

# MUTLU®

## WE ADD VALUE TO LIFE

At Mutlu Battery, our aim is to be the most innovative and the best in class as a result of the reliability that we have built on with our experience of over 70 years and solid foundations. We work constantly to be the number one in terms of reliability, expertise and quality; and to add more value into all of our products for all of our customers as a global player based in Turkey.

With our services and products and our customer focused concept carried through effective sales and distribution network, Mutlu Battery is internationally recognised as a leading company in energy storage solutions.

MUTLU®

    
[www.mutlu.com.tr](http://www.mutlu.com.tr)

**MIB**  
Metal International Battery

M.08.2016.00

## Automotive

Batteries for Cars and Light  
Commercial Vehicles

# new design new technology



"M" Quality is a "High Quality" mark defining the products manufactured in ISO/TS 16949 certified production plants where Mutlu Battery employs different production technologies. Maintaining of these high quality standards in product design and technologies, Mutlu Battery maintains its position as a preferred supplier to automotive manufacturers (OEMs).

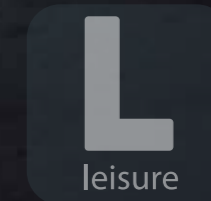
**Each product carrying the "M" Quality mark is the ideal solution for you and your vehicle.**



**SFB**  
**EFB**  
**AGM**



**SFB**



**SFB**  
**MARINE**  
**EFB**  
**FULL ENERGY**  
**GEL**

In order to maintain the best customer experience by considering variable energy needs, Mutlu product range consists of three level performance and technology classification system, SFB, EFB and AGM.



# SFB

## Areas of Application



## Superior Flooded Battery

The new technology developed by Mutlu is a flooded type battery designed from our experience to deliver innovation and quality performance for all cars and light commercial vehicles.

Mutlu's product range with SFB technology has been designed and classified as Series 2 and Series 3 with different performance criteria to meet changing power needs of vehicles depending on their equipment levels.



## Modern Design, Superior Technology

Advanced fully frame grid technology, manufactured with punch system

### SERIES 2

The Series 2 range has superior technology products suitable for high end vehicles.

### SERIES 3

The Series 3 products are high performance batteries with extended life cycle and are perfect solution for vehicles with advanced energy needs.

## Superior Technical Features



Up to **25%** higher performance than standard batteries



More vibration resistant compared to standard batteries



Patented Ca-Ca silver alloy grid technology



Advanced active material exclusively formulated for **SFB** technology



Higher performance under severe climate and working conditions compared to standard batteries



Nearly **100%** recycling capability of all products make MUTLU environmental friendly and sustainable



Sealed maintenance free safe lid technology



Reliable solution provider meeting technical and performance expectations of automotive manufacturers



QR and barcode system enabling tracking of products



**SFB**  
Superior Flooded Battery  
**technology**

## Areas of Application

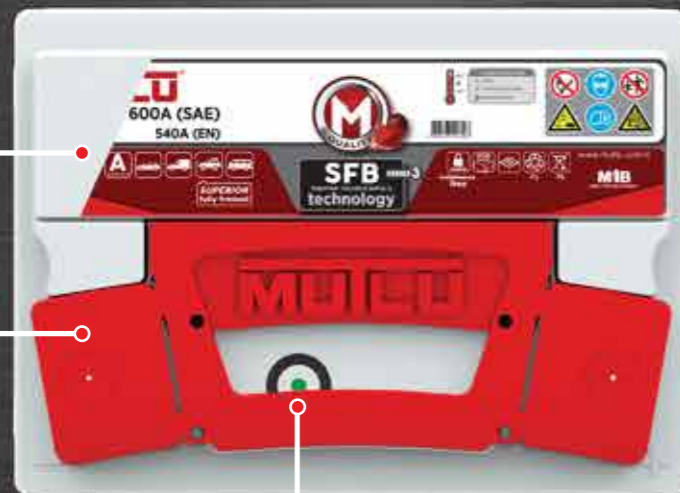


- Post
- Terminal



- Higher performance and extended life cycle due to advanced fully frame grid technology, manufactured with punch system

- Exclusive design, ergonomic handle
- Sealed maintenance free safe lid technology



- Magic eye indicating battery state of charge

- Flame arrestor



- Exclusively designed inside lid labyrinth structure

# EFB

## Areas of Application



Exclusively design securing up to **30% higher performance** than standard batteries



Patented Ca-Ca silver alloy grid technology



Advanced active material exclusively designed for micro-hybrid **START STOP** technology



More vibration resistant compared to standard batteries



OEM solution provider satisfying technical and performance expectations of car manufacturers



QR and barcode system enabling tracking of products

## Enhanced Flooded Battery

High quality flooded batteries are designed to meet micro-hybrid battery needs for all **START STOP** vehicles developed to reduce fuel consumption and carbon dioxide emission.

All EFB batteries are products of long term practise and experience of Mutlu R&D and are entitled to make Mutlu Quality mark.



## Modern Design, Advanced START STOP Technology

Fully framed grid technology

## Superior Technical Features



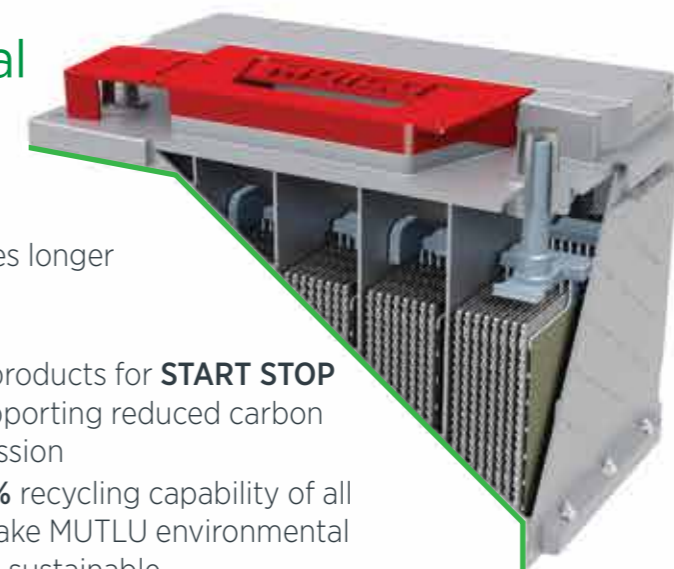
Up to 2 times longer cycle life



Innovative products for **START STOP** vehicles supporting reduced carbon dioxide emission



Nearly **100%** recycling capability of all products make MUTLU environmental friendly and sustainable



Sealed maintenance free safe lid technology



Replace with same technology battery



+61°  
-41° Higher performance under severe climate and working conditions compared to standard batteries





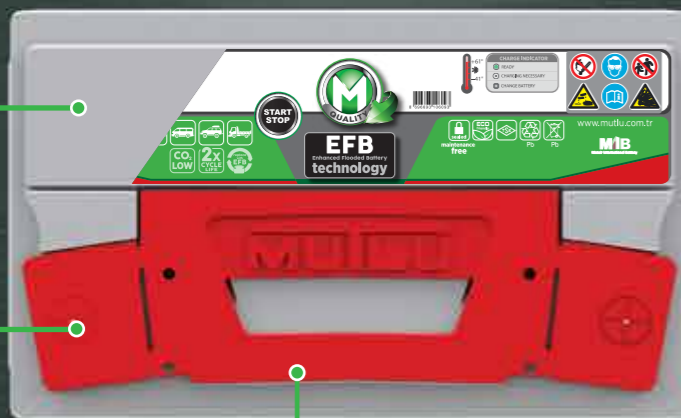
**EFB**  
Enhanced Flooded Battery  
**technology**

## Areas of Application

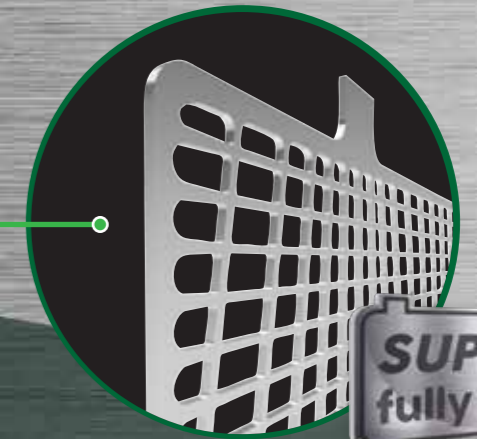


- Post
- Terminal

- Exclusive design, ergonomic handle
- Sealed Maintenance free safe lid technology



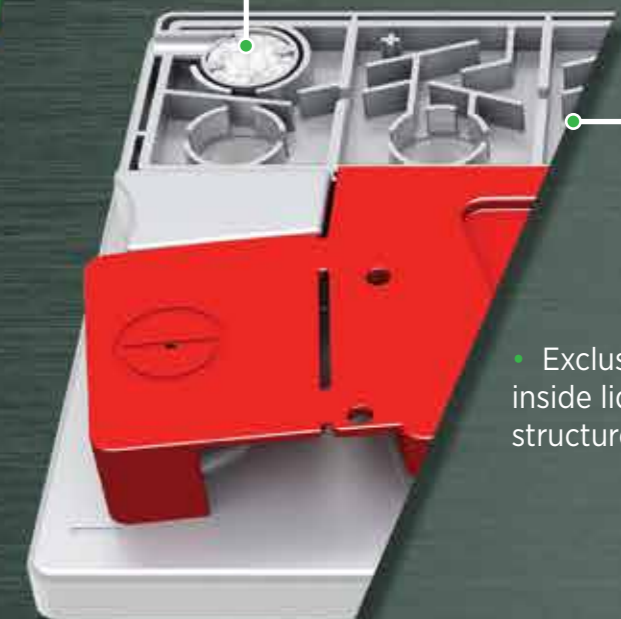
- Magic eye indicating battery state of charge



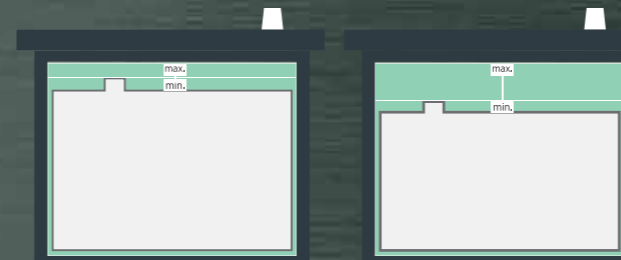
**SUPERIOR**  
fully framed

- Higher circuit delivering performance and extended cycle life thanks to advanced fully framed punch grid technology.

- Flame arrestor



- Exclusively designed inside lid labyrinth structure



• Electrolyte reserve in standard batteries

• Electrolyte reserve in MUTLU EFB batteries



# AGM

Absorbent Glass Mat Battery

technology

START  
STOP

# AGM

Areas of Application



## Absorbent Glass Mat Battery

High quality VRLA (Valve Regulated Lead Acid Battery) type batteries specially developed to meet demanding needs of all **START STOP** vehicles designed to reduce fuel consumption and emission. All AGM batteries are products of long term practise and experience of Mutlu R&D and are entitled to take Mutlu Quality mark.

## Design that Makes Difference, Pioneer Technology

- Exclusively designed valve system with pressure control (VRLA) and maintenance-free product technology
- Fully framed cast grid technology



**SUPERIOR**  
fully framed

Exclusively designed for top segment START STOP cars with a regenerative braking system

# AGM technology



Superior Technical Features

- 40% HIGHER PERFORMANCE**: Up to 40% higher performance than standard batteries
- SPECIAL GRID TECH AGM**: Advanced Ca-Ca silver alloy grid technology
- AGM START STOP**: Advanced active material exclusively designed for AGM START STOP technology
- START STOP**: Quick charge acceptance for START STOP technology
- VIBRATION**: Increased vibration resistance compared to standard batteries
- OEM ORIGINAL EQUIPMENT**: Reliable solution provider meeting technical and performance expectations of car manufacturers (OEMs)
- QR**: QR and barcode system enabling tracking of products



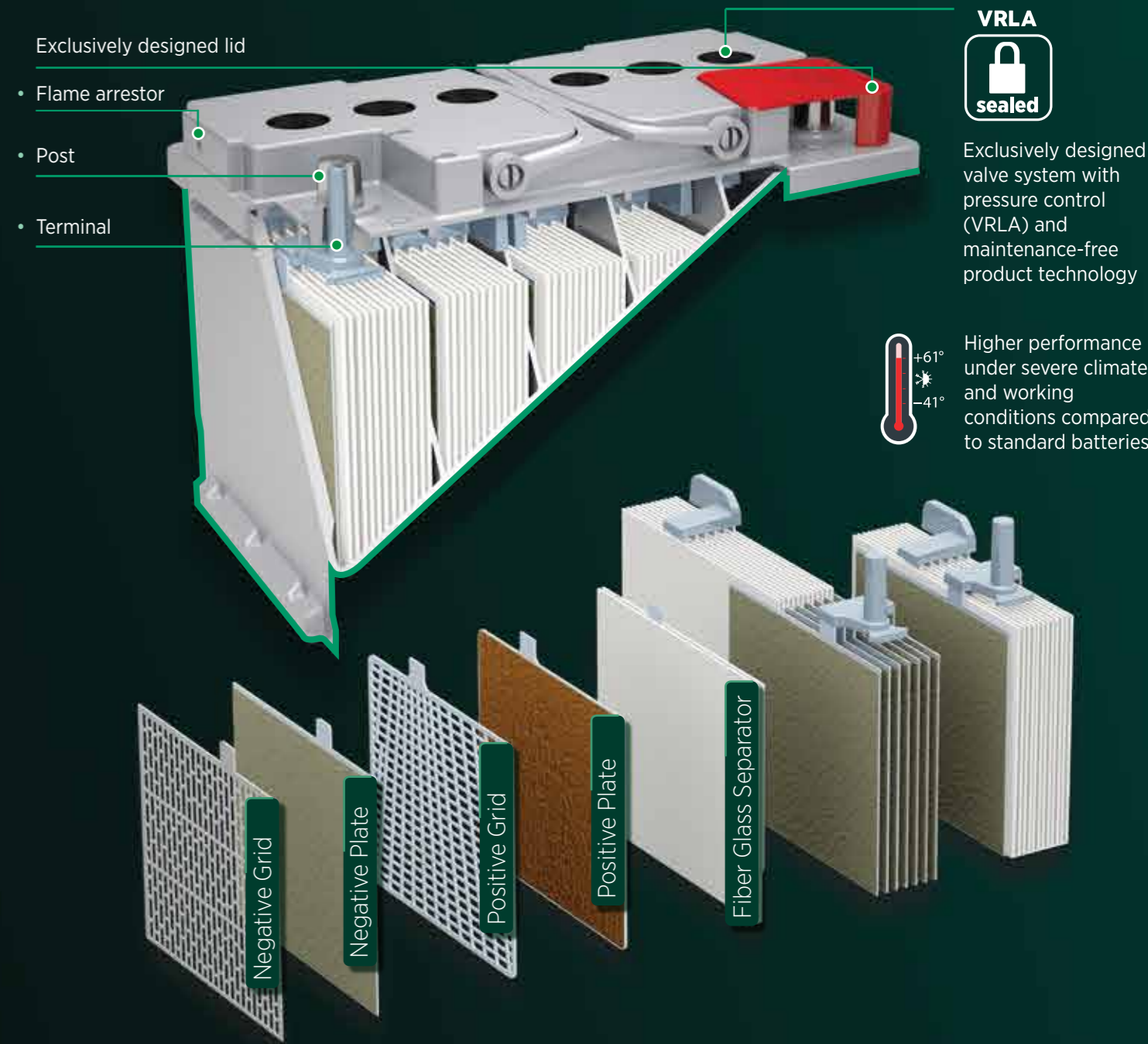
**3x CYCLE LIFE**  
Up to 3 times longer life cycle compared to standard batteries

**CO<sub>2</sub> LOW**  
Innovative products for START STOP vehicles supporting reduced carbon dioxide emission

**ECO friendly**  
Nearly 100% recycling capability of all products make MUTLU environmental friendly and sustainable

**replace with AGM**  
Replace with the same technology battery

- Spill proof
- Extremely low water loss due to internal recombination system
- Acid immobilized technology to prevent harm to humans and environment







## SFB

Superior Flooded Battery technology



## EFB

Enhanced Flooded Battery technology



## AGM

Absorbent Glass Mat Battery technology

# Technological Features

### Areas of Application



### BATTERY REPLACEMENT CHART

REPLACED BATTERY OF THE VEHICLE			
	STANDARD BATTERY	START STOP EFB BATTERY	START STOP AGM BATTERY
SFB Superior Flooded Battery technology	✓	X	X
EFB Enhanced Flooded Battery technology	✓	✓	X
AGM Absorbent Glass Mat Battery technology	X	X	✓



Replace with same technology battery



Replace with same technology battery

**SPECIAL FORMULATED GRID TECH SFB**  
Patented Ca-Ca silver alloy grid technology



Advanced active material specifically designed for **SFB** technology



Sealed Maintenance free lid technology



Up to **25% HIGHER PERFORMANCE**

**SPECIAL FORMULATED GRID TECH EFB**  
Patented Ca-Ca silver alloy grid technology



Advanced active material specifically designed for **EFB** technology



Sealed Maintenance free lid technology



Up to **30% HIGHER PERFORMANCE**



Up to 2 times longer cycle life



Innovative products for **START STOP** vehicles supporting reduced carbon dioxide emission



**START STOP** teknolojisine uygun hızlı şarj alma özelliği

**SPECIAL FORMULATED GRID TECH AGM**  
Patented Ca-Ca silver alloy grid technology



Advanced active material specifically designed for **AGM** technology



Sealed maintenance free lid technology



Up to **40% HIGHER PERFORMANCE**

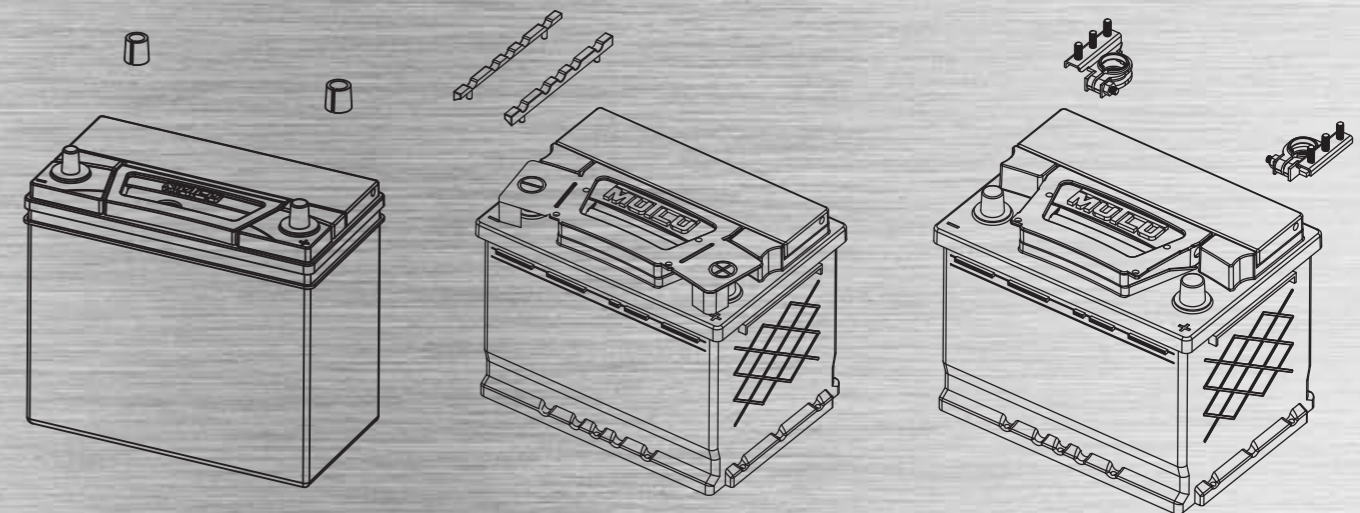


Up to 3 times longer cycle life



Innovative products for **START STOP** vehicles supporting reduced carbon dioxide emission

### Battery Connection Apparatus



Increased vibration resistance compared to standard batteries



Reliable solution provider meeting technical and performance expectations of car manufacturers (OEMs)



Nearly **100%** recycling capability of all products make MUTLU environmental friendly and sustainable



QR and barcode system enabling tracking of products



**SFB**  
Superior Flooded Battery  
technology



**EFB**  
Enhanced Flooded Battery  
technology



**AGM**  
Absorbent Glass Mat Battery  
technology

Recycling above Industry Standards

Nearly  
**100%**  
recycling capability  
of all products



**SUPERIOR**  
fully framed



Recycling plant with an annual capacity of  
**40.000 tons**

Higher energy efficiency acquired by purification through direct refining technology

Contribution to the environment and sustainability with **START STOP** batteries which help to reduce carbon dioxide emission

TSE ISO EN 14000 and TS EN ISO 50001 certified environment-friendly manufacturing facility





## SFB SERIES 3 JAPANESE (JIS) TYPE STARTER BATTERIES

Type			Capacity at 20 hour rate, +25 C A/h	CCA EN (A)	CCA SAE (A)	Layout	Terminal	Holddown	Overall dimensions (mm)				Weight With acid kg.
BOX	MUTLU CODE	PART NUMBER							Length mm	Width mm	Height Except Terminal mm	Height mm	
B20 (NS40)	B20.42.035.E	SMF 46B20L	42	350	390	0	3	B0	196	134	202	222	10,5
	B20.42.035.F	SMF 46B20R	42	350	390	1	3	B0					
	B20.42.035.G	SMF 46B20FL	42	350	390	0	3	B1					
	B20.42.035.H	SMF 46B20FL	42	350	390	1	3	B1					
B24 (NS60)	B24.55.045.A	SMF 65B24LS	55	450	480	0	1	B0	237	127	201	222	12,6
	B24.55.045.B	SMF 65B24RS	55	450	480	1	1	B0					
	B24.55.045.E	SMF 65B24L	55	450	480	0	3	B0					
	B24.55.045.F	SMF 65B24R	55	450	480	1	3	B0					
D20	D20.55.045.C	SMF 55D20FL	55	450	480	0	1	B1	203	175	183	202	13,2
	D20.55.045.D	SMF 55D20FR	55	450	480	1	1	B1					
D23	D23.68.060.A	SMF 70D23L	68	600	650	0	1	B0	232	173	204	225	16,25
	D23.68.060.B	SMF 70D23R	68	600	650	1	1	B0					
	D23.68.060.C	SMF 70D23FL	68	600	650	0	1	B1					
	D23.68.060.D	SMF 70D23FR	68	600	650	1	1	B1					
D26 (N50)	D26.80.066.A	SMF 95D26L	80	660	720	0	1	B0	260	173	204	225	19,0
	D26.80.066.B	SMF 95D26R	80	660	720	1	1	B0					
	D26.80.066.C	SMF 95D26FL	80	660	720	0	1	B1					
	D26.80.066.D	SMF 95D26FR	80	660	720	1	1	B1					
D31 (N70)	D31.100.085.C	SMF 115D31FL	100	850	900	0	1	B1	306	175	202	224	24,5
	D31.100.085.D	SMF 115D31FR	100	850	900	1	1	B1					



## SFB SERIES 3 EUROPEAN (DIN) TYPE STARTER BATTERIES

Type			Capacity at 20 hour rate, +25 C A/h	CCA EN (A)	CCA SAE (A)	Layout	Terminal	Holddown	Overall dimensions (mm)				Weight With acid kg.
BOX	MUTLU CODE	PART NUMBER							Length mm	Width mm	Height Except Terminal mm	Height mm	
L0	L0.44.040.A	SMF 54418	44	400	430	0	1	B13	175	175	190	190	10,4
L1	L1.50.042.A	SMF 55054	50	420	450	0	1	B13	207	175	190	190	12,5
	L1.50.042.B	SMF 55055	50	420	450	1	1	B13					
	L1.55.054.A	SMF 55540	55	540	600	0	1	B13					13,3
	L1.55.054.B	SMF 55541	55	540	600	1	1	B13					
LB1	LB1.50.042.A	SMF 55016	50	420	450	0	1	B13	207	175	175	175	12,1
	LB1.50.042.B	SMF 55017	50	420	450	1	1	B13					
	LB1.55.054.A	SMF 55516	55	540	600	0	1	B13					13,0
	LB1.55.054.B	SMF 55517	55	540	600	1	1	B13					
L2	L2.60.054.A	SMF 56081	60	540	600	0	1	B13	242	175	190	190	15,1
	L2.60.054.B	SMF 56082	60	540	600	1	1	B13					
	L2.63.060.A	SMF 56319	63	600	650	0	1	B13					16,0
	L2.63.060.B	SMF 56317	63	600	650	1	1	B13					
LB2	LB2.60.054.A	SMF 56054	60	540	600	0	1	B13	242	175	175	175	14,8
	LB2.60.054.B	SMF 56055	60	540	600	1	1	B13					
	LB2.63.060.A	SMF 56360	63	600	650	0	1	B13					15,8
	LB2.63.060.B	SMF 56361	63	600	650	1	1	B13					
L3	L3.75.072.A	SMF 57512	75	720	750	0	1	B13	278	175	190	190	18,2
	L3.75.072.B	SMF 57513	75	720	750	1	1	B13					
	L3.78.078.A	SMF 57812	78	780	830	0	1	B13					18,8
	L3.78.078.B	SMF 57813	78	780	830	1	1	B13					
LB3	LB3.75.072.A	SMF 57572	75	720	750	0	1	B13	278	175	175	175	17,8
	LB3.75.072.B	SMF 57573	75	720	750	1	1	B13					
	LB3.78.078.A	SMF 57820	78	780	830	0	1	B13					18,5
	LB3.78.078.B	SMF 57821	78	780	830	1	1	B13					
L4	L4.90.085.A	SMF 59042	90	850	900	0	1	B13	315	175	190	190	22,0
	L4.90.085.B	SMF 59043	90	850	900	1	1	B13					
LB4	LB4.85.080.A	SMF 58515	85	800	850	0	1	B13	315	175	175	175	20,0
	LB4.85.080.B	SMF 58516	85	800	850	1	1	B13					
L5	L5.95.085.A	SMF 59518	95	850	900	0	1	B13	353	175	190	190	22,8
	L5.95.085.B	SMF 59519	95	850	900	1	1	B13					
	L5.100.090.A	SMF 60056	100	900	950	0	1	B13					23,6
	L5.100.090.B	SMF 60057	100	900	950	1	1	B13					
LB5	LB5.95.085.A	SMF 59515	95	850	900	0	1	B13	353	175	175	175	22,5
	LB5.95.085.B	SMF 59516	95	850	900	1	1	B13					
L6	L6.110.092.A	SMF 61045	110	920	970	0	1	B13	394	175	190	190	26,5



# Product Dimensions List

## EFB START STOP BATTERIES

Type			Capacity at 20 hour rate, +25 C Ah	CCA EN (A)	CCA SAE (A)	Layout	Terminal	Holddown	Overall dimensions (mm)				Weight With acid kg.
BOX	MUTLU CODE	PART NUMBER							Lenght mm	Width mm	Height Except Terminal mm	Height mm	
L2	EFB.L2.63.060.A		63	600	630	0	1	B13	242	175	190	190	16,7
L3	EFB.L3.72.072.A		72	720	750	0	1	B13	278	175	190	190	19,1
LB3	EFB.LB3.65.065.A		65	650	680	0	1	B13	278	175	175	175	17,9
L4	EFB.L4.84.080.A		84	800	850	0	1	B13	315	175	190	190	22,0
LB4	EFB.LB4.75.073.A		75	730	760	0	1	B13	315	175	175	175	20,7
D23	EFB.D23.64.062.C		64	620	650	0	1	B01	232	173	204	225	16,5
D26	EFB.D26.72.076.C		72	760	800	0	1	B01	260	173	204	225	18,4



## AGM START STOP BATTERIES

Type			Capacity at 20 hour rate, +25 C Ah	CCA EN (A)	CCA SAE (A)	Layout	Terminal	Holddown	Overall dimensions (mm)				Weight With acid kg.
BOX	MUTLU CODE	PART NUMBER							Lenght mm	Width mm	Height Except Terminal mm	Height mm	
L2	AGM.L2.60.068.A		60	680	720	0	1	B13	242	175	190	190	18,0
L3	AGM.L3.70.076.A		70	760	800	0	1	B13	278	175	190	190	20,8
L4	AGM.L4.80.080.A		80	800	850	0	1	B13	315	175	190	190	23,5
L5	AGM.L5.95.090.A		95	900	950	0	1	B13	353	175	190	190	27,4
L6	AGM.L6.105.095.A		105	950	1000	0	1	B13	394	175	190	190	29,5

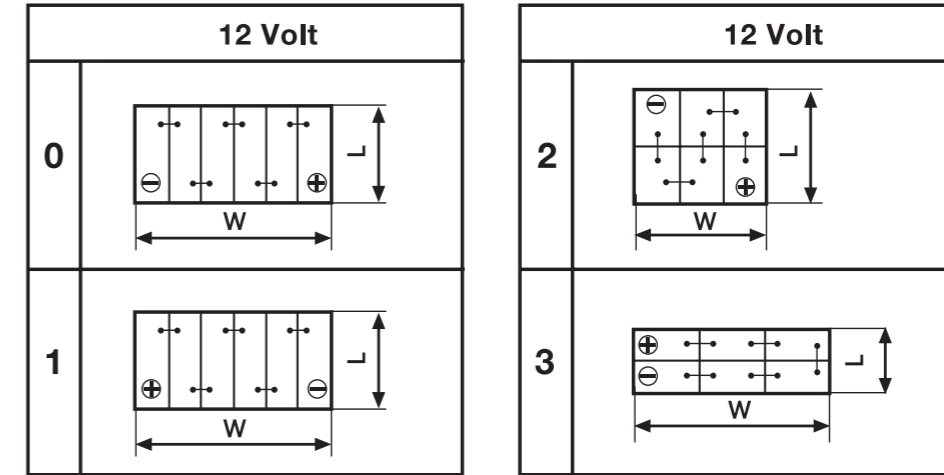


## AGM MILITARY BATTERIES

Type			Capacity at 20 hour rate, +25 C Ah	CCA EN (A)	CCA SAE (A)	Layout	Terminal	Holddown	Overall dimensions (mm)				Weight With acid kg.
BOX	MUTLU CODE	PART NUMBER							Lenght mm	Width mm	Height Except Terminal mm	Height mm	
D7	AGM.D7.120.120.C		120	1200	1300	2	1	B0	286	270	208	230	38,8

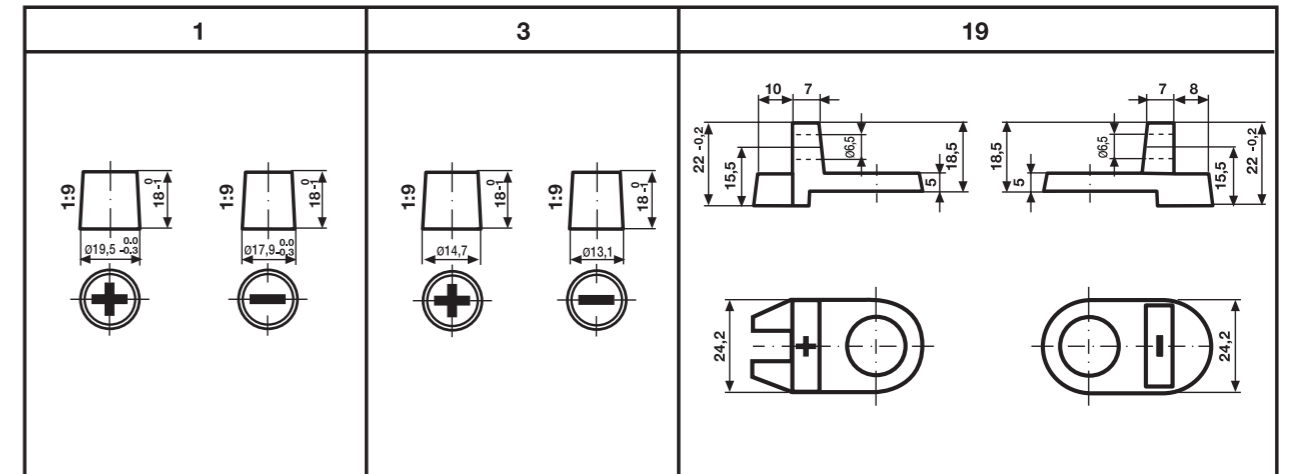


## TYPES OF INSTALLATION



W= Width  
L= Lenght

## CONNECTION TERMINALS



## HOLD DOWNS

B 00	Without bottom connections	
B 01	3 hold downs 	B 09 
B 03	3 hold downs 	B 13 5 hold downs 
B 04	3 hold downs 	B 14 5 hold downs 