

WORLDWIDE CALCIUM SEALED MAINTENANCE FREE BATTERY



HISTORY

1971

Established
DONGAH TIRE & RUBBER CO.,LTD



2011

Established
NEW DTR MF BATTERY PLANT



2007

Built VMS Plant in
China(Qingdao)

1992

Launched VMS
(Vibration
Management
System)
Business

1999

M&A DSB battery
(Dry-Charged)

2009

M&A Avon Automotive
VMS in UK

2004

Spin Off VMS Business into
DTR Corp.

2017

- Launched EFB Battery
- Renamed to DTR Automotive Corp.



2020



- Winner of Korea Consumer Satisfaction Awards(Battery)
- Started Supplying RIVIAN in US

2022

- Launched AGM Battery
- M&A Doosan Machine Tools
- Renamed to DN Automotive Corp.

2014

- Built DTR Yangsan Plant & R&D Center
- M&A CF GOMMA in Italy



2021

- GM Supplier Quality Excellence Awards (For 8 years)
- Started Supplying TESLA, NIO in US

2019

- Built VMS Plant in Mexico
- Renovated Battery R&D Center

MANUFACTURING PROCESS

1 Lead Oxide

- Barton pot process is the core of lead oxide spherically shaped particles
- Fine Oxide with ca.50% by weight less than 4.5 microns



2 Strip Rolling

- Over 90% slab reduction rate
- Excellent mechanical properties, fine and uniform strip
- Anti-corrosion alloy



3 Strip Punching

- Full Framed Grid constrains the active material and provides mechanical strength
- Reduction of Internal Resistance



4 Pasting

- Double-sided pasting for minimizing corrosion of grid
- Strong adhesion between grid and paste



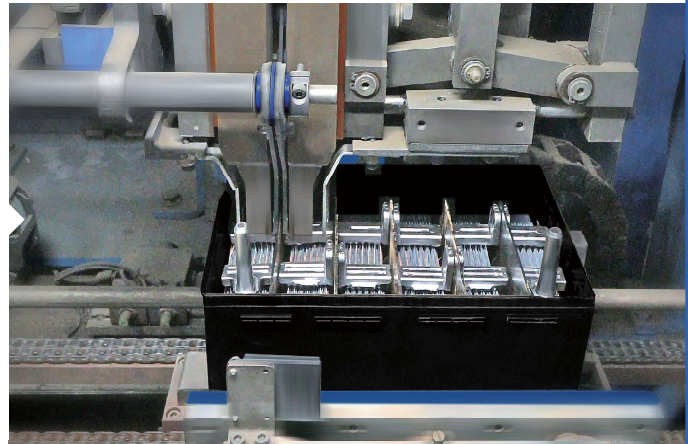
5 Curing

- Even plate quality by vertical loading
- Optimal particle size for battery performance & lifespan
- Advanced adhesion and cohesion of plate



6 Assembling

- Plate quantity & weight measuring system
- Total inspection for all batteries
- Spot welding quality measuring system



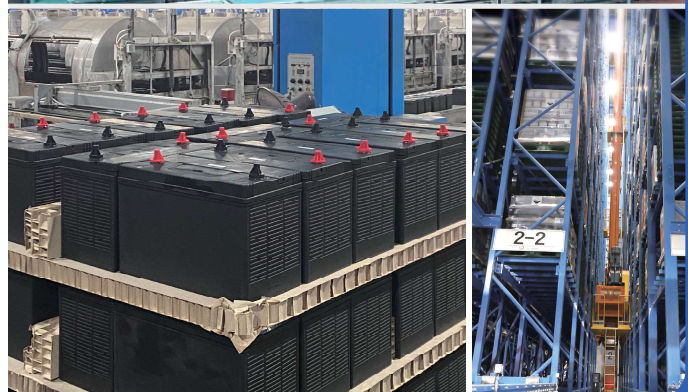
7 Formation

- Dynamic charging acceptability & less self-discharge rate by multi-step charging
- Optimized charging temperature management system



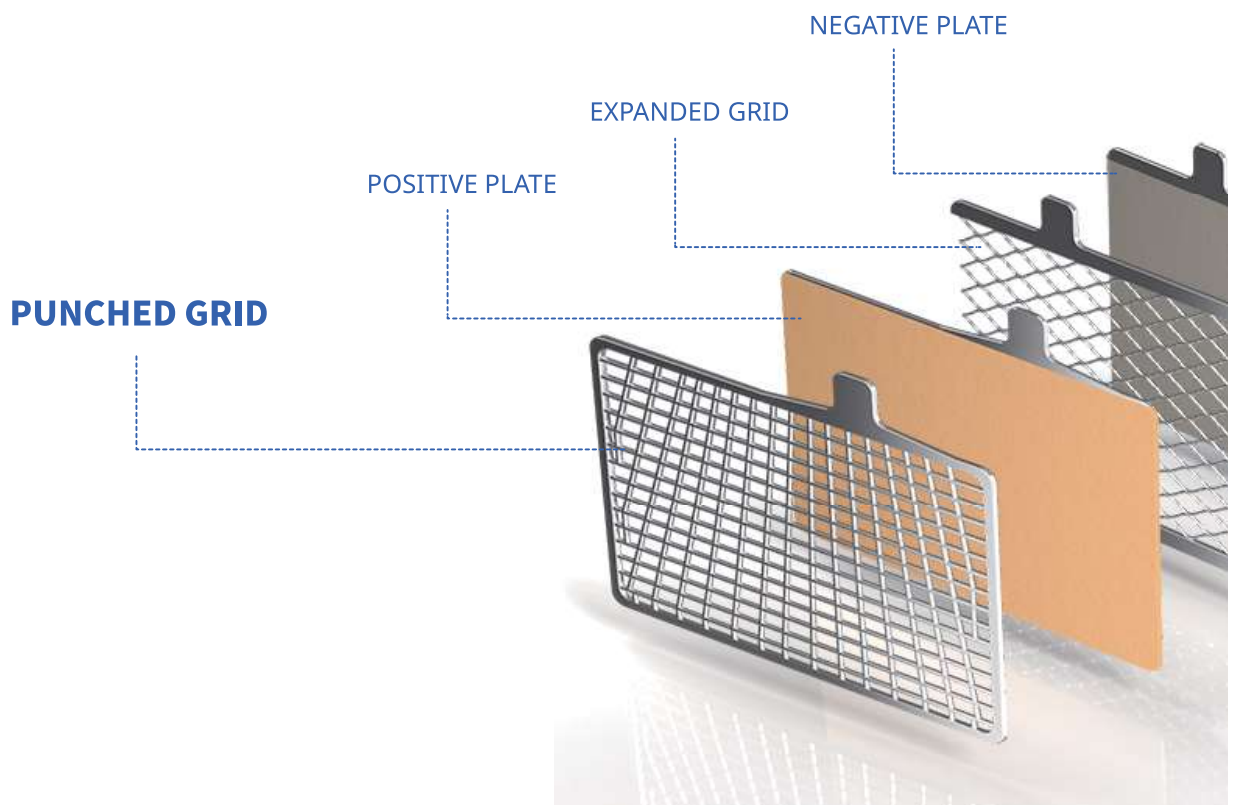
8 Finishing Process

- Electrolyte cooling system & Inspection by High Rate Discharge(HRD)
- Laser marking System & Robot Packaging System
- Storage in Automatic Warehouse for Shipping



KEY FEATURES FOR DN MF BATTERIES

- **Punched Grid for Positive plate**
 - Full framed round edge grid offers high starting power and durability
- **Calcium High Tin Alloy**
 - Optimized Calcium alloy provides maintenance free and corrosion resistance
- **Special Tissue on plates**
 - Non-wooven tissue improve adhesion of active material
- **Safety & Convenience**
 - Flame arrester prevent explosion by spark
 - Built-in handle provides easy handling





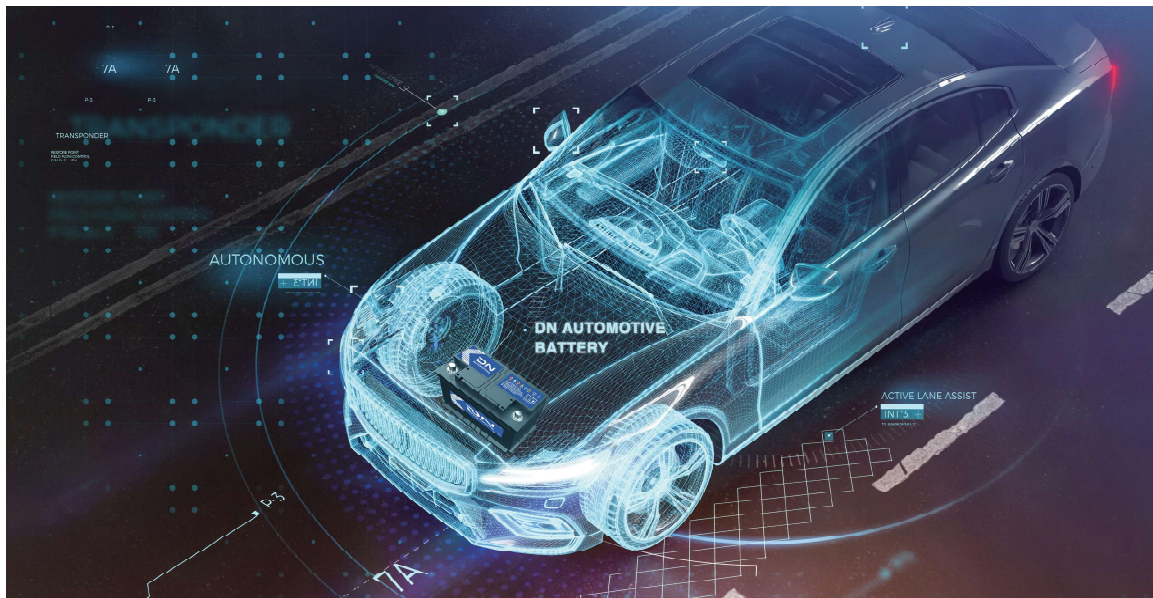
SPECIFICATION

AUTOMOTIVE

JIS MF SERIES / For Japanese Vehicles

DIN MF SERIES / For European Vehicles

BCI MF SERIES / For American Vehicles



JIS MF SERIES (For Japanese Vehicles)

| Group | TYPE No. | | Capacity 20HR | CCA (SAE) | RC (MIN) | Dimension(mm) | | | | Layout | Terminal | BHD |
|-------|----------|---------|------------------|--------------|-------------|---------------|-----|-----|-----|--------|----------|-------|
| | New | Old | | | | L | W | H | TH | | | |
| B19 | 32B19L | NS40L | 32 | 270 | 48 | 187 | 127 | 200 | 222 | 0 | B | B0/B1 |
| | 32B19R | NS40 | 32 | 270 | 48 | 187 | 127 | 200 | 222 | 1 | B | B0/B1 |
| | 32B19LS | - | 32 | 270 | 48 | 187 | 127 | 200 | 222 | 0 | A | B0/B1 |
| | 32B19RS | - | 32 | 270 | 48 | 187 | 127 | 200 | 222 | 1 | A | B0/B1 |
| | 40B19L | NS40ZL | 35 | 300 | 52 | 187 | 127 | 200 | 222 | 0 | B | B0/B1 |
| | 40B19R | NS40Z | 35 | 300 | 52 | 187 | 127 | 200 | 222 | 1 | B | B0/B1 |
| | 40B19LS | NS40ZLS | 35 | 300 | 52 | 187 | 127 | 200 | 222 | 0 | A | B0/B1 |
| | 40B19RS | NS40ZS | 35 | 300 | 52 | 187 | 127 | 200 | 222 | 1 | A | B0/B1 |
| | 42B19L | - | 38 | 340 | 55 | 187 | 127 | 200 | 222 | 0 | B | B0/B1 |
| | 42B19R | - | 38 | 340 | 55 | 187 | 127 | 200 | 222 | 1 | B | B0/B1 |
| | 42B19LS | - | 38 | 340 | 55 | 187 | 127 | 200 | 222 | 0 | A | B0/B1 |
| | 42B19RS | - | 38 | 340 | 55 | 187 | 127 | 200 | 222 | 1 | A | B0/B1 |
| | 44B19L | - | 40 | 370 | 60 | 187 | 127 | 200 | 222 | 0 | B | B0/B1 |
| | 44B19R | - | 40 | 370 | 60 | 187 | 127 | 200 | 222 | 1 | B | B0/B1 |
| | 44B19LS | - | 40 | 370 | 60 | 187 | 127 | 200 | 222 | 0 | A | B0/B1 |
| | 44B19RS | - | 40 | 370 | 60 | 187 | 127 | 200 | 222 | 1 | A | B0/B1 |
| B24 | 46B24L | - | 35 | 300 | 52 | 235 | 127 | 200 | 222 | 0 | B | B0/B1 |
| | 46B24R | - | 35 | 300 | 52 | 235 | 127 | 200 | 222 | 1 | B | B0/B1 |
| | 46B24LS | - | 35 | 300 | 52 | 235 | 127 | 200 | 222 | 0 | A | B0/B1 |
| | 46B24RS | - | 35 | 300 | 52 | 235 | 127 | 200 | 222 | 1 | A | B0/B1 |
| | 50B24L | N40LB | 40 | 370 | 60 | 235 | 127 | 200 | 222 | 0 | B | B0/B1 |
| | 50B24R | N40B | 40 | 370 | 60 | 235 | 127 | 200 | 222 | 1 | B | B0/B1 |
| | 50B24LS | N40L | 40 | 370 | 60 | 235 | 127 | 200 | 222 | 0 | A | B0/B1 |
| | 50B24RS | N40 | 40 | 370 | 60 | 235 | 127 | 200 | 222 | 1 | A | B0/B1 |
| | 55B24L | NS60L | 45 | 430 | 71 | 235 | 127 | 200 | 222 | 0 | B | B0/B1 |
| | 55B24R | NS60 | 45 | 430 | 71 | 235 | 127 | 200 | 222 | 1 | B | B0/B1 |
| | 55B24LS | NS60LS | 45 | 430 | 71 | 235 | 127 | 200 | 222 | 0 | A | B0/B1 |
| | 55B24RS | NS60S | 45 | 430 | 71 | 235 | 127 | 200 | 222 | 1 | A | B0/B1 |
| | 60B24L | - | 48 | 470 | 75 | 235 | 127 | 200 | 222 | 0 | B | B0/B1 |
| | 60B24R | - | 48 | 470 | 75 | 235 | 127 | 200 | 222 | 1 | B | B0/B1 |
| | 60B24LS | - | 48 | 470 | 75 | 235 | 127 | 200 | 222 | 0 | A | B0/B1 |
| | 60B24RS | - | 48 | 470 | 75 | 235 | 127 | 200 | 222 | 1 | A | B0/B1 |
| D20 | 50D20L | - | 50 | 450 | 80 | 200 | 172 | 200 | 220 | 0 | A | B0/B1 |
| | 50D20R | - | 50 | 450 | 80 | 200 | 172 | 200 | 220 | 1 | A | B0/B1 |

JIS MF SERIES (For Japanese Vehicles)

| Group | TYPE No. | | Capacity 20HR | CCA (SAE) | RC (MIN) | Dimension(mm) | | | | Layout | Terminal | BHD |
|-------|----------|----------|------------------|--------------|-------------|---------------|-----|-----|-----|--------|----------|-------|
| | New | Old | | | | L | W | H | TH | | | |
| D23 | 55D23L | - | 60 | 550 | 100 | 231 | 172 | 200 | 220 | 0 | A | B0/B1 |
| | 55D23R | - | 60 | 550 | 100 | 231 | 172 | 200 | 220 | 1 | A | B0/B1 |
| | 75D23L | - | 65 | 580 | 110 | 231 | 172 | 200 | 220 | 0 | A | B0/B1 |
| | 75D23R | - | 65 | 580 | 110 | 231 | 172 | 200 | 220 | 1 | A | B0/B1 |
| | 80D23L | - | 70 | 630 | 120 | 231 | 172 | 200 | 220 | 0 | A | B0/B1 |
| | 80D23R | - | 70 | 630 | 120 | 231 | 172 | 200 | 220 | 1 | A | B0/B1 |
| D26 | 48D26L | N50L | 50 | 430 | 80 | 258 | 172 | 200 | 220 | 0 | A | B0/B1 |
| | 48D26R | N50 | 50 | 430 | 80 | 258 | 172 | 200 | 220 | 1 | A | B0/B1 |
| | 55D26L | N50ZL | 60 | 550 | 100 | 258 | 172 | 200 | 220 | 0 | A | B0/B1 |
| | 55D26R | N50Z | 60 | 550 | 100 | 258 | 172 | 200 | 220 | 1 | A | B0/B1 |
| | 75D26L | NS70L | 65 | 580 | 110 | 258 | 172 | 200 | 220 | 0 | A | B0/B1 |
| | 75D26R | NS70 | 65 | 580 | 110 | 258 | 172 | 200 | 220 | 1 | A | B0/B1 |
| | 80D26L | NX110-5L | 70 | 600 | 120 | 258 | 172 | 200 | 220 | 0 | A | B0/B1 |
| | 80D26R | NX110-5 | 70 | 600 | 120 | 258 | 172 | 200 | 220 | 1 | A | B0/B1 |
| | 90D26L | - | 75 | 630 | 130 | 258 | 172 | 200 | 220 | 0 | A | B0/B1 |
| | 90D26R | - | 75 | 630 | 130 | 258 | 172 | 200 | 220 | 1 | A | B0/B1 |
| D31 | 55D31L | - | 60 | 510 | 100 | 303 | 172 | 200 | 220 | 0 | A | B0/B1 |
| | 55D31R | - | 60 | 510 | 100 | 303 | 172 | 200 | 220 | 1 | A | B0/B1 |
| | 60D31L | - | 65 | 560 | 120 | 303 | 172 | 200 | 220 | 0 | A | B0/B1 |
| | 60D31R | - | 65 | 560 | 120 | 303 | 172 | 200 | 220 | 1 | A | B0/B1 |
| | 65D31L | N70L | 70 | 600 | 120 | 303 | 172 | 200 | 220 | 0 | A | B0/B1 |
| | 65D31R | N70 | 70 | 600 | 120 | 303 | 172 | 200 | 220 | 1 | A | B0/B1 |
| | 75D31L | N70ZL | 75 | 630 | 130 | 303 | 172 | 200 | 220 | 0 | A | B0/B1 |
| | 75D31R | N70Z | 75 | 630 | 130 | 303 | 172 | 200 | 220 | 1 | A | B0/B1 |
| | 95D31L | NX120-7L | 80 | 670 | 140 | 303 | 172 | 200 | 220 | 0 | A | B0/B1 |
| | 95D31R | NX120-7 | 80 | 670 | 140 | 303 | 172 | 200 | 220 | 1 | A | B0/B1 |
| | 105D31L | - | 90 | 750 | 160 | 303 | 172 | 200 | 220 | 0 | A | B0/B1 |
| | 105D31R | - | 90 | 750 | 160 | 303 | 172 | 200 | 220 | 1 | A | B0/B1 |
| | 115D31L | - | 95 | 830 | 170 | 303 | 172 | 200 | 220 | 0 | A | B0/B1 |
| | 115D31R | - | 95 | 830 | 170 | 303 | 172 | 200 | 220 | 1 | A | B0/B1 |
| | 125D31L | - | 100 | 830 | 180 | 303 | 172 | 200 | 220 | 0 | A | B0/B1 |
| | 125D31R | - | 100 | 830 | 180 | 303 | 172 | 200 | 220 | 1 | A | B0/B1 |
| D33 | MF100L | - | 100 | 830 | 180 | 326 | 172 | 203 | 223 | 0 | A | B0 |
| | MF100R | - | 100 | 830 | 180 | 326 | 172 | 203 | 223 | 1 | A | B0 |
| E41 | 95E41L | N100L | 100 | 830 | 180 | 408 | 172 | 210 | 230 | 0 | A | B0 |
| | 95E41R | N100 | 100 | 830 | 180 | 408 | 172 | 210 | 230 | 1 | A | B0 |
| | 115E41L | NS120L | 110 | 900 | 200 | 408 | 172 | 210 | 230 | 0 | A | B0 |
| | 115E41R | NS120 | 110 | 900 | 200 | 408 | 172 | 210 | 230 | 1 | A | B0 |

JIS MF SERIES (For Japanese Vehicles)

| Group | TYPE No. | | Capacity 20HR | CCA (SAE) | RC (MIN) | Dimension(mm) | | | | Layout | Terminal | BHD |
|-------|----------|--------|------------------|--------------|-------------|---------------|-----|-----|-----|--------|----------|-----|
| | New | Old | | | | L | W | H | TH | | | |
| F51 | 135F51L | N120L | 120 | 870 | 230 | 506 | 182 | 212 | 233 | 3 | A | B0 |
| | 135F51R | N120 | 120 | 870 | 230 | 506 | 182 | 212 | 233 | 4 | A | B0 |
| | 150F51L | - | 130 | 900 | 250 | 506 | 182 | 212 | 233 | 3 | A | B0 |
| | 150F51R | - | 130 | 900 | 250 | 506 | 182 | 212 | 233 | 4 | A | B0 |
| G51 | 155G51L | - | 135 | 920 | 290 | 506 | 215 | 212 | 233 | 3 | A | B0 |
| | 155G51R | - | 135 | 920 | 290 | 506 | 215 | 212 | 233 | 4 | A | B0 |
| | 160G51L | N150L | 150 | 1000 | 300 | 506 | 215 | 212 | 233 | 3 | A | B0 |
| | 160G51R | N150 | 150 | 1000 | 300 | 506 | 215 | 212 | 233 | 4 | A | B0 |
| | 165G51L | NS200L | 170 | 1050 | 325 | 506 | 215 | 212 | 233 | 3 | A | B0 |
| | 165G51R | NS200 | 170 | 1050 | 325 | 506 | 215 | 212 | 233 | 4 | A | B0 |
| | 180G51L | - | 180 | 1150 | 350 | 506 | 215 | 212 | 233 | 3 | A | B0 |
| | 180G51R | - | 180 | 1150 | 350 | 506 | 215 | 212 | 233 | 4 | A | B0 |
| H52 | 180H52L | - | 180 | 1000 | 350 | 509 | 274 | 219 | 240 | 3 | A | B0 |
| | 180H52R | - | 180 | 1000 | 350 | 509 | 274 | 219 | 240 | 4 | A | B0 |
| | 210H52L | N200L | 200 | 1200 | 430 | 509 | 274 | 219 | 240 | 3 | A | B0 |
| | 210H52R | N200 | 200 | 1200 | 430 | 509 | 274 | 219 | 240 | 4 | A | B0 |
| | 225H52L | - | 210 | 1300 | 440 | 509 | 274 | 219 | 240 | 3 | A | B0 |
| | 225H52R | - | 210 | 1300 | 440 | 509 | 274 | 219 | 240 | 4 | A | B0 |
| | 245H52L | - | 220 | 1400 | 460 | 509 | 274 | 219 | 240 | 3 | A | B0 |
| | 245H52R | - | 220 | 1400 | 460 | 509 | 274 | 219 | 240 | 4 | A | B0 |



DIN MF SERIES (For European Vehicles)

| Group | TYPE No. | Capacity 20HR | CCA (EN) | RC (MIN) | Dimension(mm) | | | | Layout | Terminal | BHD |
|-------|----------|------------------|-------------|-------------|---------------|-----|-----|-----|--------|----------|-----|
| | | | | | L | W | H | TH | | | |
| LBN1 | 53518 | 35 | 330 | 60 | 207 | 174 | 175 | 175 | 0 | A | B13 |
| | 53519 | 35 | 330 | 60 | 207 | 174 | 175 | 175 | 1 | A | B13 |
| | 54316 | 43 | 400 | 70 | 207 | 174 | 175 | 175 | 0 | A | B13 |
| | 54318 | 43 | 400 | 70 | 207 | 174 | 175 | 175 | 1 | A | B13 |
| | 54321 | 43 | 450 | 71 | 207 | 174 | 175 | 175 | 0 | A | B13 |
| | 54322 | 43 | 450 | 71 | 207 | 174 | 175 | 175 | 1 | A | B13 |
| LN1 | 54459 | 44 | 390 | 71 | 207 | 174 | 190 | 190 | 0 | A | B13 |
| | 54464 | 44 | 390 | 71 | 207 | 174 | 190 | 190 | 1 | A | B13 |
| | 55054 | 50 | 420 | 80 | 207 | 174 | 190 | 190 | 0 | A | B13 |
| | 55055 | 50 | 420 | 80 | 207 | 174 | 190 | 190 | 1 | A | B13 |
| LBN2 | 54519 | 45 | 390 | 71 | 242 | 174 | 175 | 175 | 0 | A | B14 |
| | 54518 | 45 | 390 | 71 | 242 | 174 | 175 | 175 | 1 | A | B14 |
| | 55040 | 50 | 450 | 80 | 242 | 174 | 175 | 175 | 0 | A | B13 |
| | 55044 | 50 | 450 | 80 | 242 | 174 | 175 | 175 | 0 | A | B4 |
| | 55045 | 50 | 450 | 80 | 242 | 174 | 175 | 175 | 1 | A | B4 |
| | 55457 | 54 | 480 | 90 | 242 | 174 | 175 | 175 | 0 | A | B13 |
| | 55458 | 54 | 480 | 90 | 242 | 174 | 175 | 175 | 1 | A | B13 |
| | 56009 | 60 | 510 | 100 | 242 | 174 | 175 | 175 | 0 | A | B13 |
| 56077 | 60 | 540 | 100 | 242 | 174 | 175 | 175 | 0 | A | B13 | |
| LN2 | 55071 | 50 | 420 | 80 | 242 | 174 | 190 | 190 | 0 | A | B13 |
| | 55076 | 50 | 420 | 80 | 242 | 174 | 190 | 190 | 1 | A | B13 |
| | 55559 | 55 | 480 | 90 | 242 | 174 | 190 | 190 | 0 | A | B13 |
| | 55565 | 55 | 480 | 90 | 242 | 174 | 190 | 190 | 1 | A | B13 |
| | 56219 | 62 | 540 | 100 | 242 | 174 | 190 | 190 | 0 | A | B13 |
| | 56220 | 62 | 540 | 100 | 242 | 174 | 190 | 190 | 1 | A | B13 |
| LBN3 | 55415 | 54 | 480 | 90 | 277 | 174 | 175 | 175 | 0 | A | B13 |
| | 56318 | 63 | 540 | 105 | 277 | 174 | 175 | 175 | 0 | A | B14 |
| | 56330 | 63 | 540 | 105 | 277 | 174 | 175 | 175 | 0 | A | B13 |
| | 56331 | 63 | 540 | 105 | 277 | 174 | 175 | 175 | 1 | A | B13 |
| | 56828 | 68 | 570 | 113 | 277 | 174 | 175 | 175 | 0 | A | B13 |
| | 56821 | 68 | 570 | 113 | 277 | 174 | 175 | 175 | 1 | A | B13 |
| | 57113 | 71 | 640 | 120 | 277 | 174 | 175 | 175 | 0 | A | B13 |
| | 57112 | 71 | 640 | 120 | 277 | 174 | 175 | 175 | 1 | A | B13 |
| LN3 | 56638 | 66 | 540 | 110 | 277 | 174 | 190 | 190 | 0 | A | B13 |
| | 56640 | 66 | 540 | 110 | 277 | 174 | 190 | 190 | 1 | A | B13 |
| | 57219 | 72 | 610 | 120 | 277 | 174 | 190 | 190 | 1 | A | B13 |
| | 57220 | 72 | 610 | 120 | 277 | 174 | 190 | 190 | 0 | A | B13 |
| | 57412 | 74 | 680 | 130 | 277 | 174 | 190 | 190 | 0 | A | B13 |
| | 57413 | 74 | 680 | 130 | 277 | 174 | 190 | 190 | 1 | A | B13 |

DIN MF SERIES (For European Vehicles)

| Group | TYPE No. | Capacity 20HR | CCA (EN) | RC (MIN) | Dimension(mm) | | | | Layout | Terminal | BHD |
|-------|----------|------------------|-------------|-------------|---------------|-----|-----|-----|--------|----------|-----|
| | | | | | L | W | H | TH | | | |
| LBN4 | 57539 | 75 | 640 | 130 | 313 | 174 | 175 | 175 | 0 | A | B13 |
| | 57538 | 75 | 640 | 130 | 313 | 174 | 175 | 175 | 1 | A | B13 |
| | 58014 | 80 | 680 | 140 | 313 | 174 | 175 | 175 | 0 | A | B13 |
| LN4 | 58043 | 80 | 640 | 140 | 313 | 174 | 190 | 190 | 0 | A | B13 |
| | 58044 | 80 | 640 | 140 | 313 | 174 | 190 | 190 | 1 | A | B13 |
| | 59042 | 90 | 720 | 160 | 313 | 174 | 190 | 190 | 0 | A | B13 |
| | 59043 | 90 | 720 | 160 | 313 | 174 | 190 | 190 | 1 | A | B13 |
| LBN5 | 58515 | 85 | 720 | 145 | 351 | 174 | 175 | 175 | 0 | A | B13 |
| | 59015 | 90 | 740 | 160 | 351 | 174 | 175 | 175 | 0 | A | B13 |
| LN5 | 58821 | 88 | 680 | 150 | 351 | 174 | 190 | 190 | 1 | A | B13 |
| | 58827 | 88 | 680 | 150 | 351 | 174 | 190 | 190 | 0 | A | B13 |
| | 59218 | 92 | 720 | 165 | 351 | 174 | 190 | 190 | 0 | A | B13 |
| | 59219 | 92 | 720 | 165 | 351 | 174 | 190 | 190 | 1 | A | B13 |
| | 60044 | 100 | 850 | 180 | 351 | 174 | 190 | 190 | 0 | A | B13 |
| | 60043 | 100 | 850 | 180 | 351 | 174 | 190 | 190 | 1 | A | B13 |
| B19 | 54026 | 40 | 330 | 60 | 187 | 127 | 200 | 222 | 0 | B | B0 |
| | 54027 | 40 | 330 | 60 | 187 | 127 | 200 | 222 | 1 | B | B0 |
| B24 | 54523 | 45 | 360 | 71 | 235 | 127 | 200 | 222 | 0 | A | B0 |
| | 54524 | 45 | 360 | 71 | 235 | 127 | 200 | 222 | 1 | A | B0 |
| | 54551 | 45 | 360 | 71 | 235 | 127 | 200 | 222 | 1 | B | B0 |
| | 54584 | 45 | 360 | 71 | 235 | 127 | 200 | 222 | 0 | B | B0 |
| D20 | 55041 | 50 | 390 | 80 | 200 | 172 | 200 | 220 | 0 | A | B1 |
| | 55042 | 50 | 390 | 80 | 200 | 172 | 200 | 220 | 1 | A | B1 |
| 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 | 120 | 266 | 172 | 200 | 220 | 1 | A | B9 |
| | 57029 | 70 | 540 | 120 | 266 | 172 | 200 | 220 | 0 | A | B9 |
| D31 | 57512 | 75 | 600 | 130 | 303 | 172 | 200 | 220 | 0 | A | B1 |
| | 57513 | 75 | 600 | 130 | 303 | 172 | 200 | 220 | 1 | A | B1 |
| | 58513 | 85 | 680 | 145 | 303 | 172 | 200 | 220 | 0 | A | B1 |
| | 58514 | 85 | 680 | 145 | 303 | 172 | 200 | 220 | 1 | A | B1 |
| | 59518 | 95 | 720 | 170 | 303 | 172 | 200 | 220 | 0 | A | B1 |
| | 59519 | 95 | 720 | 170 | 303 | 172 | 200 | 220 | 1 | A | B1 |
| | 60045 | 100 | 760 | 180 | 303 | 172 | 200 | 220 | 0 | A | B1 |
| | 60046 | 100 | 760 | 180 | 303 | 172 | 200 | 220 | 1 | A | B1 |
| D33 | 59615 | 96 | 760 | 170 | 326 | 172 | 203 | 223 | 0 | A | B1 |
| | 59616 | 96 | 760 | 170 | 326 | 172 | 203 | 223 | 1 | A | B1 |
| E41 | 60016 | 100 | 760 | 180 | 408 | 172 | 210 | 230 | 0 | A | B0 |

DIN MF SERIES (For European Vehicles)

| Group | TYPE No. | Capacity 20HR | CCA (EN) | RC (MIN) | Dimension(mm) | | | | Layout | Terminal | BHD |
|-------|----------|------------------|-------------|-------------|---------------|-----|-----|-----|--------|----------|-----|
| | | | | | L | W | H | TH | | | |
| A | 62034 | 120 | 680 | 230 | 514 | 189 | 196 | 217 | 3 | A | B0 |
| | 62035 | 120 | 680 | 230 | 514 | 189 | 196 | 217 | 3 | A | B13 |
| | 62036 | 120 | 680 | 230 | 514 | 189 | 196 | 217 | 4 | A | B13 |
| | 62038 | 120 | 680 | 230 | 514 | 189 | 196 | 217 | 4 | A | B0 |
| | 63530 | 135 | 720 | 250 | 514 | 189 | 196 | 217 | 3 | A | B0 |
| | 63532 | 135 | 720 | 250 | 514 | 189 | 196 | 217 | 4 | A | B0 |
| | 64589 | 145 | 800 | 260 | 514 | 189 | 196 | 217 | 3 | A | B0 |
| | 64590 | 145 | 800 | 260 | 514 | 189 | 196 | 217 | 4 | A | B0 |
| | 65038 | 150 | 900 | 300 | 514 | 189 | 196 | 217 | 3 | A | B0 |
| B | 64317 | 143 | 900 | 270 | 514 | 223 | 196 | 217 | 3 | A | B0 |
| | 64318 | 143 | 900 | 270 | 514 | 223 | 196 | 217 | 4 | A | B0 |
| | 66016 | 160 | 900 | 320 | 514 | 223 | 196 | 217 | 3 | A | B0 |
| | 66017 | 160 | 900 | 320 | 514 | 223 | 196 | 217 | 4 | A | B0 |
| | 67018 | 170 | 950 | 320 | 514 | 223 | 196 | 217 | 3 | A | B0 |
| | 67019 | 170 | 950 | 320 | 514 | 223 | 196 | 217 | 4 | A | B0 |
| | 67025 | 170 | 950 | 320 | 514 | 223 | 196 | 217 | 4 | A | B13 |
| | 68032 | 180 | 1000 | 370 | 514 | 223 | 196 | 217 | 3 | A | B0 |
| | 68033 | 180 | 1000 | 370 | 514 | 223 | 196 | 217 | 4 | A | B0 |
| C | 70027 | 200 | 1050 | 430 | 518 | 273 | 216 | 237 | 3 | A | B0 |
| | 70029 | 200 | 1050 | 430 | 518 | 273 | 216 | 237 | 4 | A | B0 |
| | 71014 | 210 | 1150 | 430 | 518 | 273 | 216 | 237 | 3 | A | B0 |
| | 71015 | 210 | 1150 | 430 | 518 | 273 | 216 | 237 | 4 | A | B0 |
| | 72512 | 225 | 1150 | 460 | 518 | 273 | 216 | 237 | 3 | A | B0 |
| | 72513 | 225 | 1150 | 460 | 518 | 273 | 216 | 237 | 4 | A | B0 |
| | 73011 | 230 | 1200 | 460 | 518 | 273 | 216 | 237 | 3 | A | B0 |
| | 73012 | 230 | 1200 | 460 | 518 | 273 | 216 | 237 | 4 | A | B0 |



BCI MF SERIES (For American Vehicles)

| Group | TYPE No. | CCA (SAE) | RC (MIN) | Dimension(mm) | | | | Layout | Terminal | BHD |
|-------|----------|-----------|----------|---------------|-----|-----|-----|--------|----------|-----|
| | | | | L | W | H | TH | | | |
| 151R | 151R-270 | 270 | 48 | 187 | 127 | 200 | 222 | 28 | A | B0 |
| | 151R-340 | 340 | 55 | 187 | 127 | 200 | 222 | 28 | A | B0 |
| | 151R-370 | 370 | 60 | 187 | 127 | 200 | 222 | 28 | A | B0 |
| 26 | 26-525 | 525 | 80 | 208 | 172 | 181 | 201 | 10 | A | B1 |
| 26R | 26R-525 | 525 | 80 | 208 | 172 | 181 | 201 | 11 | A | B1 |
| 85 | 85-450 | 450 | 75 | 231 | 172 | 180 | 200 | 11 | A | B1 |
| | 85-500 | 500 | 85 | 231 | 172 | 180 | 200 | 11 | A | B1 |
| | 85-550 | 550 | 95 | 231 | 172 | 180 | 200 | 11 | A | B1 |
| | 85-620 | 620 | 110 | 231 | 172 | 180 | 200 | 11 | A | B1 |
| 86 | 86-450 | 450 | 75 | 231 | 172 | 180 | 200 | 10 | A | B1 |
| | 86-500 | 500 | 85 | 231 | 172 | 180 | 200 | 10 | A | B1 |
| | 86-550 | 550 | 95 | 231 | 172 | 180 | 200 | 10 | A | B1 |
| | 86-620 | 620 | 110 | 231 | 172 | 180 | 200 | 10 | A | B1 |
| 24 | 24-430 | 430 | 80 | 258 | 172 | 200 | 220 | 10 | A | B1 |
| | 24-500 | 500 | 90 | 258 | 172 | 200 | 220 | 10 | A | B1 |
| | 24-550 | 550 | 100 | 258 | 172 | 200 | 220 | 10 | A | B1 |
| | 24-580 | 580 | 110 | 258 | 172 | 200 | 220 | 10 | A | B1 |
| | 24-600 | 600 | 120 | 258 | 172 | 200 | 220 | 10 | A | B1 |
| | 24-630 | 630 | 130 | 258 | 172 | 200 | 220 | 10 | A | B1 |
| | 24-670 | 670 | 140 | 258 | 172 | 200 | 220 | 10 | A | B1 |
| | 24-700 | 700 | 140 | 258 | 172 | 200 | 220 | 10 | A | B1 |
| 24R | 24R-430 | 430 | 80 | 258 | 172 | 200 | 220 | 11 | A | B1 |
| | 24R-500 | 500 | 90 | 258 | 172 | 200 | 220 | 11 | A | B1 |
| | 24R-550 | 550 | 100 | 258 | 172 | 200 | 220 | 11 | A | B1 |
| | 24R-580 | 580 | 110 | 258 | 172 | 200 | 220 | 11 | A | B1 |
| | 24R-600 | 600 | 120 | 258 | 172 | 200 | 220 | 11 | A | B1 |
| | 24R-630 | 630 | 130 | 258 | 172 | 200 | 220 | 11 | A | B1 |
| | 24R-670 | 670 | 140 | 258 | 172 | 200 | 220 | 11 | A | B1 |
| | 24R-700 | 700 | 140 | 258 | 172 | 200 | 220 | 11 | A | B1 |
| 24F | 24F-430 | 430 | 80 | 266 | 172 | 200 | 220 | 11F | A | B9 |
| | 24F-500 | 500 | 90 | 266 | 172 | 200 | 220 | 11F | A | B9 |
| | 24F-550 | 550 | 100 | 266 | 172 | 200 | 220 | 11F | A | B9 |
| | 24F-580 | 580 | 110 | 266 | 172 | 200 | 220 | 11F | A | B9 |
| | 24F-600 | 600 | 120 | 266 | 172 | 200 | 220 | 11F | A | B9 |
| | 24F-630 | 630 | 130 | 266 | 172 | 200 | 220 | 11F | A | B9 |
| | 24F-670 | 670 | 140 | 266 | 172 | 200 | 220 | 11F | A | B9 |
| | 24F-700 | 700 | 140 | 266 | 172 | 200 | 220 | 11F | A | B9 |
| 25 | 25-450 | 450 | 80 | 231 | 172 | 200 | 220 | 10 | A | B1 |
| | 25-500 | 500 | 100 | 231 | 172 | 200 | 220 | 10 | A | B1 |
| | 25-550 | 550 | 100 | 231 | 172 | 200 | 220 | 10 | A | B1 |
| | 25-580 | 580 | 110 | 231 | 172 | 200 | 220 | 10 | A | B1 |
| | 25-630 | 630 | 120 | 231 | 172 | 200 | 220 | 10 | A | B1 |

BCI MF SERIES (For American Vehicles)

| Group | TYPE No. | CCA (SAE) | RC (MIN) | Dimension(mm) | | | | Layout | Terminal | BHD |
|-------|----------|-----------|----------|---------------|-----|-----|-----|--------|----------|-----|
| | | | | L | W | H | TH | | | |
| 35 | 35-450 | 450 | 80 | 231 | 172 | 200 | 220 | 11 | A | B1 |
| | 35-500 | 500 | 100 | 231 | 172 | 200 | 220 | 11 | A | B1 |
| | 35-550 | 550 | 100 | 231 | 172 | 200 | 220 | 11 | A | B1 |
| | 35-580 | 580 | 110 | 231 | 172 | 200 | 220 | 11 | A | B1 |
| | 35-630 | 630 | 120 | 231 | 172 | 200 | 220 | 11 | A | B1 |
| 21 | 21-450 | 450 | 80 | 200 | 172 | 200 | 220 | 10 | A | B1 |
| 21R | 21R-450 | 450 | 80 | 200 | 172 | 200 | 220 | 11 | A | B1 |
| 34 | 34-550 | 550 | 100 | 260 | 172 | 181 | 201 | 10 | A | B1 |
| | 34-600 | 600 | 113 | 260 | 172 | 181 | 201 | 10 | A | B1 |
| | 34-670 | 670 | 120 | 260 | 172 | 181 | 201 | 10 | A | B1 |
| | 34-750 | 750 | 130 | 260 | 172 | 181 | 201 | 10 | A | B1 |
| 34R | 34R-550 | 550 | 100 | 260 | 172 | 181 | 201 | 11 | A | B1 |
| | 34R-600 | 600 | 113 | 260 | 172 | 181 | 201 | 11 | A | B1 |
| | 34R-670 | 670 | 120 | 260 | 172 | 181 | 201 | 11 | A | B1 |
| | 34R-750 | 750 | 130 | 260 | 172 | 181 | 201 | 11 | A | B1 |
| 27 | 27-600 | 600 | 120 | 303 | 172 | 200 | 220 | 10 | A | B1 |
| | 27-630 | 630 | 130 | 303 | 172 | 200 | 220 | 10 | A | B1 |
| | 27-650 | 650 | 120 | 303 | 172 | 200 | 220 | 10 | A | B1 |
| | 27-670 | 670 | 140 | 303 | 172 | 200 | 220 | 10 | A | B1 |
| | 27-750 | 750 | 160 | 303 | 172 | 200 | 220 | 10 | A | B1 |
| | 27-800 | 800 | 170 | 303 | 172 | 200 | 220 | 10 | A | B1 |
| | 27-830 | 830 | 180 | 303 | 172 | 200 | 220 | 10 | A | B1 |
| | 27-900 | 900 | 180 | 303 | 172 | 200 | 220 | 10 | A | B1 |
| 27R | 27R-600 | 600 | 120 | 303 | 172 | 200 | 220 | 11 | A | B1 |
| | 27R-630 | 630 | 130 | 303 | 172 | 200 | 220 | 11 | A | B1 |
| | 27R-650 | 650 | 120 | 303 | 172 | 200 | 220 | 11 | A | B1 |
| | 27R-670 | 670 | 140 | 303 | 172 | 200 | 220 | 11 | A | B1 |
| | 27R-750 | 750 | 160 | 303 | 172 | 200 | 220 | 11 | A | B1 |
| | 27R-800 | 800 | 170 | 303 | 172 | 200 | 220 | 11 | A | B1 |
| | 27R-830 | 830 | 180 | 303 | 172 | 200 | 220 | 11 | A | B1 |
| | 27R-900 | 900 | 180 | 303 | 172 | 200 | 220 | 11 | A | B1 |
| 27F | 27F-600 | 600 | 120 | 311 | 172 | 200 | 220 | 11F | A | B9 |
| | 27F-630 | 630 | 130 | 311 | 172 | 200 | 220 | 11F | A | B9 |
| | 27F-650 | 650 | 120 | 311 | 172 | 200 | 220 | 11F | A | B9 |
| | 27F-670 | 670 | 140 | 311 | 172 | 200 | 220 | 11F | A | B9 |
| | 27F-750 | 750 | 160 | 311 | 172 | 200 | 220 | 11F | A | B9 |
| | 27F-800 | 800 | 170 | 311 | 172 | 200 | 220 | 11F | A | B9 |
| | 27F-830 | 830 | 180 | 311 | 172 | 200 | 220 | 11F | A | B9 |
| 51 | 51-300 | 300 | 52 | 235 | 135 | 200 | 222 | 10 | A | B1 |
| | 51-370 | 370 | 60 | 235 | 135 | 200 | 222 | 10 | A | B1 |
| | 51-430 | 430 | 71 | 235 | 135 | 200 | 222 | 10 | A | B1 |
| | 51-470 | 470 | 75 | 235 | 135 | 200 | 222 | 10 | A | B1 |
| 51R | 51R-300 | 300 | 52 | 235 | 135 | 200 | 222 | 11 | A | B1 |
| | 51R-370 | 370 | 60 | 235 | 135 | 200 | 222 | 11 | A | B1 |
| | 51R-430 | 430 | 71 | 235 | 135 | 200 | 222 | 11 | A | B1 |
| | 51R-470 | 470 | 75 | 235 | 135 | 200 | 222 | 11 | A | B1 |

BCI MF SERIES (For American Vehicles)

| Group | TYPE No. | CCA (SAE) | RC (MIN) | Dimension(mm) | | | | Layout | Terminal | BHD |
|-------|----------|-----------|----------|---------------|-----|-----|-----|--------|----------|-----|
| | | | | L | W | H | TH | | | |
| 47 | 47-430 | 430 | 80 | 242 | 174 | 190 | 190 | 24 | A | B13 |
| | 47-500 | 500 | 90 | 242 | 174 | 190 | 190 | 24 | A | B13 |
| | 47-550 | 550 | 90 | 242 | 174 | 190 | 190 | 24 | A | B13 |
| | 47-580 | 580 | 100 | 242 | 174 | 190 | 190 | 24 | A | B13 |
| | 47-650 | 650 | 120 | 242 | 174 | 190 | 190 | 24 | A | B13 |
| 48 | 48-550 | 550 | 90 | 277 | 174 | 190 | 190 | 24 | A | B13 |
| | 48-580 | 580 | 110 | 277 | 174 | 190 | 190 | 24 | A | B13 |
| | 48-700 | 700 | 130 | 277 | 174 | 190 | 190 | 24 | A | B13 |
| | 48-750 | 750 | 130 | 277 | 174 | 190 | 190 | 24 | A | B13 |
| 94R | 94R-750 | 750 | 160 | 313 | 174 | 190 | 190 | 24 | A | B13 |
| | 94R-800 | 800 | 170 | 313 | 174 | 190 | 190 | 24 | A | B13 |
| | 94R-870 | 870 | 160 | 313 | 174 | 190 | 190 | 24 | A | B13 |
| 49 | 49-710 | 710 | 150 | 351 | 174 | 190 | 190 | 24 | A | B13 |
| | 49-750 | 750 | 165 | 351 | 174 | 190 | 190 | 24 | A | B13 |
| | 49-800 | 800 | 170 | 351 | 174 | 190 | 190 | 24 | A | B13 |
| | 49-850 | 850 | 170 | 351 | 174 | 190 | 190 | 24 | A | B13 |
| | 49-870 | 870 | 180 | 351 | 174 | 190 | 190 | 24 | A | B13 |
| | 49-950 | 950 | 185 | 351 | 174 | 190 | 190 | 24 | A | B13 |
| 58 | 58-500 | 500 | 90 | 234 | 182 | 157 | 177 | 26 | A | B8 |
| | 58-550 | 550 | 100 | 234 | 182 | 157 | 177 | 26 | A | B8 |
| 58R | 58R-500 | 500 | 90 | 234 | 182 | 157 | 177 | 19 | A | B8 |
| | 58R-550 | 550 | 100 | 234 | 182 | 157 | 177 | 19 | A | B8 |
| 65 | 65-650 | 650 | 120 | 287 | 187 | 172 | 192 | 21 | A | B8 |
| | 65-700 | 700 | 120 | 287 | 187 | 172 | 192 | 21 | A | B8 |
| | 65-750 | 750 | 140 | 287 | 187 | 172 | 192 | 21 | A | B8 |
| | 65-800 | 800 | 135 | 287 | 187 | 172 | 192 | 21 | A | B8 |
| | 65-850 | 850 | 160 | 287 | 187 | 172 | 192 | 21 | A | B8 |
| 65R | 65R-650 | 650 | 120 | 287 | 187 | 172 | 192 | 11 | A | B8 |
| | 65R-700 | 700 | 120 | 287 | 187 | 172 | 192 | 11 | A | B8 |
| | 65R-750 | 750 | 140 | 287 | 187 | 172 | 192 | 11 | A | B8 |
| | 65R-800 | 800 | 135 | 287 | 187 | 172 | 192 | 11 | A | B8 |
| | 65R-850 | 850 | 160 | 287 | 187 | 172 | 192 | 11 | A | B8 |
| 75 | 75-500 | 500 | 90 | 230 | 179 | 181 | 181 | 17 | SIDE | B1 |
| | 75-550 | 550 | 100 | 230 | 179 | 181 | 181 | 17 | SIDE | B1 |
| | 75-600 | 600 | 113 | 230 | 179 | 181 | 181 | 17 | SIDE | B1 |
| | 75-650 | 650 | 120 | 230 | 179 | 181 | 181 | 17 | SIDE | B1 |
| 75DT | 75DT-500 | 500 | 90 | 230 | 179 | 181 | 201 | 17 | DT | B1 |
| | 75DT-550 | 550 | 100 | 230 | 179 | 181 | 201 | 17 | DT | B1 |
| | 75DT-600 | 600 | 113 | 230 | 179 | 181 | 201 | 17 | DT | B1 |
| | 75DT-650 | 650 | 120 | 230 | 179 | 181 | 201 | 17 | DT | B1 |
| 78 | 78-550 | 550 | 100 | 260 | 179 | 181 | 181 | 17 | SIDE | B1 |
| | 78-600 | 600 | 113 | 260 | 179 | 181 | 181 | 17 | SIDE | B1 |
| | 78-670 | 670 | 120 | 260 | 179 | 181 | 181 | 17 | SIDE | B1 |
| | 78-750 | 750 | 130 | 260 | 179 | 181 | 181 | 17 | SIDE | B1 |

BCI MF SERIES (For American Vehicles)

| Group | TYPE No. | CCA (SAE) | RC (MIN) | Dimension(mm) | | | | Layout | Terminal | BHD |
|-------|----------|-----------|----------|---------------|-----|-----|-----|--------|----------|-----|
| | | | | L | W | H | TH | | | |
| 78DT | 78DT-550 | 550 | 100 | 260 | 179 | 181 | 201 | 17 | DT | B1 |
| | 78DT-600 | 600 | 113 | 260 | 179 | 181 | 201 | 17 | DT | B1 |
| | 78DT-670 | 670 | 120 | 260 | 179 | 181 | 201 | 17 | DT | B1 |
| | 78DT-750 | 750 | 130 | 260 | 179 | 181 | 201 | 17 | DT | B1 |
| 90 | 90-330 | 330 | 52 | 242 | 174 | 175 | 175 | 24 | A | B13 |
| | 90-370 | 370 | 60 | 242 | 174 | 175 | 175 | 24 | A | B13 |
| | 90-430 | 430 | 71 | 242 | 174 | 175 | 175 | 24 | A | B13 |
| | 90-480 | 480 | 80 | 242 | 174 | 175 | 175 | 24 | A | B13 |
| | 90-500 | 500 | 90 | 242 | 174 | 175 | 175 | 24 | A | B13 |
| | 90-540 | 540 | 100 | 242 | 174 | 175 | 175 | 24 | A | B13 |
| | 90-570 | 570 | 100 | 242 | 174 | 175 | 175 | 24 | A | B13 |
| 96R | 96R-430 | 430 | 71 | 242 | 174 | 175 | 175 | 15 | A | B1 |
| | 96R-480 | 480 | 80 | 242 | 174 | 175 | 175 | 15 | A | B1 |
| | 96R-500 | 500 | 90 | 242 | 174 | 175 | 175 | 15 | A | B1 |
| | 96R-540 | 540 | 100 | 242 | 174 | 175 | 175 | 15 | A | B1 |
| | 96R-570 | 570 | 100 | 242 | 174 | 175 | 175 | 15 | A | B1 |
| 42 | 42-430 | 430 | 71 | 242 | 174 | 175 | 175 | 15 | A | B4 |
| | 42-570 | 570 | 100 | 242 | 174 | 175 | 175 | 15 | A | B4 |
| 91 | 91-500 | 500 | 90 | 277 | 174 | 175 | 175 | 24 | A | B13 |
| | 91-580 | 580 | 105 | 277 | 174 | 175 | 175 | 24 | A | B13 |
| | 91-630 | 630 | 113 | 277 | 174 | 175 | 175 | 24 | A | B13 |
| | 91-670 | 670 | 120 | 277 | 174 | 175 | 175 | 24 | A | B13 |
| | 91-750 | 750 | 125 | 277 | 174 | 175 | 175 | 24 | A | B13 |
| 40R | 40R-500 | 500 | 90 | 277 | 174 | 175 | 175 | 15 | A | B1 |
| | 40R-630 | 630 | 113 | 277 | 174 | 175 | 175 | 15 | A | B1 |
| | 40R-670 | 670 | 120 | 277 | 174 | 175 | 175 | 15 | A | B1 |
| 41 | 41-500 | 500 | 90 | 277 | 174 | 175 | 175 | 15 | A | B4 |
| | 41-580 | 580 | 105 | 277 | 174 | 175 | 175 | 15 | A | B4 |
| | 41-670 | 670 | 120 | 277 | 174 | 175 | 175 | 15 | A | B4 |
| 92 | 92-670 | 670 | 120 | 313 | 174 | 175 | 175 | 24 | A | B13 |
| | 92-710 | 710 | 130 | 313 | 174 | 175 | 175 | 24 | A | B13 |
| | 92-750 | 750 | 140 | 313 | 174 | 175 | 175 | 24 | A | B13 |
| | 92-830 | 830 | 145 | 313 | 174 | 175 | 175 | 24 | A | B13 |
| 93 | 93-750 | 750 | 140 | 351 | 174 | 175 | 175 | 24 | A | B13 |
| | 93-780 | 780 | 160 | 351 | 174 | 175 | 175 | 24 | A | B13 |
| 30H | 30H-750L | 750 | 160 | 326 | 172 | 203 | 223 | 11 | A | B1 |
| | 30H-750 | 750 | 160 | 326 | 172 | 203 | 223 | 10 | A | B1 |
| | 30H-830L | 830 | 180 | 326 | 172 | 203 | 223 | 11 | A | B1 |
| | 30H-830 | 830 | 180 | 326 | 172 | 203 | 223 | 10 | A | B1 |
| | 30H-900L | 900 | 180 | 326 | 172 | 203 | 223 | 11 | A | B1 |
| | 30H-900 | 900 | 180 | 326 | 172 | 203 | 223 | 10 | A | B1 |

BCI MF SERIES (For American Vehicles)

| Group | TYPE No. | CCA (SAE) | RC (MIN) | Dimension(mm) | | | | Layout | Terminal | BHD |
|-------------|-----------|-----------|----------|---------------|-----|-----|-----|--------|----------|-----|
| | | | | L | W | H | TH | | | |
| 4D | 4D-820 | 820 | 230 | 506 | 215 | 212 | 233 | 8 | A | B0 |
| | 4D-920 | 920 | 290 | 506 | 215 | 212 | 233 | 8 | A | B0 |
| | 4D-1000 | 1000 | 300 | 506 | 215 | 212 | 233 | 8 | A | B0 |
| | 4D-1050 | 1050 | 325 | 506 | 215 | 212 | 233 | 8 | A | B0 |
| | 4D-1150 | 1150 | 350 | 506 | 215 | 212 | 233 | 8 | A | B0 |
| 8D | 8D-1000 | 1000 | 350 | 509 | 274 | 219 | 240 | 8 | A | B0 |
| | 8D-1200 | 1200 | 430 | 509 | 274 | 219 | 240 | 8 | A | B0 |
| | 8D-1250 | 1250 | 430 | 509 | 274 | 219 | 240 | 8 | A | B0 |
| | 8D-1300 | 1300 | 440 | 509 | 274 | 219 | 240 | 8 | A | B0 |
| | 8D-1400 | 1400 | 460 | 509 | 274 | 219 | 240 | 8 | A | B0 |
| 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 |
| C31 | C31-670 | 670 | 150 | 330 | 172 | 217 | 239 | 18 | TOP | B0 |
| | C31-750 | 750 | 160 | 330 | 172 | 217 | 239 | 18 | TOP | B0 |
| | C31-800 | 800 | 170 | 330 | 172 | 217 | 239 | 18 | TOP | B0 |
| | C31-850 | 850 | 180 | 330 | 172 | 217 | 239 | 18 | TOP | B0 |
| | C31-900 | 900 | 185 | 330 | 172 | 217 | 239 | 18 | TOP | B0 |
| | C31-950 | 950 | 185 | 330 | 172 | 217 | 239 | 18 | TOP | B0 |
| | C31-1000 | 1000 | 190 | 330 | 172 | 217 | 239 | 18 | TOP | B0 |
| C31S | C31S-670 | 670 | 150 | 330 | 172 | 217 | 238 | 18 | STUD | B0 |
| | C31S-750 | 750 | 160 | 330 | 172 | 217 | 238 | 18 | STUD | B0 |
| | C31S-800 | 800 | 170 | 330 | 172 | 217 | 238 | 18 | STUD | B0 |
| | C31S-850 | 850 | 180 | 330 | 172 | 217 | 238 | 18 | STUD | B0 |
| | C31S-900 | 900 | 185 | 330 | 172 | 217 | 238 | 18 | STUD | B0 |
| | C31S-950 | 950 | 185 | 330 | 172 | 217 | 238 | 18 | STUD | B0 |
| | C31S-1000 | 1000 | 190 | 330 | 172 | 217 | 238 | 18 | STUD | B0 |



START & STOP BATTERIES

AGM / ADVANCED START & STOP

- **AGM(Absorbant Glass Mat) Separator**
 - Minimized electric resistance provides outstanding cranking power
 - Minimized self-discharge
 - No plate movement, leak proof-installation at any angle
- **Punched & Thicker Grid for both Positive and Negative**
 - Longer life, Stable Starting Power and Superior Durability
 - High Dimension grid structure increases energy density
- **Stability and Convenience**
 - VRLA structure allows stable cranking power
 - Leak-proof and safe handling
 - Reinforced plastic case with inner flame arrester
- **3x Higher Start & Stop cycling performance**



EFB / START & STOP

- **Punched & Thicker Grid for both Positive and Negative**
 - Enhanced Charge Acceptance and Durability
 - Prevent distortion of grid structure from corrosion
- **Carbon+ Technology : Special Carbon Additives in Negative**
 - Optimized Components for quick charge
 - Special Carbon applied to achieve an improvement in charging recovery performance from frequent discharge
- **Low resistance envelope separator**
 - Enhanced starting power
- **2x Higher Start & Stop cycling performance**



AGM / ADVANCED START & STOP

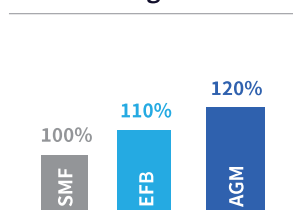
| Group | TYPE No. | Capacity 20HR | CCA (EN) | RC (MIN) | Dimension(mm) | | | | Layout | Terminal | BHD |
|-------|----------|---------------|----------|----------|---------------|-----|-----|-----|--------|----------|-----|
| | | | | | L | W | H | TH | | | |
| LN2 | AGM60 | 60 | 680 | 100 | 241 | 174 | 190 | 190 | 0 | A | B13 |
| LN3 | AGM70 | 70 | 760 | 120 | 277 | 174 | 190 | 190 | 0 | A | B13 |
| LN4 | AGM80 | 80 | 800 | 140 | 314 | 174 | 190 | 190 | 0 | A | B13 |
| LN5 | AGM95 | 95 | 850 | 160 | 352 | 174 | 190 | 190 | 0 | A | B13 |

EFB / START & STOP

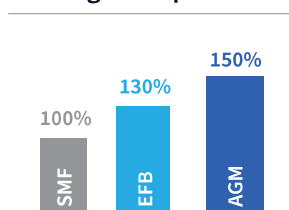
| Group | TYPE No. | Capacity 20HR | CCA (SAE) | RC (MIN) | Dimension(mm) | | | | Layout | Terminal | BHD |
|-------|----------|---------------|-----------|----------|---------------|-----|-----|-----|--------|----------|-------|
| | | | | | L | W | H | TH | | | |
| B19 | ECK42 | 35 | 360 | 52 | 187 | 127 | 200 | 222 | 0 | B | B0/B1 |
| | ECK42R | 35 | 360 | 52 | 187 | 127 | 200 | 222 | 1 | B | B0/B1 |
| | ECK44 | 40 | 420 | 60 | 187 | 127 | 200 | 222 | 0 | B | B0/B1 |
| | ECK44R | 40 | 420 | 60 | 187 | 127 | 200 | 222 | 1 | B | B0/B1 |
| B20 | ECM42 | 40 | 420 | 60 | 197 | 129 | 200 | 222 | 0 | B | B0 |
| | ECM42R | 40 | 420 | 60 | 197 | 129 | 200 | 222 | 1 | B | B0 |
| B24 | ECN55 | 45 | 460 | 71 | 235 | 127 | 200 | 222 | 0 | B | B0/B1 |
| | ECN55R | 45 | 460 | 71 | 235 | 127 | 200 | 222 | 1 | B | B0/B1 |
| D23 | ECQ85 | 65 | 670 | 110 | 231 | 172 | 200 | 220 | 0 | A | B0/B1 |
| | ECQ85R | 65 | 670 | 110 | 231 | 172 | 200 | 220 | 1 | A | B0/B1 |
| D26 | ECS95 | 68 | 730 | 113 | 258 | 172 | 200 | 220 | 0 | A | B0/B1 |
| | ECS95R | 68 | 730 | 113 | 258 | 172 | 200 | 220 | 1 | A | B0/B1 |
| D31 | ECT110 | 80 | 800 | 140 | 303 | 172 | 200 | 220 | 0 | A | B0/B1 |
| | ECT110R | 80 | 800 | 140 | 303 | 172 | 200 | 220 | 1 | A | B0/B1 |

| Group | TYPE No. | Capacity 20HR | CCA (EN) | RC (MIN) | Dimension(mm) | | | | Layout | Terminal | BHD |
|-------|----------|---------------|----------|----------|---------------|-----|-----|-----|--------|----------|-----|
| | | | | | L | W | H | TH | | | |
| LN1 | EC50 | 50 | 450 | 80 | 207 | 174 | 190 | 190 | 0 | A | B13 |
| LN2 | EC60 | 60 | 560 | 100 | 242 | 174 | 190 | 190 | 0 | A | B13 |
| LBN3 | EC65D | 65 | 650 | 130 | 277 | 174 | 175 | 175 | 0 | A | B13 |
| LN3 | EC70 | 70 | 650 | 120 | 277 | 174 | 190 | 190 | 0 | A | B13 |
| LBN4 | EC75D | 75 | 730 | 150 | 313 | 174 | 175 | 175 | 0 | A | B13 |
| LN4 | EC80 | 80 | 730 | 140 | 313 | 174 | 190 | 190 | 0 | A | B13 |
| LN5 | EC95 | 95 | 900 | 170 | 351 | 174 | 190 | 190 | 0 | A | B13 |

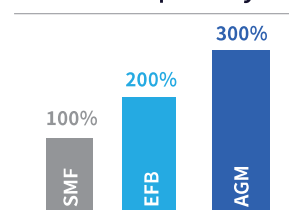
Starting Power



Charge Acceptance



Start & Stop Life Cycle



SPECIALTY BATTERIES

- **Punched & Thicker Grid for Positive plate**
- Full framed round edge grid offer high starting power and durability
- **High Density Active material**
- Endurable active material provide stable performances during cycling
- **Twin Terminal for Marine & 'L' Terminal for Lawn batteries**
- Terminal according to application provide easy electric connection
- **Hotmelt**
- Hot melt glue on the plates provide vibration resistance.

• **Comparison between Marine Starting vs Starting & Cycling**

| Battery Rating Criteria | Marine Starting | Starting & Cycling |
|---------------------------------|-----------------|--------------------|
| Starting Service Capability | ★★★ | ★★★ |
| Dual Purpose Service Capability | - | ★★★ |
| Deep Cycle Service Capability | - | ★ |
| Floating Service Capability | ★ | ★★ |
| Maintenance Free | ★★★ | ★★★ |
| Storage Ability | ★★★ | ★★★ |

Rating Scale : ★Good ★★Very Good ★★★Excellent



MARINE FOR STARTING

| Group | TYPE No. | Capacity 20HR | CCA (0°F/-18°C) | MCA (32°F/0°C) | RC (MIN) | Dimension(mm) | | | | Layout | Terminal | BHD |
|-------|----------|------------------|--------------------|-------------------|-------------|---------------|-----|-----|-----|--------|----------|-----|
| | | | | | | L | W | H | TH | | | |
| M24 | M24-500 | 55 | 500 | 620 | 90 | 258 | 172 | 200 | 221 | 1 | TWIN | B1 |
| | M24-560 | 60 | 560 | 700 | 105 | 258 | 172 | 200 | 221 | 1 | TWIN | B1 |
| | M24-600 | 70 | 600 | 750 | 120 | 258 | 172 | 200 | 221 | 1 | TWIN | B1 |
| | M24-650 | 75 | 650 | 810 | 130 | 258 | 172 | 200 | 221 | 1 | TWIN | B1 |
| | M24-700 | 75 | 700 | 860 | 140 | 258 | 172 | 200 | 221 | 1 | TWIN | B1 |
| | M24-750 | 75 | 750 | 930 | 130 | 258 | 172 | 200 | 221 | 1 | TWIN | B1 |
| M27 | M27-600 | 70 | 600 | 750 | 130 | 303 | 172 | 200 | 221 | 1 | TWIN | B1 |
| | M27-710 | 85 | 710 | 880 | 145 | 303 | 172 | 200 | 221 | 1 | TWIN | B1 |
| | M27-750 | 90 | 750 | 920 | 160 | 303 | 172 | 200 | 221 | 1 | TWIN | B1 |
| | M27-800 | 95 | 800 | 1,000 | 170 | 303 | 172 | 200 | 221 | 1 | TWIN | B1 |
| | M27-830 | 100 | 830 | 1,030 | 180 | 303 | 172 | 200 | 221 | 1 | TWIN | B1 |
| M31 | M31-800 | 100 | 800 | 1,000 | 180 | 330 | 172 | 217 | 238 | 1 | TWIN | B0 |
| | M31-850 | 100 | 850 | 1,060 | 180 | 330 | 172 | 217 | 238 | 1 | TWIN | B0 |
| | M31-900 | 105 | 900 | 1,120 | 185 | 330 | 172 | 217 | 238 | 1 | TWIN | B0 |
| | M31-950 | 105 | 950 | 1,180 | 185 | 330 | 172 | 217 | 238 | 1 | TWIN | B0 |



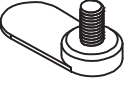

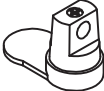
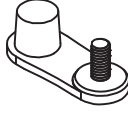




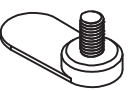

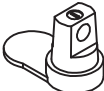
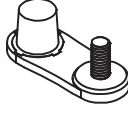


STARTING & CYCLING

| Group | TYPE No. | Capacity 20HR | CCA (0°F/-18°C) | MCA (32°F/0°C) | RC (MIN) | Dimension(mm) | | | | Layout | Terminal | BHD |
|-------|-----------|------------------|--------------------|-------------------|-------------|---------------|-----|-----|-----|--------|----------|-----|
| | | | | | | L | W | H | TH | | | |
| M24 | M24DC-550 | 75 | 550 | 715 | 130 | 258 | 172 | 200 | 221 | 1 | TWIN | B1 |
| | M24DC-650 | 80 | 650 | 810 | 145 | 258 | 172 | 200 | 221 | 1 | TWIN | B1 |
| M27 | M27DC-700 | 90 | 700 | 860 | 170 | 303 | 172 | 200 | 221 | 1 | TWIN | B1 |
| | M27DC-750 | 90 | 750 | 920 | 170 | 303 | 172 | 200 | 221 | 1 | TWIN | B1 |
| M31 | M31DC-750 | 100 | 750 | 920 | 190 | 330 | 172 | 217 | 238 | 1 | TWIN | B0 |
| | M31DC-800 | 105 | 800 | 1,000 | 195 | 330 | 172 | 217 | 238 | 1 | TWIN | B0 |





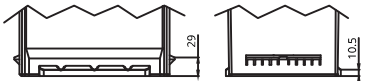

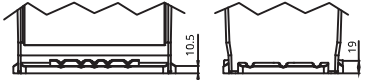
LAWN & GARDEN

| Group | TYPE No. | Capacity 20HR | CCA (SAE) | RC (MIN) | Dimension(mm) | | | | Layout | Terminal | BHD |
|-------|----------|------------------|--------------|-------------|---------------|-----|-----|-----|--------|----------|-----|
| | | | | | L | W | H | TH | | | |
| U1 | U1-190 | 14 | 190 | 17 | 195 | 130 | 160 | 183 | 10 | LUG | B0 |
| | U1-230 | 17 | 230 | 22 | 195 | 130 | 160 | 183 | 10 | LUG | B0 |
| | U1-250 | 19 | 250 | 25 | 195 | 130 | 160 | 183 | 10 | LUG | B0 |
| | U1-300 | 23 | 300 | 32 | 195 | 130 | 160 | 183 | 10 | LUG | B0 |
| | U1-350 | 27 | 350 | 38 | 195 | 130 | 160 | 183 | 10 | LUG | B0 |
| U1R | U1R-190 | 14 | 190 | 17 | 195 | 130 | 160 | 183 | 11 | LUG | B0 |
| | U1R-230 | 17 | 230 | 22 | 195 | 130 | 160 | 183 | 11 | LUG | B0 |
| | U1R-250 | 19 | 250 | 25 | 195 | 130 | 160 | 183 | 11 | LUG | B0 |
| | U1R-300 | 23 | 300 | 32 | 195 | 130 | 160 | 183 | 11 | LUG | B0 |
| | U1R-350 | 27 | 350 | 38 | 195 | 130 | 160 | 183 | 11 | LUG | B0 |

TERMINAL



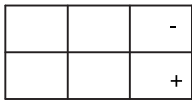
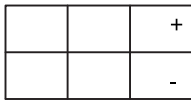
| | A(Standard) | B(Small) | STUD | TOP | DUAL | MARINE TWIN | SIDE | LUG |
|-------------------|---|---|--|---|---|--|---|---|
| Positive Terminal |  |  |  3/8"-16 THREADS |  |  |  5/16"-18 THREADS |  |  |
| Negative Terminal |  |  |  3/8"-16 THREADS |  |  |  5/16"-18 THREADS |  |  |

BASE HOLDDOWN

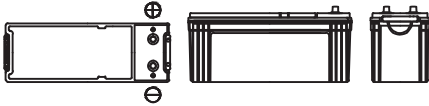
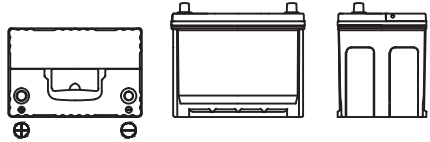
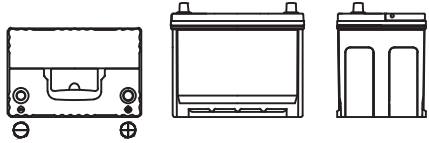
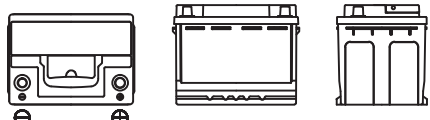
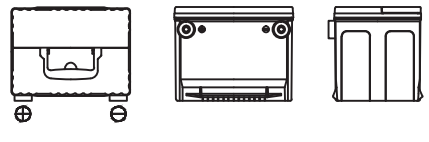
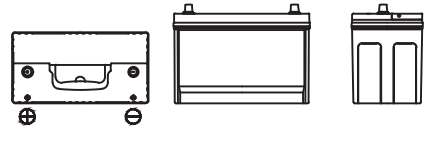
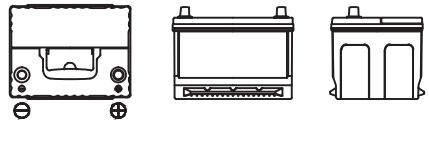
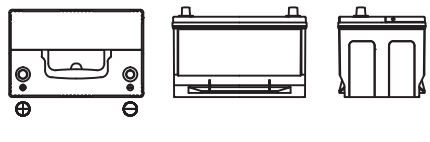
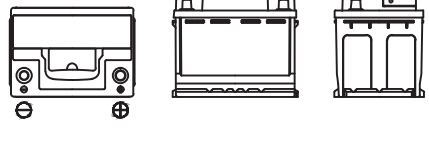
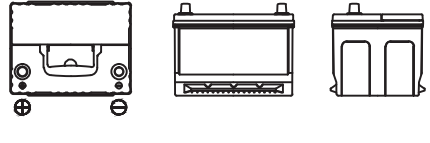
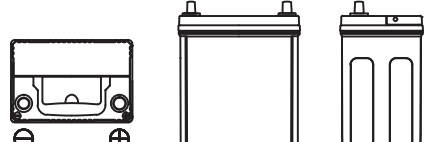
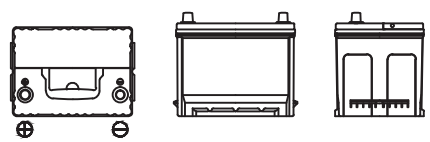
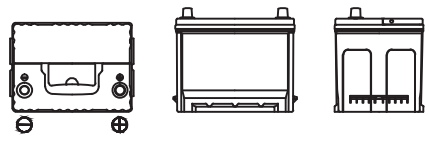
| | | | |
|-----|--|-----|---|
| B0 |  | B1 |  10.5mm on long sides only |
| B4 | 5 notches  19mm on long sides only | B8 |  13.5mm on long sides only |
| B9 |  10.5mm on long sides, 29mm on short sides | B13 | 5 notches  10.5mm on all four sides |
| B14 |  19mm on long sides, 10.5mm on short sides | | |

※These are common holddown types but other may be used.

JIS, DIN Cell Layout

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

BCI Cell Layout

| | | | |
|----------|---|----------|--|
| FIG. 8 |  | FIG. 10 |  |
| FIG. 11 |  | FIG. 15 |  |
| FIG. 17 |  | FIG. 18 |  |
| FIG. 19 |  | FIG. 21 |  |
| FIG. 24 |  | FIG. 26 |  |
| FIG. 28 |  | FIG. 10F |  |
| FIG. 11F |  | | |

BATTERY DIMENSION



| B19 | | | | | | | | B24 | | | | | | | |
|---|-------|------|---------------|-----|-----|-----|-----------|--|-----|-----|---------------|-----|-----|-----|-----------|
|  | | | | | | | |  | | | | | | | |
| JIS | DIN | BCI | Dimension(mm) | | | | HOLD DOWN | JIS | DIN | BCI | Dimension(mm) | | | | HOLD DOWN |
| | | | L | W | H | TH | | | | | L | W | H | TH | |
| B19 | 54026 | 151R | 187 | 127 | 200 | 222 | B0 | B24 | - | 51 | 235 | 127 | 200 | 222 | B0 |

| D20 | | | | | | | | D23 | | | | | | | |
|--|-------|-----|---------------|-----|-----|-----|-----------|---|-----|-----|---------------|-----|-----|-----|-----------|
|  | | | | | | | |  | | | | | | | |
| JIS | DIN | BCI | Dimension(mm) | | | | HOLD DOWN | JIS | DIN | BCI | Dimension(mm) | | | | HOLD DOWN |
| | | | L | W | H | TH | | | | | L | W | H | TH | |
| D20 | 55041 | 21 | 200 | 172 | 200 | 220 | B1 | D23 | - | 35 | 231 | 172 | 200 | 220 | B1 |

| D26 | | | | | | | | D31 | | | | | | | |
|---|-----|-----|---------------|-----|-----|-----|-----------|--|-------|-----|---------------|-----|-----|-----|-----------|
|  | | | | | | | |  | | | | | | | |
| JIS | DIN | BCI | Dimension(mm) | | | | HOLD DOWN | JIS | DIN | BCI | Dimension(mm) | | | | HOLD DOWN |
| | | | L | W | H | TH | | | | | L | W | H | TH | |
| D26 | - | 24 | 258 | 172 | 200 | 220 | B1 | D31 | 60045 | 27 | 303 | 172 | 200 | 220 | B1 |

D33



| JIS | DIN | BCI | Dimension(mm) | | | | HOLD DOWN |
|-----|-----|-----|---------------|-----|-----|-----|-----------|
| | | | L | W | H | TH | |
| D33 | - | - | 326 | 172 | 203 | 223 | B0 |

E41



| JIS | DIN | BCI | Dimension(mm) | | | | HOLD DOWN |
|-----|-----|-----|---------------|-----|-----|-----|-----------|
| | | | L | W | H | TH | |
| E41 | - | - | 408 | 172 | 210 | 230 | B0 |

F51



| JIS | DIN | BCI | Dimension(mm) | | | | HOLD DOWN |
|-----|-----|-----|---------------|-----|-----|-----|-----------|
| | | | L | W | H | TH | |
| F51 | - | 4D | 506 | 182 | 213 | 233 | B0 |

G51



| JIS | DIN | BCI | Dimension(mm) | | | | HOLD DOWN |
|-----|-----|-----|---------------|-----|-----|-----|-----------|
| | | | L | W | H | TH | |
| G51 | - | - | 506 | 215 | 213 | 233 | B0 |

H52



| JIS | DIN | BCI | Dimension(mm) | | | | HOLD DOWN |
|-----|-----|-----|---------------|-----|-----|-----|-----------|
| | | | L | W | H | TH | |
| H52 | - | 8D | 509 | 274 | 220 | 240 | B0 |

LN1



| JIS | DIN | BCI | Dimension(mm) | | | | HOLD DOWN |
|-----|-----|-----|---------------|-----|-----|-----|-----------|
| | | | L | W | H | TH | |
| - | L1 | - | 207 | 173 | 190 | 190 | B13 |

| LN2 | | | | | | | | LN3 | | | | | | | |
|---|-----|-----|---------------|-----|-----|-----|-----------|--|-----|-----|---------------|-----|-----|-----|-----------|
|  | | | | | | | |  | | | | | | | |
| JIS | DIN | BCI | Dimension(mm) | | | | HOLD DOWN | JIS | DIN | BCI | Dimension(mm) | | | | HOLD DOWN |
| | | | L | W | H | TH | | | | | L | W | H | TH | |
| - | L2 | 47 | 242 | 173 | 190 | 190 | B13 | - | L3 | 48 | 276 | 173 | 190 | 190 | B13 |

| LN4 | | | | | | | | LN5 | | | | | | | |
|--|-----|-----|---------------|-----|-----|-----|-----------|---|-----|-----|---------------|-----|-----|-----|-----------|
|  | | | | | | | |  | | | | | | | |
| JIS | DIN | BCI | Dimension(mm) | | | | HOLD DOWN | JIS | DIN | BCI | Dimension(mm) | | | | HOLD DOWN |
| | | | L | W | H | TH | | | | | L | W | H | TH | |
| - | L4 | 94R | 315 | 173 | 190 | 190 | B13 | - | L5 | 49 | 351 | 173 | 190 | 190 | B13 |

| LBN1 | | | | | | | | LBN2 | | | | | | | |
|---|-----|-----|---------------|-----|-----|-----|-----------|--|-----|-------|---------------|-----|-----|-----|-----------|
|  | | | | | | | |  | | | | | | | |
| JIS | DIN | BCI | Dimension(mm) | | | | HOLD DOWN | JIS | DIN | BCI | Dimension(mm) | | | | HOLD DOWN |
| | | | L | W | H | TH | | | | | L | W | H | TH | |
| - | LB1 | 99R | 207 | 173 | 175 | 175 | B13 | - | LB2 | 42&90 | 242 | 173 | 175 | 175 | B13 |

| LBN3 | | | | | | | | LBN4 | | | | | | | |
|---|-----|-----|---------------|-----|-----|-----|-----------|--|-----|-----|---------------|-----|-----|-----|-----------|
|  | | | | | | | |  | | | | | | | |
| JIS | DIN | BCI | Dimension(mm) | | | | HOLD DOWN | JIS | DIN | BCI | Dimension(mm) | | | | HOLD DOWN |
| | | | L | W | H | TH | | | | | L | W | H | TH | |
| - | LB3 | 34 | 276 | 173 | 175 | 175 | B13 | - | LB4 | 92 | 315 | 173 | 175 | 175 | B13 |

| LBN5 | | | | | | | | A | | | | | | | |
|--|-----|-----|---------------|-----|-----|-----|-----------|---|-----|-----|---------------|-----|-----|-----|-----------|
|  | | | | | | | |  | | | | | | | |
| JIS | DIN | BCI | Dimension(mm) | | | | HOLD DOWN | JIS | DIN | BCI | Dimension(mm) | | | | HOLD DOWN |
| | | | L | W | H | TH | | | | | L | W | H | TH | |
| - | LB5 | 93 | 351 | 173 | 175 | 175 | B13 | - | A | - | 514 | 189 | 196 | 215 | B0 |

| B | | | | | | | | C | | | | | | | |
|---|-----|-----|---------------|-----|-----|-----|-----------|--|-----|-----|---------------|-----|-----|-----|-----------|
|  | | | | | | | |  | | | | | | | |
| JIS | DIN | BCI | Dimension(mm) | | | | HOLD DOWN | JIS | DIN | BCI | Dimension(mm) | | | | HOLD DOWN |
| | | | L | W | H | TH | | | | | L | W | H | TH | |
| - | B | - | 514 | 223 | 196 | 215 | B0 | - | C | - | 518 | 273 | 216 | 235 | B0 |

| 26 | | | | | | | | 85 | | | | | | | |
|---|-----|-----|---------------|-----|-----|-----|-----------|--|-----|-----|---------------|-----|-----|-----|-----------|
|  | | | | | | | |  | | | | | | | |
| JIS | DIN | BCI | Dimension(mm) | | | | HOLD DOWN | JIS | DIN | BCI | Dimension(mm) | | | | HOLD DOWN |
| | | | L | W | H | TH | | | | | L | W | H | TH | |
| - | - | 26 | 208 | 172 | 181 | 201 | B1 | - | - | 85 | 231 | 172 | 180 | 200 | B1 |

| C31 | | | | | | | | 65 | | | | | | | |
|--|-----|-----|---------------|-----|-----|-----|-----------|---|-----|-----|---------------|-----|-----|-----|-----------|
|  | | | | | | | |  | | | | | | | |
| JIS | DIN | BCI | Dimension(mm) | | | | HOLD DOWN | JIS | DIN | BCI | Dimension(mm) | | | | HOLD DOWN |
| | | | L | W | H | TH | | | | | L | W | H | TH | |
| - | - | C31 | 330 | 172 | 217 | 240 | B0 | - | - | 65 | 287 | 187 | 172 | 192 | B8 |

| 75 | | | | | | | | 75DT | | | | | | | |
|---|-----|-----|---------------|-----|-----|-----|-----------|--|-----|------|---------------|-----|-----|-----|-----------|
|  | | | | | | | |  | | | | | | | |
| JIS | DIN | BCI | Dimension(mm) | | | | HOLD DOWN | JIS | DIN | BCI | Dimension(mm) | | | | HOLD DOWN |
| | | | L | W | H | TH | | | | | L | W | H | TH | |
| - | - | 75 | 230 | 179 | 181 | 181 | B1 | - | - | 75DT | 230 | 179 | 181 | 201 | B1 |

| 34 | | | | | | | | | 78 | | | | | 78DT | | | | | | | | | |
|---|-----|-----|---------------|-----|-----|-----|-----------|-----|---|-----|---------------|-----|-----|---|-----------|-----|-----|------|---------------|-----|-----|-----|-----------|
|  | | | | | | | | |  | | | | |  | | | | | | | | | |
| JIS | DIN | BCI | Dimension(mm) | | | | HOLD DOWN | JIS | DIN | BCI | Dimension(mm) | | | | HOLD DOWN | JIS | DIN | BCI | Dimension(mm) | | | | HOLD DOWN |
| | | | L | W | H | TH | | | | | L | W | H | TH | | | | | L | W | H | TH | |
| - | - | 34 | 260 | 172 | 181 | 201 | B1 | - | - | 78 | 260 | 279 | 181 | 181 | B1 | - | - | 78DT | 260 | 179 | 181 | 201 | B1 |

| 58 | | | | | | | | U1 | | | | | | | |
|--|-----|-----|---------------|-----|-----|-----|-----------|---|-----|-----|---------------|-----|-----|-----|-----------|
|  | | | | | | | |  | | | | | | | |
| JIS | DIN | BCI | Dimension(mm) | | | | HOLD DOWN | JIS | DIN | BCI | Dimension(mm) | | | | HOLD DOWN |
| | | | L | W | H | TH | | | | | L | W | H | TH | |
| - | - | 58 | 234 | 182 | 157 | 177 | B8 | - | - | U1 | 195 | 130 | 160 | 183 | B0 |

| M24 | | | | | | | M27 | | | | | | M31 | | | | | | | | | | |
|---|-----|-----|---------------|-----|-----|-----|---|-----|-----|-----|---------------|-----|---|-----|-----------|-----|-----|-----|---------------|-----|-----|-----|-----------|
|  | | | | | | |  | | | | | |  | | | | | | | | | | |
| JIS | DIN | BCI | Dimension(mm) | | | | HOLD DOWN | JIS | DIN | BCI | Dimension(mm) | | | | HOLD DOWN | JIS | DIN | BCI | Dimension(mm) | | | | HOLD DOWN |
| | | | L | W | H | TH | | | | | L | W | H | TH | | | | | L | W | H | TH | |
| - | - | M24 | 258 | 172 | 200 | 221 | B1 | - | - | M27 | 303 | 172 | 200 | 221 | B1 | - | - | M31 | 330 | 172 | 217 | 238 | B0 |

※ Specifications are subject to change prior or without prior notice.

BATTERY SERVICE MANUAL

Safety Precautions

- Battery is dangerous to handle or work on. They are filled with dilute sulfuric acid. If any acid gets on your skin or cloth, flush with plenty of clean water and seek immediate medical care.
- When charging, hydrogen and oxygen are produced. Never bring cigarettes, flames or sparks anywhere near battery.
- Keep battery cover clean so that vent holes are free from clogging. Clogged up battery will have high internal pressure which may crack container or leak electrolyte.
- Battery should not be stored in a confined location under any conditions. Especially, when charging, place it in well-ventilated area.
- If there is energy left in used battery, please be careful with spark, short circuit and overflow of electrolyte.
- Please refrain from dismantlement of battery.
- This battery is designed and manufactured in accordance with conditions of vehicle operations. Please note that prescribed performance of battery cannot be sustained when battery is used for other purpose.

Caution Marks

- Each battery is marked with six warnings.



KEEP CHILDREN AWAY



SHIELD EYES



NO SPARK, FLAMES OR SMOKING



EXPLOSION HAZARD



READ INSTRUCTION MANUAL CAREFULLY



CORROSIVE HAZARD

Handling Battery in Stock

- A wet-charged battery will be self-discharged even under not-in use condition.
- Keep battery in dark, cool place and measure open circuit voltage once a month.
- When open circuit voltage is below 12.4V/25°C, carry out a boosting charge.
- If battery has been left at a low open circuit voltage for a long period, it will have sulfation and battery cannot be fully recharged, or at worst, cannot be recharged at all.

Before Selling to Consumer

- Usually stored battery will not have full capacity because of self-discharge.
- When OCV drops below 12.40V for MF battery(12.50V for AGM), battery should be recharged immediately to keep longer service life.

Charge

Constant Voltage Charge for Flooded & AGM Battery

- Charge to 14.4V~14.8V with max. current limit of 10% of C20 Capacity.
- Finish charging when current drop down to 1% of C20 Capacity.

Constant Current Charge for Flooded Battery

- Charge battery at constant current, 1/10 of its 20 hours rate capacity until three or more consecutive reading figures of terminal voltage are same.
- This method is very effective when discharged ampere-hour of battery is known since charging rate can be determined. Typically, 120~130% of discharged ampere-hour will be charged. Do not forget to disconnect charging power source when battery is completely charged. If not, it will continue to feed same amount of current to battery resulting in overcharge of battery.

Battery Charging Considerations

- Perform charging at place which is free from direct sunlight, rain, dew and moisture, but well ventilated, acid proof, washable and drained.
- Connect charging clamps to battery terminals firmly and precisely. Incorrect connection will deteriorate functions, and may cause damage to not only battery but also charger.
- Do not overcharge. Excessive charge may cause overcharging, resulting in damaged plates and separators and distortion of container due to high temperature.
- Never bring battery close to fire. Hydrogen and oxygen from battery will catch fire.
- Keep battery temperature below 45°C. When it's near such temperature, reduce charging current by half or stop charging until battery goes down to 35°C.

Charging Indicator

- Indicator on lid of battery can help to check charging status of battery.



Good



Charging Necessary



Replace

STATE OF CHARGE

| Approximate State of Charge | OCV |
|-----------------------------|-------|
| 100% | 12.75 |
| 75% | 12.40 |
| 50% | 12.20 |
| 25% | 12.00 |
| Discharged | 11.90 |

DN AUTOMOTIVE

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