GNB®
INDUSTRIAL POWER
A Division of Exide Technologies

Industrial Batteries / Motive Power

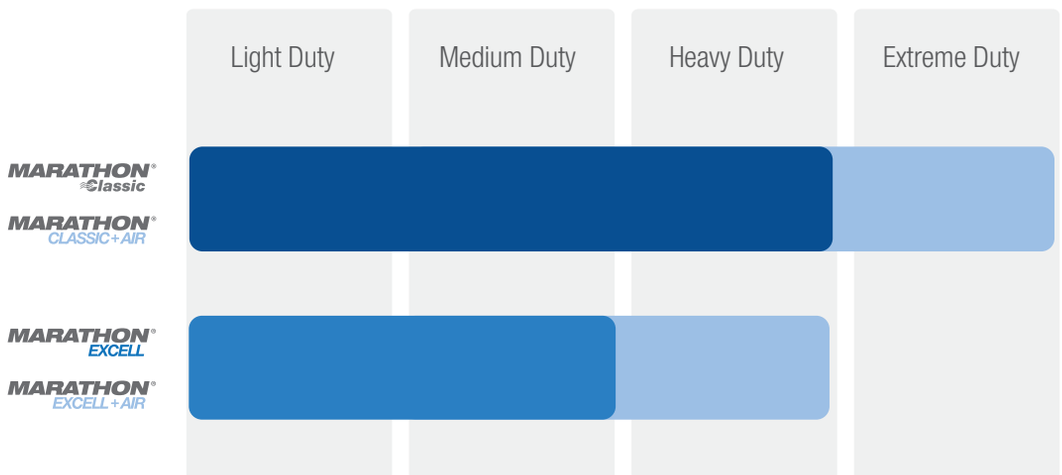
MARATHON

RUNNING FOR YOUR BUSINESS

MARATHON batteries
The economical solution

Energy solutions for all applications

The innovative MARATHON battery range from GNB® Industrial Power creates a new standard in traction batteries. MARATHON batteries are the ideal choice for light duty to heavy duty applications. These batteries are designed to power all types of industrial trucks, and are also perfectly suited for all other applications where a powerful and robust power source with high cyclability is required. Low maintenance MARATHON EXCELL batteries significantly decrease maintenance and energy costs, which can be decreased even further using the +AIR option.



Light Duty

> Limited handling performance
> 1 or 2-shift operations
> Normal environmental conditions
> Indoor applications, even ground
> Example: hand pallet truck in a supermarket

Medium Duty

> Medium handling performance
> 1 or 2-shift operations
> Temperature variations, dust
> Partial outdoor applications, uneven ground
> Example: 1-2t forklift at a loading ramp

Heavy Duty

> High handling performance
> 2 or 3-shift operations
> Elevated temperatures, dust
> Partial outdoor applications, uneven ground
> Examples: 3-5t forklift, order picker, VNA truck in warehouse

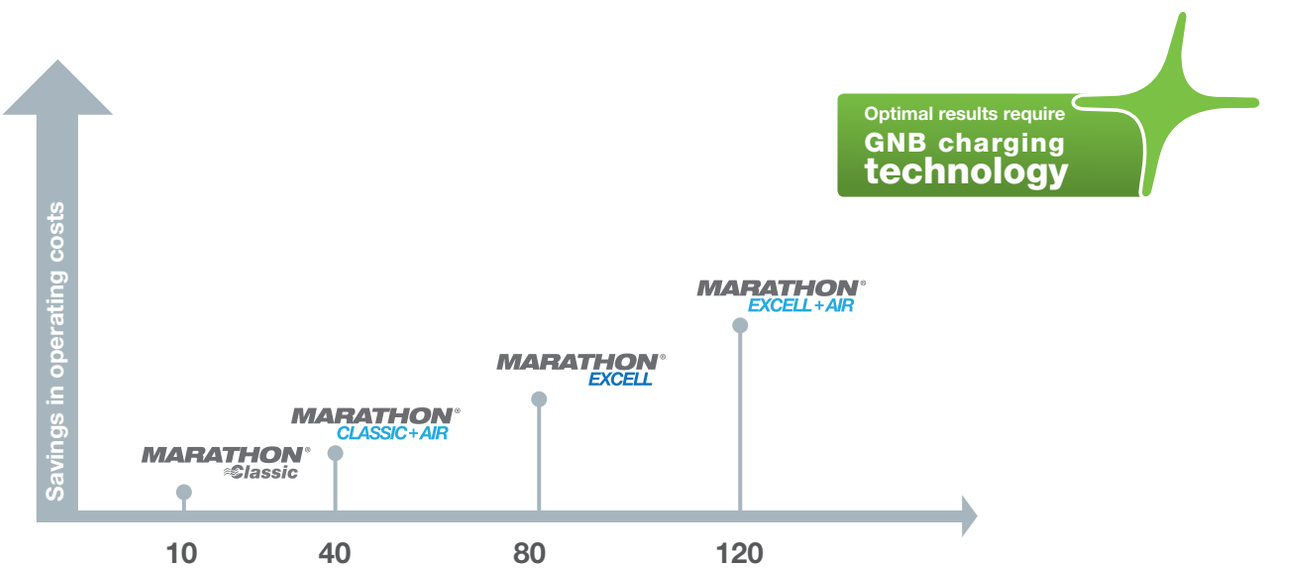
Extreme Duty

> Superior handling performance
> 2 or 3-shift operations
> High dust load, very high or low temperatures
> Indoor/outdoor applications
> Accessory equipment (clamps, multiple forks)
> Examples: Forklifts over 5t, distribution centres, cold storage, mining, chemical industry

MARATHON batteries
Economical and powerful

Reduced operating costs due to extended watering intervals

Extended watering intervals help to cut operating costs by saving water and maintenance. When GNB charging technology is used, watering intervals can be extended to 40 and up to 120 working days depending on battery type.



Reduced emissions

Carbon dioxide (CO_2), soot and noise emissions must be significantly reduced to meet environmental and public health objectives. Shifting to electric-powered trucks puts these goals within easy reach. Future-ready MARATHON technology makes it easier to change from combustion-engine trucks to battery-powered trucks.

Environmentally friendly

Because MARATHON batteries are based on lead-acid technology, they are fully recyclable – an important additional advantage over other battery technologies. Long service life, high energy efficiency and recyclability make MARATHON batteries a true green choice.

MARATHON Classic and MARATHON Classic+AIR

Proven, powerful and reliable

EPzS/EPzB batteries are the ideal energy source for all material handling applications. They can also supply the energy and cycle life required for cleaning machines, tow tractors, mobile lifting platforms, electric road vehicles and electric/hybrid boats.

MARATHON® Classic

Technical features

> Robust lead-acid battery technology with liquid electrolyte
> Proven tubular plate technology for long cycle life
> Fully insulated, bolted terminals and connectors
> DIN and BS sizes according to IEC 60254-2
> Manufactured in accordance with DIN EN ISO 9001
> Environmental management in accordance with DIN EN ISO 14001
> Fully recyclable

Expert tip: +AIR

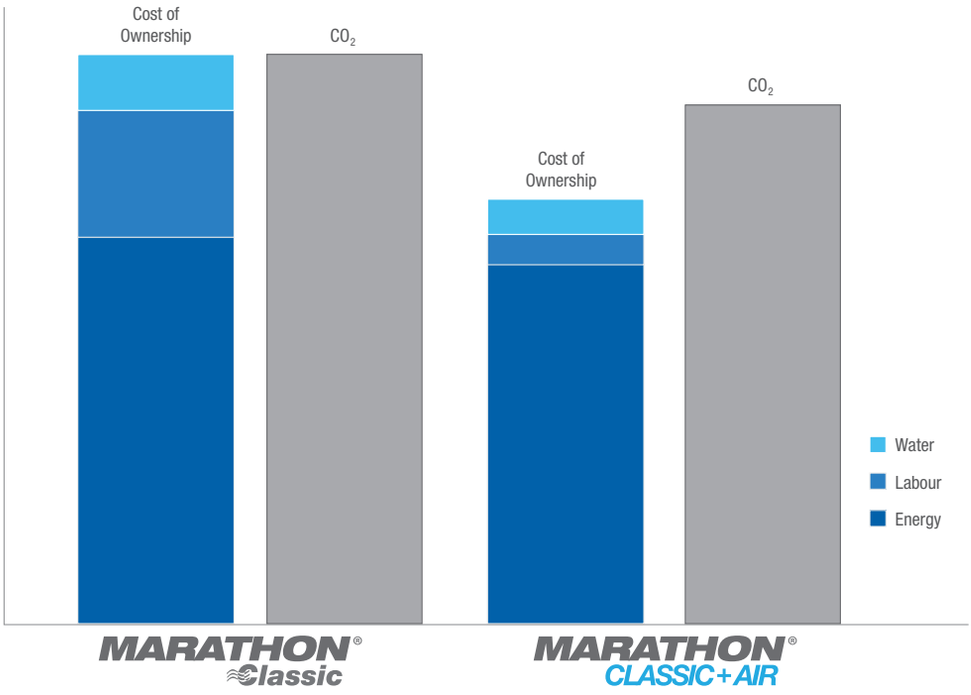
Upgrade to MARATHON Classic+AIR!

> Air agitation system (EUW) benefits:
  > Reduces energy and water consumption
  > Extends service life by reducing chemical stress and temperature rises when charging
  > Speeds up the charging process and ensures smooth opportunity charging.

MARATHON® CLASSIC+AIR

MARATHON Classic and MARATHON Classic+AIR

Economic Comparison



Your benefits:

> **Very robust & reliable**

> **Excellent price/quality ratio**

> **Environmentally friendly** and fully recyclable

Options:

> **Explosion-proof** version (ATEX)

> Automatic **water-refilling system**

MARATHON EXCELL and MARATHON EXCELL+AIR

Low maintenance with water and energy savings

MARATHON EXCELL, from GNB® Industrial Power, is reliable, durable and requires very little maintenance. The proven PzS tubular-plate technology guarantees durability, and the large selection of cell variants makes it perfect for all types of applications.

MARATHON EXCELL features extended watering intervals of up to 120 days, achieved through combining a special low-antimony alloy with an optimised charging technology. The optional electrolyte level sensor and an automatic watering system are making the maintenance of the battery even easier. This results in improved profitability and reduced total cost of ownership.

Technical features

- > Special low-antimony alloy for minimum maintenance and maximum reliability
- > Reduced water loss due to optimized charging technology
- > Extended watering intervals from 16 weeks (80 cycles) up to 24 weeks (120 cycles)
- > Long watering intervals throughout entire service life (no poisoning of negative plates)
- > Proven PzS technology/tubular plates guarantees durability
- > Recommended options: Electrolyte level sensor and automatic watering system
- > Exceptional cell diversity for all application areas, including DIN EPzS and BS EPzB cell sizes

Expert tip: +AIR

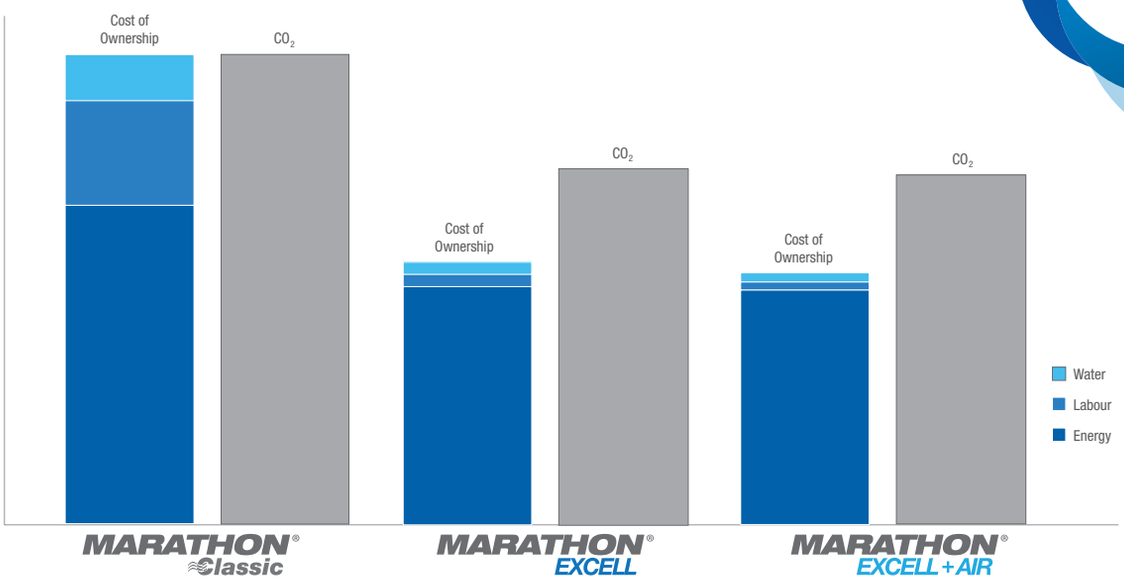
Upgrade to MARATHON EXCELL+AIR!

> Air agitation system (EUW) benefits:

- > Reduces energy and water consumption
- > Extends service life by reducing chemical stress and temperature rises when charging

MARATHON EXCELL and MARATHON EXCELL+AIR

Economic Comparison



Your benefits:

> Economical due to extended watering intervals

> **Less maintenance**

> **Less energy**

> **Less water**

> Environmentally friendly

> **Reduced CO_2** footprint

> **Fully recyclable**

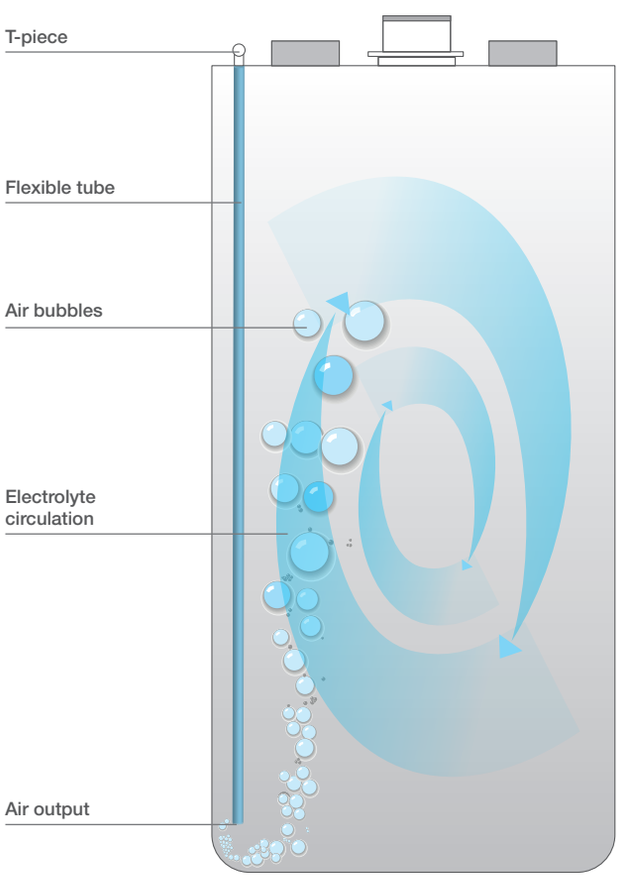
> **Excellent cyclic durability**

Forced Electrolyte Circulation System

Boost your batteries with Air Agitation

System and Functionality

Air agitation systems are designed to bubble air through the electrolyte during the charging process. Normally the required air pump is integrated inside the charger, but there are also charger-independent, battery-powered air agitation pumps available. The air is supplied via the plug to a tubing system on top of the battery that is connected to each individual cell. All cells are equipped with a T-piece on the lid that guides the air into the cell, where it flows down a flexible tube. On the inside bottom of the cell, the air bubbles out and creates a whirlpool, making the electrolyte circulate using the airlift pump principle.



Technical background

Charging a lead-acid battery generates intermediate acid stratification because lead sulphate located on the plates is converted to free sulphuric acid. Sulphuric acid is heavier than the electrolyte and therefore sinks to the bottom of the cell, generating a high concentration of acid there. This high acid concentration accelerates the corrosion rate at the lower end of the plates. It also causes deep discharges at the bottom of the plates during the discharging process, while the upper ends of the plates have less capacity due to the lack of acid.

Normally the acid stratification is resolved by overcharging, since the generation of hydrogen gas remixes the electrolyte. The negative side effects of this method are high energy and water consumption, and the battery temperature also rises significantly. If no overcharging is performed because of short charging times or frequent opportunity charging, acid stratification will cause sustained and unavoidable damage.

Batteries equipped with an air agitation system prevent detrimental acid stratification by mixing the electrolyte throughout the charging process. Less overcharge is required, which decreases the energy required and results in minimal water decomposition. Other positive side effects include lower temperature rises compared to standard charging, and the ability to carry out frequent opportunity charging before performing a full recharge.

Your benefits: +AIR

> Reduces energy and water consumption

> Extends service life by reducing chemical stress and temperature rises when charging

> Speeds up the charging process and ensures smooth opportunity charging.

MARATHON Classic and MARATHON Classic+AIR

Technical Data

Applications

EPzS batteries are the ideal energy source for all material handling applications. They can also supply the energy and cycle life required for cleaning machines, tow tractors, mobile lifting platforms, electric road vehicles and electric/hybrid boats.

Technical characteristics and data (DIN - cells) width (b/w) 198 mm

Type 60 Ah* B Height (h1) 333 mm Height (h2) 363 mm	Nominal Capacity [Ah]	Weight** [kg]	Length (l) [mm]	Type 80 Ah* C Height (h1) 396 mm Height (h2) 426 mm	Nominal Capacity [Ah]	Weight** [kg]	Length (l) [mm]	Type 90 Ah* D Height (h1) 463 mm Height (h2) 493 mm	Nominal Capacity [Ah]	Weight** [kg]	Length (l) [mm]	Type 105 Ah* E Height (h1) 511 mm Height (h2) 541 mm	Nominal Capacity [Ah]	Weight** [kg]	Length (l) [mm]
2 EPzS 120	120	8.50	47.0	2 EPzS 160	160	10.0	47.0	2 EPzS 180	180	11.9	47.0	2 EPzS 210	210	13.5	47.0
3 EPzS 180	180	12.0	65.0	3 EPzS 240	240	14.2	65.0	3 EPzS 270	270	17.0	65.0	3 EPzS 315	315	19.1	65.0
4 EPzS 240	240	15.4	83.0	4 EPzS 320	320	18.4	83.0	4 EPzS 360	360	22.1	83.0	4 EPzS 420	420	24.6	83.0
5 EPzS 300	300	19.0	101	5 EPzS 400	400	22.6	101	5 EPzS 450	450	27.1	101	5 EPzS 525	525	30.5	101
6 EPzS 360	360	22.5	119	6 EPzS 480	480	26.7	119	6 EPzS 540	540	32.2	119	6 EPzS 630	630	36.1	119
7 EPzS 420	420	26.0	137	7 EPzS 560	560	31.3	137	7 EPzS 630	630	37.2	137	7 EPzS 735	735	41.8	137
8 EPzS 480	480	29.5	155	8 EPzS 640	640	35.1	155	8 EPzS 720	720	42.3	155	8 EPzS 840	840	47.4	155
9 EPzS 540	540	33.0	173	9 EPzS 720	720	39.3	173	9 EPzS 810	810	47.4	173	9 EPzS 945	945	53.1	173
10 EPzS 600	600	36.5	191	10 EPzS 800	800	43.4	191	10 EPzS 900	900	52.4	191	10 EPzS 1050	1050	58.4	191

Type 115 Ah* F Height (h1) 542 mm Height (h2) 572 mm	Nominal Capacity [Ah]	Weight** [kg]	Length (l) [mm]	Type 125 Ah* F Height (h1) 573 mm Height (h2) 603 mm	Nominal Capacity [Ah]	Weight** [kg]	Length (l) [mm]	Type 140 Ah* G Height (h1) 683 mm Height (h2) 713 mm	Nominal Capacity [Ah]	Weight** [kg]	Length (l) [mm]	Type 155 Ah* G Height (h1) 713 mm Height (h2) 743 mm	Nominal Capacity [Ah]	Weight** [kg]	Length (l) [mm]
2 EPzS 230	230	14.2	47.0	2 EPzS 250	250	15.0	47.0	2 EPzS 280	280	17.5	47.0	2 EPzS 310	310	18.9	47.0
3 EPzS 345	345	20.3	65.0	3 EPzS 375	375	21.2	65.0	3 EPzS 420	420	24.7	65.0	3 EPzS 465	465	26.7	65.0
4 EPzS 460	460	26.4	83.0	4 EPzS 500	500	27.4	83.0	4 EPzS 560	560	31.8	83.0	4 EPzS 620	620	34.6	83.0
5 EPzS 575	575	32.4	101	5 EPzS 625	625	33.9	101	5 EPzS 700	700	39.3	101	5 EPzS 775	775	42.6	101
6 EPzS 690	690	39.0	119	6 EPzS 750	750	40.3	119	6 EPzS 840	840	46.7	119	6 EPzS 930	930	50.5	119
7 EPzS 805	805	44.7	137	7 EPzS 875	875	46.5	137	7 EPzS 980	980	53.9	137	7 EPzS 1085	1085	58.5	137
8 EPzS 920	920	50.6	155	8 EPzS 1000	1000	53.1	155	8 EPzS 1120	1120	61.3	155	8 EPzS 1240	1240	66.4	155
9 EPzS 1035	1035	56.6	173	9 EPzS 1125	1125	59.4	173	9 EPzS 1260	1260	68.6	173	9 EPzS 1395	1395	74.4	173
10 EPzS 1150	1150	62.7	191	10 EPzS 1250	1250	66.0	191	10 EPzS 1400	1400	76.0	191	10 EPzS 1550	1550	82.4	191

* Capacity per positive plate Ah (C_5) at 30°C
** Filled and charged cell weights +/- 5%
Heights given +/- 2mm

MARATHON Classic and MARATHON Classic+AIR

Technical Data

Applications

EPzB batteries are the ideal energy source for material handling trucks, cleaning machines, electrical road vehicles, tractors and other electrical vehicles with narrow battery installation space and high cyclic load.

Technical characteristics and data (BS - cells) width (b/w) 160 mm

Type 55 Ah* Height (h1) 402 mm Height (h2) 435 mm	Nominal Capacity [Ah]	Weight [kg]	Length (l) [mm]	Type 65 Ah* Height (h1) 454mm Height (h2) 487mm	Nominal Capacity [Ah]	Weight [kg]	Length (l) [mm]	Type 75 Ah* Height (h1) 514.5mm Height (h2) 547.5 mm	Nominal Capacity [Ah]	Weight [kg]	Length (l) [mm]
2 EPzB 110**	110	7.30	46.0	2 EPzB 130**	130	8.40	46.0	2 EPzB 150**	150	9.60	46.0
3 EPzB 165**	165	10.3	62.0	3 EPzB 195**	195	11.7	62.0	3 EPzB 225**	225	13.4	62.0
4 EPzB 220	220	13.3	78.0	4 EPzB 260	260	15.1	78.0	4 EPzB 300	300	17.3	78.0
5 EPzB 275	275	16.2	94.0	5 EPzB 325	325	18.5	94.0	5 EPzB 375	375	21.2	94.0
6 EPzB 330	330	19.2	110	6 EPzB 390	390	21.8	110	6 EPzB 450	450	25.0	110
7 EPzB 385	395	22.1	126	7 EPzB 455	455	25.2	128	7 EPzB 525	525	28.9	126
8 EPzB 440	440	25.1	142	8 EPzB 520	520	28.5	142	8 EPzB 600	600	32.8	142
9 EPzB 495	495	28.1	158	9 EPzB 585	585	32.0	158	9 EPzB 675	675	36.7	158
10 EPzB 550	550	31.3	174	10 EPzB 650	650	35.6	174	10 EPzB 750	750	40.8	174

Type 80 Ah* Height (h1) 514.5 mm Height (h2) 547.5 mm	Nominal Capacity [Ah]	Weight [kg]	Length (l) [mm]	Type 86 Ah* Height (h1) 568 mm Height (h2) 601 mm	Nominal Capacity [Ah]	Weight [kg]	Length (l) [mm]	Type 100 Ah* Height (h1) 601 mm Height (h2) 634 mm	Nominal Capacity [Ah]	Weight [kg]	Length (l) [mm]
2 EPzB 160**	160	9.90	46.0	2 EPzB 172**	172	10.5	46.0	2 EPzB 200**	200	11.6	46.0
3 EPzB 240**	240	14.0	62.0	3 EPzB 258**	258	14.7	62.0	3 EPzB 300*	300	16.3	62.0
4 EPzB 320	320	18.1	78.0	4 EPzB 344	344	19.0	78.0	4 EPzB 400	400	21.0	78.0
5 EPzB 400	400	22.1	94.0	5 EPzB 430	430	23.2	94.0	5 EPzB 500	500	25.7	94.0
6 EPzB 480	480	26.1	110	6 EPzB 516	516	27.4	110	6 EPzB 600	600	30.4	110
7 EPzB 560	560	30.2	126	7 EPzB 602	602	31.6	126	7 EPzB 700	700	35.2	126
8 EPzB 640	640	34.3	142	8 EPzB 688	688	35.9	142	8 EPzB 800	800	40.2	142
9 EPzB 720	720	38.4	158	9 EPzB 774	774	40.4	158	9 EPzB 900	900	45.0	158
10 EPzB 800	800	42.7	174	10 EPzB 860	860	44.7	174	10 EPzB 1000	1000	49.7	174

Special types

Type 42 Ah* Height (h1) 324 mm Height (h2) 357 mm	Nominal Capacity [Ah]	Weight [kg]	Length (l) [mm]
5 EPzB 210	210	13.1	94.0
6 EPzB 252	252	15.5	110
7 EPzB 294	294	17.8	126

* Capacity per positive plate Ah (C_5) at 30°C
** Air agitation system and electrolyte level sensor are not available for these cells

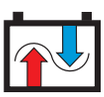
Filled and charged cell weights +/- 5%
Heights given +/- 2mm

Specifications

Nominal capacity
DIN - Cells
120 - 1550 Ah
BS - Cells
110 - 1000 Ah

Single cell

Tubular plate

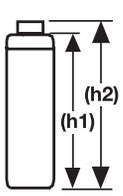


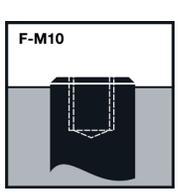
1,500 cycles acc. to DIN EN 60254-1/ IEC 60254-1

Recyclable

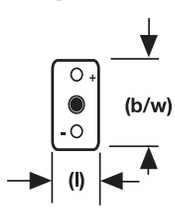
Option: Explosive-proof (Exl/Exll)

Dimensions, terminal and torque





23 Nm



Not to scale!

MARATHON® classic

MARATHON® CLASSIC+AIR

MARATHON EXCELL and MARATHON EXCELL+AIR

Technical Data

DIN-Cells

Type 60 Ah Height (h1): 333 mm Height (h2): 363 mm	Nominal Capacity [Ah]	Weight [kg]	Length (l) [mm]	Type 80 Ah Height (h1): 396 mm Height (h2): 426 mm	Nominal Capacity [Ah]	Weight [kg]	Length (l) [mm]	Type 90 Ah Height (h1) 463 mm Height (h2) 493 mm	Nominal Capacity [Ah]	Weight [kg]	Length (l) [mm]	Type 105 Ah Height (h1): 511 mm Height (h2): 541 mm	Nominal Capacity Ah	Weight kg	Length (l) mm
2 EPzS	120 SL	8.5	47	2 EPzS	160 SL	10.0	47	2 EPzS	180	11.9	47	2 EPzS	210	13.5	47
3 EPzS	180 SL	12.0	65	3 EPzS	240 SL	14.2	65	3 EPzS	270	17.0	65	3 EPzS	315	19.1	65
4 EPzS	240 SL	15.4	83	4 EPzS	320 SL	18.4	83	4 EPzS	360	22.1	83	4 EPzS	420	24.6	83
5 EPzS	300 SL	19.0	101	5 EPzS	400 SL	22.6	101	5 EPzS	450	27.1	101	5 EPzS	525	30.5	101
6 EPzS	360 SL	22.5	119	6 EPzS	480 SL	26.7	119	6 EPzS	540	32.2	119	6 EPzS	630	36.1	119
7 EPzS	420 SL	26.0	137	7 EPzS	560 SL	31.3	137	7 EPzS	630	37.2	137	7 EPzS	735	41.8	137
8 EPzS	480 SL	29.5	155	8 EPzS	640 SL	35.1	155	8 EPzS	720	42.3	155	8 EPzS	840	47.4	155

Type 115 Ah Height (h1): 542 mm Height (h2): 572 mm	Nominal Capacity [Ah]	Weight [kg]	Length (l) [mm]	Type 125 Ah Height (h1): 537 mm Height (h2): 603 mm	Nominal Capacity [Ah]	Weight [kg]	Length (l) [mm]	Type 140 Ah Height (h1) 683 mm Height (h2) 713 mm	Nominal Capacity [Ah]	Weight [kg]	Length (l) [mm]	Type 155 Ah Height (h1): 713 mm Height (h2): 743 mm	Nominal Capacity Ah	Weight kg	Length (l) mm
2 EPzS	230 SL	14.2	47	2 EPzS	250 SL	15.0	47	2 EPzS	280	17.5	47	2 EPzS	310	18.9	47
3 EPzS	345 SL	20.3	65	3 EPzS	370 SL	21.2	65	3 EPzS	420	24.7	65	3 EPzS	465	26.7	65
4 EPzS	460 SL	26.4	83	4 EPzS	500 SL	27.4	83	4 EPzS	560	31.8	83	4 EPzS	620	34.6	83
5 EPzS	575 SL	32.4	101	5 EPzS	625 SL	33.9	101	5 EPzS	700	39.3	101	5 EPzS	775	42.6	101
6 EPzS	690 SL	39.0	119	6 EPzS	750 SL	40.3	119	6 EPzS	840	46.7	119	6 EPzS	930	50.5	119
7 EPzS	805 SL	44.7	137	7 EPzS	875 SL	46.5	137	7 EPzS	980	53.9	137	7 EPzS	1085	58.5	137
8 EPzS	920 SL	50.6	155	8 EPzS	1000 SL	53.1	155	8 EPzS	1120	61.3	155	8 EPzS	1240	66.4	155

BS-Cells

Type 75 Ah Height (h1): 514,5 mm Height (h2): 547,5 mm	Nominal Capacity [Ah]	Weight [kg]	Length (l) [mm]	Type 80 Ah Height (h1): 514,5 mm Height (h2): 547,5 mm	Nominal Capacity [Ah]	Weight [kg]	Length (l) [mm]	Type 86 Ah Height (h1): 568 mm Height (h2): 601 mm	Nominal Capacity [Ah]	Weight [kg]	Length (l) [mm]	Type 100 Ah Height (h1) 601 mm Height (h2) 634 mm	Nominal Capacity Ah	Weight kg	Length (l) mm
2 EPzB*/**	150 SL	9.6	46	2 EPzB*/**	160 SL	9.9	46	2 EPzB*/**	172 SL	10.5	46	2 EPzB*/**	200 SL	11.6	46
3 EPzB*/**	225 SL	13.4	62	3 EPzB*/**	240 SL	14.0	62	3 EPzB*/**	258 SL	14.7	62	3 EPzB*/**	300 SL	16.3	62
4 EPzB	300 SL	17.3	78	4 EPzB	320 SL	18.1	78	4 EPzB	344 SL	19.0	78	4 EPzB	400 SL	21.0	78
5 EPzB	375 SL	21.2	94	5 EPzB	400 SL	22.1	94	5 EPzB	430 SL	23.2	94	5 EPzB	500 SL	25.7	94
6 EPzB	450 SL	25.0	110	6 EPzB	480 SL	26.1	110	6 EPzB	516 SL	27.4	110	6 EPzB	600 SL	30.4	110
7 EPzB	525 SL	28.9	126	7 EPzB	560 SL	30.2	126	7 EPzB	602 SL	31.6	126	7 EPzB	700 SL	35.2	126
8 EPzB	600 SL	32.8	142	8 EPzB	640 SL	34.3	142	8 EPzB	688 SL	35.9	142	8 EPzB	800 SL	40.2	142

* At present without air agitation system
** No electrolyte level sensor possible
Heights given +/- 2mm

GNB®
INDUSTRIAL POWER
A Division of Exide Technologies

Exide Technologies, with operations in more than 80 countries, is one of the world's largest producers and recyclers of lead-acid batteries. Exide Technologies provides a comprehensive and customized range of stored electrical energy solutions. Based on over 120 years of experience in the development of innovative technologies, Exide Technologies is an esteemed partner of OEMs and serves the spare parts market for industrial and automotive applications.

GNB Industrial Power – A division of Exide Technologies – offers an extensive range of storage products and services, including solutions for telecommunication systems, railway applications, mining, photovoltaic (solar energy), uninterrupted power supply (UPS), electrical power generation and distribution, fork lifts and electric vehicles.

Exide Technologies takes pride in its commitment to a better environment. An integrated approach to manufacturing, distributing and recycling of lead-acid batteries has been developed to ensure a safe and responsible life cycle for all of its products.

MXMXXREPDF00418 Subject to alteration

www.gnb.com

GNB® INDUSTRIAL POWER devises enduring energy concepts that convince with efficiency, flexibility and profitability.