



Retrofit option

## ON NETSYNCHRON

Observe additional system documents!

# General instructions

## CAUTION



### **Read the operating instructions!**

**The operating instructions provide an introduction to the safe use of the products.**

- Read the operating instructions for all system components!
- Observe accident prevention regulations!
- Observe all local regulations!
- Confirm with a signature where appropriate.

## NOTE



**In the event of queries on installation, commissioning, operation or special conditions at the installation site, or on usage, please contact your sales partner or our customer service department on +49 2680 181-0.**

**A list of authorised sales partners can be found at [www.ewm-group.com](http://www.ewm-group.com).**

Liability relating to the operation of this equipment is restricted solely to the function of the equipment. No other form of liability, regardless of type, shall be accepted. This exclusion of liability shall be deemed accepted by the user on commissioning the equipment.

The manufacturer is unable to monitor whether or not these instructions or the conditions and methods are observed during installation, operation, usage and maintenance of the equipment.

An incorrectly performed installation can result in material damage and injure persons as a result. For this reason, we do not accept any responsibility or liability for losses, damages or costs arising from incorrect installation, improper operation or incorrect usage and maintenance or any actions connected to this in any way.

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## 2 Overview

### 2.1 For your safety

#### **DANGER**



- Do not carry out any unauthorised repairs or modifications!**  
**To avoid injury and equipment damage, the unit must only be repaired or modified by specialist, skilled persons!**  
**The warranty becomes null and void in the event of unauthorised interference.**
- Appoint only skilled persons for repair work (trained service personnel)!

#### **WARNING**



- Validity of this document!**  
**This document is only valid in combination with the operating instructions for the power source being used (welding machine)!**
- Read the operating instructions, in particular the safety instructions for the power source (welding machine)!



- Risk of accidents if these safety instructions are not observed!**  
**Non-observance of these safety instructions is potentially fatal!**
- Carefully read the safety information in this manual!
  - Observe the accident prevention regulations in your country.
  - Inform persons in the working area that they must observe the regulations!

#### **CAUTION**



- Obligations of the operator!**  
**The respective national directives and laws must be observed for operation of the machine!**
- National implementation of the framework directive (89/391/EEG), as well as the associated individual directives.
  - In particular, directive (89/655/EEG), on the minimum regulations for safety and health protection when staff members use equipment during work.
  - The regulations regarding work safety and accident prevention for the respective country.
  - Setting up and operating the machine according to IEC 60974-9.
  - Check at regular intervals that users are working in a safety-conscious way.
  - Regular checks of the machine according to IEC 60974-4.

## 2.2 Proper usage

### WARNING



#### **Hazards due to improper usage!**

**Hazards may arise for persons, animals and material objects if the equipment is not used correctly. No liability is accepted for any damages arising from improper usage!**

- The equipment must only be used in line with proper usage and by trained or expert staff!
- Do not modify or convert the equipment improperly!

These instructions apply only for the conversion of the following machines:

- Tetrix 351, 451, 551 AC/DC

## 2.3 Short description of the working steps required

- Integration of a 6-stage changeover switch in the rear panel of the casing.
- Integration and wiring of PCB TSYN1 in the machine on the intermediate panel.

## 3 Conversion

### DANGER



#### **Risk of injury from electric shock!**

**Servicing machines that are not disconnected from the mains can lead to serious injuries!**

- Disconnect the machine completely from the mains.
- Unplug the mains plug!
- Wait for 4 minutes until the capacitors have discharged!



#### **Protective earth PE!**

**To protect persons and animals against dangerous live voltages and electric shocks in the event of a fault, the casing panels on the unit are connected to a green/yellow protective earth.**

- After conversion, re-connect the protective earth to the casing panels!

### CAUTION



**Damage to the machine due to missing circuit diagrams when connecting the accessories!**

**Wiring the accessories has to follow the machine's circuit diagrams at all times!**

- The circuit diagrams can be found in the machine (document pouch on the casing cover) and may also be included in these conversion instructions!

### 3.1 Parts list

**NOTE**

Before conversion, check that the retrofit kit is complete (see parts list).

Tetrix 351 AC/DC as an example:

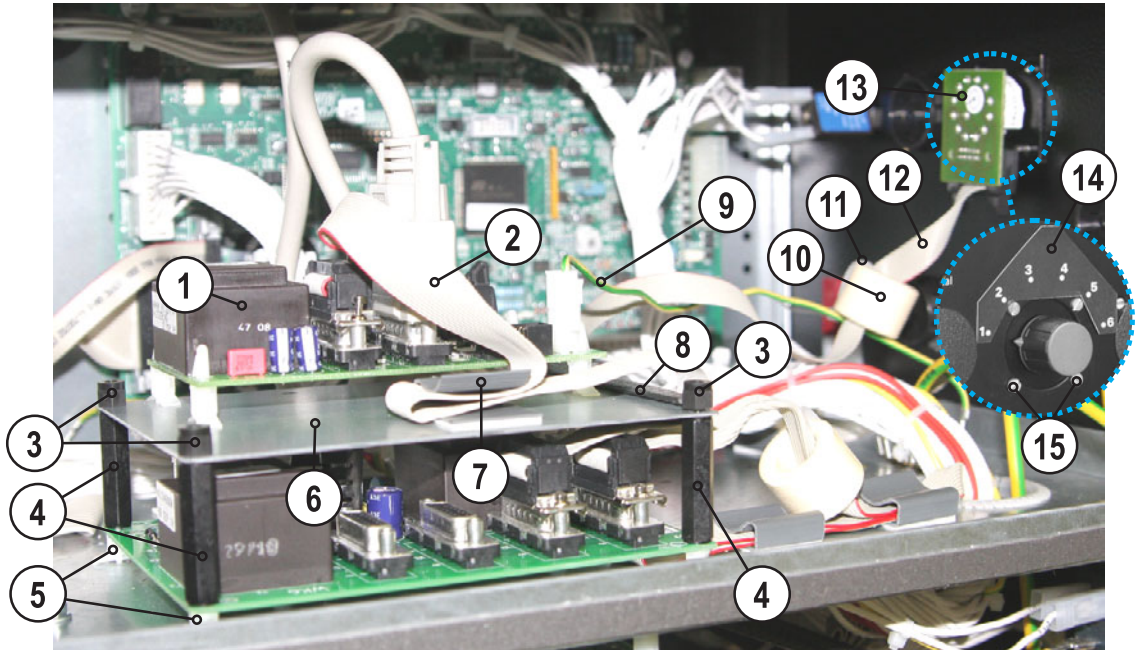


Figure 3-1

Item 0	Quantity	Description	Item number
1	1	PCB TSYN1	040-000676-00000
2	1	Flat band cable D-SUB	094-007494-00002
3	4	Thread bolt M4 x 8 mm	044-003002-00000
4	4	Spacer M4 x 35 mm	044-002151-00000
5	4	M4 expanding anchor	094-006502-00000
6	1	PCB holder	094-016978-00000
7	1	Adhesive base	074-000159-00000
8	1	Edge protection	094-007643-00000
9	1	Earthing cable (PE)	094-016979-00000
10	1	Toroidal ferrite core (interference suppression)	034-000157-00000
11	4	Cable binder	044-001275-00000
12	1	Flat band cable	094-000003-00000
13	1	Rotary switch (assembly)	092-008178-00000
14	1	Adhesive film (rotary switch)	094-009599-00000
15	4	Oval-head screw M3x10	044-001414-00001
none	1	Circuit diagram	

## 3.2 Installing the PCB

- Unscrew right-hand casing cover.
- Remove the earth cable from the cover plate.

### 3.2.1 Tetrix 351 AC/DC

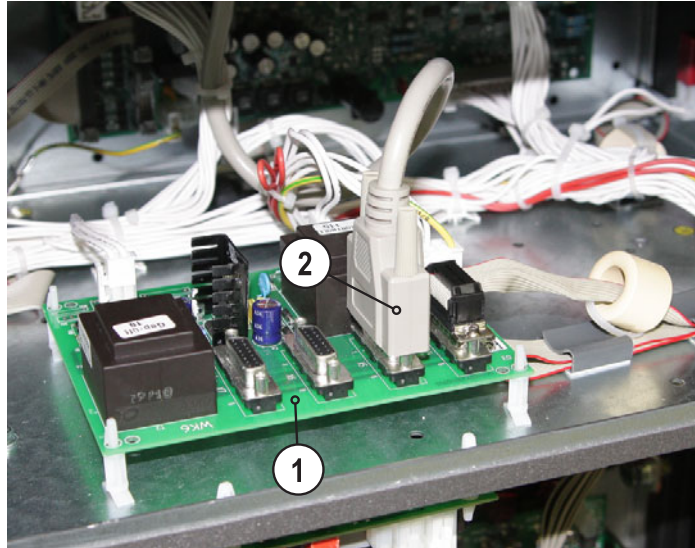


Figure 3-2

Item 0	Quantity	Description	Item number
1	1	PCB WK 6	-
2	1	D-SUB cable	-

- Remove the D-SUB cable from the WK 6 PCB.

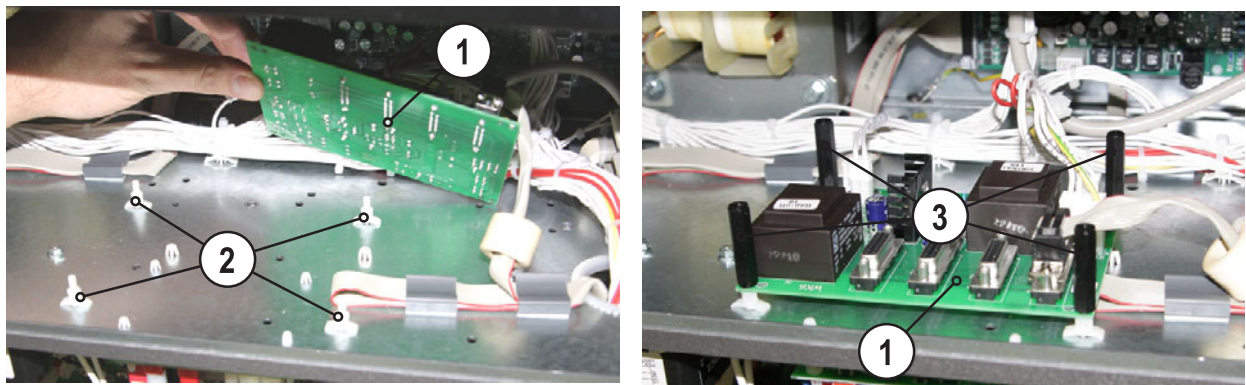


Figure 3-3

Item 0	Quantity	Description	Item number
1	1	PCB WK 6	-
2	4	M4 expanding anchor	094-006502-00000
3	4	Spacer M4 x 35 mm	044-002151-00000

- Unfasten the WK 6 PCB from the expanding anchors.
- Replace expanding anchor (without threaded end fitting) with M4 expanding anchor (with threaded end fitting).
- Attach the WK 6 PCB to the M4 expanding anchors (with threaded end fitting).
- Secure the WK 6 PCB using M4 x 35 mm spacers.



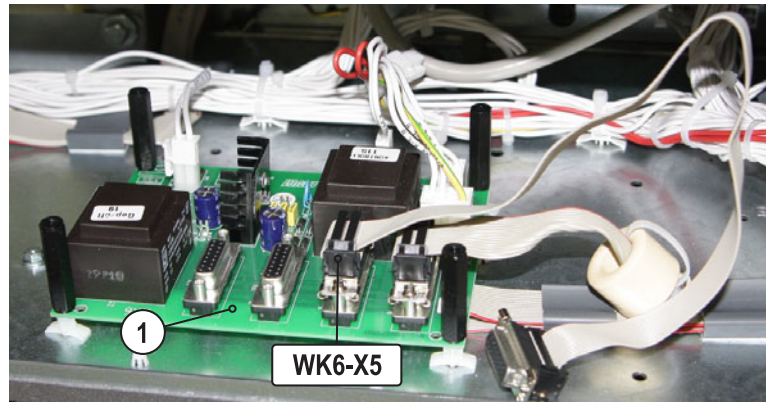


Figure 3-4

Item 0	Quantity	Description	Item number
1	1	PCB WK 6	-

- Attach the D-SUB connection of the flat band cable to the WK6-X5 PCB and screw tight.

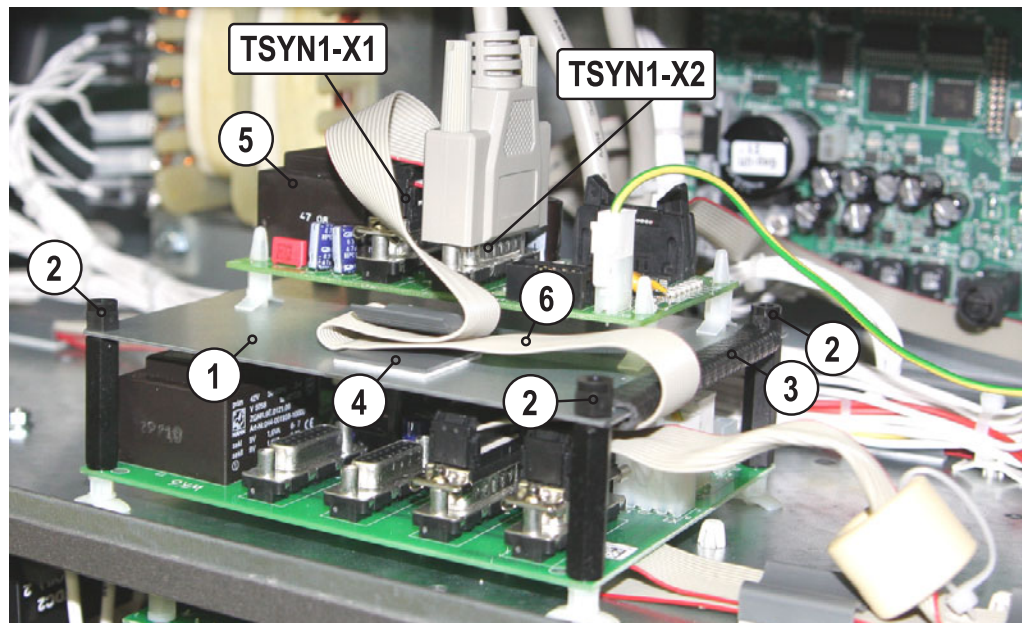


Figure 3-5

Item 0	Quantity	Description	Item number
1	1	PCB holder	094-016978-00000
2	4	Thread bolt M4 x 8 mm	044-003002-00000
3	1	Edge protection	094-007643-00000
4	1	Adhesive base	074-000159-00000
5	1	PCB TSYN1	040-000676-00000
6	1	Flat band cable D-SUB	094-007494-00002

- Attach the PCB holder to the M4 x 35 mm spacers using M4 x 8 mm stud bolts.
- Attach the edge protection to the PCB holder.
- Attach the adhesive base to the PCB holder.
- Attach the D-SUB connection of the flat band cable to the TSYN1-X1 PCB and screw tight (secure the cable in the adhesive base).
- Reattach the D-SUB cable of the WK 6 PCB to the TSYN1-X2 PCB and screw tight.

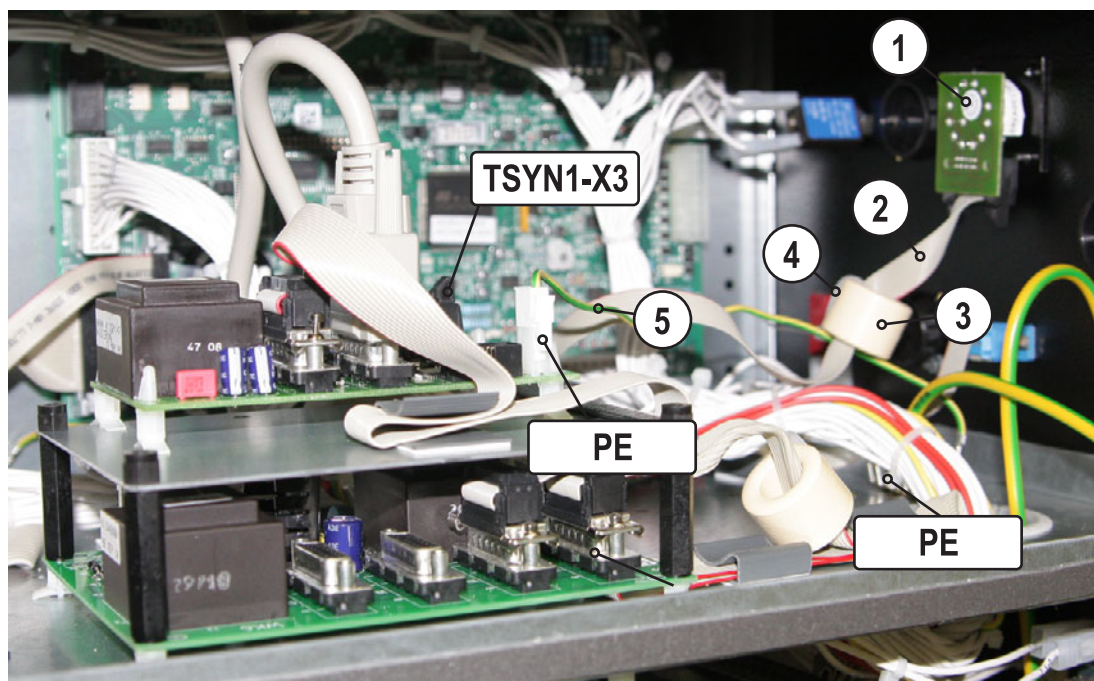


Figure 3-6

Item 0	Quantity	Description	Item number
1	1	Rotary switch (assembly)	092-008178-00000
2	1	Flat band cable	094-000003-00000
3	1	Toroidal ferrite core (interference suppression)	034-000157-00000
4	4	Cable binder	044-001275-00000
5	1	Earthing cable (PE)	094-016979-00000

- Insert the flat band cable connector plug through the toroidal ferrite core and secure using a cable binder.
- Lay the flat band cable to the TSYN1-X3 PCB, insert and lock.
- Connect the earthing cable of the TSYN1-PE PCB to the PE earthing contact on the intermediate plate.
- Secure the harness using the cable binder supplied

## 3.2.2 Tetrax 451, 551 AC/DC

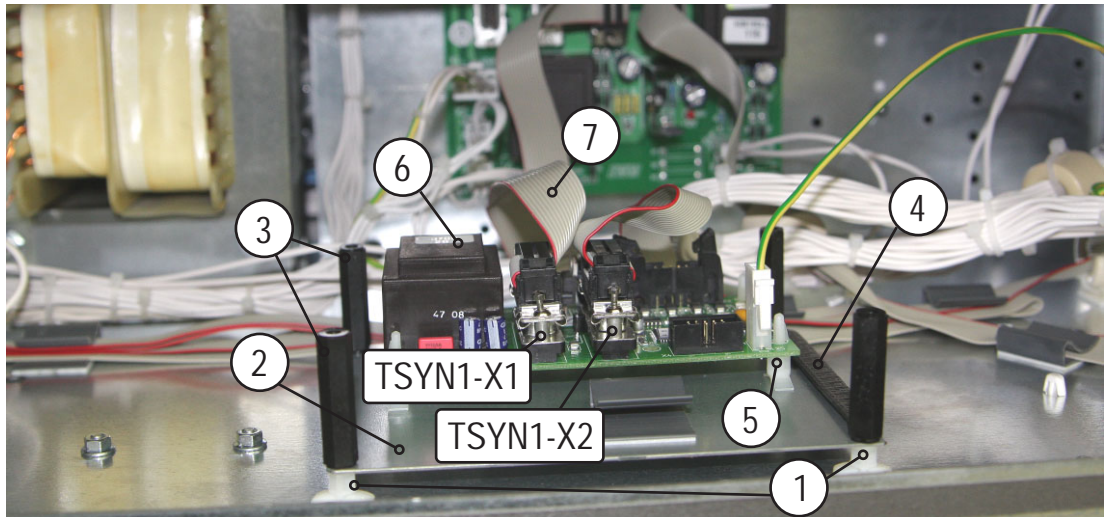


Figure 3-7

Item 0	Quantity	Description	Item number
1	4	M4 expanding anchor	094-006502-00000
2	1	PCB holder	094-016978-00000
3	4	Spacer M4 x 35 mm	044-002151-00000
4	1	Edge protection	094-007643-00000
5	4	Spacer	064-000567-00000
6	1	PCB TSYN1	040-000676-00000
7	1	Flat band cable D-SUB	094-007494-00002

- Attach the M4 expanding anchor to the intermediate plate.
- Secure the PCB holder to the M4 expanding anchor using the M4 x 35 mm spacer.
- Insert the spacer into the PCB holder.
- Fit the TSYN1 PCB on the spacer.
- Attach the edge protection to the PCB holder.
- Attach the D-SUB connection of the flat band cable to the TSYN1-X2 PCB and screw tight.
- Attach the D-SUB connection of the flat band cable of the WK 6 PCB to the TSYN1-X1 PCB and screw tight.



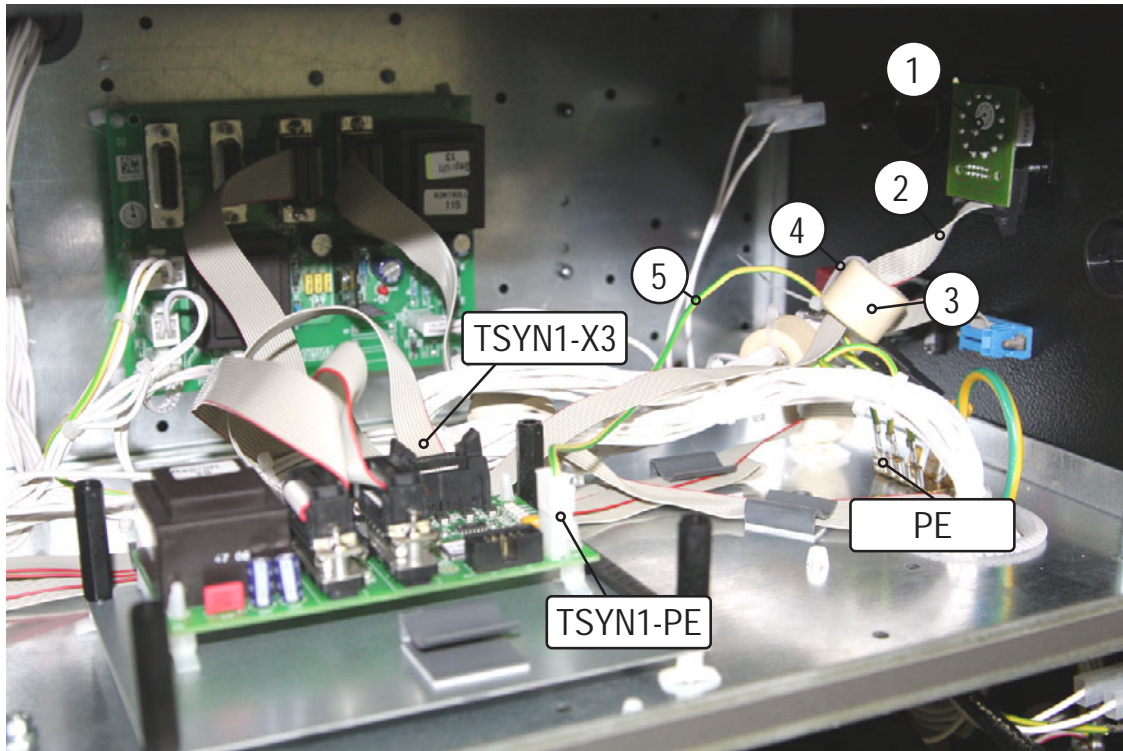


Figure 3-8

Item 0	Quantity	Description	Item number
1	1	Rotary switch (assembly)	092-008178-00000
2	1	Flat band cable	094-000003-00000
3	1	Toroidal ferrite core (interference suppression)	034-000157-00000
4	2	Cable binder	044-001275-00000
5	1	Earthing cable (PE)	094-016979-00000

- Insert the flat band cable connector plug through the toroidal ferrite core and secure using a cable binder.
- Lay the flat band cable to the TSYN1-X3 PCB, insert and lock.
- Connect the earthing cable of the TSYN1-PE PCB to the PE earthing contact on the intermediate plate.
- Secure the harness using the cable binder supplied

### 3.3 Installing the rotary switch at the back of the machine

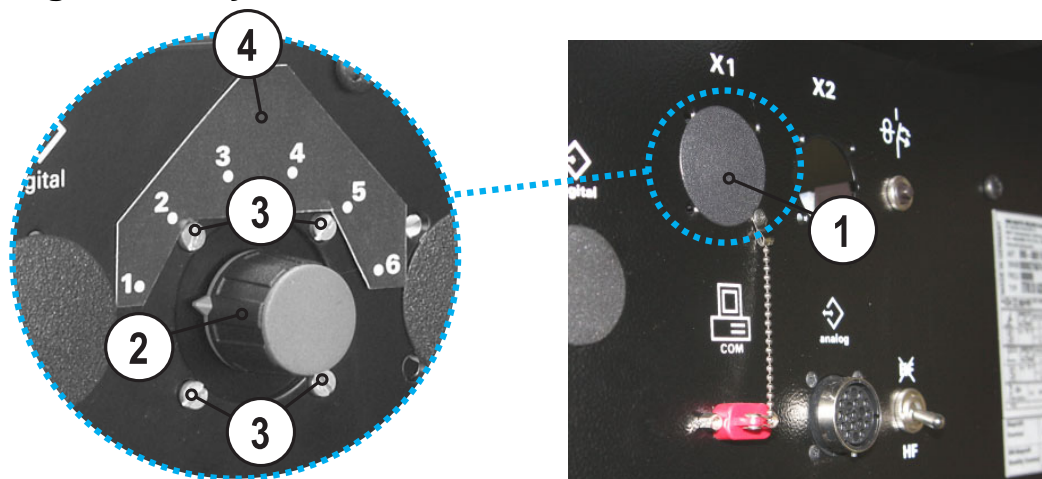



Figure 3-9

Item 0	Quantity	Description	Item number
1	1	Blind plug	
2	1	Rotary switch (assembly)	092-008178-00000
3	4	Oval-head screw M3x10	044-001414-00001
4	1	Adhesive film (rotary switch)	094-009599-00000

- Remove the blind plug from the X1 connection (with older machines, the  symbol may be shown instead of X1).
- Remove the rotary dial cover and arrow indicator from the rotary switch.
- Insert the rotary switch from inside the casing rear panel and secure from the outside using the oval-head screws.

**The step switch is equipped with a switching stage limiter nipple, which has to point to the right during installation.**

- Attach the sticker above the rotary switch at the casing rear panel (see figure).
- Reattach the rotary dial and arrow indicator to the rotary switch.

**To align the rotary dial with the sticker scale proceed as follows:**

- Using a socket wrench, screw the rotary dial tight up to the point that the steps can be switched.
- Turn the rotary dial to the different switch positions to the left until it overwinds.
- Continue turning until the arrow indicator points to position 1 again.
- Screw the rotary dial tight.
- Fit on the rotary dial cover.
- Attach the flat band cable connector plug to the VP13-X1 PCB (rotary switch) and lock.
- Assemble the machine in the reverse order.

## 4 Final inspection



### DANGER



#### Protective earth PE!

To protect persons and animals against dangerous live voltages and electric shocks in the event of a fault, the casing panels on the unit are connected to a green/yellow protective earth.

- After conversion, re-connect the protective earth to the casing panels!



### WARNING



#### Danger due to failure to carry out the final inspection!

After installation or conversion, all mechanical and electrical connections must be checked for correct installation to avoid any potential injuries.

- No leads or tubes should be squashed or laid on sharp edges.
- Check all mechanical connections to ensure that they are fitted correctly!
- Carry out the final inspection!
- Carry out the functional test!

### CAUTION



#### Test!

Before re-commissioning, it is essential that an "inspection and test during operation" is carried out conforming to IEC / DIN EN 60974-4 "Arc welding devices - inspection and testing during operation"!

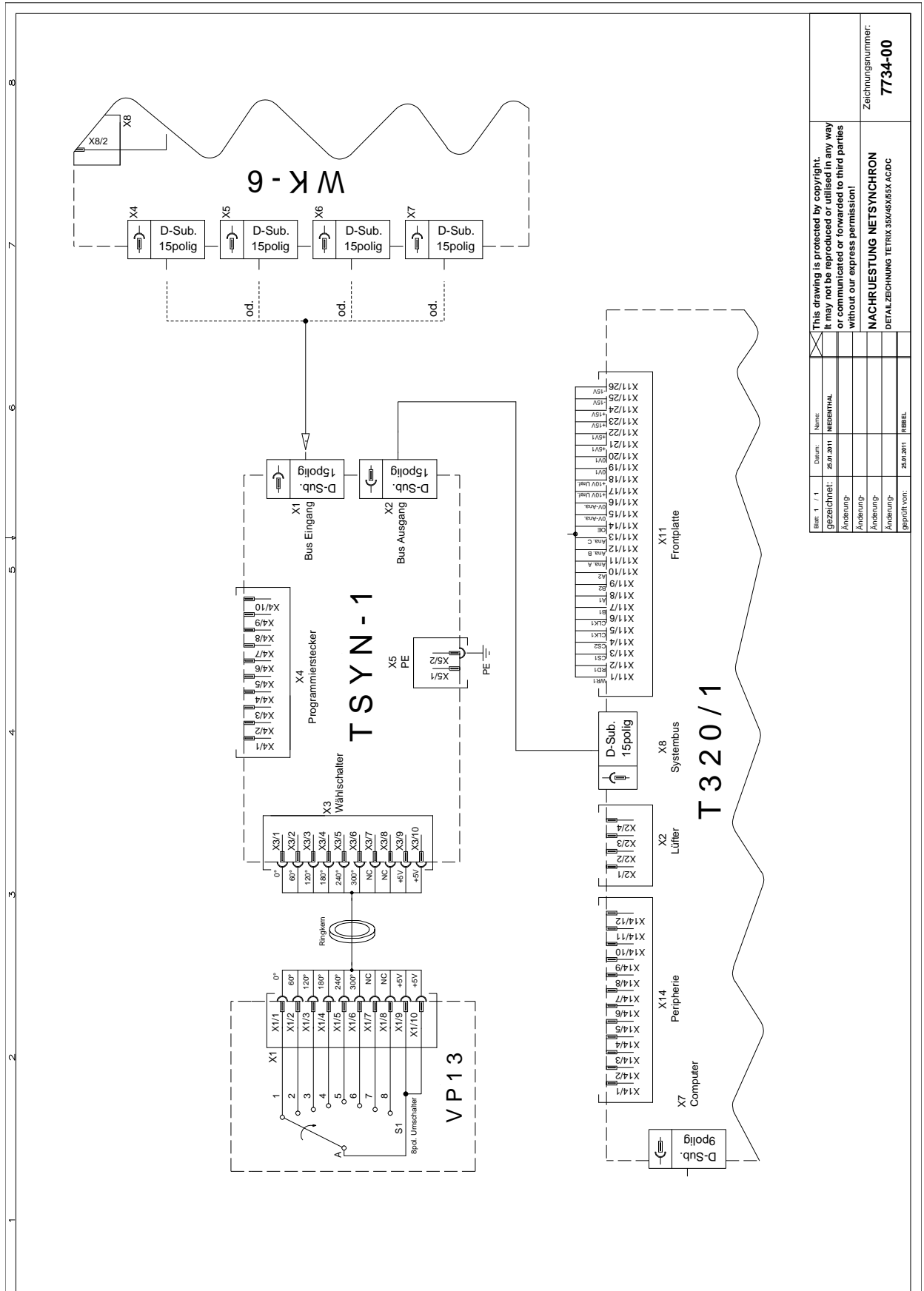
- For detailed instructions, please see the standard operating instructions for the welding machine.

### NOTE



- Keep the conversion instructions with the machine documentation!
- When ordering spare parts, ensure that the item number and serial number of the machine are quoted!

5 Appendix  
5.1 Circuit diagram



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gezeichnet:	25.03.2011		
Änderung:			
Änderung:			
Änderung:			
geprüft von:	25.03.2011	RIBEL	

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**NACHRUESTUNG NETSYNCHRON**  
DETAILZEICHNUNG TETRIX.350/450.55X AC/DC

Zeichnungsnummer:  
**7734-00**