Raytheon Anschütz

Raytheon Anschütz GmbH
Postfach 1166
D - 24100 Kiel
Germany
Tel +49-4 31-30 19-0
Fax +49-4 31-30 19-501
Email Service@raykiel.com
www.raytheon-anschuetz.de

NFU Tiller

Type 105 - 111

3612E/105-111.DOC012 Edition: Jul 25, 2002
Revision: Jan. 28, 2008

CONTENTS **page**

Annex:

Dimensional Drawing	105 E 111 HP005
Circuit Diagram	105 D 111 HP007
Assembly Drawing	105 E 111 HP010

This equipment includes electromechanical devices such as relays, switches or potentiometers.
Electromechanical devices are subject to wear and tear depending on operation cycles and environmental conditions.

1 Description

1.1 General

The Tiller 105-111 is used for system extension within a NP60 equipment.
3 tillers can be connected as a maximum.
Dependent on the equipment, 3 NFU tillers or a combination of NFU and FU tillers may be concerned.

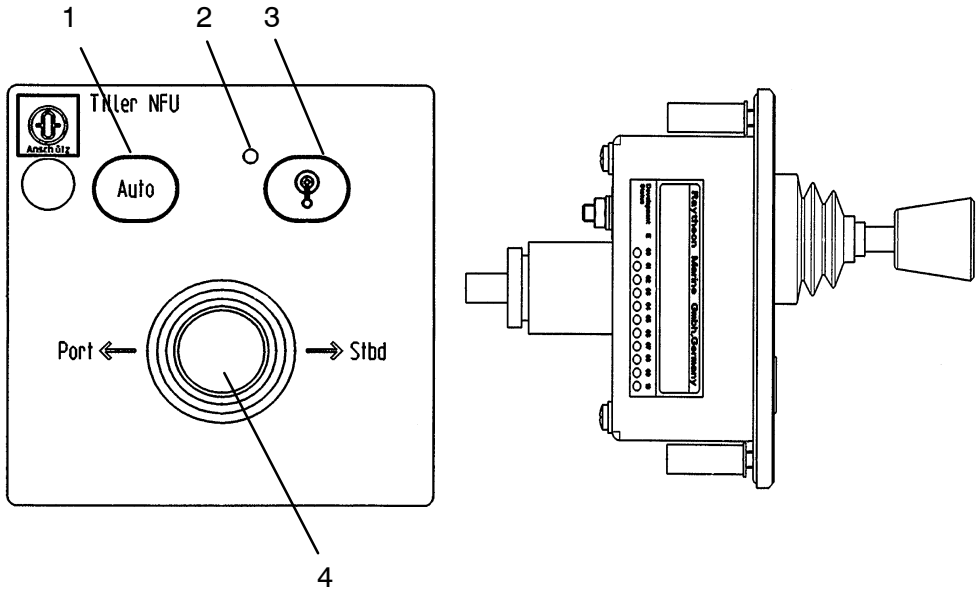


Fig. 1-1: NFU Tiller 105-111

1	Button,	Switching OFF Tiller (Heading-control at the Nautopilot NP60).
2	LED,	Indicates “Tiller active” when lights up
3	Button,	Switching ON Tiller
4	Joystick,	Rudder

1.2 Principle of Operation

The NFU tiller has been equipped with a take-over function which permits selection of the tiller control as well as return of the steering control to the autopilot.
Selection is via the tiller symbol key, return is effected via the AUTO key.
In the active state, the LED of the symbol key lights up; the rudder may now be controlled via the joystick of the tiller.

Tiller operation in a NP60 equipment means that

- other operator units or tillers are automatically switched into standby mode.
- the rudder position is now adjusted via the duration of joystick actuation of the selected tiller.

The illumination of the function keys and of the dial illumination is preset at the works for darkness. Subsequent adaptation to the real conditions on board ship can be made.

Please note: After a change over from Tiller back to NP60, by operating button “AUTO” at the Tiller or the NP60 the automatically selected mode at the NP60 is HEADING CONTROL – actual course is set course!!

1.3 Technical Data

- Dimensions, see Dimensional Drawing in the Annex
- Main Supply voltage +24VDC (NP60 Connection Unit)
- Tiller Supply Voltage +15V (Connection Unit)
- Type of enclosure IP 56
- Temperature range - 25° ... 55°
- Humidity of air max. 95% rel.

2 Operating Instructions

NOTE

The steering mode selector of the autopilot equipment must be set to position AUTO (Secondary steering). With position HAND, no tiller control is possible!

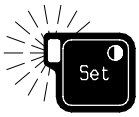
ATTENTION

Never operate the membrane keyboard with a pointed object (ball-point pen, pencil etc.)!

For cleaning the membrane keyboard and the LCD display, a commercial, acidless agent must be used!

2.1 Explanation of Used Symbols

Key or lever actuation



LED *flashing*

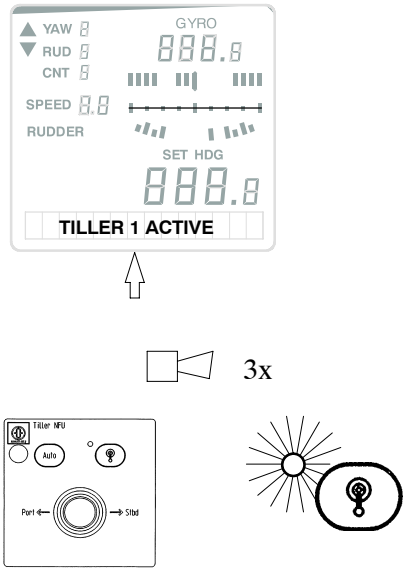
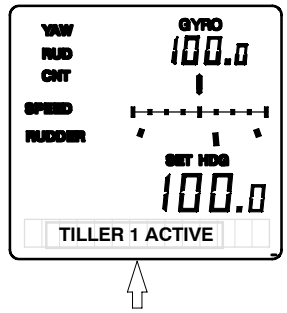
LED *out*

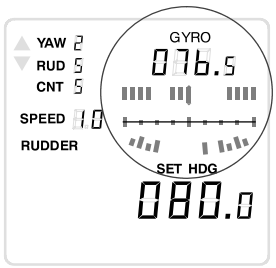
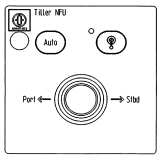
LED *on*

Audible signal *on*

Audible signal *off*

2.2 Activating the NFU Tiller Control

	Indications	Remark/Notes
1 Changing over to NFU tiller control		
		On actuating the key at the selected tiller, the following condition occurs: – The steering station changes from the operator unit to the selected NFU tiller. The operator unit (NP60) produces a signal sound three times. The info text, e.g. TILLER 1 active, indicates the selected tiller. The numerical assignment depends on the selected Tiller (max. 3 Tillers). – The rudder position limitation is cancelled for the duration of tiller control. – Possible system messages are indicated in the text line of the operator unit without signalling. – The tiller is active, the green key LED lights up. – All operator units connected change to STANDBY. The heading and the rudder position remain indicated.
2 Operating by tiller		
		On actuating the joystick, the desired rudder position occurs. The rudder position indicator of the operator unit adjusts itself for the current rudder position (Rudder feedback must be connected).

	Indications	Remark/Notes
3 Switching back to NP60		
Auto	  Auto 	On actuating the key, the steering station automatically changes to the **main operator unit** of the autopilot equipment. The green key LED does not light. The rudder position adjusted via the NFU tiller is no longer valid. The instantaneous heading is accepted as set heading. NP60 is in the operating mode of **heading control !!!**

3 Care, Maintenance and Shipboard Repair

3.1 Care

The membrane keyboard must never be operated with a pointed object.
For cleaning the keyboard, a commercial, acidless agent must be used.

3.2 Maintenance

The device requires no maintenance.

3.3 Shipboard Repair

No shipboard repair is intended. In case of a defect, the complete device is to be exchanged.

4 Installation

4.1 SAFETY NOTES

ATTENTION

In opened devices or desks, voltages representing a risk of electric shock are applied.

- SAFETY INSTRUCTION -

As a matter of principle, the system is to be made dead when installation work is performed on the equipment as well as during disassembly/assembly of components or during alteration of the circuitry.

4.1.1 Checks to be made before Installation

In order to ensure correct function of the NFU tiller, faultless operation of the following system and devices is required:

- Power supply
  - for the equipment concerned
  - 10..32VDC for the autopilot equipment

- Steering gear and steering control system has to be adjusted

- Sensors and appertaining transmission equipment
  - Gyro compass
  - Magnetic compass / flux gate compass
  - Log
  - Navigation receiver

4.2 Stock Taking and Inspection of Delivery

Remove the tiller from the cardboard box.
Check all equipment parts for visual deficiencies or transport damages.

4.3 Installation Planning and Instruction

4.3.1 NFU Tiller (Dimensional Drawing 105 E 111 HP005)

Requirements to be met by the mounting site:

The device has to be readily visible and be placed such as to ensure convenient handling.

For flush mounting, refer to the Dimensional Drawing 105 E 111 HP005 [recess and drilling scheme].

NOTE

Prior to starting work, ensure that below the selected point of recess there is sufficient space for the sawing work required!

4.4 Cabling the NFU Tiller

The tiller is provided with a connecting cable of 8m in length. The connecting cable is connected to the terminal PCB of the connection unit of NP60.
Assignment of terminals:

Terminal	ON	REF	RUD	0V	+15V
L1 (Tiller 1)	8	9	10	11	12
Color	GY	YE	GN	BN	WH
L1 (Tiller 2)	14	15	16	17	18
Color	GY	YE	GN	BN	WH
L1 (Tiller 3)	20	21	22	23	23
Colour	GY	YE	GN	BN	WH

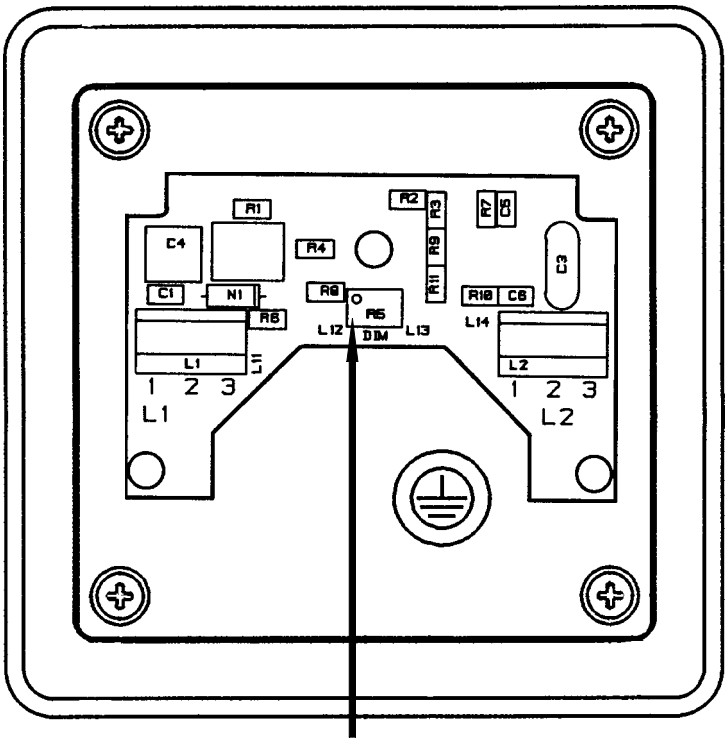
Check:

⇒ Select the service parameter *tiller...* in the NP60 (see NP60 Description, No. 3464).
⇒ At center position the NFU tiller shows -700 in the text line.
⇒ Switch NFU tiller to STBD. Within the text line a value of approx. 672 appears.
⇒ Check the rudder position.
⇒ Switch NFU tiller to PORT. Within the text line a value of approx. -672 appears.
⇒ Check the rudder position.

NOTES

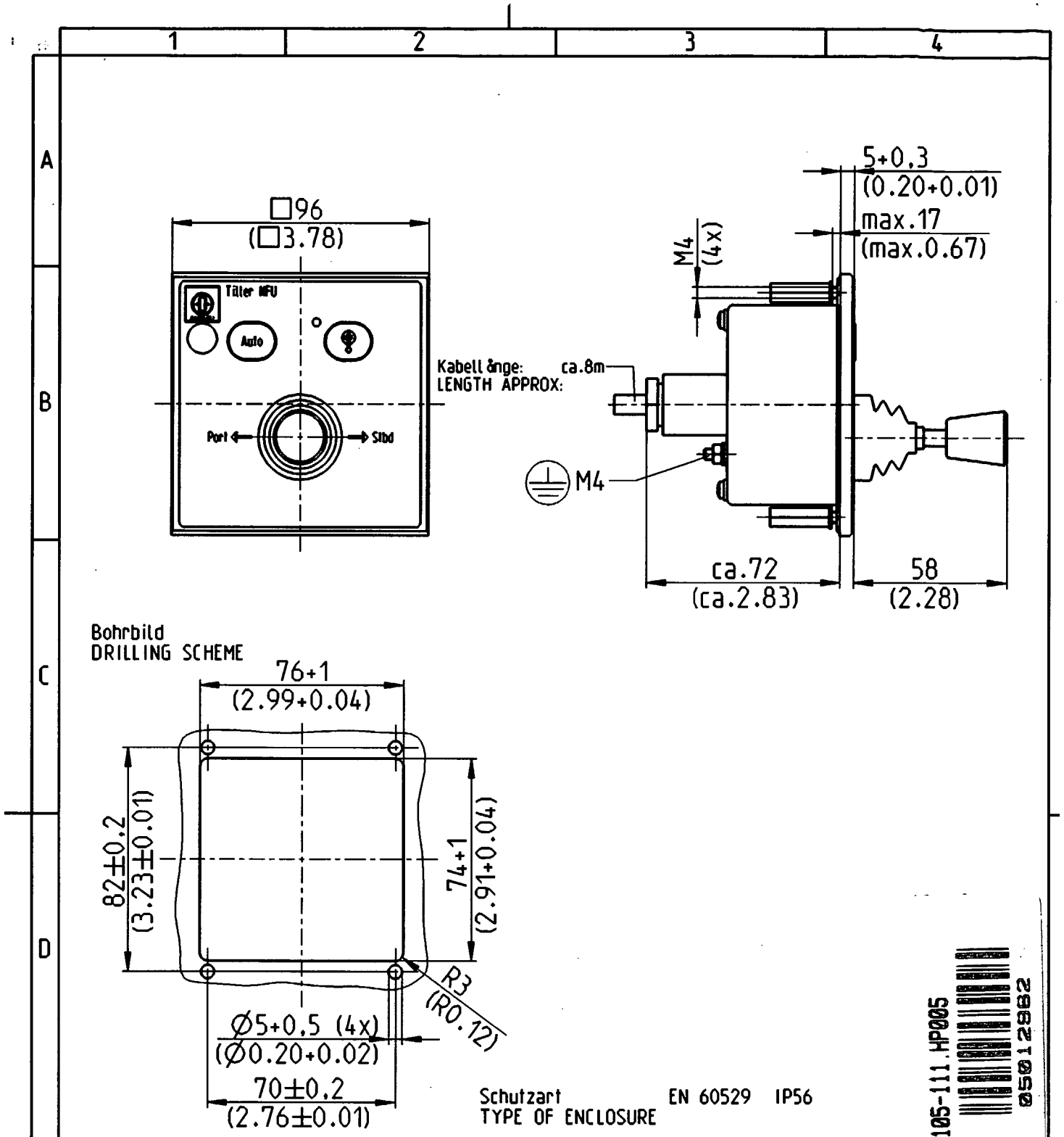
4.5 Adjusting the NFU TILLER

The NFU tiller is given at the works a basic adjustment for the brightness of the key illumination, for which in most cases no re-adjustment is required.



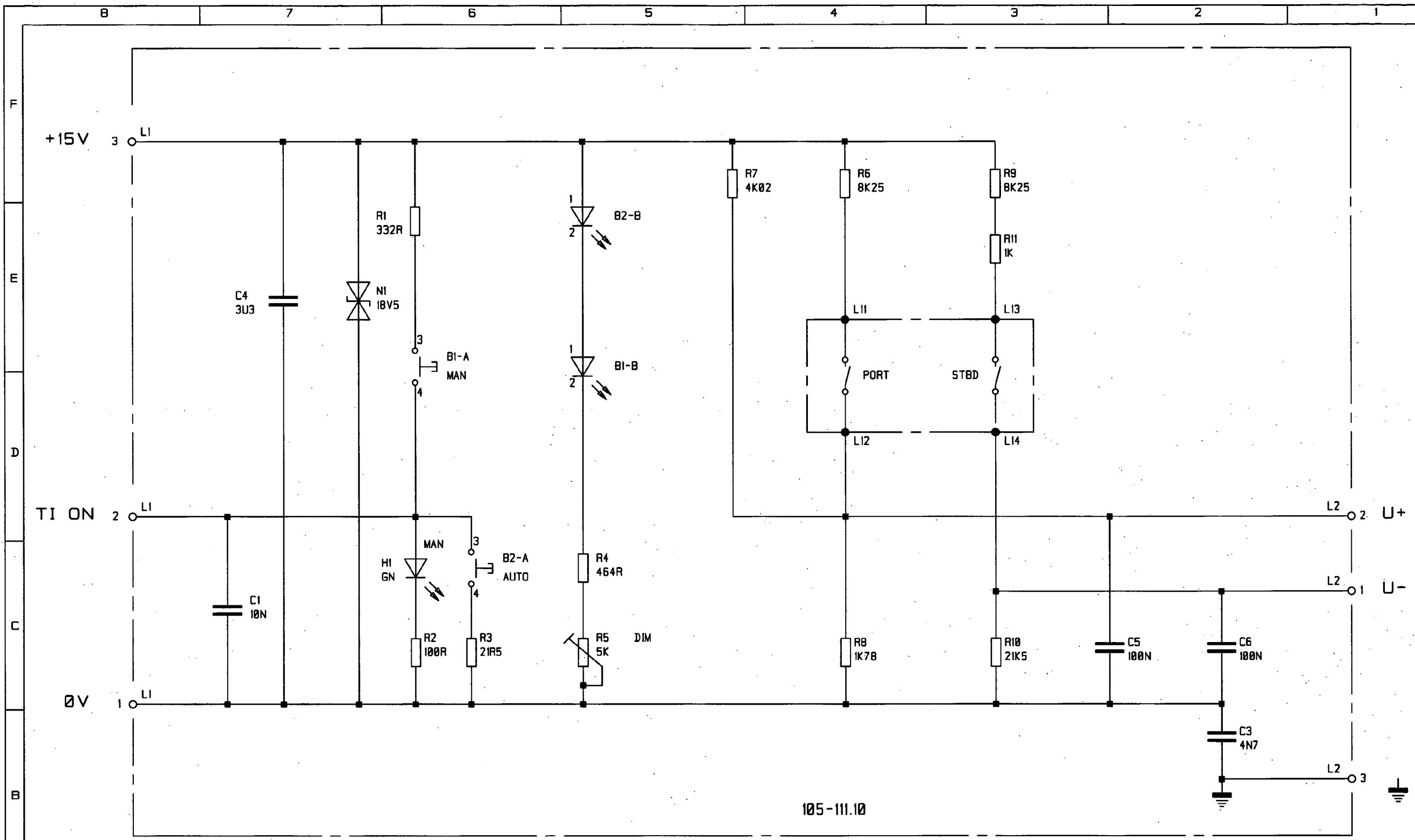
R5 Adjustment at the works
(brightness adjustment)

Fig. 4-1 : Balancing Point for Brightness Adjustment in the NFU Tiller



								CAD	
				mm / (INCH)		Arbeitspause	Maßstab	Gewicht: WEIGHT:	ca. 1 Kg
					Datum	Name	Benennung:		
				Bearb.	12-Jul-01	Zm	Tiller NFU		
				Gepr.	17.7.01	Gü.	Maßzeichnung/DIMENSIONAL DRAWING		
				Norm	20.7.01	Stz			
				Freigabe:	28.02.02	Pf.	Zeichnungsnummer:		Bl. 1
Zust.	Änderung	Datum	Name	Raytheon Raytheon Marine GmbH Germany			105 E 111.HP005		von 1
							Ers. für .	Ers. durch .	

ICAD



105-111.HP007

05101226

CAD

CAD	S 1226 AA		
2002	DATUM	NAME	
BEARB	22.07	Hanssen	
GEPR	22.07		
NORM	26.7.02		
FREIG	27.02.02		

A	2892.105	220702	HAN	
ZUST	ÄNDERUNG	DATUM	NAME	

Raytheon Marine GmbH
Germany

BENENNUNG

NFU-TILLER

STROMLAUFPLAN / CIRCUIT DIAGRAM

ZEICHNUNGSNUMMER

105 D 111 HP007

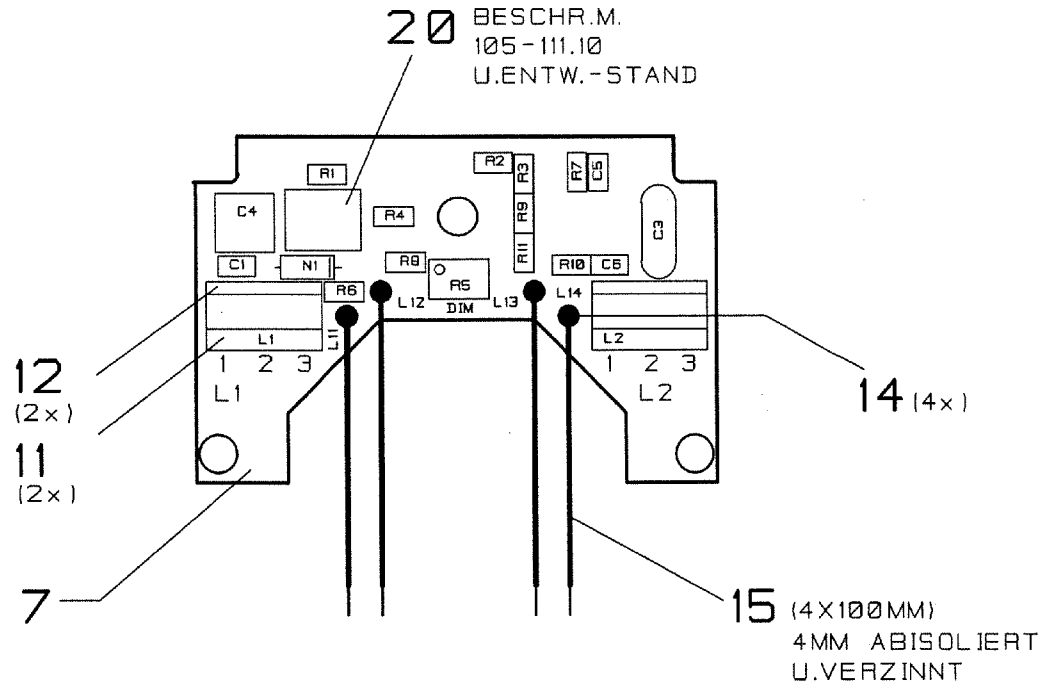
BL. 1

VON 1

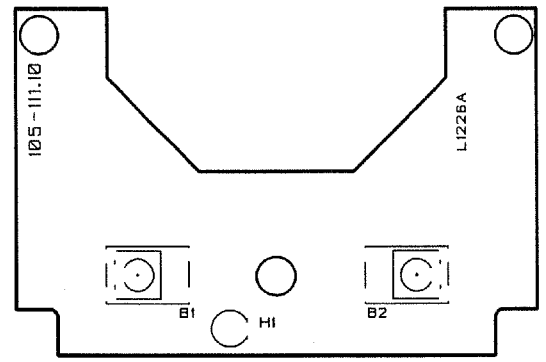
ERS.FÜR

ERS.DURCH

A4-E



ANSICHT BESTÜCKUNGSSEITE



ANSICHT LÖTSEITE

H1 AUF POS 10 GESETZT

ACHTUNG

VORSICHTSMASSNAHMEN
BEI HANDHABUNG
ELEKTROSTATISCH
ENTLADUNGSGEFAEHRDETER
BAUELEMENTE
BEACHTEN

MAX.BAUHÖHE: CA.20MM

ID.-NR.: 5013358

CAD

CAD LZ 1226 AC

M 1:1

ALLGEMEINTOLERANZ
ISO 2768 - mK

	DATUM	NAME
2002		
BEARB	17.07.	HANSSEN
GEPR	17.07.	Kaumen
NORM	5.8.05	Sta
FREIG	27.02.02	

BENENNUNG

TILLER NFU - PCB

ZUSAMMENSTELLZEICHNUNG

ZUST	ÄNDERUNG	DATUM	NAME
C	2982.105	04.08.05	GAN
B	2891.105	17.07.02	HAN
A	2887.105	28.05.02	KE

Raytheon
Raytheon Marine GmbH
Germany

ZEICHNUNGSNUMMER
105-111.HP010

BL. 1
VON 1

ERS.FÜR

ERS.DURCH