

VEGA

P O W E R S T A R T

Sealed Calcium Premium Battery




SAKA



| 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)



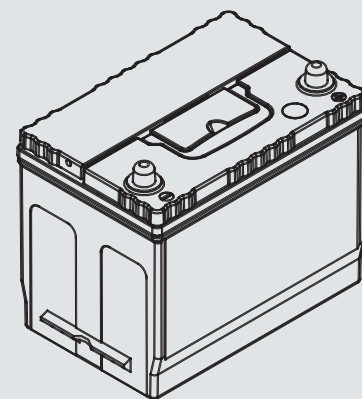
BATTERY SERVICE MANUAL

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

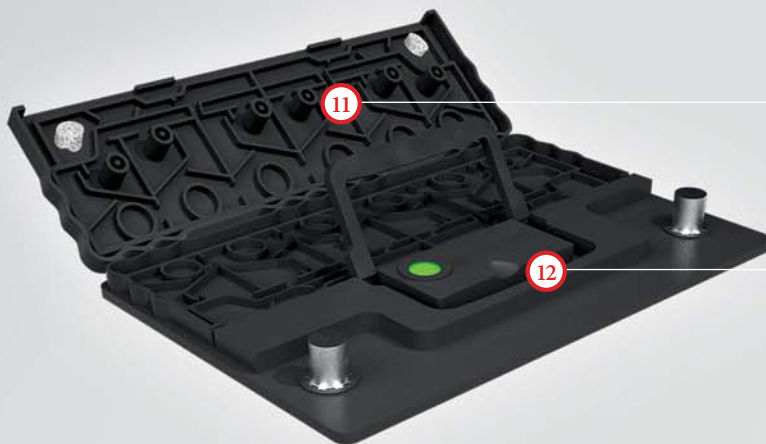
- Exclusive patented for acid leakage
- High resistance to corrosion

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



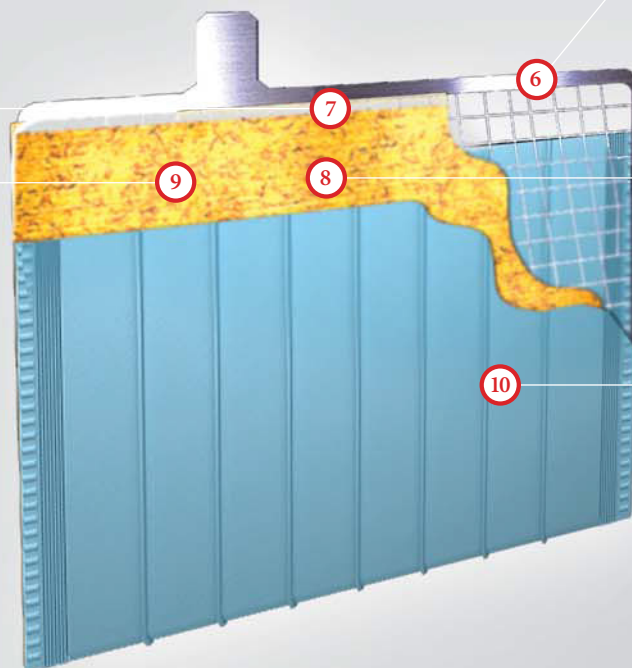
Flame Arrester

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 20HR	CCA (SAE)	R.C (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	-
	42B19FL	-	38	350	55	187	135	200	220	0	B	B1
B24	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
	90D26R	-	75	630	130	258	172	200	220	1	A	B1
D31	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 (20HR)	CCA (EN)	R.C (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 20Hr(AH)	CCA (EN)	R.C (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

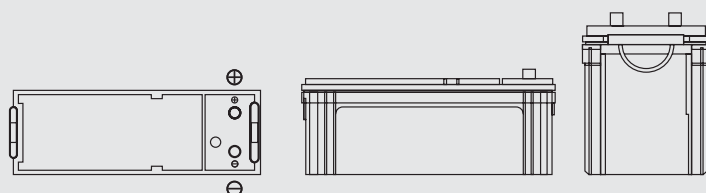


FIG.10

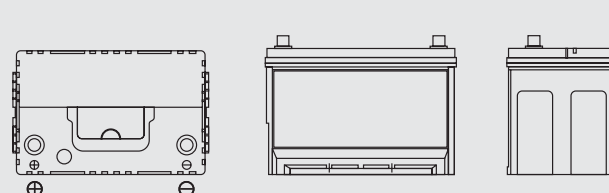


FIG.11

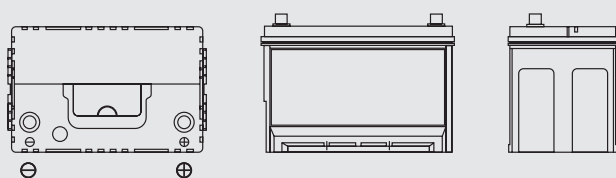
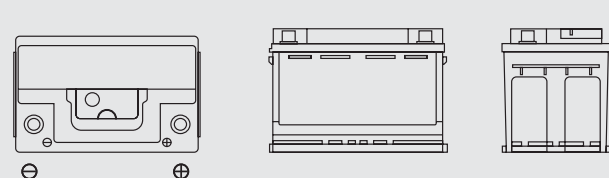
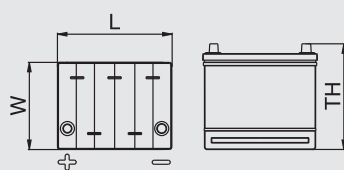


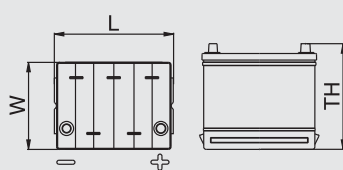
FIG.15



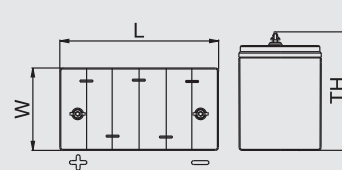
10F



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 TERMINAL						
NEGATIVE 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	

The power to surprise



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