	10
EB145TE/LE/LER	145	508	223	213	259	10.0	51.5	10
EB160TE/LE/LER	160	508	223	213	259	9.8	54.5	10

Advantages

- **Wide usage** Sweepers and electric wheelchairs etc.

GC Series (Made in Japan)

Another lineup that uses tubular plates.

Model	Voltage	Capacity (A)		Size (mm)				Battery weight with electrolyte (kg)	Amount of electrolyte (L)
		5HR	1HR	L	W	H	Total H		
GC140	6	140	84	262	181	267.5	291	30	6.9
GC200	6	200	120	262	181	267.5	291	33	6.3

Advantages

- **Easy maintenance** Users can see the electrolyte level by checking the position of float. Remarkably short replenishing time.
- **Long life** Like V series batteries, we apply tubular plates for GC series as well.
- **Wide usage** Used for industrial equipment like Automatic Guided Vehicles in the figure below.

SLH Series (Made in Japan)

More possibility with SLH series batteries

Model	Voltage	Capacity (Ah)	Dimension (mm)				Mass (kg)	Nut insert
		5h rate	L	W	H	Total H		
SLH65	12	65	292	176	219	219	25.5	Nut insert
SLH100	12	100	412	176	219	219	36.5	

Advantages

- **Long life** 600 cycles with DOD 75%
- **Flexible deployment** **(Figure1)**
- **Maintenance free**
- **Less self discharge** Maintain capacity for long time

Figure1

It can be installed in both vertical and horizontal orientations.

SER Series (Made in Japan)

Compact Energy that enriches your life Long life span

Model	Voltage	Capacity (A)		Size (mm)				Mass (kg)
		5HR	1HR	L	W	H	Total H	
SER38-12	12	32	38	199	165	176	176	14

Advantages

- **Achieved with 75% discharge and 600 cycles**
- **Lead-free terminals considering the environment**
- **Maintenance-free (no watering required) cycle service battery**

What is a cycle service battery?

A cycle service battery is a battery suitable for DC power supplies that are used by discharging and charging alternately, such as using during the day and charging at night.

SERVICE

"WE SUPPORT THE CUSTOMER OPERATION ENHANCING THE PERFORMANCE, ENERGY SAVING AND COST SAVING"

Benefits

MS will provide best solution to make sure that our customer can use battery with full capability and worthwhile based on battery condition.

After Sale Service
- Check and PM. our battery during warranty.

Service Contact
- Periodical Check and PM battery after warranty
- Monthly Check and PM battery

Battery Management Consultancy
- Monitoring battery condition and recommend how to managed forklift and battery using condition of main customer.

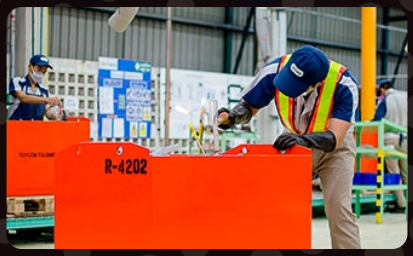
Short time of Claim System
- Have spare cell for support and shorten Customer breakdown times.

Warning Report System
- Recommend best practice to customer by comparing our suggestion with existing condition.

Technical on Site
- Managed battery usage FIFO Monthly PM battery.

Express Service Programs
- Urgent or Serious Case : Batt. exploded, generates fire, etc..
- Abnormal Case : Battery falls down, connector lost or crack, etc..
- General Case : Operating time reduced, request comments, replace cell etc..

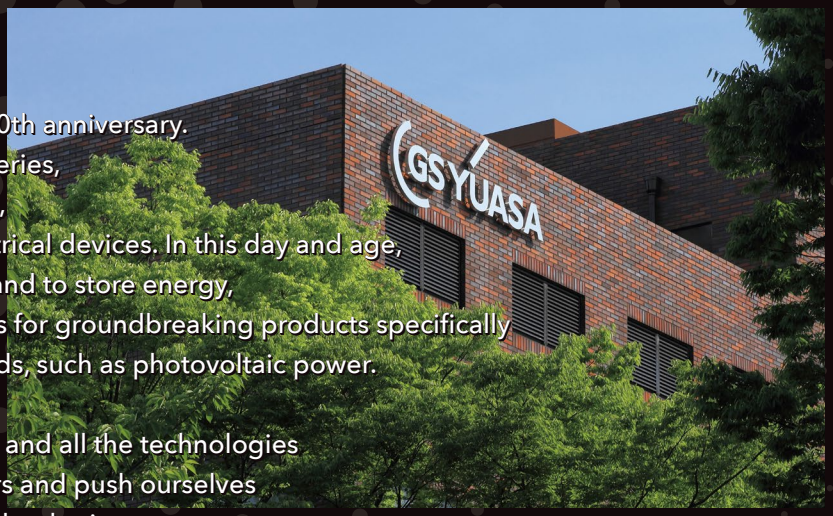
Fast And Precise



Professional

Knowledge , Skills

Manufacturing Batteries for Over a Century



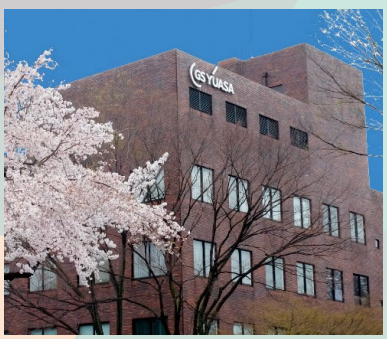
In 2017, GS Yuasa Group celebrated its 100th anniversary.
Our range of solutions today includes batteries,
power supply systems, lighting equipment,
specialty equipment, and many other electrical devices. In this day and age,
we are seeing many different ways to use and to store energy,
and our customers have great expectations for groundbreaking products specifically
tailored for applications in new energy fields, such as photovoltaic power.

We are able to leverage all our experience and all the technologies
we have developed over the past 100 years and push ourselves
to keep developing these cutting-edge technologies.
In this way, we hope to become a real driving force for innovation.
Our ambition is to make a valuable contribution to the lives of people all across the world,
based on our company policy of "Innovation and Growth".

GS Yuasa Traction Battery Production Sites

Thailand
Established: 2008
Battery Standard: JIS and DIN type

Turkey
Established:1984
Battery Standard: DIN and BS type

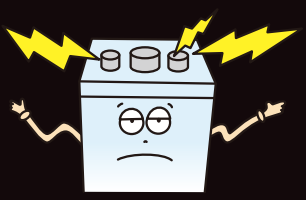


Japan
Established: 1943
Battery Standard: JIS type

CAUTIONS

1 Avoid overdischarging.

Overdischarging will shorten the life of your battery. You must avoid driving until the very last moment when your vehicle can no longer move

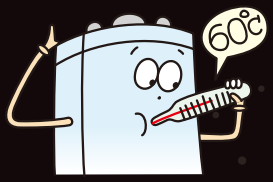


2 Avoid overcharging.

Overcharging will also shorten the life of your battery. The battery must be charged using the proper method.

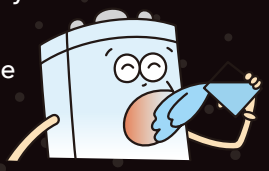
3 Avoid the battery overheating.

Always keep the temperature of the electrolyte below 60°C.



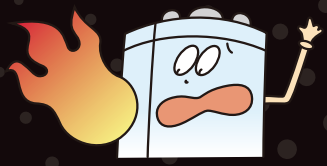
4 Keep the electrolyte level at the proper height.

The electrolyte level will gradually get lower when the battery is being used. When the electrolyte level decreases, fill up with distilled water straight away.



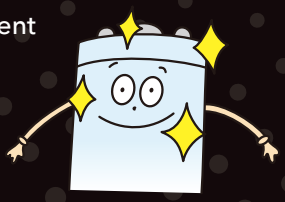
5 Fire is strictly prohibited.

Since hydrogen and oxygen are released through the vent plugs of the battery always keep the battery away from fire.



6 Keep the battery clean and dry.

Keep the outside of the battery clean and dry to prevent leakage and corrosion.



You can also check the latest compatibility chart on the web.

SPEC Sheet for V Series Produced in Japan

SPEC Sheet for V Series Produced in Turkey

SPEC Sheet for V Series Produced in Thailand

https://www.gs-yuasa.com/en/products/traction_batteries/