

# CATALOG



Tires | Lubricants | Batteries | Tools and supplies | Car care products  
Equipment | Brake pads | Filters | Car accessories | Wiper blades

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## | THE MOST ADVANCED TECHNOLOGY OF NEW SMF BATTERY

Since its establishment in 1971, Dong Ah Tire & Rubber Co.,Ltd has been continuously expanding in automotive related industry such as Automotive Batteries, Tire Inner Tubes & Flaps, Car Autoparts, CMB & Electric Insulator.



| DONG AH GLOBAL NETWORKS |

### KOREA

- ULSAN PLANT(AUTOMOTIVE BATTERY)
- YUSAN PLANT(TIRE INNER TUBE)
- BUKJUNG PLANT(CMB, RETREAD TIRE & FLAP)
- JINJU DTR PLANT(AUTOPARTS)
- YUSAN STAMPING & INSULATOR PLANT

### CHINA

- QINGDAO PLANT(TIRE INNER TUBE)
- QINGDAO DTR PLANT( AUTOPARTS)

### AMERICA

- DTR AMERICA CORP

### ENGLAND

- DTR VMS PLANT(AUTOPARTS)



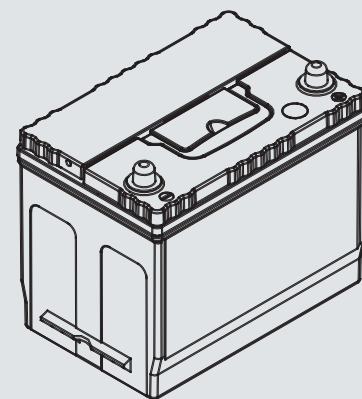
# BATTERY SERVICE MANUAL

## Handling the battery in stock

- A wet-charged battery will be discharged by itself even under not-in use condition. keep the battery in a dark, cool place and measure the open circuit voltage once a month.
- When the open circuit voltage is below 12.4V/25°C, carry out an auxiliary charge, following the procedure described in para.3.
- If the battery has been left for a long period at a low open circuit voltage, battery will have a sulfation and the battery cannot be fully recharged, or at the worst, cannot be recharged at all.

## Before selling to consumer

- Usually a storage battery will not have full capacity because of self-discharge
- Therefore before selling, we recommend to follow the procedure in para.3 to recover the amount of capacity which has discharged during transportation and storage.



## Charge

### Constant current charge

- Charge the battery at a constant current 1/10 of its 20 hours rate capacity-until all cells generate much bubbles, and/or until three or more consecutive reading figures of the terminal voltage are same.
- This method is very effective when the discharged ampere-hour of the battery is known because the charging rate can be determined before charging. Typically 120 to 130% volume of discharged ampere-hour will be charged. Do not forget to disconnect the charging power source when the battery is completely charged. If not it will continue feeding the same amount of current to the battery resulting the overcharge of the battery

### Judgement of finish of charge

- The plates are generating many bubbles (hydrogen and oxygen gases)
- Charged voltage is stable at a maximum level.

### Battery charging considerations

- Perform charging at a place which is free from direct sunshine, rain, dew, moisture, and well ventilated, acid proof, washable and well drained.
- Connect the charger terminals to the battery terminals tightly and correctly. Incorrect connection will deteriorate the functions, and may cause damage to not only the battery but also the charger.
- Have a good judgement on the end of charging. Do not overcharge. Excessive charge may cause overcharging, resulting in damaged plates and separators and distortion of softening container due to high temperature.
- Never bring the battery close to fire: Explosive hydrogen and oxygen gas from the battery will catch fire.
- Keep electrolyte below 45°C. When it reaches near such temperature, decrease the charging current by half or stop charging until the fluid goes down to 35°C.

### Charging indicator

- The indicator on the lid of the battery can help to check the charging status of the battery.



OK



Charge



Replace

## Safety precautions

- Batteries are dangerous to handle or work on. They are filled with dilute sulfuric acid. If the electrolyte gets on your skin or cloth, flush with plenty completely with clean water and take medical care immediately.
- Never bring cigarettes, flames or sparks near the battery.
- It may produce explosive hydrogen and oxygen gas when charging.
- Keep battery cover clean so that the hole in the vent plugs are free from clogging materials. Clogged up battery will have high internal pressure which may crack the container or leak electrolyte out of sealed portion.
- Battery should not be put at sealed location in any conditions. Especially, when charging, please do it in well-ventilated place.
- Jump start by booster cable should be done in accordance with following method to prevent explosion of battery.
- There is still energy left of used battery. Please be careful with spark, short circuit, flow of battery electrolyte.
- Please refrain from dismantlement of battery since it is too dangerous.
- This battery is designed and manufactured in accordance with conditions of vehicle operations. Please note that prescribed performance of battery can not be obtained when battery is used for other equipment

## Safety labeling

- Each battery is marked with six kinds of symbols as follows. The meanings of the symbols are:

Keep away  
from  
children

shield eyes

No smoking  
no naked flames,  
no sparksExplosive  
gasNote  
operating  
instructions

Battery acid

## | PROCESSING LINE

### 1. LEAD OXIDE PLANT



- ▶ Barton type PENOX lead powder machine
- ▶ Produces reliable quality of lead oxides

### 2. (+) STRIP CAST



- ▶ Sovema(ITALY)
- ▶ Over 90% raw strip rolling lead
- ▶ Equalized quality production

### 3. (+) STRIP PUNCHING



- ▶ Wirtz(USA)
- ▶ High technical machine
- ▶ Produces complete designed grids
- ▶ Full framed grid design protects active materials & improves service life

### 4. PASTING



- ▶ Advanced version of Wirtz mixing machine
- ▶ Steel Belt Paster & Drum Paster
- ▶ Increases the stability of plate quality
- ▶ Produces optimal quality of plates

### 5. CURING



- ▶ Advanced conveyor moving technology (Glascok)
- ▶ Complete plate quality by conveyor moving
- ▶ Optimal particle sizes for starting power & service life

### 6. ASSEMBLY LINE



- ▶ Dual inspection system after COS & cell welding
- ▶ Reliable welding properties

### 7. CHARGING



- ▶ High performance by charging efficiency & step charging

### 8. FINISH



- ▶ Terminal polishing
- ▶ Automatic washing & dry process
- ▶ Reliable inspection by high-rate discharge for all sizes



Handle

Magic Eye Indicator

Computer Integrated Design

Patent Bushing

Advanced Center Lug and Cast-On-Strap

### 1. Handle

- Enhances safety by Integrated computer design
- Strong power and easy transportation

### 2. Magic Eye Indicator

- Green: Good / Black: Charging necessary / White: Replace

### 3. Computer Integrated Design

- Reinforced inner vibration by compact design & uniform injection

### 4. Patent Bushing

- Exclusive patented for acid leakage
- High resistance to corrosion

### 5. Advanced Center Lug and Cast-On-Strap

- Improves inner vibration
- Perfect starting power by powerful welding

### 6. Powerful new Punched grid plate

- Improves corrosion resistance & longer life in high temperature
- Minimizes self-discharge and enhances cold cranking power
- Uniforms grid dimension and smooth electrical flow
- Full framed round edge grid design offers strong physical strength
- Internal short circuit protection by applying wide-bridge & strong adhesion of active materials



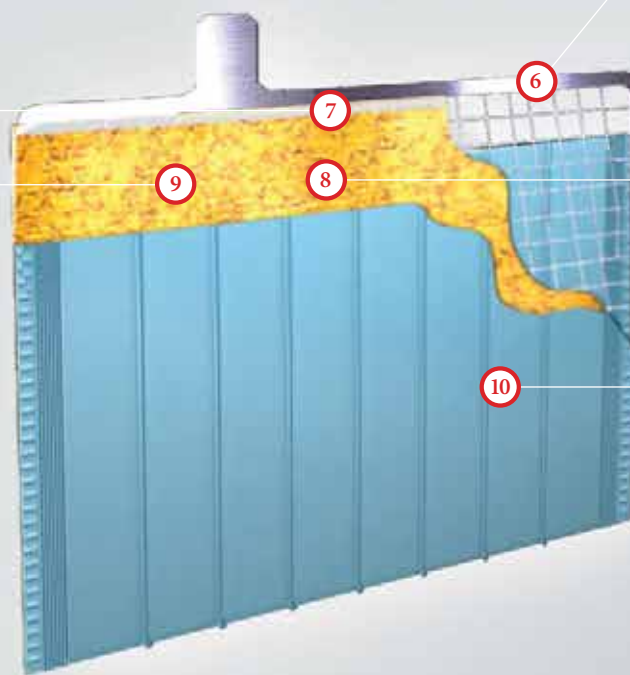
Flame Arrester

Special Sealed Cover

**Punched Grid**  
Powerful new Punched grid plate

Robust Grid Design

Pasted Cured Plate



Micro Fiber &  
Special Tissue

Envelop Separator for Low  
Electric Resistance

**7. Robust Grid Design**

- Enhances 20% battery life

**8. Micro Fiber & Special Tissue**

- Enhances adhesion of active materials
- Improves starting power and greater service life

**9. Pasted Cured Plate**

- Enhancing anti-vibration
- Suitable capacity design for powerful diesel engine

**10. Envelop Separator for Low Electric Resistance**

- Enhances starting power
- Prevents short circuit
- Improves vibration durability

**11. Flame Arrester**

- Prevents possibility of explosion
- Minimizes acid leakage

**12. Special Sealed Cover**

- Prevents acid-leakage & blocks fire from outside
- Minimizes electrolyte deflection between cells
- Minimizes electrolyte loss by gassing recovery system
- Reinforced design for resistance of vibration & shock damage
- Eco friendly materials(PP/PE copolymer)

## For Japanese Vehicles (JIS MF series)



| Group | JIS No. |                     | Capacity<br>20HR | CCA<br>(SAE) | R.C<br>(MIN) | Dimension(mm) |     |     |     | Layout | Terminal | B/Down |
|-------|---------|---------------------|------------------|--------------|--------------|---------------|-----|-----|-----|--------|----------|--------|
|       | New     | Old                 |                  |              |              | L             | W   | H   | TH  |        |          |        |
| B19   | 32B19L  | NS40L               | 32               | 270          | 48           | 187           | 127 | 200 | 220 | 0      | B        | -      |
|       | 32B19R  | NS40                | 32               | 270          | 48           | 187           | 127 | 200 | 220 | 1      | B        | -      |
|       | 40B19L  | NS40ZL              | 35               | 300          | 52           | 187           | 127 | 200 | 220 | 0      | B        | -      |
|       | 40B19R  | NS40Z               | 35               | 300          | 52           | 187           | 127 | 200 | 220 | 1      | B        | -      |
|       | 40B19FL | -                   | 35               | 300          | 52           | 187           | 135 | 200 | 220 | 0      | B        | B1     |
|       | 40B19LS | NS40ZLS             | 35               | 300          | 52           | 187           | 127 | 200 | 220 | 0      | A        | -      |
|       | 40B19RS | NS40ZS              | 35               | 300          | 52           | 187           | 127 | 200 | 220 | 1      | A        | -      |
|       | 42B19L  | -                   | 38               | 350          | 55           | 187           | 127 | 200 | 220 | 0      | B        | -      |
|       | 42B19R  | -                   | 38               | 350          | 55           | 187           | 127 | 200 | 220 | 1      | B        | -      |
| B24   | 42B19FL | -                   | 38               | 350          | 55           | 187           | 135 | 200 | 220 | 0      | B        | B1     |
|       | 50B24L  | N40LS               | 40               | 350          | 60           | 235           | 127 | 200 | 220 | 0      | B        | -      |
|       | 50B24R  | N40S                | 40               | 350          | 60           | 235           | 127 | 200 | 220 | 1      | B        | -      |
|       | 50B24LS | N40L                | 40               | 350          | 60           | 235           | 127 | 200 | 220 | 0      | A        | -      |
|       | 50B24RS | N40                 | 40               | 350          | 60           | 235           | 127 | 200 | 220 | 1      | A        | -      |
|       | 55B24L  | NS60L / NX100-S6L   | 45               | 430          | 75           | 235           | 127 | 200 | 220 | 0      | B        | -      |
|       | 55B24R  | NS60 / NX100-S6     | 45               | 430          | 75           | 235           | 127 | 200 | 220 | 1      | B        | -      |
|       | 55B24LS | NS60LS / NX100-S6LS | 45               | 430          | 75           | 235           | 127 | 200 | 220 | 0      | A        | -      |
|       | 55B24RS | NS60S / NX100-S6S   | 45               | 430          | 75           | 235           | 127 | 200 | 220 | 1      | A        | -      |
| D23   | 55D23R  | -                   | 60               | 540          | 100          | 231           | 172 | 200 | 220 | 1      | A        | B1     |
|       | 55D23L  | -                   | 60               | 540          | 100          | 231           | 172 | 200 | 220 | 0      | A        | B1     |
|       | 75D23L  | -                   | 65               | 590          | 110          | 231           | 172 | 200 | 220 | 0      | A        | B1     |
|       | 75D23R  | -                   | 65               | 590          | 110          | 231           | 172 | 200 | 220 | 1      | A        | B1     |
| D26   | 48D26L  | N50L                | 50               | 430          | 80           | 258           | 172 | 200 | 220 | 0      | A        | B1     |
|       | 48D26R  | N50                 | 50               | 430          | 80           | 258           | 172 | 200 | 220 | 1      | A        | B1     |
|       | 55D26L  | N50ZL               | 60               | 540          | 100          | 258           | 172 | 200 | 220 | 0      | A        | B1     |
|       | 55D26R  | N50Z                | 60               | 540          | 100          | 258           | 172 | 200 | 220 | 1      | A        | B1     |
|       | 75D26L  | NS70L               | 65               | 580          | 110          | 258           | 172 | 200 | 220 | 0      | A        | B1     |
|       | 75D26R  | NS70                | 65               | 580          | 110          | 258           | 172 | 200 | 220 | 1      | A        | B1     |
|       | 80D26L  | NX110-5L            | 70               | 600          | 120          | 258           | 172 | 200 | 220 | 0      | A        | B1     |
|       | 80D26R  | NX110-5             | 70               | 600          | 120          | 258           | 172 | 200 | 220 | 1      | A        | B1     |
|       | 90D26L  | -                   | 75               | 630          | 130          | 258           | 172 | 200 | 220 | 0      | A        | B1     |
| D31   | 90D26R  | -                   | 75               | 630          | 130          | 258           | 172 | 200 | 220 | 1      | A        | B1     |
|       | 65D31L  | N70L                | 70               | 600          | 120          | 303           | 172 | 200 | 220 | 0      | A        | B1     |
|       | 65D31R  | N70                 | 70               | 600          | 120          | 303           | 172 | 200 | 220 | 1      | A        | B1     |
|       | 75D31L  | N70ZL               | 75               | 650          | 130          | 303           | 172 | 200 | 220 | 0      | A        | B1     |
|       | 75D31R  | N70Z                | 75               | 650          | 130          | 303           | 172 | 200 | 220 | 1      | A        | B1     |
|       | 95D31L  | NX120-7L            | 80               | 670          | 140          | 303           | 172 | 200 | 220 | 0      | A        | B1     |
|       | 95D31R  | NX120-7             | 80               | 670          | 140          | 303           | 172 | 200 | 220 | 1      | A        | B1     |
|       | 105D31L | -                   | 90               | 750          | 150          | 303           | 172 | 200 | 220 | 0      | A        | B1     |
|       | 105D31R | -                   | 90               | 750          | 150          | 303           | 172 | 200 | 220 | 1      | A        | B1     |
| E41   | 95E41L  | N100L               | 100              | 830          | 180          | 408           | 172 | 210 | 230 | 0      | A        | -      |
|       | 95E41R  | N100                | 100              | 830          | 180          | 408           | 172 | 210 | 230 | 1      | A        | -      |
|       | 115E41L | NS120L              | 110              | 850          | 200          | 408           | 172 | 210 | 230 | 0      | A        | -      |
|       | 115E41R | NS120               | 110              | 850          | 200          | 408           | 172 | 210 | 230 | 1      | A        | -      |
| F51   | 135F51L | N120L               | 120              | 870          | 230          | 506           | 182 | 213 | 233 | 3      | A        | -      |
|       | 135F51R | N120                | 120              | 870          | 230          | 506           | 182 | 213 | 233 | 4      | A        | -      |
| G51   | 160G51L | N150L               | 150              | 1000         | 300          | 506           | 215 | 213 | 233 | 3      | A        | -      |
|       | 160G51R | N150                | 150              | 1000         | 300          | 506           | 215 | 213 | 233 | 4      | A        | -      |
|       | 165G51L | NS200L              | 170              | 1050         | 325          | 506           | 215 | 213 | 233 | 3      | A        | -      |
|       | 165G51R | NS200               | 170              | 1050         | 325          | 506           | 215 | 213 | 233 | 4      | A        | -      |
| H52   | 210H52L | N200L               | 200              | 1200         | 430          | 509           | 274 | 220 | 240 | 3      | A        | -      |
|       | 210H52R | N200                | 200              | 1200         | 430          | 509           | 274 | 220 | 240 | 4      | A        | -      |
| D33   | MF100L  |                     | 100              | 830          | 185          | 326           | 172 | 203 | 223 | 0      | A        | -      |
|       | MF100R  |                     | 100              | 830          | 185          | 326           | 172 | 203 | 223 | 1      | A        | -      |



## For European Vehicles (DIN MF series)

| Group | TYPE NO. | Capacity<br>(20HR) | CCA<br>(EN) | R.C<br>(MIN) | Dimension(mm) |     |     |     | Layout | Terminal | B/Down |
|-------|----------|--------------------|-------------|--------------|---------------|-----|-----|-----|--------|----------|--------|
|       |          |                    |             |              | L             | W   | H   | TH  |        |          |        |
| LB1   | 53518    | 35                 | 340         | 58           | 207           | 173 | 175 | 175 | 0      | A        | B13    |
|       | 53519    | 35                 | 340         | 58           | 207           | 173 | 175 | 175 | 1      | A        | B13    |
|       | 53624    | 36                 | 340         | 60           | 207           | 173 | 175 | 175 | 0      | A        | B1     |
|       | 53638    | 36                 | 340         | 60           | 207           | 173 | 175 | 175 | 1      | A        | B1     |
|       | 54321    | 43                 | 420         | 72           | 207           | 173 | 175 | 175 | 0      | A        | B13    |
|       | 54322    | 43                 | 420         | 72           | 207           | 173 | 175 | 175 | 1      | A        | B13    |
| L1    | 54459    | 44                 | 340         | 73           | 207           | 173 | 190 | 190 | 0      | A        | B13    |
|       | 54464    | 44                 | 340         | 73           | 207           | 173 | 190 | 190 | 1      | A        | B13    |
|       | 55054    | 50                 | 380         | 83           | 207           | 173 | 190 | 190 | 0      | A        | B13    |
| LB2   | 54518    | 45                 | 420         | 75           | 242           | 173 | 175 | 175 | 1      | A        | B14    |
|       | 54519    | 45                 | 420         | 75           | 242           | 173 | 175 | 175 | 0      | A        | B14    |
|       | 55040    | 50                 | 460         | 83           | 242           | 173 | 175 | 175 | 0      | A        | B13    |
|       | 55457    | 54                 | 510         | 90           | 242           | 173 | 175 | 175 | 0      | A        | B13    |
|       | 55458    | 54                 | 510         | 90           | 242           | 173 | 175 | 175 | 1      | A        | B13    |
|       | 56077    | 60                 | 540         | 100          | 242           | 173 | 175 | 175 | 0      | A        | B13    |
| L2    | 55559    | 55                 | 440         | 92           | 242           | 173 | 190 | 190 | 0      | A        | B13    |
|       | 55565    | 55                 | 440         | 92           | 242           | 173 | 190 | 190 | 1      | A        | B13    |
|       | 56219    | 62                 | 480         | 103          | 242           | 173 | 190 | 190 | 0      | A        | B13    |
|       | 56220    | 62                 | 480         | 103          | 242           | 173 | 190 | 190 | 1      | A        | B13    |
| LB3   | 55414    | 54                 | 510         | 90           | 276           | 173 | 175 | 175 | 0      | A        | B13    |
|       | 55415    | 54                 | 510         | 90           | 276           | 173 | 175 | 175 | 1      | A        | B13    |
|       | 56318    | 63                 | 540         | 105          | 276           | 173 | 175 | 175 | 0      | A        | B14    |
|       | 56330    | 63                 | 540         | 105          | 276           | 173 | 175 | 175 | 0      | A        | B13    |
|       | 56821    | 68                 | 580         | 113          | 276           | 173 | 175 | 175 | 1      | A        | B13    |
|       | 56828    | 68                 | 580         | 113          | 276           | 173 | 175 | 175 | 0      | A        | B13    |
|       | 57113    | 71                 | 620         | 120          | 276           | 173 | 175 | 175 | 0      | A        | B13    |
| L3    | 56638    | 66                 | 540         | 110          | 276           | 173 | 190 | 190 | 0      | A        | B13    |
|       | 56640    | 66                 | 540         | 110          | 276           | 173 | 190 | 190 | 1      | A        | B13    |
|       | 57219    | 72                 | 580         | 120          | 276           | 173 | 190 | 190 | 1      | A        | B13    |
|       | 57220    | 72                 | 580         | 120          | 276           | 173 | 190 | 190 | 0      | A        | B13    |
|       | 57412    | 74                 | 680         | 123          | 276           | 173 | 190 | 190 | 0      | A        | B13    |
|       | 57413    | 74                 | 680         | 123          | 276           | 173 | 190 | 190 | 1      | A        | B13    |
| LB4   | 57539    | 75                 | 640         | 130          | 315           | 173 | 175 | 175 | 0      | A        | B13    |
|       | 58014    | 80                 | 680         | 140          | 315           | 173 | 175 | 175 | 0      | A        | B13    |
| L4    | 58043    | 80                 | 640         | 140          | 315           | 173 | 190 | 190 | 0      | A        | B13    |
|       | 59042    | 90                 | 720         | 170          | 315           | 173 | 190 | 190 | 0      | A        | B13    |
|       | 59043    | 90                 | 720         | 170          | 315           | 173 | 190 | 190 | 1      | A        | B13    |
| LB5   | 58515    | 85                 | 700         | 142          | 351           | 173 | 175 | 175 | 0      | A        | B13    |
|       | 59015    | 90                 | 820         | 150          | 351           | 173 | 175 | 175 | 0      | A        | B13    |
| L5    | 58821    | 88                 | 700         | 147          | 351           | 173 | 190 | 190 | 1      | A        | B13    |
|       | 58827    | 88                 | 700         | 147          | 351           | 173 | 190 | 190 | 0      | A        | B13    |
|       | 59218    | 92                 | 740         | 153          | 351           | 173 | 190 | 190 | 0      | A        | B13    |
|       | 59219    | 92                 | 740         | 153          | 351           | 173 | 190 | 190 | 1      | A        | B13    |
|       | 60044R   | 100                | 820         | 167          | 351           | 173 | 190 | 190 | 1      | A        | B13    |
|       | 60044    | 100                | 820         | 167          | 351           | 173 | 190 | 190 | 0      | A        | B13    |
| B19   | 53520    | 35                 | 340         | 58           | 187           | 127 | 200 | 220 | 0      | B        | -      |
|       | 53522    | 35                 | 340         | 58           | 187           | 127 | 200 | 220 | 1      | B        | -      |
| B24   | 54523    | 45                 | 420         | 75           | 235           | 127 | 200 | 220 | 0      | A        | -      |
|       | 54524    | 45                 | 420         | 75           | 235           | 127 | 200 | 220 | 1      | A        | -      |
|       | 54551    | 45                 | 420         | 75           | 235           | 127 | 200 | 220 | 1      | B        | -      |
|       | 54584    | 45                 | 420         | 75           | 235           | 127 | 200 | 220 | 0      | B        | -      |



| Group | TYPE NO. | Capacity<br>20Hr(AH) | CCA<br>(EN) | R.C<br>(MIN) | Dimension(mm) |     |     |     | Layout | Terminal | B/Down |
|-------|----------|----------------------|-------------|--------------|---------------|-----|-----|-----|--------|----------|--------|
|       |          |                      |             |              | L             | W   | H   | TH  |        |          |        |
| D23   | 56068    | 60                   | 480         | 100          | 231           | 172 | 200 | 220 | 0      | A        | B1     |
|       | 56069    | 60                   | 480         | 100          | 231           | 172 | 200 | 220 | 1      | A        | B1     |
| D26   | 56048    | 60                   | 480         | 100          | 266           | 172 | 200 | 220 | 0      | A        | B9     |
|       | 56049    | 60                   | 480         | 100          | 266           | 172 | 200 | 220 | 1      | A        | B9     |
|       | 57024    | 70                   | 540         | 117          | 266           | 172 | 200 | 220 | 1      | A        | B9     |
|       | 57029    | 70                   | 540         | 117          | 266           | 172 | 200 | 220 | 0      | A        | B9     |
| D31   | 57512    | 75                   | 600         | 125          | 303           | 172 | 200 | 220 | 0      | A        | B1     |
|       | 57513    | 75                   | 610         | 125          | 303           | 172 | 200 | 220 | 1      | A        | B1     |
|       | 58513    | 85                   | 680         | 142          | 303           | 172 | 200 | 220 | 0      | A        | B1     |
|       | 58514    | 85                   | 680         | 142          | 303           | 172 | 200 | 220 | 1      | A        | B1     |
|       | 59518    | 95                   | 720         | 158          | 303           | 172 | 200 | 220 | 0      | A        | B1     |
|       | 59519    | 95                   | 720         | 158          | 303           | 172 | 200 | 220 | 1      | A        | B1     |
| MF100 | 59615    | 96                   | 740         | 160          | 326           | 172 | 203 | 223 | 0      | A        | B1     |
|       | 59616    | 96                   | 740         | 160          | 326           | 172 | 203 | 223 | 1      | A        | B1     |
| E41   | 60016    | 100                  | 760         | 180          | 408           | 172 | 210 | 230 | 0      | A        | -      |

## ■ FOR BCI CELL LAYOUT

FIG.8

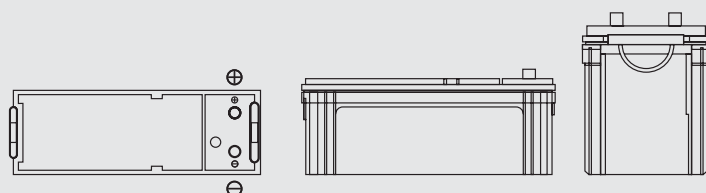


FIG.10

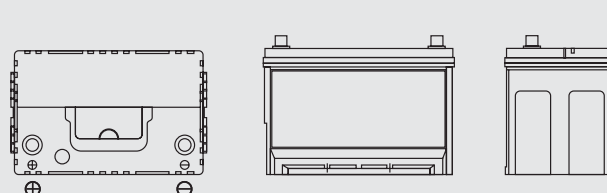


FIG.11

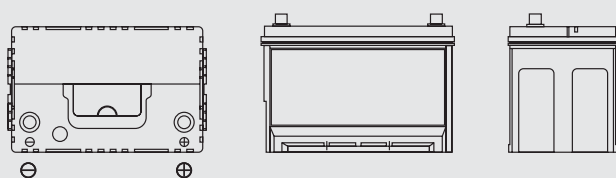
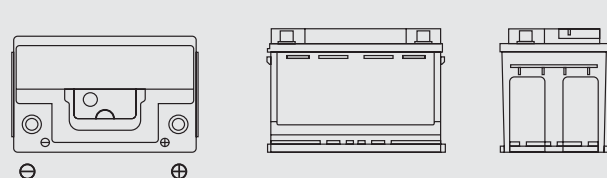
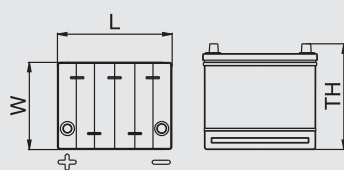


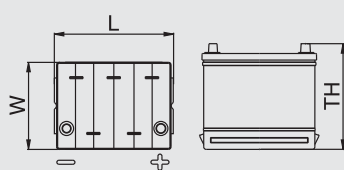
FIG.15



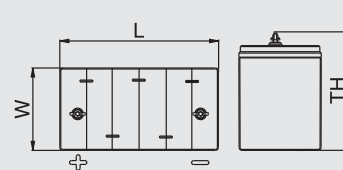
10F



11F



18



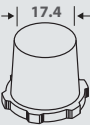
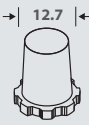
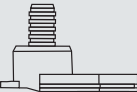
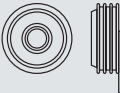
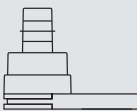
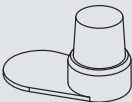
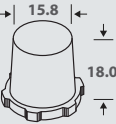
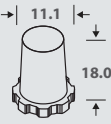
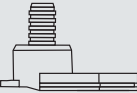
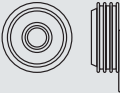
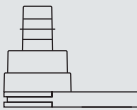
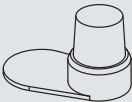


## For American Vehicles (BCI MF series)

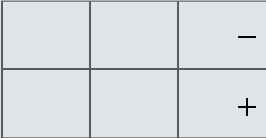
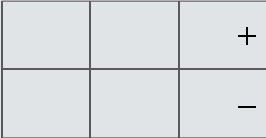
| Group | TYPE NO.  | CCA (SAE) | R.C (MIN) | Dimension(mm) |     |     |     | Layout | Terminal | B/Down |
|-------|-----------|-----------|-----------|---------------|-----|-----|-----|--------|----------|--------|
|       |           |           |           | L             | W   | H   | TH  |        |          |        |
| 85    | 85-500    | 500       | 85        | 231           | 172 | 180 | 200 | 11     | A        | B1     |
|       | 85-550    | 550       | 95        | 231           | 172 | 180 | 200 | 11     | A        | B1     |
| 86    | 86-500    | 500       | 85        | 231           | 172 | 180 | 200 | 10     | A        | B1     |
|       | 86-550    | 550       | 95        | 231           | 172 | 180 | 200 | 10     | A        | B1     |
| 24    | 24-550    | 550       | 100       | 258           | 172 | 200 | 220 | 10     | A        | B1     |
|       | 24-600    | 600       | 110       | 258           | 172 | 200 | 220 | 10     | A        | B1     |
|       | 24-630    | 630       | 120       | 258           | 172 | 200 | 220 | 10     | A        | B1     |
|       | 24-650    | 650       | 130       | 258           | 172 | 200 | 220 | 10     | A        | B1     |
|       | 24-700    | 700       | 140       | 258           | 172 | 200 | 220 | 10     | A        | B1     |
| 24R   | 24R-550   | 550       | 100       | 258           | 172 | 200 | 220 | 11     | A        | B1     |
|       | 24R-600   | 600       | 110       | 258           | 172 | 200 | 220 | 11     | A        | B1     |
|       | 24R-630   | 630       | 120       | 258           | 172 | 200 | 220 | 11     | A        | B1     |
|       | 24R-650   | 650       | 130       | 258           | 172 | 200 | 220 | 11     | A        | B1     |
|       | 24R-700   | 700       | 140       | 258           | 172 | 200 | 220 | 11     | A        | B1     |
| 25    | 25-500    | 500       | 90        | 231           | 172 | 200 | 220 | 10     | A        | B1     |
|       | 25-550    | 550       | 100       | 231           | 172 | 200 | 220 | 10     | A        | B1     |
|       | 25-600    | 600       | 110       | 231           | 172 | 200 | 220 | 10     | A        | B1     |
| 35    | 35-500    | 500       | 90        | 231           | 172 | 200 | 220 | 11     | A        | B1     |
|       | 35-550    | 550       | 100       | 231           | 172 | 200 | 220 | 11     | A        | B1     |
|       | 35-600    | 600       | 110       | 231           | 172 | 200 | 220 | 11     | A        | B1     |
| 27    | 27-650    | 650       | 130       | 303           | 172 | 200 | 220 | 10     | A        | B1     |
|       | 27-700    | 700       | 140       | 303           | 172 | 200 | 220 | 10     | A        | B1     |
|       | 27-750    | 750       | 150       | 303           | 172 | 200 | 220 | 10     | A        | B1     |
| 27R   | 27R-650   | 650       | 130       | 303           | 172 | 200 | 220 | 11     | A        | B1     |
|       | 27R-700   | 700       | 140       | 303           | 172 | 200 | 220 | 11     | A        | B1     |
|       | 27R-750   | 750       | 150       | 303           | 172 | 200 | 220 | 11     | A        | B1     |
| 51    | 51-400    | 400       | 75        | 235           | 135 | 200 | 220 | 10     | A        | B1     |
|       | 51-430    | 430       | 85        | 235           | 135 | 200 | 220 | 10     | A        | B1     |
| 51R   | 51R-400   | 400       | 75        | 235           | 135 | 200 | 220 | 11     | A        | B1     |
|       | 51R-430   | 430       | 85        | 235           | 135 | 200 | 220 | 11     | A        | B1     |
| 47    | 47-500    | 500       | 90        | 242           | 173 | 190 | 190 | 15     | A        | B13    |
|       | 47-550    | 550       | 100       | 242           | 173 | 190 | 190 | 15     | A        | B13    |
|       | 47-650    | 650       | 120       | 242           | 173 | 190 | 190 | 15     | A        | B13    |
| 48    | 48-550    | 550       | 110       | 276           | 173 | 190 | 190 | 15     | A        | B13    |
|       | 48-600    | 600       | 120       | 276           | 173 | 190 | 190 | 15     | A        | B13    |
|       | 48-650    | 650       | 130       | 276           | 173 | 190 | 190 | 15     | A        | B13    |
|       | 48-700    | 700       | 140       | 276           | 173 | 190 | 190 | 15     | A        | B13    |
| 49    | 49-730    | 730       | 147       | 351           | 173 | 190 | 190 | 15     | A        | B13    |
|       | 49-820    | 820       | 167       | 351           | 173 | 190 | 190 | 15     | A        | B13    |
| 90    | 90-530    | 530       | 92        | 242           | 173 | 175 | 175 | 15     | A        | B13    |
|       | 90-570    | 570       | 100       | 242           | 173 | 175 | 175 | 15     | A        | B13    |
| 91    | 91-580    | 580       | 108       | 276           | 173 | 175 | 175 | 15     | A        | B13    |
|       | 91-650    | 650       | 123       | 276           | 173 | 175 | 175 | 15     | A        | B13    |
| 92    | 92-700    | 700       | 130       | 315           | 173 | 175 | 175 | 15     | A        | B13    |
|       | 92-750    | 750       | 140       | 315           | 173 | 175 | 175 | 15     | A        | B13    |
| 93    | 93-730    | 730       | 139       | 351           | 173 | 175 | 175 | 15     | A        | B13    |
|       | 93-820    | 820       | 146       | 351           | 173 | 175 | 175 | 15     | A        | B13    |
| 30H   | 30H-830   | 830       | 180       | 326           | 172 | 203 | 223 | 10     | A        | B1     |
| 4D    | 4D-900    | 900       | 300       | 506           | 215 | 213 | 233 | 8      | A        | -      |
|       | 4D-960    | 960       | 322       | 506           | 215 | 213 | 233 | 8      | A        | -      |
| 8D    | 8D-1200   | 1200      | 430       | 509           | 274 | 220 | 240 | 8      | A        | -      |
| 22F   | 22F-450   | 450       | 75        | 240           | 172 | 180 | 203 | 11F    | DUAL FIT | B9     |
|       | 22F-450R  | 450       | 75        | 240           | 172 | 180 | 203 | 10F    | DUAL FIT | B9     |
|       | 22F-500   | 500       | 85        | 240           | 172 | 180 | 203 | 11F    | DUAL FIT | B9     |
|       | 22F-500R  | 500       | 85        | 240           | 172 | 180 | 203 | 10F    | DUAL FIT | B9     |
|       | 22F-550   | 550       | 95        | 240           | 172 | 180 | 203 | 11F    | DUAL FIT | B9     |
|       | 22F-550R  | 550       | 95        | 240           | 172 | 180 | 203 | 10F    | DUAL FIT | B9     |
| 31    | C31-750   | 750       | 160       | 330           | 172 | 217 | 240 | 18     | TOP      | -      |
|       | C31-800   | 800       | 170       | 330           | 172 | 217 | 240 | 18     | TOP      | -      |
|       | C31-850   | 850       | 180       | 330           | 172 | 217 | 240 | 18     | TOP      | -      |
|       | C31-1000  | 1000      | 190       | 330           | 172 | 217 | 240 | 18     | TOP      | -      |
| 31S   | C31S-750  | 750       | 160       | 330           | 172 | 217 | 240 | 18     | STUD     | -      |
|       | C31S-800  | 800       | 170       | 330           | 172 | 217 | 240 | 18     | STUD     | -      |
|       | C31S-850  | 850       | 180       | 330           | 172 | 217 | 240 | 18     | STUD     | -      |
|       | C31S-1000 | 1000      | 190       | 330           | 172 | 217 | 240 | 18     | STUD     | -      |

# Technical Information

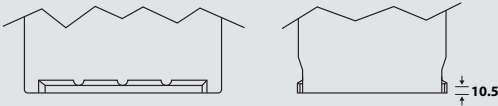
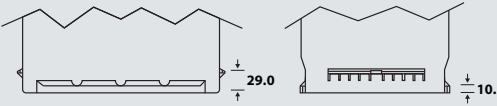
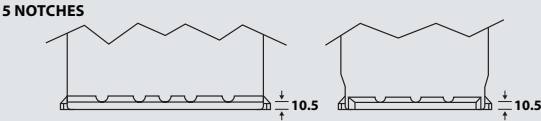
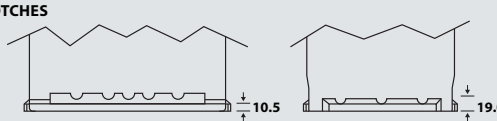
## ■ TERMINAL

|                      | A(Standard)                                                                       | B(Small)                                                                          | STUD                                                                              | SIDE                                                                               | DUAL                                                                                | TOP                                                                                 |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| POSITIVE<br>TERMINAL |  |  |  |  |  |  |
| NEGATIVE<br>TERMINAL |  |  |  |  |  |  |

## ■ LAYOUT

| 0                                                                                   | 1                                                                                   | 3                                                                                    | 4                                                                                     |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |  |  |

## ■ HOLD-DOWN

| 10.5mm on long sides only |                                                                                     | 10.5mm on long sides, 29.0mm on short sides |                                                                                      |
|---------------------------|-------------------------------------------------------------------------------------|---------------------------------------------|--------------------------------------------------------------------------------------|
| B1                        |  | B9                                          |  |
| 10.5mm on all four sides  |                                                                                     | 19.0mm on long sides, 10.5mm on short sides |                                                                                      |
| B13                       |  | B14                                         |  |