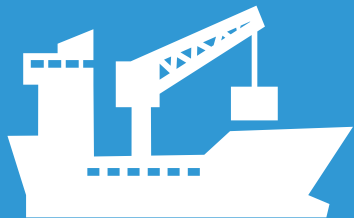




shop.mme-group.com

SACRIFICIAL ANODES



MME ENGINEERING LTD.

FOR A LONGER LIFE

Since MME Group controls the entire chain of production of sacrificial anodes, we can easily cater to our clients' specific needs. Whether it is an Ethernet-accessible impressed current system, a well balanced sacrificial anode layout or a hybrid system, MME Group will always design the optimum.

'A longer life' is our mission, put into practice every day by our dedicated staff.

MME Group has a large foundry for the manufacturing of sacrificial anodes for the marine, offshore, renewable energy and civil engineering industries. With a unique manufacturing process, using different disciplines like insert manufacturing, grit blasting and anode casting on just one dedicated worksite, MME Group is able to comply with the strictest requirements for quality as well as short delivery terms. An efficient certification structure guarantees an accurate and professional order processing.

ABOUT MME ENGINEERING

One of MME Group's specialities is corrosion control by means of cathodic protection. Since steel is the most widely used material for marine structures such as ships, offshore platforms, harbour structures and lock gates, corrosion protection is necessary to ensure a longer life for these investments.

Our anodes are produced in a 4.000 square meters production facility, fully owned by MME Group. The foundry operates under an ISO 9001-certified Quality Management System, and produces high quality anodes at competitive prices. In addition, our foundry can produce custom-made anodes at short notice.

More than 100 different types of anodes are available in zinc and aluminium alloys. This diversity, in combination with the possibility to produce moulds for non-standard anodes, enables MME Group to guarantee a longer lifetime for your investment. Since the establishment of our foundry, millions of anodes have been produced for the cathodic protection of ships, quay walls, jetties, lock gates and offshore structures.

Our anodes can be distributed quickly and efficiently, either directly from the foundry site in Kent (UK), from our extensive main warehouse in Rotterdam or from various distributors.

MME Engineering, Ltd.
Unit 3, Faversham Shipyard
Upper Brents
Faversham
Kent ME13 7DZ
United Kingdom

E-mail: info@mme-group.com
Tel. +44 (0) 1795 53 55 59
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MME Group
Rietdekkerstraat 16
2984 BM Ridderkerk
The Netherlands

E-mail: info@mme-group.com
Tel.: +31 (0)180 48 28 28
Mob.: +31 (0)6 29 58 18 20
Fax: +31 (0)180 46 22 40

CHOOSING ZINC OR ALUMINIUM AS ALLOY FOR SACRIFICIAL ANODES

GENERAL

Traditionally many companies prefer to use zinc instead of aluminium. MME advises the use of aluminium instead of zinc for the following reasons:

1. Price of anode material

Due to the fact that the capacity of aluminium (2700 A hr/Kg) is almost 3.5 times higher than zinc (780 A hr /Kg) the total amount of required anode material (Kg) is less. This results in a cheaper Cathodic Protection System to that given by zinc with an equal level of protection.

2. Price of Installation

As the total weight of anode material for a system using aluminium is less compared to a system using zinc anodes the installation costs for a system using aluminium anodes will also be less.

3. Multi Effective

In brackish water aluminium anodes work more effectively than zinc, due to the higher driving voltage of aluminium.

4. Environmental Pollution

Compared to aluminium alloys, zinc is considered to be less neutral to the environment.

ANODE RECOMMENDATIONS

Saltwater

Zn

Al



In saltwater, both Zinc and Aluminium are suitable, but Aluminium is the only material that will reactivate when the boat is put back in the water.

Brackish Water



Al



Aluminium is the only recommended material for brackish water.

Fresh Water



Al

Mg

Aluminium and Magnesium are both suitable for use in fresh water. However an increase in the amount of pollutants found in fresh water can cause the magnesium anode to overprotect the boat. Therefore, Aluminium is the safest option.

These recommendations apply to steel structures. For more detailed information, please consult your local distributor.

ALLOY SPECIFICATIONS OF STANDARD SACRIFICIAL ANODES

GENERAL

The below mentioned alloys have been chosen with great care to ensure an even corrosion pattern, reliable electrical capacity and a long working life. These alloys are used for standard sacrificial anodes. On request Material Metingen Europe can cast anodes with different alloy specifications.

ALUMINIUM ALLOY

Element	Range (%)
Zinc (Zn)	3.50 - 5.00
Titanium (Ti)	0.01 - 0.05
Silicon (Si)	0.05 - 0.20
Bismuth (Bi)	0.05 - 0.15
Indium (In)	0.02 - 0.05
Copper (Cu)	0.01 max
Iron (Fe)	0.15 max
Others each	0.10 max
Aluminium	Balance

Nominal electrical capacity: 2700 AmpHr/Kg

Nominal open circuit potential: -1100 mV vs Ag/AgCl (seawater) reference cell

ZINC ALLOY acc. US MIL Spec. A-18001K

Element	Range (%)
Aluminium (Al)	0.10 - 0.5
Cadmium (Cd)	0.025 - 0.07
Copper (Cu)	0.005 max
Iron (Fe)	0.005 max
Lead (Pb)	0.006 max
Others total	0.10 max
Zinc (Zn)	Balance

Nominal electrical capacity: 780 AmpHr/Kg

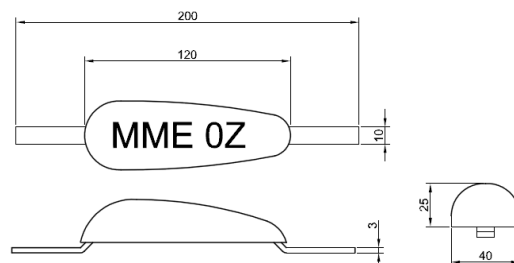
Nominal open circuit potential: -1050 mV vs Ag/AgCl (seawater) reference cell

The copper, iron and lead contents of our normal zinc alloys are usually less than 0.003% each.

MME ENGINEERING LTD.

ZINC HULL ANODES

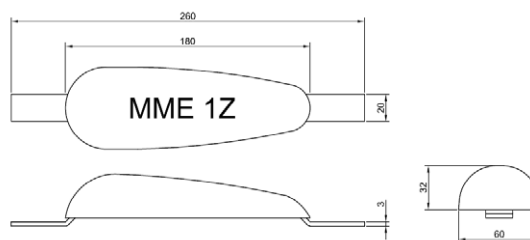
MME 0Z



Weight		Dimensions		
Gross	0.60 kg	Overall	Zn anode	Core
Nett	0.50 kg	200 x 40 x 25 mm	120 x 40 x 25 mm	10 x 3 mm

[Find product in webshop](#)

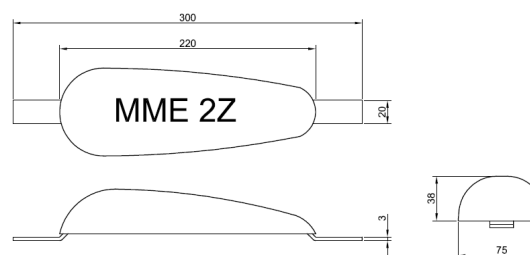
MME 1Z



Weight		Dimensions		
Gross	1.1 kg	Overall	Zn anode	Core
Nett	1.0 kg	260 x 60 x 32 mm	180 x 60 x 32 mm	20 x 3 mm

[Find product in webshop](#)

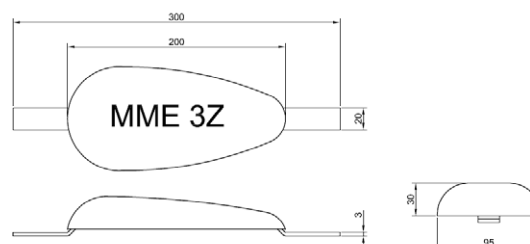
MME 2Z



Weight		Dimensions		
Gross	2.1 kg	Overall	Zn anode	Core
Nett	2.0 kg	300 x 75 x 38 mm	220 x 75 x 38 mm	20 x 3 mm

[Find product in webshop](#)

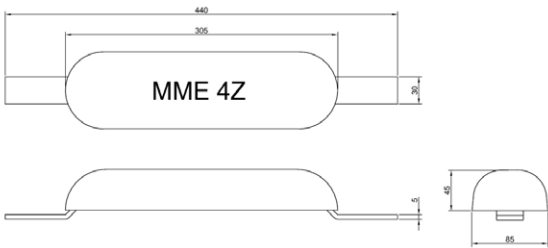
MME 3Z



Weight		Dimensions		
Gross	3.1 kg	Overall	Zn anode	Core
Nett	3.0 kg	300 x 95 x 30 mm	200 x 95 x 30 mm	20 x 3 mm

[Find product in webshop](#)

MME 4Z



Weight

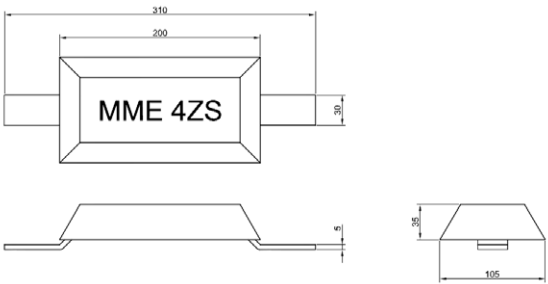
Gross 4.5 kg
Nett 4.0 kg

Dimensions

Overall 440 x 85 x 45 mm
Zn anode 305 x 85 x 45 mm
Core 30 x 5 mm

[Find product in webshop](#)

MME 4ZS



Weight

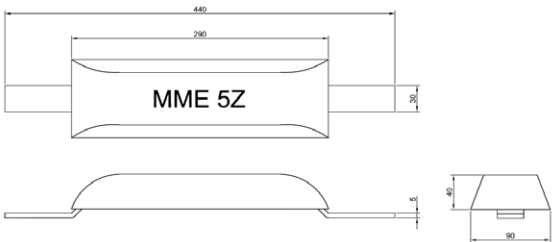
Gross 4.4 kg
Nett 4.0 kg

Dimensions

Overall 310 x 105 x 35 mm
Zn anode 200 x 105 x 35 mm
Core 30 x 5 mm

[Find product in webshop](#)

MME 5Z



Weight

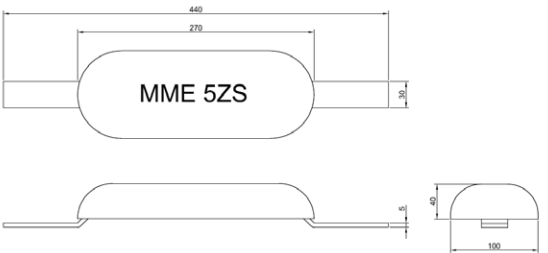
Gross 5.5 kg
Nett 5.0 kg

Dimensions

Overall 440 x 90 x 40 mm
Zn anode 290 x 90 x 40 mm
Core 30 x 5 mm

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MME 5ZS



Weight

Gross 5.5 kg
Nett 5.0 kg

Dimensions

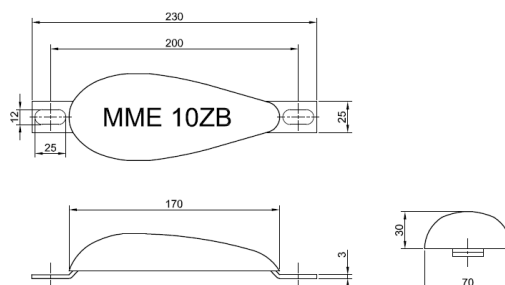
Overall 440 x 100 x 40 mm
Zn anode 275 x 100 x 40 mm
Core 30 x 5 mm

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MME ENGINEERING LTD.

ZINC BOLT ON ANODES

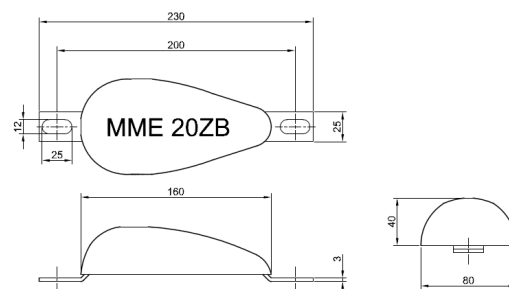
MME 10ZB



Weight		Dimensions		Hole centres 200 mm	
Gross	1.3 kg	Overall	230 x 70 x 30 mm	Zn anode	Core
Nett	1.0 kg			170 x 70 x 30 mm	25 x 3 mm

[Find product in webshop](#)

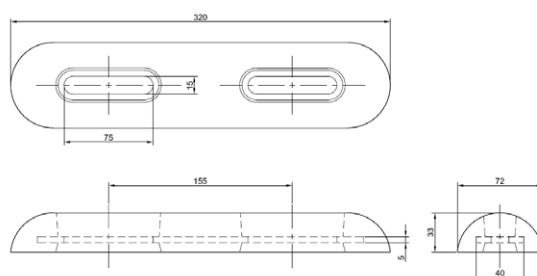
MME 20ZB



Weight		Dimensions		Hole centres 200 mm	
Gross	2.3 kg	Overall	230 x 80 x 40 mm	Zn anode	Core
Nett	2.0 kg			160 x 80 x 40 mm	25 x 3 mm

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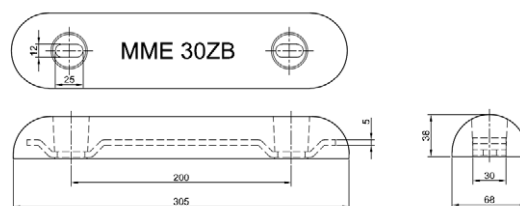
MME 24ZB



Weight		Dimensions		Hole centres 200 mm	
Gross	2.4 kg	Slots 75 mm	Centres 155 mm	Zn anode	Core
Nett	2.7 kg			320 x 72 x 33 mm	40 x 5 mm

[Find product in webshop](#)

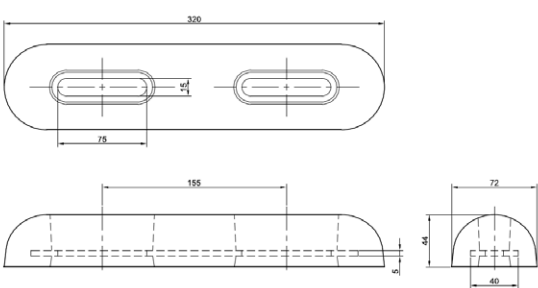
MME 30ZB



Weight		Dimensions		Hole centres 200 mm	
Gross	3.2 kg	Slots 25 mm	Centres 200 mm	Zn anode	Core
Nett	3.0 kg			305 x 78 x 38 mm	30 x 5 mm

[Find product in webshop](#)

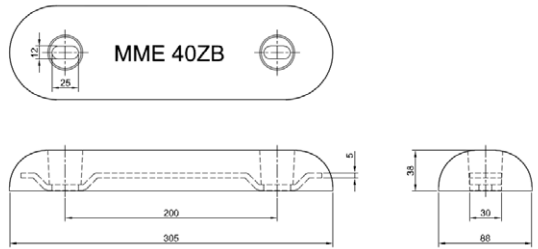
MME 33ZB



Weight		Dimensions		
Gross	3.6 kg	Slots 75 mm	Zn anode	Core
Nett	3.3 kg	Centres 155 mm	320 x 72 x 44 mm	40 x 5 mm

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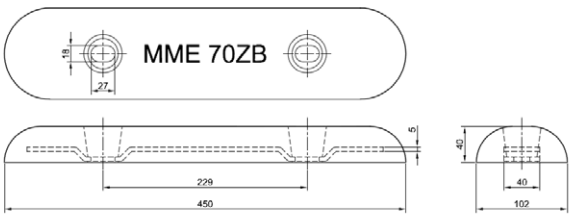
MME 40ZB



Weight		Dimensions		
Gross	4.2 kg	Slots 25 mm	Zn anode	Core
Nett	4.0 kg	Centres 200 mm	305 x 88 x 38 mm	30 x 5 mm

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MME 70ZB



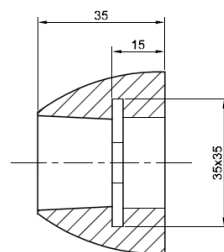
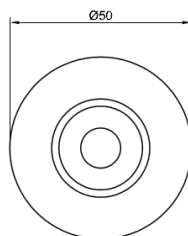
Weight		Dimensions		
Gross	7.5 kg	Slots 27 mm	Zn anode	Core
Nett	7.0 kg	Centres 229 mm	450 x 102 x 40 mm	40 x 5 mm

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MME ENGINEERING LTD.

ZINC BOLT ON DISC ANODES

MME 03ZB



Weight

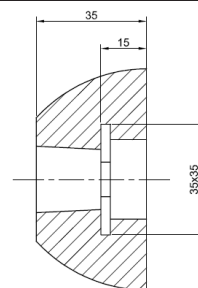
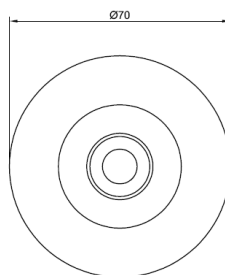
Gross 0.3 kg
Nett 0.25 kg

Dimensions

Zn anode Core
Ø 50 x 35 mm Ø 35 x 3 mm

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MME 05ZB



Weight

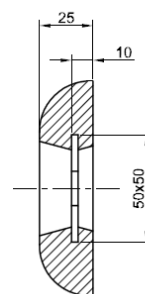
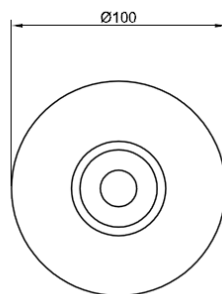
Gross 0.53 kg
Nett 0.5 kg

Dimensions

Zn anode Core
Ø 70 x 35 mm Ø 35 x 3 mm

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MME 1ZB



Weight

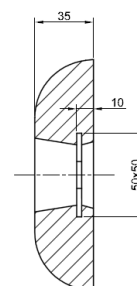
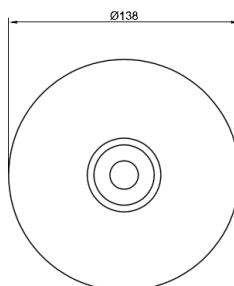
Gross 1.1 kg
Nett 1.0 kg

Dimensions

Zn anode Core
Ø 100 x 25 mm Ø 50 x 3 mm

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MME 2ZB



Weight

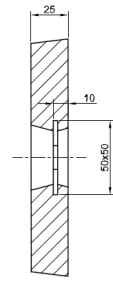
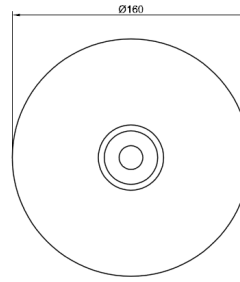
Gross 2.1 kg
Nett 2.0 kg

Dimensions

Zn anode Core
Ø 138 x 35 mm Ø 50 x 3 mm

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MME 27ZB



Weight

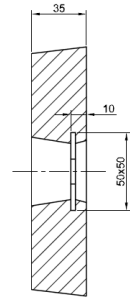
Gross 2.8 kg
Nett 2.7 kg

Dimensions

Zn anode Core
Ø 160 x 25 mm Ø 50 x 3 mm

[Find product in webshop](#)

MME 41ZB



Weight

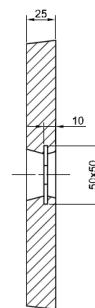
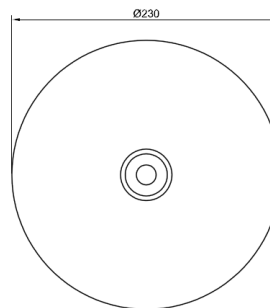
Gross 4.2 kg
Nett 4.1 kg

Dimensions

Zn anode Core
Ø 160 x 35 mm Ø 50 x 3 mm

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MME 71ZB



Weight

Gross 7.2 kg
Nett 7.1 kg

Dimensions

Zn anode Core
Ø 230 x 25 mm Ø 50 x 3 mm

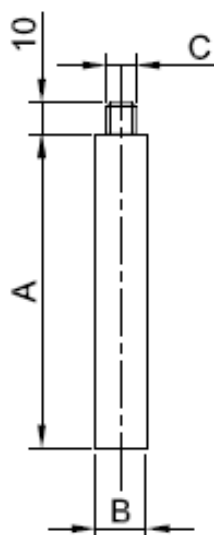
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ZINC PENCIL ANODES

Type	Dimensions in mm		Thread	Weight Grams
	Lenght	Diameter		
MME ZP10-50	50 mm	10 mm	1/4 whit	28 grams
MME ZP10-100	100 mm	10 mm	1/4 whit	56 grams
MME ZP12-50	50 mm	12 mm	1/4 whit	40 grams
MME ZP12-100	100 mm	12 mm	1/4 whit	80 grams
MME ZP16-50	50 mm	16 mm	3/8 whit	71 grams
MME ZP16-100	100 mm	16 mm	3/8 whit	143 grams
MME ZP20-50	50 mm	20 mm	3/8 whit	112 grams
MME ZP20-100	100 mm	20 mm	3/8 whit	224 grams
MME ZP25-50	50 mm	25 mm	3/8 whit	175 grams
MME ZP25-100	100 mm	25 mm	3/8 whit	350 grams

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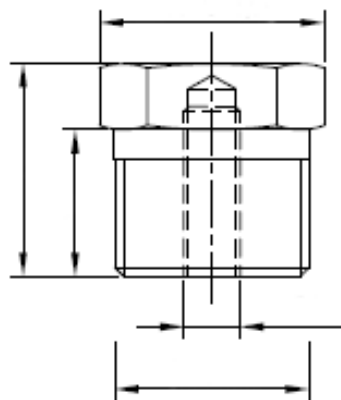


MME ENGINEERING LTD.

BRASS PLUGS

Type	Thread		Suitable for
	External	Internal	
BP1 - Brass Plug	1/4 npt	1/4 whit	ZP10-50 / ZP10-100
BP2 - Brass Plug	3/8 npt	1/4 whit	ZP12-50 / ZP12-100
BP3 - Brass Plug	1/2 npt	3/8 whit	ZP16-50 / ZP16-100
BP4 - Brass Plug	3/4 npt	3/8 whit	ZP20-50 / ZP20-100
BP5 - Brass Plug	1 npt	3/8 whit	ZP25-50 / ZP25-100

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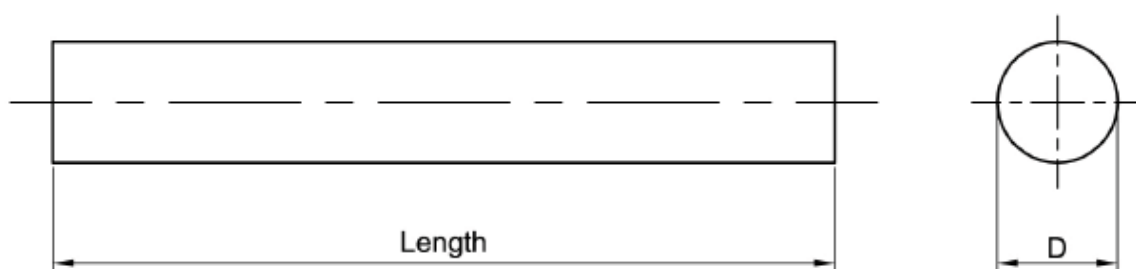


MME ENGINEERING LTD.

ZINC ROD ANODES

Type	Dimensions in mm			Weight Kilograms
	Diameter	Lenght		
MME ZR20	20 mm	500 mm	Nom. Wt.	1.2 kg
MME ZR20-600	20 mm	600 mm	Nom. Wt.	1.4 kg
MME ZR25	25 mm	500 mm	Nom. Wt.	1.8 kg
MME ZR30	30 mm	500 mm	Nom. Wt.	2.5 kg
MME ZR40	40 mm	500 mm	Nom. Wt.	4.5 kg

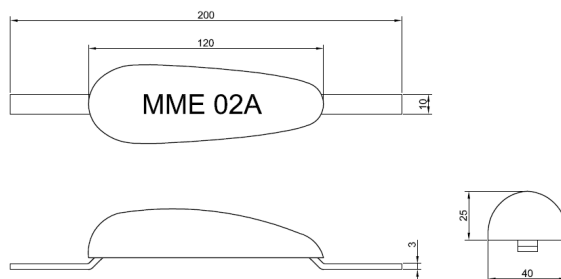
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MME ENGINEERING LTD.

ALUMINIUM HULL ANODES

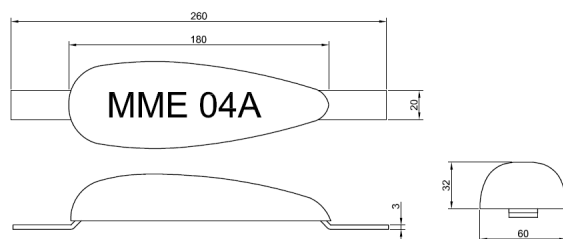
MME 02A



Weight		Dimensions		
Gross	0.25 kg	Overall	Al anode	Core
Nett	0.2 kg	200 x 40 x 25 mm	120 x 40 x 25 mm	10 x 3 mm

[Find product in webshop](#)

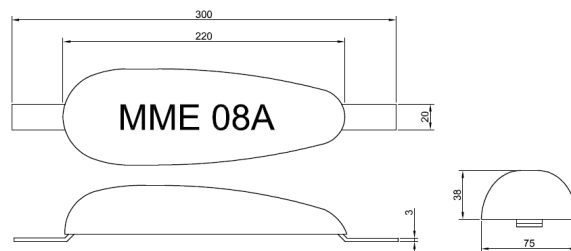
MME 04A



Weight		Dimensions		
Gross	0.5 kg	Overall	Al anode	Core
Nett	0.4 kg	260 x 60 x 32 mm	180 x 60 x 32 mm	20 x 3 mm

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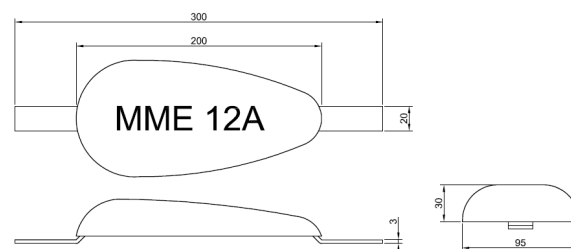
MME 08A



Weight		Dimensions		
Gross	0.9 kg	Overall	Al anode	Core
Nett	0.8 kg	300 x 75 x 38 mm	220 x 75 x 38 mm	20 x 3 mm

[Find product in webshop](#)

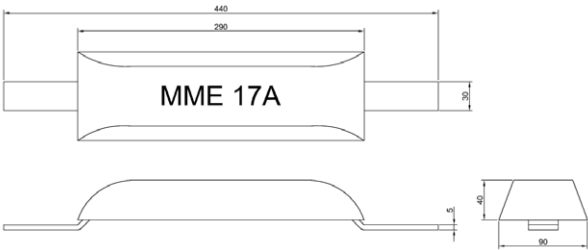
MME 12A



Weight		Dimensions		
Gross	1.4 kg	Overall	Al anode	Core
Nett	1.2 kg	300 x 95 x 30 mm	200 x 95 x 30 mm	20 x 3 mm

[Find product in webshop](#)

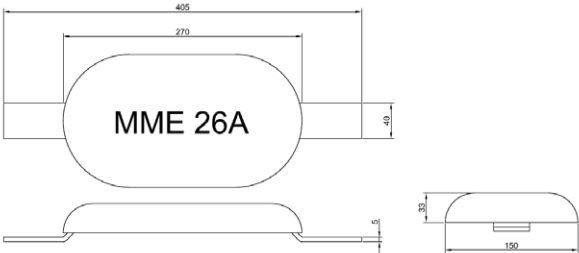
MME 17A



Weight		Dimensions		
Gross	2.2 kg	Overall	Al anode	Core
Nett	1.7 kg	440 x 90 x 40 mm	290 x 90 x 40 mm	30 x 5 mm

Find product in webshop

MME 26A



Weight		Dimensions		
Gross	3.2 kg	Overall	Al anode	Core
Nett	2.6 kg	405 x 150 x 33 mm	270 x 150 x 33 mm	40 x 5 mm

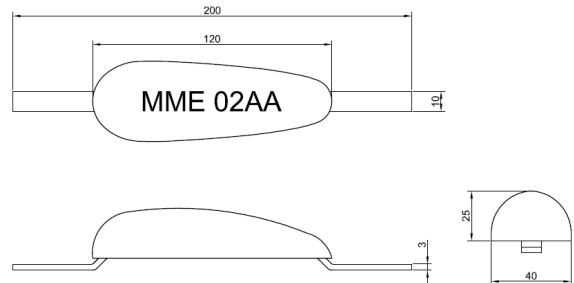
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MME ENGINEERING LTD.

ALUMINIUM HULL ANODES

WITH ALUMINIUM INSERT FOR ALUMINIUM HULLS

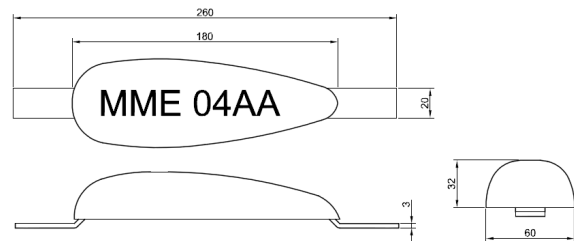
MME 02AA



Weight		Dimensions		
Gross	0.22 kg	Overall	Al anode	Core
Nett	0.2 kg	200 x 40 x 25 mm	120 x 40 x 25 mm	10 x 3 mm

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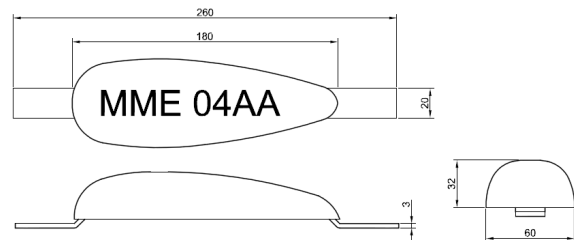
MME 04AA



Weight		Dimensions		
Gross	0.45 kg	Overall	Al anode	Core
Nett	0.4 kg	260 x 60 x 32 mm	180 x 60 x 32 mm	20 x 3 mm

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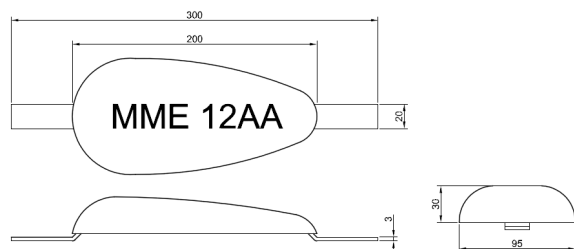
MME 08AA



Weight		Dimensions		
Gross	0.85 kg	Overall	Al anode	Core
Nett	0.8 kg	300 x 75 x 38 mm	220 x 75 x 38 mm	20 x 3 mm

[Find product in webshop](#)

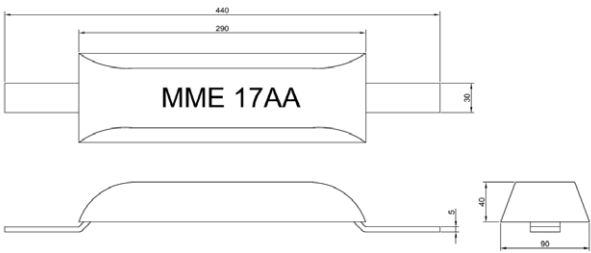
MME 12AA



Weight		Dimensions		
Gross	1.3 kg	Overall	Al anode	Core
Nett	1.2 kg	300 x 95 x 30 mm	300 x 95 x 30 mm	20 x 3 mm

[Find product in webshop](#)

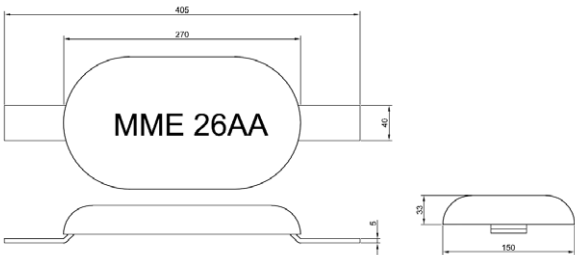
MME 17AA



Weight		Dimensions		
Gross	1.9 kg	Overall	Al anode	Core
Nett	1.7 kg	440 x 90 x 40 mm	290 x 90 x 40 mm	30 x 5 mm

[Find product in webshop](#)

MME 26AA



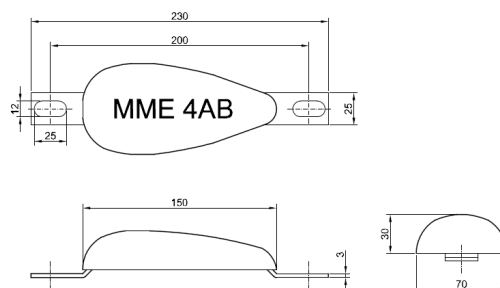
Weight		Dimensions		
Gross	2.9 kg	Overall	Al anode	Core
Nett	2.6 kg	405 x 150 x 33 mm	270 x 150 x 33 mm	40 x 5 mm

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MME ENGINEERING LTD.

ALUMINIUM BOLT ON ANODES

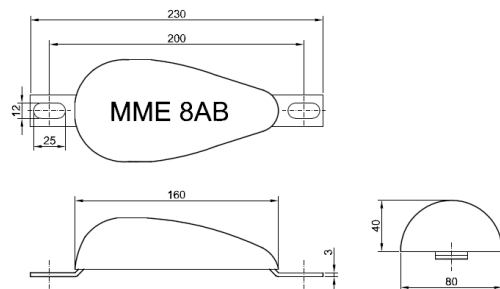
MME 4AB



Weight		Dimensions	Hole centres 200 mm	
Gross	0.6 kg		Al anode	Core
Nett	0.4 kg	Overall 230 x 70 x 30 mm	150 x 70 x 30 mm	25 x 3 mm

[Find product in webshop](#)

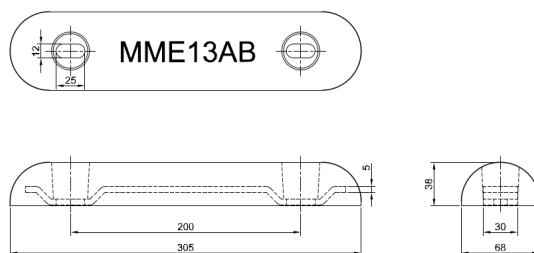
MME 8AB



Weight		Dimensions	Hole centres 200 mm	
Gross	0.9 kg		Al anode	Core
Nett	0.8 kg	Overall 230 x 80 x 40 mm	160 x 80 x 40 mm	25 x 3 mm

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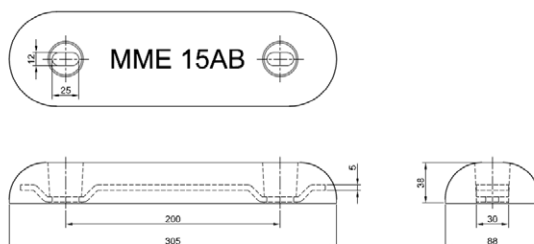
MME 13AB



Weight		Dimensions	Hole centres 200 mm	
Gross	1.5 kg		Al anode	Core
Nett	1.3 kg	Slots 25 mm Centres 200 mm	305 x 78 x 38 mm	30 x 5 mm

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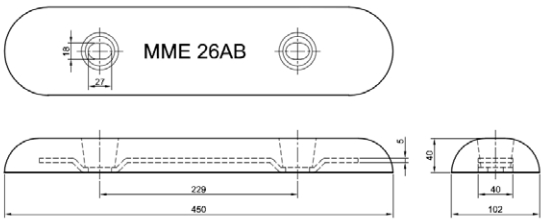
MME 15AB



Weight		Dimensions	Hole centres 200 mm	
Gross	1.7 kg		Al anode	Core
Nett	1.5 kg	Slots 25 mm Centres 200 mm	305 x 88 x 38 mm	30 x 5 mm

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MME 26AB



Weight

Gross	3.1 kg
Nett	2.6 kg

Dimensions

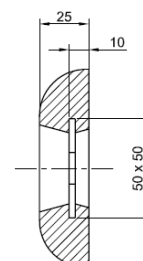
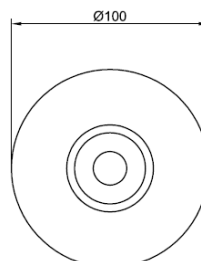
Slots 27 mm	Al anode	Core
Centres 229 mm	450 x 102 x 40 mm	40 x 5 mm

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ALUMINIUM BOLT ON DISC ANODES

MME 04AB



Weight

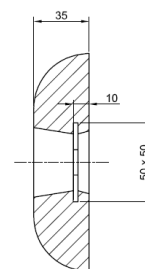
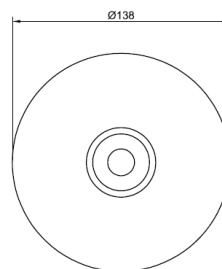
Gross 0.5 kg
Nett 0.4 kg

Dimensions

Zn anode Core
Ø 100 x 25 mm Ø 50 x 3 mm

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MME 08AB



Weight

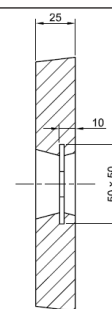
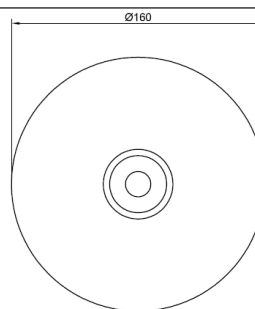
Gross 0.9 kg
Nett 0.8 kg

Dimensions

Zn anode Core
Ø 138 x 35 mm Ø 50 x 3 mm

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MME 12AB



Weight

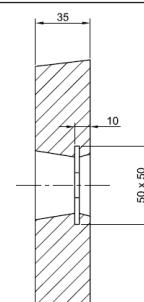
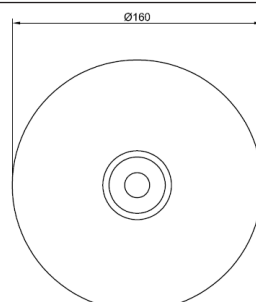
Gross 1.3 kg
Nett 1.2 kg

Dimensions

Zn anode Core
Ø 160 x 25 mm Ø 50 x 3 mm

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MME 16AB



Weight

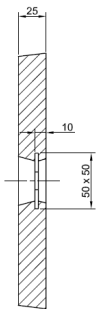
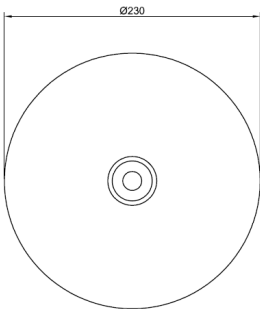
Gross 1.7 kg
Nett 1.6 kg

Dimensions

Zn anode Core
Ø 160 x 35 mm Ø 50 x 3 mm

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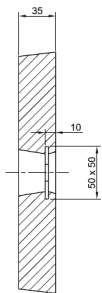
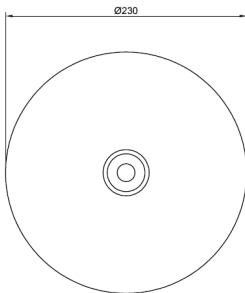
MME 28AB



Weight		Dimensions	
Gross	2.9 kg	Zn anode	Core
Nett	2.8 kg	Ø 230 x 25 mm	Ø 50 x 3 mm

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MME 37AB



Weight		Dimensions	
Gross	3.8 kg	Zn anode	Core
Nett	3.7 kg	Ø 230 x 35 mm	Ø 50 x 3 mm

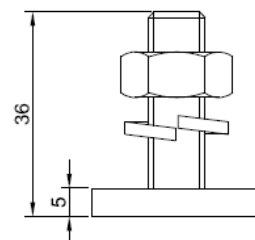
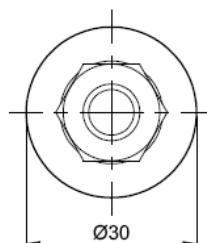
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ACCESSORIES

STUDS FOR STEEL HULLED VESSELS

M10C - mild steel

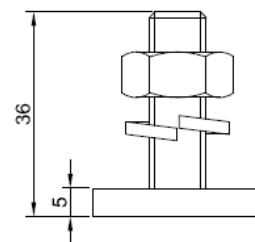
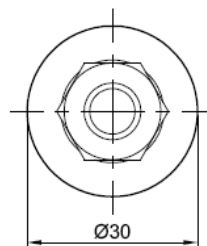


Description

Mild steel stud pads for steel hulled vessels

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M10C - stainless steel

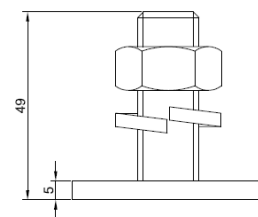
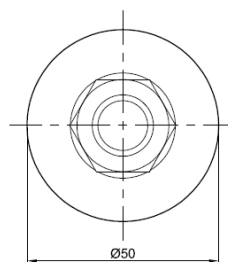


Description

Stainless steel stud pads for steel hulled vessels

Find product in webshop

M16C - mild steel

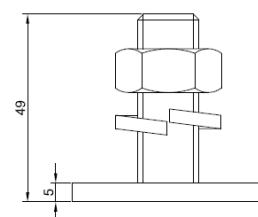
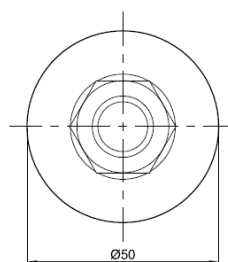


Description

Mild steel stud pads for steel hulled vessels

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M16C - stainless steel



Description

Stainless steel stud pads for steel hulled vessels

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MME ENGINEERING LTD.

ACCESSORIES

FIXING STUDS FOR GRP / WOODEN VESSELS

M10B - mild steel



Description

Mild steel fixing studs GRP / wooden vessels

[Find product in webshop](#)

M10B - stainless steel



Description

Stainless steel fixing studs GRP / wooden vessels

[Find product in webshop](#)

M16B - mild steel



Description

Mild steel fixing studs GRP / wooden vessels

[Find product in webshop](#)

M16B - stainless steel



Description

Stainless steel fixing studs GRP / wooden vessels

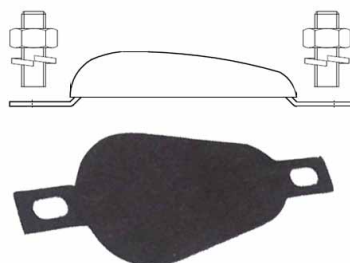
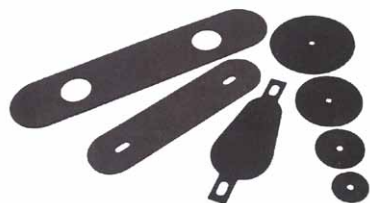
[Find product in webshop](#)

MME ENGINEERING LTD.

ACCESSORIES

BACKING SHEETS

Backing sheets



Description

Neoprene Backing sheets to suit bolt on anodes.

[Find product in webshop](#)

Type	Description	Compatible with
BS025ZB	Neoprene Backing sheets	MME03ZB
BS05ZB	Neoprene Backing sheets	MME05ZB
BS1ZB	Neoprene Backing sheets	MME1ZB / MME04AB
BS20ZB	Neoprene Backing sheets	MME10ZB / MME20ZB / MME4AB / MME8AB
BS2ZB	Neoprene Backing sheets	MME2ZB / MME08AB
BS40ZB	Neoprene Backing sheets	MME30ZB / MME40ZB / MME13AB / MME15AB
BS70ZB	Neoprene Backing sheets	MME70ZB / MME26AB



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