

# Responder 1000/1100

Version V 1.0

## Servicing Instructions

227 487 20 ENG

Revision G



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**GE Medical Systems**  
*Information Technologies*

**Caution:**

During repairs/service interventions, observe the protective measures against damage due to ESD.

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  - the instrument is used in accordance with the instructions for use.
- This manual contains service information, operating instructions are provided in the Operator's Manual of the instrument.
- This manual is in conformity with the instrument at printing date.
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## Revision History

Each page of this manual has the document number followed by a revision letter, located at the bottom line of the page. This letter identifies the manual update level. The latest letter of the alphabet corresponds to the most current revision of the document.

The revision history of this manual is summarized below.

<b>Date</b>	<b>Revision</b>	<b>Comments</b>
1998 - 07	A	Initial release
2004 - 01	B	ECO 075782
2006 - 06	C	ECO 082042
2007 - 05	D	ECO 087144
2007 - 12	E	ECO 088330
2008 - 06	F	ECO091141, Changes on page 33, 34. Drawing 10116601-D02 rev.L replaced by rev.M
2008 - 12	G	ECO093900, Battery disposal added on page 20.

# 1 Documentation and nomenclature of GE Medical Systems *Information Technologies* instrument part Nos

## 1.1 Configuration of Instrument part No

The instrument part No comprises 8 digits, the first 6 digits determining the instrument type, the last 2 digits the instrument version. The language is determined by configuration, thus having no influence on the part No.

E.g. Instrument Type	Version
Responder 1000, without battery, 230...240 V	101 166 01
Responder 1100, with battery, 230...240V	101 166 12

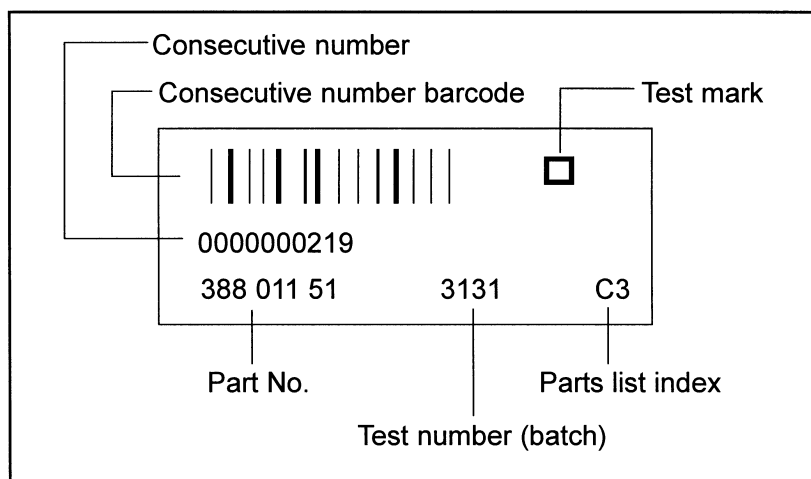
## 1.2 Configuration of the PCB part No

### 388 xxx yy Spare part numbers for the operative PCBs.

The instrument documentation, e.g., reference diagrams, circuit diagrams and parts lists are listed under this part No.

The 388 number is located on the barcode label.

Configuration of the barcode labels:



### **303 xxx yy Spare part numbers for PCBs tested especially thoroughly**

303 numbers are only given to PCBs where the level of testing applied to 388 PCBs is inadequate for implementation when servicing in the field, or where only a complete set of PCBs can be replaced in the field.

In addition to a barcode label (388 number) 303 part Nos also have an additional label with a 303 number and are to be found in the spare parts list under this number.

### **389 xxx yy Replacement numbers for defective PCBs**

Where servicing is required 389 PCBs are available for the replacement of some PCBs. When using a replacement PCB (389 part No) the defective PCB is to be returned to the Freiburg factory. Replacement PCB part Nos are included in the spare parts list.

389 PCBs have an additional adhesive label.

## **1.3 Instrument Status Documentation (nominal status)**

Due to the hardware and software combination unambiguous documentation of the instrument assembly status is necessary, also in the event of repairs.

This documentation comprises the following documents and measures:

### **Master Record Index (MRI)**

This document is a component of this instrument documentation.

This document states the combination of permissible hardware and software for a particular instrument version. The permissible PCB Index is given in the “Index” column with each update delivered. Further permissible PCB Indexes are given in the “compatible” column. The PCB Index can be found in the PCB barcode label.

### **Product Status Index**

This document is created during manufacture. The Product Status Index documents the hardware/software product status.

## 2 General Overview

These service instructions describe both the **Responder 1000** as well as the **Responder 1100**. Unless a note appears to the contrary, this description applies to both units.

**Responder 1000** and **Responder 1100** are based on the same hardware platform.

The following versions are available:

- 101 166 01 Responder 1000, w/o battery, 230...240V~
- 101 166 02 Responder 1000, w/ battery , 230...240V~
- 101 166 03 Responder 1000, w/o battery, US, 115...120V~
- 101 166 04 Responder 1000, w/ battery, US, 115...120V~
- 101 166 05 Responder 1000, w/o battery, MiniDef III, Esaote 230...240V~
- 101 166 06 Responder 1000, w/ battery, MiniDef III, Esaote 230...240V~
- 101 166 07 Responder 1000, w/o battery, 115...120V~
- 101 166 08 Responder 1000, w/ battery, 115...120V~
- 101 166 09 Responder 1000, w/o battery, US, 230...240V~
- 101 166 10 Responder 1000, w/ battery, US, 230...240V~
- 101 166 11 Responder 1100, w/o battery, 230...240V~
- 101 166 12 Responder 1100, w/ battery, 230...240V~
- 101 166 13 Responder 1100, w/o battery, US, 115...120V~
- 101 166 14 Responder 1100, w/ battery, US, 115...120V~
- 101 166 15 Responder 1100, w/o battery, MiniDef III, sync, , Esaote 230...240V~
- 101 166 16 Responder 1100, w/ battery, MiniDef III, sync, , Esaote 230...240V~
- 101 166 17 Responder 1100, w/o battery, 115...120V~
- 101 166 18 Responder 1100, w/ battery, 115...120V~
- 101 166 19 Responder 1100, w/o battery, US, 230...240V~
- 101 166 20 Responder 1100, w/ battery, US, 230...240V~
- 101 166 23 Responder 1000, w/o battery, 230...240V~, China
- 101 166 24 Responder 1000, w/ battery, 230...240V~, China

The hardware consists of the following function blocks:

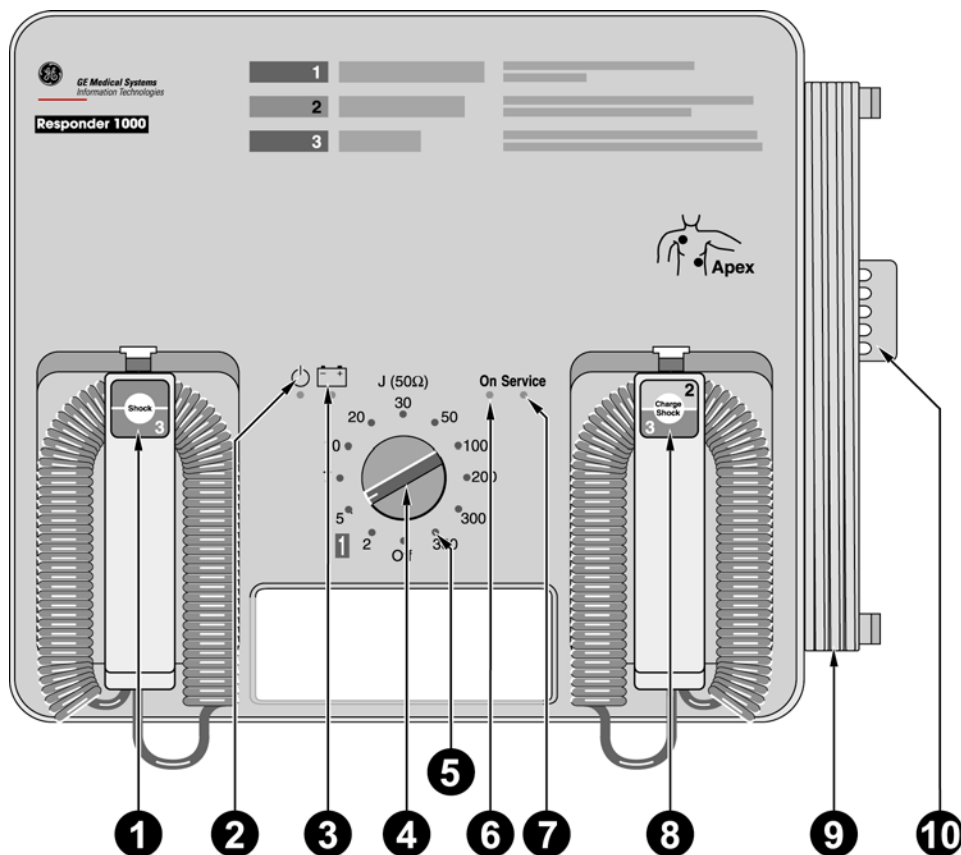
- PCB Responder 1000/1100
- battery module including PCB battery module
- keypad
- defibrillator electrodes (paddles)

The following function blocks are implemented as PCBs.

- PCB Responder 1000/1100
- PCB battery module

The intended use, the functions available and operation of **Responder 1000/1100** are described in the instructions for use.

## 2.1 Responder 1000



- 1 Button to deliver the shock - together with button 8
- 2 AC line power indicator
- 3 Indicator light is green while the battery is charging (line power operation), it is red when the battery needs charging (battery power operation)
- 4 Energy selector, On/Off switch
- 5 Indicators 2 to 360 illuminate when the corresponding energy level has been reached
- 6 "On" indicator illuminates when the device is On
- 7 "Service" indicator illuminates when a problem was detected during the automatic self-test
- 8 Button to initiate defibrillator charging and to deliver the shock - together with button 1
- 9 Power cord
- 10 Tube holder for skin prep cream

### Explanation of symbols used on the device



Refer to Operator's Manual



Caution, High Voltage



Type CF signal input: highly insulated, suitable for intracardiac application

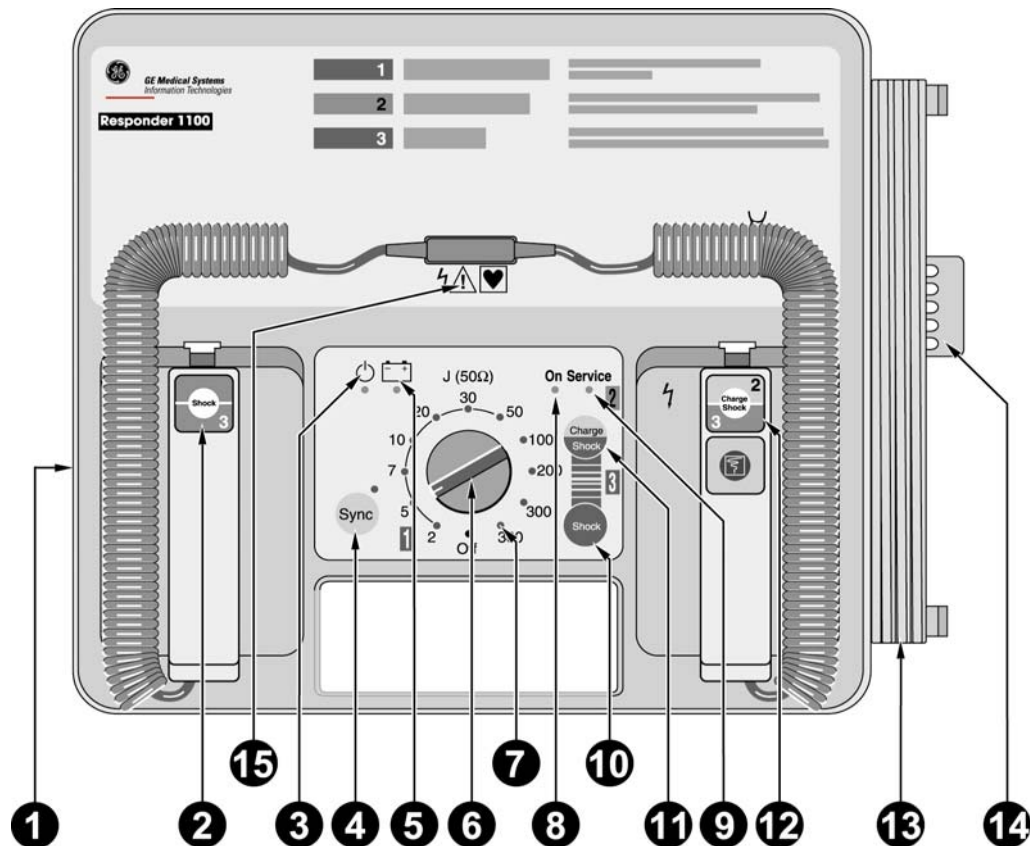


battery



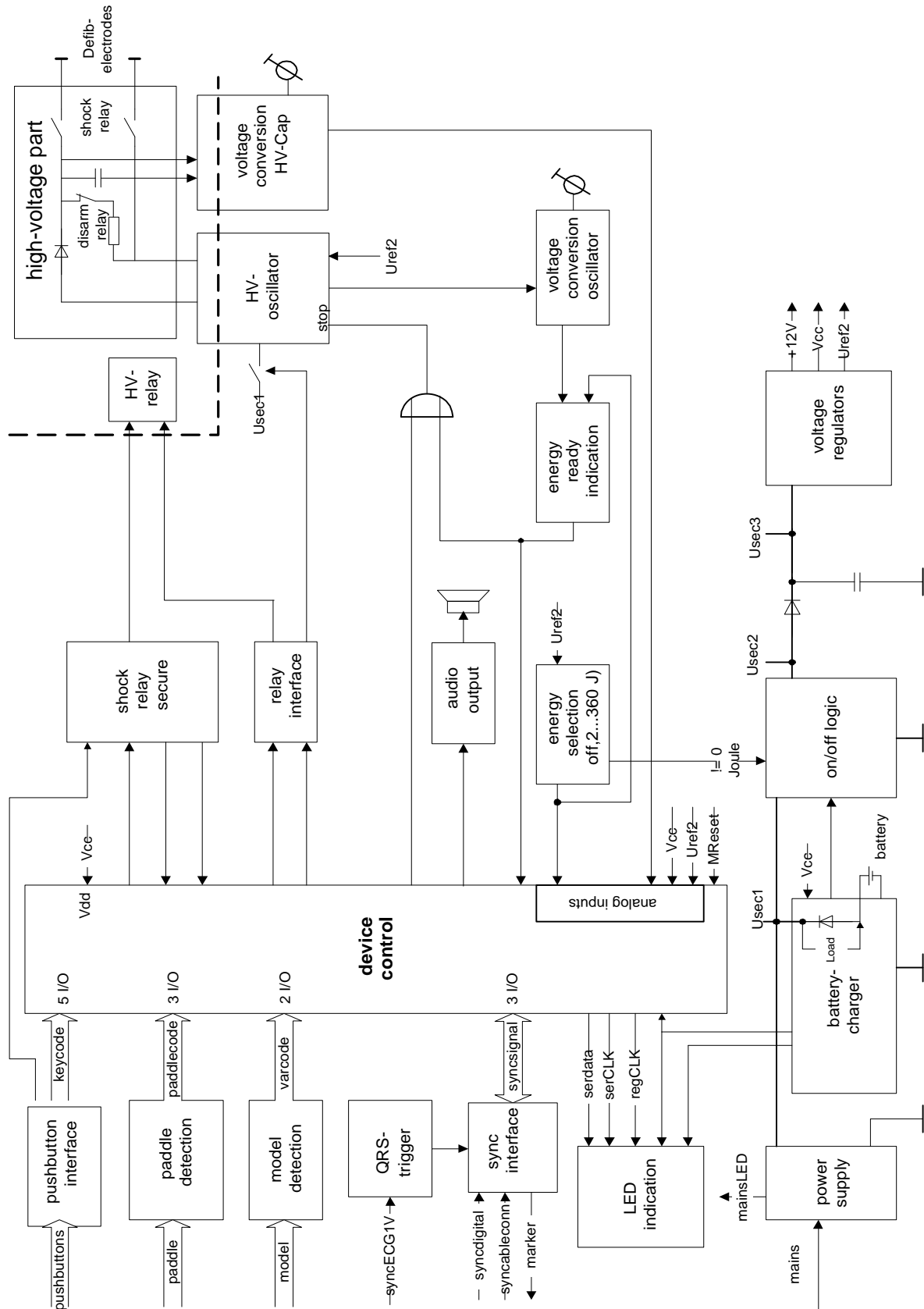
Standby mode (line power operation)

## 2.2 Responder 1100



- 1 ECG trigger signal input (synchronized defibrillation)
- 2 Button to deliver the shock - together with button 12
- 3 AC line power indicator
- 4 Button to enable and disable the synchronized defibrillation mode, with indicator (indicator is illuminated during sync. defibrillation and flashes to the rhythm of the QRS complex)
- 5 Indicator light is green while the battery is charging (line power operation), it is red when the battery needs charging (battery power operation)
- 6 Energy selector, On/Off switch
- 7 Indicators 2 to 360 illuminate when the corresponding energy level has been reached
- 8 "On" indicator illuminates when the unit is On
- 9 "Service" indicator illuminates when a problem was detected during the automatic self-test
- 10 Button to initiate defibrillator charging and to deliver the shock - together with button 11 when adhesive pads or internal electrodes are used
- 11 Button to deliver the shock when adhesive pads or internal electrodes are used - together with button 10
- 12 Button to initiate defibrillator charging and to deliver the shock - together with button 2
- 13 Power cord
- 14 Tube holder for skin prep cream
- 15 Connector for defibrillation electrodes (turn off the unit before exchanging the electrodes)

### 2.3 Block Diagram, total Unit



## 2.4 Mechanical Structure

The major mechanical components of the unit are the **top and bottom shell**. The top shell is the basic element carrying the following sub-assemblies:

- PCB Responder 1000/1100
- Keypad (only Responder 1100)

The bottom shell holds the battery module and the capacitor which are linked to the PCB Responder 1000/1100 via cables.

The 6-pin inlet plug for **connecting the sync-cable** is located at the left side of the top shell. It is linked to the PCB via a cable.

## 2.5 Functions

The functions follows the **Block Diagram** of the total unit **in chapter 2.3** and the **function blocks of the P plans**.

The unit contains following functions:

- power supply
- battery charger (located at PCB battery module)
- on/off logic
- voltage regulators
- device control
- LED indication
- audio output
- high voltage part
- shock relay secure
- relay interface
- HV- oscillator
- energy selection
- voltage conversion HV-Cap
- voltage conversion oscillator
- energy ready indication

### 3 Interfaces

#### 3.1 Internal Interfaces

##### Interface signal PCB Responder 1000/1100

connector : <b>BattLoad1</b>					
function: connector to battery module					
type: MODUI 6pol					
	signal name	level	active	I/O	meaning
1	Usec1	+18..30V	-	Output	charging voltage
2	GND	0V	-	-	Ground
3	+5V	+5V	-	Output	5V
4	BATTMINIM	+5V	High	Input	battery Low signal
5	BATTCHARGE	+18..25V	-	Input	battery charge signal
6	BATTLEER	-	-	Input	battery empty signal

connector : <b>Sync</b>					
function: connector to Sync input.					
type: MODUII 6pol					
	signal name	level	active	I/O	meaning
1	ECG1V		-	Input	1V ECG
2	DIG_GND	0V	-	-	digital Ground
3	SYNEXT		L->H	Input	trigger signal extern monitors
4	MARKOUT		High	Output	marker signal
5	AN_GND	0V	-	-	analog Ground
6	SYNCABLE	CMOS	Low	Input	cable detection

connector : <b>HV_Trafo_Pri</b>					
function: connector to High Voltage transformer					
type: 4,8 x 0,8					
	signal name	level	active	I/O	meaning
2	HV_TRAFO_PRI/2	-	-	-	"passive end" of transformer winding
1	HV_TRAFO_PRI/1	-	-	-	"active end" of transformer winding

connector : <b>HVCapConn</b>					
function: connector to High Voltage Capacitor					
type: 4,8 x 0,8					
	signal name	level	active	I/O	meaning
-	KO_PLUS	-	+	-	plus terminal
-	KO_NEG	-	-	-	minus terminal

connector : <b>KeyConn</b>					
function: connector to keypad					

type: TRIO MATE 4pol					
	signal name	level	active	I/O	meaning
1	SHOTAFOL_	+5V	Low	Input	key "shock"
2	CHATAFOL_	+5V	Low	Input	key "charge/shock"
3	SYNTAFOL_	+5V	Low	Input	key "sync"
4	GND	0	-	Output	Ground

connector : <b>PaddConn1</b>					
function: connector to "Sternum" Paddle					
type: MODU II 4pol					
	signal name	level	active	I/O	meaning
1	SHOTAPAD	+5V	High	Input	key "shock" (paddle)
2	VCC	+5V	-	Output	VCC
3	PADTYP0	+5V	High	Input	paddle detection
4	PADTYPHE2	analog		Input	paddle detection (level depends on paddle type)

connector : <b>PaddConn2</b>					
function: connector to "Apex" paddle					
type: MODU II 4pol					
	signal name	level	active	I/O	meaning
1	NC				
2	NC				
3	CHATAPAD	+5V	High	Input	key charge/shock (paddle)
4	VCC	+5V	-	Output	VCC

connector : <b>PaddleHVConn</b>					
function: connector to paddles (high voltage)					
type: 4,8 x 0,8					
	signal name	level	active	I/O	meaning
7	HV_POS	5kV	-	Output	connection to "Sternum" paddle
8	HV_NEG	0V	-	Output	connection to "Apex" paddle

## Interface signal PCB battery module

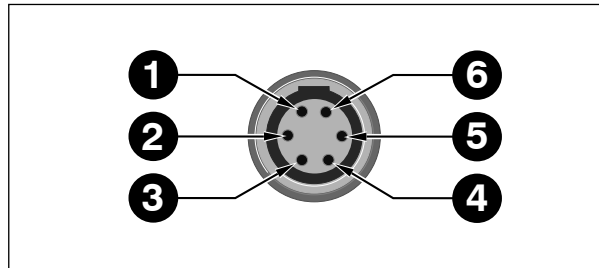
connector : <b>BattConn</b>					
function: connector to battery					
type: soldering connection					
	signal name	level	active	I/O	meaning
1	BAT_PLUS	18V	-	-	battery +
2	BAT_MINUS	GND	-	-	battery -

connector : <b>BattLoad2</b>					
function: connection to PCB Responder 1000/1100					
type: crimp connection terminal mini 2000					
	signal name	level	active	I/O	meaning
1	Usec1	+18..30V	-	Input	charging voltage or battery voltage
2	GND	0V	-	Input	Ground
3	+5V	+5V	-	Input	5V
4	BATTMINIM	+5V	High	Output	battery Low signal
5	BATTCHARGE	+18..25V	High	Output	battery charge signal
6	BATTLEER	-	-	Output	battery empty signal

### 3.2 External Interfaces

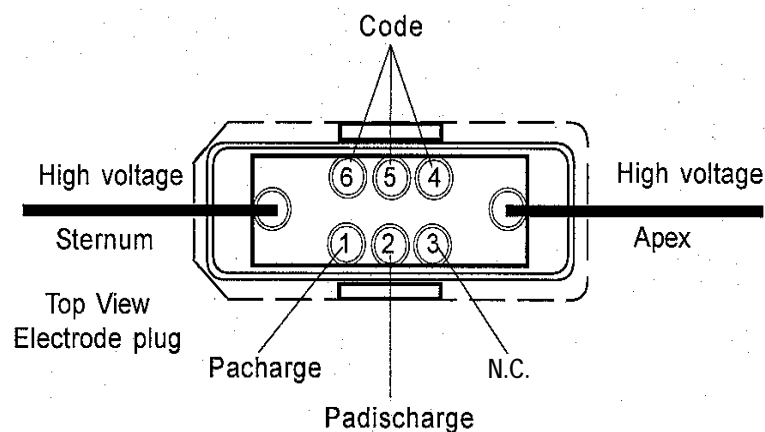
Only the **Responder 1100** is equipped with external interfaces.

#### Sync interface

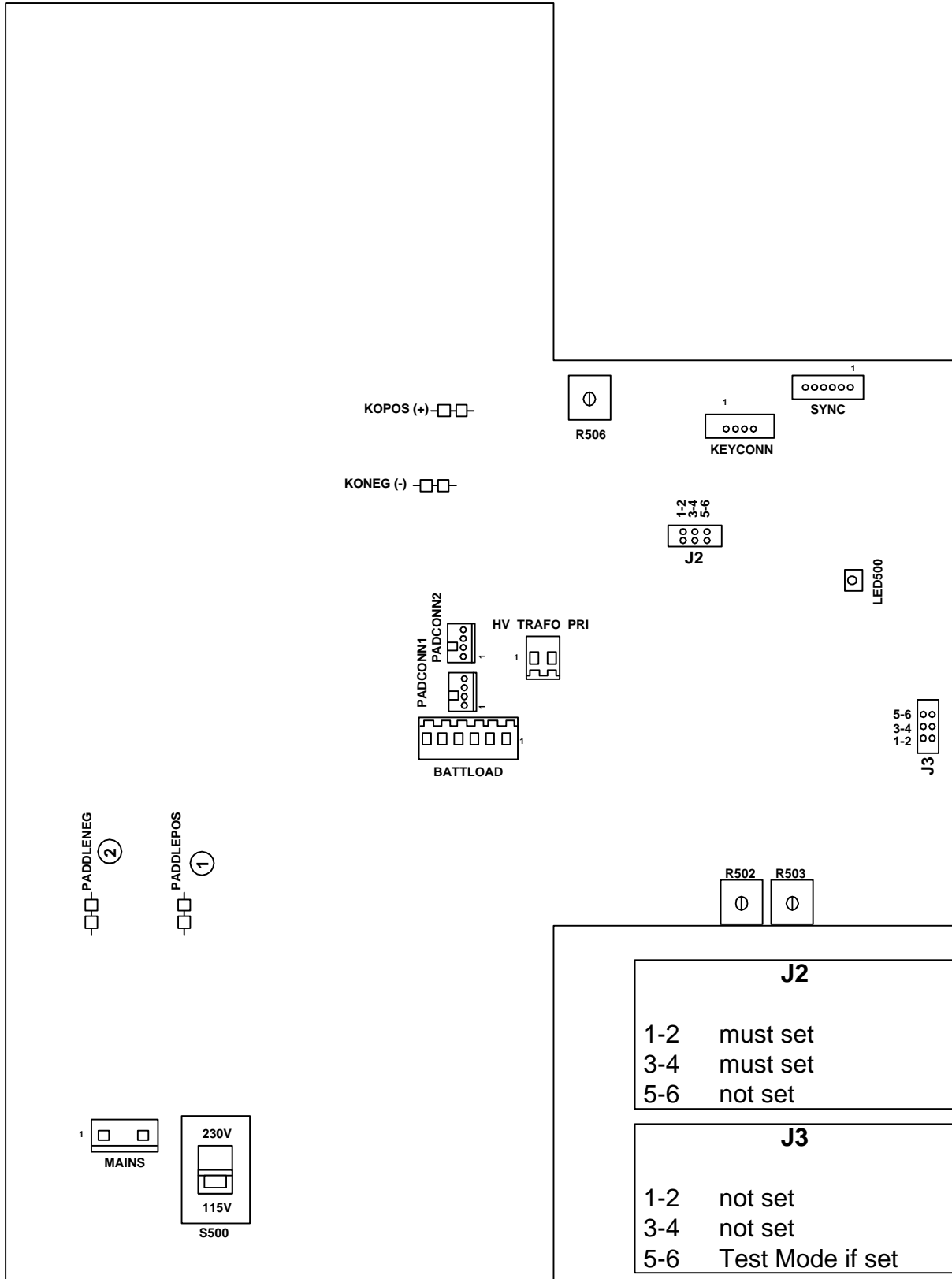


- 1 1-Volt ECG signal, analog (see chapter 9 Technical Description)
- 2 Ground, digital
- 3 SYNC pulse, digital (see chapter 9 Technical Description)
- 4 Marker, digital
- 5 Ground, analog
- 6 SYNC cable detection

#### Interface for defibrillator electrodes



## 4 Adjustment and Performance Instruction



Where (e.g. PCB)	What (e.g. PCB)	What to measure with?	Where to clip to?	Where to turn	How much and exact?	What else to note?
entire unit	check 30s safety period	stopwatch	---	---	30 ± 1s until defibrillator deactivate charging	remove plug HV_TRAFO_PRI, set energy to 2J, press <b>charge</b> button
entire unit	check 60s safety period as of “energy reached”	stopwatch	---	---	40...90 s ± 1s after the defibrillator is charged, it must discharge internally	set energy to 2J, press <b>charge</b> button
PCB Responder	adjust oscillating current	effective value (RMS) Ampere-meter	power supply, primary side, (connector mains)	R 502	502...528mA 1004...1056mA	<b>without battery</b> , charging with energy set to 300J U=230VAC, U=115VAC
PCB Responder	adjust energy	defibrillator-tester	paddles	R 503	339...381J	set energy to 360J, trigger defibrillator
PCB Responder	adjust charge monitor LED	LED 500	---	R 506	as of “energy reached” set R 506 so that LED 500 just lights up and after a short time (2...3s) goes out again	before this, the energy level must be adjusted with R 503. set energy to 360J, press <b>charge</b> button
entire unit	check charge monitor LED's	all charge monitor LED's	---	---	all LED's must light	set energy to 360J, press <b>charge</b> button
entire unit	check charging period	stopwatch	---	---	≤ 12s	<b>without battery</b> , set energy to 360J, press <b>charge</b> button

## 5 Unit Test Functions

### 5.1 General

After power-up and during operation, the **Responder 1000/1100** runs automatic self-tests. After power-up, the device beeps and all LED's will briefly light up. When the unit detects a error, the "Service" LED lights up and an acoustic signal sounds. Every three seconds the unit try's a new restart and test whether the error still appears.

### 5.2 Test Mode

The test mode is activated by inserting a jumper on PCB Responder 1000/1100 (J3 5-6). In the test mode, some LED's of the energy levels (2J to 30J) will indicate any detected malfunction. The table below lists all error codes and the corresponding explanations.

If the device detects a error, then:

- 1.) switch Off the device
- 2.) insert jumper J3 5-6 (use the jumper J2 3-4 for this test)
- 3.) switch On the device

After power up, the "Service" LED lights up, an acoustic signal sounds and the error code will indicated by the LED's of the energy levels. This mode is active until the device will switched Off.

**Error codes and the corresponding explanations**

LED 30J	LED 20J	LED 10J	LED 7J	LED 5J	LED 2J	Meaning	What to do
-	-	-	-	-	light	key error	test keypad and paddles
-	-	-	-	light	-	rotary switch error	replace PCB
-	-	-	-	light	light	high voltage error	replace PCB
-	-	-	light	-	-	disarm error (initialization)	replace PCB
-	-	-	light	-	light	disarm error (running time)	replace PCB
-	-	-	light	light	-	variant error	check jumper J3
-	light	-	-	-	-	device control error (Z501)	replace PCB
-	light	-	-	-	light	device control error (Z501)	replace PCB
-	light	-	-	light	-	device control error (Z501)	replace PCB
-	light	-	-	light	light	device control error (Z501)	replace PCB
-	light	-	light	-	-	device control error (Z501)	replace PCB
-	light	-	light	-	light	device control error (Z501)	replace PCB
-	light	-	light	light	-	device control error (Z501)	replace PCB
-	light	-	light	light	light	error high voltage to high	check adjustment
-	light	light	-	-	-	rotary switch error	replace PCB
-	light	light	-	-	light	device control error (Z501)	replace PCB
-	light	light	-	light	-	error shock relay	test keypad and paddles
-	light	light	-	light	light	device control error (Z501)	replace PCB
	light	light	light	-	-	device control error (Z501)	replace PCB
	light	light	light	-	light	signal error "pENROK"	replace PCB
	light	light	light	light	-	signal error "pSRELECT"	replace PCB
	light	light	light	light	light	device control error (Z501)	replace PCB
light	-	-	-	-	-	error voltage Uref2	replace PCB

## 6 Repair Notes

### 6.1 Safety Notes

<b>WARNING !</b> <b>Shock hazard. Always switch of the unit and disconnect the power cord before opening the unit. Do not reconnect the power cord when the unit is open.</b>	<b>WARNING !</b> <b>Shock hazard. Before replacing the primary fuse inside the unit, always switch off the unit and disconnect the power cord.</b>
--	---

When replacing electronic components, always implement **ESD protection**.  
Return replacement PCBs only in **ESD packaging**.  
Return defective or exhausted batteries to the factory for **proper disposal**.

### 6.2 Component Replacement

#### Opening the unit

Before opening the unit switch the instrument off and disconnect power cord plug. To open the unit, remove the 7 attachment screws on the base of the unit, place top shell to the left next to the instrument. When reassembling the unit, make sure that none of the cables are pinched.

#### Replacing the PCB

The PCB is located in the top shell. With the unit open, first disconnect the plug connections **KOPOS** and **KONEG** to the HV-capacitor. Disconnect the plug connection **BATTLOAD** (only if the unit is equipped with battery). Disconnect the plug connection **PADDLENEG**, **PADDLEPOS**, **PADCONN1** and **PADCONN2** to the paddles. At the **Responder 1100** disconnect the remaining plugs to the keypad (plug connection **KEYCONN**) and to the Sync input (plug connection **SYNC**). Then remove the 12 attachment screws.

#### Replacing the battery module

The battery module is located in the bottom shell. With the unit open, first disconnect the plug connection **BATTLOAD** to the PCB. Then remove the 4 attachment screws.

**Caution:** Use only original GE Medical Systems batteries (see chapter 11, Spare Parts List)  
Return defective battery module to the factory for proper disposal.



This symbol indicates that the waste of electrical and electronic equipment must not be disposed as unsorted municipal waste and must be collected separately. Please contact an authorized representative of the manufacturer for information concerning the decommissioning of your equipment. The letter below indicates the toxic element (Pb=Lead, Cd=Cadmium, Hg=Mercury) that is contained in the battery that may require special recycling or disposal methods. Please contact a GEHC representative to facilitate servicing, removal and disposal options.

## 7 Troubleshooting

### Unit cannot be switched on during line-power operating:

Green LED (AC line power indicator) fails to light up and unit cannot be switched on

- line power cord defective or not connected properly ?
  - mains connection on PCB correctly ?
  - primary fuse inside the unit defective ?
  - input voltage selection (S500) in the correct position ?
- if all items above are OK: → PCB defective

Green LED (AC line power indicator) lights, unit still cannot be switched on

- input voltage selection (S500) in the correct position ?
- if all items above are OK: → PCB defective

### Unit cannot be switched on during battery operation:

- battery charged ?
  - plug connection BATTLOAD on PCB connected ?
  - connect mains cord, green LED (power indicator) and green LED (battery indicator) must light up and unit can be activated ? If not, see above.
  - battery charge activated when connecting the mains cord ?
  - After 10 minutes charging, disconnect the mains cord. Can unit be switched on ?
- battery module defective or battery capacity too low

### Battery does not charge:

- green LED (power indicator) and green LED (battery indicator) must light up
  - Check connector BATTLOAD to battery module
  - Check connection BATTPLUS and BATTMINUS at PCB battery module
- if all items above are OK: → PCB battery module or battery is defective

### Error detected during self-test:

If an error is detected during the self-test, the red Service-LED lights and an acoustic signal sounds. (see chapter 5. Unit Test Functions)

## 8 Maintenance and Technical Inspection

### 8.1 Testing Equipment

defibrillator-tester  
standard 1V-ECG signal generator

### 8.2 Technical Inspection

**Caution!**

The unit uses high voltage. The inspection should be referred to independent persons with adequate training and experience.  
The **Technical inspections** must be carried out **once every year**.

**Note!**

The following checks and tests must be carried out by personnel who are qualified to maintain this equipment.

**Note:**

Check the operational safety and the functional safety of the unit using the following check lists. They serve the experienced technician to check the appliance. The person carrying out checks and inspections must be familiar with the operation of the unit as specified in the operating instructions.

The test items are based on the following measuring and test equipment:

The tests should be carried out with customer's accessories. This will ensure that any defective accessories are automatically identified. If measuring and test equipment other than the above is used, the test items and the tolerance values may have to be modified accordingly.

#### 8.2.1 Visual Checks

Check unit and accessories to make sure that:

- internal fuse comply with the values specified by the manufacturer
- safety notices attached to the unit are readable
- the mechanical condition allows the continued use of the unit
- no pollution reducing the safety standards are found

The defibrillator electrodes as well as handles and holder recesses must be free of any cream residue. The defibrillator electrodes, power cord and Sync cable should be checked for any visible external damage to the insulation and strain relief.

## 8.2.2 Function Checks

### AC line power LED

Connect the unit to mains. The green LED (AC line power indicator) must light up.

### Power-up

Switch the unit on with energy selector switch (turn rotary switch to the first position 2J). After power-up and during operation, the **Responder 1000/1100** runs automatic self-tests. After power-up, the unit beeps and all LED's will briefly light up. Afterwards the green "On-LED" lights up and the unit is ready. When the unit detects an error, the "Service" LED lights up and an acoustic signal sounds. Every three seconds the unit try's a new restart and test whether the error still appears. (see chapter 6. Unit test functions)

### Automatic defibrillator discharge after 60 sec

see chapter 4. Adjustment and Performance Instruction

### Adjustment of charge current

see chapter 4. Adjustment and Performance Instruction

### Adjustment of the charge monitor LED's

see chapter 4. Adjustment and Performance Instruction

### Adjustment of the energy

see chapter 4. Adjustment and Performance Instruction

### Delivered energy

The paddles must be locked at the defibrillator-tester.

Prerequisite for the following test <energy 360 joules in 11 second>

The battery must be fully charged or the instrument must be connected to mains.

Switch instrument on. Switch energy selector to 360 joules. Start energy charge by pressing the charge/shock key in the electrode handle. Energy must be available after approx. 11 second.

As soon as the charge operation is complete a acoustic signal sounds. Release the defibrillation pulse with the charge/shock key and the shock key within the next 60 seconds.

Test all energy levels:

Select each energy level and start energy charge every time by pressing the charge/shock key in the electrode handle. Check that all indicators (LED's) light up one after the other up to the selected level. After the device beeps (defibrillator is charged), release the Shock immediately.

The values (tolerance range) for the energy released is given in the table next page.

If an energy adjustment proves necessary, see chapter 4. Adjustment and Performance Instruction.

Energy selected	Energy released
-----------------	-----------------

2	1-3
5	4-6
7	6-8
10	8-12
20	18-22
30	28-32
50	47-53
100	93-107
200	185-215
300	278-322
360	333-387

### Synchronized defibrillation

Connect the Sync-cable to the defibrillator. Use a standard 1V-ECG signal generator (connected to Pin 1 and 5) or digital pulse (connected to Pin 3 and 2) to generate signals. Set energy selector switch to any energy setting. Press the Sync key on the defibrillator. The Sync function should now be indicated by the Sync LED. As soon as a correct trigger signal is available, the indicator goes off with each trigger pulse.

The paddles must be locked at the defibrillator-tester. Start energy charge by pressing the **charge/shock** key in the electrode handle. As soon as the charge operation is complete a acoustic signal sounds. Press the **charge/shock** key and the **shock** key. Shock release is effected by the R-peak of the beat. Afterwards, the Sync function is automatically reset.

### Battery

Proper maintenance of NiCd batteries is essential and considerably promotes their proper performance. Routine preventive maintenance should be carried out qualified service technicians on a regular basis. If batteries are repeatedly partially discharged, the resulting “memory effect” dramatically reduce the battery capacity. This effect can be efficiently minimized by regular conditioning. If the capacity of a relatively new battery is drastically reduced, the battery must be reconditioned by repeated charging and discharging.

#### Yearly Battery Maintenance (Conditioning) and Checks

1. Charge the battery for min. 14 hours. While charging, the green battery LED must light up.
2. Disconnect the unit from the power line and discharge fully charged battery. To do so, discharge the battery by defibrillation into the defibrillator-tester.
3. Min. 20 defibrillation at 360 joules must be possible. If less, the battery is too old or improperly maintained and should be replaced. The red battery LED must light up when battery is almost discharged.
4. Recharge the battery. This will take 14 hours.

Rechargeable batteries require special maintenance and continued checks to assure their function in emergency situations. It is normal for batteries of this type to selfdischarge when not in use.

**Note :**     **Batteries must be replaced every 3 years.**

## 8.3 Safety Analysis Test

### 8.3.1 General Information

The suggested Safety Analysis Test refer to the international Standard IEC 601-1.

The tests are generally performed with Safety Testers, on most of them, the measuring circuits according IEC 601 are already implemented.

The tests which have to be performed are described generally, for the handling of your Safety Tester follow the user manual.

The tests may be performed under normal ambient conditions of temperature, humidity and pressure and with line voltage.

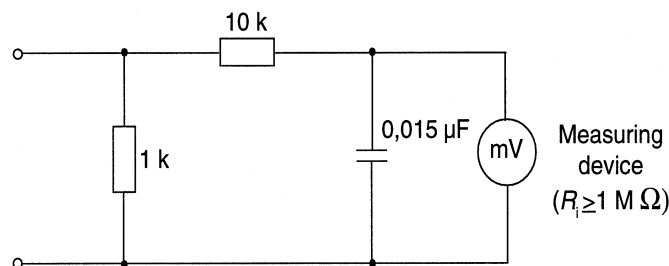
The leakage currents correspond to 110 % of rated voltage for the tested unit. Most Safety Testers take this into account, otherwise the measured values have to be calculated.

### Recommended test equipment

- Safety Tester for measurements according IEC 601.
- Testing connector for the following description.

### 8.3.2 Measuring of Leakage Current

To proceed the suggested measurements, the unit under test has to be separated from any interconnection to a system. If the unit is part of a system, extended tests according IEC 601-1-1 have to be performed. The following diagram shows the needed Measuring Circuit [M] for leakage current. The reading in mV corresponds to  $\mu\text{A}$  (leakage current). The Safety Testers generally work with this Measuring Circuit [M] and the displayed values are already converted to leakage current.



### 8.3.3 Enclosure Leakage Current

This test is performed to measure leakage current from chassis to ground during normal conditions (N.C.) and single fault conditions (S.F.C.).

In any case, the leakage current is measured from any exposed conductive parts to ground, the unit under test has to be switched on and off.

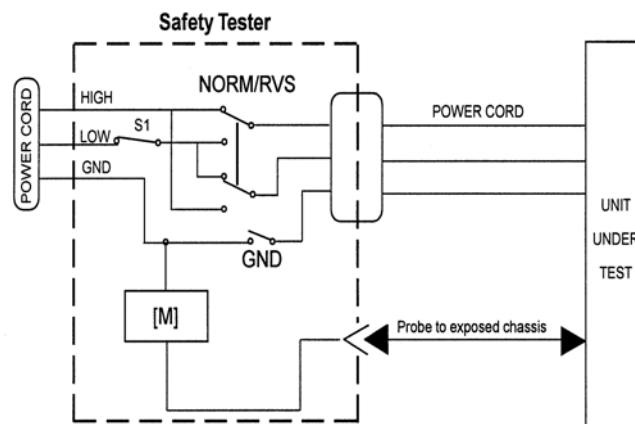
Connect the unit under test to your Safety Tester.

- During normal conditions (N.C.), referring to the electrical diagram, measurements have to be done under following conditions:
  - \* Polarity switch Norm and RVS
  - \* GND switch n/a
  - \* S1 closed
  
- During single fault conditions (S.F.C.), referring to the electrical diagram, the measurements have to be done under following conditions:
  - \* Polarity switch NORM and RVS
  - \* GND switch n/a
  - \* S1 open

Test has failed if the measured values are greater than:

N.C.	S.F.C
100 $\mu$ A	500 $\mu$ A
	300 $\mu$ A (U.L. requirements)

#### Electrical diagram for Enclosure Leakage Current Test



### 8.3.4 Patient Leakage Current

This test performs a leakage current test under single fault conditions (S.F.C.) dependent of domestic power outlet with 115 or 230 V AC as source into the floating inputs.

The following signal have to be tested:  
From paddles

In any case, the leakage current is measured from paddles of unit under test, to ground.

For testing the floating input from paddles, the test is measured on each defibrillator paddle.

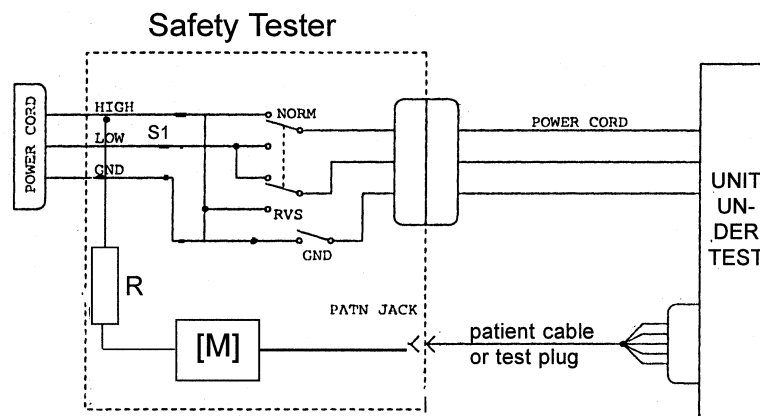
Connect the unit under test to your Safety Tester.

- Referring to the electrical diagram, measurements have to be done under following conditions

- \* Polarity switch NORM and RVS
- \* GND switch GND closed
- \* S1 closed

Test has failed if the measured values are greater than **100  $\mu$ A** at defibrillator paddles.

#### Electrical Diagram for Patient Leakage Current Test



For protection of the person, the following values of resistor R may be used:

- Type BF 22 kOhm (120 to 130 V)  
47 kOhm (220 to 240 V)
- Type CF 100 kOhm (220 to 240 V)

## 9 Technical Description

The “**Technical Description**” section describes the technical data of the unit valid at the time of printing

### Operating mode

- **Responder 1000**, non-synchronized defibrillation
- **Responder 1100**, non-synchronized and synchronized defibrillation

### Energy selection

- Selectable energy levels, energy to be delivered into a 50-ohm external resistance (max. energy of 50 joules for internal defibrillation by **Responder 1100**)
  - 2
  - 5
  - 7
  - 10
  - 20
  - 30
  - 50
  - 100
  - 200
  - 300
  - 360 joules
- possible deviation from selected energy less than deviations permitted by IEC regulations

### Energy storage

By means of capacitor, capacitor is charged from the power line or from battery.  
Typical capacitor charge time to energy level of 360 joules:

- at line voltage or from full charged battery: 11 s  
at 90% of line voltage or from partially discharged battery: 12 s (15 s max.)  
measured at least 5 minutes after 15 shocks of 360 joules each
- internal safety discharge (see Safety discharge)
- stored energy level indicated by LED's
- "charge done" indicated by buzzer

### Defibrillation shock

Capacitor discharge via induction coil (damped serial resonant circuit), pulse shape resembling sinusoidal halfwave with decay period

- pulse duration for an external resistance of 50 ohms approximately 4.2 ms, measured from beginning of the pulse to the intersection of the zero line and the inflection point of the trailing pulse edge
- in synchronized mode the defibrillation shock is released within 25 ms of the R-wave trigger

### Discharge circuit

- serial oscillating circuit with external resistance (patient)
- capacitance 35  $\mu\text{F}$
- inductance 45 mH
- equivalent resistance 10.7 ohms, in series with external resistance (patient)

### Pulse output

isolated, no conductive connection to other parts of the circuit or the enclosure, test voltage 9 kV DC, open-circuit and short-circuit-proof, type CF according to IEC requirements

### Safety discharge

Capacitor discharge via internal load resistance:

- when the defibrillation shock is not triggered within 60 s after charging
- when the defibrillation shock is triggered, but the discharge circuit is interrupted, after approx. 0.2 s
- immediately when reducing or increasing the selected energy during or after charging
- when the selected energy is not reached, after 30 s
- in the event of technical malfunctions

### Test features

- LED's for unit status: line connected, power on and battery charging
- Automatic defibrillator test on power up with LED for error indication

### Synchronization (Responder 1100)

In the SYNC mode and in conjunction with a monitor, the unit can be used for synchronized defibrillation

Synchronization via the SYNC interface can be achieved in two ways:

- by SYNC signal from the monitor (SYNC-pulses) or
- by SYNC signal (analog 1-Volt ECG) derived from the 1V-ECG via QRS-Trigger

With digital SYNC pulses

- Shock release: rising edge
- Input trigger threshold:  $V_{IH} = +2.2 \text{ V (min.)}$   
 $V_{IL} = +1.8 \text{ V (max.)}$
- Input voltage range (typ.): 0 to +5 V
- Input voltage (max.): +15 V
- Input impedance: 10 K $\Omega$  (min)
- Pulse width (min.): >1 ms

With analog "1-Volt ECG"

- Input amplitude (typ.): 1 V (1 V/mV)
- Input voltage range: +/- 4 V
- Input voltage (max.):  $\pm 15 \text{ V}$
- Input impedance (min.): 10 K $\Omega$

### Digital marker output

The trigger signal can be checked on the monitor screen. For this purpose, the **Responder 1100** supplies a marker signal. Some patient monitors (e.g. Eagle 3000/4000) use this signal to superimpose the trigger signal on the ECG waveform.)

- output voltage                       $V_{OH} = 3.5V$  (min.) at 1 mA  
    $V_{OL} = 0.5 V$  (max.) at 1 mA
- input impedance (min.)          200  $\Omega$  nominal
- output current                      25 mA (max.)
- pulse width (min.)                >100 ms

### Power

From the power line, design in compliance with protection class II requirements of IEC 601

Model for rated voltage of 230...240 V

- operating voltage range 207...264 V, 49 to 65 Hz
- rated current 0.5 A

Model for rated voltage of 115...120 V

- operating voltage range 104 to 132 V, 49 to 65 Hz
- rated current 1.0 A

Power for models with built-in rechargeable NiCd battery

- rated voltage 18 V
- rated capacity 600 mAh
- charging time for depleted battery approximately 14 hours, overcharge protection
- battery charging from built-in power supply also during line-power operation
- a new and fully charged battery powers the defibrillator for approximately 25 defibrillation shocks of 360 joules each (into 50 ohms) (with new, full charged battery at least 25 shocks at an ambient temperature of 20 °C / 68 °F)

### Operational readiness

2 s after power up (incl. Automatic selftest)

### Operating position

any

### Ambient conditions

- Operation  
Temperature between 0 and +40 °C  
relative humidity between 10 and 95%, no condensation  
atmospheric pressure between 700 and 1060 hPa
- Storage and transport  
Temperature between -30 and +60 °C  
relative humidity between 10 and 95%, no condensation  
atmospheric pressure between 500 to 1060 hPa

### Dimensions

- width 332 mm (13 in.)
- depth 300 mm (11.8 in.)
- height 130 mm (5 in.)

### Weight

- model without battery approximately 5.4 kg (11.0 lbs)
- model with battery approximately 5.8 kg (12.8 lbs)

## 10 Spare Part List

### Responder 1000 Version's

#### Part Number Description

101 166 01	without Battery	230V-240V	
101 166 02	with Battery	230V-240V	
101 166 03	without Battery	115V-120V	US
101 166 04	with Battery	115V-120V	US
101 166 05	without Battery	230V-240V	MiniDef III, Esaote
101 166 06	with Battery	230V-240V	MiniDef III, Esaote
101 166 07	without Battery	115V-120V	
101 166 08	with Battery	115V-120V	
101 166 09	without Battery	230V-240V	US
101 166 10	with Battery	230V-240V	US
101 166 23	without Battery	230V-240V	China
101 166 24	with Battery	230V-240V	China

### Responder 1100 Version's

#### Part Number Description

101 166 11	without Battery	230V-240V	
101 166 12	with Battery	230V-240V	
101 166 13	without Battery	115V-120V	US
101 166 14	with Battery	115V-120V	US
101 166 15	without Battery	230V-240V	MiniDef III, sync, Esaote
101 166 16	with Battery	230V-240V	MiniDef III, sync, Esaote
101 166 17	without Battery	115V-120V	
101 166 18	with Battery	115V-120V	
101 166 19	without Battery	230V-240V	US
101 166 20	with Battery	230V-240V	US

## Operator's Manual Responder 1000

<b>Part Number</b>	<b>Description</b>
227 487 01	Operator's Manual German
227 487 02	Operator's Manual English
227 487 03	Operator's Manual French
227 487 04	Operator's Manual USA
227 487 05	Operator's Manual Italian
227 487 06	Operator's Manual Spanish
227 487 07	Operator's Manual Russian
227 487 08	Operator's Manual Swedish
227 487 09	Operator's Manual ESAOTE
227 487 10	Operator's Manual Portuguese
227 487 16	Operator's Manual Polish
227 487 17	Operator's Manual Czech
227 487 21	Operator's Manual Chinese
2033249-002	Operator's Manual Estonian
2033249-003	Operator's Manual Latvian
2033249-004	Operator's Manual Lithuanian

## Operator's Manual Responder 1100

<b>Part Number</b>	<b>Description</b>
227 488 01	Operator's Manual German
227 488 02	Operator's Manual English
227 488 03	Operator's Manual French
227 488 04	Operator's Manual USA
227 488 05	Operator's Manual Italian
227 488 06	Operator's Manual Spanish
227 488 07	Operator's Manual Russian
227 488 08	Operator's Manual Swedish
227 488 09	Operator's Manual ESAOTE
227 488 10	Operator's Manual Portuguese

## Service Manual

<b>Part Number</b>	<b>Description</b>
227 487 20	Service Manual Responder 1000/1100

## Housing Parts

<b>Part Number</b>	<b>Description</b>
--------------------	--------------------

432 525 32	Housing upper shell for Responder 1000
432 525 31	Housing upper shell for Responder 1100
432 519 81	snap spring for Defibrillator paddles
432 519 60	Housing lower shell for Responder 1000/1100
924 017 20	Device foot

### Label for Housing upper shell Responder 1000 (Logo: GE marquette)

<b>Part Number</b>	<b>Description</b>
--------------------	--------------------

430 520 12	German
430 520 17	English
430 520 18	French
430 520 23	Italian
430 520 25	Spanish
430 520 27	Russian
430 520 28	Swedish
430 520 32	Portuguese
430 520 99	Chinese
2037488-001	Polish
2037299-001	Lithuanian
2041048-001	Estonian
2041050-001	Hungarian
2041052-001	Latvian

### Label for Housing upper shell Responder 1000 REMCO (EP700 Cardioline)

<b>Part Number</b>	<b>Description</b>
--------------------	--------------------

430 520 51	Italian
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### Label for Housing upper shell Responder 1000 (Logo: marquette)

<b>Part Number</b>	<b>Description</b>
--------------------	--------------------

430 520 13	English, U.S. version
------------	-----------------------

### Label for Housing upper shell Responder 1000 Minidef PRO (Logo: ESAOTE)

<b>Part Number</b>	<b>Description</b>
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430 520 14	Italian
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**Label for Housing upper shell Responder 1100 (Logo: Marquette Hellige)**

**Part Number Description**

430 520 09	German
430 520 19	English
430 520 20	French
430 520 24	Italian
430 520 26	Spanish
430 520 29	Russian
430 520 30	Swedish
430 520 33	Portuguese

**Label for Housing upper shell Responder 1100 (Logo: marquette)**

**Part Number Description**

430 520 20	English, U.S. version
------------	-----------------------

**Label for Housing upper shell Responder 1000 Minidef SYC (Logo: ESAOTE)**

**Part Number Description**

430 520 11	Italian
------------	---------

**Label for Housing lower shell Responder 1000/1100**

**Part Number Description**

430 520 83	German
430 520 84	English
430 520 85	French
430 520 86	Italian
430 520 87	Spanish
430 520 88	Russian
430 520 89	Swedish
430 520 90	Portuguese
430 520 98	Chinese
430 521 01	Czech
2037489-001	Polish
2037300-001	Lithuanian
2041049-001	Estonian
2041051-001	Hungarian
2041053-001	Latvian

## **Label for Housing lower shell Responder 1000**

<b>Part Number</b>	<b>Description</b>
2027555-001	WEEE label
2034056-020	China RoHS label

## **Keypad's**

<b>Part Number</b>	<b>Description</b>
390 001 79	Keypad for Responder 1000 with Battery
390 001 80	Keypad for Responder 1000 without Battery
390 001 77	Keypad for Responder 1100 with Battery
390 001 78	Keypad for Responder 1100 without Battery

## **Connector`s**

<b>Part Number</b>	<b>Description</b>
383 273 86	Sync connector complete wired (Responder 1100)
383 272 24	Wire set for High voltage capacitor
303 446 64	Electrode coupling for Defibrillator paddles (Responder 1100)

## **Printed circuit board`s**

<b>Part Number</b>	<b>Description</b>
388 032 79	Spare PCB Responder 1000/1100
389 004 31	Exchange PCB Responder 1000/1100

## **Battery Part**

<b>Part Number</b>	<b>Description</b>
205 100 02	Battery Module complete
388 032 80	PCB Battery Module
383 273 72	Wire set Battery Module
504 654 54	Battery holder
929 165 31	Battery chargeable

## Miscellaneous Parts

### Part Number Description

903 449 88	High voltage capacitor 35 $\mu$ F
482 035 21	Energy selector button
303 439 42	Mains cable
2031736-001	Power Cord China
217 338 01	Defib electrode Shock Sternum (Responder 1000)
217 338 02	Defib electrode Charge/Shock Apex (Responder 1000)
217 337 01	Defib electrode (Responder 1100)
303 439 96	Contact insert for Defib paddles
384 018 72	Accessories pan complete with housing foot and screw
223 428 01	Sync. cable with open end for Responder 1100

## Sync. Cable to different Monitors

### Part Number Description

223 428 01	Sync. Cable with open end for Responder 1100
223 428 02	Sync. Cable to Eagle 3000/4000, Solar 8000
223 428 03	Sync. Cable to Eagle 1000
223 428 04	Sync. Cable to Case 8000

## Supplies for Responder 1000

### Defibrillation external

#### Part Number Description

303 439 96	Contact plate for Defib electrodes 1pcs
303 439 95	Electrode adapter for children, 1pcs

### Consumables

#### Part Number Description

217 083 05	Electrode cream,10 tubes/cs
217 083 18	Electrode cream,250 ml refill
217 083 14	Electrode cream,51 container
930 115 82	Dispenser,30ml

## Supplies for Responder 1100

### Defibrillation external

Part Number	Description
217 337 01	Defib electrode, external,
217 337 02	Defib electrode, external,
303 439 96	Contact plate for Defib electrodes, 1pcs
303 439 95	Electrode adapter for children, 1pcs
217 329 01	Defib electrode anterior-posterior
919 202 94	Defibrillator-Pacing electrode, adult, disposable, 1 pair
919 202 95	Defibrillator- Pacing electrode, children, disposable ,1pair
223 383 01	Adapter for 91920294 and 91920295

### Defibrillation internal

Part Number	Description
217 308 01	Pair of defib electrodes for internal defibrillation (w/o. contact insert)
384 013 19	Contact inserts (2), internal, for adults
384 013 20	Contact inserts (2), internal, for children
384 013 21	Contact inserts (2), internal, for babies
919 202 36	External counter electrode for internal defibrillation

### Consumables

Part Number	Description
217 083 05	Electrode cream, pkg. of 10 tubes
217 083 18	Electrode cream, 250-ml bottle, refillable
217 083 14	Electrode cream, 51 container
930 115 82	Dispenser pump

## 11 Schematics

### Circuit Diagrams

Mechanical Drawing Responder 1000	101 166 01/02, 07/08, 23/24
Mechanical Drawing Responder 1000	101 166 03/04, 09/10
Mechanical Drawing Responder 1100	101 166 11/12, 17/18
Mechanical Drawing Responder 1100	101 166 13/14, 19/20
Mechanical Drawing MiniDef III	101 166 15/16
Complete Wiring Diagram Responder 1000	101 166 01,02,05,06,07,08,23,24 Sheet 1
Complete Wiring Diagram Responder 1100	101 166 11...20 Sheet 1
Master Record Index	101 166 .. Sheet 2
PCB Responder 1000/1100	388 032 79 P Sheet 1...6 388 032 79 R Sheet 1...2
PCB Battery Module	388 032 80 P Sheet 1 388 032 80 R Sheet 1
Sync Cable Responder 1100	223 428 01

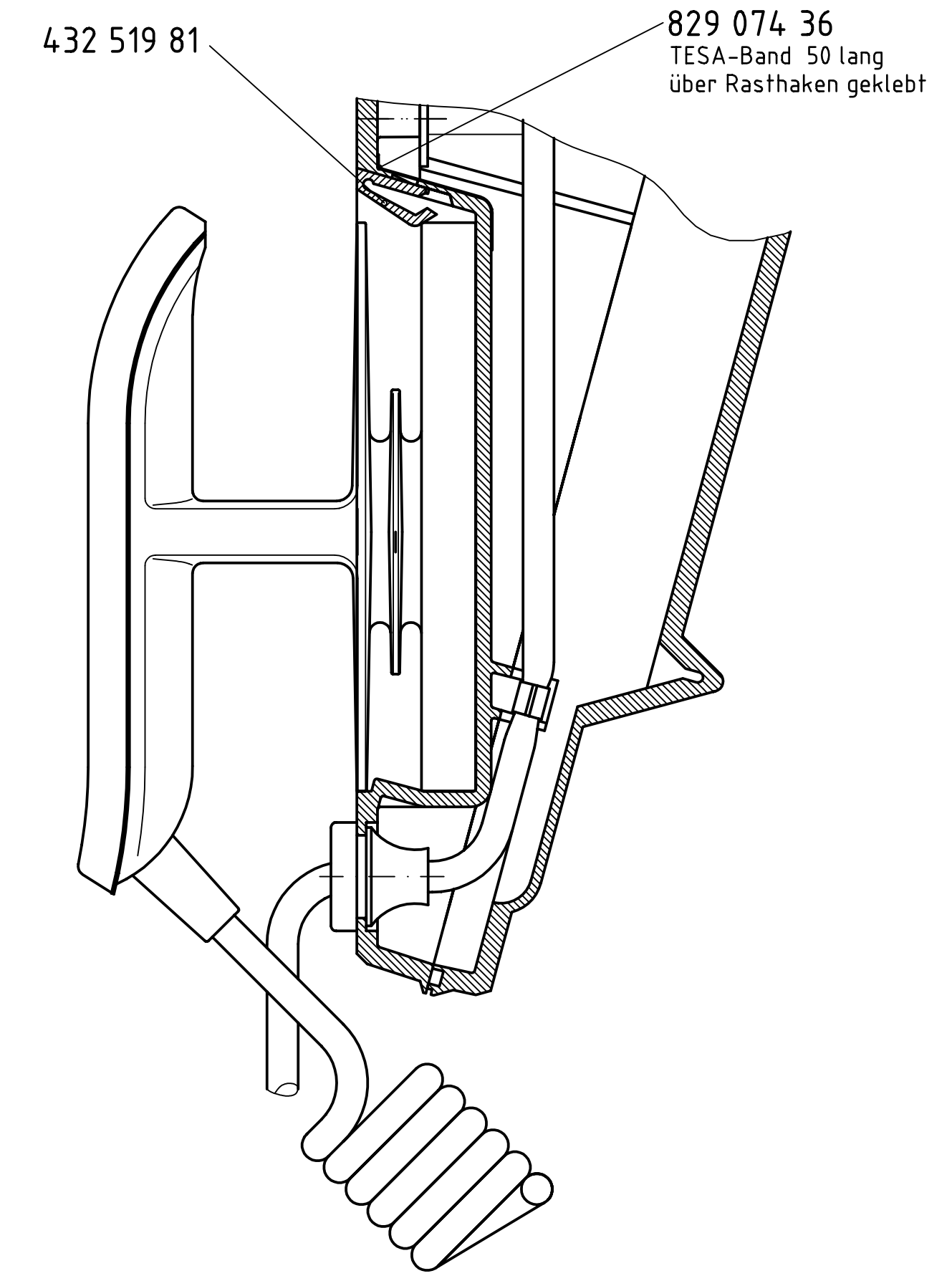


Ansicht in Pfeilrichtung Y

Ansicht in Pfeilrichtung Z

Ansicht in Pfeilrichtung W

Schnitt C-D



Z

405 174 08

924 017 20

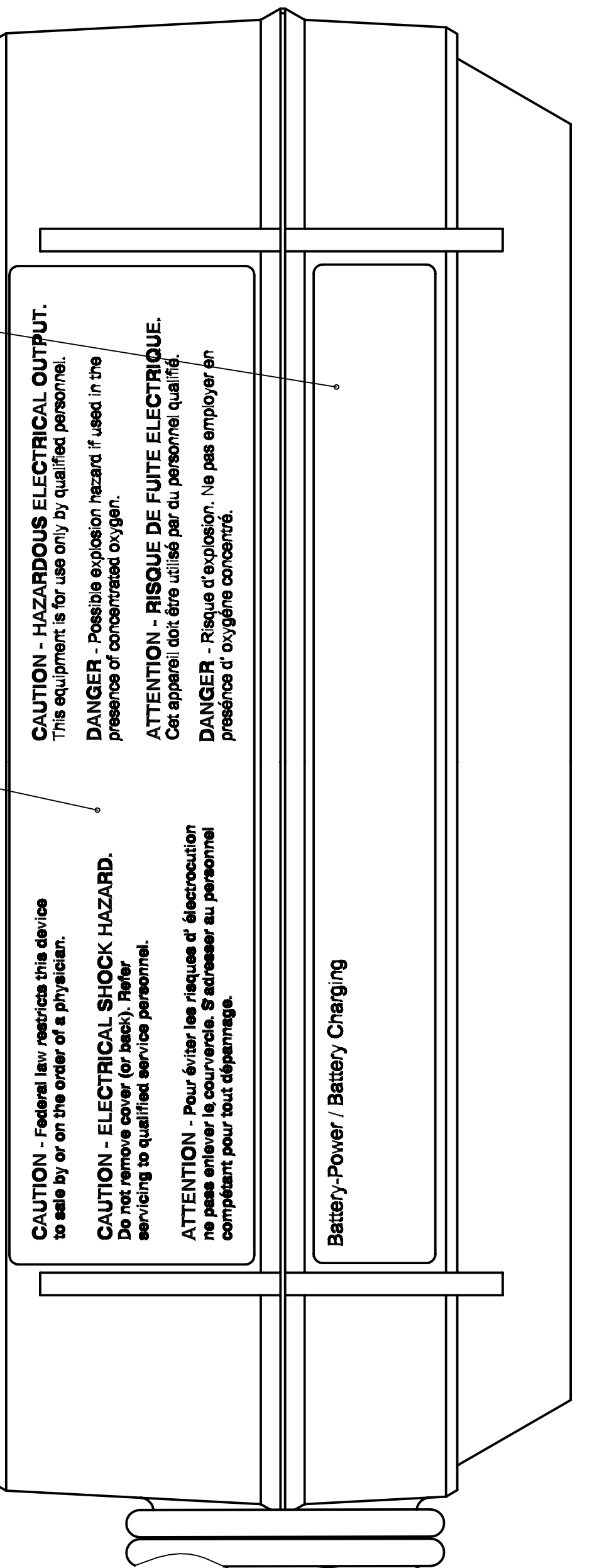
430 520 46

405 174 68

924 017 20

für 101 166 04 und 101 166 10  
430 520 84 Klebeschild englisch

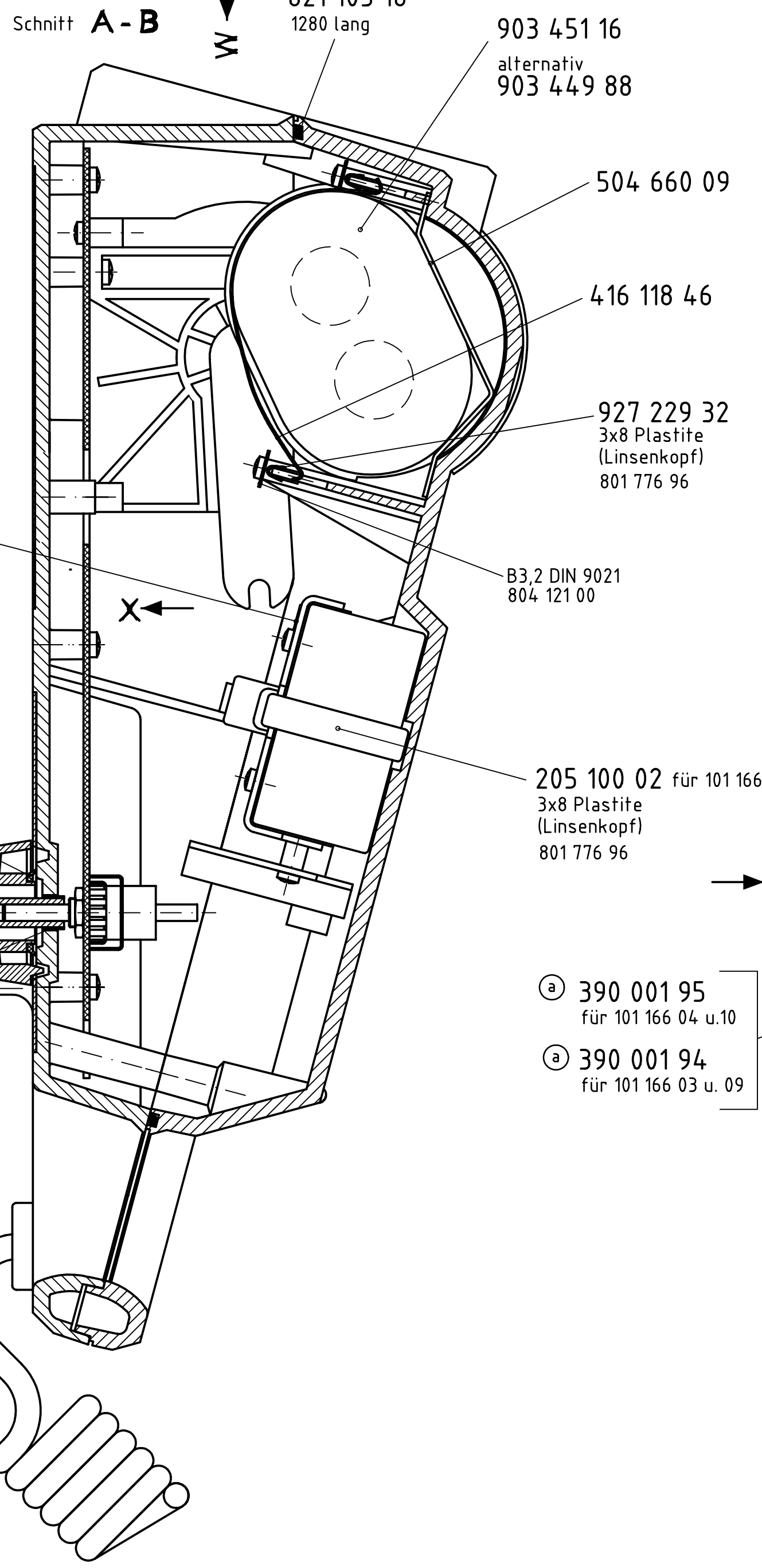
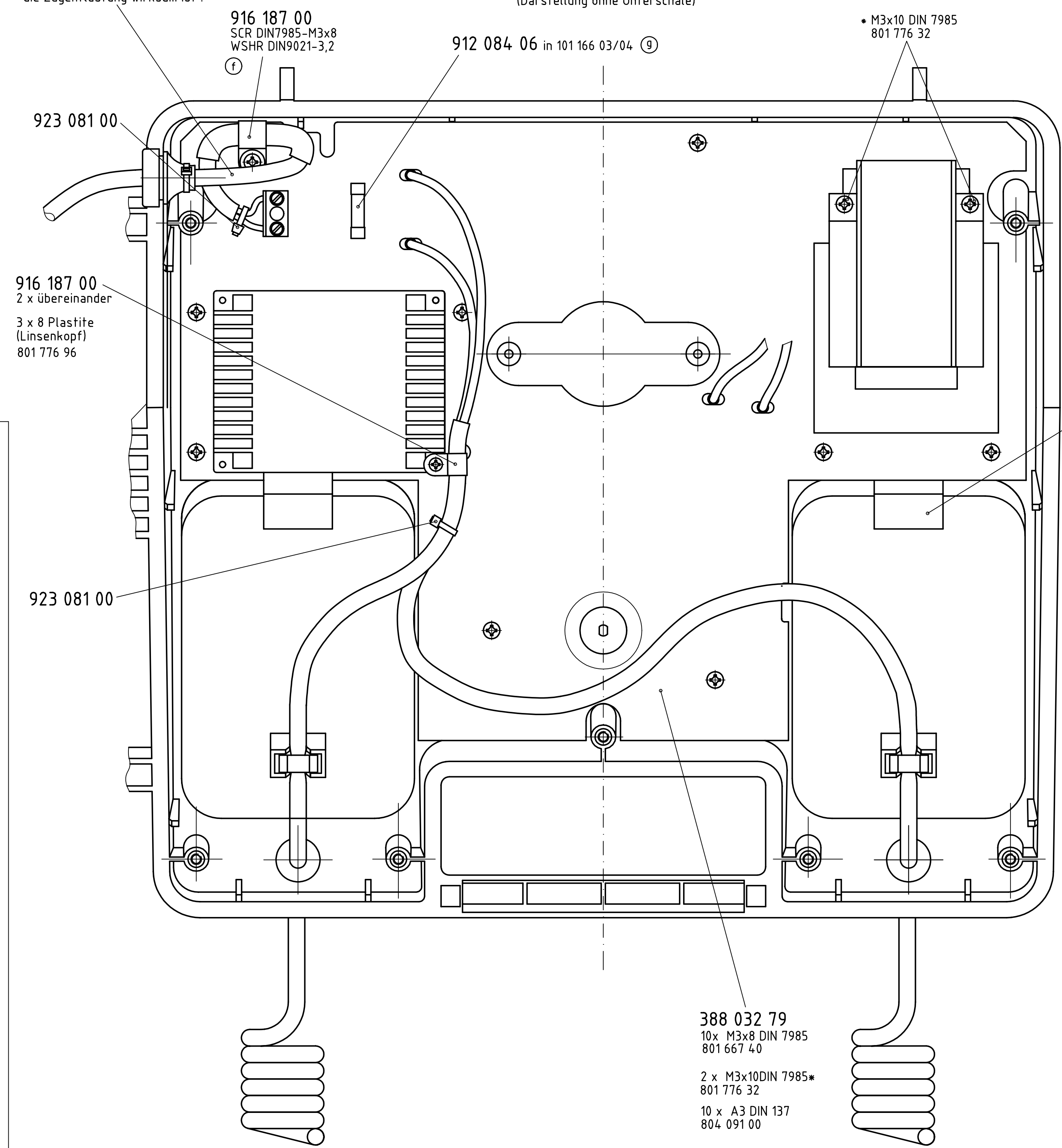
430 520 45



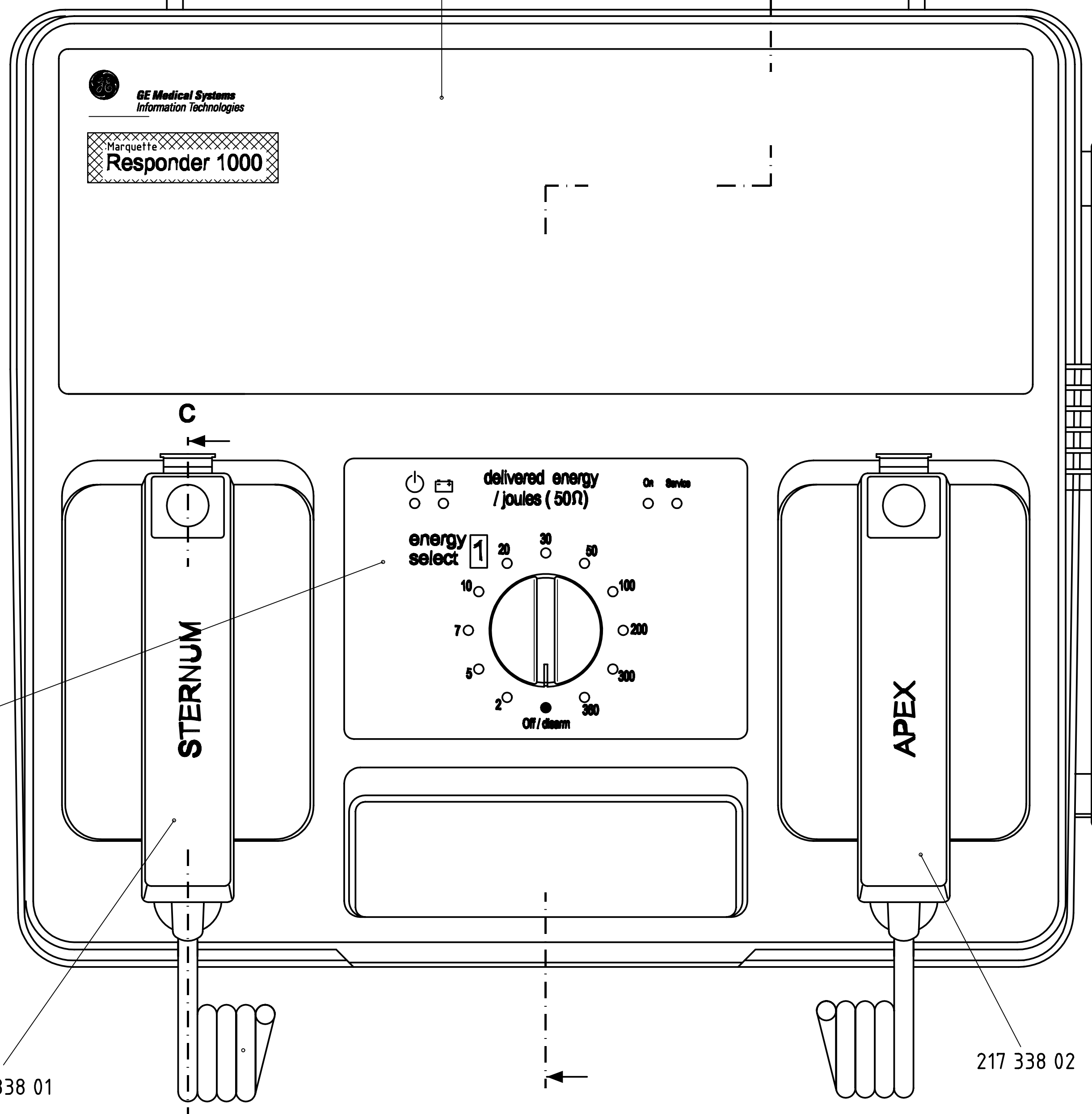
Netzleitung so in die Zugenlastung  
einhängen, daß nach Montage der Unterschale  
die Zugenlastung wirksam ist!

Ansicht in Pfeilrichtung X  
(Darstellung ohne Unterschale)

Schnitt A-B

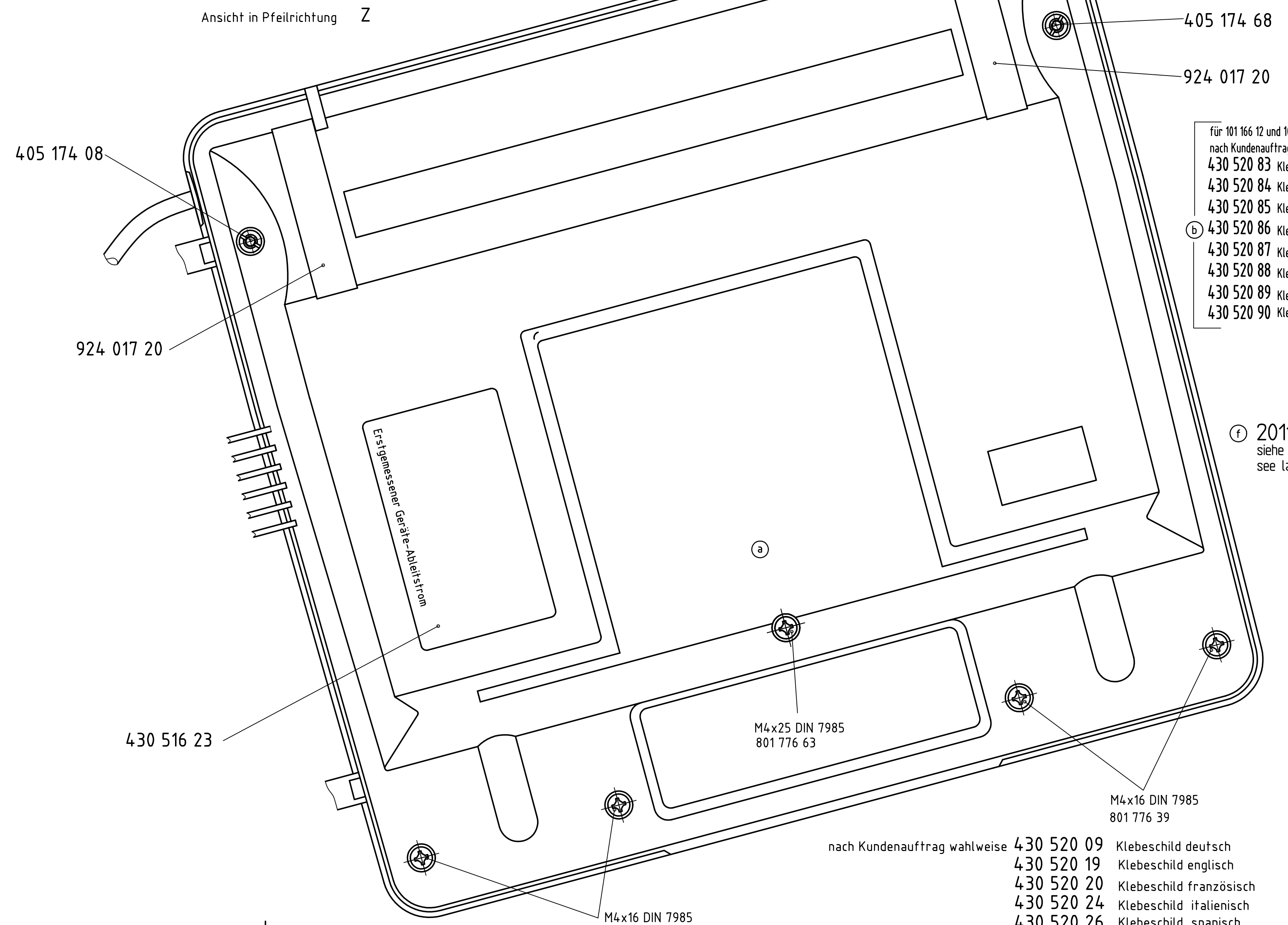
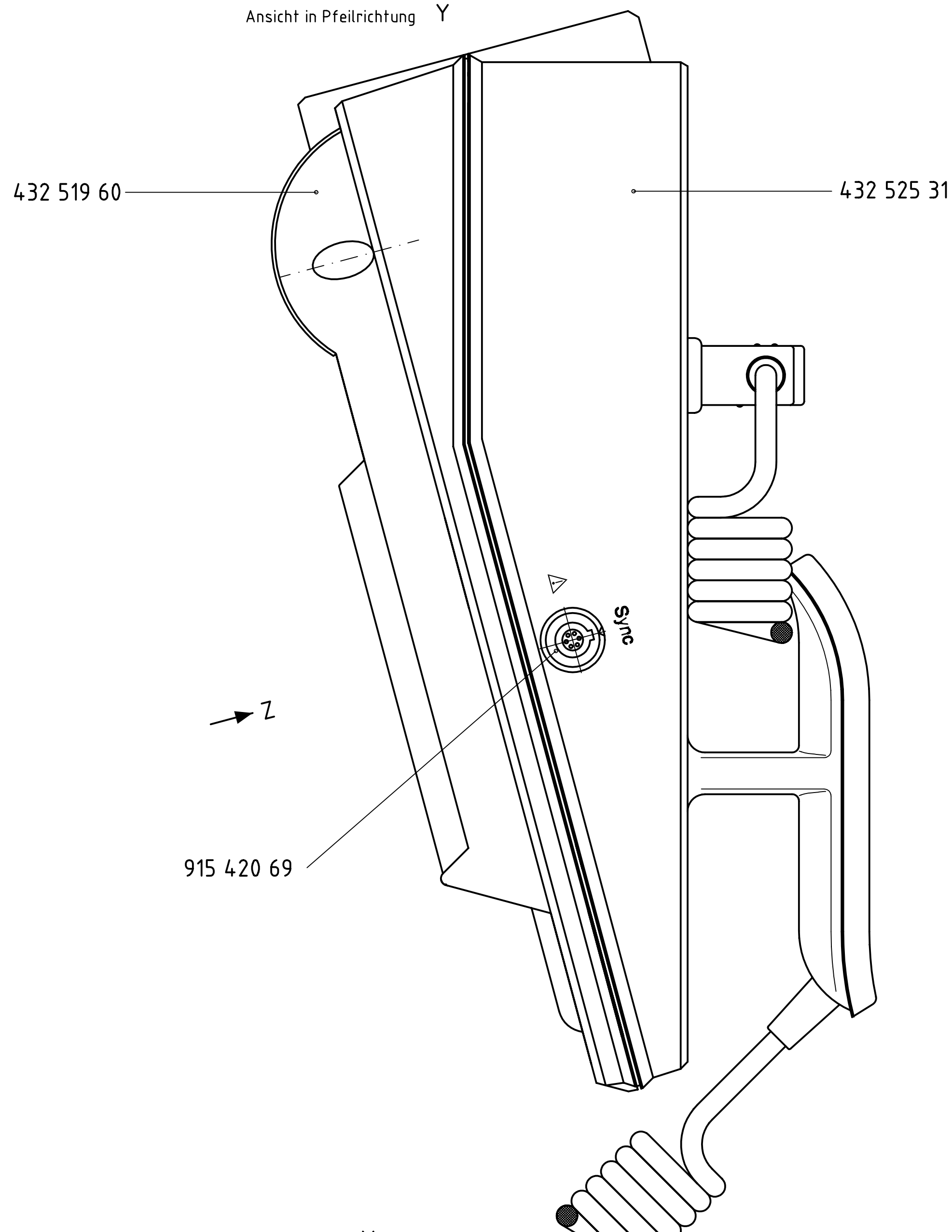


430 520 13

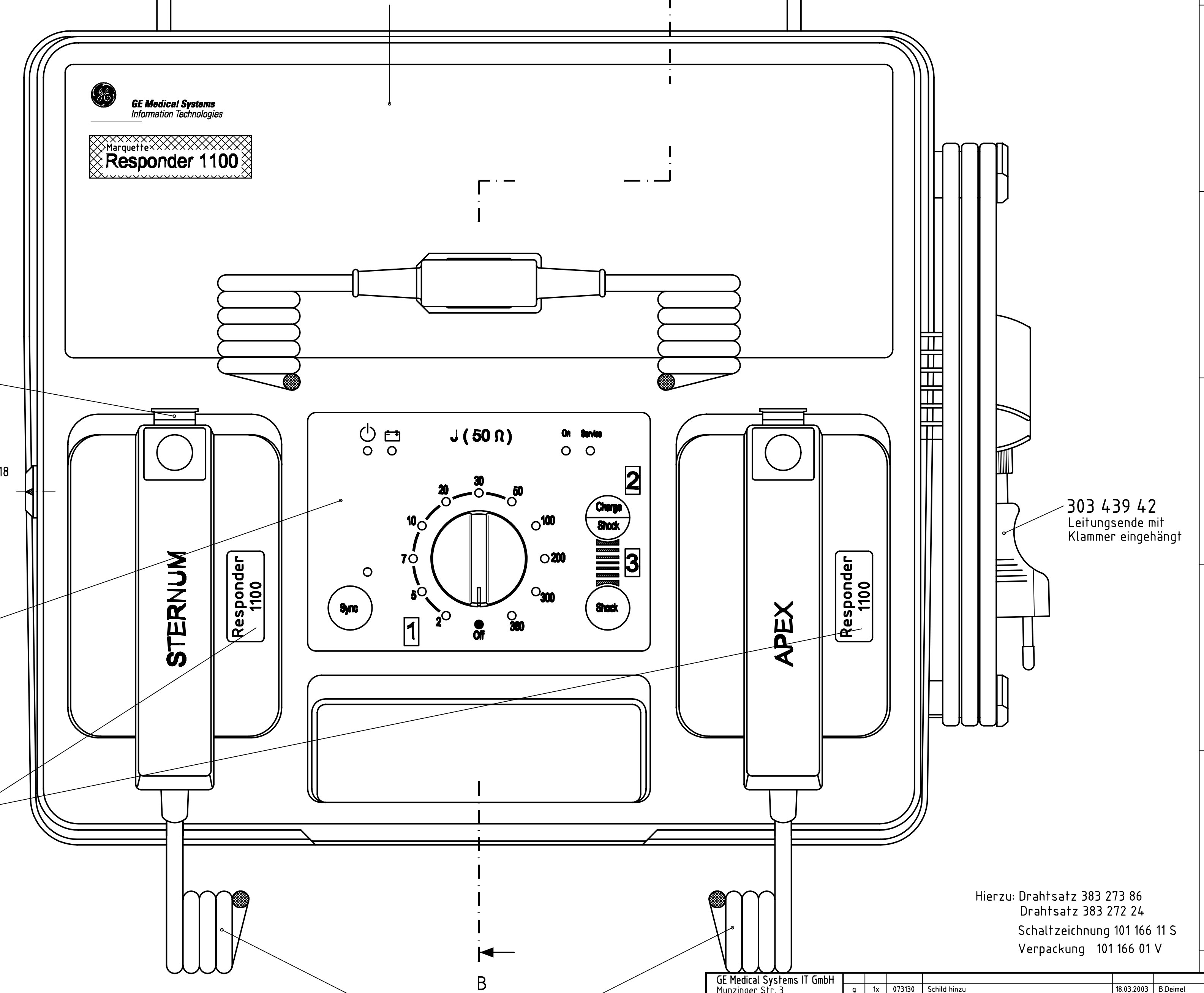
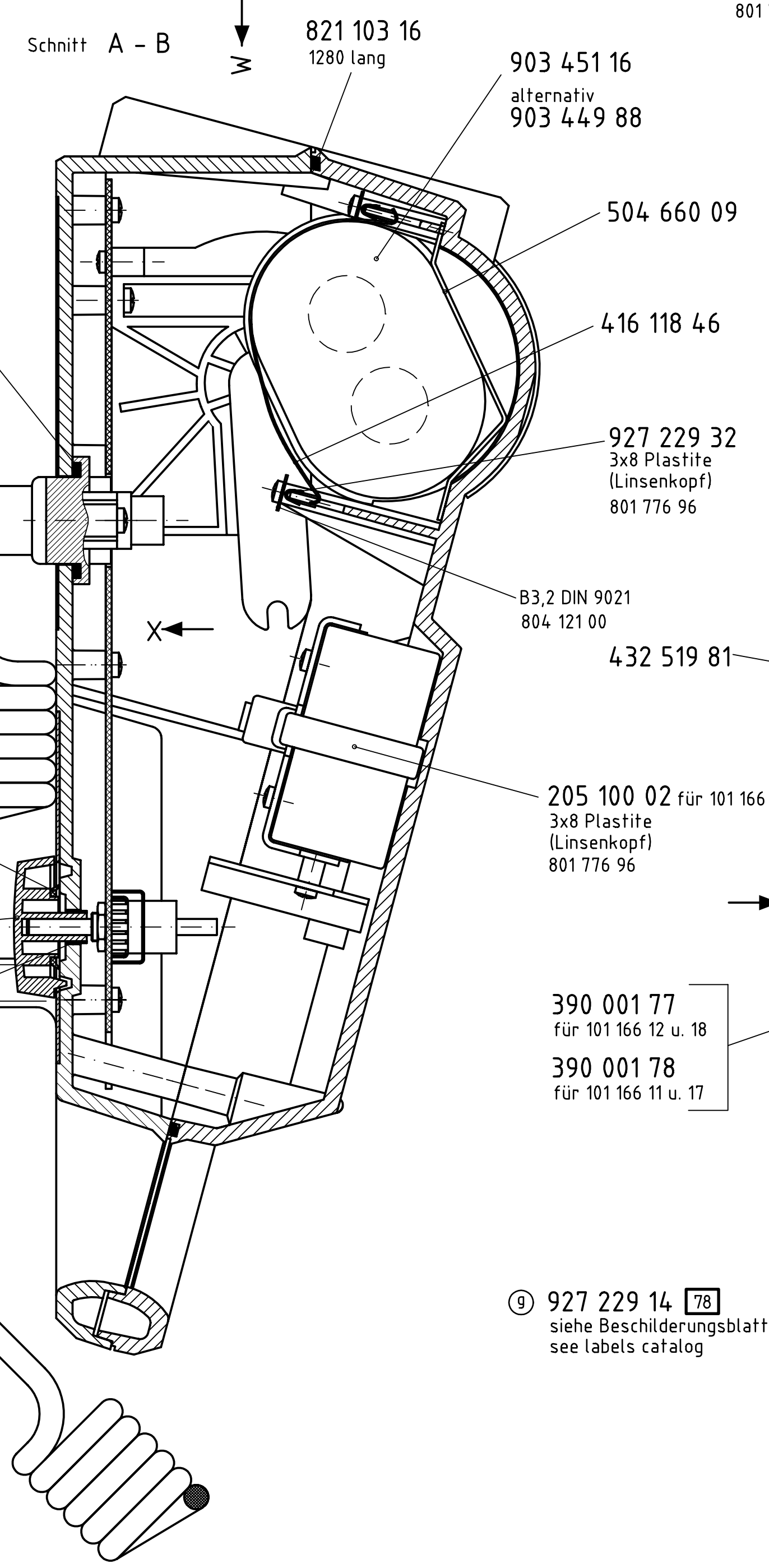
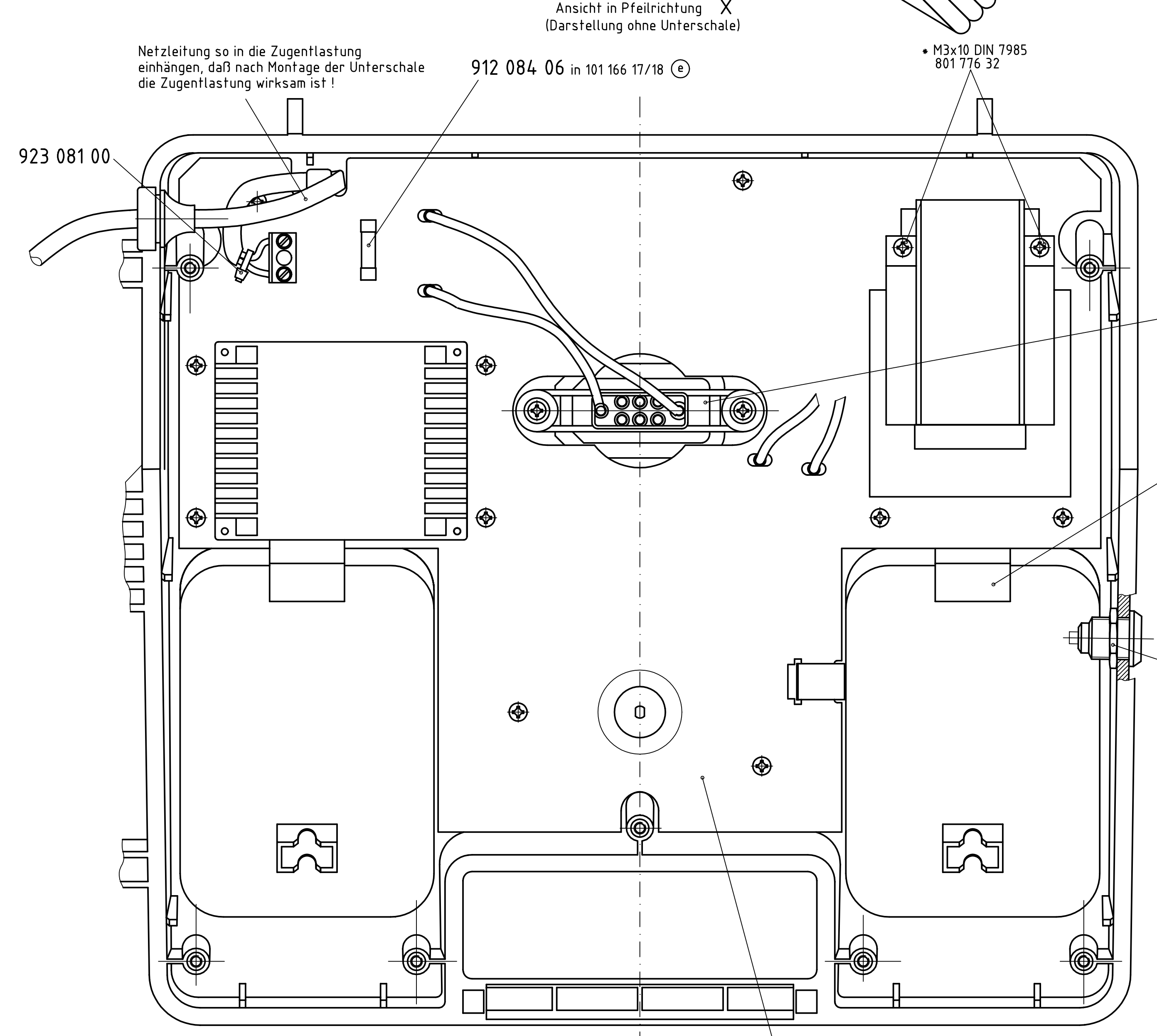
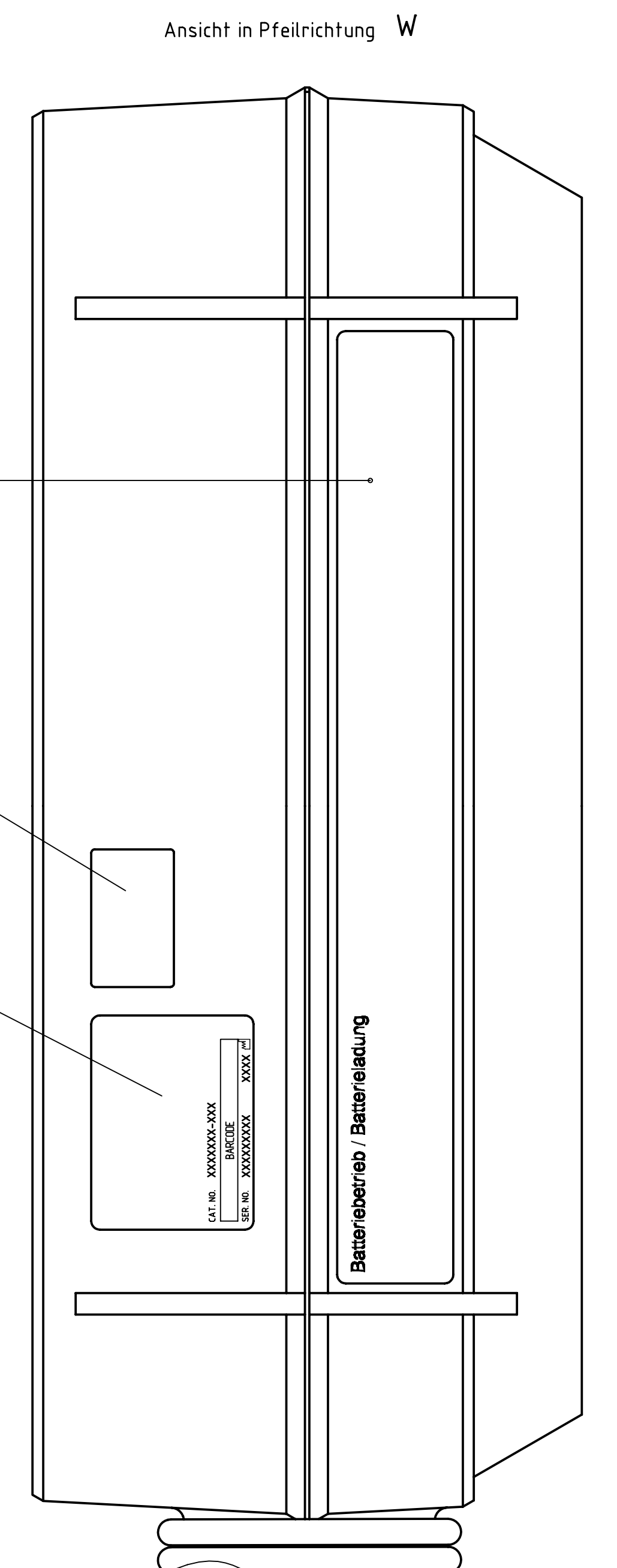


Hierzu: Drahtsatz 383 272 24  
Schaltzeichnung 101 166 01 S  
Verpackung 101 166 01 V

GE Medical Systems IT GmbH Mucogoger Str. 3 D-79111 Freiburg		ECO No.		Änderungsbeschreibung - Change Description		Date		Name	
Material	Part No.	Material	Part No.	Material	Part No.	Material	Part No.	Material	Part No.
9	07861	1	08209	1	08209	23.06.2002	B. Dinkel		
1	08209	1	08209	1	08209	09.10.01	G. Krieger		
1	08209	1	08209	1	08209	18.06.2001	B. Dinkel		
1	08209	1	08209	1	08209	18.11.99	G. Krieger		
1	08209	1	08209	1	08209	06.05.99	G. Krieger		
10116603-D03 ZM01		10116603-D03 ZM01		10116603-D03 ZM01		10116603-D03 ZM01		10116603-D03 ZM01	
ZM/01		ZM/01		ZM/01		ZM/01		ZM/01	
Defibrillator Responder 1000		Defibrillator Responder 1000		Defibrillator Responder 1000		Defibrillator Responder 1000		Defibrillator Responder 1000	
101 166 03/04 u. 09/10		101 166 03/04 u. 09/10		101 166 03/04 u. 09/10		101 166 03/04 u. 09/10		101 166 03/04 u. 09/10	

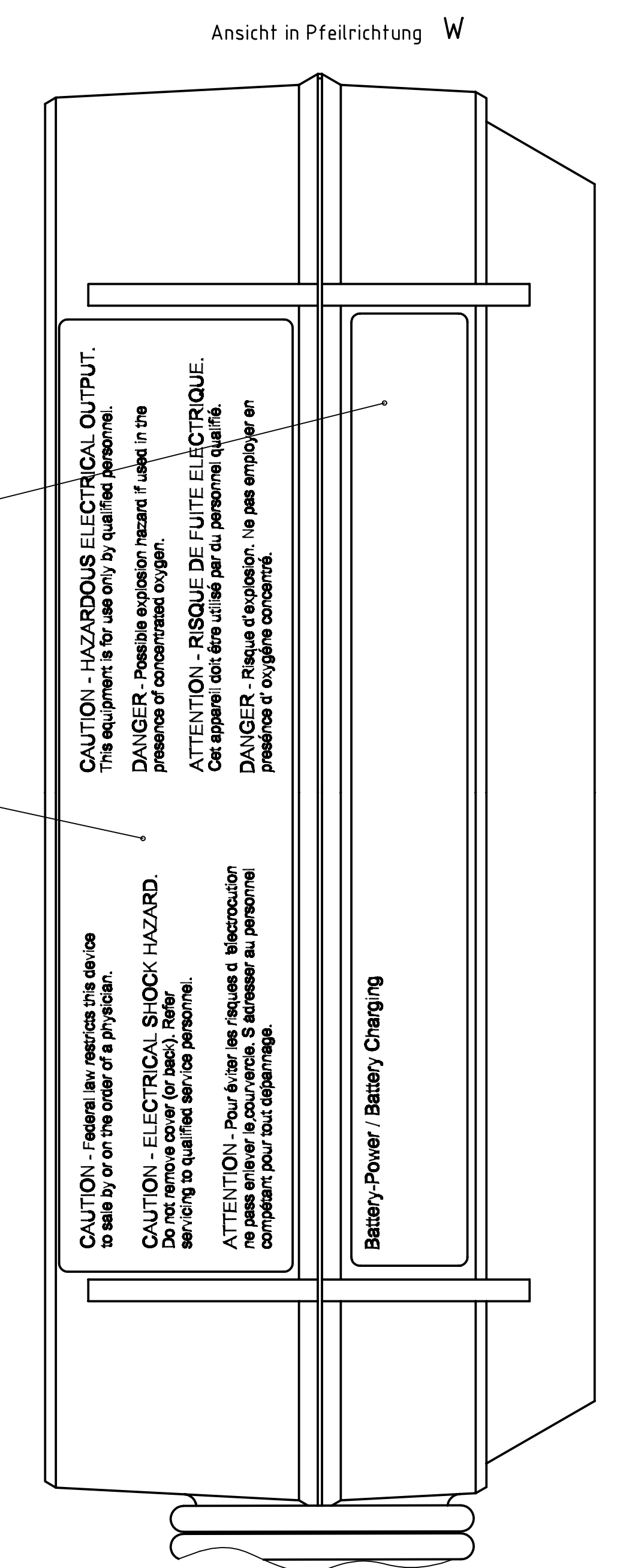
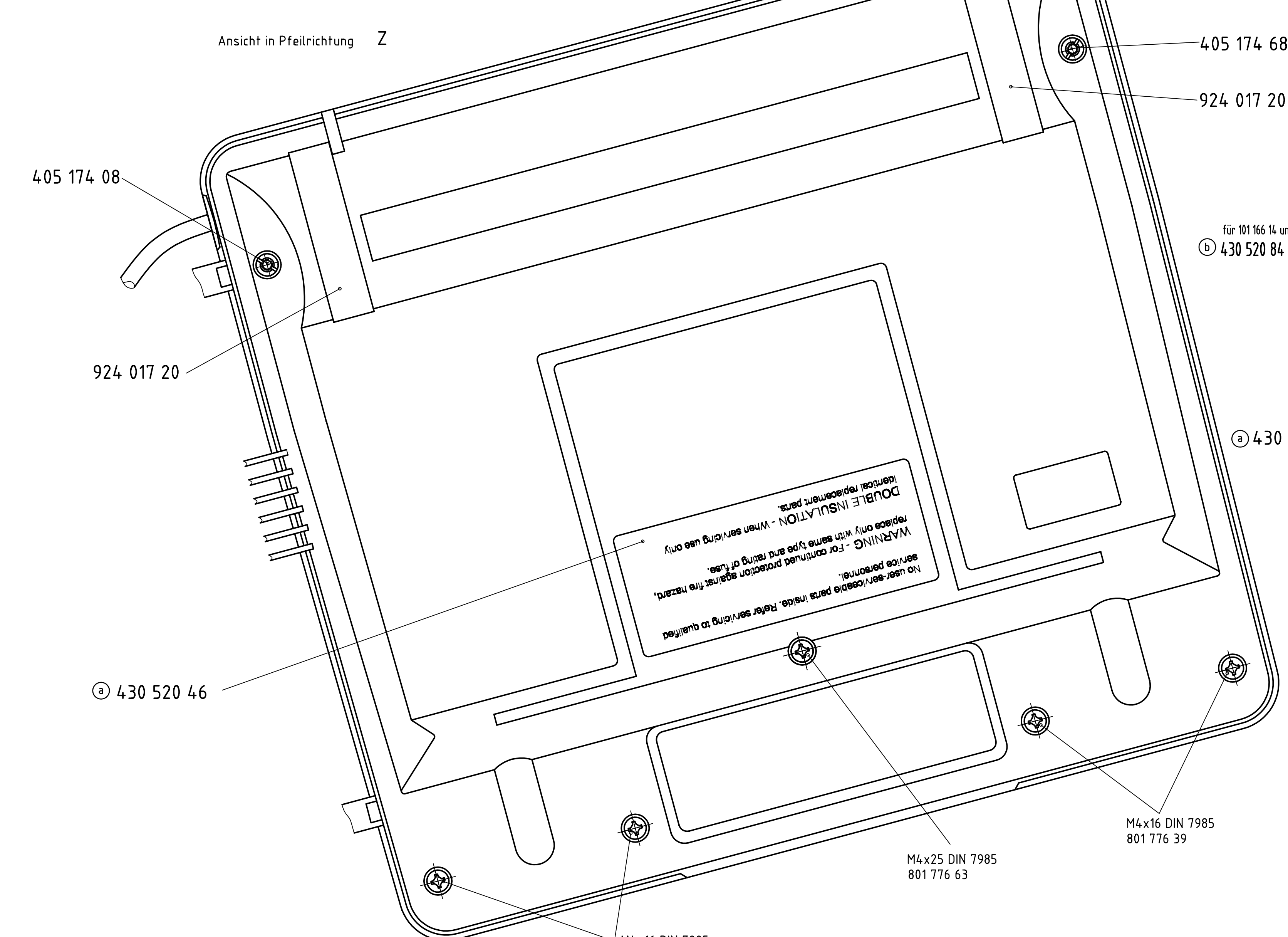
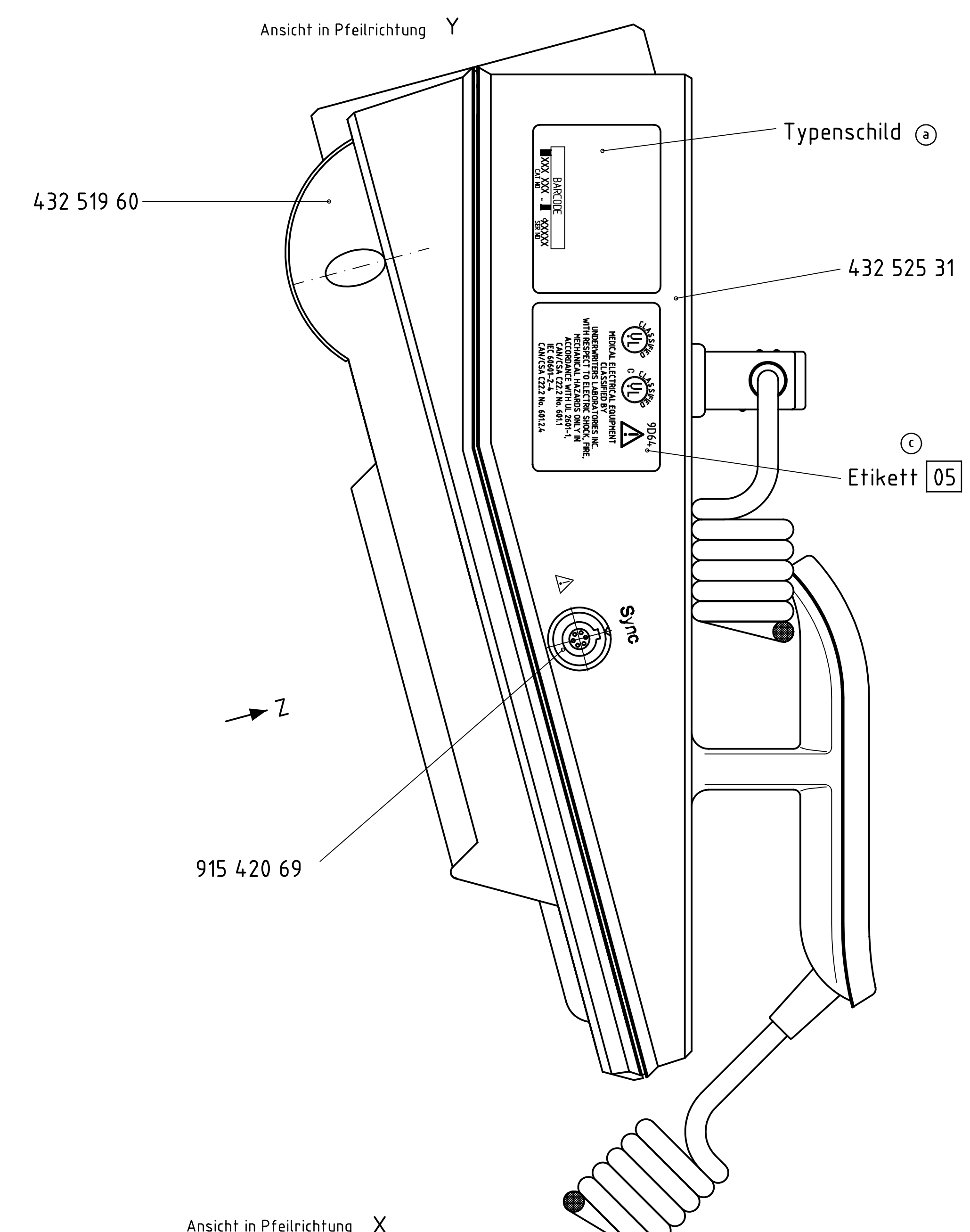


- für 101 166 12 und 101 166 18  
nach Kundenauftrag wahlweise  
430 520 83 Klebeschild deutsch  
430 520 84 Klebeschild englisch  
430 520 85 Klebeschild französisch  
430 520 86 Klebeschild italienisch  
430 520 87 Klebeschild spanisch  
430 520 88 Klebeschild russisch  
430 520 89 Klebeschild schwedisch  
430 520 90 Klebeschild portugiesisch

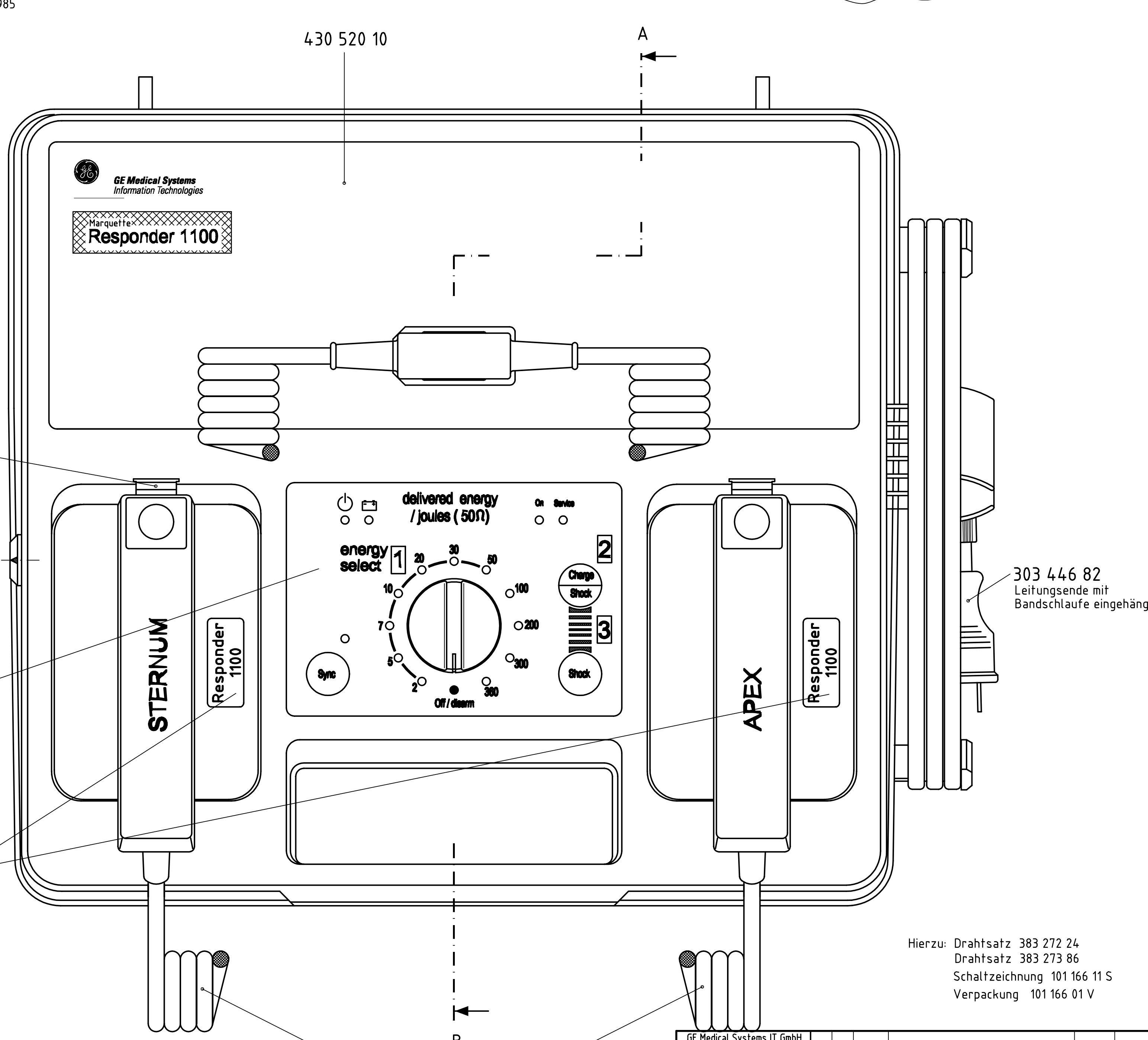
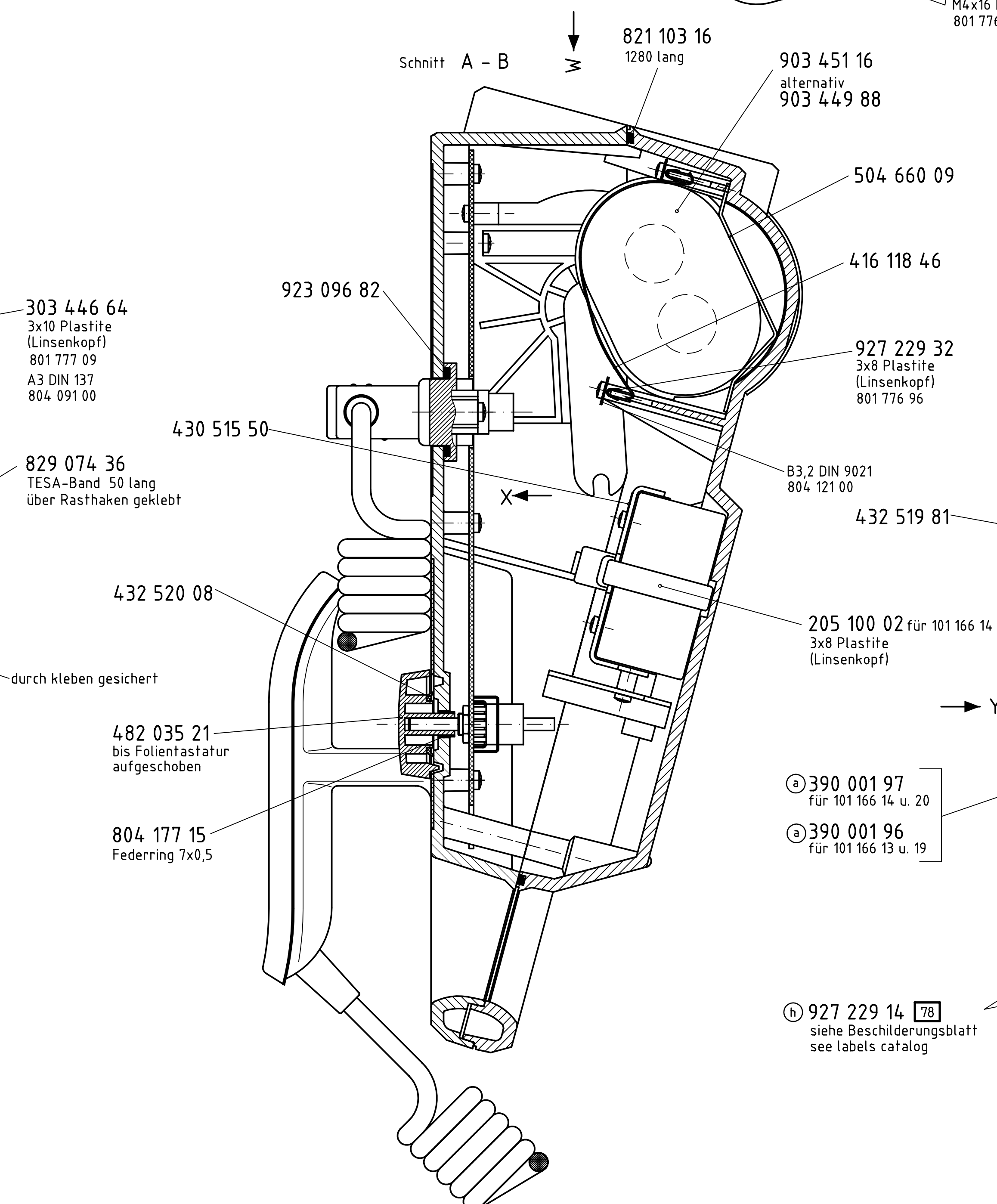
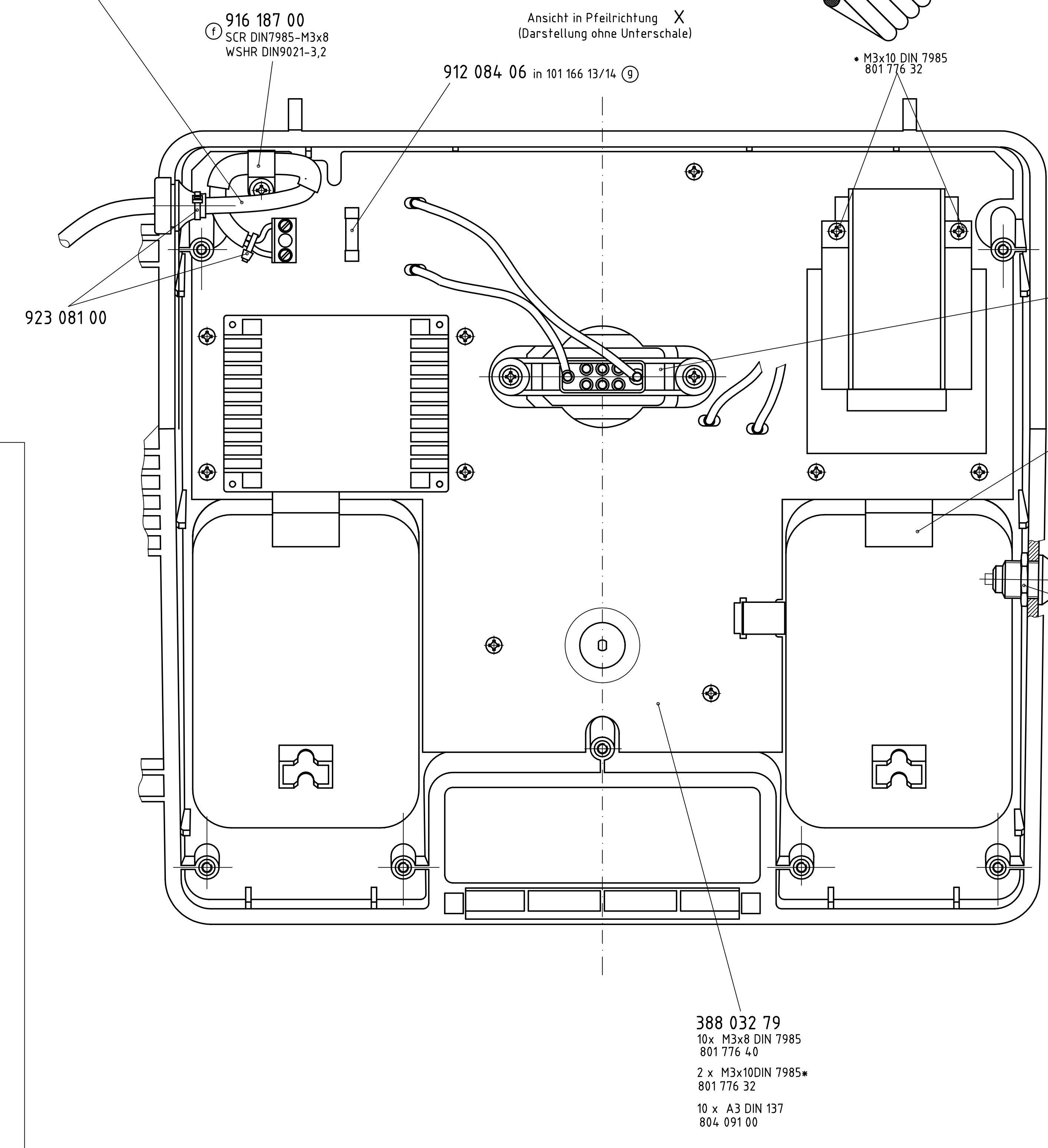


- 388 032 79  
10x M3x8 DIN 7985  
801 776 40  
2 x M3x10DIN 7985  
801 776 32  
10 x A3 DIN 137  
804 091 00

GE Medical Systems IT GmbH		Mucroner Str. 3 D-79111 Freiburg		18.03.2003 B.Datmel	
2	lx 07310	Schild neu		18.03.2003	B.Datmel
7	lx 07018	Schild neu		16.05.2002	B.Datmel
8	lx 07061	Text geändert		23.04.2002	B.Datmel
2	lx 06755	Logo GE Medical Systems geändert		18.06.2001	B.Datmel
1	lx 06374	neues Logo		24.11.99	G.Kaltenbach
3	lx 06187	Schild neu		09.12.98	F.Kaltenbach
3	lx 06052	Schild geändert		11.09.98	F.Kaltenbach
Änderungsbeschreibung - Change Description		Datum	Uhrzeit	Name	
10116611-002_ZM01	A0	1:1	10.03.08	F.Kaltenbach	
10116611-002_ZM01			10.03.08	F.Kaltenbach	
Teilbeschreibung - Part Description		Teil-Nr. - Part Number			
10116611-002		ZM/01	Defibrillator Responder 1100		
			101 166 11/12 u. 17/18		



Netzleitung so in die Zugenlastung einhängen, daß nach Montage der Unterschale die Zugenlastung wirksam ist!



Rev.	Gr.	Änderung	Änderungsbeschreibung - Change Description	Datum	Benutzer
1	1	h	1x 97330 Schild hinzu	18.03.2003	B. Dietel
2	1	h	1x 078617 Kart geändert	23.04.2002	B. Dietel
3	1	h	06859 Zugentlastung geändert, Klebeschleife - Schraube hinzu	17.09.01	CR/ep
4	1	h	06755 Logo in GE Medical Systems geändert	18.06.2001	B. Dietel
5	1	h	92714 Head Logo	16.11.00	CR/Kaltenbach
6	1	h	06272 UL-Schild hinzu	05.05.99	CR/Kaltenbach

Rev.	Gr.	Änderung	Änderungsbeschreibung - Change Description	Datum	Benutzer
1	1	h	10116613-D03_ZM01	02.03.08	F. Kaltenbach
2	1	h	10116613-D03_ZM01	02.03.08	F. Kaltenbach

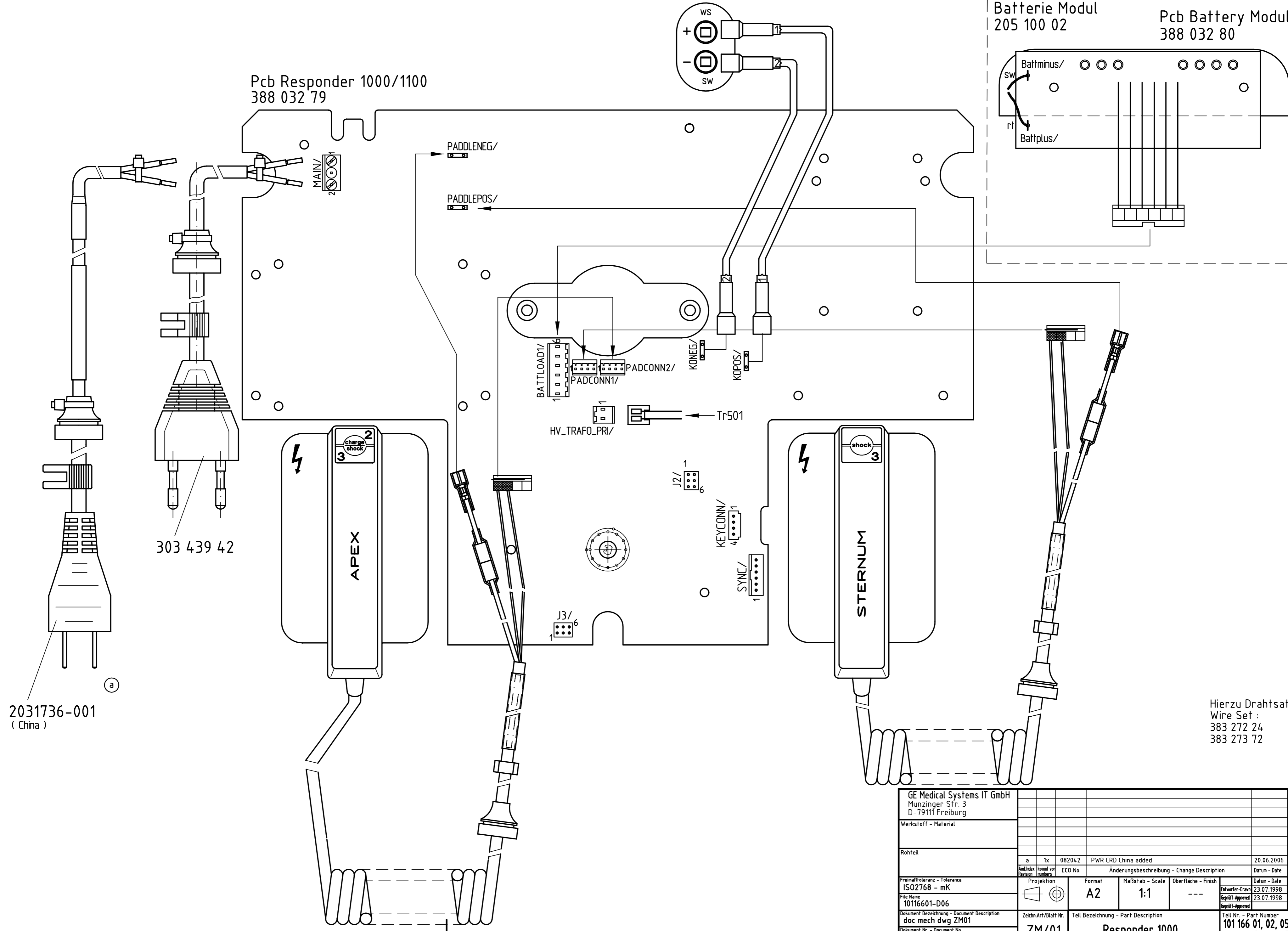
  

Rev.	Gr.	Änderung	Änderungsbeschreibung - Change Description	Datum	Benutzer
1	1	h	ZM/01 Defibrillator Responder 1100	101 166 13/14 u. 19/20	



Pcb Responder 1000/1100  
388 032 79

optional  
Batterie Modul  
205 100 02  
Pcb Battery Module  
388 032 80



2031736-001  
( China )

303 439 42

Hierzu Drahtsatz :  
Wire Set :  
383 272 24  
383 273 72

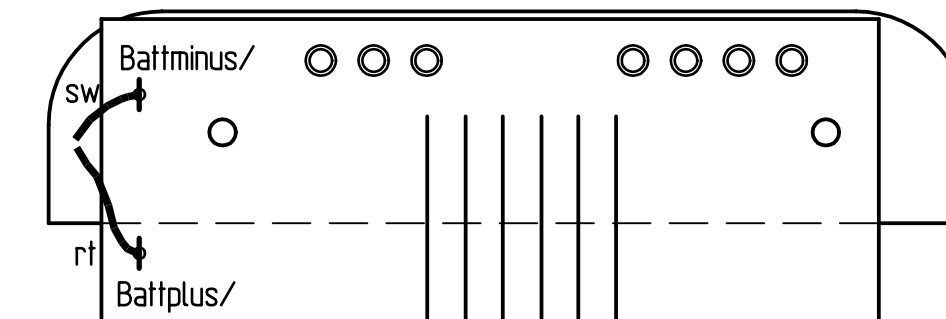
GE Medical Systems IT GmbH Munzinger Str. 3 D-79111 Freiburg					
Werkstoff - Material					
Rohteil					
a	1x	082042	PWR CRD China added	20.06.2006	G.Krieg
ÄndIndex	Änd vor	ECO No.	Änderungsbeschreibung - Change Description	Datum - Date	Name
Revision	numbers				
Freimaßtoleranz - Tolerance ISO2768 - mK		Projektion	Format	Maßstab - Scale	Oberfläche - Finish
File Name 10116601-D06			A2	1:1	---
Document Bezeichnung - Document Description doc mech dwg ZM01		Zeichn.Art/Blatt Nr.	Teil Bezeichnung - Part Description		Teil Nr. - Part Number
Document Nr. - Document No. 10116601-D06		ZM/01	Responder 1000		101 166 01, 02, 05, 06, 07, 08 23, 24 S Bl.1

Schutzvermerk nach DIN 34 beachten

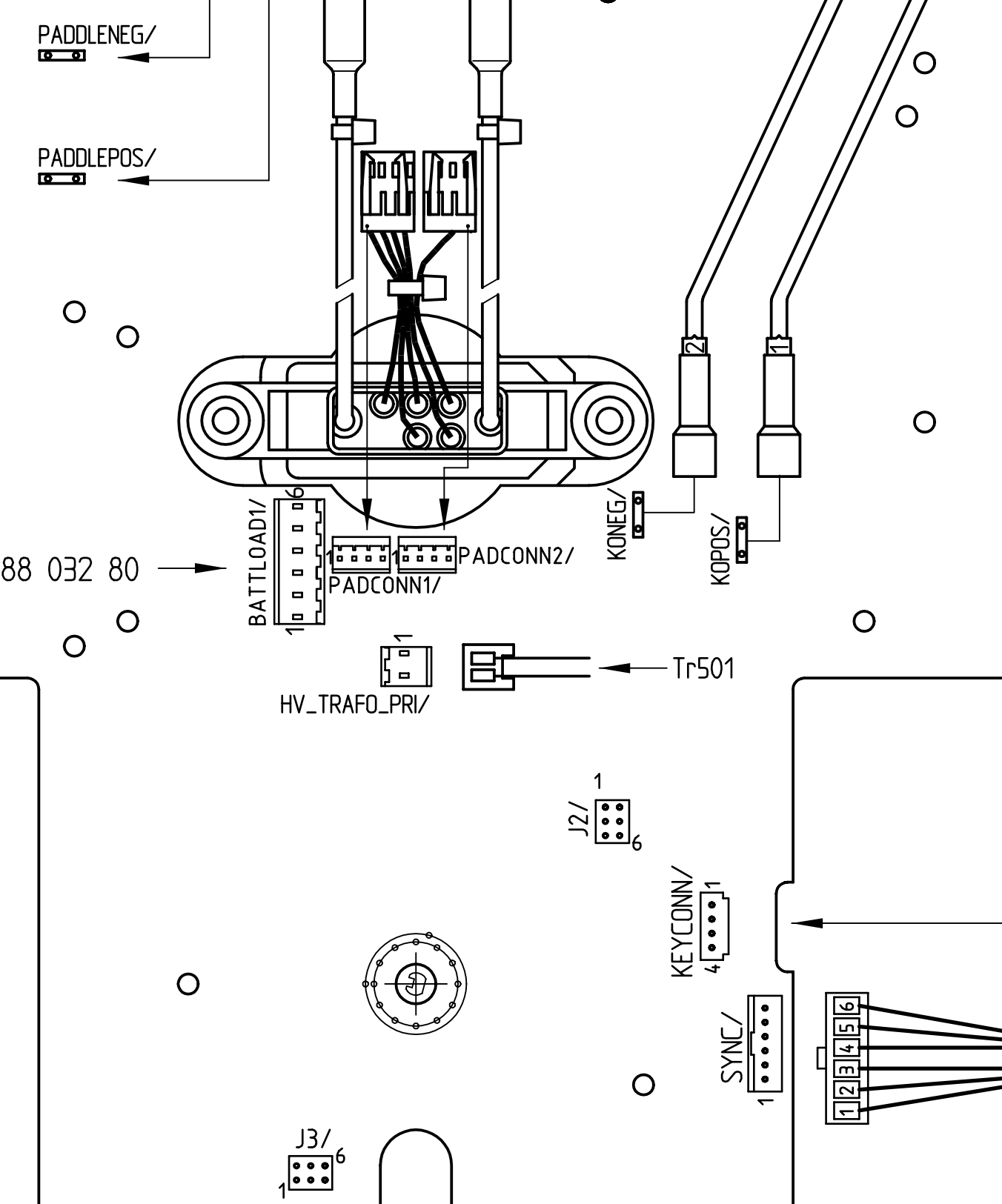
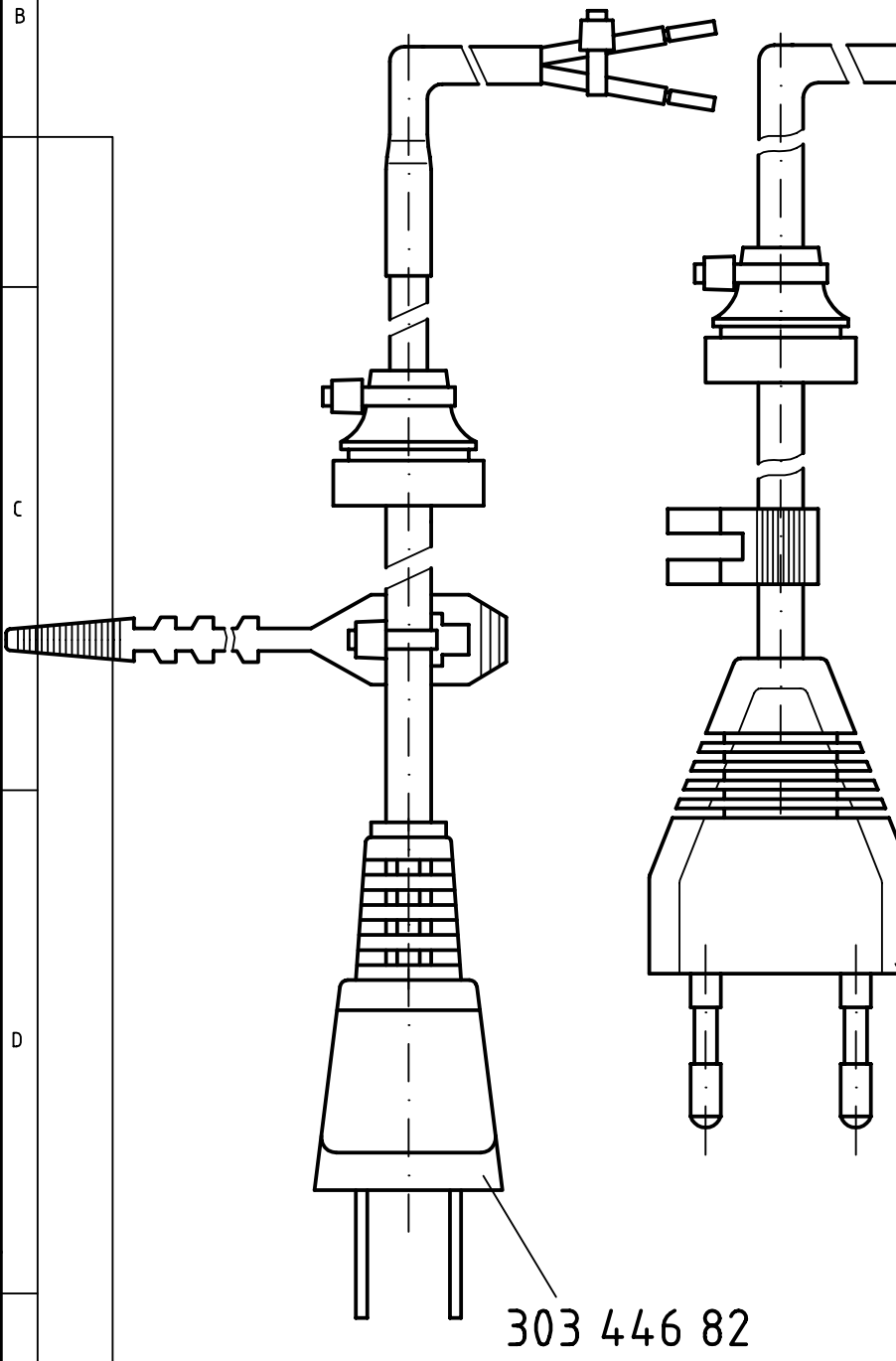
optional  
Batterie Modul  
205 100 02

Pcb Battery Module  
388 032 80

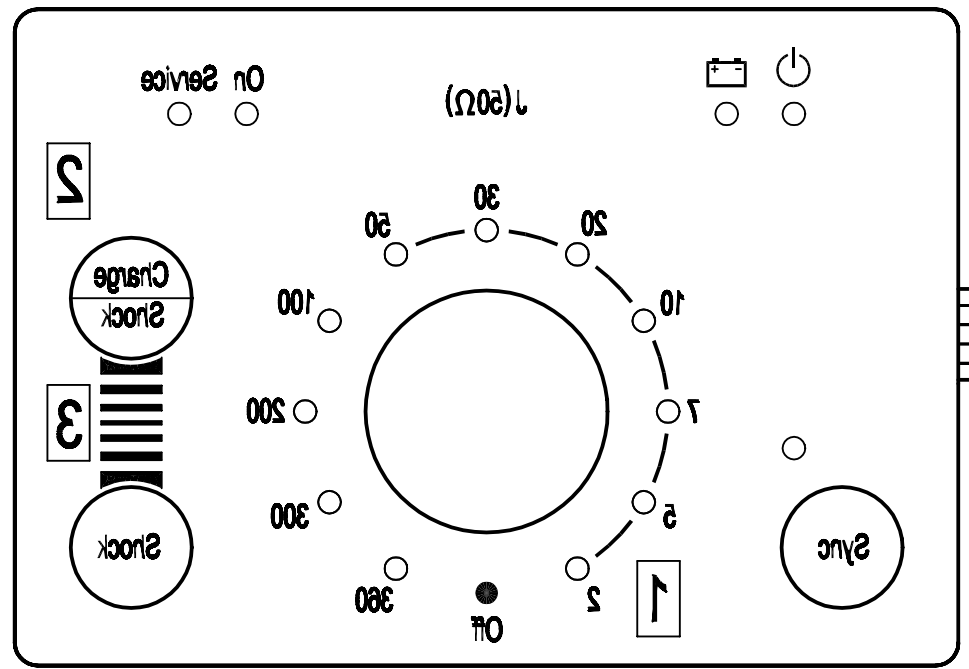
Pcb Responder 1000/1100  
388 032 79



Battload/1  
388 032 79



Folientastatur  
Membrane Keypad  
390 001 77, 78



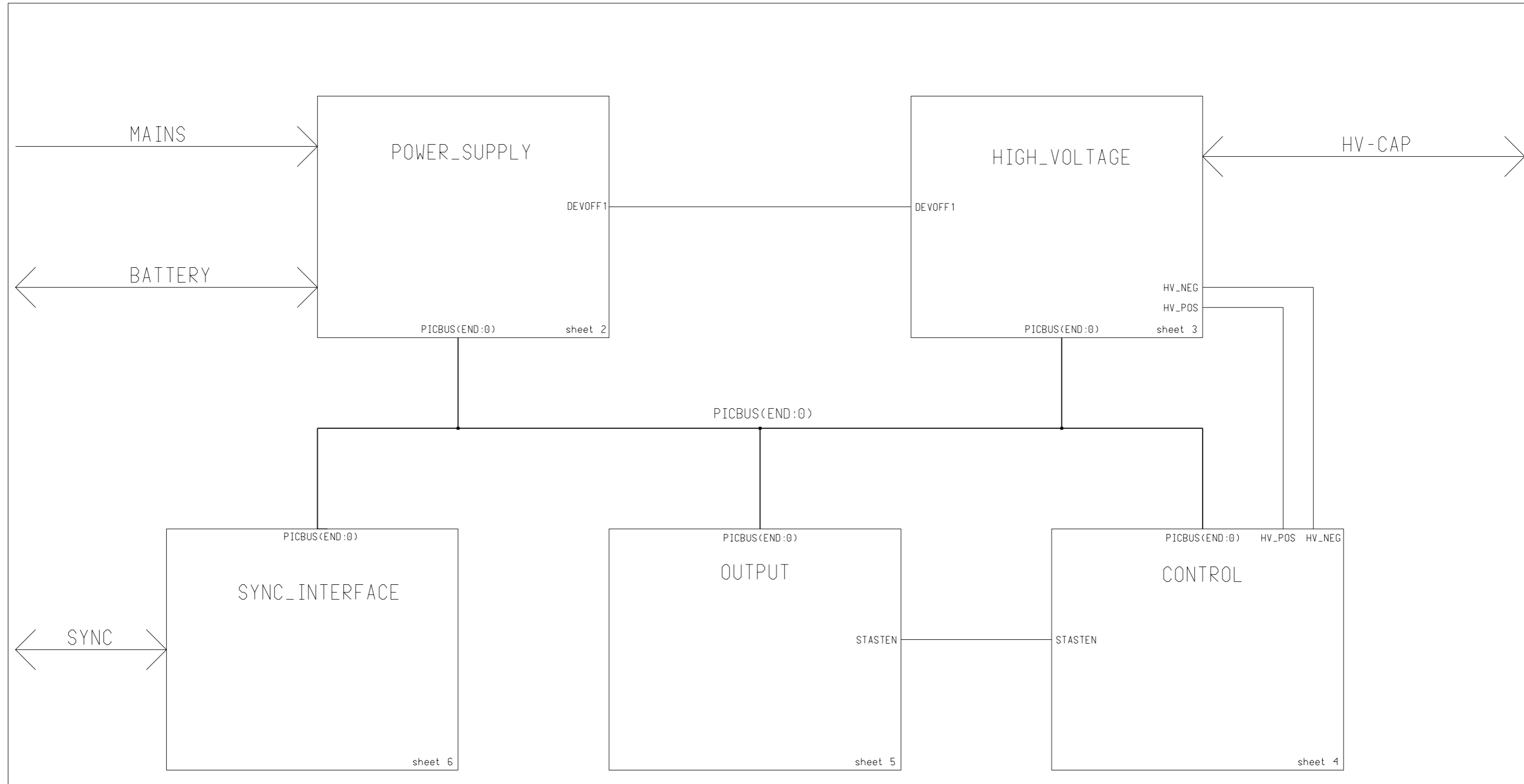
Hierzu Drahtsatz :  
Wire Set :  
383 272 24  
383 273 72  
383 273 86

Werkstoff					
Rohteil					
Paßmaß	Abmaße	Freimaßtoleranz	ACAD-Nr.	Format	Benennung
			10116611_SZ01	A2	Responder 1100
Änd.-Index	kommt vor	Änd.Nr.	Änderungstext	Datum	Name
Maßstab	Datum	Name	Sach-Nr.		
	16.06.98	G.Kaltenbach	101 166 11...20 S Bl.1		
	16.06.98	C.Spitznagel			

**Diese Tabelle definiert die gültigen Konfigurationen von : Responder 1000 Version 1**  
**This table defines the valid configurations of : Responder 1000 Version 1**

Komponente Component	Sachnummer Part No.	Index Rev.	kompatibel (Service) compatible (Service)	in Variante in Device	Sw.Rel. sw. rel.
Lpl Responder 1000/1100, PCB Responder 1000/1100	388 032 79	L	D,E,F,G,H,I,J,K	01,02,05, 06,07,08, 22,23,24	V1.2
Ersatzteil-Nr. , Spare Part No. Austausch Nr. , Replacement No.	388 032 79 389 004 31				
Batterie Modul , Battery Module	205 100 02	A		02,04,06, 08,22,24	
Lpl Batterie Modul , PCB Battery Module	388 032 80	B		02,04,06,08 22,24	
Paddle Defib Shock	217 338 01	D	B, C	01,02,05,06, 07,08,22,23,24	
Paddle Defib Charge / Shock	217 338 02	D	B, C	01,02,05,06, 07,08,22,23,24	
Defi Kondensator , Defib Capacitor	903 449 88	A2	A, A1	01,02,05,06, 07,08,22,23,24	

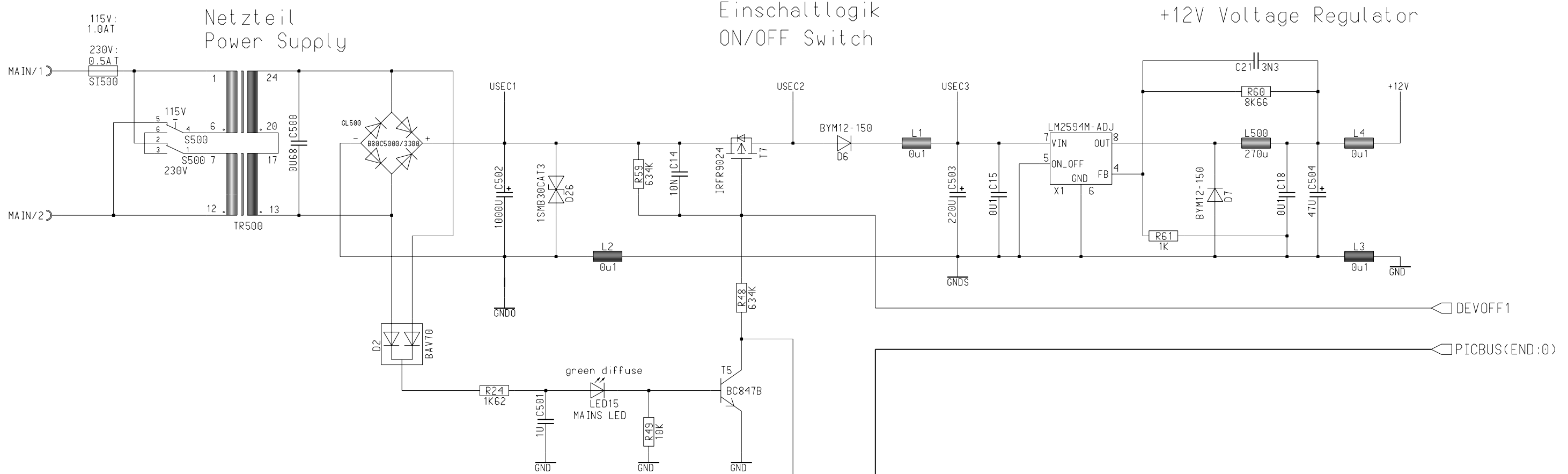
GE Medical Systems IT GmbH Munzinger Str. 3 D-79111 Freiburg	q	089876	Defib capacitor added		04.12.07	P.Fischer	
	p	082042	General reworked, Resp.1100 removed		21.06.06	P.Fischer	
	o	076243	Index von 388 032 79 auf L gesetzt		11.03.04	P.Fischer	
Master Record Index (MRI)	n	074451	Index von 388 032 79 auf K gesetzt		19.08.03	P.Fischer	
	m	072696	Elektroden 217 338 .. von C nach D		14.01.03	B.Deimel	
	l	071347	Elektrodenpaar..01 v. B n. C,..02 v. C n.D		30.09.02	B.Deimel	
	Änd.Index Rev. No.	ECO No.	Änderungsbeschreibung – Change Description		Datum-Date	Name	
	Blatt Nr. – Page No.		<b>MRI</b>	Format <b>A4</b>	Entworfen-Drawn:	30.06.98	G.Kaltenb.
File Name <b>10116601-D07_SZ02</b>	<b>SZ/02</b>				Gepüft-Approved:	Electronical in Agile	
Dokument Bezeichnung – Document Description <b>doc schem dwg SZ02</b>	Teil Bezeichnung – Part Description <b>Responder 1000</b>			Teil Nr. – Part No. <b>101 166 ..</b>			
Dokument Nr. – Document No. <b>10116601-D07</b>							



Schutzvermerk nach DIN 34 beachten

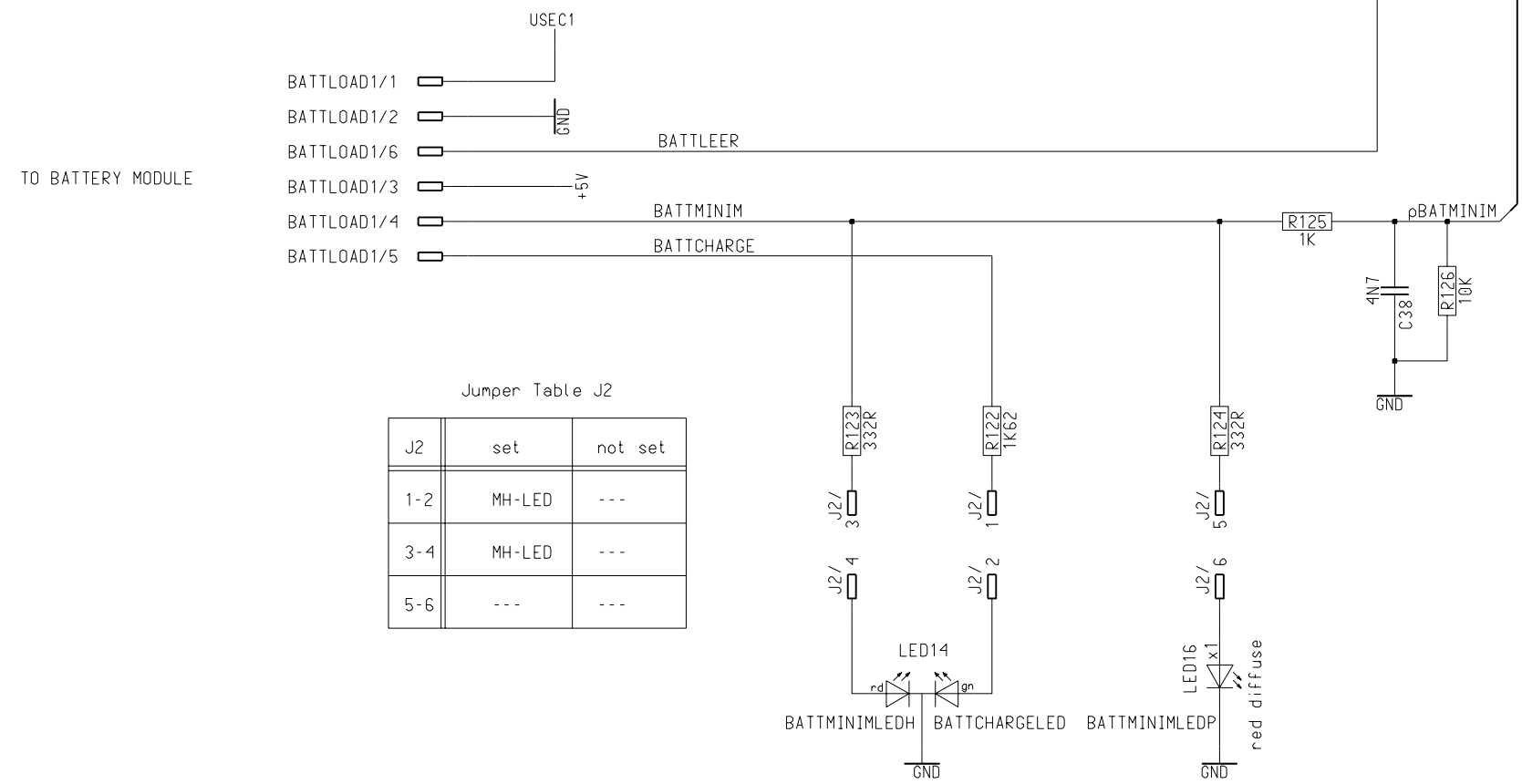
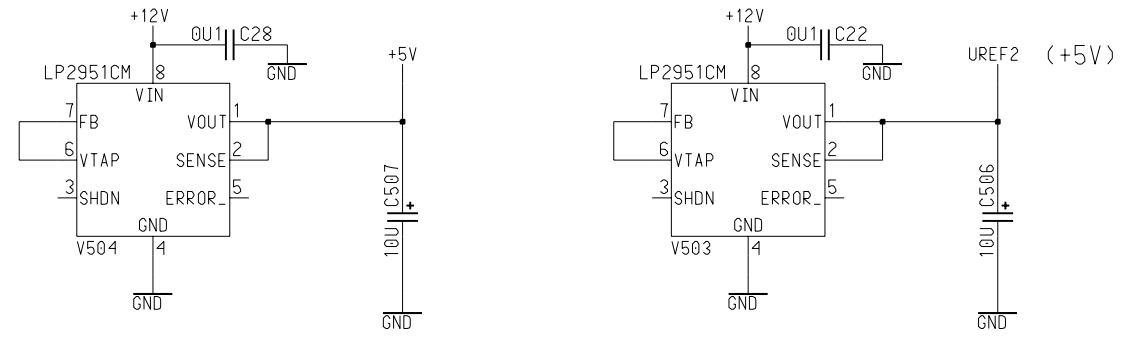
<b>Marquette Hellige GmbH</b> D-79007 Freiburg					<b>388 032 79 - D02</b>	Sheet: 1 of 6
Not equipped in Version :		REVISIONS			A03	43367260
x1	38803279	Revision-No	Index	Date / Name		Date / Name
x2		063764	A	22.02.00/MSG	DRAWN	18.12.97/BNH
x3					APPROVED	18.12.97/BNH
x4						
x5					ISSUED	B. HAGER
					<b>SCHEMATIC</b>	
					<b>RESPONDER 1000/1100</b>	

+12V Spannungsregler  
+12V Voltage Regulator



+5V Spannungsregler  
+5V Voltage Regulator

UREF2 Spannungsregler  
UREF2 Voltage Regulator



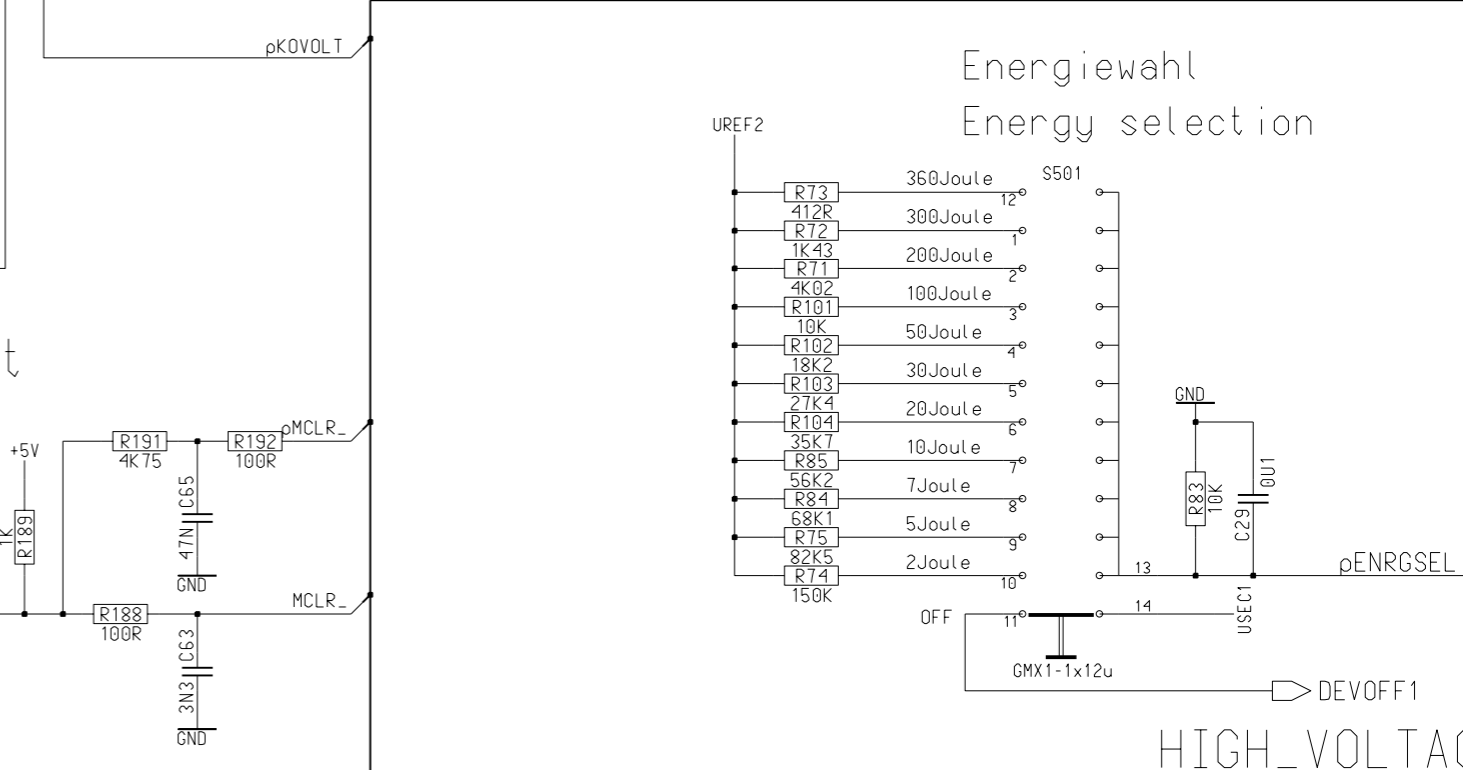
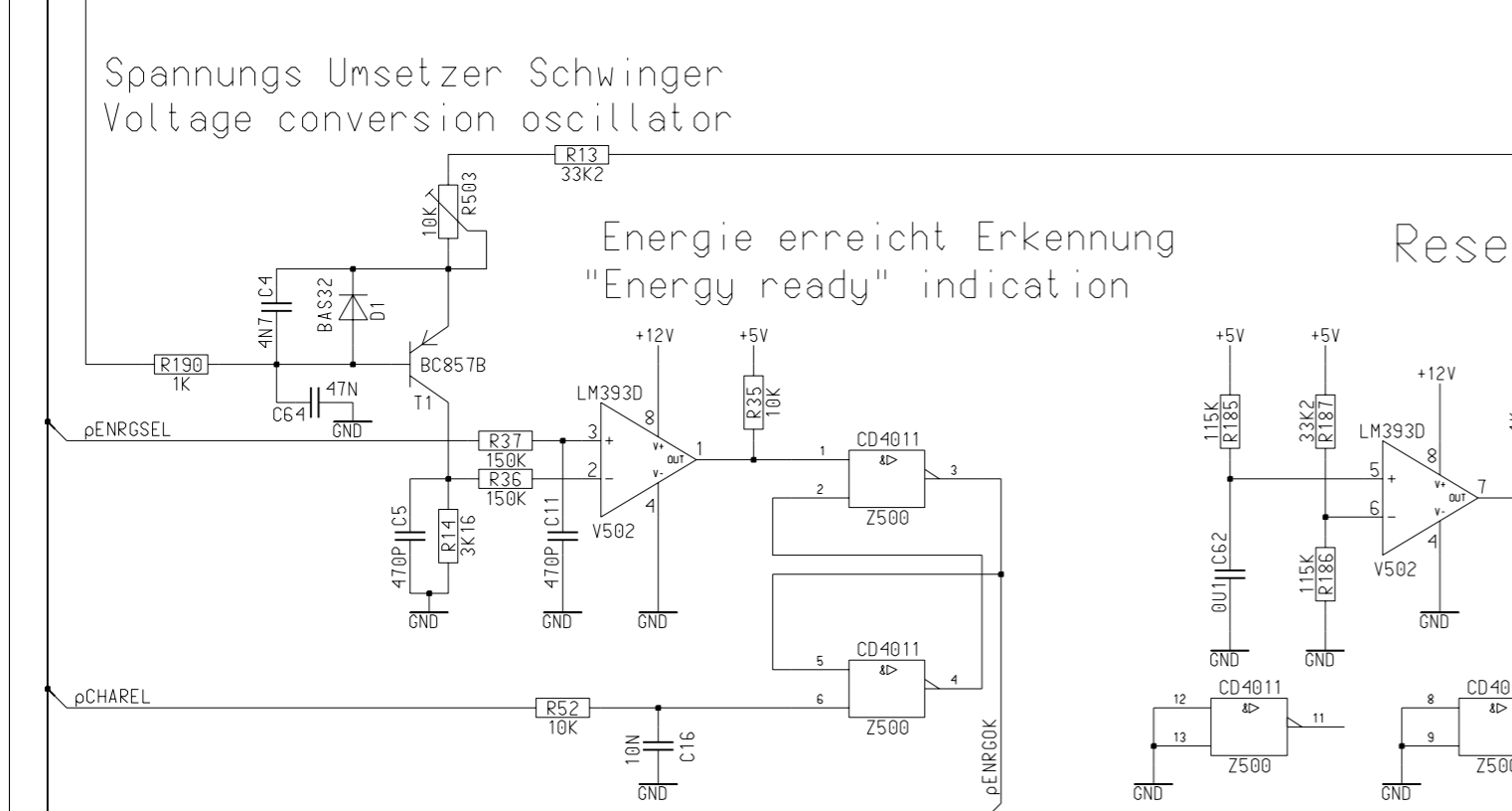
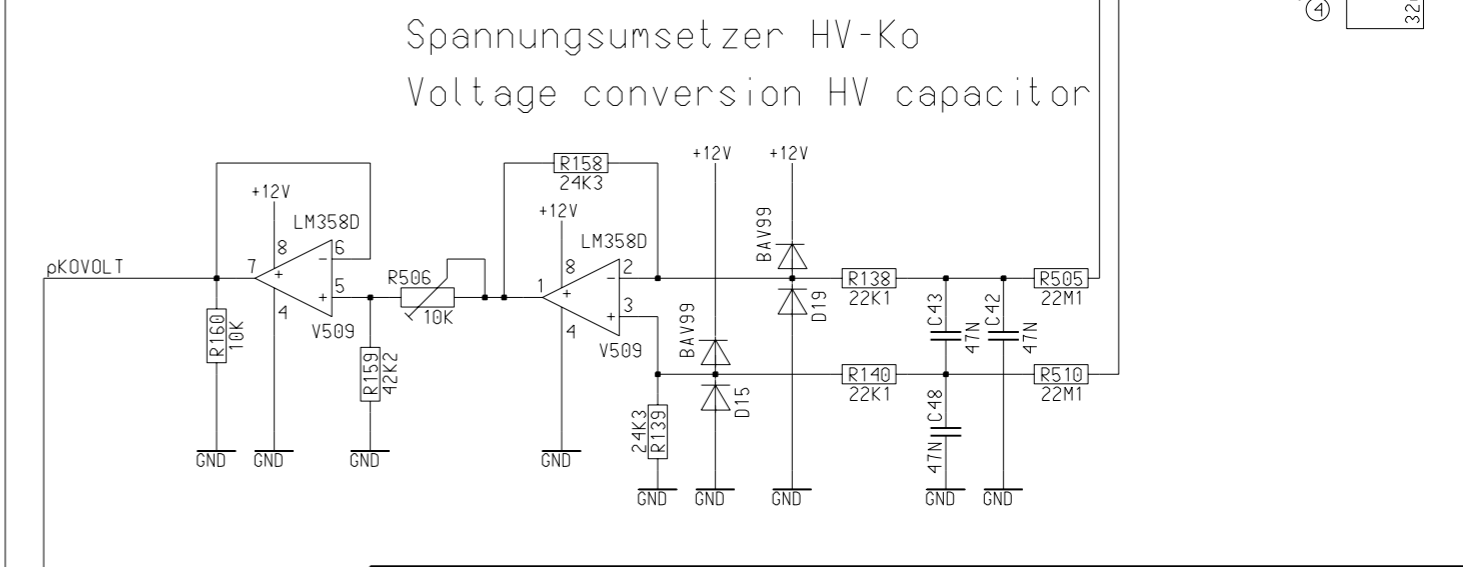
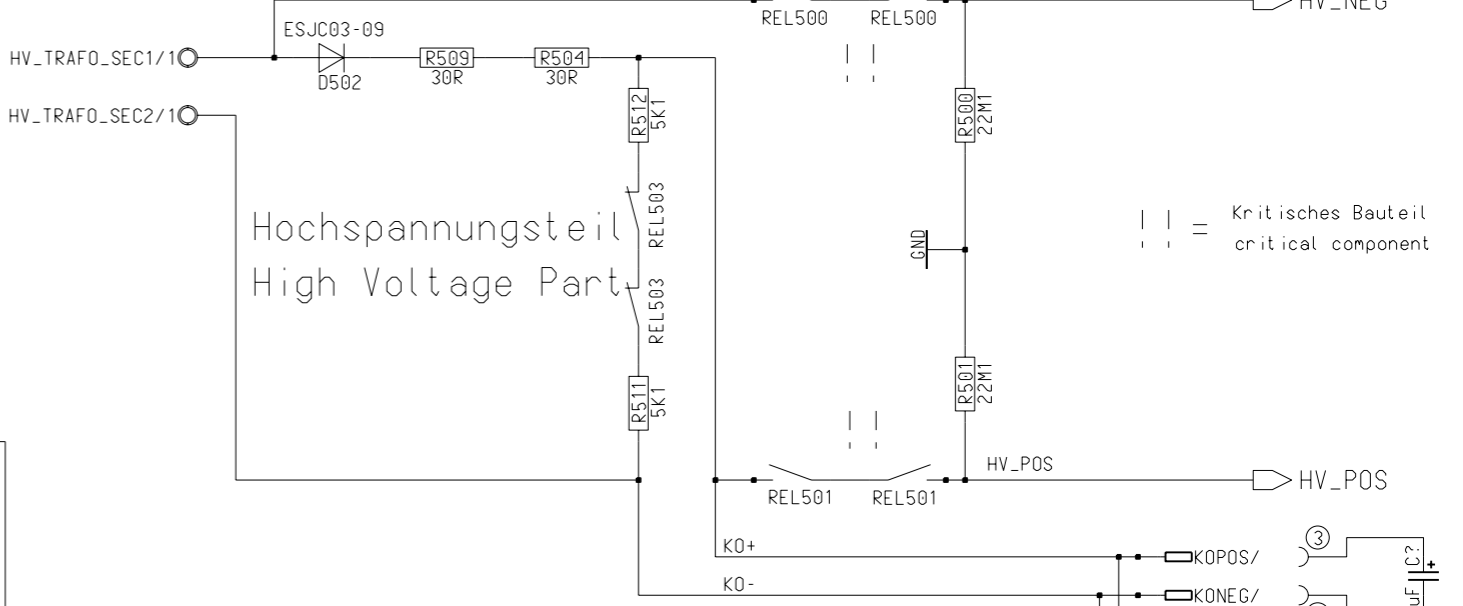
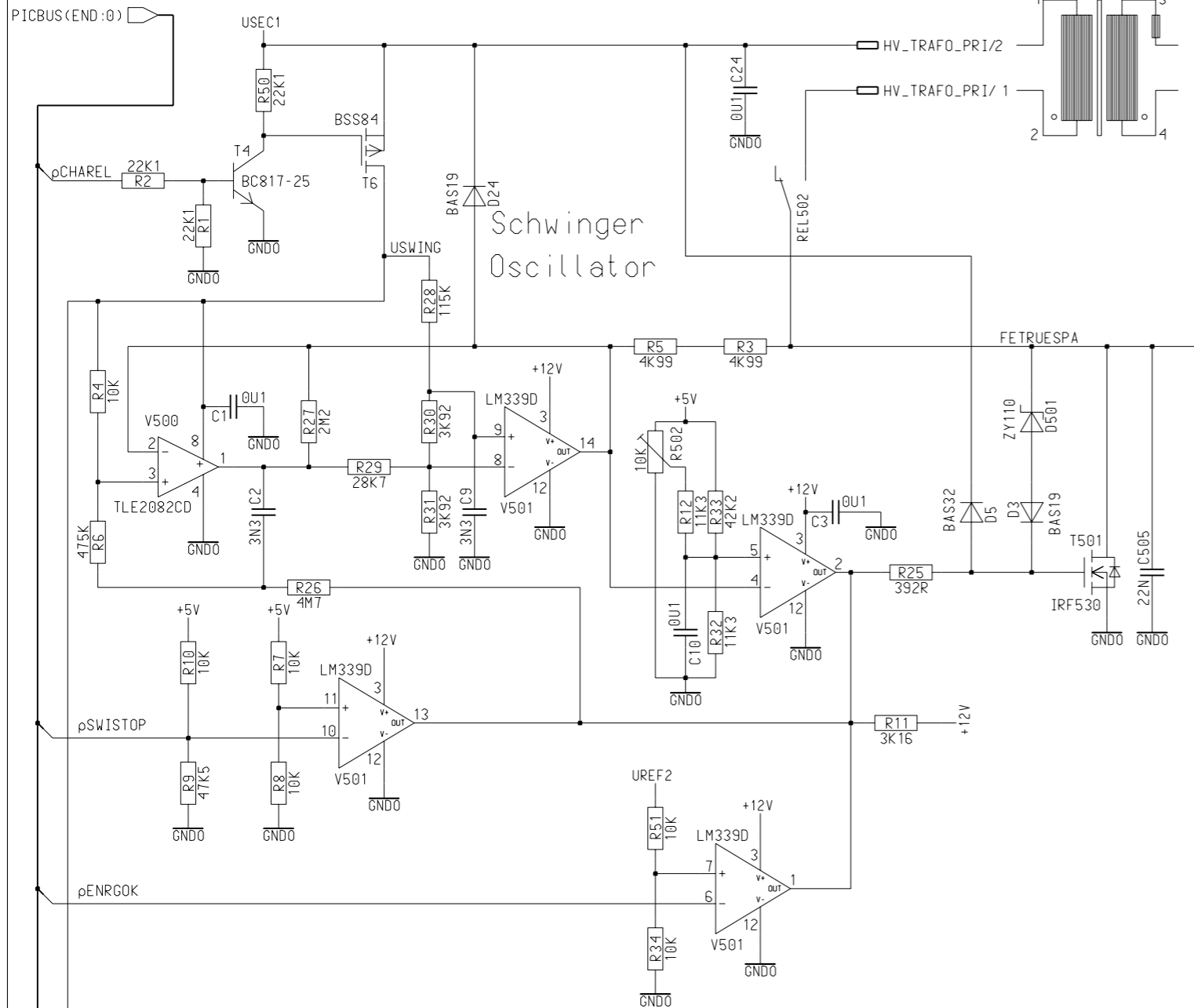
Jumper Table J2

J2	set	not set
1-2	MH-LED	---
3-4	MH-LED	---
5-6	---	---

POWER\_SUPPLY

Marquette Hellige GmbH D-79007 Freiburg				388 032 79 - D03		Sheet: 2 of 6	
Not equipped in Version :		REVISIONS		A03		F67260	
x1	38803279	Revision-No	063764	Date / Name	22.02.00/MSG	Date / Name	
x2		Index	067395	Date / Name	05.07.01/TYR	DRAWN 17.12.97/JFS	
x3						APPROVED 17.12.97/JFS	
x4						ISSUED J. SCHULER	
x5						SCHEMATIC	
						RESPONDER 1000/1100	

Schutzvermerk nach DIN 34 beachten



Schutzvermerk nach DIN 34 beachten

<b>GE Medical Systems</b> <b>Information Technologies GmbH</b>		D-79111 Freiburg Munzinger Str. 3		<b>388 032 79 - D04</b>	Sheet: 3 of 6
<b>SCHEMATIC</b> <b>RESPONDER 1000/1100</b>					
Not equipped in Version :	REVISIONS Revision-No Index Date / Name	A01 43367260 Date / Name			
x1	38803279 060448 A 23.06.98/MSG				
x2	063764 B 22.02.00/MSG	DRAWN	17.12.97/BNH		
x3	074451 C 13.08.03/TYR	APPROVED	17.12.97/BNH		
x4		ISSUED	B. HAGER		
x5					

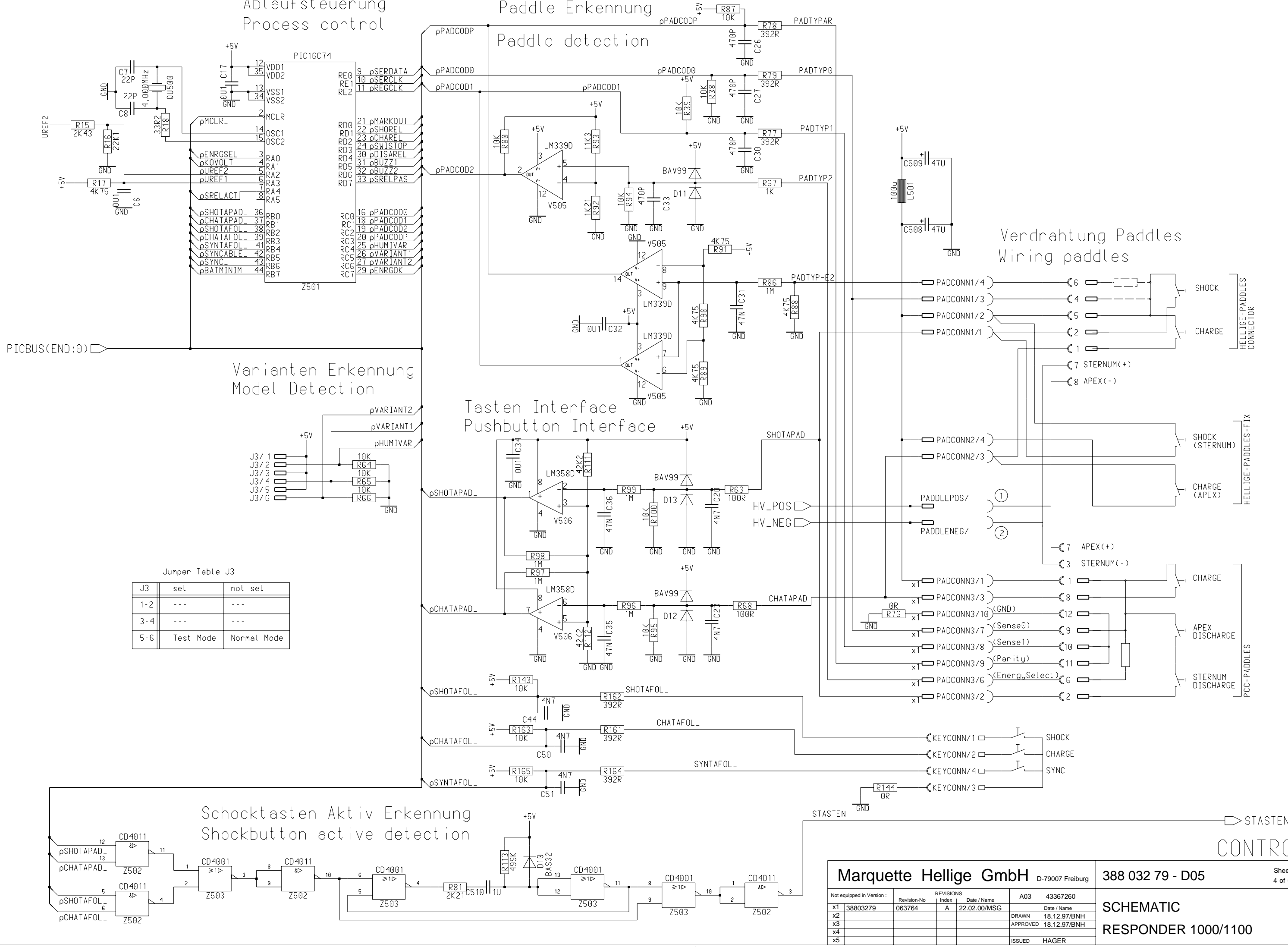
Ablaufsteuerung  
Process control

Paddle Erkennung  
Paddle detection

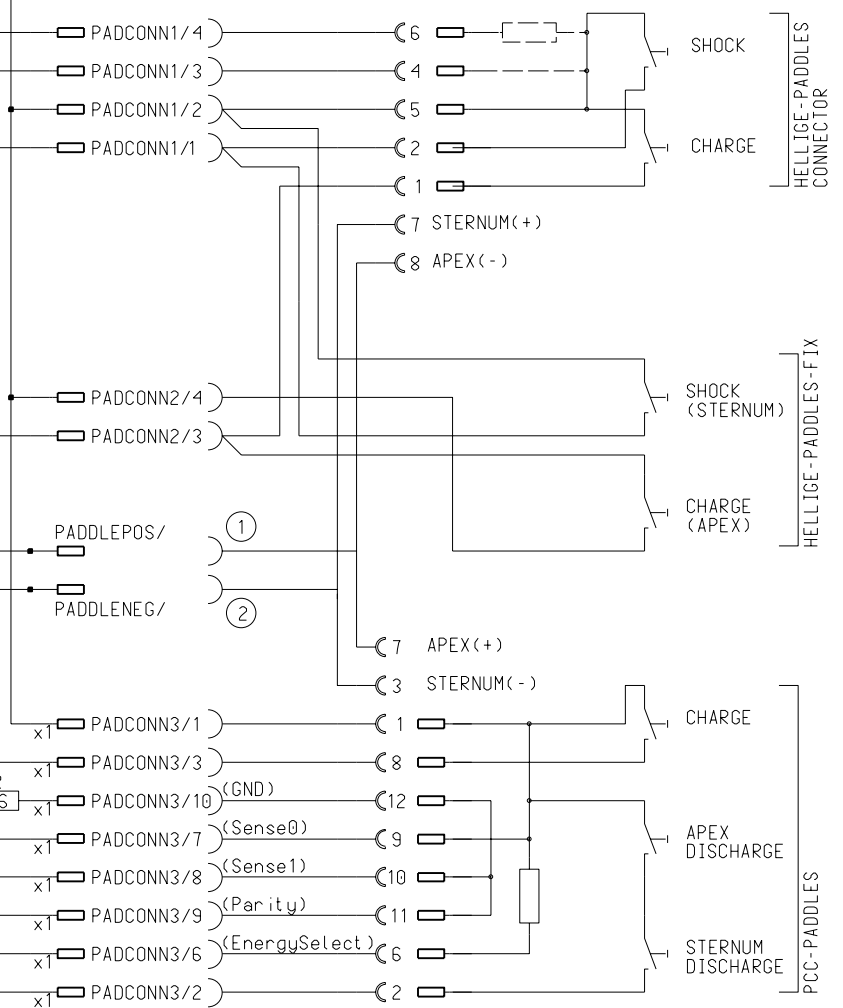
Varianten Erkennung  
Model Detection

Tasten Interface  
Pushbutton Interface

Schocktasten Aktiv Erkennung  
Shockbutton active detection



Verdrahtung Paddles  
Wiring paddles



Jumper Table J3

J3	set	not set
1-2	---	---
3-4	---	---
5-6	Test Mode	Normal Mode

Marquette Hellige GmbH D-79007 Freiburg 388 032 79 - D05 Sheet: 4 of 6

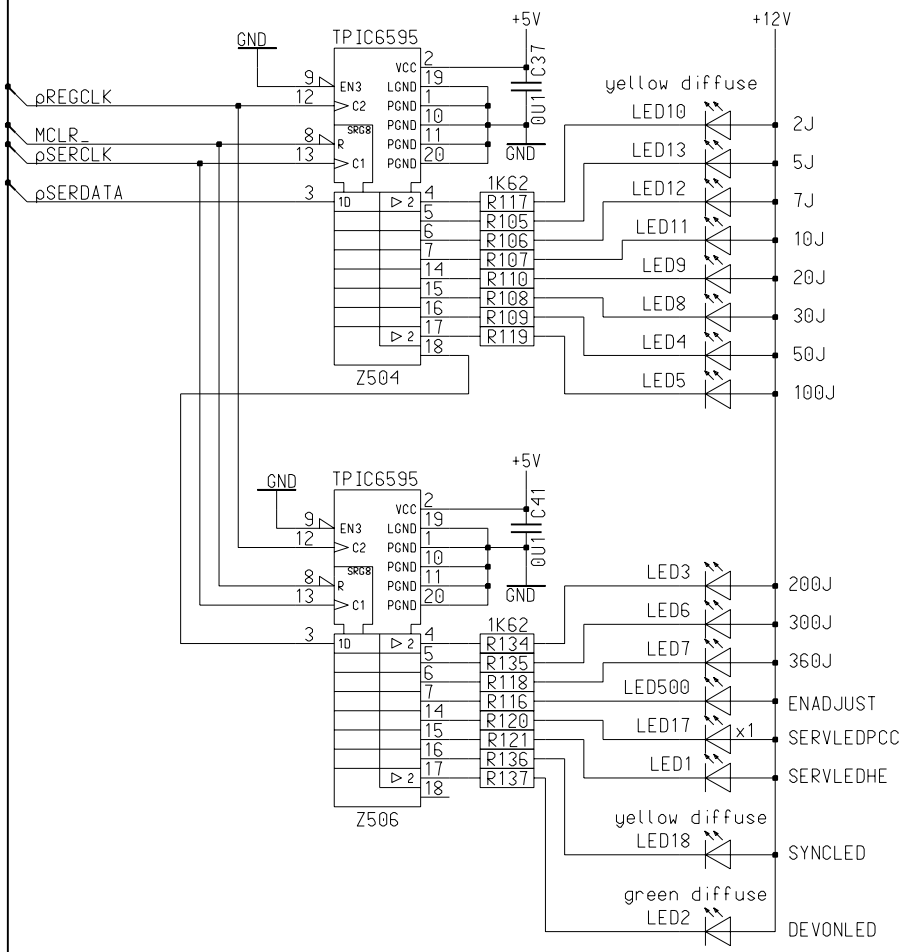
SCHEMATIC RESPONDER 1000/1100

Not equipped in Version :	Revision-No	Index	Date / Name	A03	43367260
x1	38803279	063764	A	22.02.00/MSG	Date / Name
x2					DRAWN 18.12.97/BNH
x3					APPROVED 18.12.97/BNH
x4					ISSUED HAGER
x5					

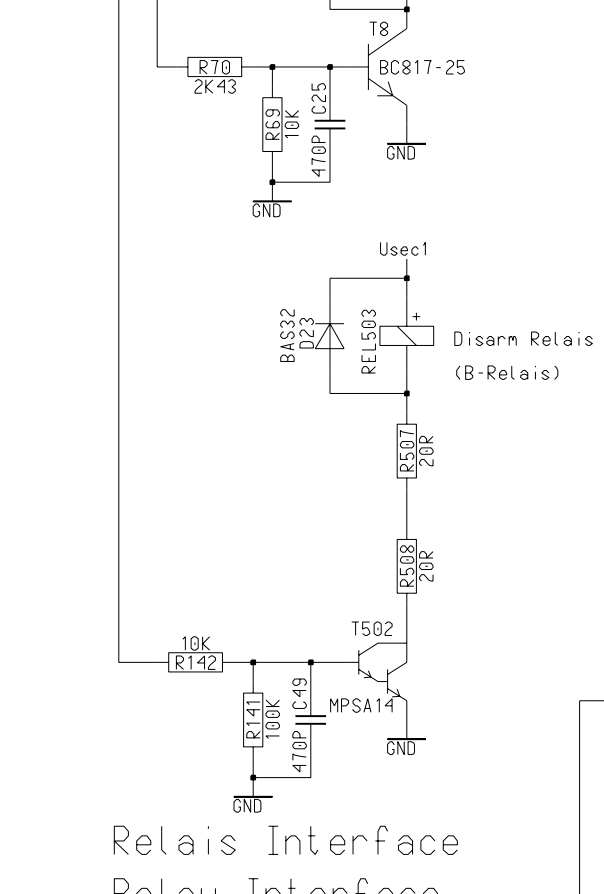
Schutzvermerk nach DIN 34 beachten

PICBUS(EN:0)

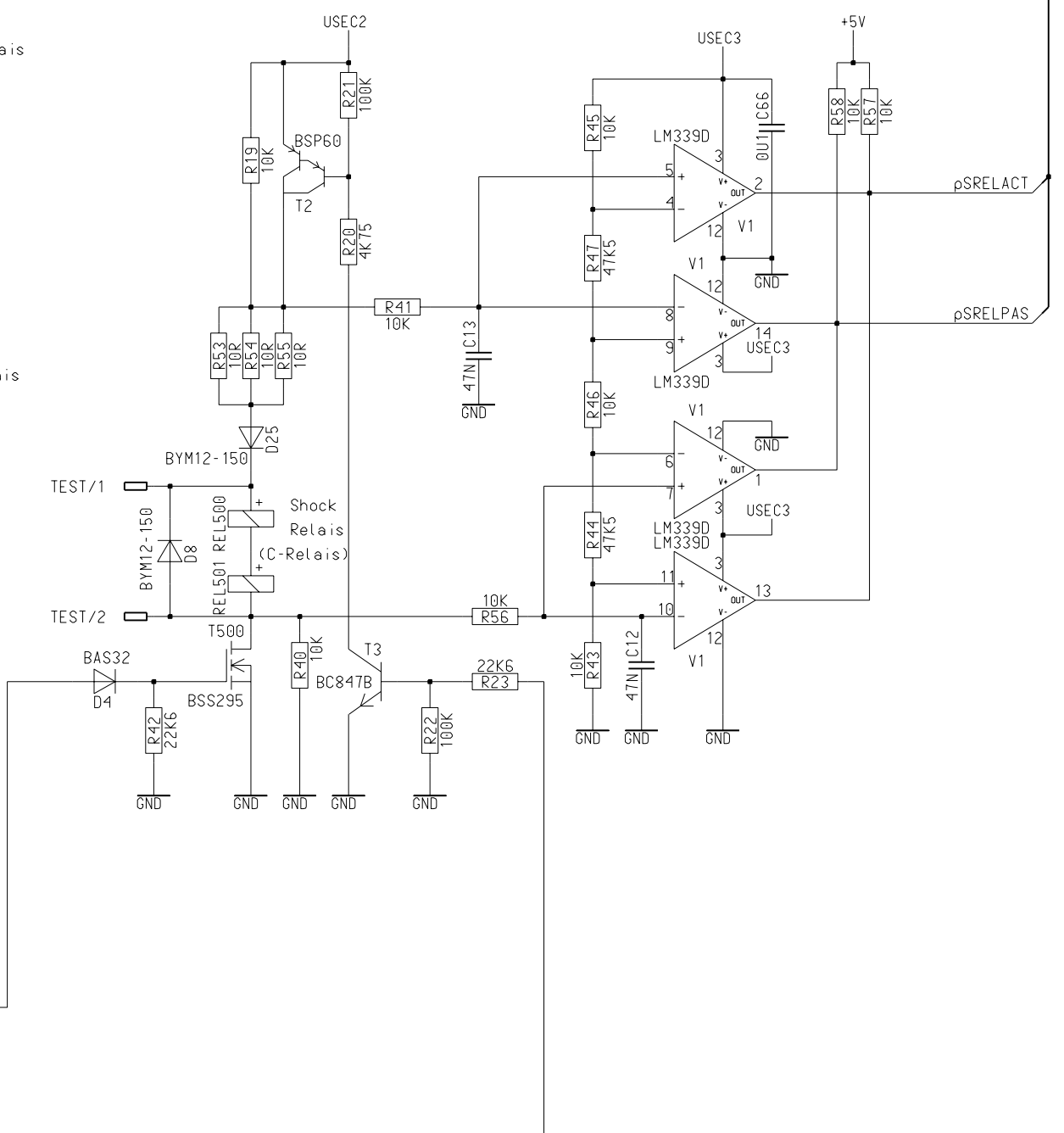
### LED Anzeige LED indication



### Relais Interface Relay Interface



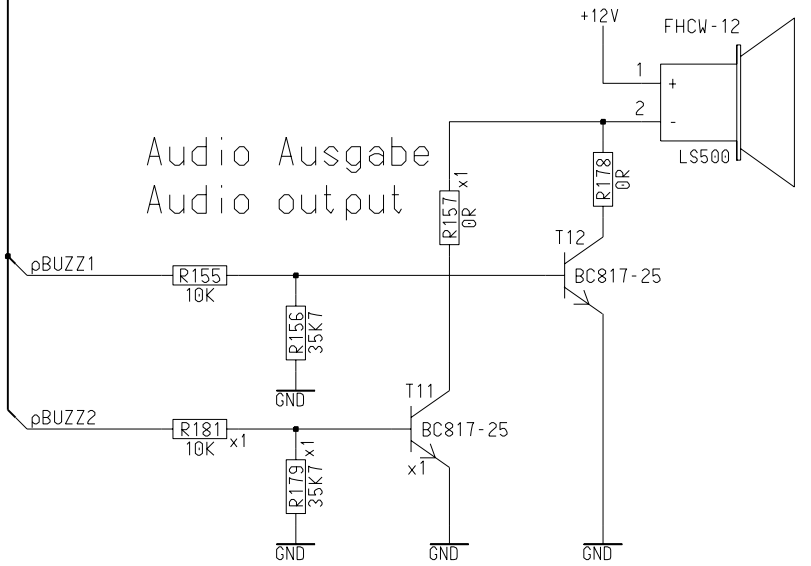
### Shock Relais Secure Shock Relais monitoring/blocking



STASTEN

pSHOREL

### Audio Ausgabe Audio output

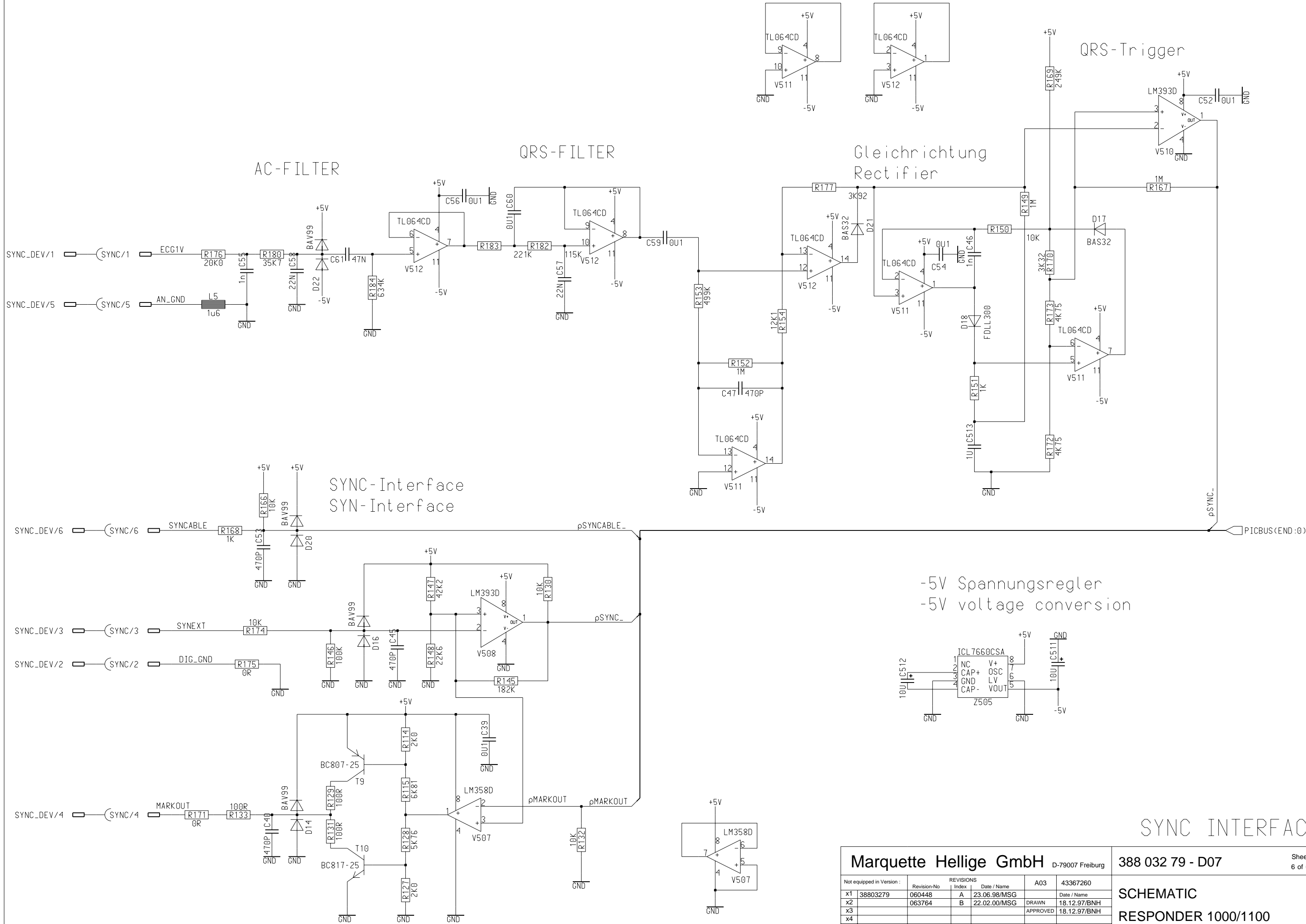


OUTPUT

Schutzvermerk nach DIN 34 beachten

<b>Marquette Hellige GmbH</b> D-79007 Freiburg				<b>388 032 79 - D06</b>	Sheet: 5 of 6
Not equipped in Version :	REVISIONS		A03	43367260	
x1	38803279	063764	A	22.02.00/MSG	Date / Name
x2		067395	B	05.07.01/TYR	18.12.97/BNH
x3					APPROVED 18.12.97/BNH
x4					
x5					ISSUED HAGER

**SCHEMATIC  
RESPONDER 1000/1100**

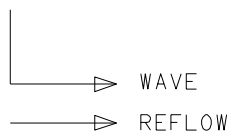
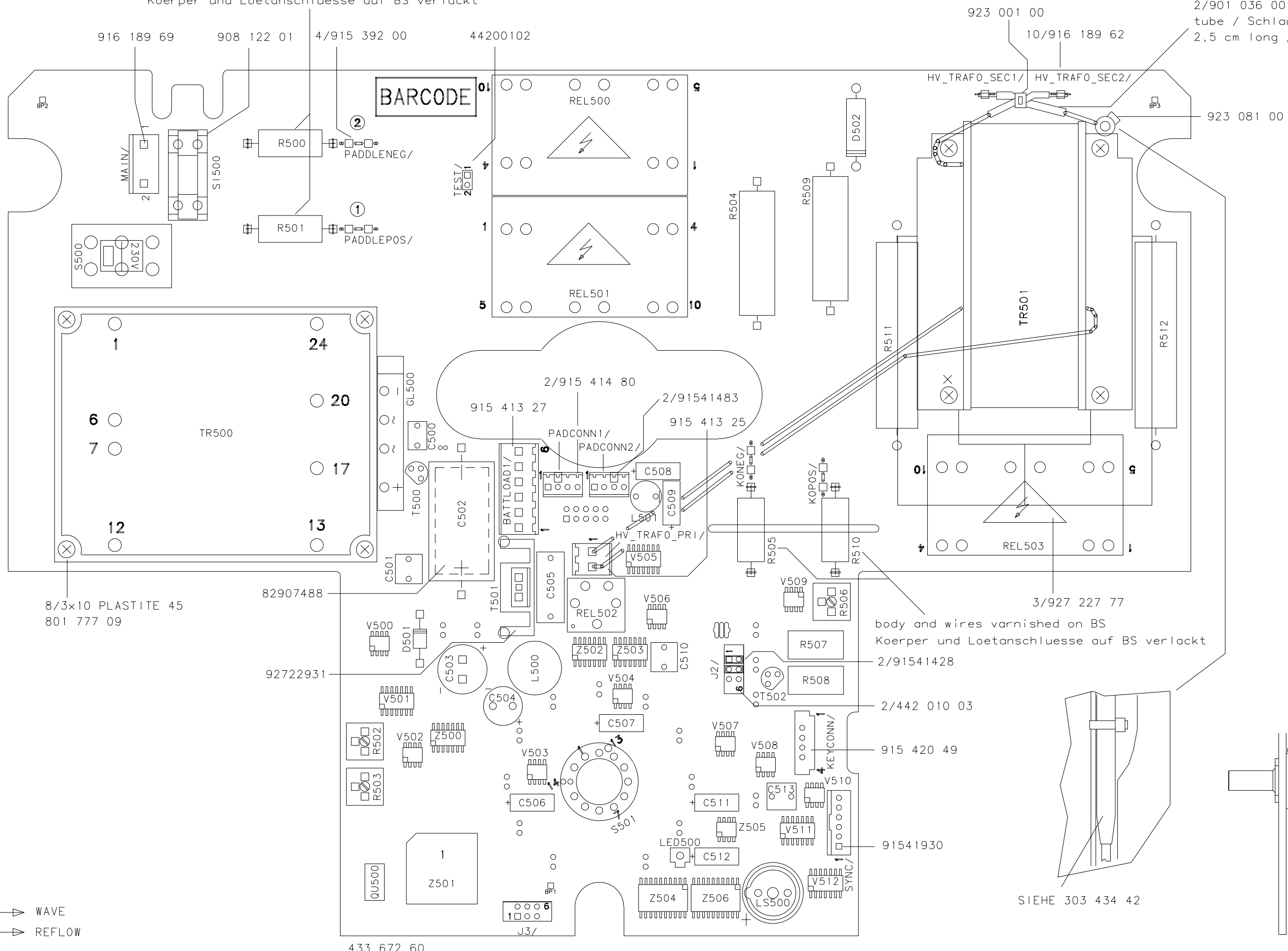


Schutzvermerk nach DIN 34 beachten

<b>Marquette Hellige GmbH</b> D-79007 Freiburg				<b>388 032 79 - D07</b>		Sheet: 6 of 6	
Not equipped in Version :				REVISIONS		A03 43367260	
x1	38803279	060448	A	23.06.98/MSG	Date / Name		<b>SCHEMATIC</b> <b>RESPONDER 1000/1100</b>
x2		063764	B	22.02.00/MSG	DRAWN 18.12.97/BNH		
x3					APPROVED 18.12.97/BNH		
x4							
x5					ISSUED B. HAGER		

body and wires varnished on BS  
 Koerper und Loetanschluesse auf BS verlackt

2/901 036 00  
 tube / Schlauch 3,5 Ø PVC  
 2,5 cm long / lang

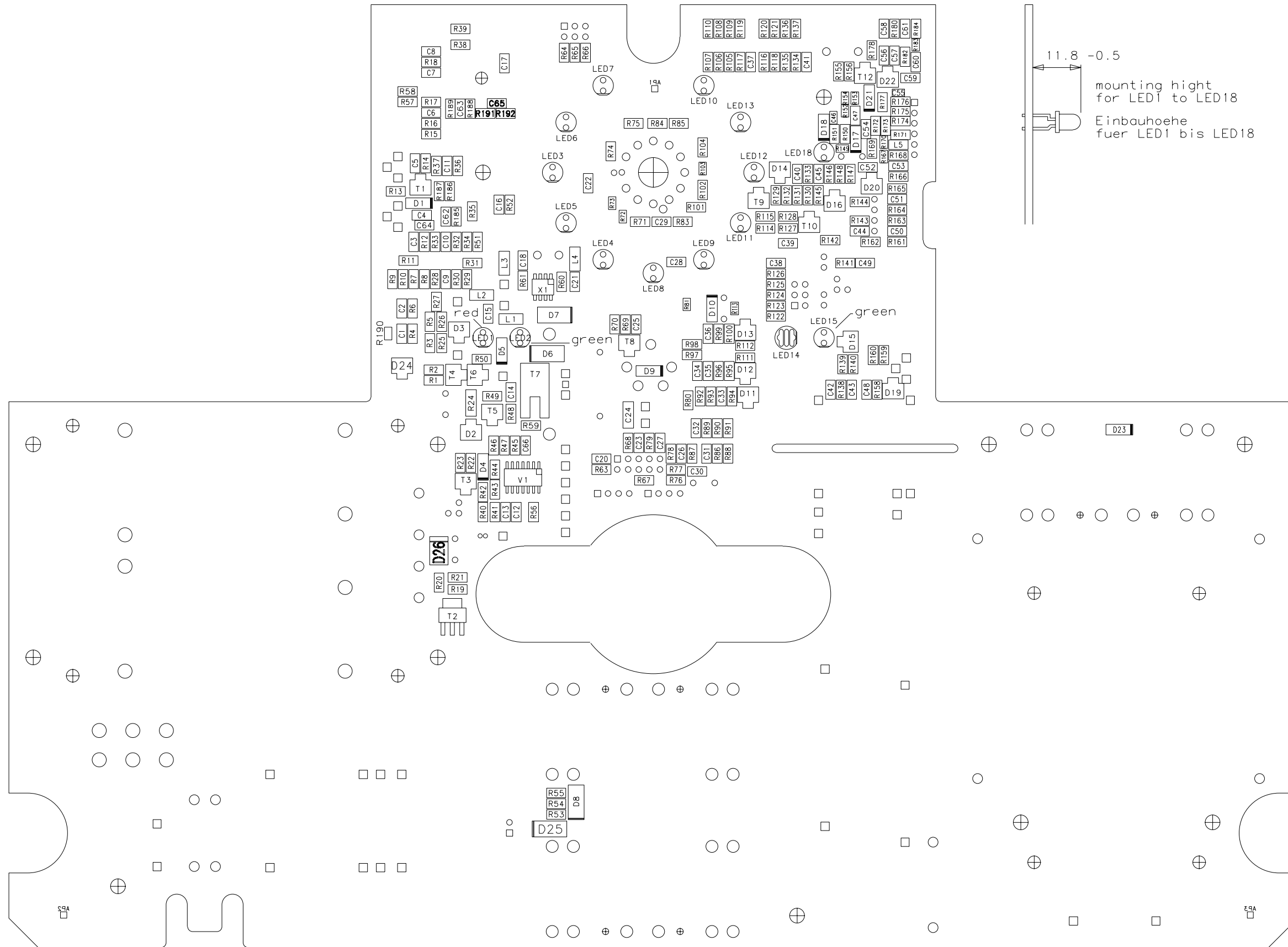


Schutzvermerk nach DIN 34 beachten.

<b>Marquette Hellige GmbH</b> D-79007 Freiburg			38803279-D08	1 / 2
REVISIONS			A03	
Revision-No	Index	Date/Name	43367260	
060448	C	23.06.98/MSG	Drawn	21.01.98/JOK
060523	D	17.07.98/MSG	Approved	21.01.98/MSG
060925	E	13.10.98/MSG		
063764	F	23.02.00/MSG		
067395	G	12.07.01/TYR	Issued	M&E/HAGER

REF DWG  
RESPONDER 1000/1100

Schutzvermerk nach DIN 34 beachten.

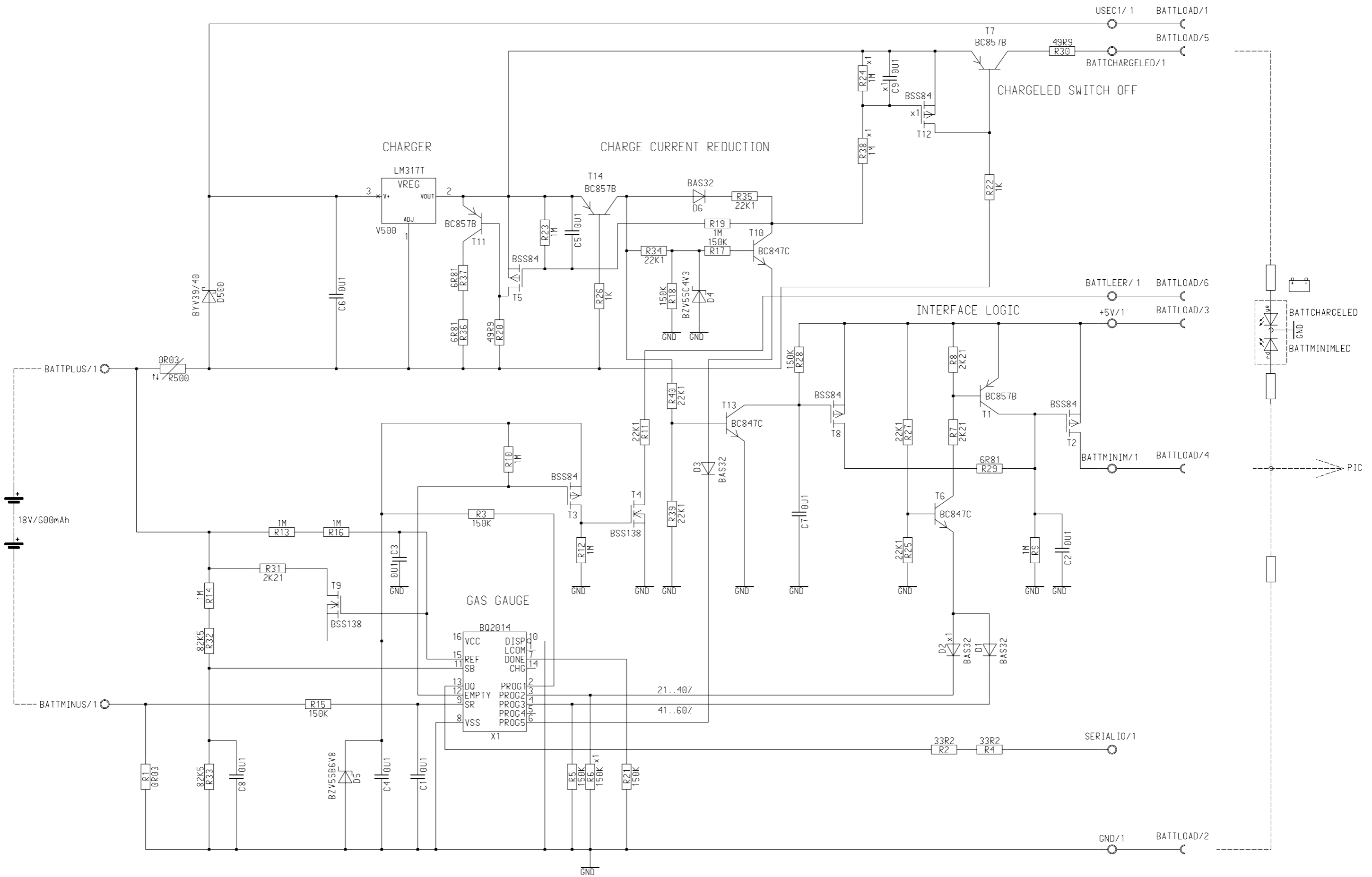


433 672 60

← GLUING

<b>Marquette Hellige GmbH</b> D-79007 Freiburg		38803279-D09	2 / 2
REVISIONS		A03	
Revision-No	Index	Date/Name	Date/Name
---	B	11.05.98/MSG	43367260
060448	C	23.06.98/MSG	Drawn 21.08.98/JOK
060523	D	17.07.98/MSG	Approved 21.01.98/MSG
063764	E	23.02.00/MSG	
067395	F	11.07.01/TYR	Issued M&E/HAGER

REF DWG  
RESPONDER1000/1100



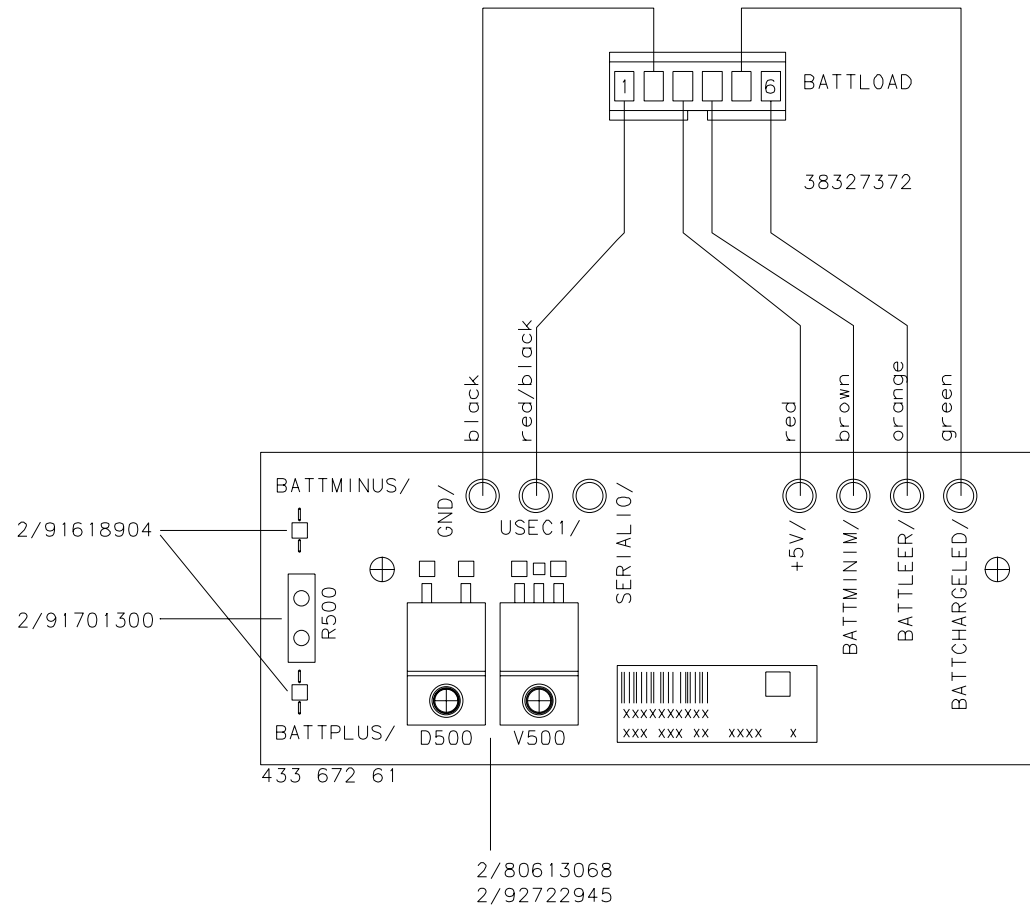
# BATTERY MANAGEMENT

<b>Marquette Hellige GmbH</b> D-79007 Freiburg				<b>38803280-D04</b>		Sheet: 1 of 1	
Not equipped in Version :		REVISIONS		A03	F67261		
x1	38803280	--	--	07.04.98/MNS		Date / Name	
x2	--	--	--	15.05.98/MSG	DRAWN	19.01.98/MSG	
x3		065687	A	19.10.00/MSG	APPROVED	19.01.98/JFS	
x4					ISSUED	SCHULER	
x5							

**SCHEMATIC**  
**BATTERY MODULE**

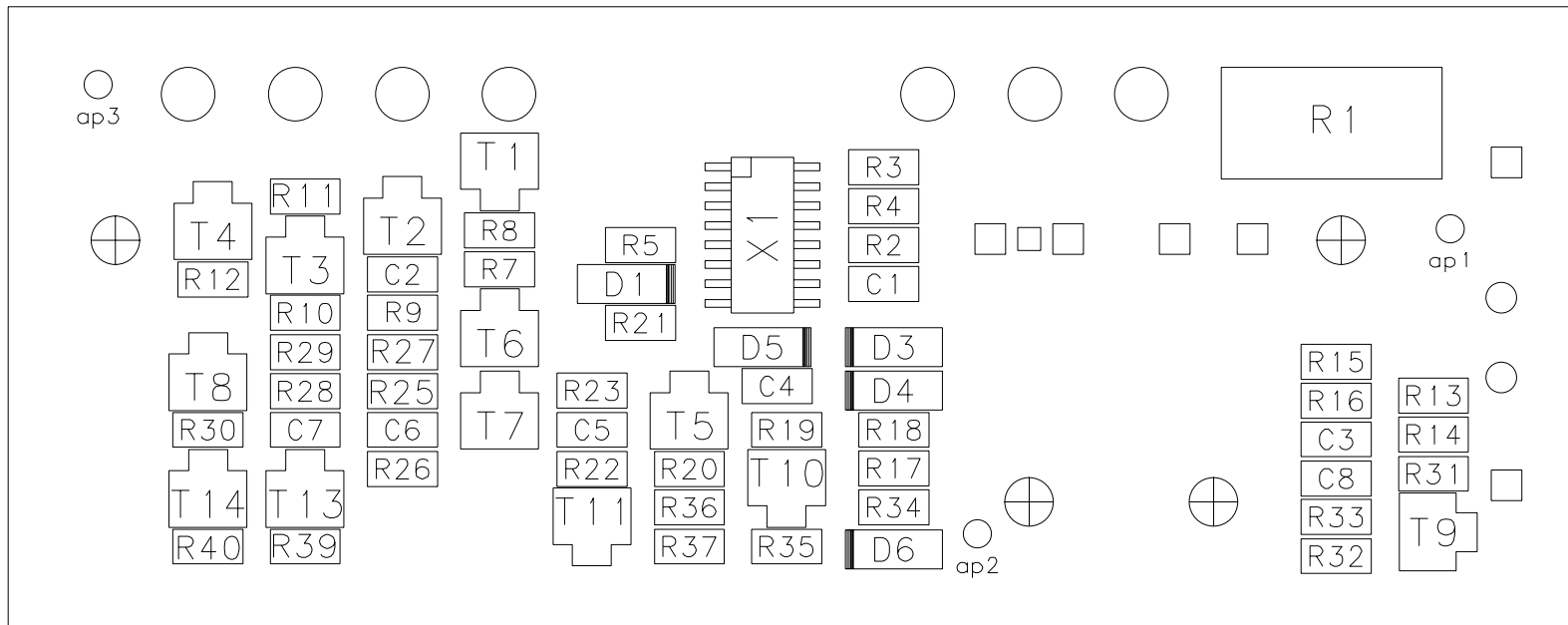
Schutzvermerk nach DIN 34 beachten.

BT-AS: 70  
 BT-BS: 12  
 LOET-AS: 184  
 LOET-BS: 0



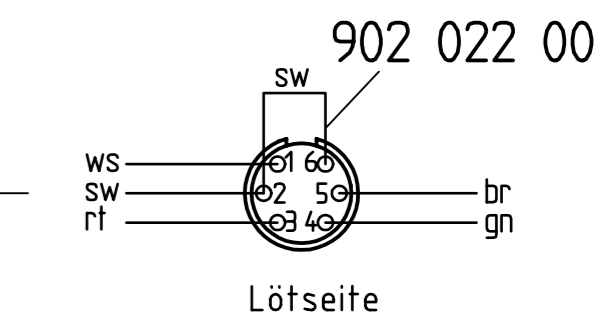
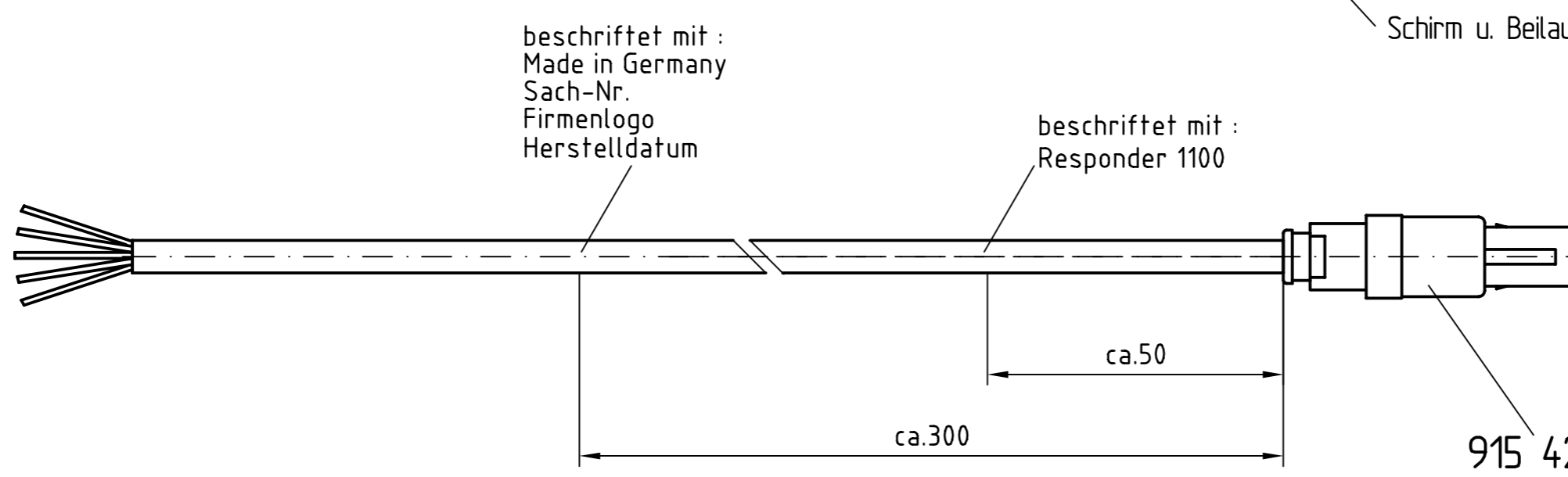
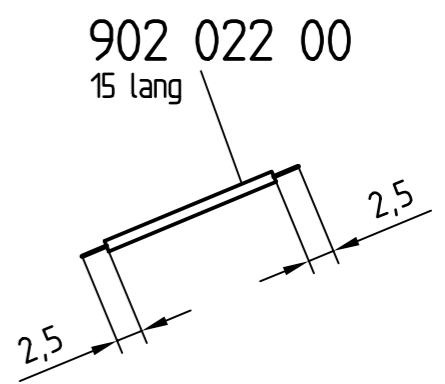
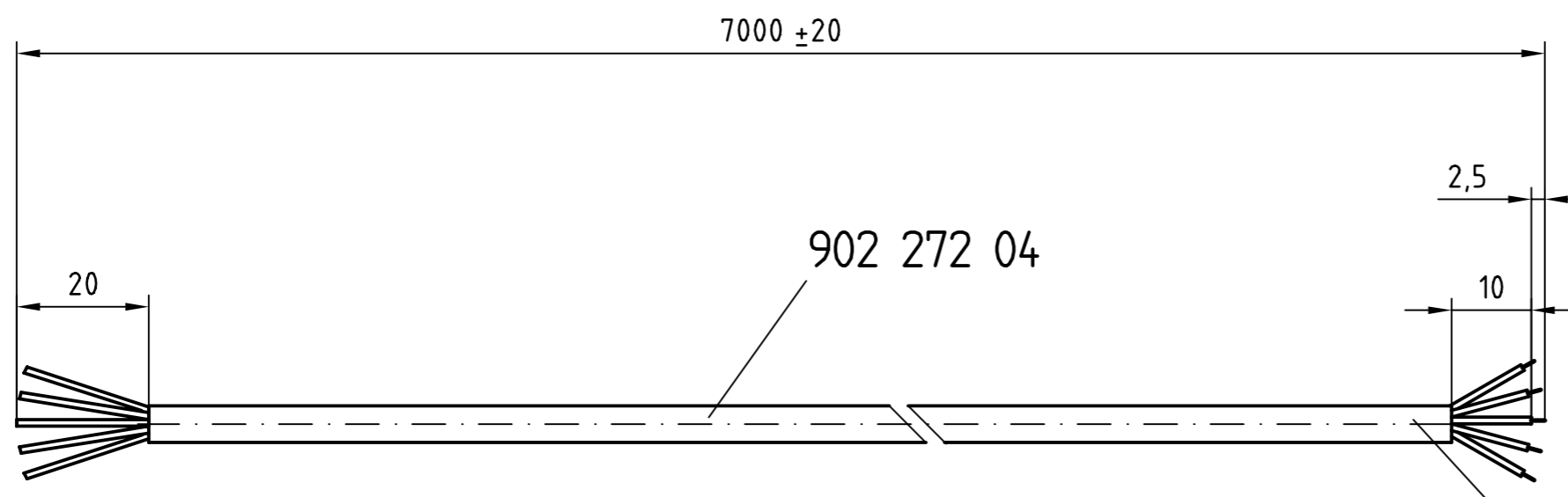
↑ WAVE

Marquette Hellige GmbH D-79007 Freiburg				38803280-D02_RP01 1 / 2	
REVISIONS				A04	
Revision-No	Index	Date/Name		43367261	
--	A	08.04.98/MNS		Date/Name	
065687	B	19.10.00/MSG	Drawn	08.04.98/MNS	
			Approved	08.04.98/MSG	
			Issued	M. Steinle	
				REF DWG	
				BATTERY MODULE	



433 672 61

Marquette Hellige GmbH 0-79007 Freiburg				38803280-D03 2 / 2	
REVISIONS				A04	
Revision-No	Index	Date/Name		43367261	
--	A	08.04.98/MNS		Date/Name	
--	B	15.05.98/MSG	Drawn	08.04.98/MNS	
065687	C	19.10.00/MSG	Approved	08.04.98/MSG	
			Issued	M. Steinle	
				REF DWG	
				BATTERY MODULE	



915 420 68  
 bei Montage 2x Führungsnut  
 beachten  
 Steckerkappe verklebt

223 428 01  
 Achtung ! Verdrahtungshinweis

Pin	Color	Signal
1	White	Defib Sync ECG
2	Black	Digital Ground
3	Red	Defib Sync Digital
4	Green	Marker Out
5	Broun	Analog Ground

927 229 49  
 auf Verpackung geklebt

beschriftet mit  
 Etikettendrucker

Verpackung siehe Stückliste

Werkstoff									
Rohteil									
Änd.-Index	kommt vor	Änd.Nr.	Änderungstext			Datum	Name		
Maßstab		Datum		Name		Sach-Nr.			
1:1		09.06.98		G.Kaltenbach		223 428 01			
Paßmaß		Geprüft		C.Spitznagel					
Oberfläche		Freimaßtoleranz		Format		Benennung			
ACAD-Nr. 22342801_ZM01		A3		Sync. Kabel Responder 1100					

Schutzvermerk nach DIN 34 beachten



CE 0459



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1 800 558 5120 (US only)  
Fax: +1 414 355 3790



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D-79111 Freiburg  
Germany  
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Fax: +49 761 45 43 - 233

Asia Headquarters:  
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No1 Huatuo Road,  
Zhangjiang Hi-Tech Park Pudong,  
Shanghai, P.R.China 201203  
Tel: +86 21 38777888  
Fax: +86 21 38777402

[www.gehealthcare.com](http://www.gehealthcare.com)

