HIGH TECH BATTERY

FIAMM

FIAMM's experience has led to **POWERCUBE** and **ENERGYCUBE**, the two new series of High Technology batteries for commercial vehicles, created to meet the various energy needs of today's automotive industry.
Operation, long life and reliability. These are the concepts that guided us during the study, design and making of this new, rich range of batteries.

THE NEW
powerCUBE & energyCUBE
BATTERIES FOR LATEST GENERATION COMMERCIAL VEHICLES

The new application needs generated by the technological development of the latest commercial vehicles, in particular the medium- and long-range heavy vehicles, has given rise to increased demand for energy that has gained strength over recent years.
As far as the **starter batteries** are concerned, this means a significant increase in product operation, long life and reliability requirements.
In detail, adapting the product to new vehicles and the often critical conditions of use in the field have generated a heavy demand for improving the following technical and functional characteristics:

- ENERGY AVAILABLE FOR THE ELECTRIC/ ELECTRONIC SYSTEM
- STARTING POWER IN CRITICAL CONDITIONS: LOW TEMPERATURES AND PARTIAL CHARGE
- LIFE IN TERMS OF DISCHARGE/CHARGE CYCLES
- RESISTANCE TO INTENSE DISCHARGE CYCLES
- CHARGE ACCEPTANCE
- RESISTANCE TO VIBRATIONS

The new range of FIAMM POWERCUBE and ENERGYCUBE batteries for commercial vehicles, agricultural machinery and earth-moving equipment, developed to achieve a line of batteries better designed for their specific requirements, is today offered more complete and geared to the specific application (vehicle/ use) to ensure proper coverage of all vehicles in use.
The new line of batteries is the expertly executed synthesis of technological innovation in terms of design, development and production combined with almost a century of direct experience in the field. All this is expressed in a simple concept:

THE RIGHT BATTERY
FOR EVERY APPLICATION.

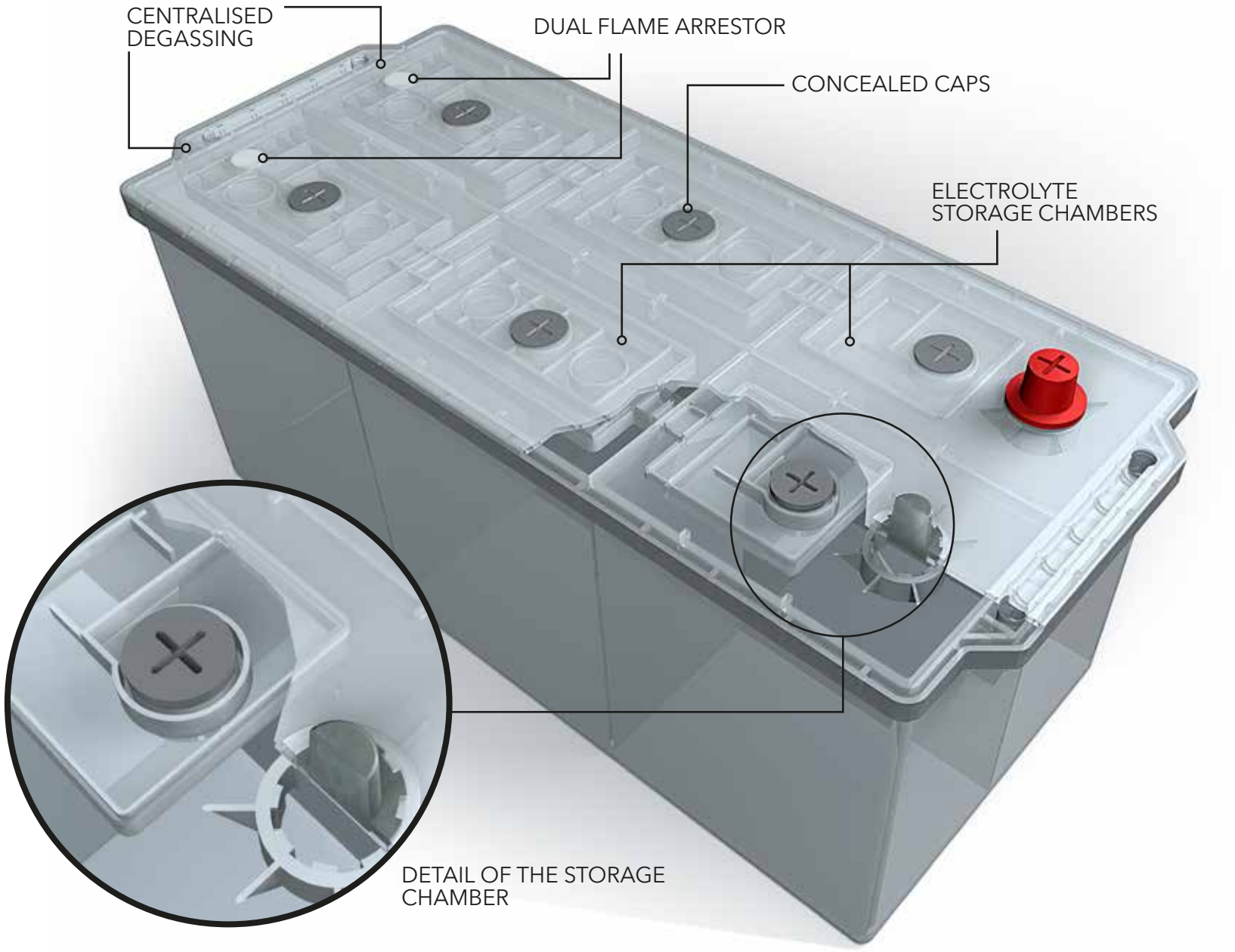
TECHNOLOGICAL INNOVATIONS

The technology of the new flat lid with internal labyrinth

In line with the new requirements of preventing the electrolyte from escaping, FIAMM has developed a new flat lid with internal labyrinth, storage chambers and recondensation of the gases produced when the battery is being charged.

It is a centralised degassing lid with dual gas venting channel and explosion-proof dual flame arrestor pad.

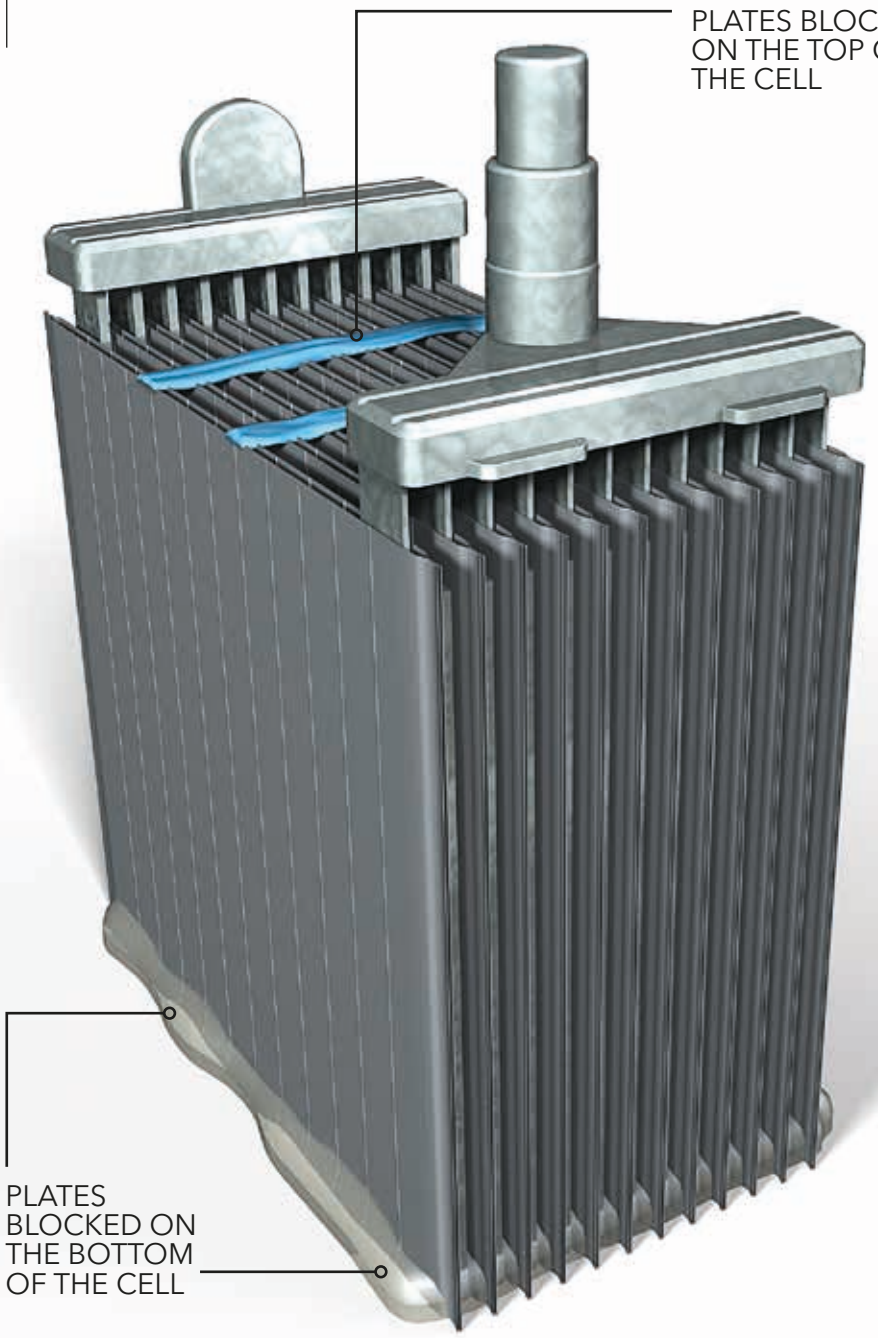
The caps are fitted with O-rings **(OR)** to guarantee maximum seal if the battery is handled incorrectly.



The innovative dual plate blocking system inside the cells

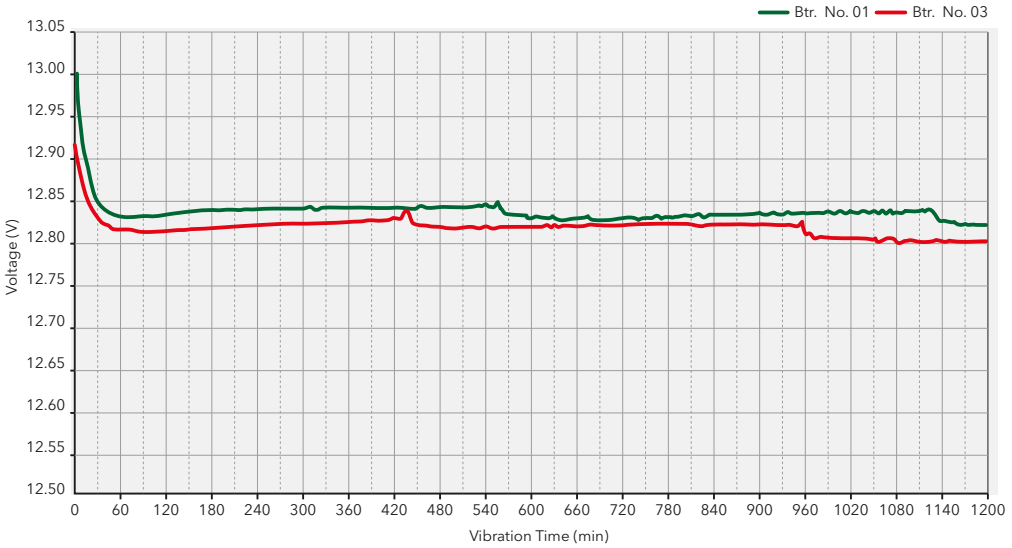
A new plate blocking system has been introduced to increase resistance to vibrations. A special resin blocks the plates to the bottom of the cell so they become integral with the battery box. Applying the same resin to the top of the element as well ensures they remain totally blocked.

The new blocking system ensures vibration-resistance more than double that of the traditional systems, and exceeds the strictest requirement (V3) laid down by technical standard EN 50342-1, which requires 20 h of vibrations at 6G and 30 Hz at T = +25°C.



The following charts show voltage performance at the battery terminals during the test, and the performance during rapid starting discharge before and after the vibration resistance test. As the charts demonstrate, the vibrations caused no change in performance.

Vibration Resistance Test EN 50342-1 (30Hz 6G 20h at + 25°C)



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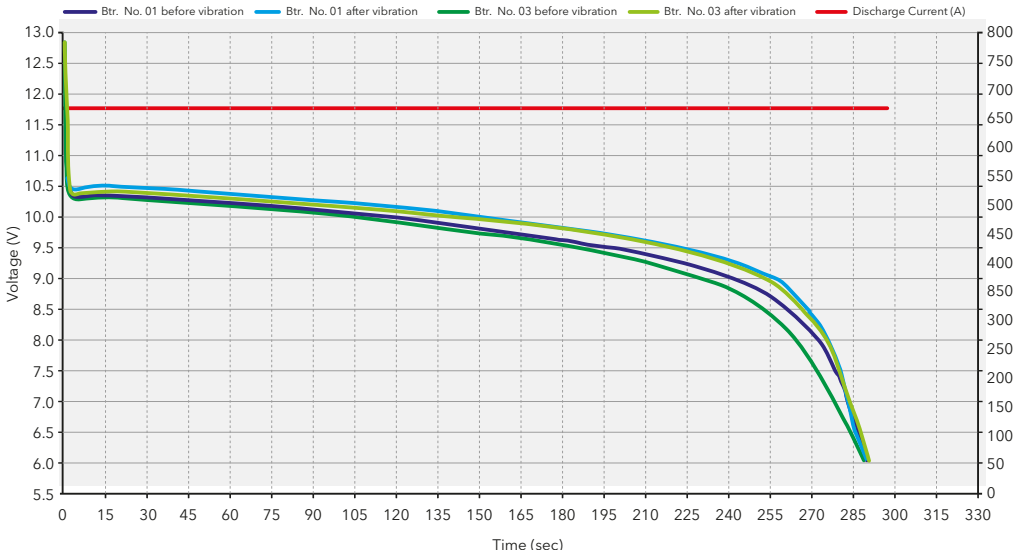


New polyethylene envelope separator

The new and thicker polyethylene separator, made with materials having a higher resistance to breakage and/or perforation, guarantee better resistance and longer life of the battery when its use is the most critical: heavy cycling, intense discharges, overload and vibrations. It also reduces dangerous metallisation phenomena.

Improved negative electrode

The negative plate was improved to increase the thickness of the grid and the density and formulation of the active negative matter. This leads to greater efficiency of the negative electrode, with improved electrical and mechanical performance of the battery.

Process of active matter adhering to the grid

Improvement in the industrial process of 'adhering' (**coupling**) the active matter to the grid, and in particular that of the positive plates, offers several benefits such as maintaining performance over time, increasing resistance to the charge/discharge cycles, improving resistance to intense discharge, increasing vibration-resistance, reducing the shedding phenomenon (when the positive active matter detaches from the grid and falls onto the bottom of the cell).

OUR RANGE

THE MODELS

The new FIAMM TRUCK line is divided into two product ranges that are subdivided into 5 levels that ensue from the combination of technology and type of cover and the specific **Product Names** that distinguish the more technologically advanced products from the more traditional ones so as to get a range better oriented toward specific requirements.

POWERCUBE APC

- Low-maintenance free acid battery requiring no top-ups, but the caps will allow it to be topped up if necessary
- Flat lid with internal labyrinth, gas recondensation chambers, caps with special O-ring preventing leaks, dual-channel centralised degassing with dual flame arrestor pad
- Innovative dual plate blocking system inside the cell that provides high resistance to vibrations and that complies with the highest automotive industry standards
- High starting power
- Excellent charge acceptance
- High endurance to charge/discharge cycles
- Good resistance to intense discharges
- Excellent vibration resistance

POWERCUBE EHD

- Low-maintenance free acid battery requiring no top-ups, but the caps will allow it to be topped up if necessary
- Flat lid with internal labyrinth, gas recondensation chambers, caps with special O-ring preventing leaks, dual-channel centralised degassing with dual flame arrestor pad (only for A-B-C Batteries)
- Innovative dual plate blocking system inside the cell that provides high resistance to vibrations and that complies with the highest automotive industry standards
- Great starting power
- Good charge acceptance
- Good endurance to charge/discharge cycles
- Good vibration resistance

POWERCUBE AGM

- VRLA AGM battery with gas recombination
- Absolutely maintenance-free
- **Sealed** lid
- Greater starting power than traditional batteries
- Better endurance to charge/discharge cycles, more than double that of the best traditional batteries
- Better charge acceptance, particularly in dynamic conditions
- High resistance to intense discharges
- High vibration resistance

ENERGY**CUBE APC**

- Low-maintenance free acid battery with sealed anti-leakage caps
- Innovative dual plate blocking system inside the cell that provides high resistance to vibrations and that complies with the highest automotive industry standards
- Good starting power
- High charge acceptance
- Good resistance to intense discharges
- Extreme endurance to charge/discharge cycles
- High vibration resistance

ENERGY**CUBE RST**

- Low-maintenance free acid battery requiring no top-ups, but the caps will allow it to be topped up if necessary
- Standard lid
- Great starting power
- Good charge acceptance
- Good endurance to charge/discharge cycles
- Resistant to vibrations

Performance of the new truck range - OVERVIEW

● low ●● medium ●●● good ●●●● high ●●●●● very good ●●●●●● excellent

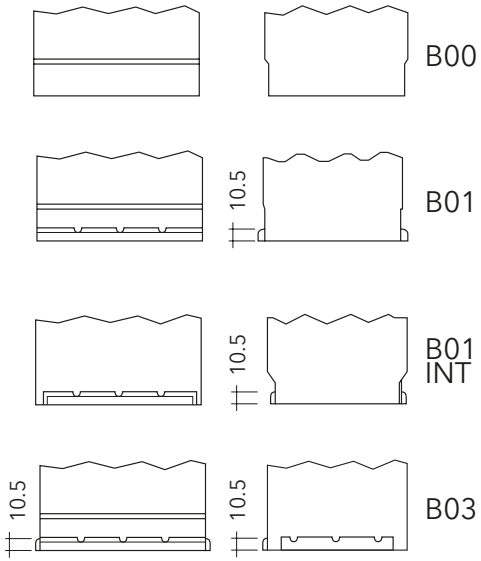
	STARTING POWER	CHARGE ACCEPTANCE	CYCLING RESISTANCE	RESISTANCE TO VIBRATIONS
POWERCUBE AGM	✚✚✚✚✚	✚✚✚✚✚✚	✚✚✚✚✚✚	✚✚✚✚✚
POWERCUBE APC	✚✚✚✚✚	✚✚✚✚✚	✚✚✚✚	✚✚✚✚✚
POWERCUBE EHD	✚✚✚✚✚	✚✚✚✚	✚✚✚	✚✚✚✚✚
ENERGYCUBE APC	✚✚✚✚	✚✚✚✚✚	✚✚✚✚✚	✚✚✚✚✚
ENERGYCUBE RST	✚✚✚✚✚	✚✚✚✚	✚✚	✚✚✚

✓ = maximum performance

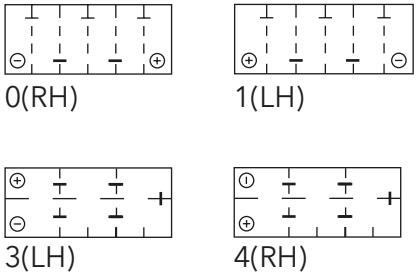
			APPLICATIONS								
Level	**Product Name**	**Technology**	**Overnight**	**Long Distance**	**Express Delivery**	**Coach**	**City Bus**	**Small Tractor**	**Big Tractor**	**Heavy Industrial**	**DIN size**
1	**POWERCUBE AGM**	AGM	✓			✓	✓		✓	✓	D7-B-C
2	**POWERCUBE APC**	APC	✓	✓		✓	✓		✓	✓	A-B-C
3	**POWERCUBE EHD***	EHD		✓	✓			✓			A-B-C & other formats
4	**ENERGYCUBE APC**	APC	✓		✓	✓	✓		✓	✓	B-C
5	**ENERGYCUBE RST**	RST			✓			✓			other formats

* flat cover (FLAT) only for A-B-C Batteries

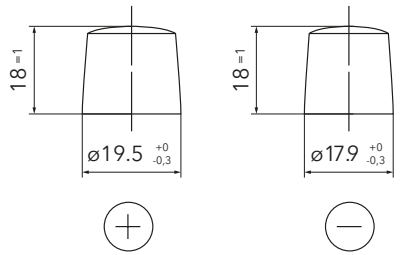
Base fasteners



Polarity



Terminal



TRUCK - TRACTOR BATTERIES / NEW RANGE

Code	Size format	Technology	ID code	ETN	Capacity (C20) Ah	CCA (A) EN	Dimensions LxWxH (mm)	Terminals Layout	Base fastener
POWERCUBE - AGM - ABSORBENT GLASS MAT									
7904567	D7	**AGM**	**D7 125 AGM**	-	125	1000	266x280x230	2/1	B00
POWERCUBE - APC - ADVANCED POWER CYCLING									
7904568	A	**APC**	**A 135 APC**	635 105 085	135	850	513x189x223	3/1	B01 (Int.)
7904569	B	**APC**	**B 180 APC**	680 032 100	180	1000	513x223x223	3/1	B00
7904570	C	**APC**	**CX 225 APC**	725 012 115	225	1150	518x273x242	3/1	B00
POWERCUBE - EHD - ENHANCED HEAVY DUTY									
7904571	MCD110	**EHD**	**D11 110 EHD**	610 107 080	110	800	514x175x210	3/1	B03
7904572	A	**EHD**	**A 120 EHD**	620 108 085	120	850	513x189x223	3/1	B01 (Int.)
7904573	MAC120	**EHD**	**MC12 120 EHD**	620 107 085	120	850	510x175x228	4/1	B03
7904574	MAT132	**EHD**	**MT 132 EHD**	632 101 095	132	950	508x175x205	0/1	B01
7904575	MCD110	**EHD**	**D11 135 EHD**	635 106 095	135	950	514x175x210	3/1	B03
7904576	A	**EHD**	**A 140 EHD**	640 102 095	140	950	513x189x223	3/1	B01 (Int.)
7904577	MCD143	**EHD**	**D14 148 EHD**	648 101 100	148	1000	514x218x210	3/1	B03
7904578	B	**EHD**	**B 160 EHD**	660 104 105	160	1050	513x223x223	3/1	B00
7904579	MAC154	**EHD**	**MC15 160 EHD**	660 103 105	160	1050	510x218x228	4/1	B03
7904580	B	**EHD**	**B 180 EHD**	680 104 110	180	1100	513x223x223	3/1	B00
7904581	B	**EHD**	**B 180 EHD (B03)**	-	180	1100	513x223x223	3/1	B03
7904582	MAC154	**EHD**	**MC15 185 EHD**	685 101 120	185	1200	510x218x228	4/1	B03
7904583	C	**EHD**	**CX 200 EHD**	700 108 115	200	1150	518x273x242	3/1	B00
7904584	C	**EHD**	**C 200 EHD**	700 109 115	200	1150	518x273x242	4/1	B00
ENERGYCUBE - APC - ADVANCED POWER CYCLING									
7904585	B	**APC**	**B 185 APC**		185	1000	513x223x223	3/1	B00
7904586	C	**APC**	**CX 220 APC**		220	1100	518x273x242	3/1	B00
ENERGYCUBE - RST - RELIABLE STARTER (DRY)									
7904587	A DRY	**RST**	**A 120 RSTd**	620 108 085	120	850	513x189x223	3/1	B01 (Int.)
7904588	B DRY	**RST**	**B 160 RSTd**	660 104 105	160	1050	513x223x223	3/1	B00
7904589	B DRY	**RST**	**B 180 RSTd**	680 104 110	180	1100	513x223x223	3/1	B00
7904590	C DRY	**RST**	**CX 200 RSTd**	700 108 115	200	1150	518x273x242	3/1	B00
ENERGYCUBE - RST - RELIABLE STARTER									
7904591	GR28	**RST**	**G28 100 RST**	-	100	720	333x175x215	0/1	B03
7904592	GR28	**RST**	**G28X 100 RST**	-	100	720	333x175x215	1/1	B01
7904593	COM100	**RST**	**CB 110 RST**	-	110	850	349x175x239	0/1	B00
7904594	COM100	**RST**	**CBX 110 RST**	-	110	850	349x175x239	1/1	B00
7904595	COM100	**RST**	**CB 110 RST (B01)**	-	110	850	349x175x239	0/1	B01
7904596	COM125	**RST**	**CH 125 RST**	625 103 076	125	760	349x175x290	0/1	B00
7904597	COM125	**RST**	**CHX 125 RST**	625 104 076	125	760	349x175x290	1/1	B00
7904598	MC 130	**RST**	**MC 130 RST**	630 104 095	130	950	514x218x210	3/1	B00
ENERGYCUBE - RST - RELIABLE STARTER (DRY)									
7904599	AT 100	**RST**	**AT 100 RSTd**	600 026 060	100	600	413x175x220	0/1	B00
7904600	AT 100	**RST**	**ATX 100 RSTd**	600 035 060	100	600	413x175x220	1/1	B00

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