

## ZINC ALLOY WELD-ON HULL ANODES (Z-GUARD®)

Corrosion may be defined as the deterioration of a metal due to a reaction with its environment. For corrosion to occur areas with different electrical potentials must exist on the metal surface. An electrical current will flow between water and fittings made of different metals, causing some of them to corrode away. On wooden & GRP boats the propeller, shaft, p-bracket and skin fitting are at risk, while on a steel hulled vessel the whole underwater area is vulnerable to costly and potentially dangerous damage.

Hull anodes are used and designed to prevent corrosion of the entire immersed steel hull area including exposed shafts, brackets, rudders and propellers.



**Design formula:** Length water line LWL X (Beam + Draught) = wetted surface area. Medium displacement yachts: 3/4. Light displacement yachts: 1/2 area.

## STEEL HULL PROTECTION Schemes

<b>2 ANODE SYSTEM</b>  <b>SAILING YACHT</b> WL <b>MOTOR YACHT</b> <b>WETTED SURFACE AREA</b> 0 – 15m <sup>2</sup> <b>TYPE</b> 2 x ZGS5R or ZGW5R <b>SCHEME LIFE</b> 1 YEAR	<b>8 ANODE SYSTEM</b>  <b>SAILING YACHT</b> WL <b>MOTOR YACHT</b> <b>WETTED SURFACE AREA</b> 150 – 200m <sup>2</sup> <b>TYPE</b> 8 x ZGS25MR or ZGW15 <b>SCHEME LIFE</b> 1 YEAR
<b>4 ANODE SYSTEM</b>  <b>SAILING YACHT</b> WL <b>MOTOR YACHT</b> <b>WETTED SURFACE AREA</b> 15 – 30m <sup>2</sup> <b>TYPE</b> 4 x ZGS5R or ZGW5R <b>SCHEME LIFE</b> 1 YEAR	<b>10 ANODE SYSTEM</b>  <b>SAILING YACHT</b> WL <b>MOTOR YACHT</b> <b>WETTED SURFACE AREA</b> 200 – 250m <sup>2</sup> <b>TYPE</b> 10 x ZGS25MR or ZGW15 <b>SCHEME LIFE</b> 1 YEAR
<b>6 ANODE SYSTEM</b>  <b>SAILING YACHT</b> WL <b>MOTOR YACHT</b> <b>WETTED SURFACE AREA</b> 50 – 100m <sup>2</sup> <b>TYPE</b> 6 x ZGS10R or ZGW10R <b>SCHEME LIFE</b> 1 YEAR	<b>12 ANODE SYSTEM</b>  <b>SAILING YACHT</b> WL <b>MOTOR YACHT</b> <b>WETTED SURFACE AREA</b> 250 – 300m <sup>2</sup> <b>TYPE</b> 12 x ZGS25MR or ZGW15 <b>SCHEME LIFE</b> 1 YEAR



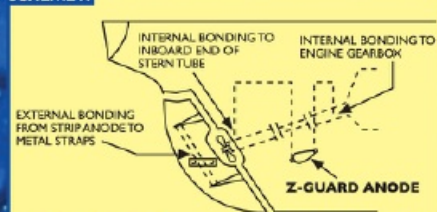
## ZINC ALLOY BOLT-ON HULL ANODES (Z-GUARD®)

The Z-Guard Anode Systems exploits the same electrical process as explained earlier to protect your valuable underwater fittings. Z-Guard Sacrificial anodes (Zinc for sea water, Aluminium for brackish water or Magnesium for fresh water) become part of the electrical "circuit" and waste away instead of objects made of more precious metals.



## GRP/WOODEN PROTECTION SCHEMES

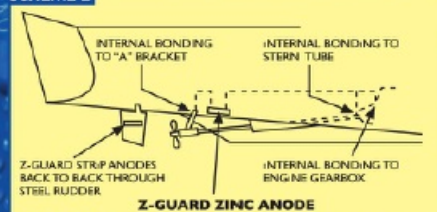
SCHEME A



SCHEME A Prop. only (Rudder as above)

PROP.DIA: Up to 29"  
ANODE: 1 x ZGS5R  
PROP.DIA: 30"-36"  
ANODE: 1 x ZGS10R  
PROP.DIA: 37"-60"  
ANODE: 1 x ZGS25R

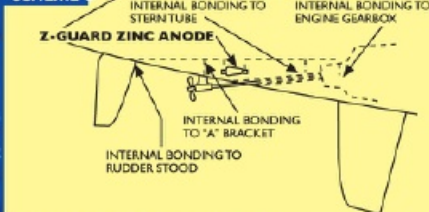
SCHEME B



SCHEME B Prop./s., shaft & A brackets (Rudder/s as above)

PROP.DIA: Up to 21"  
ANODE: 1 x ZGS5R  
PROP.DIA: 22"-30"  
ANODE: 1 x ZGS10R  
PROP.DIA: 31"-54"  
ANODE: 1 x ZGS25R

SCHEME C



SCHEME C Prop. and rudder

PROP.DIA: Up to 26"  
ANODE: 1 x ZGS5R  
PROP.DIA: 27"-33"  
ANODE: 1 x ZGS10R  
PROP.DIA: 34"-54"  
ANODE: 1 x ZGS25R



## SHAFT ANODES WITH INSERTS



The original and best shake-proof shaft anode. Low drag easy to fit anodes for sailing yacht and power craft alike. Cast-in steel inserts for positive electrical contact and firm hold, ensuring they stay put! Bolts included.

ZGP7 - 7/8"	ZGP11 - 1 3/8"
ZGP8 - 1"	ZGP12 - 1 1/2"
ZGP9 - 1 1/8"	ZGP25 - 25mm
ZGP10 - 1 1/4"	ZGP30 - 30mm

## SHAFT GLOBE ANODES



SGA 3/4 - 3/4"	SGA 2 1/2 - 2 1/2"
SGA 7/8 - 7/8"	SGA 3 3/4 - 3 3/4"
SGA 1 - 1"	SGA 3 - 3"
SGA 1 1/8 - 1 1/8"	SGA 3 1/2 - 3 1/2"
SGA 1 1/4 - 1 1/4"	SGA 20 - 25mm
SGA 1 3/8 - 1 3/8"	SGA 30 - 30mm
SGA 1 1/2 - 1 1/2"	SGA 40 - 40mm
SGA 1 3/4 - 1 3/4"	SGA 50 - 50mm
SGA 2 - 2"	SGA 60 - 60mm
SGA 2 1/4 - 2 1/4"	

## SHAFT COLLARS



AZ20S - 20mm	AZ50S - 50mm
AZ25S - 25mm	AZ 1 1/4S - 2 1/4"
AZ28S - 1 1/8"	AZ 1 1/2S - 2 1/2"
AZ30S - 30mm	AZ 2 3/4S - 2 3/4"
AZ35S - 1 3/8"	AZ3S - 3"
AZ38S - 1 1/2"	AZ 3 1/2S - 3 1/2"
AZ40S - 40mm	AZ4S - 4"
AZ45S - 45mm	

## ACCESSORIES



**FIXING STUDS STEEL HULLS**  
M10S - M10 THREAD, 37mm DIA PLATE  
M16S - M16 THREAD, 50mm DIA PLATE



**FIXING STUDS WOOD & GRP HULLS**  
M10G - 108mm O/L M10 THREAD  
M16G - 150mm O/L M16 THREAD

### BACKING SHEETS:

ZGS5BP
ZGS10BP
ZGS25BP
ZGR2BP
ZGR5BP
ZGST12BP
ZGST15BP

These black expanded polyethylene backing sheets are for positioning beneath the anode when fitted to a wood or GRP hull. They ensure a more satisfactory and shake-proof installation between two surfaces which may not be absolutely flat.

## ZINC STRIP



Thin section strip anodes for use on sailing yachts and fast motor boats where minimum water resistance is required - some boats accommodate these anodes in special hull recesses.

ZGST5 - 5"	ZGST12D - 12", 2 Holes	ZGST24 - 24"
ZGST6 - 6"	ZGST15 - 15"	ZGST36 - 36"
ZGST6D - 6", 1 Hole	ZGST15D - 15", 2 Holes	ZGST39 - 39"
ZGST12 - 12"	ZGST18 - 18"	ZGCP4

## ZINC ROD



Zinc Rod is used to manufacture zinc engine anodes and are available in the following sizes:

ZR12 - 12mm x 500mm - NOM WT 0.4kg	ZR50 - 50mm x 500mm - NOM WT 7kg
ZR16 - 16mm x 500mm - NOM WT 0.7kg	ZR60 - 60mm x 500mm - NOM WT 10kg
ZR20 - 20mm x 500mm - NOM WT 1.25kg	ZR70 - 70mm x 500mm - NOM WT 13.7kg
ZR25 - 25mm x 500mm - NOM WT 1.80kg	ZR80 - 80mm x 500mm - NOM WT 17.7kg
ZR30 - 30mm x 500mm - NOM WT 2.5kg	ZR90 - 90mm x 500mm - NOM WT 22.7kg
ZR40 - 40mm x 500mm - NOM WT 4.5kg	ZR100 - 100mm x 500mm - NOM WT 27.7kg
	ZR125 - 125mm x 500mm - NOM WT 46.5kg
	ZR150 - 150mm x 500mm - NOM WT 66.5kg

## ZINC ENGINE ANODES



Pencil anode and plug. For use in sea water (direct cooled) engines. Plug is screwed into engine water jacket.

375/2" - 3/8" Dia x 2" Long	ZGHE - LISTER PETTER
375/4" - 3/8" Dia x 4" Long	625/4" - 5/8" Dia x 4" Long
500/2" - 1/2" Dia x 2" Long	750/2" - 3/4" Dia x 2" Long
500/4" - 1/2" Dia x 4" Long	750/4" - 3/4" Dia x 4" Long
625/2" - 5/8" Dia x 2" Long	1050/2" - 1.05" Dia x 2" Long
	1050/4" - 1.05" Dia x 4" Long

## BRASS PLUGS

250BP - TO SUIT 375 PENCIL ANODE
375BP - TO SUIT 500 PENCIL ANODE
500BP - TO SUIT 625 PENCIL ANODE
750BP - TO SUIT 750 PENCIL ANODE
1000BP - TO SUIT 1050 PENCIL ANODE

## KELVIN ANODES



ZGA 625	- 0.625" x 0.75"
ZGA 825	- 0.825" x 0.75"
ZGA 1050	- 1.05" x 0.75"
ZGA 1050M Female Thread	- 1.05" x 0.75"



## A-GUARD® ANODES

Aluminium Anodes are used for protecting vessels operating in brackish water and protect to the same levels as zinc anodes.



**AGR2**  
Weight: 0.4 Kg  
Dia: 100mm

**AGR5**  
Weight: 1 Kg  
Dia: 138mm

**AGW5R**  
Weight: 1 Kg

**AGW7R**  
Weight: 1.5 Kg

**AGW10R**  
Weight: 2 Kg

**AGW12**  
Weight: 2.5 Kg

**AGW15**  
Weight: 4 Kg

**AGW20**  
Weight: 4.5 Kg

**AGW30R**  
Weight: 6 Kg

**AGW35**  
Weight: 9 Kg

**AGW45**  
Weight: 11.5 Kg

**A8**  
Weight: 8 Kg

**A10**  
Weight: 10 Kg

## M-GUARD® ANODES

Magnesium Anodes are used for protecting vessels operating in fresh water. Recommended Magnesium Anode Requirements for Corrosion Prevention on Canal and Cruising Boats in Fresh Water can be seen in the table below.



**MGR2**  
Weight: 0.25 Kg  
Dia: 100mm

**MGR5**  
Weight: 0.75 Kg  
Dia: 138mm

**MG55R**  
Weight: 0.8 Kg

**MGW7R**  
Weight: 1 Kg

**MG510R**  
Weight: 1.3 Kg  
Centres: 200mm

**MGW10R**  
Weight: 1.5 Kg

**MGW15**  
Weight: 2.6 Kg

**MGW20**  
Weight: 3.5 Kg

**MGW30R**  
Weight: 4.5 Kg

Canal Boat Length	Wetted Surface Area	2 Year Plan	Cruising Boat Length	Wetted Surface Area	2 Year Plan
UP TO 30' x 6' 10" x 2' (9.15 x 2.1 x 0.61)	LPTO 300 sq. ft. (28m²)	4 x MGW10R	LPTO 40' x 10" x 2' (12.19 x 3.05 x 0.61)	UP TO 350 sq. ft. (32m²)	4 x MGW20
UP TO 50' x 6' 10" x 2' (15.25 x 2.1 x 0.61)	UP TO 301-450 sq. ft. (28-42m²)	4 x MGW20	LPTO 50' x 10" x 2' (15.25 x 3.05 x 0.61)	UP TO 351-500 sq. ft. (32-42m²)	4 x MGW20
UP TO 60' x 6' 10" x 2' (18.35 x 2.1 x 0.61)	UP TO 451-550 sq. ft. (43-51m²)	6 x MGW20	LPTO 60' x 10" x 2' (18.35 x 3.05 x 0.61)	UP TO 451-550 sq. ft. (42-51m²)	6 x MGW20
UP TO 70' x 6' 10" x 2' (21.30 x 2.1 x 0.61)	UP TO 551-700 sq. ft. (51-65m²)	6 x MGW30R	LPTO 70' x 10" x 2' (21.30 x 3.05 x 0.61)	UP TO 551-700 sq. ft. (51-65m²)	6 x MGW30R

## Z-GUARD® TANK ANODES

Tank anodes are used to complement the coating at areas of exposed steel prolonging the life of the coating and structure. Hydrogen is evolved from aluminium anodes and thermite sparking may occur when light alloys impact on rusty steel. Therefore there is a height restriction in cargo/ballast tanks in tankers that anodes are not located at a height (in m) greater than 27/W where W is the total mass (in kg) of the anode and insert.



**ZGT10** - 10kg

**ZGT15** - 15kg

**ZGT22** - 22kg

**ZGT30** - 30kg

**ZGT40** - 40kg

**ZGT50** - 50kg

## A-GUARD® TANK ANODES



**AGT5** - 5kg

**AGT10** - 10kg

**AGT15** - 15kg

**AGT20** - 20kg

**AGT25** - 25kg

**AGT30** - 30kg

Fixings are available as Straight Core, Double Cranked or with Integral Clamp.



Aluminium outboards should be protected with zinc anodes in sea water, as aluminium anodes produce alkalinity at the cathode which can effect the aluminium casing. Magnesium anodes are available for fresh water environments. (See anodes with \*).



## MERCURY



## HONDA



## OMC



## VOLVO





## BENETEAU ANODES



22/25mm 40mm  
30mm 45mm  
35mm 50mm

## SUZUKI



Z3C7602/8/A0  
TRANSOM BAR



Z55320-95310  
TRANSOM PLATE



Z55125-9630  
SMALL FIN



Z55125-87D00  
FIN ANODE

## YANMAR



COLLAR  
ANODE



Z104211-41300  
PENCILANODE

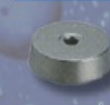


Z27210-200-300  
PENCILANODE



Z27210-200-200  
PENCILANODE

## YAMAHA



Z688-45251-01  
ZINC BUTTON



Z6E0-45251-11  
ZINC BLOCK



Z664-45371-01  
ZINC FIN



Z6J9-45371-00  
ZINC FIN



Z6H1-45251-02  
TRANSOM ON



## MAX PROP



63mm  
70mm  
83mm

## BUKH



Z00E-5829  
COLLARANODE

### MERCURY FORCE MARINER



### MERCURUISER STERN DRIVE



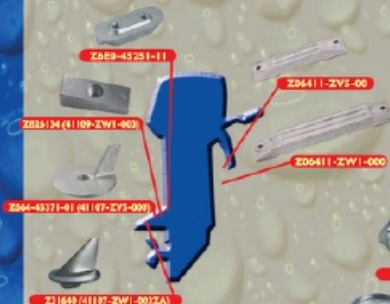
### OMC STERN DRIVE



### OMC JOHNSON EVINRUDE



### HONDA



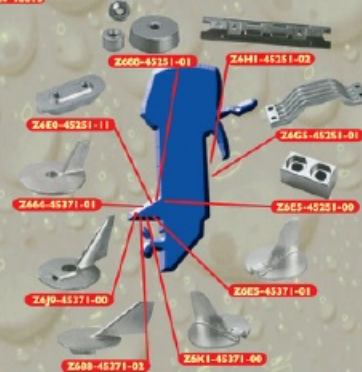
### VOVLO STERN DRIVE



### SUZUKI



### YAMAHA





## SHAFT EARTHING



This is the ultimate in protection in the fight against corrosion, it monitors the condition of your anode and the efficiency of your shaft and propeller protection at the touch of a button

The anode alert system will fit any diameter shaft, offering an effective and high performance shaft bonding solution.

Unlike any other shaft bonding system the anode alert constantly monitors the cleanliness of the shaft and will alert you to any unusual electrical activity in the water surrounding your vessel.

The versatile design of the Anode Alert System enables it to be fitted to most types of vessels in salt, brackish or fresh water.

## GALVANIC ISOLATOR

The galvanic isolator provides galvanic protection while connected to shore power supply.

The heavy-duty design allows it to safely carry earth fault currents whilst remaining sensitive enough to block stray galvanic currents while connected shore power.



## MGPS



Marine fouling and bio-fouling can form at all depths and temperatures and is commonly found in boats sea water cooling systems.

Z-Guard has developed a minute marine growth prevention system (MGPS) adopted for the pleasure craft. We use a specially formulated copper alloy rod anode to prevent marine fouling, and a built-in cathode to allow the system to be utilised with any type of pipe work. The anodes are supplied DC current through a power unit that is powered from the boats 12v-24v battery supply.

An MGPS, once fitted requires little maintenance and is not damaging to the environment.

## ALWC

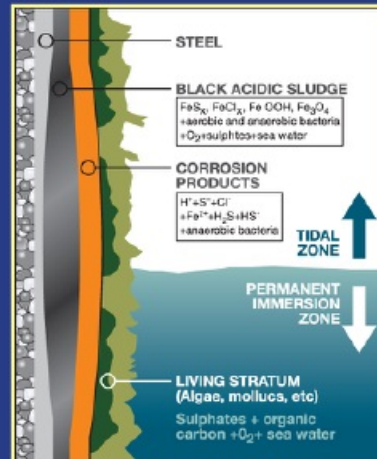


It is now evident that steel piles and mooring chains corrode at rates far in excess of what is known as acceptable due to an increase by the presence a phenomenon known as

**Accelerated Low Water Corrosion (ALWC).**

Identified by orange soft organic bacteria, with a black layer hiding bright, pitted steel.

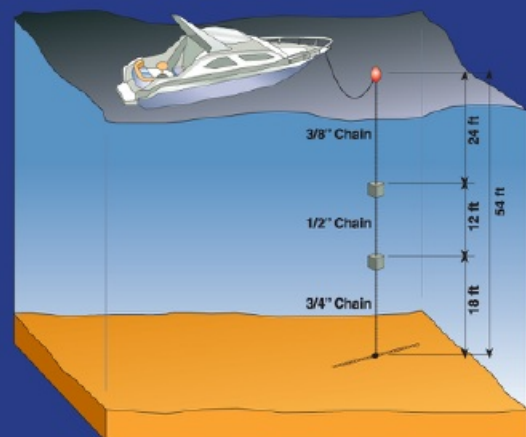
Research revealed that Cathodic Protection greatly reduces the corrosion rate in the presents of ALWC.



## CHAIN ANODE

Z-Guard Zinc Anodes produce two sizes in mooring anodes; one for 1/4 inch and one for 1/2 inch chains and they are available in

both Zinc for seawater and Aluminium for estuarine environments. The chain anodes are cast around links tested chains conforming to BS590 and BS6405. Each anode has a free link at each end to allow it to be easily shackled into the riser.



## HANGING ANODE

### ZG SHARK

Normally used as temporary protection during fitting out or when the anode requires visual monitoring. Available in zinc for sea water, aluminium for brackish water and magnesium for fresh water.

