Ned Marine
services B.V.

# Sacrificial Anodes

# Cathodic Protection

**Ned Marine Services B.V. has the experience to supply and deliver the right Cathodic protection for all your projects. Whether to supply anodes for a yacht, a seagoing vessel or a harbor quay, Ned Marine Services B.V. delivers her clients the right anodes.**
**Is Ned Marine Services B.V. different from many others, we say YES because we distinguish ourselves as follows:**

***A large stock and resulting in very competitive prices and a quick delivery***
Ned Marine Services B.V. gets the anodes delivered in her warehouse in large quantities, therefore we are able to supply from stock against very competitive prices.

***Anodes of superb quality***
The production of our anodes is done under very strict quality control regulations and according the ISO 9001 norm.

***Delivery of the many types, measurements and sizes***
Whether it is magnesium, aluminum or zinc, weld-on type or bolt-on type, hull or tank anodes, Ned Marine Services B.V. can provide all your requirements for cathodic protection.

***One contact from enquiry to delivery***
One dedicated contact person from the receipt of your enquiry until final delivery has been done assuring you of undivided personal attention via the shortest possible line in an organization.

***Delivery worldwide possible***
Via her global network Ned Marine Services B.V. receives enquiries from all over the world; since the production of the anodes is done at various places in different continents of the world, Ned Marine Services B.V. is also able to deliver worldwide on short notice against a very cost effective manner.

***Clear description including drawings of the supplied anodes***
With every enquiry or order, Ned Marine Services B.V. provides a clear drawing of the subject anodes. This part of our excellent service, assures our customers of the exact knowledge what will be delivered.

## Mastering Corrosion

# Cathodic Protection

**Ned Marine Services B.V. is 24/7 available to give expert advice in relation to Cathodic protection. Besides an explanation about the different kind of anodes, it is our pleasure to clarify which anodes are to be used where.**

**Magnesium Anodes**

In case of Cathodic protection requirements for steel objects in fresh water, Ned Marine Services B.V. advises the use of magnesium anodes. Magnesium has a rather low potential itself, and the potential difference compared to freshwater is large, so Magnesium as material suits perfectly as a Cathodic protection for steel objects in freshwater.

Magnesium anodes are available in a variety of dimensions and weights. Please contact our sales department for more detailed info.

**Aluminium anodes**

In case of Cathodic protection requirements for steel objects in both brackish water as well as (salt) seawater, Ned Marine Services B.V. advises the use of Aluminum anodes. Compared with saltwater, freshwater has a higher electrical resistance, therefore and due to the difference in potential difference of zinc and aluminum, aluminum is the better choice as a Cathodic protection material for steel objects in both brackish water as well as in seawater.

Enclosed you will find a selection of the most requested anodes.

**Zinc anodes**

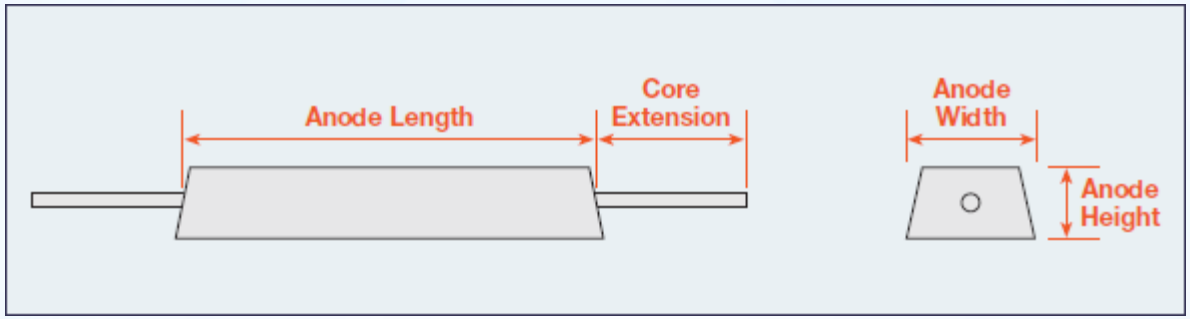
In case of Cathodic protection requirements for steel objects in seawater, Ned Marine Services B.V. advises the use of zinc anodes. Aluminum can also be used in salt water, but experience shows that aluminum is more affected by salt water, and thus will disappear faster.

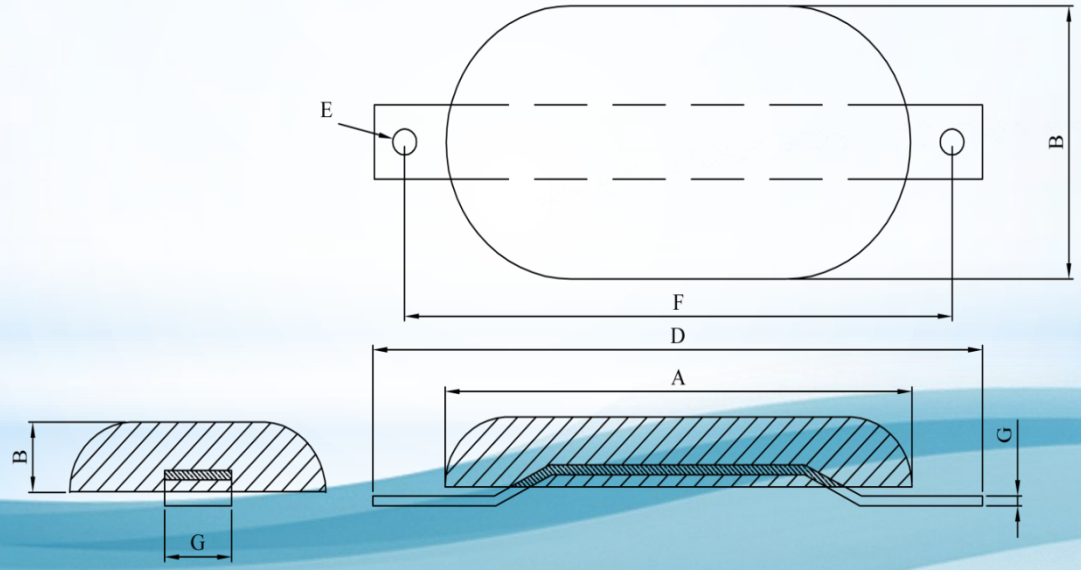
Enclosed you will find a selection of the most requested anodes.

Ned Marine services B.V.

# Cathodic Protection

## ALUMINIUM AND ZINC ANODES




Mastering Corrosion

Ned Marine services B.V.

# Aluminium

| Aluminium Anodes | | |
|---|---|---|
| | | |
| Aluminium Alloy Specifications : | | |
| | | |
| **Element :** | | **Value :** |
| | | **Aluminium PL 742** |
| Aluminium | (Al) | Remaining |
| Zinc | (Zn) | 3.5% - 5.0% Range |
| Iron | (Fe) | 0.16% Max |
| Copper | (Cu) | 0.01% Max |
| Indium | (In) | 0.02% - 0.05% Range |
| Silicon | (Si) | 0.1% Max |
| Others | | 0.04% Max |
| Capacity | | 2680 Ah/Kg |
| Efficiency | | 90% |
| Potential | | -1110mV Cu-CuSo4 electrolyte artificial seawater DIN50905 |

Ned Marine services B.V.

# Cathodic Protection

| Product Code | **Ned Marine** **Aluminium** Weld-on Hull Anodes | Nett/Gross Weight (Kg) | A – Length (mm) | B – Width (mm) | C – Height (mm) | D – Overall Length (mm) | G – Insert Size (mm) | H – Insert Length (mm) |
|---|---|---|---|---|---|---|---|---|
| A6 |  NED A6 | 0.6/0,8 | 250 | 80 | 25 | 300 | 20x3 | 305 |
| A30 |  NED A30 | 2.7/3.5 | 275 | 148 | 35 | 360 | 40x5 | 365 |
| A36 |  NED A36 | 3.0/3.5 | 275 | 148 | 39 | 405 | 40x5 | 410 |
| A37 |  NED A37 | 3.7/4.1 | 300 | 160 | 45 | 430 | 30x4 | 435 |
| A60 |  NED A60 | 5.0/6.2 | 450 | 100 | 52 | 560 | 40x5 | 565 |
| A100 |  NED A100 | 8.5/9.9 | 550 | 128 | 62 | 660 | 40x5 | 665 |

# Cathodic Protection

| Product Code | Ned Marine Aluminium Tank Anodes | Nett/Gross Weight (Kg) | A – Length (mm) | B – Width (mm) | C – Height (mm) | D – Overall Length (mm) | G – Insert Size (mm) | H – Insert Length (mm) |
|---|---|---|---|---|---|---|---|---|
| AT161 |   | 15.0/ 16.0 | 750 | 85 | 125 | 1250 | ø12 | 1255 |

Ned Marine services B.V.

# Zinc

| Zinc Anodes | | |
|---|---|---|
| | | |
| ZInc Alloy Specifications : | | |
| | | |
| **Element :** | | **Value :** |
| | | **US-MIL-A-18001K** |
| Aluminium | (Al) | 0.1% - 0.5% Range |
| Zinc | (Zn) | Remaining |
| Iron | (Fe) | 0.005% Max |
| Copper | (Cu) | 0.006% Max |
| Indium | (In) | 0.025% - 0.07% Range |
| Silicon | (Si) | 0.005% Max |
| Others | | |
| Capacity | | 780 Ah/Kg |
| Efficiency | | 95% |
| Potential | | -1105mV Cu-CuSo4 electrolyte artificial seawater DIN50905 |

Ned Marine services B.V.

# Cathodic Protection

| Product Code | **Ned Marine** **Zinc** Weld-on Hull Anodes | Nett/Gross Weight (Kg) | A – Length (mm) | B – Width (mm) | C – Height (mm) | D – Overall Length (mm) | E – Diameter (mm) | F – Fixing Centres (mm) | G – Insert Size (mm) | H – Insert Length (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 30Z |   | 2.2/ 2.6 | 230 | 78 | 37 | 310 | - | - | 30x5 | 315 |
| 50Z |   | 4.8/ 5.3 | 290 | 100 | 50 | 410 | - | - | 30x5 | 415 |
| 95Z |   | 9.5/ 10.0 | 285 | 145 | 66 | 410 | - | - | 30x5 | 415 |
| 110Z |   | 10.1/ 10.5 | 285 | 145 | 71 | 410 | - | - | 30x5 | 415 |
| 130Z |   | 11.8/ 13.0 | 450 | 100 | 62 | 560 | - | - | 40x5 | 565 |
| 160Z |   | 14.3/ 16.0 | 590 | 105 | 48 | 750 | - | - | 40x5 | 755 |

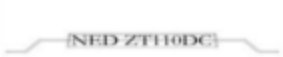
Ned Marine services B.V.

# Cathodic Protection

| Product Code | Ned Marine **Zinc** Bolt-on Hull Anodes | Nett/Gross Weight (Kg) | A – Length (mm) | B – Width (mm) | C – Height (mm) | D – Overall Length (mm) | E – Diameter (mm) | F – Fixing Centres (mm) | G – Insert Size (mm) | H – Insert Length (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| B11Z |   | 13,5/ 13,8 | 300 | 150 | 50 | 300 | 22 | 160 | 50x5 | 305 |
| | | | | | | | | | | |

Ned Marine services B.V.

# Cathodic Protection

| Product Code | Ned Marine **Zinc** Tank Anodes | Nett/Gross Weight (Kg) | A – Length (mm) | B – Width (mm) | C – Height (mm) | D – Overall Length (mm) | E – Diameter (mm) | F – Fixing Centres (mm) | G – Insert Size (mm) | H – Insert Length (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| ZT110 |   | 9.1/ 10.0 | 520 | 50 | 57 | 980 | - | - | ø12 | 985 |
| ZT650 |   | 65.0/ 67.0 | 790 | 130 | 100 | 1660 | - | - | ø12 | 1665 |

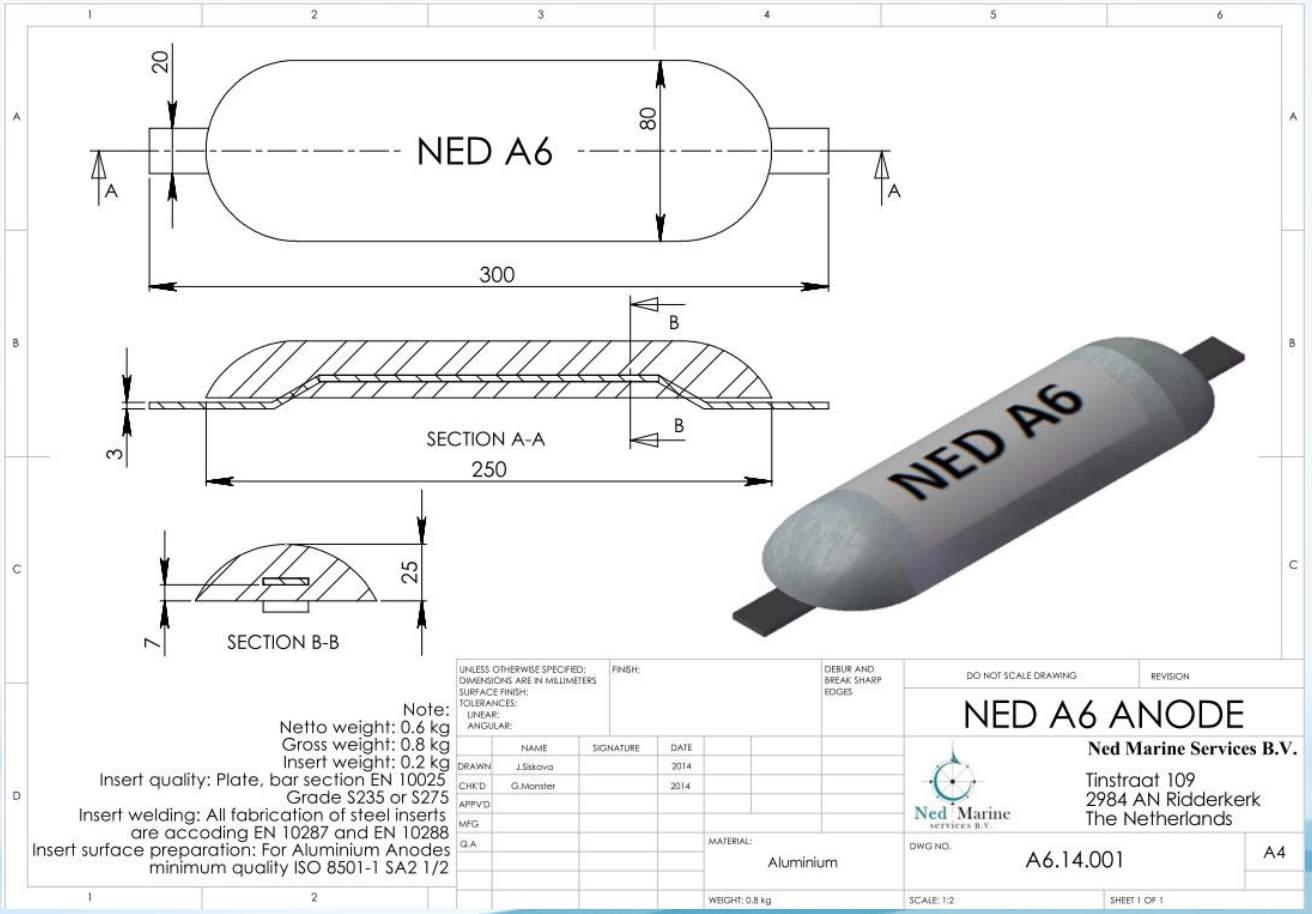
Ned Marine services B.V.

# Magnesium

| Magnesium Anodes | | |
|---|---|---|
| | | |
| Magnesium Alloy Specifications : | | |
| | | |
| **Element :** | | **Value :** |
| | | **Magnesium AZ 63** |
| Copper | (Cu) | 0.05% Max |
| Aluminium | (Al) | 5.3% - 6.7% Range |
| Silicon | (Si) | 0.3% Max |
| Iron | (Fe) | 0.005% Max |
| Mangaan | (Mn) | 0.25% Min |
| Nikkel | (Ni) | 0.003% Max |
| Zinc | (Zn) | 2.5% - 3.5% Range |
| Others | | 0.03% Max |
| Magnesium | (Mg) | Remaining |
| Capacity | | 1230 Ah/Kg |
| Efficiency | | 50% |
| Potential | | -1.50 Volts Ag/Ag Cl reference |

# Detailed drawings Anodes

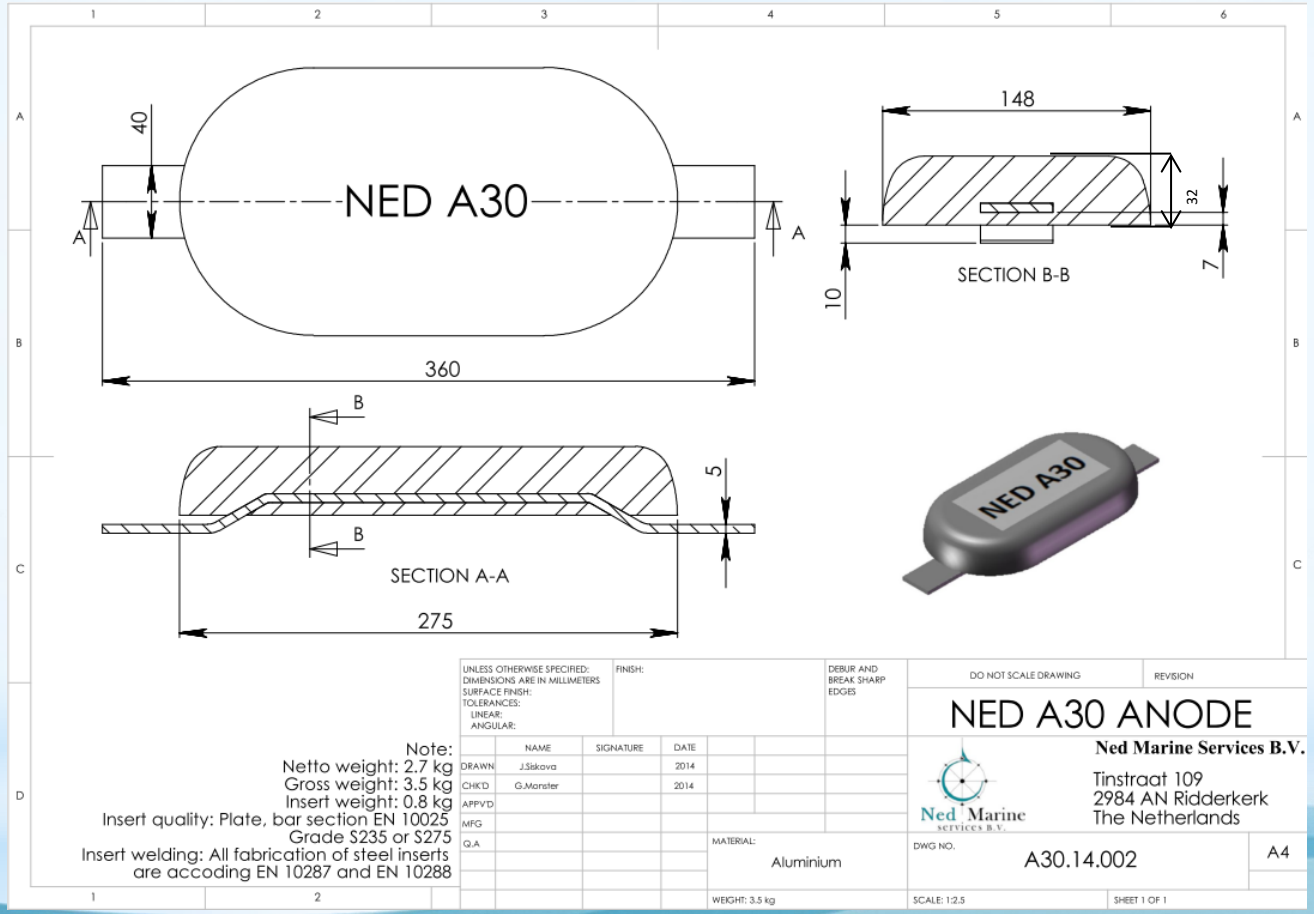
# Cathodic Protection




# Mastering Corrosion

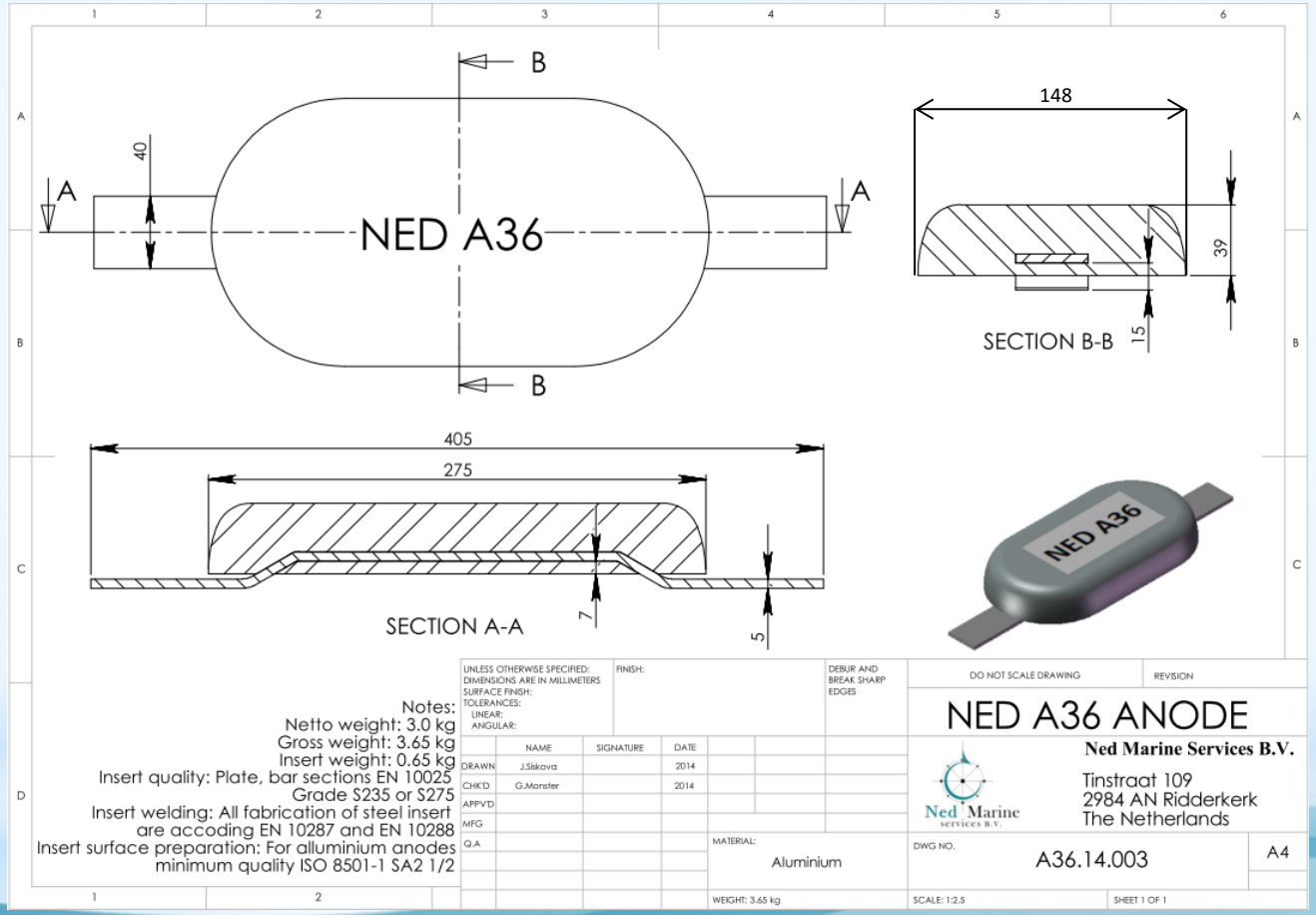
Ned Marine services B.V.

# Cathodic Protection




# Mastering Corrosion

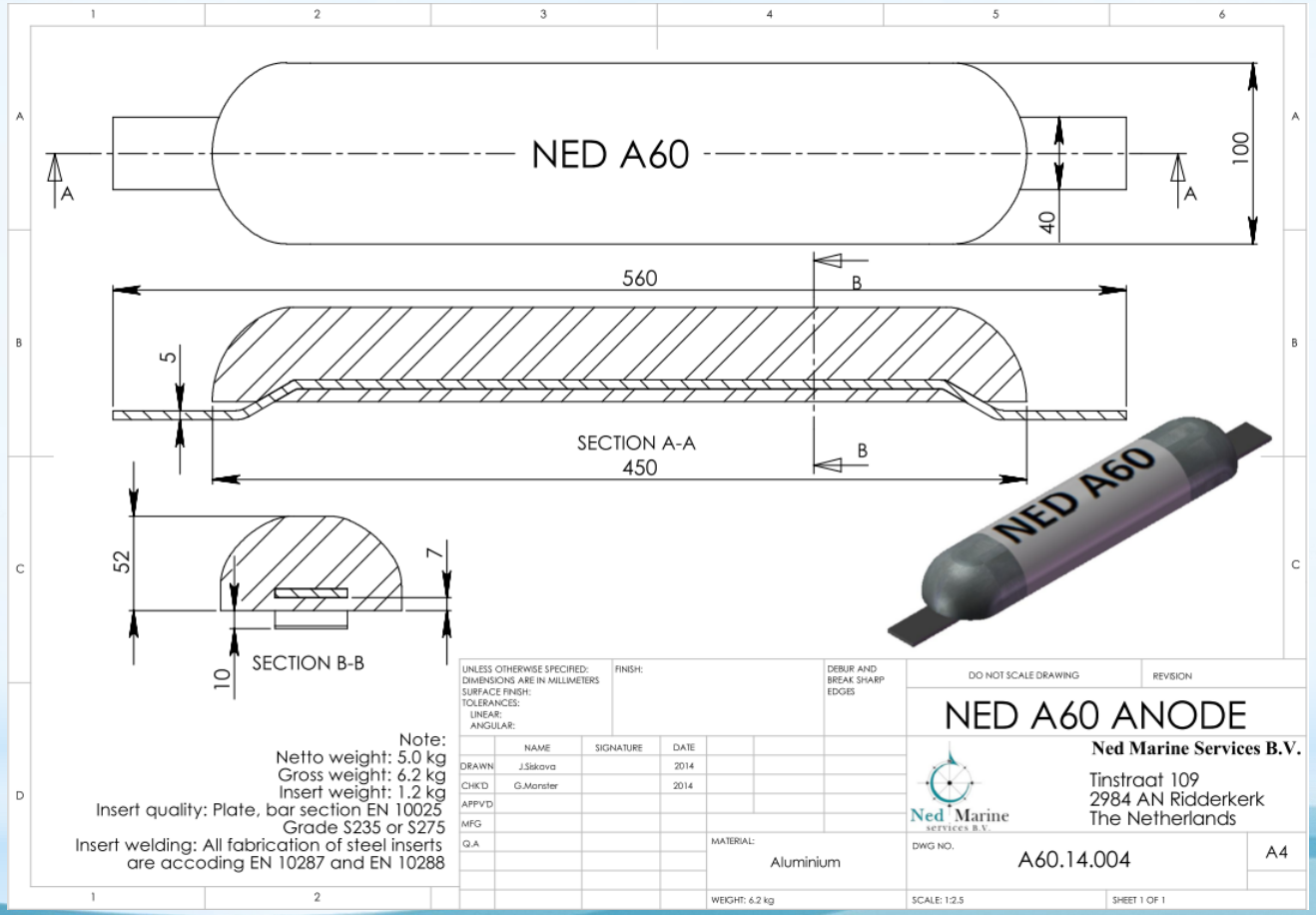
# Cathodic Protection




# Mastering Corrosion

Ned Marine services B.V.

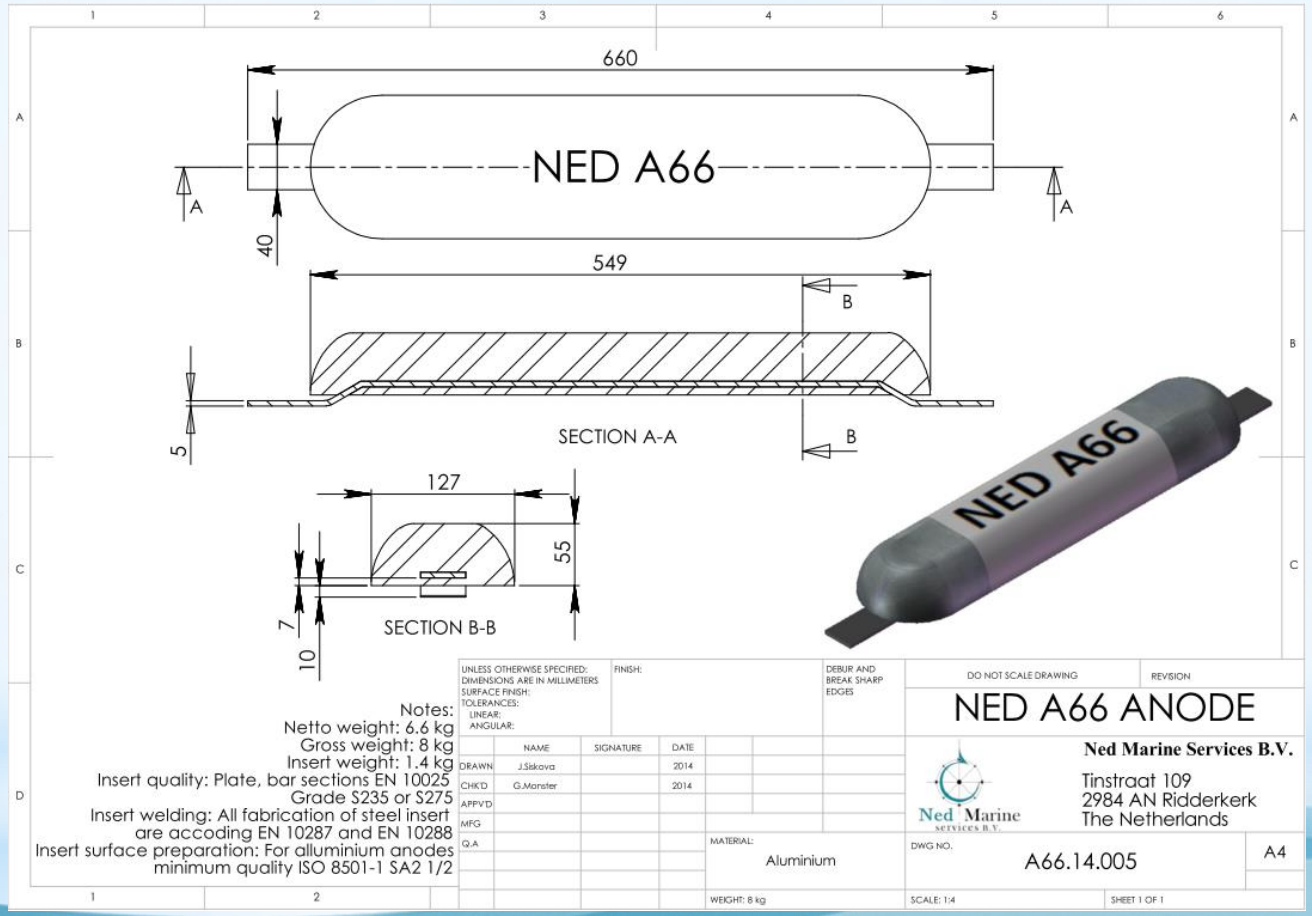
# Cathodic Protection




# Mastering Corrosion

Ned Marine services B.V.

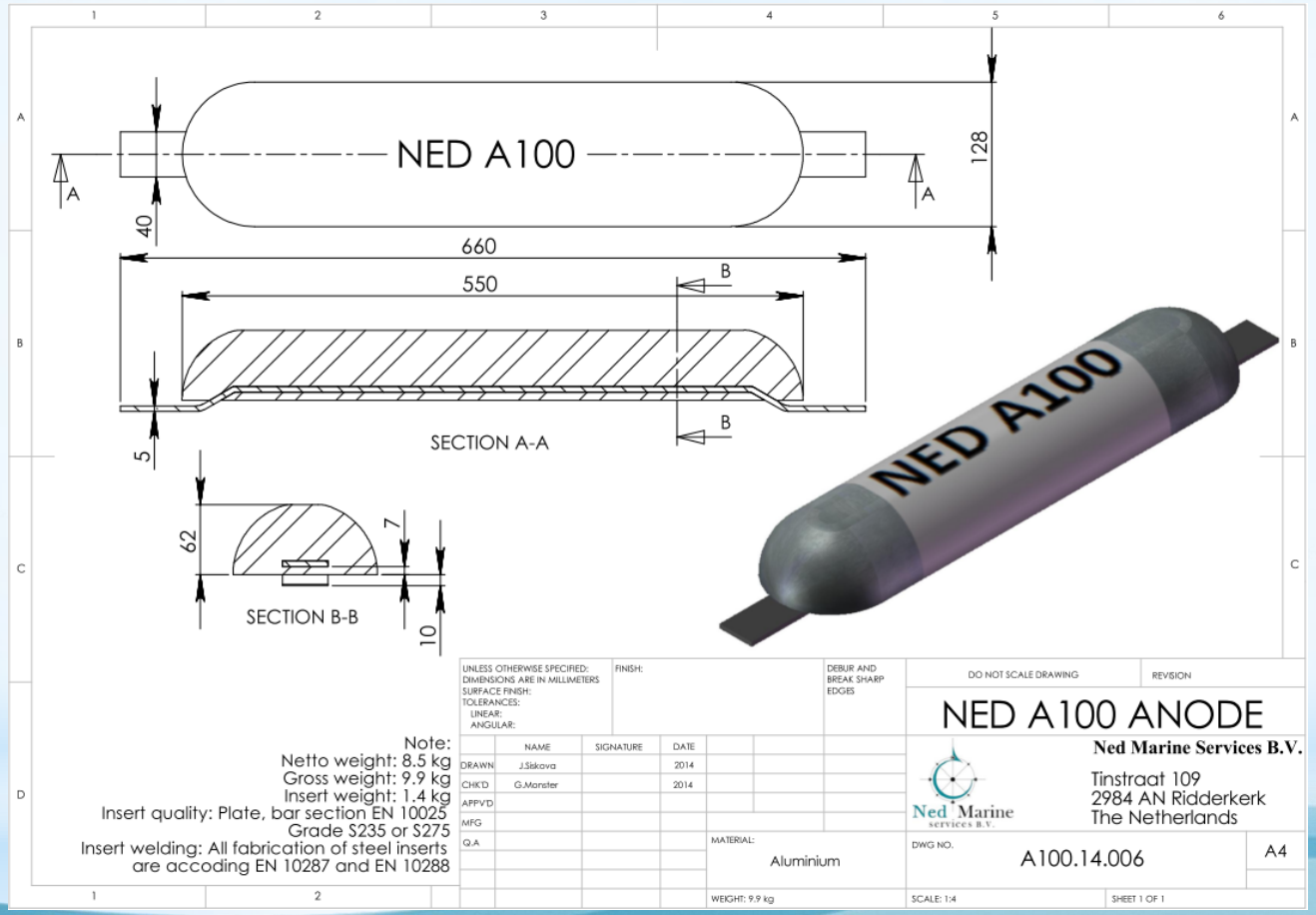
# Cathodic Protection




# Mastering Corrosion

Ned Marine services B.V.

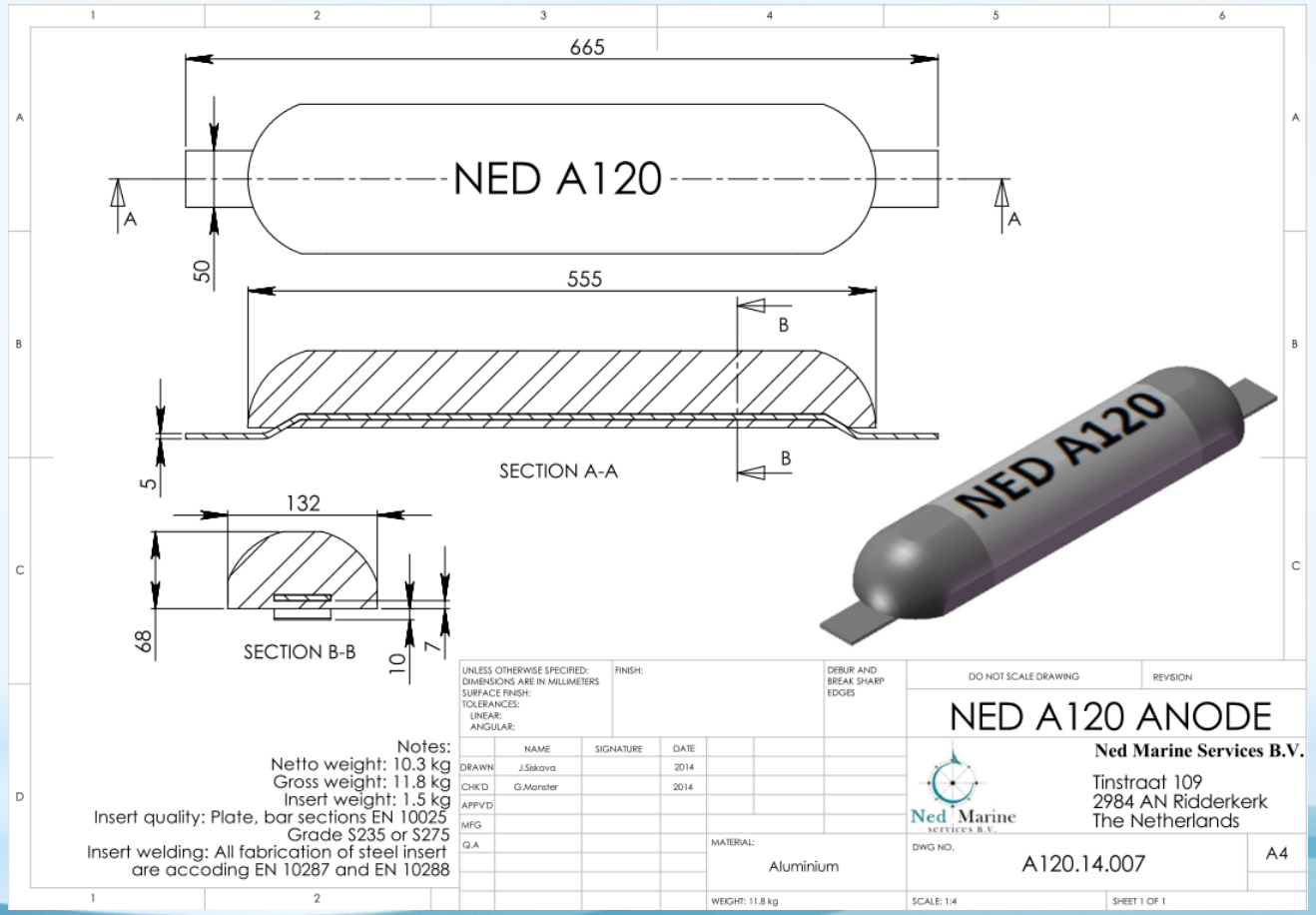
# Cathodic Protection




# Mastering Corrosion

Ned Marine services B.V.

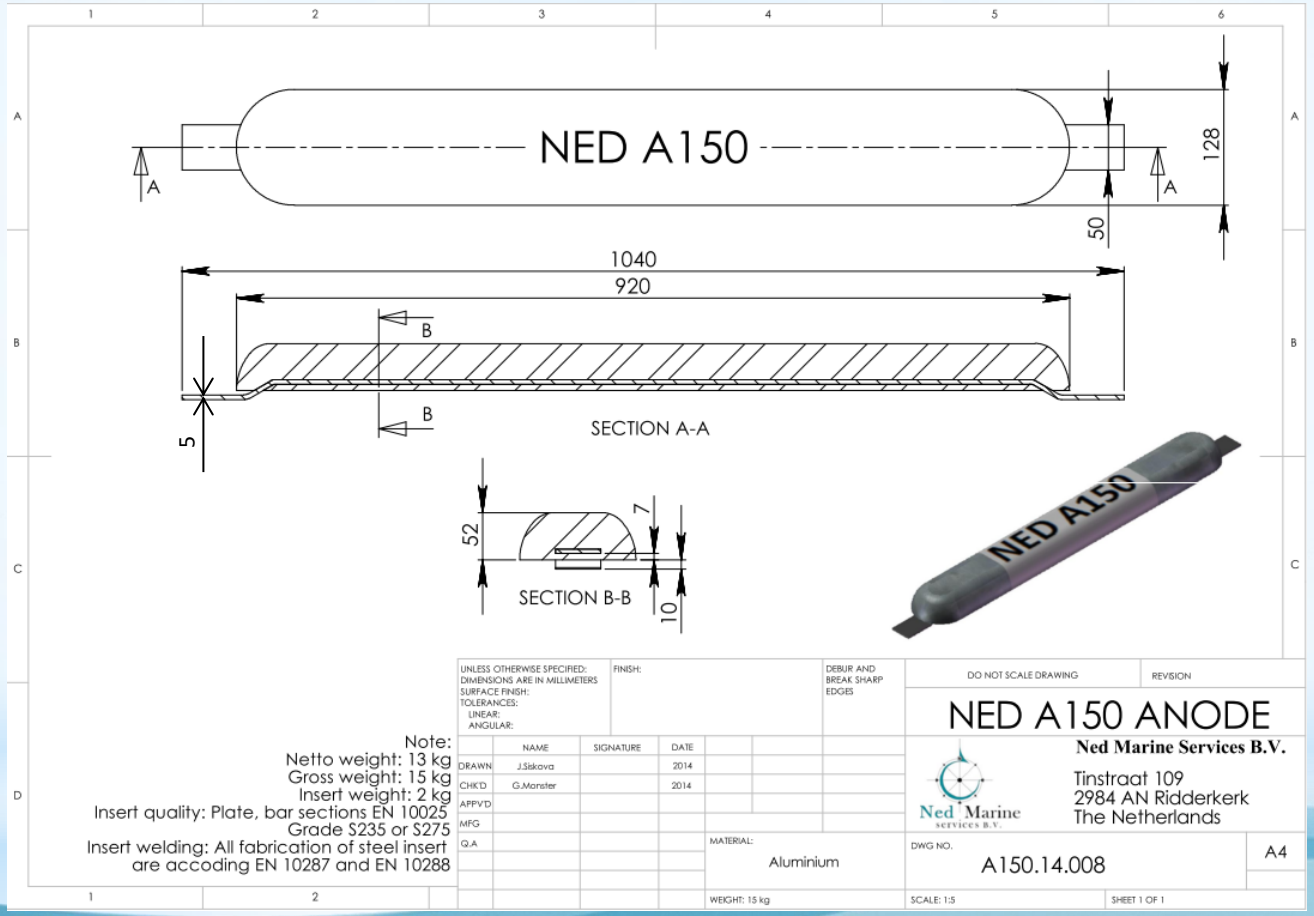
# Cathodic Protection




# Mastering Corrosion

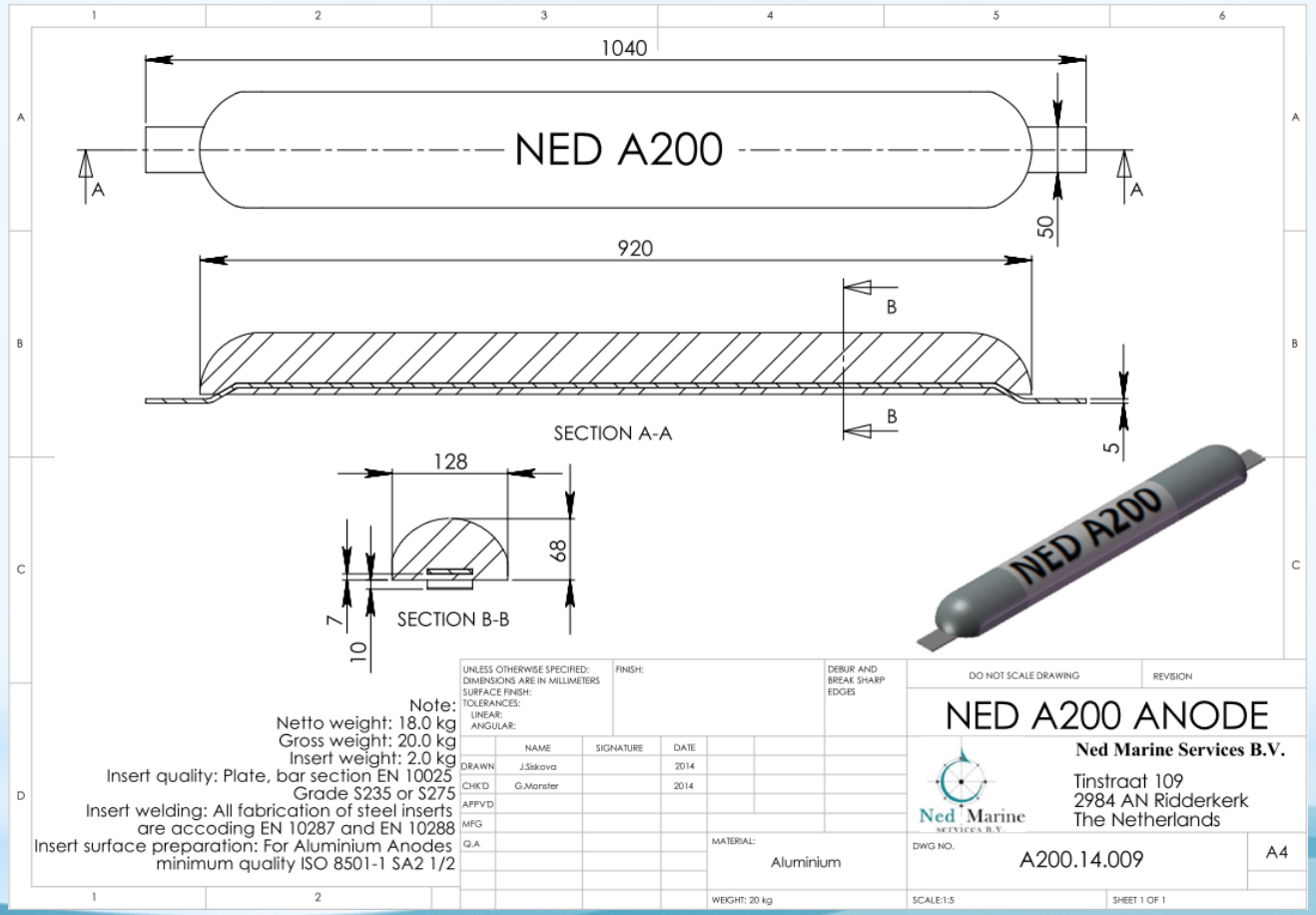
Ned Marine services B.V.

# Cathodic Protection



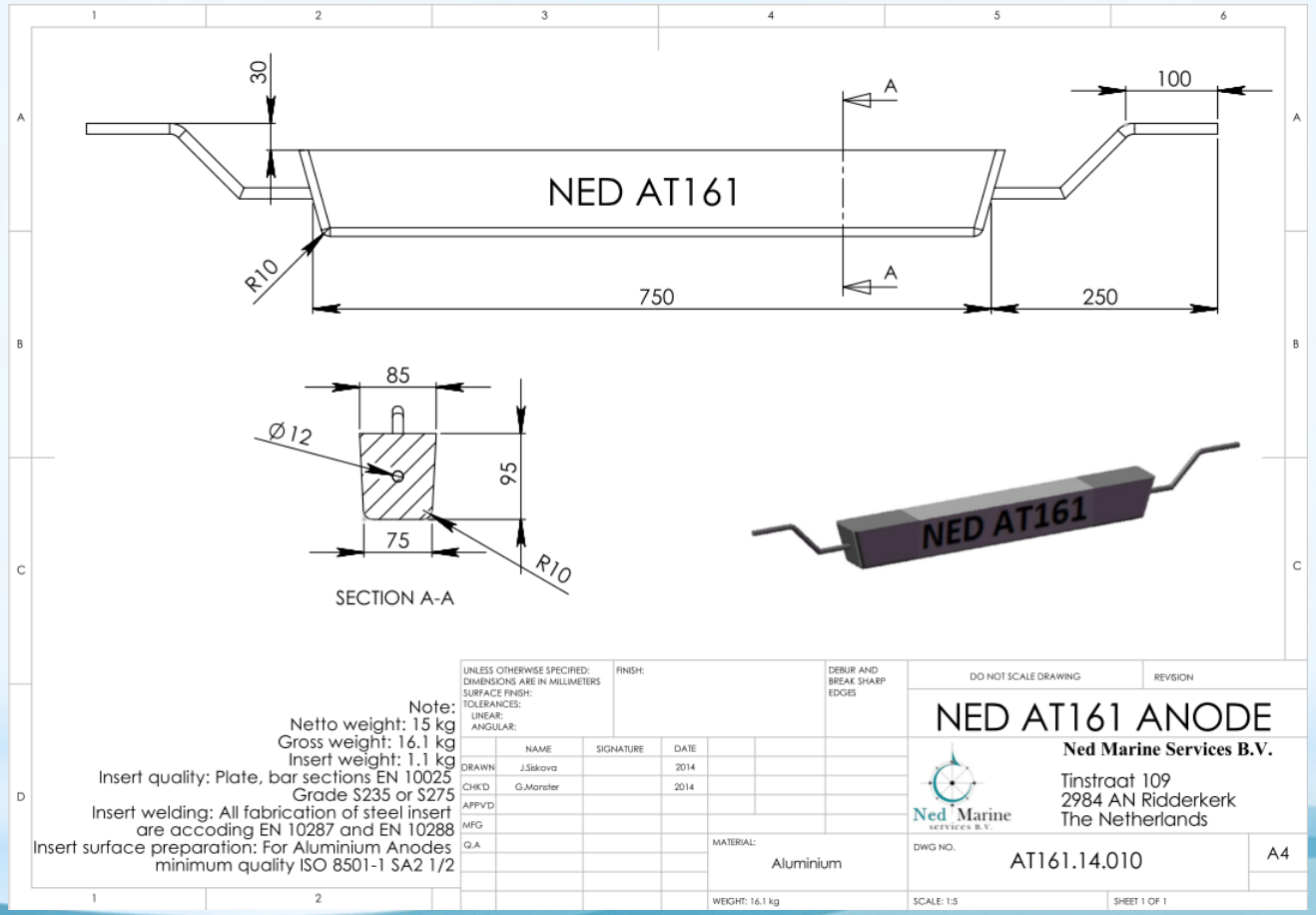

# Mastering Corrosion

# Cathodic Protection




# Mastering Corrosion

# Cathodic Protection




Note:
Netto weight: 15 kg
Gross weight: 16.1 kg
Insert weight: 1.1 kg
Insert quality: Plate, bar sections EN 10025
Grade S235 or S275
Insert welding: All fabrication of steel insert
are accoding EN 10287 and EN 10288
Insert surface preparation: For Aluminium Anodes
minimum quality ISO 8501-1 SA2 1/2

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH:
TOLERANCES:
LINEAR:
ANGULAR:
FINISH:
DEBUR AND BREAK SHARP EDGES

| | NAME | SIGNATURE | DATE |
|---|---|---|---|
| DRAWN | J.Sikova | | 2014 |
| CHK'D | G.Monster | | 2014 |
| APPV'D | | | |
| MFG | | | |
| Q.A | | | |

MATERIAL: Aluminium
WEIGHT: 16.1 kg

DO NOT SCALE DRAWING
REVISION

NED AT161 ANODE

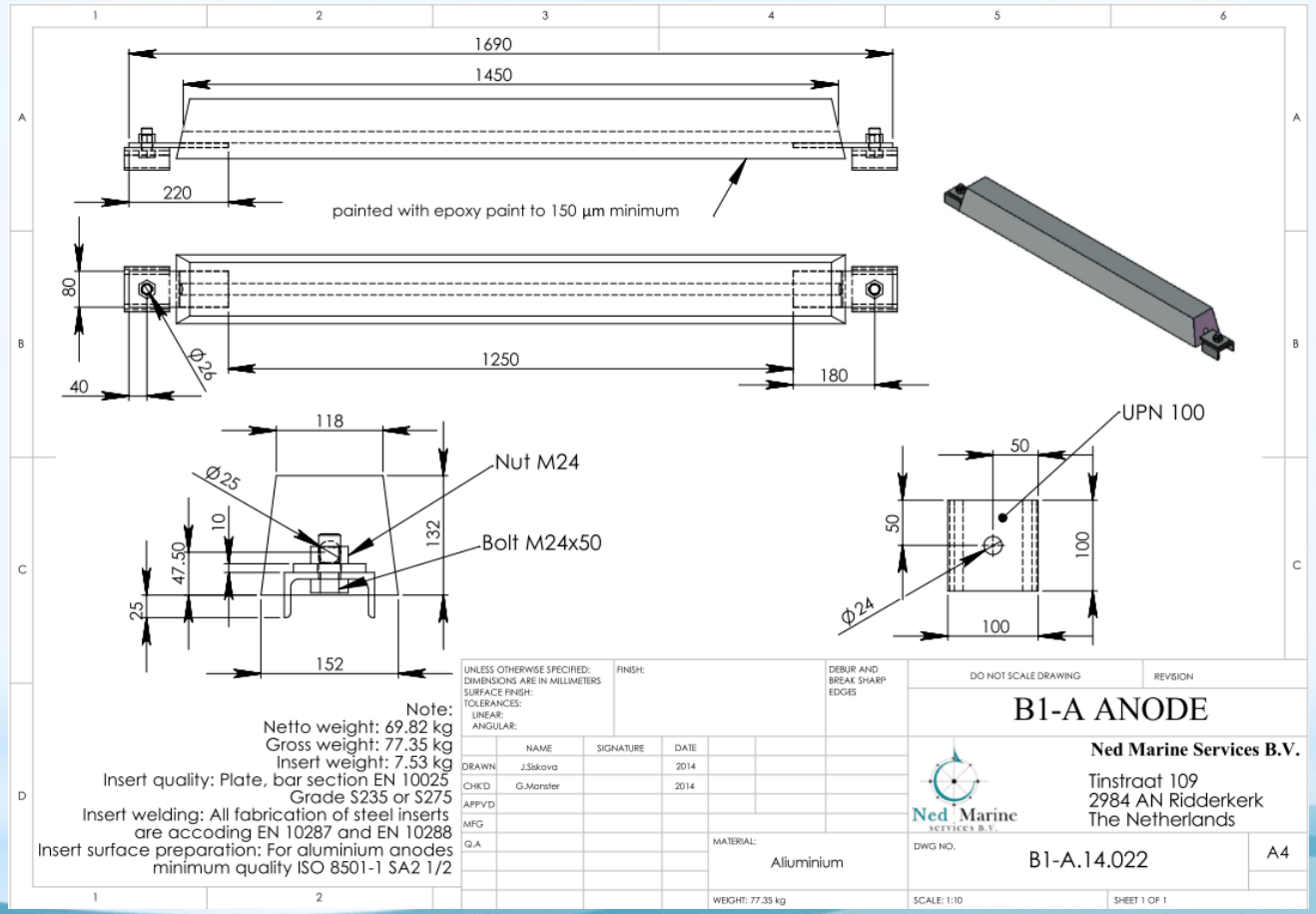
Ned Marine Services B.V.
Tinstraat 109
2984 AN Ridderkerk
The Netherlands

DWG NO. AT161.14.010
A4
SCALE: 1:5
SHEET 1 OF 1

# Mastering Corrosion

Ned Marine services B.V.

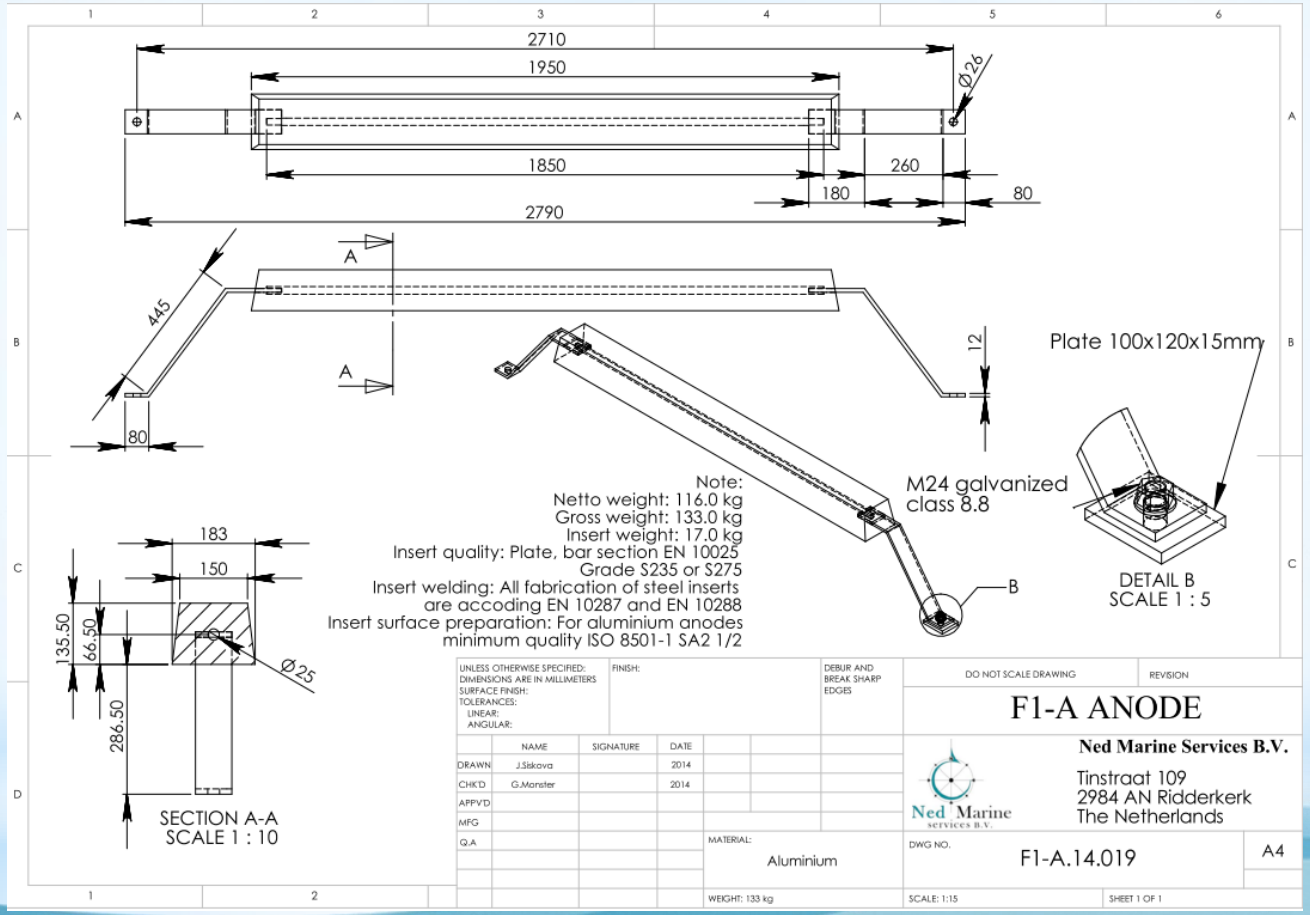
# Cathodic Protection




# Mastering Corrosion

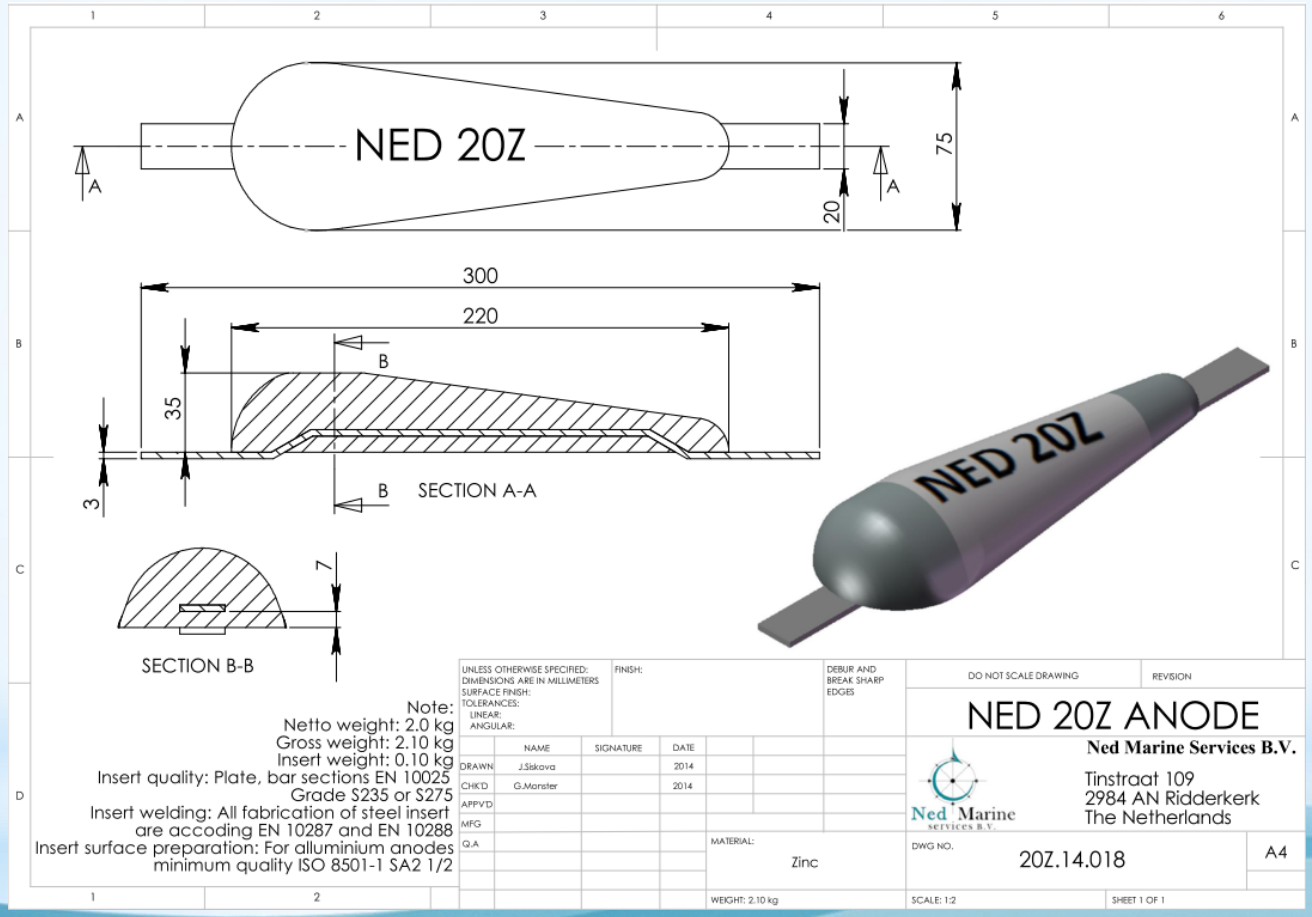
Ned Marine services B.V.

# Cathodic Protection



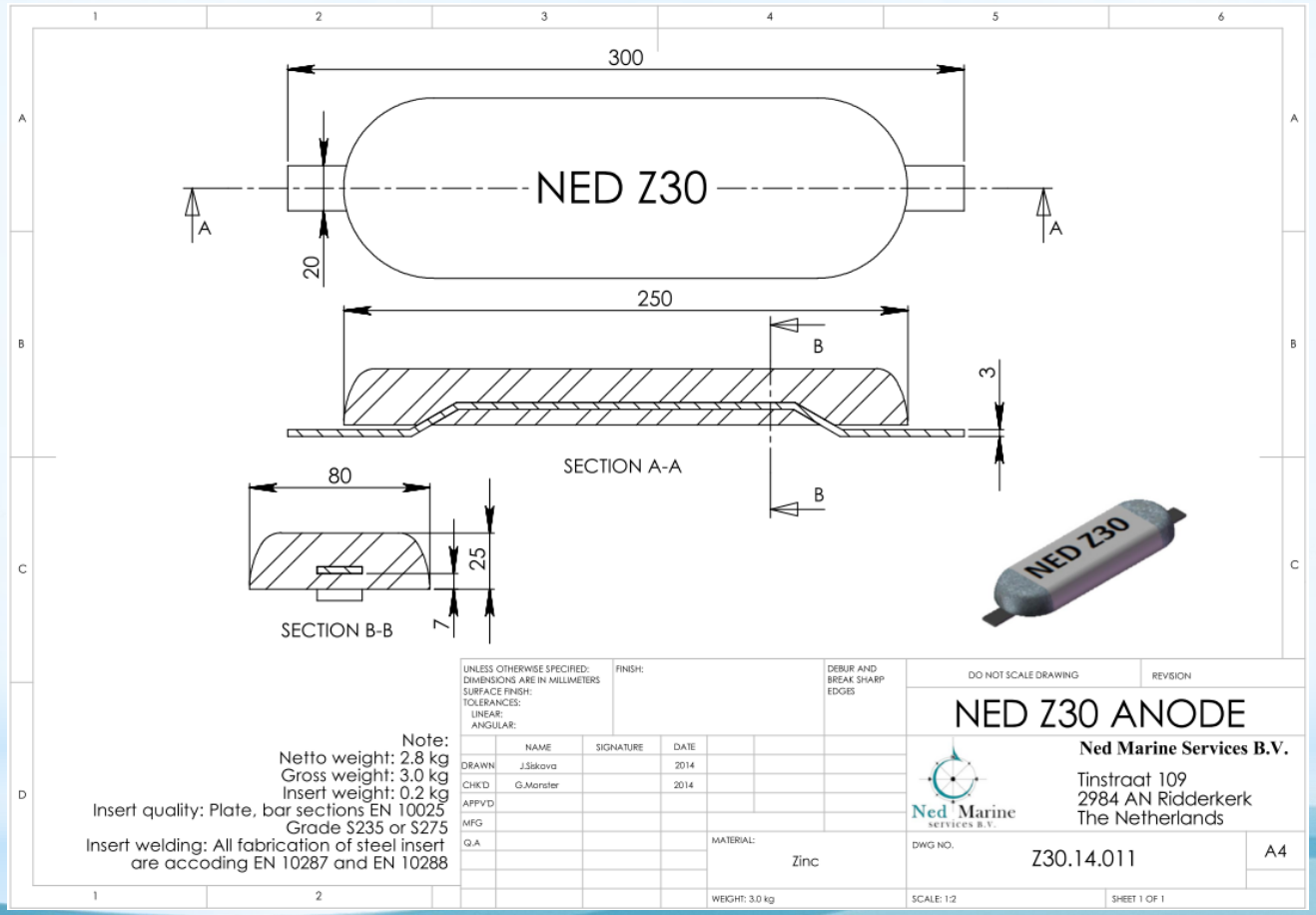

# Mastering Corrosion

# Cathodic Protection




# Mastering Corrosion

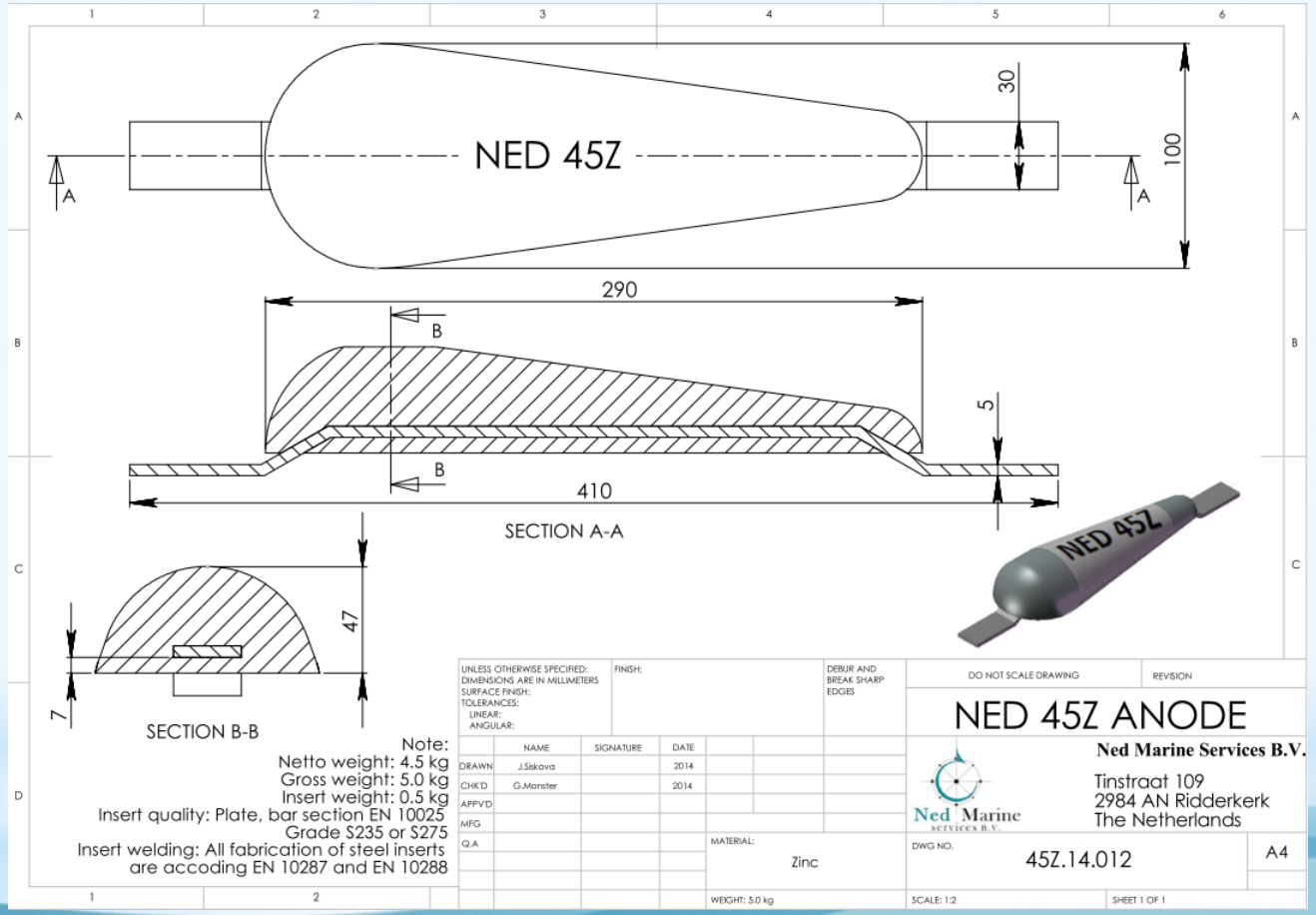
# Cathodic Protection




# Mastering Corrosion

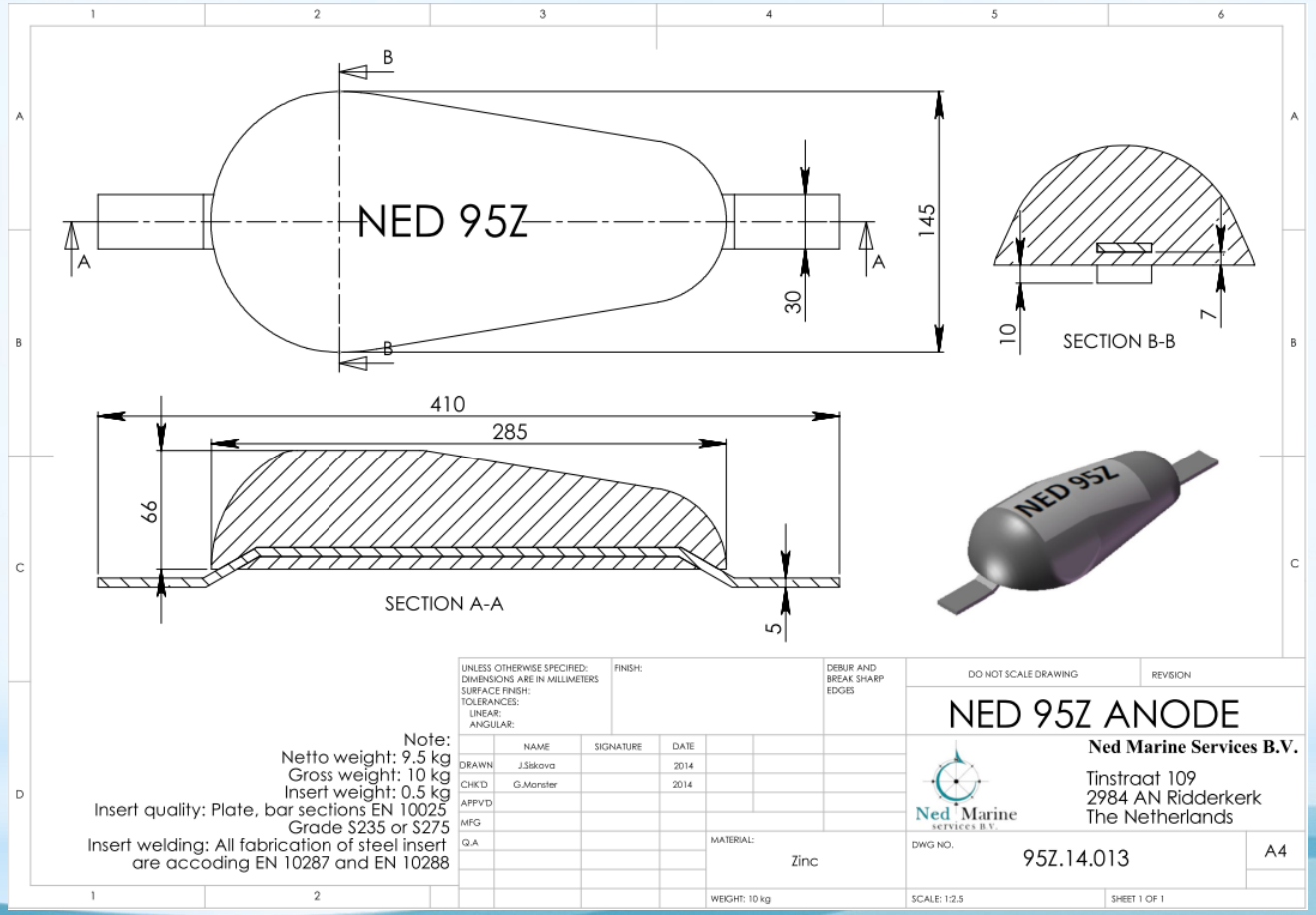
Ned Marine services B.V.

# Cathodic Protection



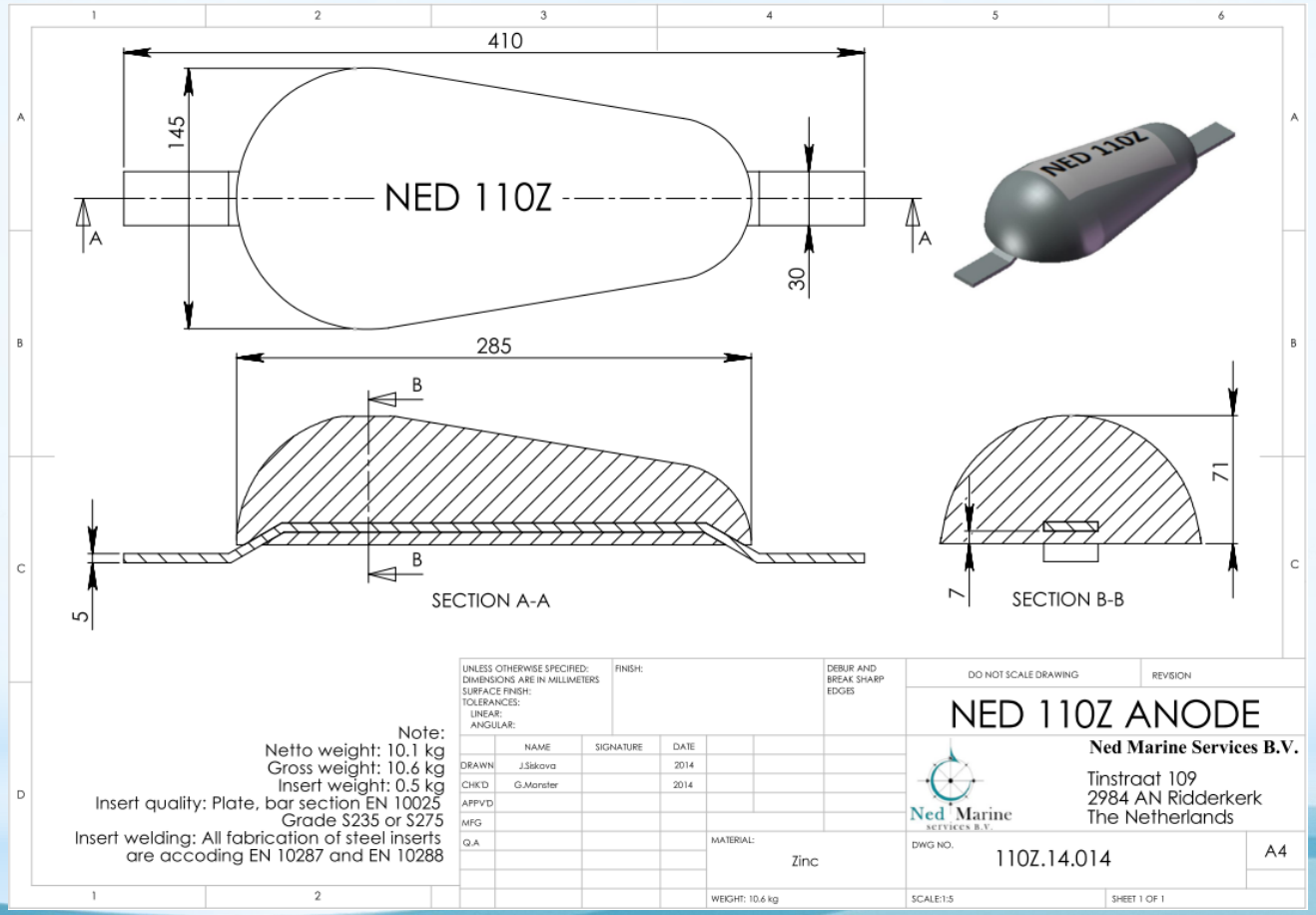

# Mastering Corrosion

# Cathodic Protection



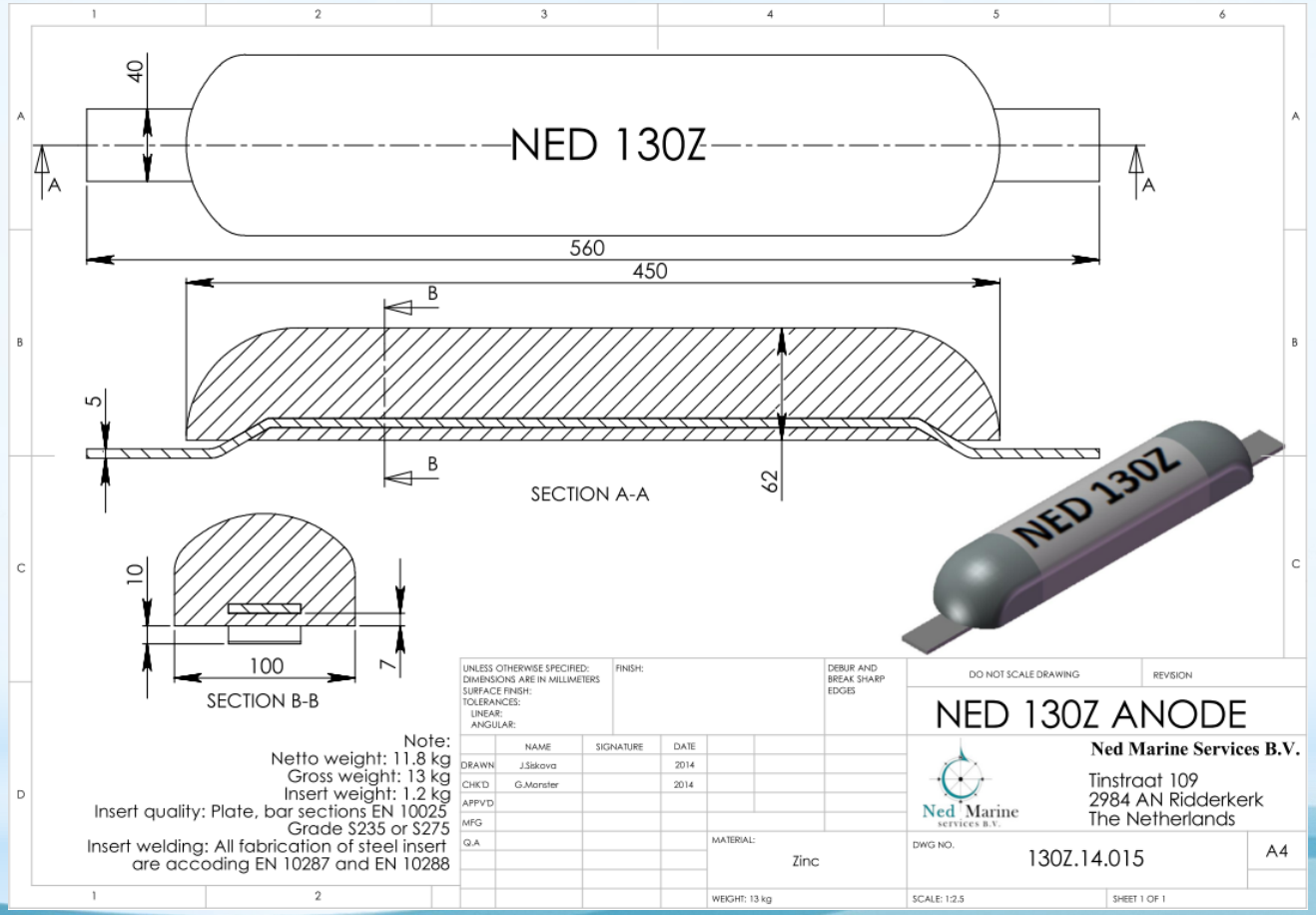

# Mastering Corrosion

# Cathodic Protection



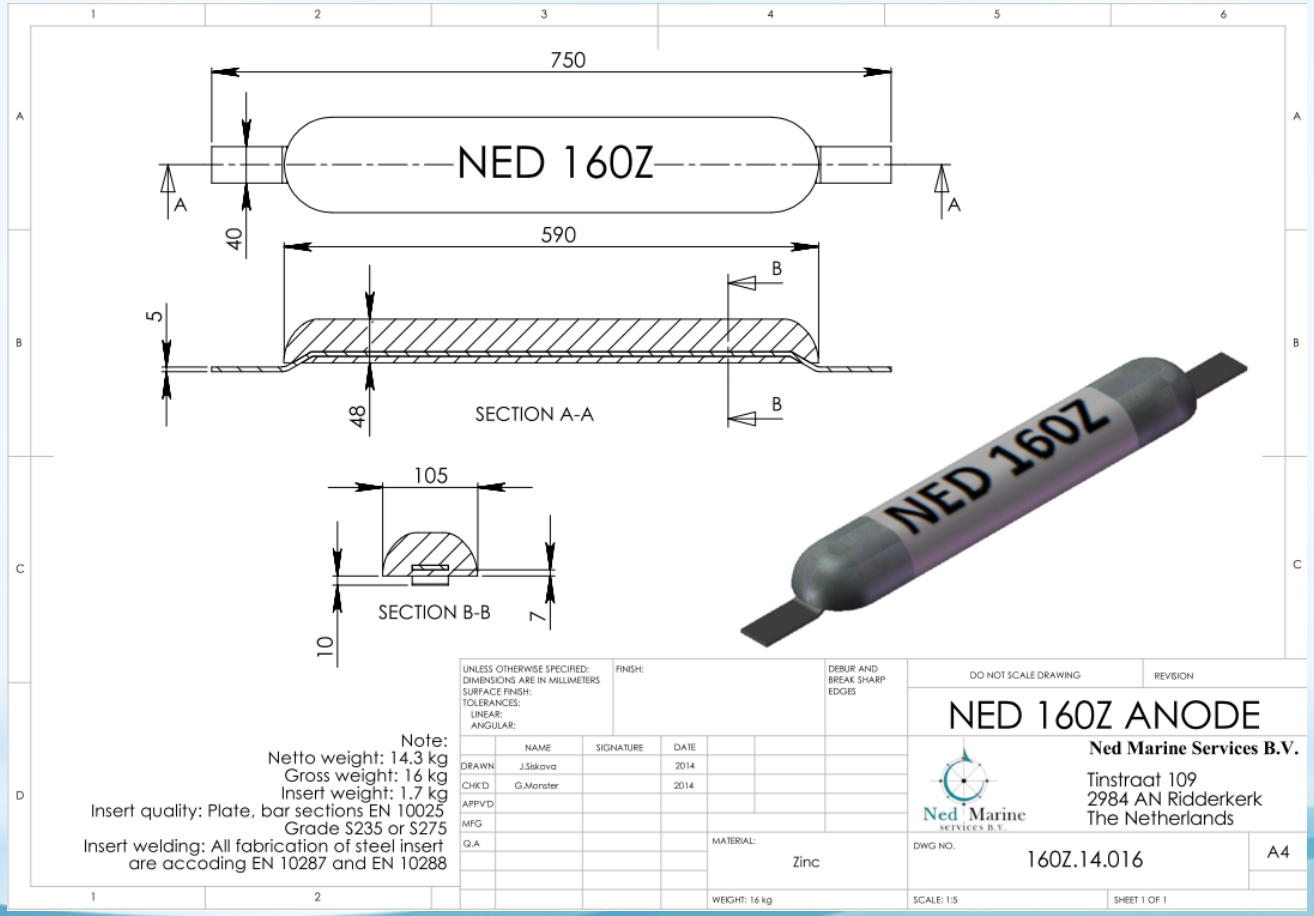

# Mastering Corrosion

# Cathodic Protection




# Mastering Corrosion

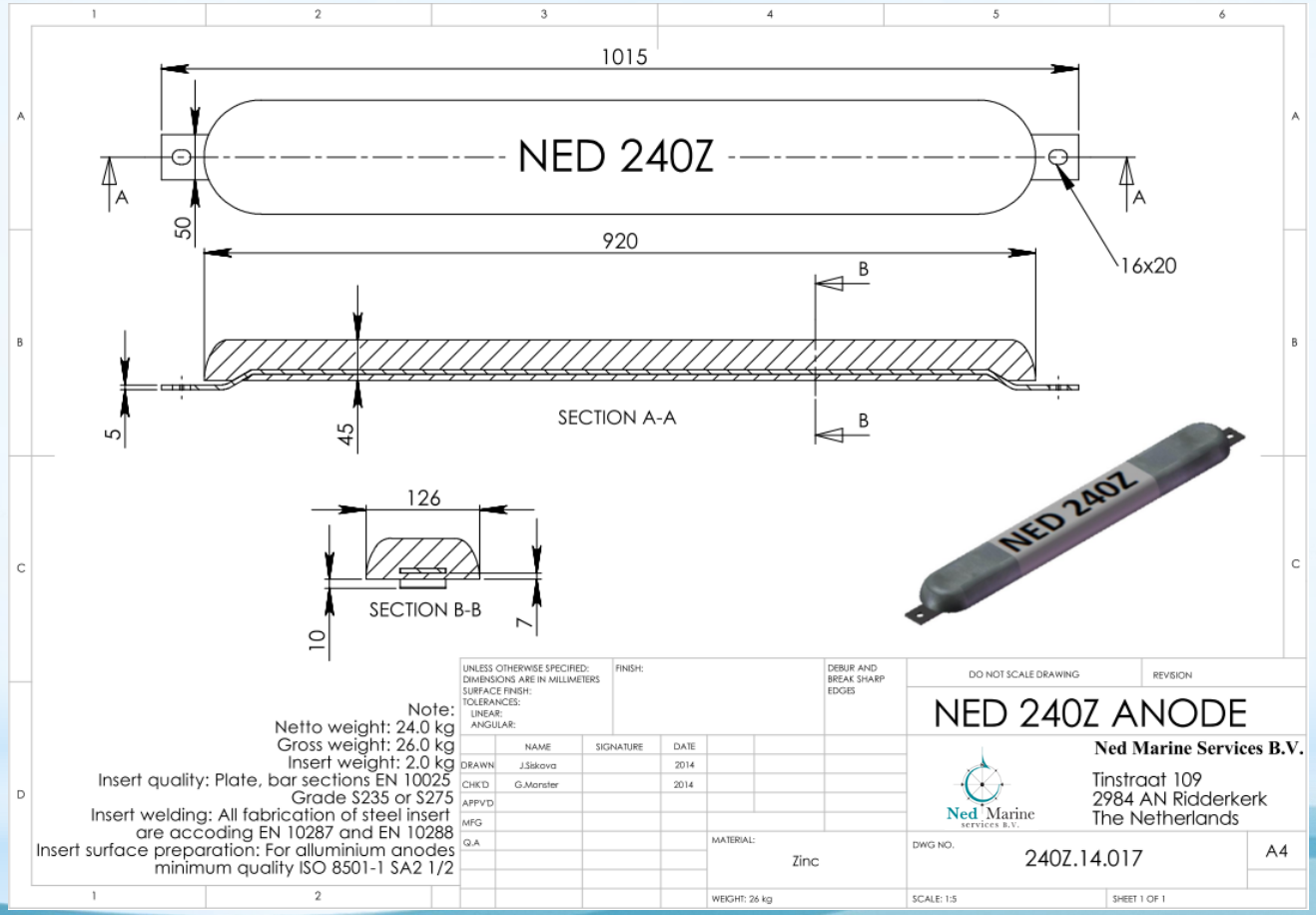
# Cathodic Protection




# Mastering Corrosion

Ned Marine services B.V.

# Cathodic Protection




Note:
Netto weight: 24.0 kg
Gross weight: 26.0 kg
Insert weight: 2.0 kg
Insert quality: Plate, bar sections EN 10025 Grade S235 or S275
Insert welding: All fabrication of steel insert are accoding EN 10287 and EN 10288
Insert surface preparation: For alluminium anodes minimum quality ISO 8501-1 SA2 1/2

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:
FINISH:
DEBUR AND BREAK SHARP EDGES

| | NAME | SIGNATURE | DATE |
|---|---|---|---|
| DRAWN | J.Stskova | | 2014 |
| CHK'D | G.Monster | | 2014 |
| APPV'D | | | |
| MFG | | | |
| Q.A | | | |

MATERIAL: Zinc
WEIGHT: 26 kg

DO NOT SCALE DRAWING
REVISION

NED 240Z ANODE

Ned Marine Services B.V.
Tinstraat 109
2984 AN Ridderkerk
The Netherlands

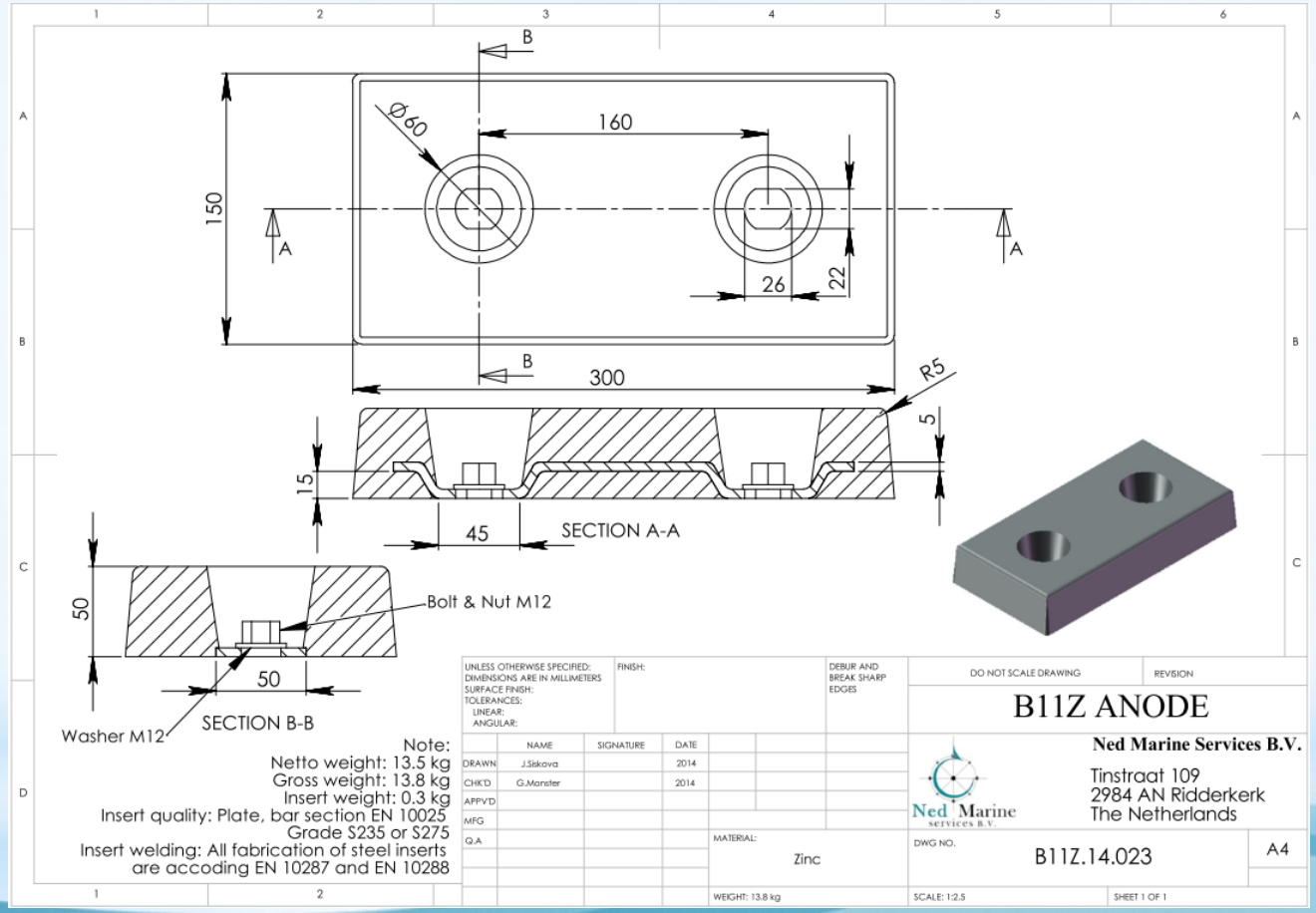
DWG NO. 240Z.14.017
A4

SCALE: 1:5
SHEET 1 OF 1

# Mastering Corrosion

Ned Marine services B.V.

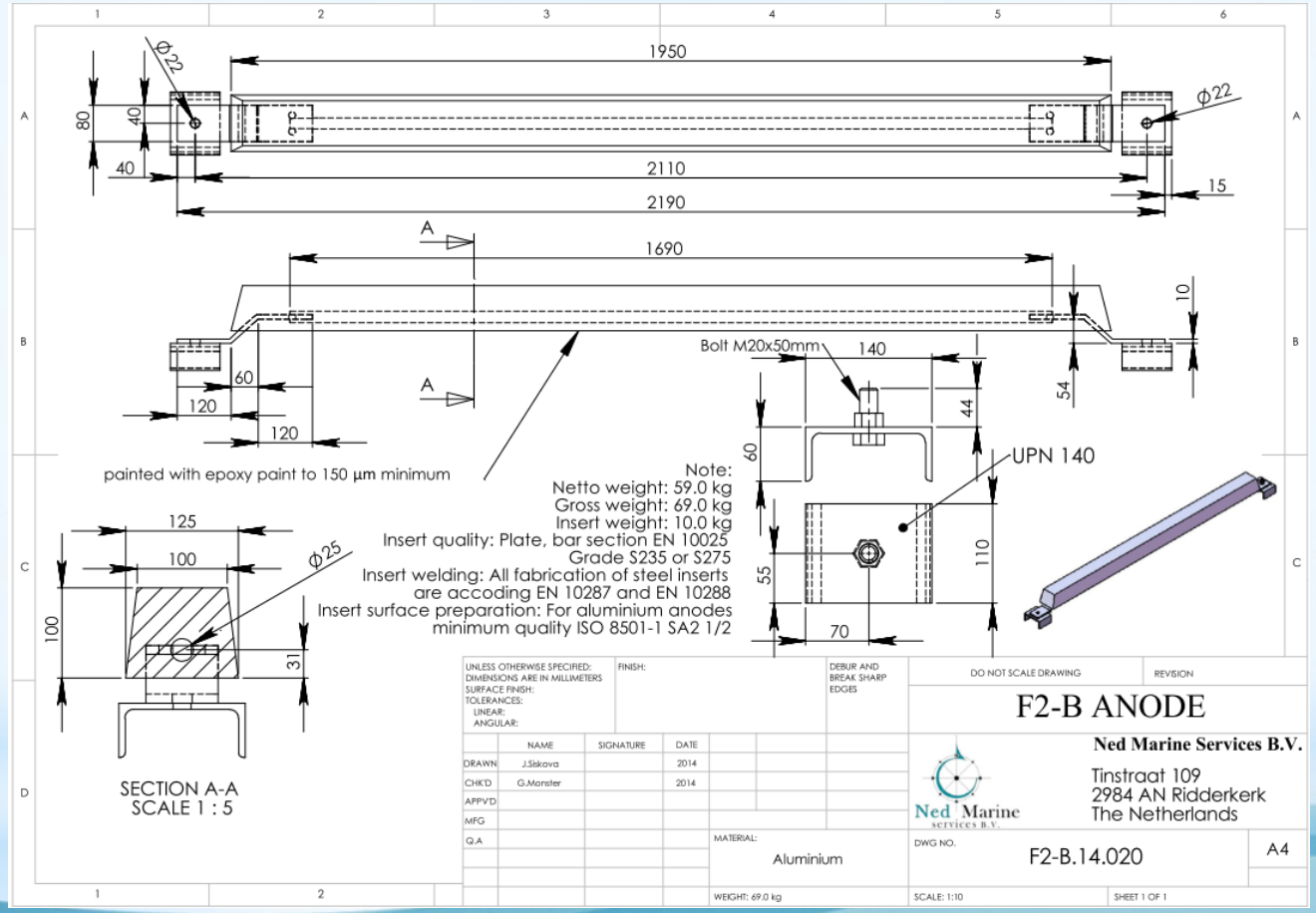
# Cathodic Protection




# Mastering Corrosion

Ned Marine services B.V.

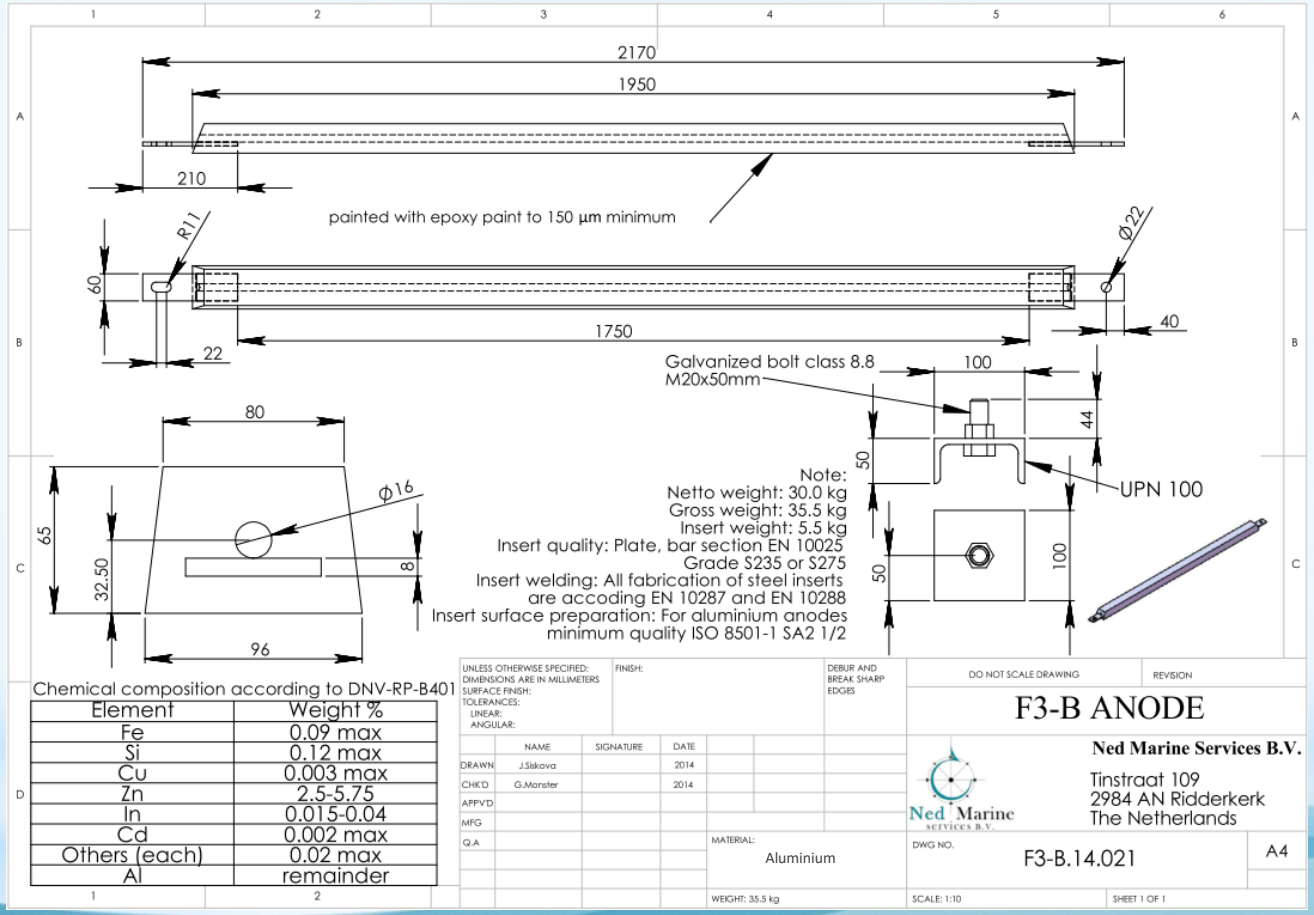
# Cathodic Protection




Mastering Corrosion

Ned Marine services B.V.

# Cathodic Protection

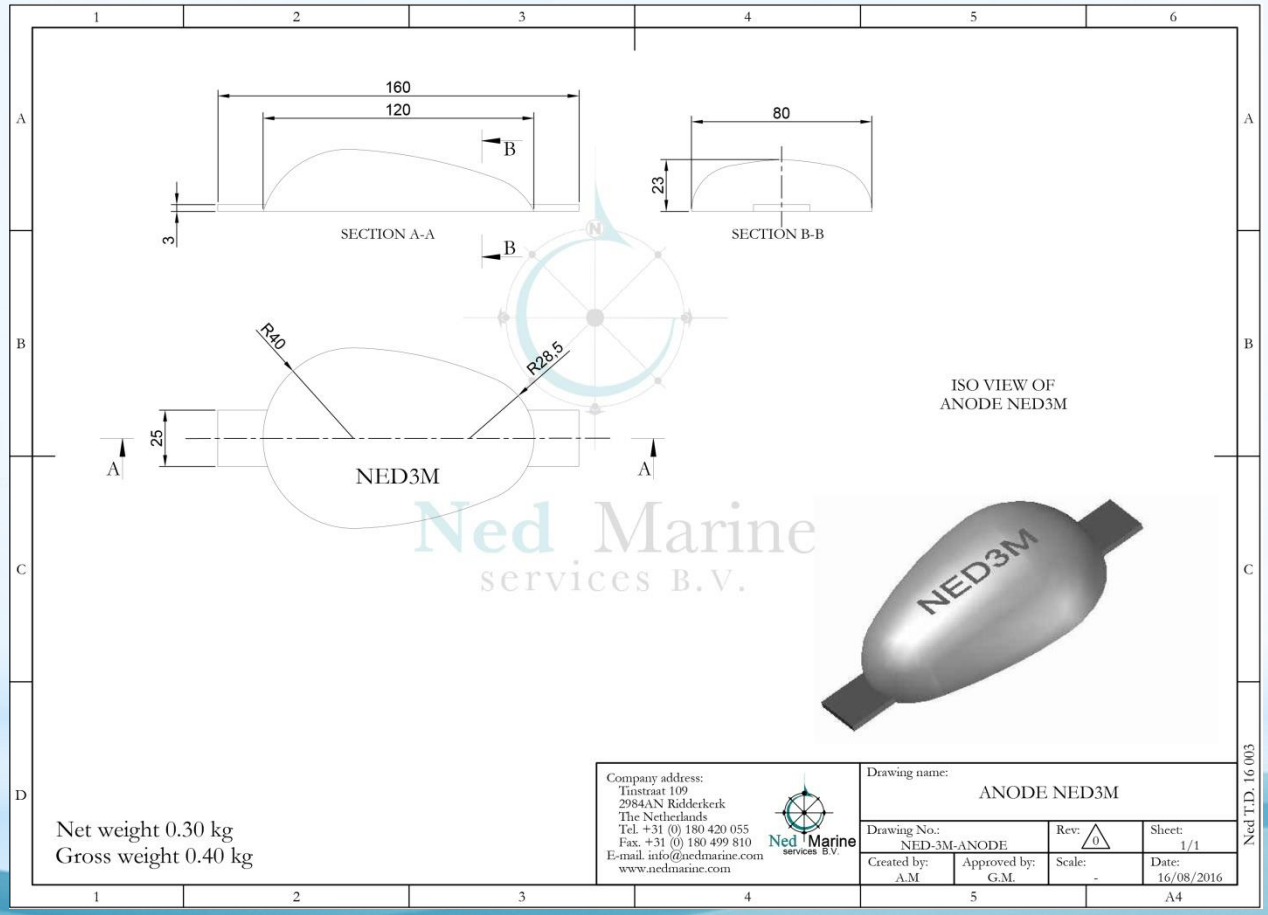



Chemical composition according to DNV-RP-B401

| Element | Weight % |
|---|---|
| Fe | 0.09 max |
| Si | 0.12 max |
| Cu | 0.003 max |
| Zn | 2.5-5.75 |
| In | 0.015-0.04 |
| Cd | 0.002 max |
| Others (each) | 0.02 max |
| Al | remainder |

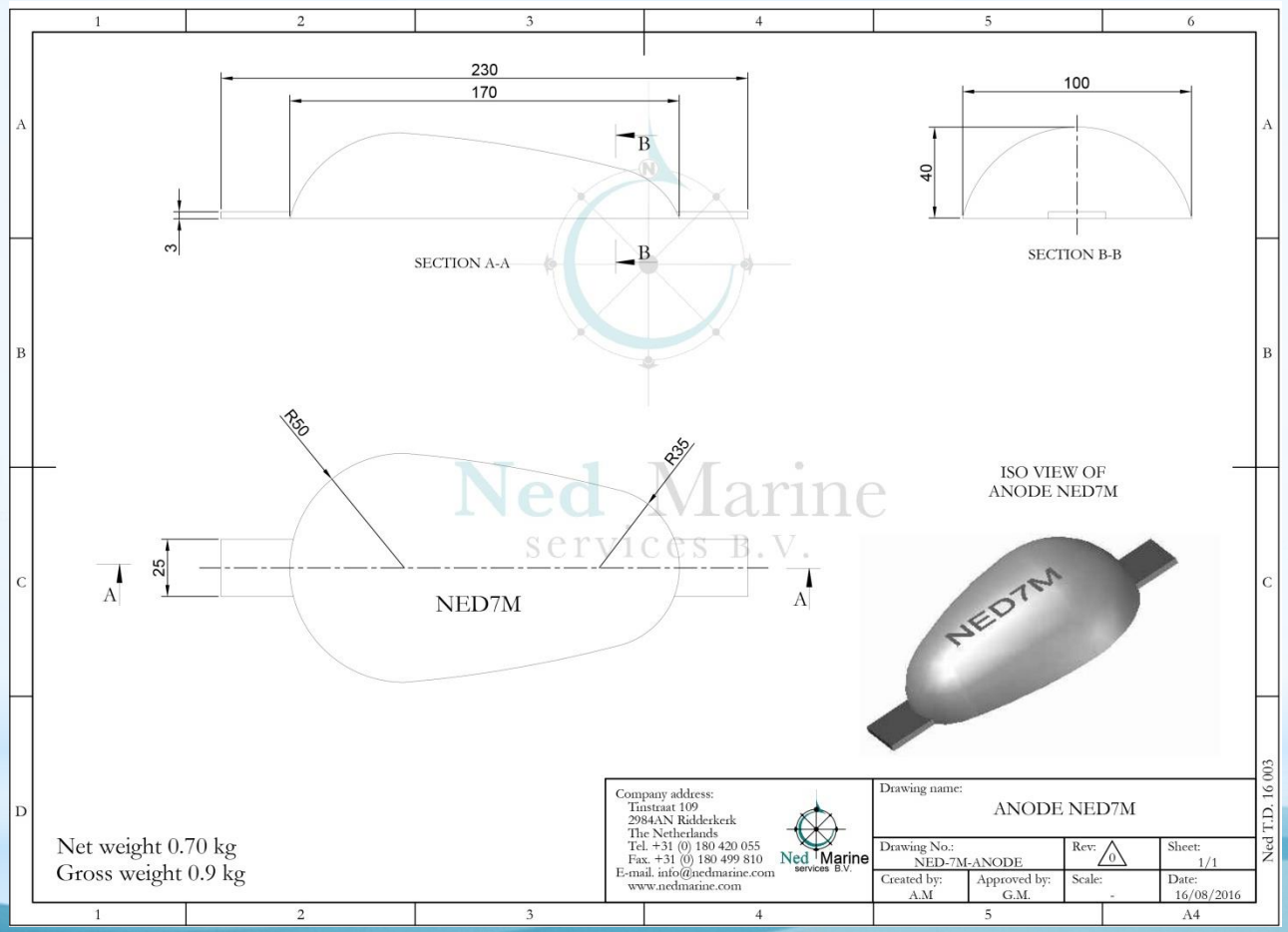
# Mastering Corrosion

# Cathodic Protection



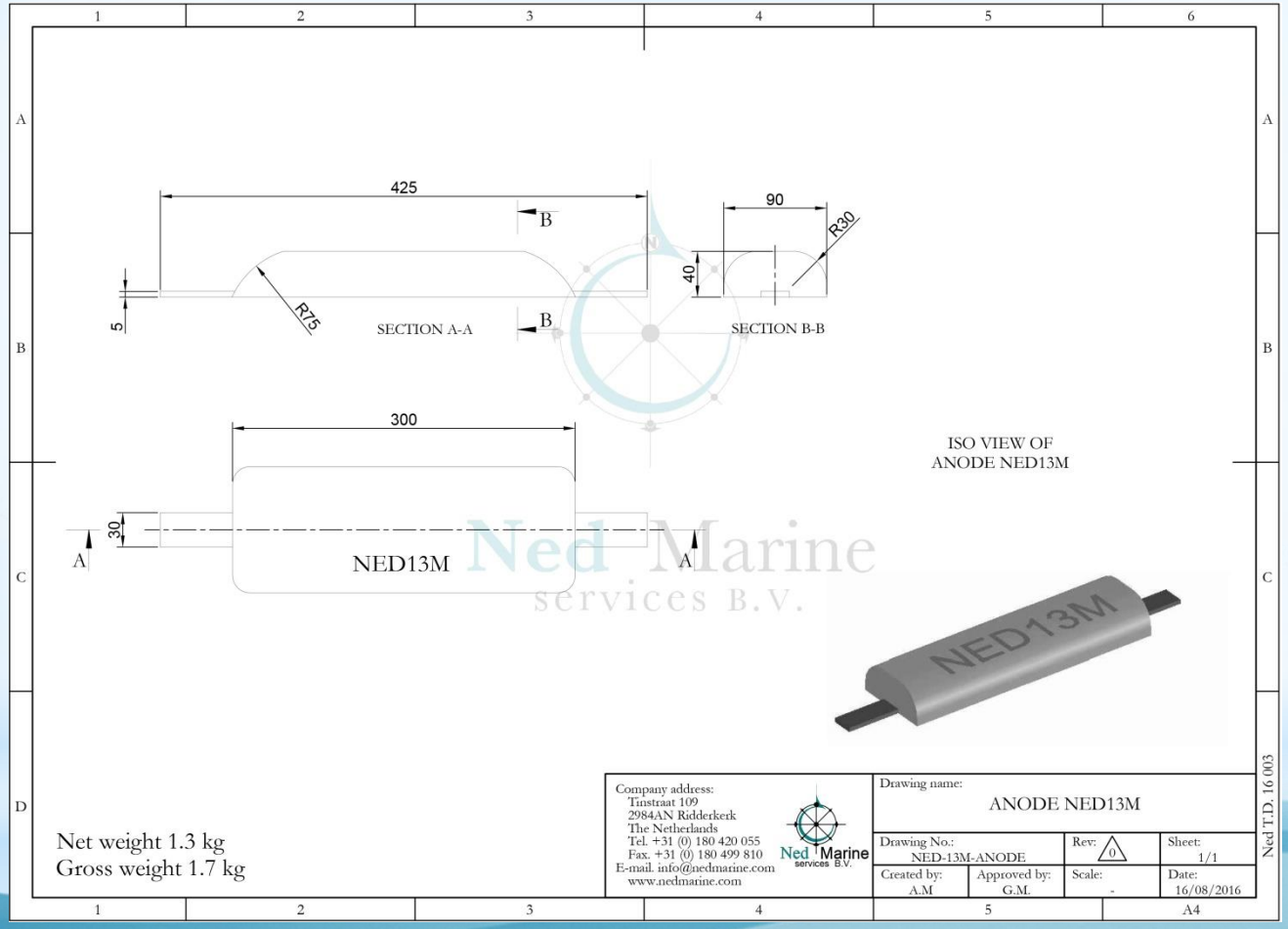

# Mastering Corrosion

# Cathodic Protection



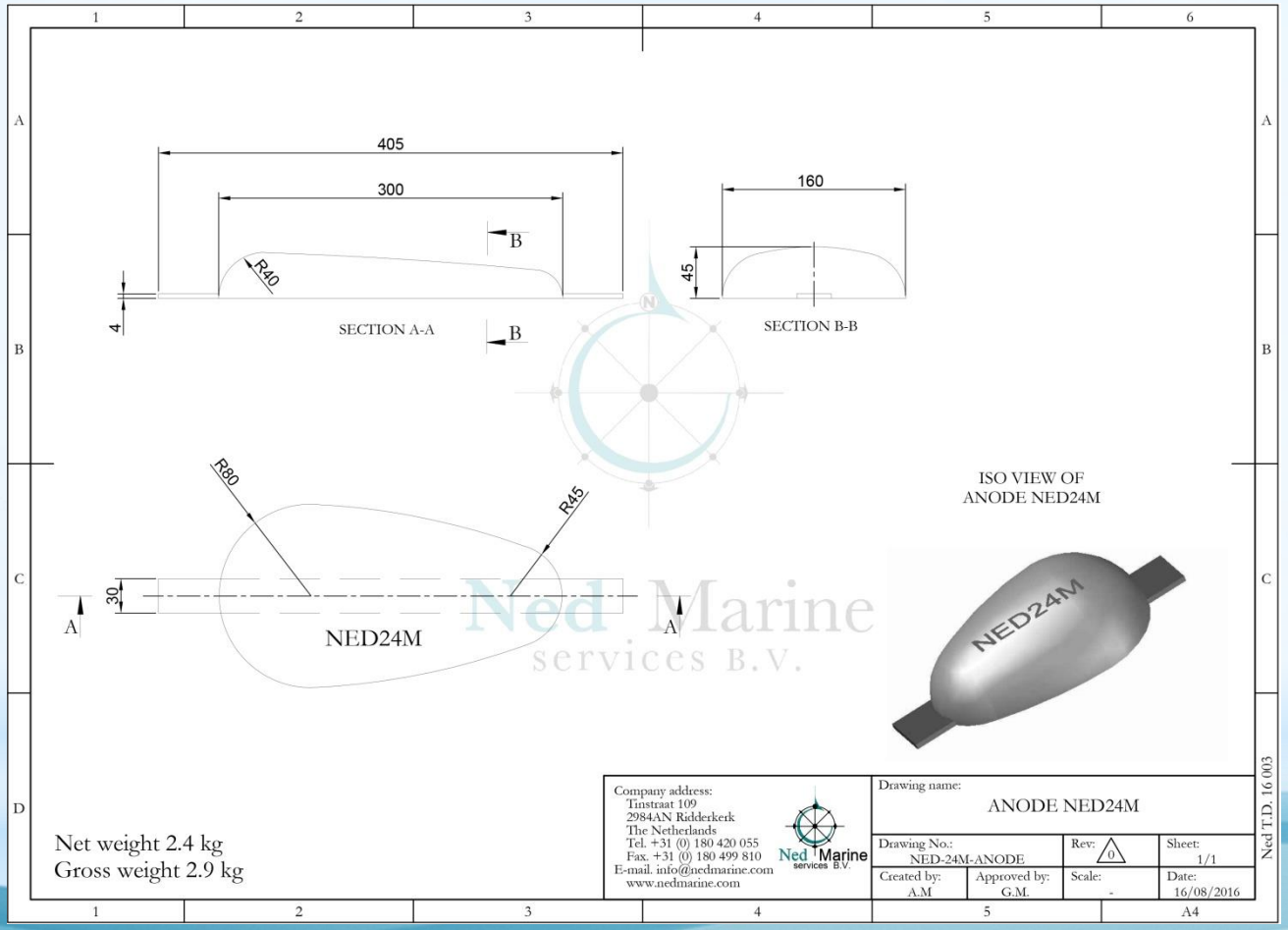

# Mastering Corrosion

# Cathodic Protection



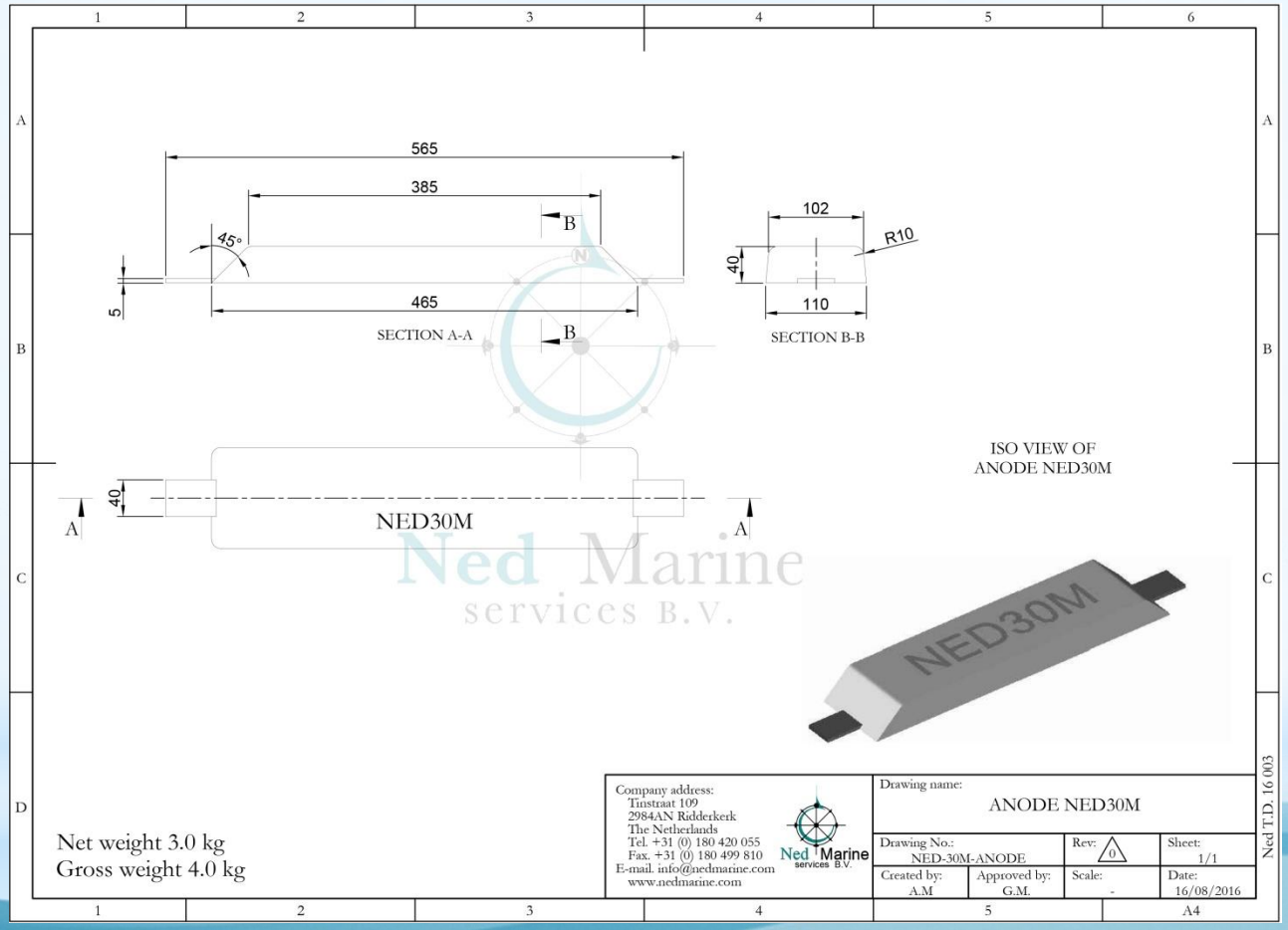

Mastering Corrosion

# Cathodic Protection



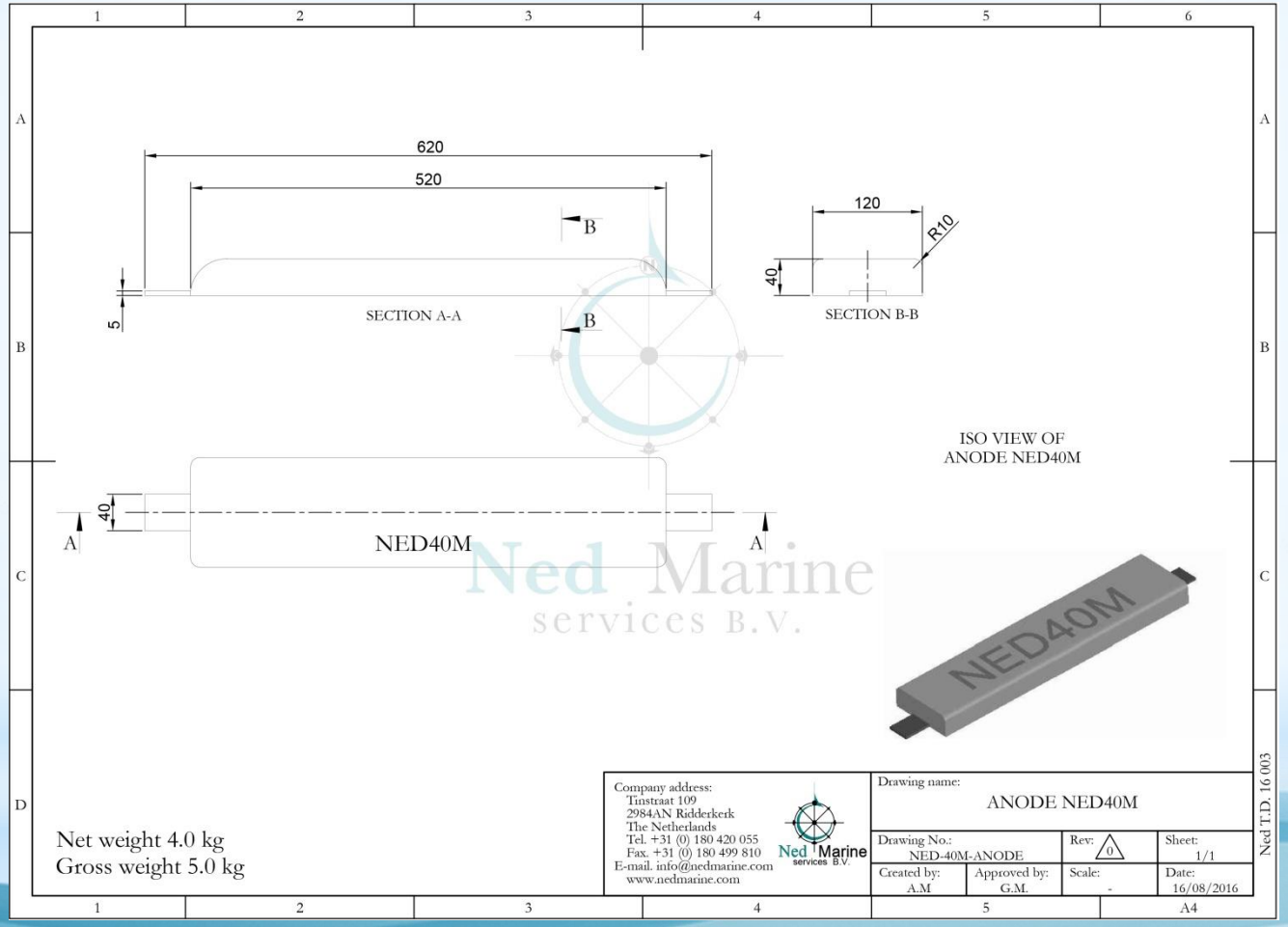

# Mastering Corrosion

# Cathodic Protection



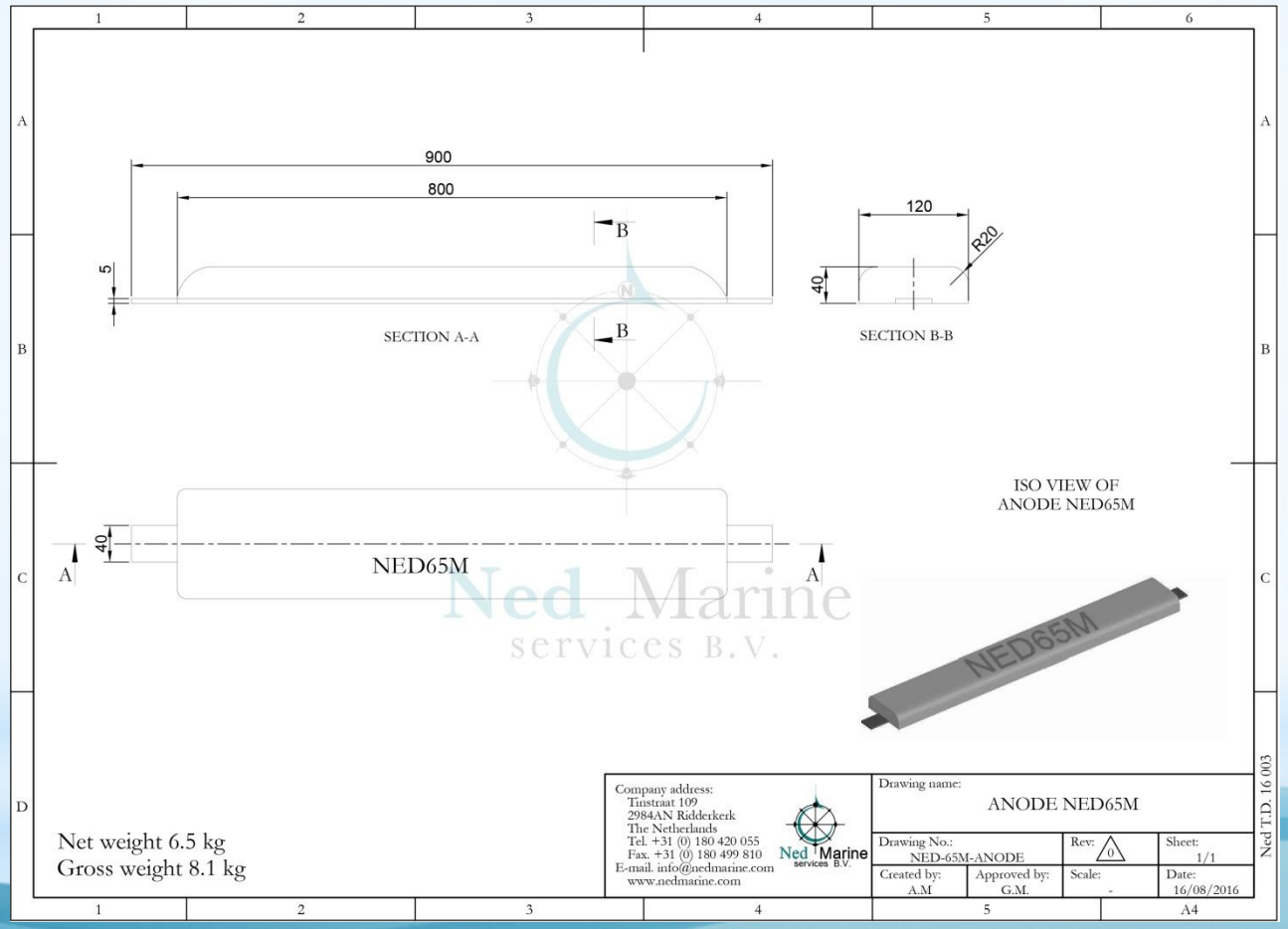

# Mastering Corrosion

# Cathodic Protection




# Mastering Corrosion

# Cathodic Protection




# Mastering Corrosion

For further info or inquiries please contact

Ned Marine
services B.V.


**address:** Wolweverstraat 43
2984 CE Ridderkerk
The Netherlands

**phone** +31 180 420 055
**e-mail** info@nedmarine.com
**website** www.nedmarine.com