

|            |  |          |     |
|------------|--|----------|-----|
| PART NOS.  |  | 12-10-06 | TTW |
| A          |  | 28-02-07 | TTW |
| DIMENSIONS |  |          |     |

# SPECIFICATIONS POTENTIOMETER P4504

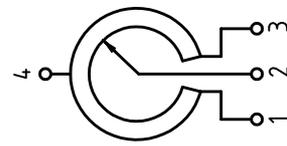
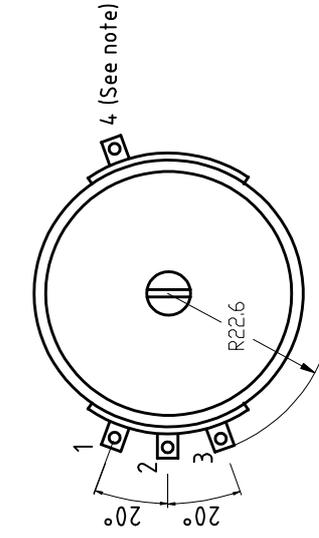
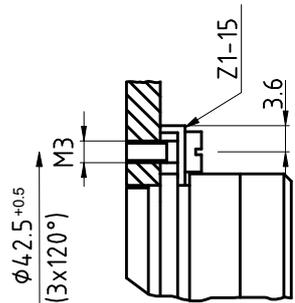
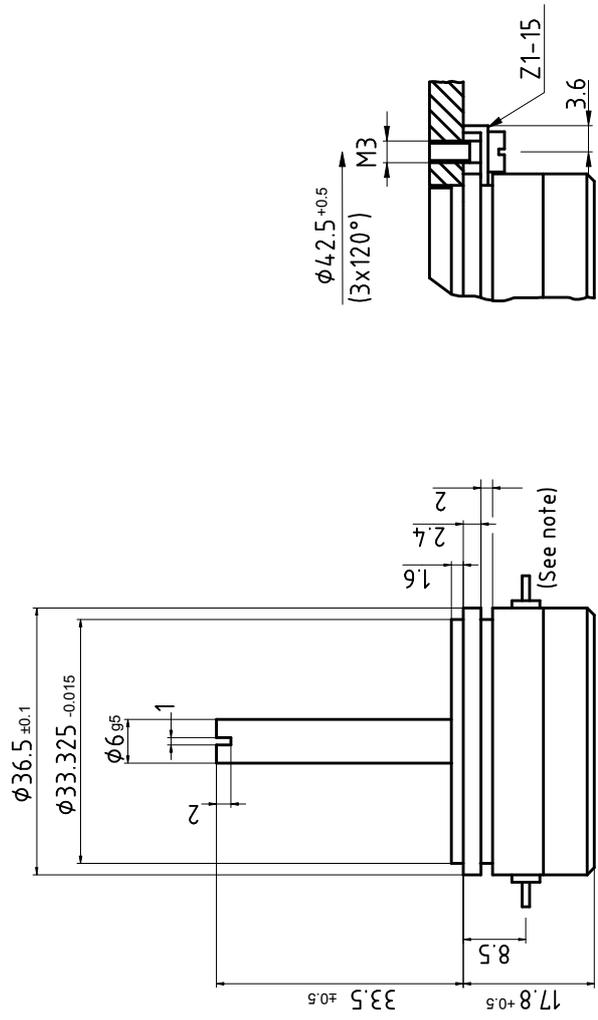
**Make:** Novotechnik  
**Type:** P4504-s0060  
**Part no:** 54000019

**MECHANICAL DATA**  
**Mounting:** servomount with 3 clamps (included)  
 360° continuous  
**Mechanical travel:** 45 N  
 Permitted shaft load (axial and radial) <= 0,1 Ncm  
 static or dynamic force: 10000 rpm  
 Torque: 45 g  
**Maximum operational speed:** 45 g

**ELECTRICAL DATA**  
**Actual electrical travel:** 350° (±2°)  
**Total resistance value:** 2KOhm (± 20%)  
**Repeatability:** 0.002% (0.007°)  
**Independent linearity:** ± 0,075%  
**Max. permissible applied voltage:** 42 V  
**Center tap position:** ± 1% (± 1,75°) (See note)  
**Recommended operating wiper current:** < 1uA  
**Maximum wiper current in case of malfunction:** 10mA  
**Insulation resistance (500VDC, 1bar, 2s):** >= 10MOMhm  
**Dielectric strength (50Hz, 500VAC, 1bar, 2s):** <= 100uA

**ENVIRONMENTAL DATA**  
**Operating temperature range:** -40°C/+100°C  
**Vibration:** 5-2000Hz  
 Amax = 0,75mm  
 amax = 20g  
 50g  
 11ms  
 >100x10E6 rev.  
 IP40

**Protection class:**



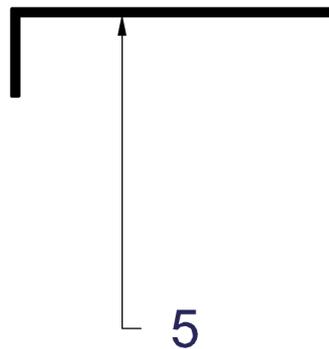
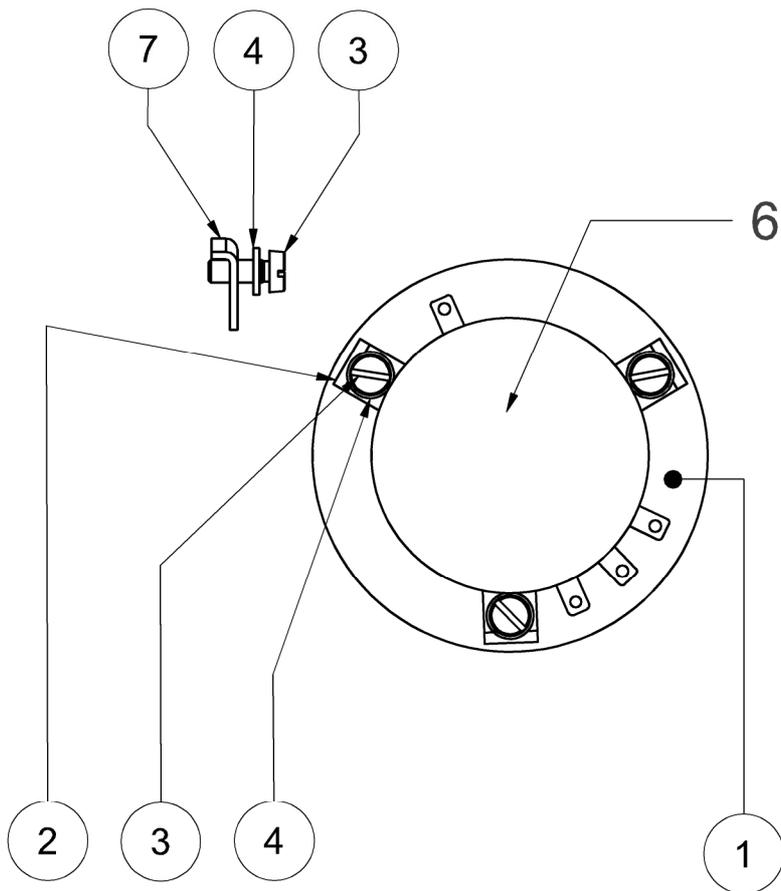
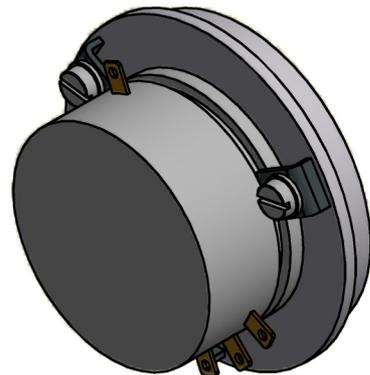
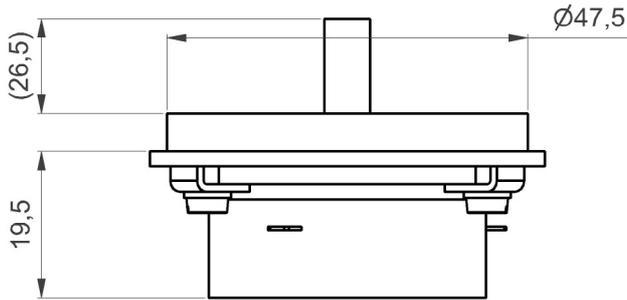
Schematic view on the shaft

|  |  |                    |   |                    |
|--|--|--------------------|---|--------------------|
| <b>DATASHEET POTENTIOMETERS P4504 SERIES</b> |  | <b>4 A 0110696</b> |   | PROJ. METHODE      |
|  |  | WIJZ.              | B |                    |
|  |  | GET. TTW           |   | D.D. 07-11-02 GEZ. |
|  |  | SCHAAL: 1:1        |   | BLAD.              |

## KWANT CONTROLS

KWANT CONTROLS B.V. SNEEK HOLLAND  
 HET AUTEURSRECHT WORDT VOORBEHOUDEN OVEREENKOMSTIG DE WET

|   |   |   |           |    |
|---|---|---|-----------|----|
| A | - | Bevestigingsmaterialen adapter toegevoegd | 15-04-03  | SS |
| B |   | Part list revised                         | 28-10-'14 | HS |
| C |   | Dimensions added                          | 07-12-'16 | HS |

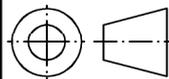


Parts List

| ITEM | QTY | PART NUMBER | DESCRIPTION                            |
|------|-----|-------------|--|
| 1    | 1   | 32100002    | Adapter ring 2" --> 1,5"               |
| 2    | 3   | 77061501    | Clamp potentiometer 1,5"               |
| 3    | 6   | 71032308    | Screw M3x8 - A2 DIN84                  |
| 4    | 6   | 72072300    | Spring Washer M3 - A2 DIN127B          |
| 5    | 1   | 90042003    | Allen key 1,5mm                        |
| 6    | 1   | 54000019    | Potmeter P4504 - see drawing 4A0110696 |
| 7    | 3   | 32200028    | Clamp potentiometer 2"                 |

POT. METER P4504 WITH 2" ADAPTER

Form. A4 4A0110932



**KWANT CONTROLS**  
KWANT CONTROLS B.V. SNEEK HOLLAND

Maten in millimeters

Wijz.: C

Art.: 25000018

HET AUTEURSRECHT WORDT VOORBEHOUDEN OVEREENKOMSTIG DE WET

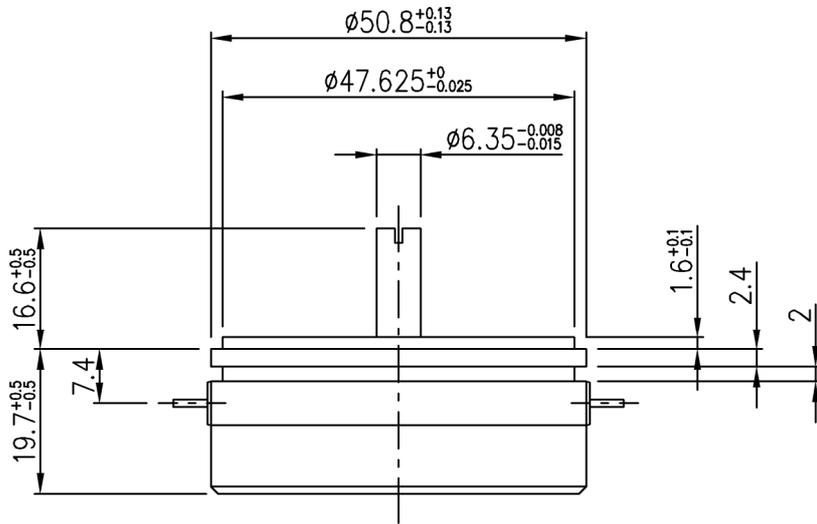
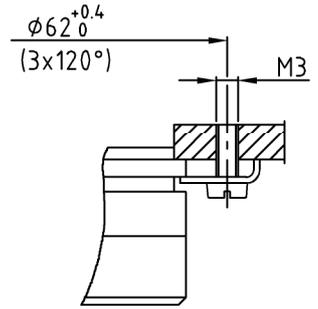
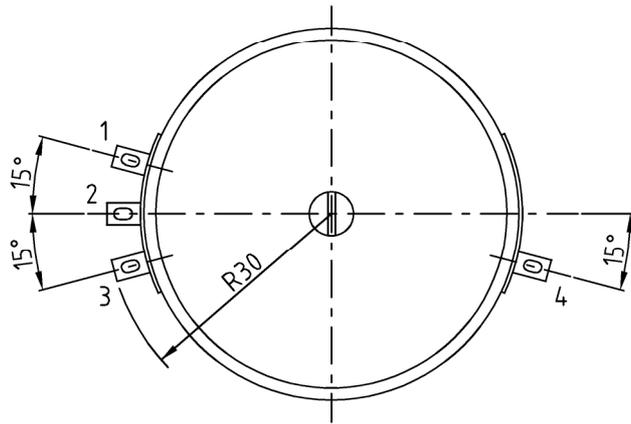
Get.: SS

Datum: 21-1-2003

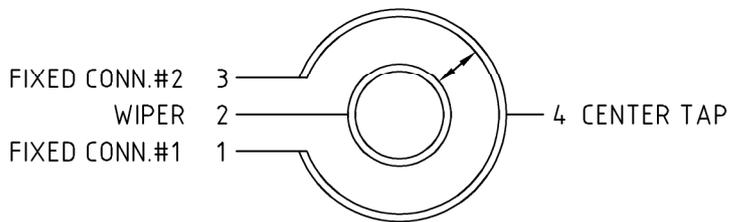
Blad1 / 1

Schaal: 1:1

Vrijgave dd:



ELECTRICAL CONNECTIONS

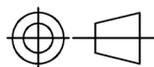


BOTTOM VIEW

DATASHEET POTENTIOMETER P6530s0001

4 A0107770

PROJ. METHODE



**KWANT CONTROLS**

KWANT CONTROLS B.V. SNEEK HOLLAND

HET AUTEURSRECHT WORDT VOORBEHOUDEN OVEREENKOMSTIG DE WET

WIJZ.

GET. EVD

SCHAAL: 1:1

D.D. 30-5-2000 GEZ.

BLAD. 1/2

# SPECIFICATIONS POTENTIOMETER P6530s0001

|          |             |
|----------|-------------|
| Make:    | Novotechnik |
| Type:    | P6530s0001  |
| Part no: | 54000005    |

## MECHANICAL DATA

|  |  |
|--|--|
| Dimensions:  | Refer to page 1                        |
| Mounting:  | servomount with<br>3 clamps (included) |
| Mechanical travel:   | 360° continuous                        |
| Permitted shaft load<br>(axial and radial)<br>static or dynamic force: | 45 N                                   |
| Torque:  | $\leq 0,15$ Ncm                        |
| Maximum operational speed:   | 10000 rpm                              |
| Weight:  | 80 g                                   |

## ELECTRICAL DATA

|   |                                |
|---|--------------------------------|
| Actual electrical travel:                     | 355° ( $\pm 2^\circ$ )         |
| Total resistance value:                       | 2KOhm ( $\pm 20\%$ )           |
| Repeatability:                                | 0.002% (0.007°)                |
| Independent linearity:                        | $\pm 0,1\%$                    |
| Max. permissible applied voltage              | 50 V                           |
| Center tap position:                          | $\pm 1\%$ ( $\pm 1,75^\circ$ ) |
| Recommended operating wiper current:          | $< 1\mu\text{A}$               |
| Maximum wiper current in case of malfunction: | 10mA                           |
| Insulation resistance (500VDC, 1bar, 2s):     | $\geq 10\text{M}\Omega$        |
| Dielectric strenght (50Hz, 500VAC, 1bar, 2s): | $\leq 100\mu\text{A}$          |

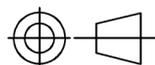
## ENVIRONMENTAL DATA

|                              |   |
|------------------------------|---|
| Operating temperature range: | -40°C/+100°C  |
| Vibration:                   | 5-2000Hz<br>$A_{\text{max}} = 0,75\text{mm}$<br>$a_{\text{max}} = 20\text{g}$ |
| Shock:                       | 50g<br>11ms   |
| Life:                        | $> 100 \times 10^6$ rev.  |
| Protection class:            | IP40 (DIN 400 50)   |

DATASHEET POTENTIOMETER P6530s0001

4 A 0 1 0 7 7 7 0

PROJ. METHODE



## KWANT CONTROLS

KWANT CONTROLS B.V. SNEEK HOLLAND  
HET AUTEURSRECHT WORDT VOORBEHOUDEN OVEREENKOMSTIG DE WET

WIJZ.

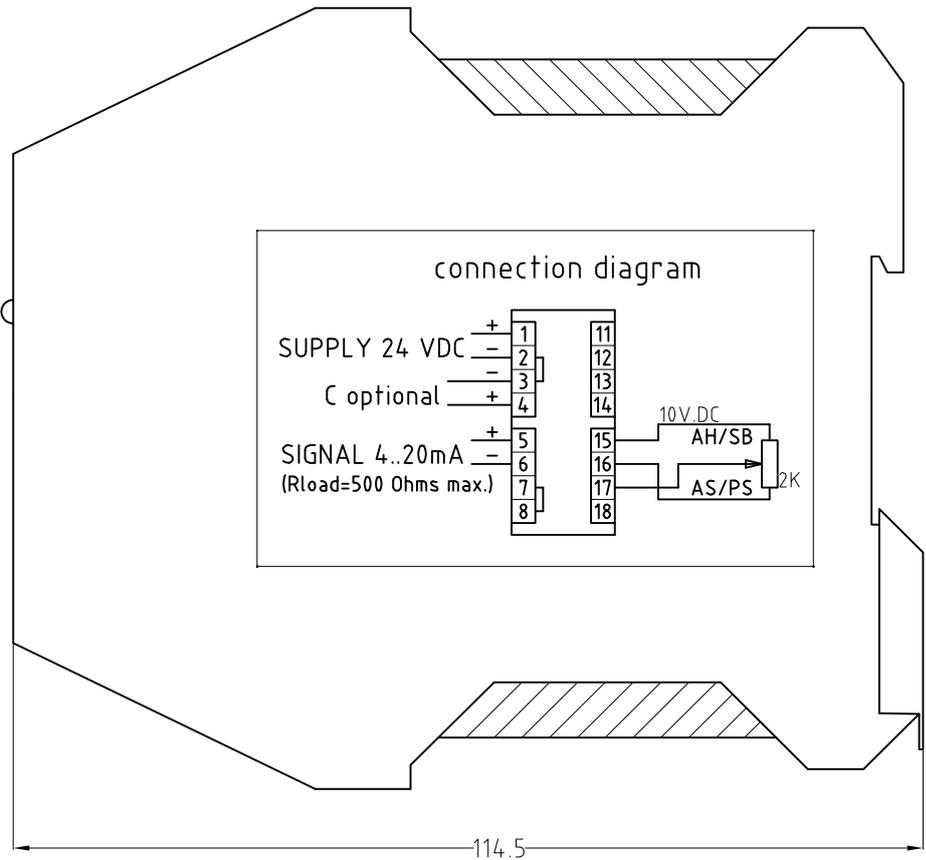
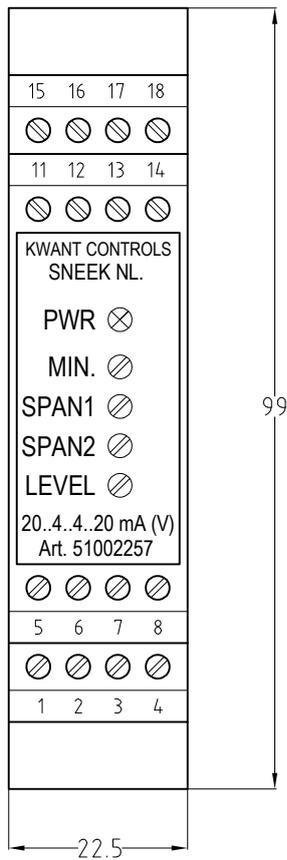
GET. EVD

SCHAAL: 1:1

D.D. 30-5-2000 GEZ.

BLAD. 2/2

|   |  |            |     |
|---|--|------------|-----|
| A | CE-MARKING ADDED                               | 12-11-1999 | TTW |
| E | Version 2 removed, covered by version 4        | 29-10-2004 | TTW |
| F | Part number on the dimensional drawing changed | 26-4-2006  | TTW |
| G | 358° changed to 356°                           | 10-1-2011  | TTW |
| H | Version 6L added                               | 19-10-2020 | JZ  |



PWR = LED-lamp indicating the presence of the supplyvoltage  
 MIN = setpoint for adjusting the minimum outputsignal (e.g. for creating a flat in a 20..4..20 mA signal)  
 SPAN1 = setpoint for adjusting the required span (range) in the 'Ahead/Starboard'-sector.  
 SPAN2 = setpoint for adjusting the required span (range) in the 'Astern/Portside'-sector (for 20..4..20mA signals)  
 LEVEL = setpoint for adjusting the signallevel in the 'Stop/Midship'-leverposition (e.g. 12mA)

Note: the module is clipped on a mountingrail size 35/7,5mm (acc. to EN 50 022)

**ELECTRICAL SPECIFICATIONS**

- Supplyvoltage: 24 V.DC (-20% ... +30%)
  - Powerconsumption: approximately 1 W.
  - Operating temperature range: -25° ... +70°C.
  - Loadimpedance: 0 ... 500 Ohm
- The powersupply input is protected against voltage transients and wrong polarity connections. The power supply is isolated from the outputsignal (500VDC).

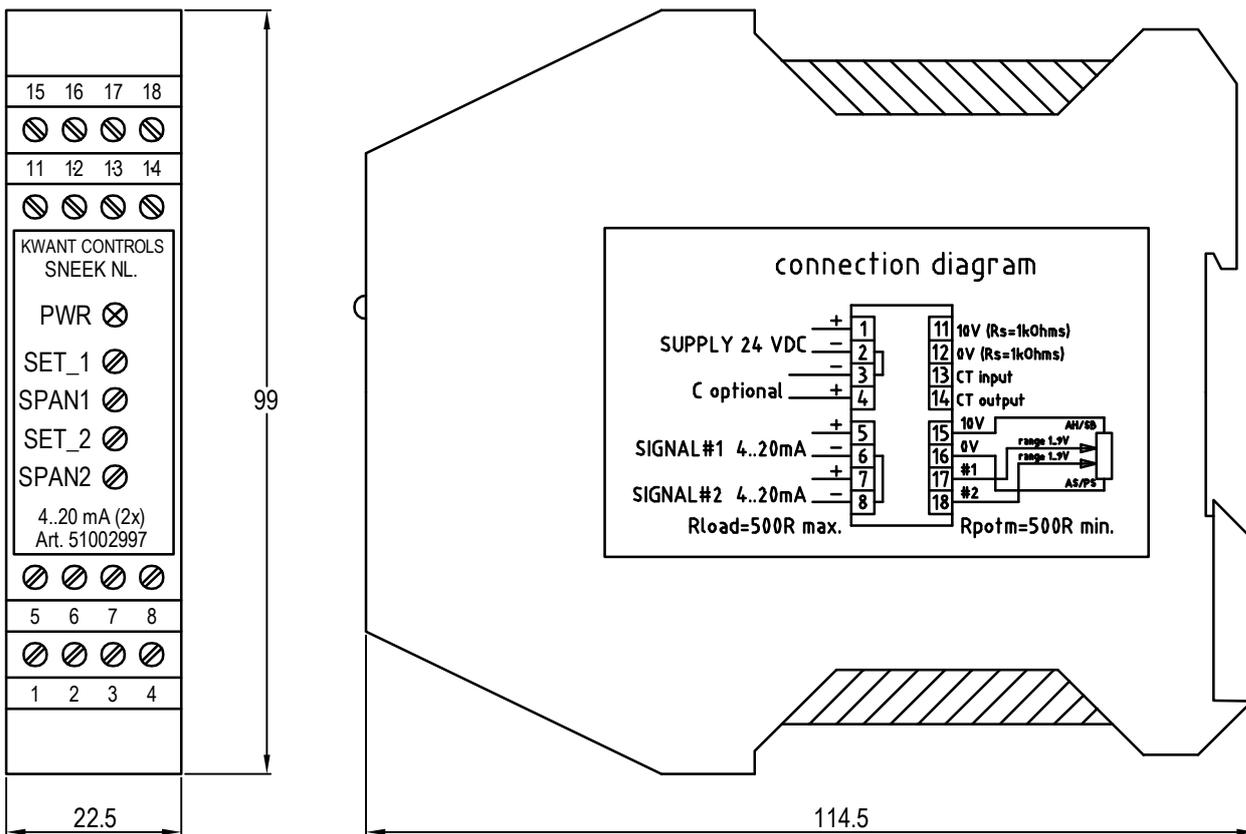
The mA-transmitter has been CE-approved according to EN60945:1997, as laid down in certificate nr. 96122-KRQ/EMC 99-4555.



**The mA-transmitter can be supplied in the next versions:**

1. Type 51001907 = the **standard 4 ... 20 mA** signaltransmitter for normal applications with an input-range of 80%.
3. Type 51001917 = a **continuous 4 ... 20 mA** signaltransmitter for use in 360°-systems. A special 356°-potentiometer is used; when the wiper is in the remaining 4°-contactless area the outputsignal will remain at 4 or at 20 mA depending on the last contact.
4. Type 51002257 = a **V-shaped signal (20..4..20 mA)** used for direct signaltransmission to e.g. a governor.The signallevel around the 'Stop/Neutral' position can be flattened in order to activate the clutches before changing the motor speed.
6. Type 51002927 = the **4 ... 20 mA** signaltransmitter for normal applications with an adj. inputrange of 50 to 85%.
- 6L. Type 51002928 = the **4 ... 20 mA** signaltransmitter for normal applications with an adj. inputrange of 50 to 85%, with signal loss indication.

|  |               |           |                                   |         |                |
|--|---------------|-----------|-----------------------------------|---------|----------------|
| <b>KWANT CONTROLS</b><br>sneek-holland | Drawn by: NJV | 20-9-1999 | Doc. type: DATA SHEET             |         |                |
|  | Appr. by: -   |           | Doc. title: MODULE mA-TRANSMITTER |         |                |
| Drawing scale: 1:1                     | Fact. No.: -  |           | Doc. Ref.: 4A0107073              | Rev.: G | Sheet: 1 of: 1 |



PWR = LED-lamp indicating the presence of the supply voltage  
 SET\_1 = setpoint for adjusting the signal level at the 'Neutral/Midship'-position for output 1  
 SPAN1 = setpoint for adjusting the required span (range) in the 'Ahead/Starboard'-sector for output 1  
 SET\_2 = setpoint for adjusting the signal level at the 'Neutral/Midship'-position for output 2  
 SPAN2 = setpoint for adjusting the required span (range) in the 'Ahead/Starboard'-sector for output 2  
 Note: the module is clipped on a mountingrail size 35/7,5mm (acc. to EN 50 022)

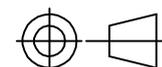
**ELECTRICAL SPECIFICATIONS**

- Supplyvoltage: 24 V.DC (-30...+30%)
  - Powerconsumption: approximately 2 W.
  - Operating temperature range: -25° ... +71°C.
  - Loadimpedance: 0 ... 500 Ohm
- The powersupply input is protected against voltage transients and wrong polarity connections. The power supply is isolated from the outputsignal (500VDC).

MODULE DOUBLE R/I-CONVERTER

4 A 01 10799

PROJ. METHODE



**KWANT CONTROLS**

KWANT CONTROLS B.V. SNEEK HOLLAND

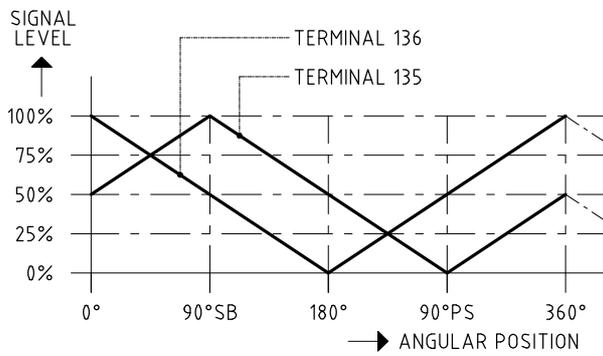
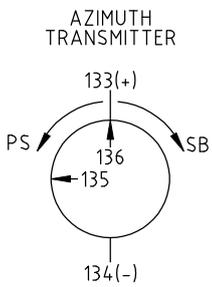
WIJZ.

GET. NJV

D.D. 27-11-2002 GEZ.

SCHAAL 1:1

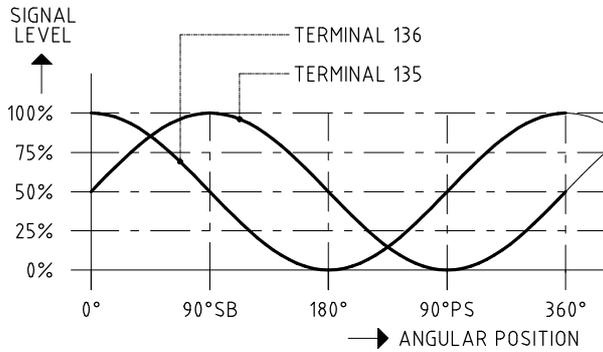
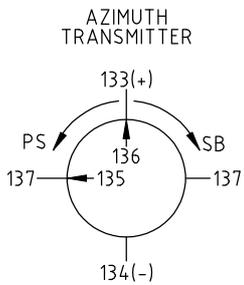
RI AD



| VOLTAGE ON TERMINALS |        |        |      |      |
|----------------------|--------|--------|------|------|
| TERM POS             | 133(+) | 134(-) | 135  | 136  |
| A.H.                 | 100%   | 0%     | 50%  | 100% |
| S.B.                 | 100%   | 0%     | 100% | 50%  |
| A.S.                 | 100%   | 0%     | 50%  | 0%   |
| P.S.                 | 100%   | 0%     | 0%   | 50%  |

(SUPPLY ON TERMINALS 133-134)

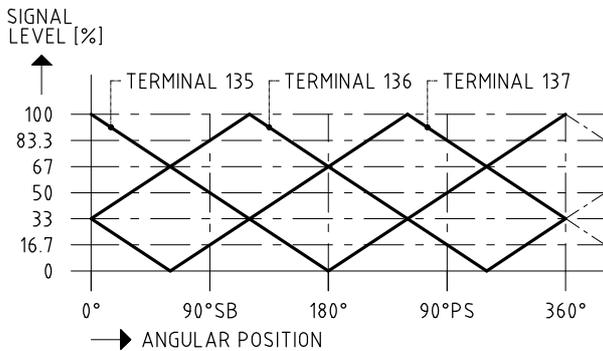
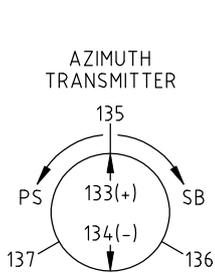
Fig.1 Linear azimuth transmitter



| VOLTAGE ON TERMINALS |        |        |      |      |     |
|----------------------|--------|--------|------|------|-----|
| TERM POS             | 133(+) | 134(-) | 135  | 136  | 137 |
| A.H.                 | 100%   | 0%     | 50%  | 100% | 50% |
| S.B.                 | 100%   | 0%     | 100% | 50%  | 50% |
| A.S.                 | 100%   | 0%     | 50%  | 0%   | 50% |
| P.S.                 | 100%   | 0%     | 0%   | 50%  | 50% |

(SUPPLY ON TERMINALS 133-134)

Fig.2 SIN/COS azimuth transmitter



| VOLTAGE ON TERMINALS |        |        |      |       |       |
|----------------------|--------|--------|------|-------|-------|
| TERM POS             | 133(+) | 134(-) | 135  | 136   | 137   |
| A.H.                 | 100%   | 0%     | 100% | 33%   | 33%   |
| S.B.                 | 100%   | 0%     | 50%  | 83,3% | 16,7% |
| A.S.                 | 100%   | 0%     | 0%   | 67%   | 67%   |
| P.S.                 | 100%   | 0%     | 50%  | 16,7% | 83,3% |

(SUPPLY ON TERMINALS 133-134)

Fig.3 Linear three phase azimuth transmitter

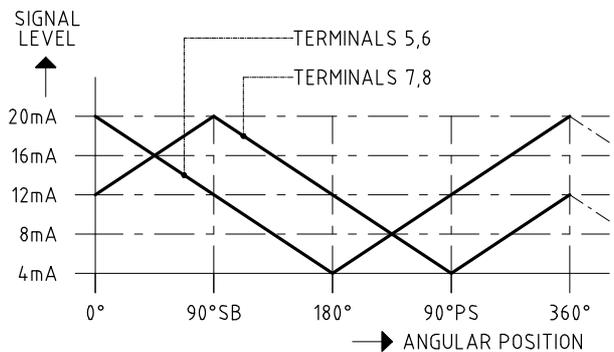
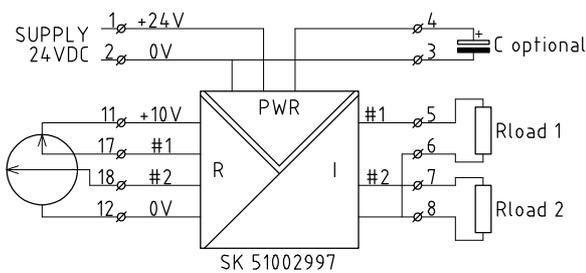


Fig.4 Dual channel mA transmitter

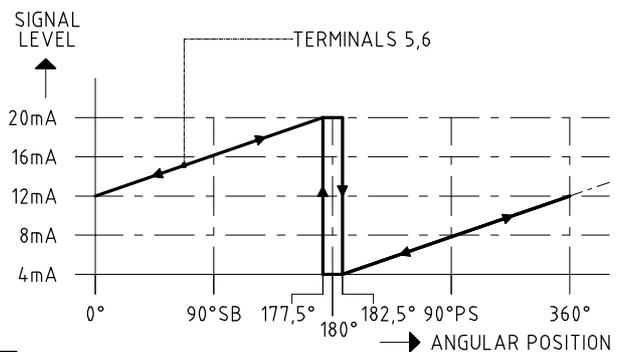
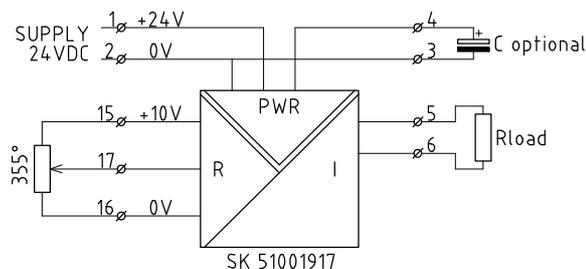


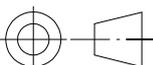
Fig.5 Single channel 360° mA transmitter with hysteresis

AZIMUTH SIGNALS

4A0111385

PROJ. METHODE

**KWANT CONTROLS**



KWANT CONTROLS B.V. SNEEK HOLLAND

WIJZ. C

GET. TTW

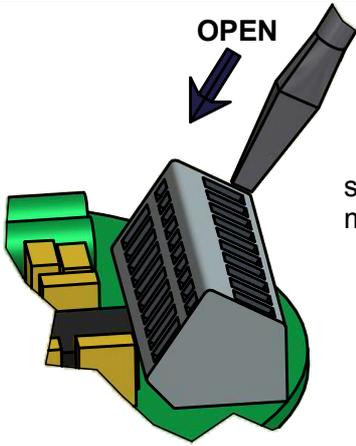
D.D. 28-05-03 GEZ.

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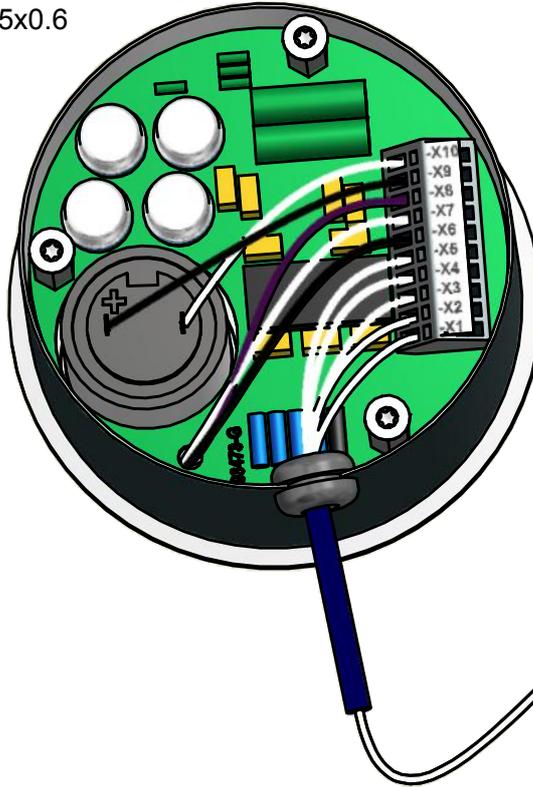
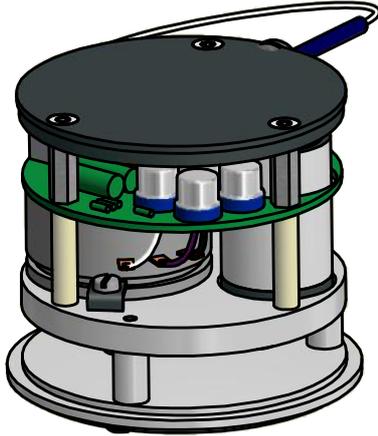
SCHAAL: \_

BLAD.

| Wijz | Omschrijving                         | Datum      | Naam |
|------|--------------------------------------|------------|------|
| A    | test added                           | 26-11-2010 | JR   |
| B    | omgezet naar 3D                      | 29-11-2010 | SJ   |
| B    | Kleuren en verloop kabels veranderd. | 13-09-2011 | KvO  |



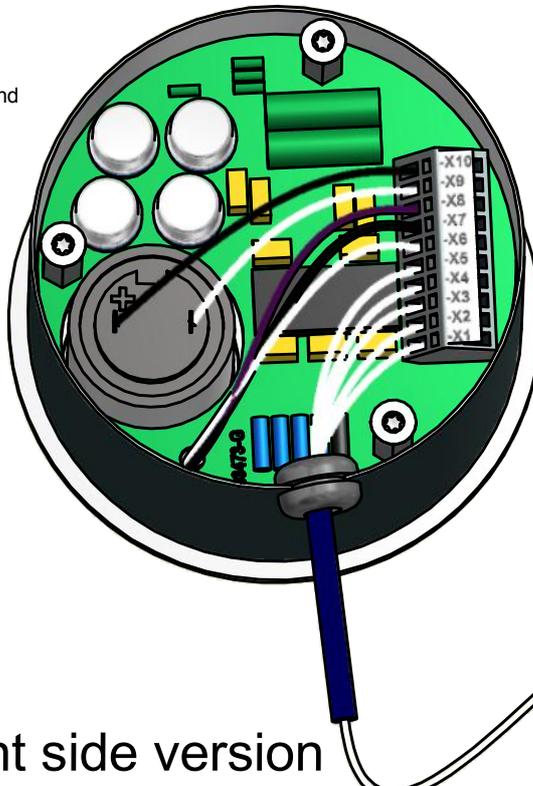
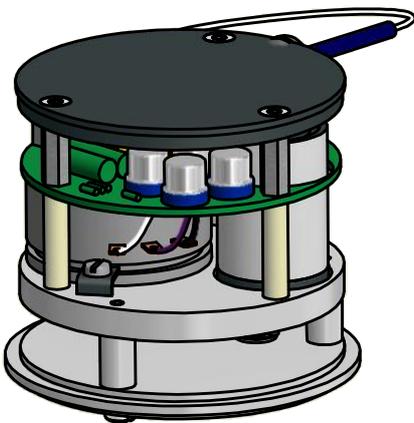
screw driver  
max: 3.5x0.6



- X10 (white)
- X9 (black)
- X8 (purple)
- X7 (white)
- X6 (black)
- X5 = 5
- X4 = 4
- X3 = 3 or 6
- X2 = 2
- X1 = 1

### Left side version

Modification to change left to right side version  
(swap BK and WH wire on terminal X6 and X7 and  
swap BK and WH wire on terminal X9 and X10)

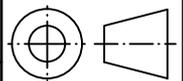


- X10 (black)
- X9 (white)
- X8 (purple)
- X7 (black)
- X6 (white)
- X5 = 5
- X4 = 4
- X3 = 3 of 6
- X2 = 2
- X1 = 1

### Right side version

Motor unit type RSM4-U

Form. 4A0120049



**KWANT CONTROLS**  
KWANT CONTROLS B.V. SNEEK HOLLAND

Maten in millimeters

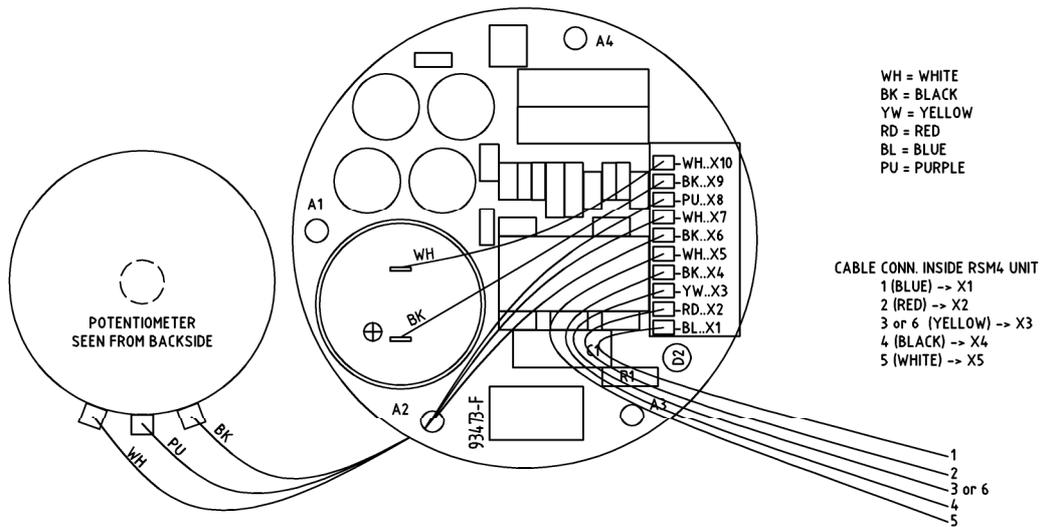
Wijz.: C Art.: 21000195

HET AUTEURSRECHT WORDT  
VOORBEHOUDEN  
OVEREENKOMSTIG DE WET

Get.: SJ Get.dd.: 26-11-2010 L.Wijz.dd.: 30-11-2010

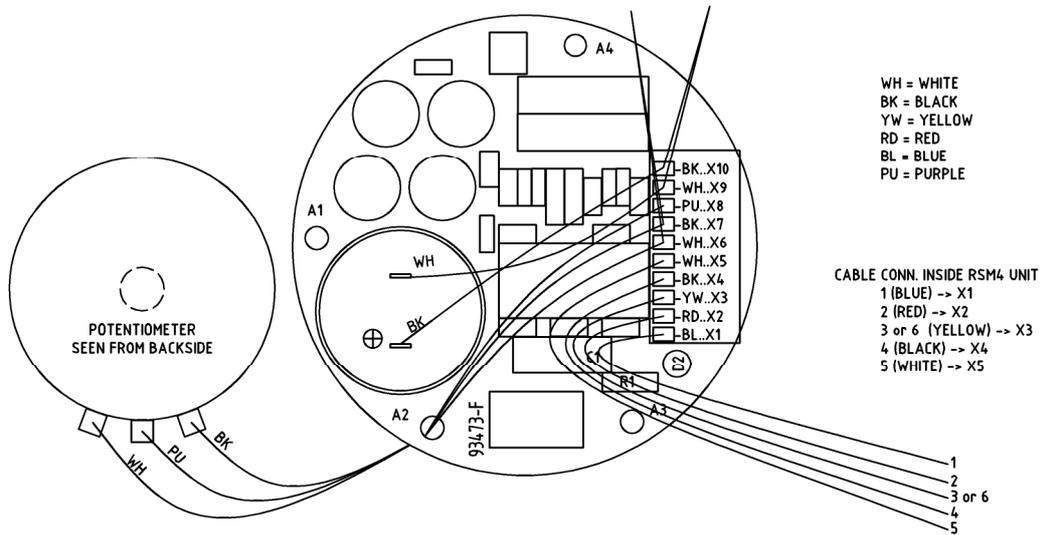
Schaal: 1 : 1 Status: Released

Blad: 1 / 1



Left Side Version

Modification to change Left to Right Side version  
(swap BK and WH wire on terminal X6 and X7 and  
swap BK and WH wire on terminal X9 and X10)



Right Side Version

|   |                                     |                              |
|---|-------------------------------------|------------------------------|
| CONNECTION DIAGRAM RSM4   | 4 AO 117318                         | PROJ. METHODE<br>            |
| <b>KWANT CONTROLS</b><br>KWANT CONTROLS B.V. SNEEK HOLLAND<br>HET AUTEURSRECHT WORDT VOORBEHOUDEN OVEREENKOMSTIG DE WET | WIJZ. A<br>GET. NJV<br>SCHAAAL: 1:1 | D.D. 6-11-2008 GEZ.<br>BLAD. |



**GENERAL TERMS AND CONDITIONS OF CONTRACT 2018  
of HOLLAND MARINE EQUIPMENT ASSOCIATION (HME)**

These conditions are publicized and can be downloaded on [www.maritimetechnology.nl](http://www.maritimetechnology.nl) under the button 'Voor leden/NMT ledenvoordelen' (the English version of these conditions to be addressed via NMT's Dutch homepage). Copyright in these conditions is vested with branch organization Netherlands Maritime Technology (NMT). Members of NMT are allowed to use and copy these conditions free of charge. Non-members can obtain a paid license for any use of copying of these conditions with NMT.

## **1 Definitions**

In these General Terms and Conditions of Contract (hereinafter referred to as the "Terms and Conditions"), the following terms shall have the following meaning:

"Supplier": any supplier of Goods and/or Services under an Agreement;

"Customer": the party with whom the Supplier entered into an Agreement;

"Agreement": the specific written sales and/or service contract or acknowledgement of order, with appendices, between the Supplier and the Customer, including these Terms and Conditions, which form an integral part thereof;

"Services": any services like jobbing, erection, installation, commissioning, technical assistance, inspection, advice, repair, overhaul and/or maintenance that the Supplier has undertaken to provide, whether or not subsidiary to Delivery of Goods and regardless of their appellation;

"Goods": any goods the Supplier has undertaken to supply, including software and/or hardware, spare parts, certificates and/or documentation required for proper Performance;

"Acceptance Protocol": the document to be issued and signed by both parties, which shall constitute evidence that the Goods delivered and /or Services provided have been found to be in accordance with an Agreement;

"Delivery": the delivery of the Goods, as agreed between the parties in accordance with the Agreement;

"Performance": the provision of Services and/or the supply of Goods by the Supplier;

"Contract Price": the price to be paid to the Supplier in connection with the Delivery of Goods and/or provision of Services under the Agreement;

"Personnel": all personnel either directly or indirectly employed or hired by the Supplier, including representatives of the Supplier;

"Intent or Willful Recklessness": intent or willful recklessness (*opzet of bewuste roekeloosheid*) of the Supplier, its organs (*organen van de vennootschap*), its managers (*leidinggevers*), and/or other managerial or executive employees (*de leidinggevende onder-geschikten*), including the applicability of article 7:762 Dutch Civil Code ("DCC").

## **2 General**

2.1 These Terms and the Agreement can be amended and supplemented only if such amendment or supplement has expressly been agreed upon as such in writing.

2.2 The Agreement replaces all prior oral and written agreements with respect to the subject matter of the Agreement.

2.3 Supplier's offers are without engagement.

2.4 The Agreement is conditional on obtaining of all relevant export licences.

2.5 The Supplier shall be entitled to subcontract or assign any part of its rights and obligations out of the Agreement.

2.6 Terms in these Terms and Conditions refer to Dutch legal concepts only (as in some cases referred to in the Dutch language between brackets in italics) and shall be interpreted accordingly. The use of these or similar terms in any other jurisdiction shall be disregarded.

## **3 Obligations of the Customer**

The Customer warrants that the Supplier will be enabled to commence and effect Performance outside Supplier's works immediately upon arrival of Supplier's Goods or Personnel and without interruption or hindrance. For this purpose, the Customer shall, before the arrival of Supplier's Goods or Personnel, make all the arrangements necessary -whether or not expressly agreed upon- to ensure that the work can commence at the agreed date and can be carried out without interruption or hindrance.

### **3.1 Technical, Safety and Storage Assistance**

3.1.1 In case the Performance takes place at the premises of the Customer, the Customer shall take all measures prescribed by law and/or any other reasonable measures necessary for the prevention of accidents at his premises. The Customer shall inform the Supplier at least 7 days before commencement of any work in writing of the valid safety precautions and shall ensure that his personnel responsible for safety matters is present during the times that Performance is to take place. The Supplier is entitled to refuse or suspend Performance if the safety of his Personnel is not sufficiently guaranteed.

3.1.2 In addition to article 3.1.1, the Customer shall, at no charge, provide the Supplier with all assistance the Supplier reasonably requires, such as -but not limited to- skilled and unskilled personnel, the necessary devices, implements and auxiliary means, in particular the tools for the assistant personnel and lift and hoisting gear of sufficient capacity (including operating staff), scaffolding etc., as well as cleaning, packing and lubricant materials. Furthermore, the Customer shall supply heating, lighting, water and electricity and their connections in sufficient capacity and quantity as well as welding gas and other working requirements in so far as these are not to be provided by the Supplier under the terms of the Agreement. The equipment made available by the Customer shall be safe and in perfect condition.

3.1.3 The Customer shall at all times bear responsibility for the storage of all Goods delivered, including Spare Parts and other materials, at least in a dry, closed and lockable room on the site or in its near vicinity, in accordance with normal practice and/or the instructions issued by the Supplier. Prior to the commencement of work or installation of these Goods, they shall be checked by the Customer, in order to make sure that the Goods are complete and undamaged. Goods lost or damaged during storage shall be replaced or repaired at the expense of the Customer.

### **3.2 Documentation**

3.2.1 The Customer warrants that all documents and licences required in connection with the import and/or export of the Goods and/or the stay of Supplier's Personnel in the country and at the premises of the Customer shall be available at the time of arrival of the Goods and/or Personnel.

3.2.2 The Customer shall, at no charge, provide the Supplier timely with any information reasonably required in connection with the Agreement, such as - but not limited to - relevant technical documentation, logs, inspection reports and import licences.

3.2.3 The Customer shall keep any information received from the Supplier strictly confidential, and shall use such information solely for the proper performance of the Agreement. All information provided by the Supplier shall be returned by the Customer to the Supplier on Supplier's first request.

### **3.3 Intellectual property rights**

3.3.1 All intellectual property rights, including but not limited to, all drawings, designs, (technical) documentation, building specifications, computer programs, as well as the carriers on which such rights are laid down (hereafter jointly: "IP-rights"), which come to the knowledge of the Customer during the contract, will at all times remain vested in and the property of the Supplier and will be returned to the Supplier upon first request or immediately upon fulfilment of the contractual obligations of both the Customer and the Supplier.

3.3.2 All IP-rights produced or developed by or on behalf of the Customer for or during the Contract, are hereby transferred and assigned to the Supplier which transfer and assignment the Supplier hereby accepts. The Customer shall at





first request of the Supplier perform any act, if any, required by the applicable law to conclude full transfer of the IP-rights to the Supplier, including signing additional documents. The Customer hereby transfers in advance all future IP-rights ("Future IP-rights") to the Supplier, which transfer is hereby accepted by the Supplier to the extent that the law does not permit transfer in advance of the Future IP-rights, the Customer will, upon the establishment of any Future IP-rights and at first request of the Supplier, perform any act required for the transfer of the Future IP-rights. The Customer hereby grants the Supplier an irrevocable power of attorney to perform – in the name of the Customer – all acts necessary to conclude the transfer pursuant to the aforementioned IP-rights.

3.3.3 In the event parties decide to deviate from the terms and conditions as laid down in the paragraphs 3.3.1 and 3.3.2, and agree in writing that the (Future) IP-rights or any part thereof will be transferred and assigned to the Customer, the Customer herewith grants or, if such granting cannot be achieved by means of these Terms and Conditions, shall be obliged to grant the Supplier a perpetual, world-wide, exclusive, royalty-free, non-restrictive and non-transferable licence for the use, including but not limited to exploitation, publication and copying, of the (Future) IP-rights or any part thereof.

#### **4 Terms for Performance**

##### **4.1 Place of Performance**

The place of Performance shall be stated in the Agreement. In case the Agreement does not specify a place of Performance, such place shall be determined by the Supplier at its discretion after consulting the Customer.

##### **4.2 Times of Performance**

4.2.1 Time(s) or periods of Performance shall be stated in the Agreement. Any time or period of Performance that differs from the Agreement shall only be binding if they have been agreed upon by the Supplier in writing. If Performance is to take place during a specific and fixed period of time by the expiry of which Performance is deemed to be completed, any such period will not commence until all contractual obligations of the Customer have been met, all payments due have been made, security desired by the Supplier has been put up and/or any other preconditions have been fulfilled.

4.2.2 In case the Agreement does not specify the time of Performance, such time shall be determined by the Supplier at its discretion after consulting the Customer. However, as far as the Agreement sees to the provision of Services, the date of Performance mentioned in the Agreement shall be an estimate only. The Supplier shall make every reasonable effort to effect Performance at the said date.

##### **4.3 Delay in Performance**

4.3.1 If Performance is delayed due to (i) any act or omission of the Customer or (ii) the Customer failing to perform any of the obligations mentioned in article 3 of these Terms and Conditions, the Supplier is entitled to extend the time of Performance with a reasonable period which is at least equal to the additional period of time caused by such delay.

Furthermore, it is expressly agreed that the Supplier shall have the right to extend the time of Performance in the event that (i) the Supplier has not received the advance payment (or an other contractual payment) as stipulated in the Agreement, or (ii) the Customer has not provided security that complies with the requirements in the Agreement.

4.3.2 Any additional costs arising from delay which is attributable to the Customer, shall be borne by the Customer.

4.3.3 In case the Supplier fails to Perform in time due to reasons solely attributable to the Supplier, a grace period of two weeks shall apply. Thereafter, the Customer shall be entitled to claim liquidated damages of 0,5% for each completed week of delay, calculated on the value of the delayed Goods. Liquidated damages shall in no case exceed 5% of the value of the delayed Goods. Liquidated damages shall only be due if the Customer proves that the delay caused damage and the amount of the loss suffered can be substantiated accordingly.

Liquidated damages shall be the Customer's sole and exclusive remedy for damages and/or losses incurred as a result of delay in Performance and except in case of Intent or Wilful Recklessness, the Supplier shall not be liable on whatever legal ground for any direct, indirect or consequential losses, damages or expenses of whatever nature incurred by the Customer by reason of any delay in Performance.

4.3.4 In case of any occurrence or threat, either foreseeable or not, beyond the reasonable control of the Supplier or any of his sub-Suppliers, which prevents the Supplier from effecting Performance ("Force Majeure"), the date of Performance will be extended with at least the period of Force Majeure. Cases of Force Majeure are in particular -but in no case limited to- fire, war or warlike acts, riots, insurrection, mobilisation, floods, earthquakes and other natural disasters, epidemics, quarantine measures, strikes, lockouts, requisitioning, restriction of foreign currency transfer, transport restrictions, unworkable weather conditions, failure of metal castings and/or forgings, delay in the supply of parts, goods or services by third parties, transportation difficulties, business disturbances and restrictions in the issue of permits for the Personnel, importation and exportation of Goods, tools and/or materials.

4.3.5 Except in case of Intent or Wilful Recklessness, the Supplier shall not be liable on whatever legal ground for any direct, indirect or consequential losses, damages or expenses of whatever nature incurred by the Customer by reason of any Force Majeure.

4.3.6 Should the situation described in Article 4.3.3 of these Terms and Conditions continue in excess of a period of 12 (twelve) consecutive months, the Customer shall be entitled to terminate the Agreement on expiry of that period. Should the situation of Force Majeure described in Article 4.3.4 of these Terms and Conditions continue in excess of a period of 6 (six) consecutive months, either the Customer or the Contractor shall be entitled to terminate the Agreement on expiry of that period. Termination by the Customer within the meaning of this Article 4.3.6 can only be effected as from the moment at which the respective period expires.

##### **4.4 Special provisions for Delivery of Goods**

4.4.1 The Customer shall have no right to reject or refuse Delivery or acceptance of Goods due to minor defects which do not prevent the normal operation of the Goods, provided that the Supplier agrees to remedy such defects after the Delivery of the Goods, in compliance with the Agreement.

4.4.2 All Goods shall be delivered Ex Works, excluding packaging, Suppliers premises, The Netherlands, unless expressly otherwise agreed upon.

4.4.3 In the event that dispatch or collection of the Goods at the designated place of delivery is delayed for reasons beyond Supplier's control, the Supplier shall be entitled to store the Goods at the expense of the Customer in a warehouse at Supplier's choice. Upon storage, Delivery shall be deemed completed and the risk for the goods shall transfer to the Customer accordingly.

4.4.4 Unless otherwise agreed upon, the Supplier shall be permitted to deliver the Goods in partial shipments. Each shipment may be invoiced separately, in which case the Customer shall pay the separate invoices as part of the total Contract Price.

4.4.5 Any alteration of regulations either by Governments or Classification Societies after the moment on which the Supplier and the Customer entered into the Agreement, can never be ground for liability of the Supplier. Any delay, costs or adjustment of the Contract Price as the result of such alteration of regulations shall be for the risk and account of the Customer.

##### **4.5 Special Provisions for the provision of Services**

###### **4.5.1 General terms of service and working hours**

- (1) Performance shall be considered completed when either
- the Supplier has notified the Customer that the provision of Services has been completed and the Protocol of Acceptance was signed; or
  - eight days have elapsed from the time the Supplier notified the Customer as above and Customer has neglected to inspect the Services provided within this time and/or failed to notify Supplier in writing of its approval or





rejection, the Customer commences, without the approval of the Supplier and during the term of Performance, the use or the operation of the Goods on which the Services were provided.

- (2) Unless expressly otherwise agreed upon in the Agreement, Services shall be provided during a working week which shall be in accordance with normal industry practice. A working day is deemed to be a man-day.
  - (3) Hours worked outside these normal working hours, on Sundays or on official holidays will be charged separately as overtime.
  - (4) Supplier's Personnel will be guided, if possible, by the operational conditions at the Customer's premises and by the climatic conditions of the country.
- 4.5.2 Additional Obligations of the Customer for the provision of Services
- (1) During Performance, the Supplier is entitled to replace the Personnel delegated by him by other qualified Personnel.
  - (2) In case of accidents or illness of Supplier's Personnel, the Customer shall provide the necessary (professional) assistance.
  - (3) Any waiting time for which the Supplier is not responsible, will be charged to the Customer as normal working time.
- 4.5.3 Transfer of risk
- (1) In so far as no special agreement is made, the risk of the accidental destruction or deterioration of the Services as a whole or of self-contained parts will be transferred to the Customer at the moment the Supplier notifies the Customer of the completion of the provision of the Services. If a trial run or sea trial are agreed upon, the transfer of risk shall take place upon completion of successful trial run or sea trial.
  - (2) Objects and materials made available by the Customer, will be taken in charge by the Supplier in accordance with the scope of agreements made for this purpose. The risk of accidental destruction or deterioration of these objects and materials shall remain with the Customer; for damage to these objects and materials for which the Supplier is responsible, article 7 shall apply.
  - (3) Should the provision of Services or the trial run or sea trial be interrupted, stopped or delayed for reasons beyond Supplier's control, the risk of accidental destruction or deterioration of the Services provided shall be transferred to the Customer during the period of the interruption, stoppage or delay.
- 4.6 Contract price
- The Contract Price is always stated in Euros, excluding VAT and other taxes and/or government levies payable on the sale and provision of Products and/or Services, and excluding the transport costs.
- 4.7 Additional work and cost-increasing circumstances
- 4.7.1 Additional Work occurs (i.a.) when (i) the Supplier is required to perform more work and/or render a higher performance for the provision of the Goods and/or Services than agreed between him and the Customer on entering into the Agreement, (ii) additional or other materials are required than those agreed on with the Customer on entering into the Agreement, (iii) changes are made to the specifications, whether or not tacitly (changes to the specifications, the work or the conditions for the execution of the work) or (iv) if ensuing from these Terms and Conditions; ('Additional Work') (*Meerwerk*).
- 4.7.2 Additional Work can also occur if so agreed between the Supplier and the Customer in a separate Additional Work Order or if the Supplier performs such Additional Work at the request of, or with the prior consent of, the Customer. Additional Work can furthermore occur if the agreed Performance is expanded or adjusted due to an action or omission on the part of the Customer. The Supplier is never required to comply with a request for Additional Work by the Customer. In the absence of an explicit agreement between the Supplier and the Customer for Additional Work or for Additional Work otherwise authorised by the Supplier, the Supplier retains the right to Performance in accordance with what was initially agreed with the Customer on entering into the Agreement.
- 4.7.3 Additional Work is paid for by the Customer in accordance with the customary

fees applied by the Supplier, the payment of which the Customer is required to make to the Supplier prior to the execution of that work, unless otherwise agreed between the Supplier and the Customer.

- 4.7.4 Should, for whatever reason, one or more cost-increasing circumstances occur after the formation of the Agreement for which the Supplier is not exclusively and fully accountable ("Cost-increasing Circumstances") (*Kostprijs-verhogende Omstandigheden*), the Supplier shall be entitled to increase the Contract price proportionally to the Cost-increasing Circumstance(s) in question, even if such cost increase(s) ensue(s) from (a) foreseeable circumstance(s). Cost-increasing Circumstances are compensated by the Customer in accordance with the customary fees applied by the Supplier.
- 4.7.5 All consequences of Additional Work and of Cost-increasing Circumstances, whether relating to (i) the time at or the period within which Performance is required, (ii) the Contract price or (iii) otherwise, are always for the risk and account of the Customer.
- 4.7.6 The fact that (a request for) Additional Work or Cost-increasing Circumstances occurs/occur during the execution of the Agreement can never constitute a ground for the Customer on which to terminate or otherwise end the Agreement.
- 4.8 Safety
- 4.8.1 The Customer and his employees, as well as any third party engaged by the Customer, are required to fully comply with all safety and environmental regulations as defined by the Supplier and as imposed by law, and to strictly adhere to all regulations, directives and order-, safety-, environment- and inspection-related instructions as applied at the location where the work is being executed.
- 4.8.2 The Customer is always and unrestrictedly liable for any form of damage (including costs) incurred by the Supplier and/or the employees of the Supplier and/or third parties engaged by the Supplier as a result of (maintenance) work being performed by the Supplier and/or his employees and/or third parties engaged by the Supplier on the Customer's premises or at the Customer's request and/or to items of property belonging to the Customer or belonging to the Customer prior to the moment at which the Agreement was entered into.

## **5 Retention of title**

- 5.1 All Goods delivered by the Supplier, shall remain Supplier's property until the Customer has fulfilled all its obligations under this Agreement and under any previous agreement of similar kind between the Customer and the Supplier.
- 5.2 Until the moment property has been transferred to the Customer in accordance with the previous paragraph, the Customer shall take no actions (like combining the Goods delivered, either in production or in storage, with other goods, or transferring, selling or encumbering them in any respect, or taking them into another country) which could jeopardise the unfettered execution of Supplier's property right. Furthermore, the Customer shall take any actions reasonably required in order to protect these rights, and shall immediately return the Goods to the Supplier at first request.

## **6 Warranty**

- 6.1 General
- The following paragraphs shall apply to all warranties provided by the Supplier insofar articles 6.2 and 6.3 do not contain any differing stipulations applicable to the specific type of warranty.
- 6.1.1 Any warranty to be provided by the Supplier, shall be strictly limited to, at its discretion either repair or replace at its works or at local premises and during normal working hours, defects due to poor workmanship, use of defective materials or defective design, provided these defects have been reported to the Supplier in writing during the warranty period, within 7 days from the moment the Customer became known or could reasonably have become known of the above mentioned defects.
- 6.1.2 Defective parts which have been replaced shall be made available to the Supplier upon request and shall be deemed property of the Supplier from the moment those parts are exchanged.





6.1.3 The warranty provided does not cover any defect due to or connected with: (i) any materials or components or design provided by or on behalf of the Customer, (ii) the negligence or other improper acts or omissions of the Customer, its employees or agents or other third parties, (iii) improper installation and alterations carried out without Supplier's prior written consent. In particular, warranty provided does not cover any defects that are caused by or connected with normal wear and tear, the use of unsuitable materials by the Customer or which are caused by any use, maintenance, service or operation of the Goods delivered or services provided, which is not in conformity with Supplier's manuals, instructions or which is otherwise not in accordance with good engineering practice.

6.1.4 The warranty obligation does not include consequential costs, including -but not limited to- crange, electricity, scaffolding, assisting work, docking, demounting, mounting and travel- and boarding costs of Supplier's Personnel. If the warranty obligation has to be carried out at a location outside The Netherlands, the Supplier bears only the material costs and the costs of working time required under normal conditions, as would be incurred when the warranty obligation would have been carried out in the Netherlands. The Customer shall bear the costs for travelling, travelling time, waiting time, day and night allowances, tariff expenses as well as costs that are to be borne by the Supplier according to the articles of these General Terms.

6.1.5 No warranty obligation will be enforceable by the Customer until the Supplier has received payment of the Contract Price in full.

#### 6.2 Warranty for Goods delivered

6.2.1 The warranty period ends 12 ( twelve) months after the date on which

- (i) the Goods have been taken into use; or
  - (ii) a trial run or sea trial has been found successful; or
  - (iii) the Protocol of Acceptance has been issued;
- or 18 (eighteen) months after Delivery of the Goods, whichever comes first.

6.2.2 No new or additional warranty shall be available for Goods repaired or replaced according to article 6.1 of these terms and Conditions.

6.2.3 No warranty shall be available for Goods other than Goods produced, supplied and/or installed by the Supplier.

#### 6.3 Warranty for Services Provided

6.3.1 The Supplier warrants Performance to the best of its abilities. Any additional warranty with respect thereto is explicitly excluded.

6.3.2 Claims by the Customer for damage to the object(s) upon which the Services were performed, are governed by article 7 of these Terms and Conditions.

#### 6.4 Warranty for infringements of intellectual property rights

In case the Goods or Services infringe any third party's intellectual property rights, Supplier's sole obligation shall be to, at its discretion, either procure the right for the Customer to continue to use the Goods, or to alter the Goods to make them non-infringing.

### 7 Liability and indemnity

7.1 The contractual liability and each guarantee obligation and obligation to rectify a shortcoming under Article 6 of these Terms and Conditions of the Supplier, is limited to compliance with the guarantee obligations stated in Article 6 of these Terms and Conditions and does not extend to rectification of, or compensation for, any other or further material damage or property damage or immaterial and/or consequential damages or losses ensuing from such a shortcoming. All such damages are subject to the provisions of Article 7.3 of these Terms and Conditions.

7.2 Any other Supplier's liability shall be strictly limited to (1) the amount of the Contract Price, calculated at an average use of manpower and facilities, or (2) the amount which is paid out under Supplier's liability insurance policy, which ever is the lesser.

7.3 Save as otherwise provided in these Terms and Conditions and except in case of Intent or Wilful Recklessness, the Supplier shall not be responsible

nor liable to the Customer in contract, tort or on any other ground or legal theory, howsoever and whatever the cause thereof, for any direct, indirect, consequential or any other losses, damages, costs or expenses, all including -but not limited to- loss of time, loss of profit or earnings or demurrage directly or indirectly incurred, environmental pollution, docking costs and mounting and demounting costs.

7.4 Every claim against the Supplier, except those which the Supplier has expressly acknowledged in writing, expires by the mere lapse of 12 months after its arising.

7.5 The Customer hereby fully indemnifies (*vrijwaren*) the Supplier and holds the Supplier harmless from and against any third party claim, such as, but not limited to, tax claims, civil claims, social security laws related claims and/or claims for damages -penalties, whether or not imposed by a government body or any party affiliated with the government, included- and/or from and against any other third party claim, insofar as these claims relate to the Agreement, future agreements and/or other contractual documents or shall be based upon the law and/or any other (legal) ground or theory.

### 8 Payment Terms

8.1 Unless explicitly otherwise agreed upon, payments shall be made cash on delivery or by payment to a bank account designated by the Supplier within 30 days of the date of invoice and without any deductions, compensation for debts or withholding of any nature.

8.2 Upon reasonable request of the Supplier, the Customer shall provide sufficient security for the total Contract Price. If the Customer does not meet any such request of the Supplier, the Supplier shall have the right to wholly or partially terminate or suspend the Agreement by a written notification to the Customer.

8.3 Any objections of whatever kind to invoiced amount shall be submitted to the Supplier in writing within 14 days of the date of the invoice, failing which the invoiced amount shall be deemed to have been accepted by the Customer.

8.4 If the Customer fails to perform any of the above payment obligations, the Customer shall pay to the Supplier interest on the amount overdue at 1.5 per cent per month or part of a month. In addition the Supplier may, after having notified the Customer in writing, suspend Performance until payment in full is received with respect to the Agreement and/or the above payment terms. All the extra-judicial and judicial costs of debt collection incurred by the Supplier shall be for the Customer's account, whereby a minimum of 15 per cent of the outstanding amount shall be payable by the Customer.

### 9 Suspension and Termination of Agreement

9.1 If the Customer does not, not in time or not adequately fulfil one or more of its obligations or if there are good reasons to fear that the Customer is or shall not be able to fulfil its contractual obligations towards the Supplier, or if the Customer is declared bankrupt, requests (temporary) moratorium (*surcéance van betaling aanvraagt*) or proceeds to liquidate its business, as well as when its assets are attached in whole or in part, the Supplier to its sole discretion either has the right to suspend its performance under the Agreement or to rescind (*ontbinden*) the Agreement in whole or in part by means of a written declaration and without prior notice of default, and always without prejudice to any rights to which the Supplier is entitled with respect to compensation for costs, damage and interest.

9.2 The Customer is authorized to rescind only in the case referred to in article 4.3.6 of these Terms and Conditions, and in such case only after payment to the Supplier of all amounts owed to the Supplier at that time, whether or not payable and including payments for all obligations entered into by the Supplier with third parties regarding the Performance at the moment of such rescission. The Customer waives any and all other rights it has or might have to rescind (*ontbinden*), terminate (*opzeggen*), or annul (*vernietigen*) the Agreement, be it in whole or partially and whether in court or extra-judicial, or to have the competent court change any of the effects of the agreement as stated in article 6:230 paragraph 2 DCC.





**10 No assignment or pledge of rights or claims under the agreement**

- 10.1 Save in case of the Supplier's prior approval in writing, which shall not unreasonably be withheld, the Customer shall not be permitted, either in whole or in part, to assign to others the Agreement or any of his rights as against the Supplier thereunder. All costs related to any such assignment in accordance with this Article 10.1, including all costs of the Supplier itself, shall be borne by the Customer.
- 10.2 Save in case of the Supplier's prior approval in writing, which shall not unreasonably be withheld, the Customer shall not be permitted to pledge to any third party or otherwise encumber any of his rights or claims as against the Supplier under the Agreement or otherwise.
- 10.3 The provisions of the articles 10.1 and 10.2 of these Terms and Conditions are intended to exclude the pledging or otherwise encumbrance or transfer by the Customer of any of its rights or claims under the Agreement without the prior written approval of the Supplier and contains a stipulation as referred to in Article 3:83 par 2 DCC. Consequently no such transfer, encumbrance or pledge will have any legal effect and therefore this article under Dutch law shall have property law consequences (*goederenrechtelijke effect*).
- 10.4 Passing of rights pursuant to article 6:251 DCC is excluded towards the Supplier with respect to rights of action (*vorderingsrechten*).

**11 Applicable Law and Jurisdiction**

- 11.1 This Agreement shall be governed by the laws of the Netherlands.
- 11.2 All disputes arising between the parties to this Agreement in connection therewith shall be settled through friendly consultations between the parties.
- 11.3 In case no settlement can be reached through these consultations, all disputes remaining or arising out of or in connection with the Agreement or any agreement entered into between the Supplier and the Customer related to or stemming from the Agreement shall be finally settled in accordance with the arbitration rules of the Netherlands Arbitration Institute. Unless the parties shall agree otherwise, the arbitral tribunal shall be composed of three arbitrators. The place of arbitration shall be Rotterdam, the Netherlands. The arbitral procedure shall be conducted in the English language, unless when both parties are based in the Netherlands and/or are native Dutch speakers. In such case the arbitral procedure shall be conducted in the Dutch language. Regardless of the previous provisions of this article 11.3, the Supplier shall always be entitled to file any dispute as mentioned herebefore with the competent civil court at Rotterdam, the Netherlands (*Rechtbank Rotterdam*).

