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1. General

With the exception of the gimbal ring, the compass liquid has to be drained off before repair and maintenance work can be carried out on the compass.

This liquid may be re-used and is to be drained off into a suitable container, which has been cleaned with a solvent beforehand.

The bottle of compass liquid available as a replacement part contains one liter of liquid and is intended for topping - up purposes only. The liquid capacity of the Jupiter compass is a little more than two liters.

These instructions describe the disassembly and assembly as far as the replacement of the sapphire bearing. The bottom verge glass, the stabilizer ring, the upper section of the membrane chamber and the threaded stud are not to be removed. Removal of these components will result in the stabilizer ring having to be rebalanced (so that the compass lies horizontally) and the height of the threaded stud adjusted after assembly.

All parts which come into contact with compass liquid are to be protected from contamination, grease and oil and are to be cleaned in a solvent before assembly. Avoid air bubbles being trapped in the liquid by following the filling instructions carefully and ensure that the membrane is in the correct position when the compass is filled.

2. Replacement of the gimbal ring and trunnion mountings (see fig. 1, page 08)

2.1 Tools Required

Socket spanner, size 17 mm.

Screwdriver with a blade width of approximately 8 mm.

Pair of long-nosed pliers.

2.2 Procedure

- a) Loosen the lock-nuts (17,21) and remove the journals (16) by turning counterclockwise with a screwdriver.

NOTE: Trunnion journals for bearing the gimbal ring are to be removed carefully with a pair of pliers.

- b) Using a pair of long-nosed pliers, remove the nylon bushes (15) and fibre washers (14).
- c) Press in by hand new bushes (15) and washers (14).
- d) Screw in replacement journals (16) so that no play exists between compass and gimbal ring and secure with lock-nuts (17).

3. Disassembly and assembly of the compass

3.1 Tools Required

No. off

- | | |
|---|--|
| 1 | socket spanner, size 12 mm, outer diameter turned down to 15 mm for a length of 14 mm. |
| 1 | screwdriver with a blade width of approximately 7 mm. |
| 1 | pair of small flat-nosed pliers. |
| 1 | pin, 7 mm to 10 mm in diameter, rounded at one end. |
| 1 | container for compass liquid which has been clean in a solvent; capacity approximately 2,5 liters. |
| 1 | hot cabinet for temperature of 50° C to 60° C, minimum internal dimensions 300 mm x 300 mm x 300 mm. |
| 1 | wooden block approximately 50 mm in height. |
| 1 | box or framework to support the compass in a vertical position. |

3.2 Removal of the Bearing Ring (see fig. 1, page 08)

The bearing ring (1) is held in place on the top ring (3) by means of projections on the inner side of the bearing ring at positions 22°-68°, 112°-158°, 202°-248° and 292°-338° (identified by "A" in figure 1). These projections engage in slots in the outer side of the top ring.

Procedure

- a) Place the compass on an even table or workbench.
- b) Place alternately at positions 20°, 110°, 200° and 290° the wooden block under the gimbal ring, and holding the compass down with one hand and forearm and using the gimbal ring as a pivot, lever of the bearing ring with a screwdriver or similar instrument.
Place a piece of plastic other material between the bearing ring and screwdriver to protect the former.

3.3 Draining off the Compass Liquid (see fig. 1, page 08)

Procedure

- a) Place the compass in a vertical position with the filler plug (22) at the top in the box or framework.
- b) Using a 12 mm spanner, remove the filler plug (22) with its seal.
- c) Pour the liquid (approximately 2 liters) into a suitable container which has been cleaned beforehand in a solvent.
- d) Pump out the liquid in the membrane chamber by inserting the round-ended pin through the hole (20) in the membrane housing (19) and pressing and releasing the membrane until all the liquid in the chamber has been pumped out.
- e) Turn the compass upside down to empty the chamber completely.
- f) Bring the container with the compass liquid to a place where it cannot be inadvertently knocked over or contaminated.

3.4 Removal of the Top Glass (see fig. 1, page 08)

Procedure

- a) Place the compass on the flat surface of a table or workbench.
- b) Identify the outer surface of the glass with a piece of adhesive tape.
- c) Unscrew opposite retaining screws (2) gradually and remove them.
- d) Remove the top ring (3), the O-ring (4) and the top glass (6).

NOTE: Protect all parts which come into contact with compass liquid from contamination.

3.5 Removal of the Float (see fig. 1, page 08)

Procedure

- a) Remove the float (7) by lifting it from the bearing.

3.6 Removal of the Pivot (see fig. 1, page 08)

Procedure

- a) Using a small pair of flat-nosed pliers carefully pull the pivot (8) out of the flat (7).

CAUTION: WHEN FITTING A REPLACEMENT PIVOT, MAKE CERTAIN THAT THE POLISHED POINT DOES NOT COME INTO CONTACT WITH THE PAIR OF PLIERS.

- b) Using a small pair of flat-nosed pliers carefully insert a replacement pivot into the float (7).

3.7 Replacement of the Cap and Sapphire Bearing (see fig. 1, page 08)

General

The sapphire bearing (10) is held in place by the cap (9) which is screwed onto the column (11) and secured with a bonding material. The height of the column (11) is not to be altered by turning during removal of the cap (9) and sapphire (10).

Procedure

- a) Grip the column (11) firmly with a pair of flat-nosed pliers.
- b) Grip the cap (9) with pair of flat-nosed pliers and unscrew it counterclockwise and remove the sapphire (10).

**CAUTION: DO NOT ALLOW THE COLUMN (11) TO BE TURNED
WHEN UNSCREWING THE CAP (9).**

- c) Fit a replacement sapphire and screw on the cap and tighten, holding the column (11) with a pair of flat-nosed pliers to prevent it from being turned.
- d) Apply bonding material to the cap (9) and column (11) to secure the cap.

NOTE: When available, use bonding material Cyanolit 101. When not available, use a bonding material or varnish which is alcohol resistant.
Allow the bonding material to cure before filling the compass.

3.8 Replacement of the Membrane (see fig. 1, page 08)

Procedure

- a) Unscrew the four screws (2) and remove the cover (19) and the membrane (18).
- b) Insert a replacement membrane in the cover, fit the cover and membrane and attach with the four screws (2).

NOTE: Tighten screws in a diagonal sequence.

3.9 Assembly and Filling (see fig. 1, page 08)

NOTE: Assembly and filling are to be carried out at room temperature (approx. 24° C).

- a) Place the compass bowl (12) on an even table or workbench.
- b) Screw in the filler plug (22) with the its seal.
- c) Fill the bowl with compass liquid to approximately 3 mm below the installation position of the O-ring (4).
- d) In the horizontal position, bring the compass to the edge of the table so that access is gained to the membrane through the hole (20) in the cover (19).
- e) Using the round-ended pin, push the membrane through the hole (20) up into the bowl and let it spring back into position. Repeat this process until all the air present in the cavity above the membrane has been pumped out.
- f) Slide the bowl back into the center of the table and carefully fit the float.

3.10 Fitting the Top Glass (see fig. 1, page 08)

- a) Fit the lower O-ring (4) in position and place the top glass (6) correct side up on the bowl (12).

NOTE: It may be necessary to stretch a new O-ring so that is lies correctly in the bowl.

For compasses type 2060, the top glass with the boss (5) in the center is to be positioned in the center of the bowl by measuring the distance from the edge of the glass to the edge of the bowl.

- b) Fit an O-ring (4) into the verge ring (1) and place the verge ring on the top glass without moving the glass.
- c) Insert the attachment screws (2) and tighten them in a diagonal sequence.

3.11 De-aeration (see fig. 1, page 08)

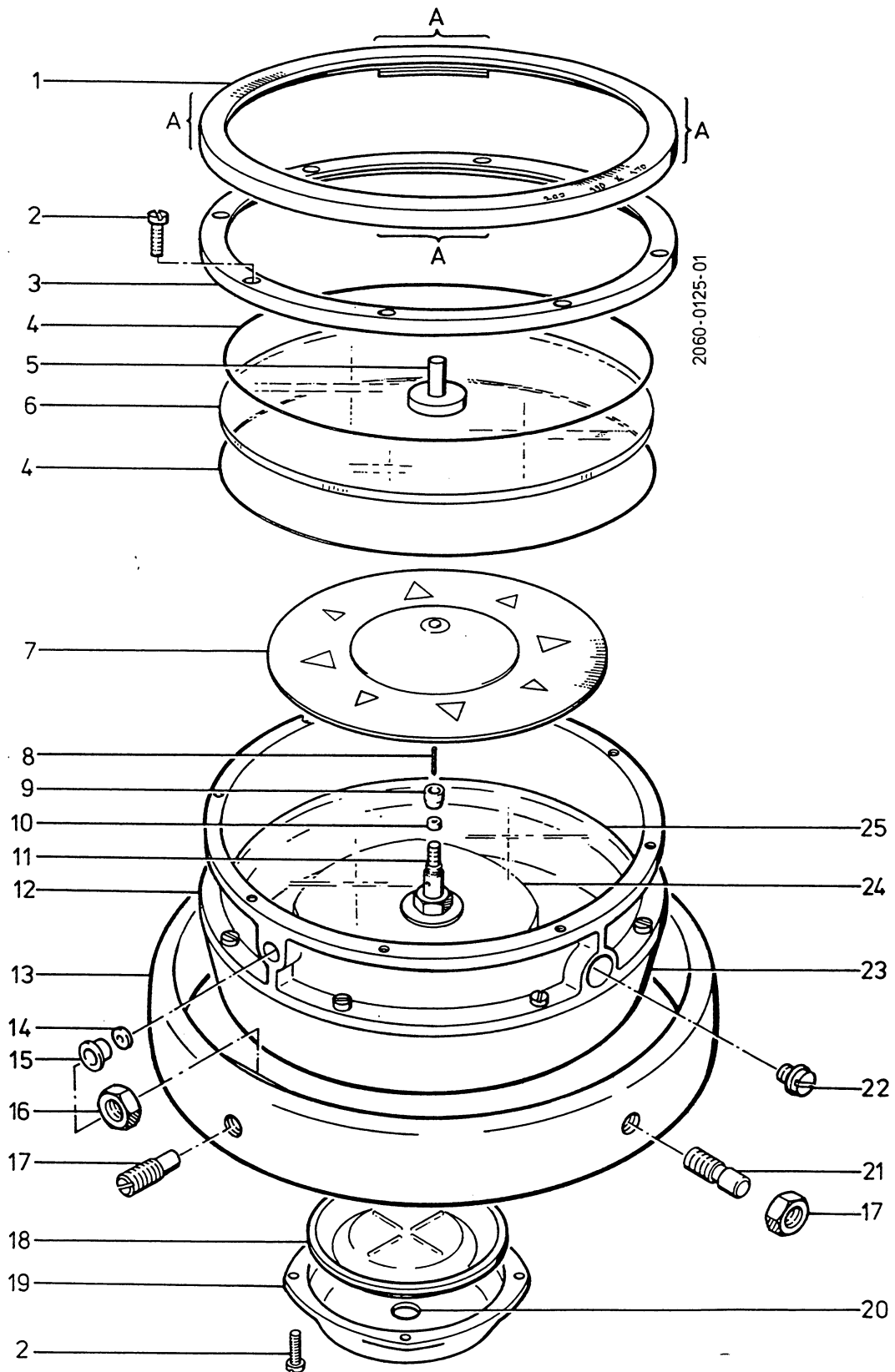
Procedure

- a) Lift the compass and turn it upside down to release air trapped below the float. At the same time agitate the liquid by moving the compass in a circular fashion.
- b) Place the compass in a vertical position in the box or framework with the filler hole at the top.
- c) Remove the filler plug (22) and gasket.
- d) Place the compass in this position and an open container of compass liquid in a hot cabinet to de-aerate at 60° C for eight hours.
- e) After a period of eight hours, remove the compass from the hot cabinet.
- f) Screw in the filler plug (22) and gasket and with the compass in a horizontal position, pump out any remaining bubbles out of the cavity above the membrane (see also 3.9).
- g) Turn the compass upside down and agitate the liquid by moving the compass in a circular fashion.
- h) Allow the liquid to cease moving.
- i) Turn the compass slowly into a vertical position so that the trapped air collects beneath the filler hole.
- j) Remove the filler plug (22) and gasket.
- k) Place the compass in a vertical position and the container with the compass liquid in a hot cabinet at 50° C for at least one hour.
- l) Remove the compass from the hot cabinet and fill the compass with liquid from the container at a temperature of 50° C to the brim of the filler hole.
- m) Screw in and tighten the filler plug (22).
- n) Clean the compass of any superfluous liquid.

3.12 Fitting the Bearing Ring (see fig. 1, page 08)

Procedure

- a) Place the bearing ring (1) on the bowl so that the lubber line coincides exactly with the 180° marking.
- b) Press on so that the ring snaps into place without changing position.



The "JUPITER" Compass
 Figure 1



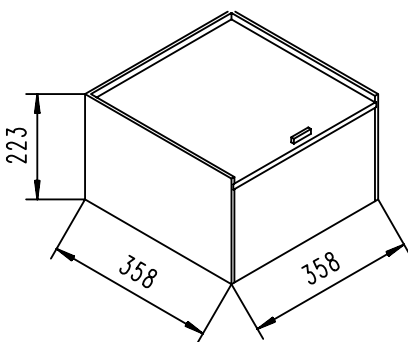
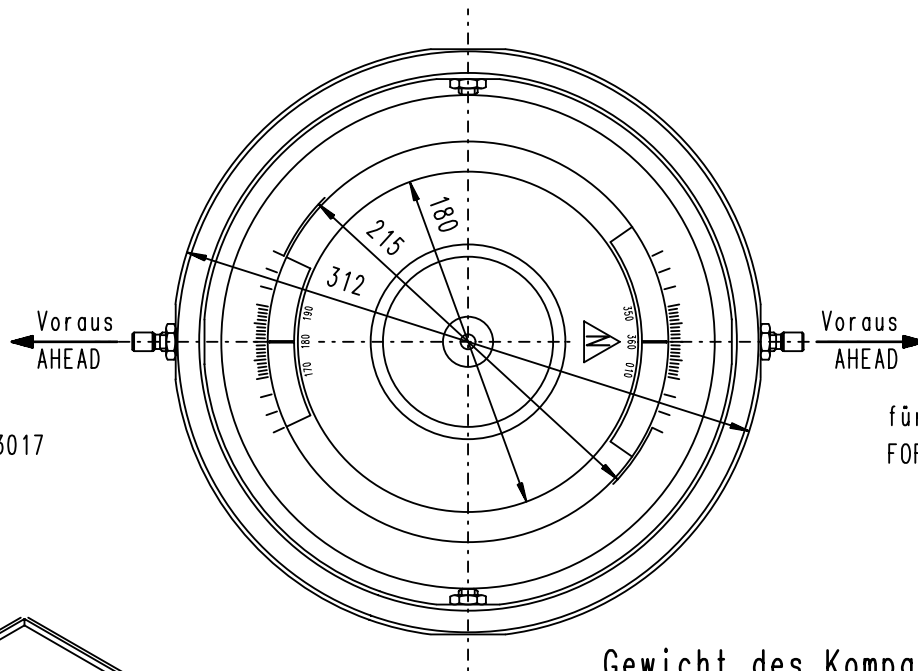
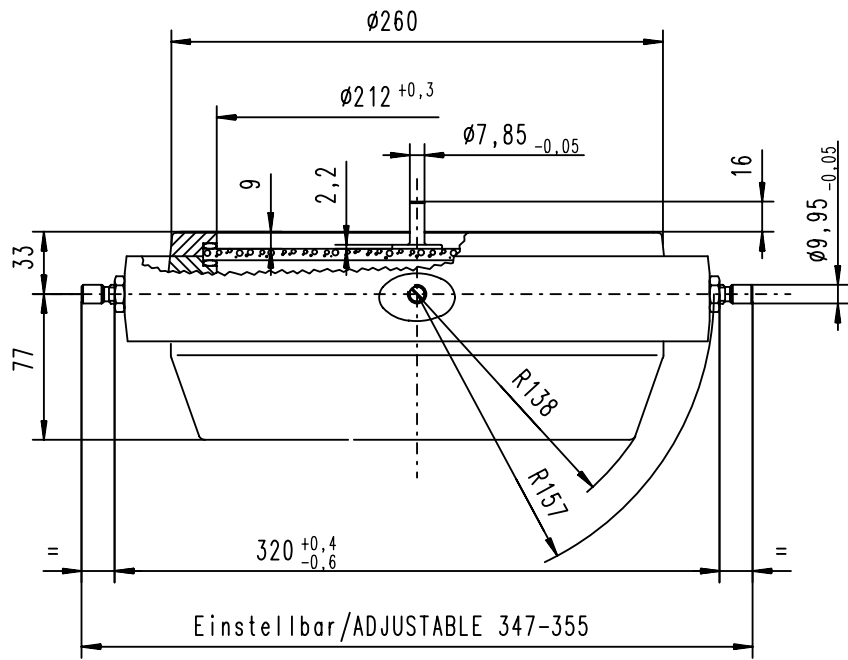
4. Replacement Parts List

Please address all requests for replacement parts to

C.PLATH
Stueckenstrasse 1-3
22081 Hamburg
Germany

and accompany the request with the data on the identification label of the compass.

Fig./ Item No.	Qty	Designation	Stock No.
1	1	Bearing ring	40353
2	12	Screw 4x12	22866
3	1	Cover ring	40366
4	4	O-ring	40360
5	1	Boss	40356
6	1	Top glass	40335
7	1	Float, complete for type 2059 for type 2060	34866 40342
8	1	Pivot	40348
9	1	cap (for sapphire bearing)	40560
10	1	Sapphire bearing	31141
11	1	Column	33113
12	1	Weight	40350
13	1	Gimbal ring	40377
14	2	Fiber washer	21060
15	2	Bush	40359
16	4	Nut M10	22868
17	2	Trunnion journal	40338
18	1	Membrane	36252
19	4	Washer	21098
20	1	Bottom plate	33022
21	2	Trunnion journal	32962
22	1	Filler plug with gasket	37226
23	1	Lead weight	40350
24	1	Base	40322
25	1	Bottom glass	40328
-	1	1 liter bottle of compass fluid	33686



Aufbewahrungskasten
STORAGE CASE
Lg.Nr. 73007
STO.No.

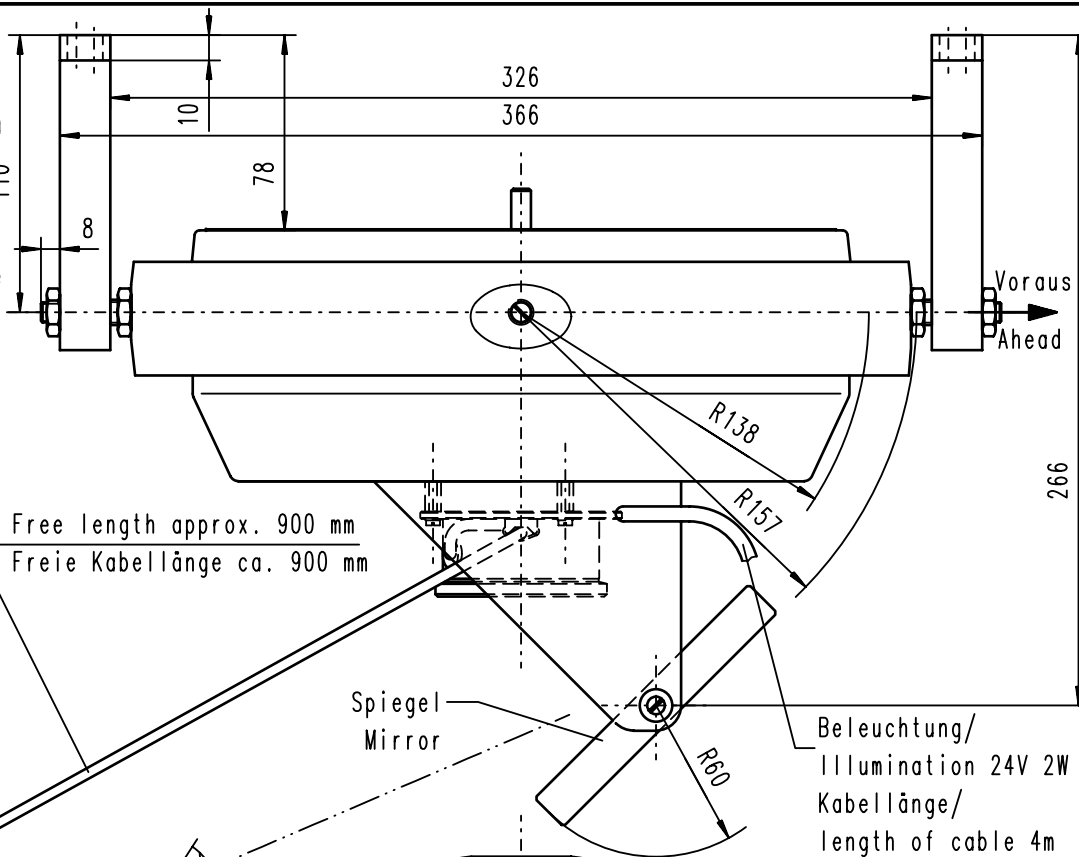
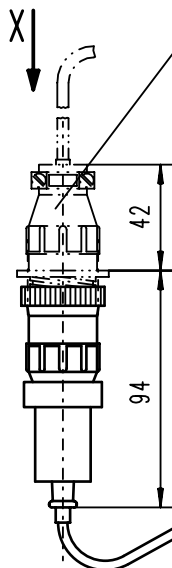
Gewicht des Kompasses 8.75 kg
WEIGHT OF THE COMPASS

Type	Lg. Nr. Sto.No	Rose Compass card	
2060	73023	N/N	BSH
2060	73434	N/N	
2555	73017	N/S	BSH

(NORTHROP GRUMMAN SPERRY MARINE 21.01.02)

				Maßstab/SCALE	DATE	NAME	Maßzeichnung / DIMENSION DRAWING		CAD
				/	21.01.02	Ho.	Magnetkompass JUPITER		
					see ECO		MAGNETIC COMPASS JUPITER		Blattz. SHEETS 1
AA	98866	22.01.02	Ho.	Zeichnungs Nr./Drawing No.			REPLACEMENT FOR:		
02	304/80	22.09.80	Rei	2060-0112-04					1
01	277/80	01.08.80	Rei	NORTHROP GRUMMAN Electronic Systems			Sperry Marine		
00	-	30.01.80	Sta	Lager Nr./STOCK NO. see above					1
REV	ECO-No.	DATE	NAME						

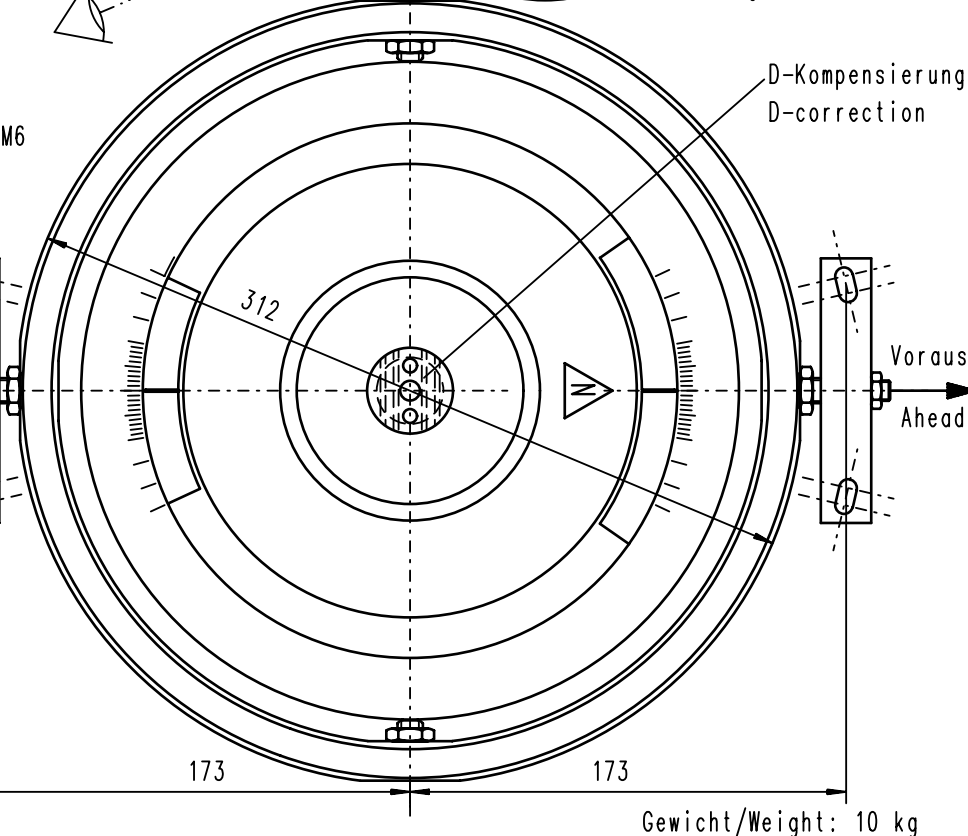
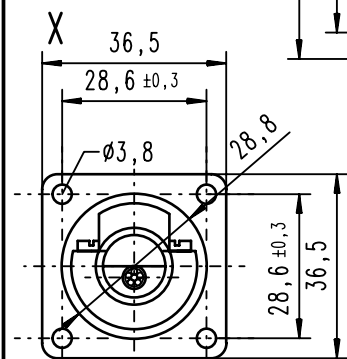
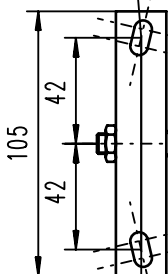
4000 mm Lg.Nr. 33375
 bestellen Kabellänge
 Stecker mit Kabel extra
 Sto.No. 33375
 cable 4000 mm
 ordered extra length of
 Socket with cable to be



Free length approx. 900 mm
 Freie Kabellänge ca. 900 mm

Für antimagnetische Schrauben M6
 For antimagnetic screws M6

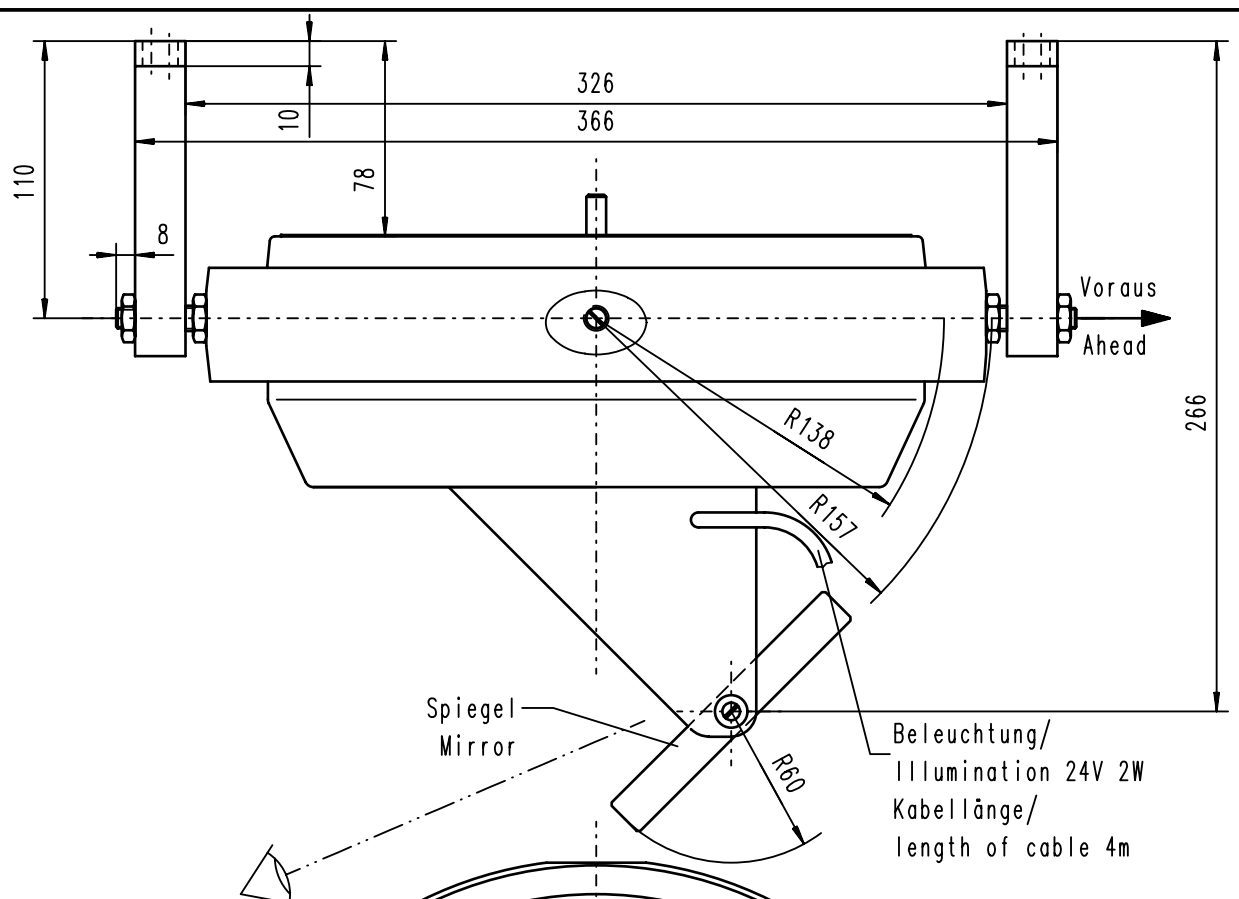
Lager.Nr/ Stock.No.	
73449	BSH
73450	



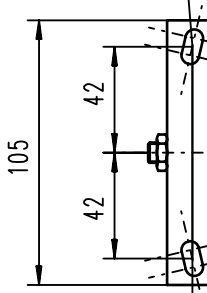
Gewicht/Weight: 10 kg

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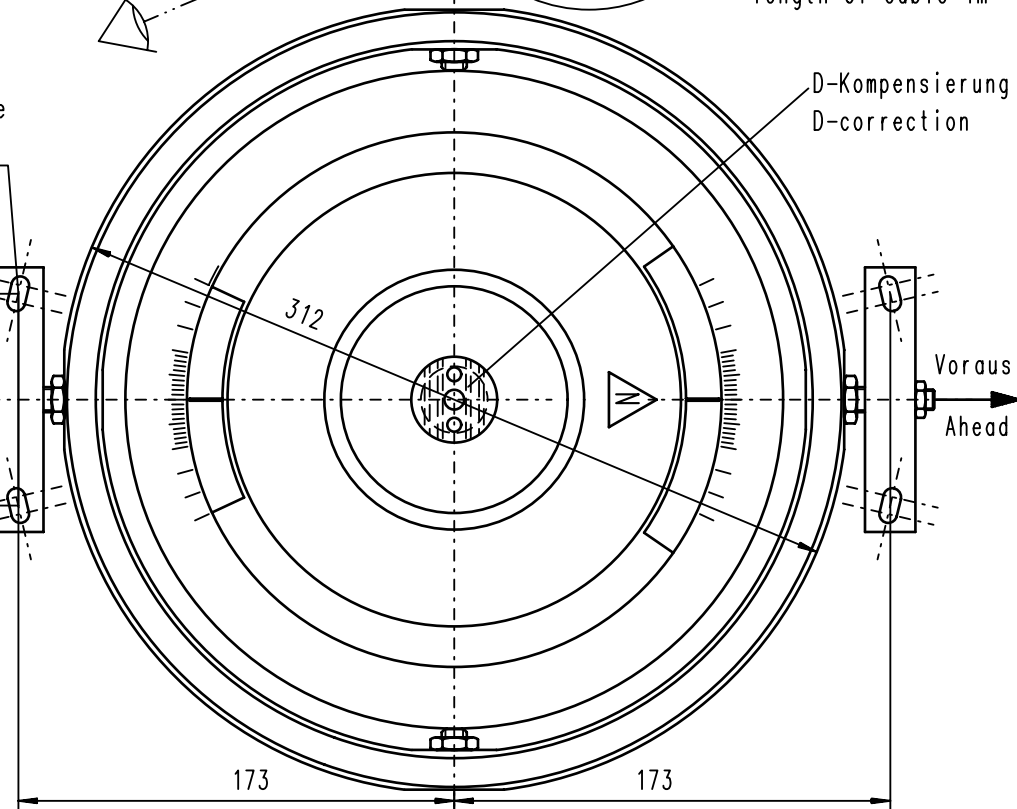
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					DOS 4882-0112-01		Magnetic compass JUPITER		Blatt SHEET
				Zeichnungs Nr./Drawing No.			with CP sin/cos fluxgate overhead		1
				4882-0112-01					Blattz. SHEETS
AB	99715	14.11.96	Kie	NORTHROP GRUMMAN Electronic Systems		Sperry Marine		REPLACEMENT FOR:	1
AA	-	29.11.94	Kie						1
REV	ECO-No.	DATE	NAME	Lager Nr./STOCK NO.					1



Für antimagnetische
Schrauben M6
For antimagnetic
screws M6



D-Kompensierung
D-correction



Gewicht/Weight: 10 kg

Lager.Nr/ Stock.No.	
73143	BSH
73436	

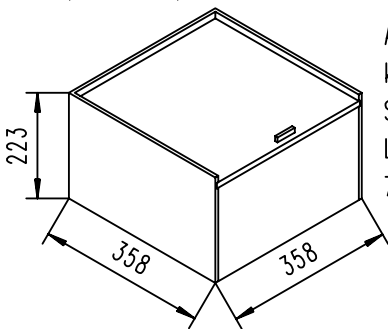
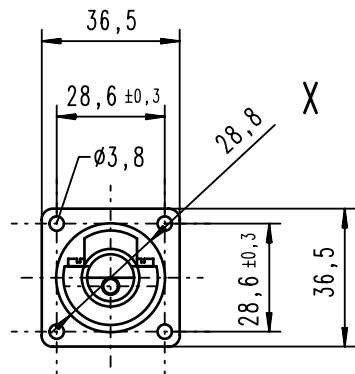
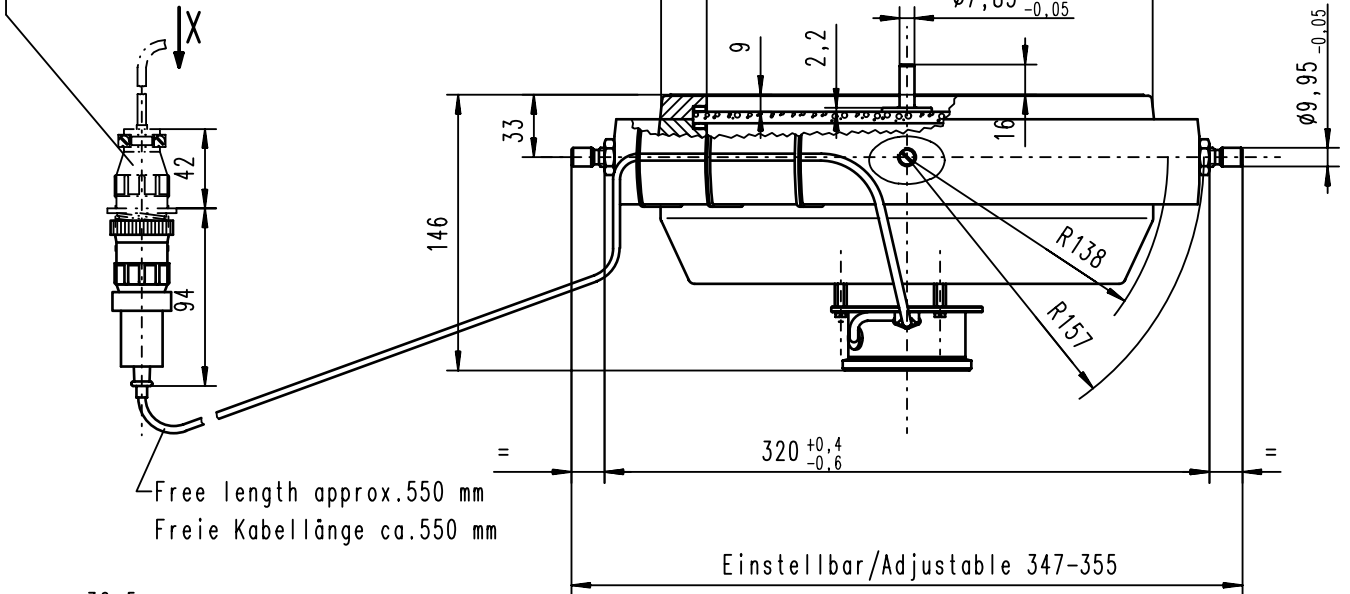
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00	-	08.03.81	
REV	ECO-No.	DATE	NAME

Maßstab/SCALE	DATE	NAME
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	CHD	see ECO
	DOS	2843-0112-01
Zeichnungs Nr./Drawing No. 2843-0112-01		
NORTHROP GRUMMAN Electronic Systems		Sperry Marine
Lager Nr./STOCK NO. see above		

Maßzeichnung / DIMENSION DRAWING	CAD
Deckenkompass JUPITER	
Magnetic compass JUPITER in overhead mounting	Blatt SHEET 1
REPLACEMENT FOR:	Blattz. SHEETS 1

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Kabellänge 4000 mm Lg.Nr. 33375
 Stecker mit Kabel extra bestellen
 length of cable 4000 mm Sto.No. 33375
 Socket with cable to be ordered extra



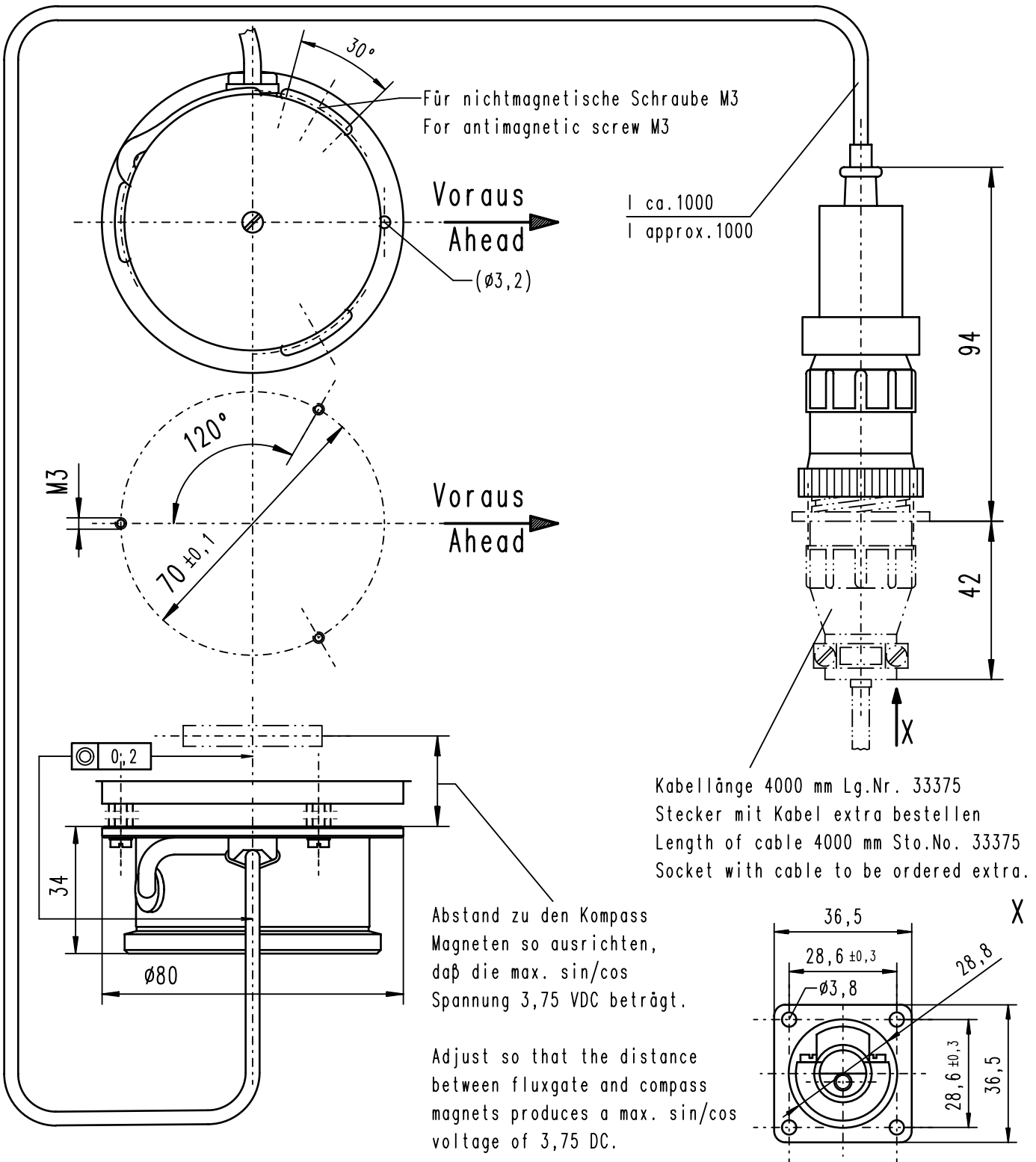
Aufbewahrungs-
 kasten/
 Storage case
 Lg.Nr./Sto.No.
 73007

Gewicht/Weight: 9,5 kg

Type	Lg. Nr. Sto.No	Rose Compass card	
4863	73444	N/N	BSH
4863	73448	N/N	
4863-AA	73470	N/S	BSH

Maßstab/SCALE				DATE	NAME	Maßzeichnung / DIMENSION DRAWING Magnetkompass JUPITER mit Sonde	CAD	
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				CHD	see ECO			
				DOS	4863-0112-01			
Zeichnungs Nr./Drawing No. 4863-0112-01				NORTHROP GRUMMAN Electronic Systems		Sperry Marine		
Lager Nr./STOCK NO. see above				REPLACEMENT FOR:		Blatt SHEET 1 Blattz. SHEETS 1		

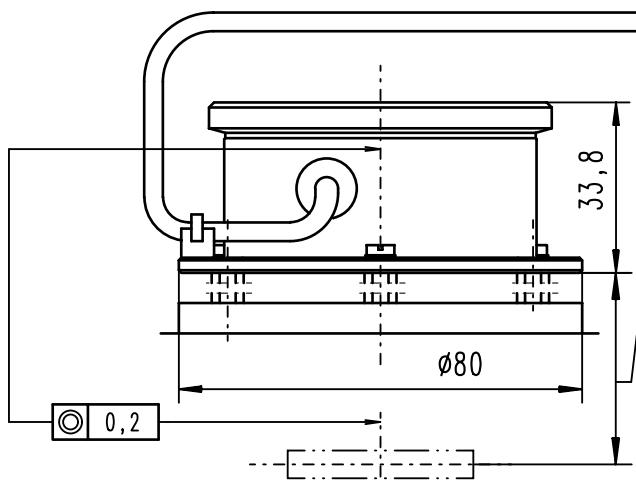
Montage unterhalb des Kompasses / Attachment below the compass



© (NORTHROP GRUMMAN SPERRY MARINE 14.12.93)

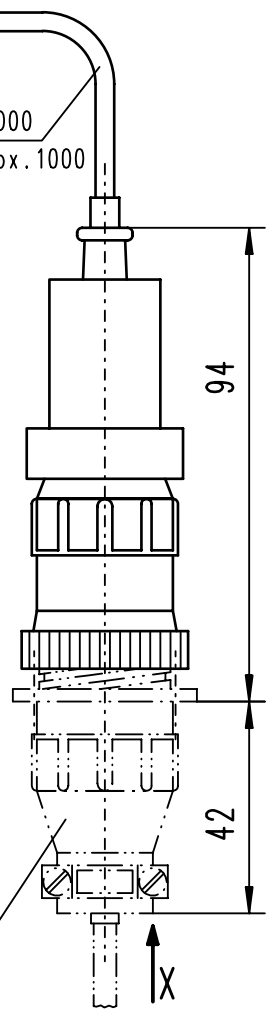
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AB	980943	11.08.03	Ho.	NORTHROP GRUMMAN		Sperry Marine	Fluxgate with cable	Blatt SHEET
AA	-	28.02.94	Kie	Electronic Systems				1
REV	ECO-No.	DATE	NAME	Lager Nr./STOCK NO. 26085			REPLACEMENT FOR:	Blattz. SHEETS
								2

Montage oberhalb des Kompasses / Attachment above the compass

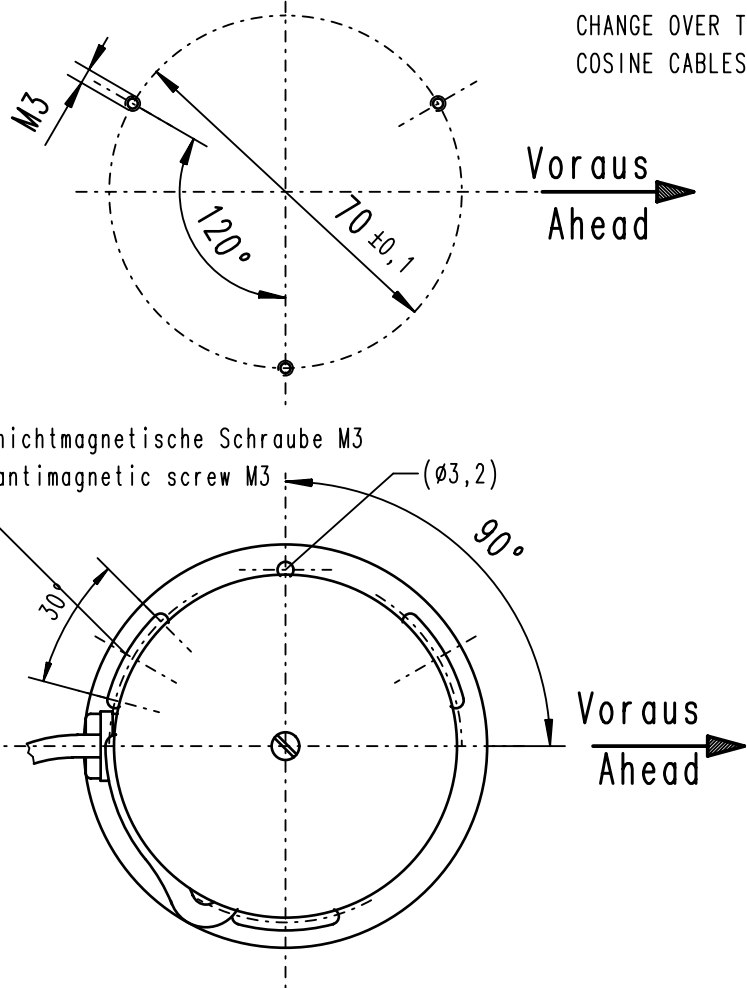


Abstand zu den Kompass Magneten so ausrichten, | ca.1000
 daß die max. sin/cos | approx.1000
 Spannung 3,75 VDC beträgt.
ACHTUNG!
 SINUS UND COSINUS LEITUNGEN
 VERTAUSCHEN.

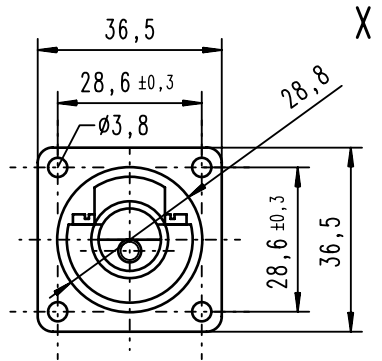
Adjust so that the distance between fluxgate and compass magnets produces a max. sin/cos voltage of 3,75 DC.
NOTE!
 CHANGE OVER THE SINE AND COSINE CABLES.



Kabellänge 4000 mm Lg.Nr. 33375
 Stecker mit Kabel extra Bestellen
 Length of cable 4000 mm Sto.No. 33375
 Socket with cable to be ordered extra.



Für nichtmagnetische Schraube M3
 For antimagnetic screw M3



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				Maßstab/SCALE	DATE	NAME	Maßzeichnung / DIMENSION DRAWING	CAD
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				4863-0112-02				
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