



CIS ELEKTROTECHNIK GMBH

Wellseedamm 13  
24145 Kiel-Wellsee  
Tel.: +49 431 7197 003  
Fax :+49 431 7197 004  
e-mail: [jp@cis-ship.com](mailto:jp@cis-ship.com)  
[www.cis-ship.com](http://www.cis-ship.com)

*CIS \* Postfach 7023 \* 24170 KIEL / Germany*



## About Us

### OCEANIC TECHNOLOGIES

In 2009, four European companies specializing in Cathodic Protection decided to join forces and OCEANIC TECHNOLOGIES was created. The idea behind this association was to share knowledge and resources and invest in research and development in the fields of Cathodic Protection (by sacrificial anodes or ICCP systems) and Marine Growth Prevention (Cu ion or sodium hypochlorite systems, MGPS), as well as to offer an extensive range of products and services and create a global service network of associates, agents and service stations strategically placed worldwide.

The main activities of the association are Cathodic Protection by Sacrificial Anodes or Impressed Current Systems (ICCP), Marine Growth Prevention for sea water cooling systems (MGPS), Ultrasonic Thickness Gauging, Steel/ Coating Inspections, Superintendence services, Ventilation systems, QC Marine NDT Services, supply of marine electrical equipment.

Although the main involvement of the group concerns marine-and-offshore oriented projects, valuable experience on onshore Cathodic Protection projects has been acquired over the years.

More Details: [www.oceanic-technologies.eu/](http://www.oceanic-technologies.eu/)



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## **Sacrificial Anodes**

Sacrificial or galvanic anodes have been used for almost two centuries to prevent corrosion. The first documented use of Sacrificial anodes is described by Sir Humphry Davy in a series of papers presented to the Royal Society in London in 1824.

This technique is called Cathodic Protection (CP), where the corrosion of a metal surface is being controlled by making it work as a cathode of an electrochemical cell. This is achieved by placing in contact with the metal to be protected another more easily corroded metal to act as the anode of the electrochemical cell. Cathodic protection systems are most commonly used to protect steel, water or fuel pipelines and storage tanks, steel pier piles, ships, offshore oil platforms and onshore oil well casings.

Sacrificial or Galvanic anodes are designed and selected to have a more "active" voltage (technically a less negative electrochemical potential) than the metal of the structure (typically steel). For effective CP, the potential of the steel surface is polarized (pushed) more negative until the surface has a uniform potential. At that stage, the driving force for the corrosion reaction is halted. The sacrificial or galvanic anode continues to corrode; consuming the anode material until eventually it must be replaced. The polarization is caused by the electron flow from the anode to the cathode. The driving force for the CP current flow is the difference in electrochemical potential between the anode and the cathode.

Today, galvanic or sacrificial anodes are made in various shapes using alloys of zinc, aluminium magnesium and in some cases soft iron.

Oceanic Technologies has sacrificial anode production facilities and stock points world-wide. Aluminium and Zinc alloyed anodes can be found in most of our stock points and factories and magnesium and soft iron anodes are available upon request.

Oceanic Technologies has sacrificial anode production facilities and stock points world-wide. The Aluminum and Zinc alloyed anodes listed in this catalogue, can be found in most of our stock points and factories.

Our Zinc alloys are the ASTM B-418 type I, equivalent to US MIL A 18001 K and the cadmium free ASTM B-418 type II, and the Aluminum alloy with the following compositions and properties:



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## Aluminum and Zinc Alloyed Anode Catalogue

Composition	Alloy	ASTM B-418 type I	ASTM B-418 type II
Zinc (%)	2.8 – 6.5	Balance	Balance
Aluminum (%)	Remainder	0.1-0.5	0.005 max
Copper (%)	0.006 max	0.006 max	0.002 max
Silicon (%)	0.10 max	-	-
Iron (%)	0.15 max	0.005 max	0.0014 max
Titanium (%)	0.025 max	-	-
Bismuth (%)	0.02 max	-	-
Indium (%)	0.01–0.02	-	-
Lead (%)	-	0.006 max	0.003 max
Cadmium (%)	-	0.02-0.07	0.003 max
Nominal Electromechanical Capacity (Ahr/Kg)	2600	780	780
Nominal Solution Potential (V)	1,1	1,1	1,05
Density (kg/m <sup>3</sup> )	2710	7000	7000

**Apart from our standard alloys listed above, other alloys can be manufactured to meet customer specifications.**

Table #1. Aluminium Alloyed Flush Mounted Anodes							
Type	A (mm)	B (mm)	C (mm)	D (mm)	Insert (mm)	NWT (kg)t	GWT (kg)
W131	300	200	95	32	20x3	1.2	1.3
W130	350	270	150	32	40x6	2.6	3.2
W111	500	400	150	32	40x6	4.0	5.0
W114	650	550	130	50	40x6	8.0	9.2
W117	650	550	130	65	50x6	10.1	11.6
W119	650	550	130	75	50x6	12.6	14.1
W118	650	550	130	95	50x6	16.5	18.0
W124	1015	920	130	50	50x6	13.0	15.4
W126	1015	920	130	75	50x6	21.0	23.4
W128	1015	920	130	105	50x6	30.0	32.4

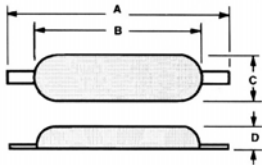


Table #2. Aluminium Alloyed Slender Stand-Off Anodes*								
Type	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F Dia. (mm)	NWT (kg)	GWT (kg)
W110	1225	765	50	40	50	12	4.2	5.3
W156	765	305	70	50	76	12	3.3	3.8
W155	1070	610	70	50	76	12	7.1	8.1
W154	1222	762	70	50	76	12	8.7	10.0
W153	1476	1016	70	50	76	12	14.5	16.3
W152	1730	1270	70	50	76	12	14.5	16.3
W151	1984	1524	70	50	76	12	17.3	19.3
W196	765	305	95	75	85	12	5.8	6.5
W195	1060	600	95	75	85	12	12.2	13.1
W194	1210	750	95	75	85	12	15.0	16.1
W193	1465	1005	95	75	85	12	20.2	21.5
W192	1720	1260	95	75	85	12	25.4	26.9

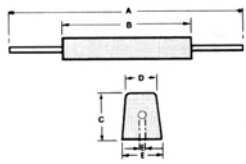


Table #3. Zinc Alloyed Flush Mounted Anodes							
Type	A (mm)	B (mm)	C (mm)	D (mm)	Insert (mm)	NWT (kg)t	GWT (kg)
WP3	300	200	95	30	40x3	3.1	3.2
W6Z	350	270	150	32	40x6	6.5	7.1
W11Z	500	400	150	32	40x6	10.8	11.8
W14Z	650	550	130	50	40x6	21.3	22.5
W17Z	650	550	130	65	50x6	25.0	26.5
W18Z	650	550	130	95	50x6	42.6	44.1
W19Z	650	550	130	75	50x6	33.0	34.5
W24Z	1015	920	130	50	50x6	35.0	37.4

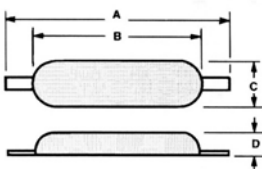
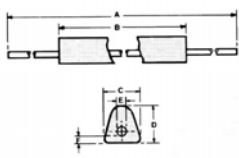
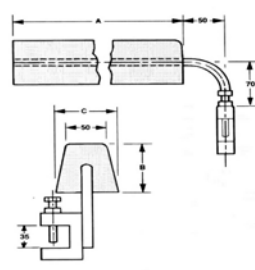




	Table #4. Zinc Alloyed Flush Mounted Anodes (drop shape)							
	Type	A (mm)	B (mm)	C (mm)	D (mm)	Insert (mm)	NWT (kg)t	GWT (kg)
	WP1	260	180	60	32	20x3	1.0	1.1
	WP2	300	220	75	38	20x3	2.15	2.3
	WP5	380	290	100	50	30x5	4.55	5.0
	W10Z	400	280	150	75	40x6	10.0	10.7
	W16Z	520	420	160	70	40x6	15.0	16.0

	Table #5. Zinc Alloyed Slender Stand-Off Anodes*								
	Type	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F Dia. (mm)	NWT (kg)	GWT (kg)
	WT50Z	1676	1219	63	57	12	19	21.0	22.5
	WT70Z	1676	1219	76	68	12	23	30.0	32.0
	WT90Z	1676	1219	82	78	12	25	40.0	42.0

	Table #6. "C" Clamp Mounted Slender Stand-Off Anodes (Pit Guard)						
	Type	Alloy	A (mm)	B (mm)	C (mm)	F Dia. (mm)	NWT (kg)
	AT2235	Aluminium	193	70	76	2.25	2.25
	AT2235/1	Aluminium	386	70	76	4.5	4.5
	AT2235/2	Aluminium	344	70	76	4.0	4.0
	ZT2247	Zinc	332	70	76	10.0	10.0

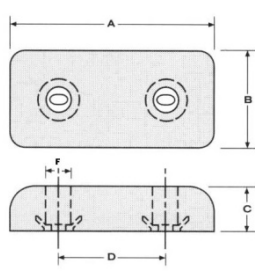
	Table #7. Standard Bolted Anodes					Aluminum Alloy	Zinc Alloy	
	Type	A (mm)	B (mm)	C (mm)	D (mm)	F (mm)	GWT (kg)	GWT (kg)
	B4	200	100	40	110	50	1.8	4.20
	B9E	300	150	40	160	50	4.6	11.0
	B9F	300	150	50	160	50	5.5	13.8
	B9H	300	150	60	160	50	6.5	16.5
	B9G	300	150	65	160	50	7.0	18.0
	B12E	300	200	40	160	50	6.6	15.2
	B12F	300	200	50	160	50	7.5	18.8
	B12H	300	200	60	160	50	9.7	25.0
	B12G	300	200	65	160	50	10.7	26.8

Table #8. Aluminum Alloyed Bolted Anodes							
Type	A (mm)	B (mm)	C (mm)	D (mm)	F (mm)	NWT (kg)	GWT (kg)
MF 134 E	400	180	40	180	50	7.4	7.8
MF 134 F	400	180	50	180	50	9.3	9.7
MF 134 H	400	180	60	180	50	11.2	11.6
MF 134	400	180	70	180	50	13.0	13.4

Table #9. Aluminum Alloyed Bolted Anodes							
Type	A (mm)	B (mm)	C (mm)	D (mm)	F (mm)	NWT (kg)	GWT (kg)
RF-118	460	200	64	260	50	11.5	11.8
RF-155	540	200	65	340	50	15.1	15.4

Table #10. Zinc Alloyed Rods			
Type	Diameter (mm)	Length (mm)	Weight (kg)
ZR 20	20	300	1.00
ZR 30	30	300	1.70
ZR 40	40	300	3.00
ZR 50	50	300	4.50
ZR 60	60	300	6.20
ZR 70	70	300	8.50
ZR 80	80	300	10.80
ZR 90	90	300	14.00
ZR 100	100	300	16.50
ZR 110	110	300	20.00
ZR 120	120	300	23.80

Anode lengths given on tables 2 and 5 are standard, but other lengths can be supplied to order

All weights and dimensions are nominal

Your local OCEANIC TECHNOLOGIES representative is:

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