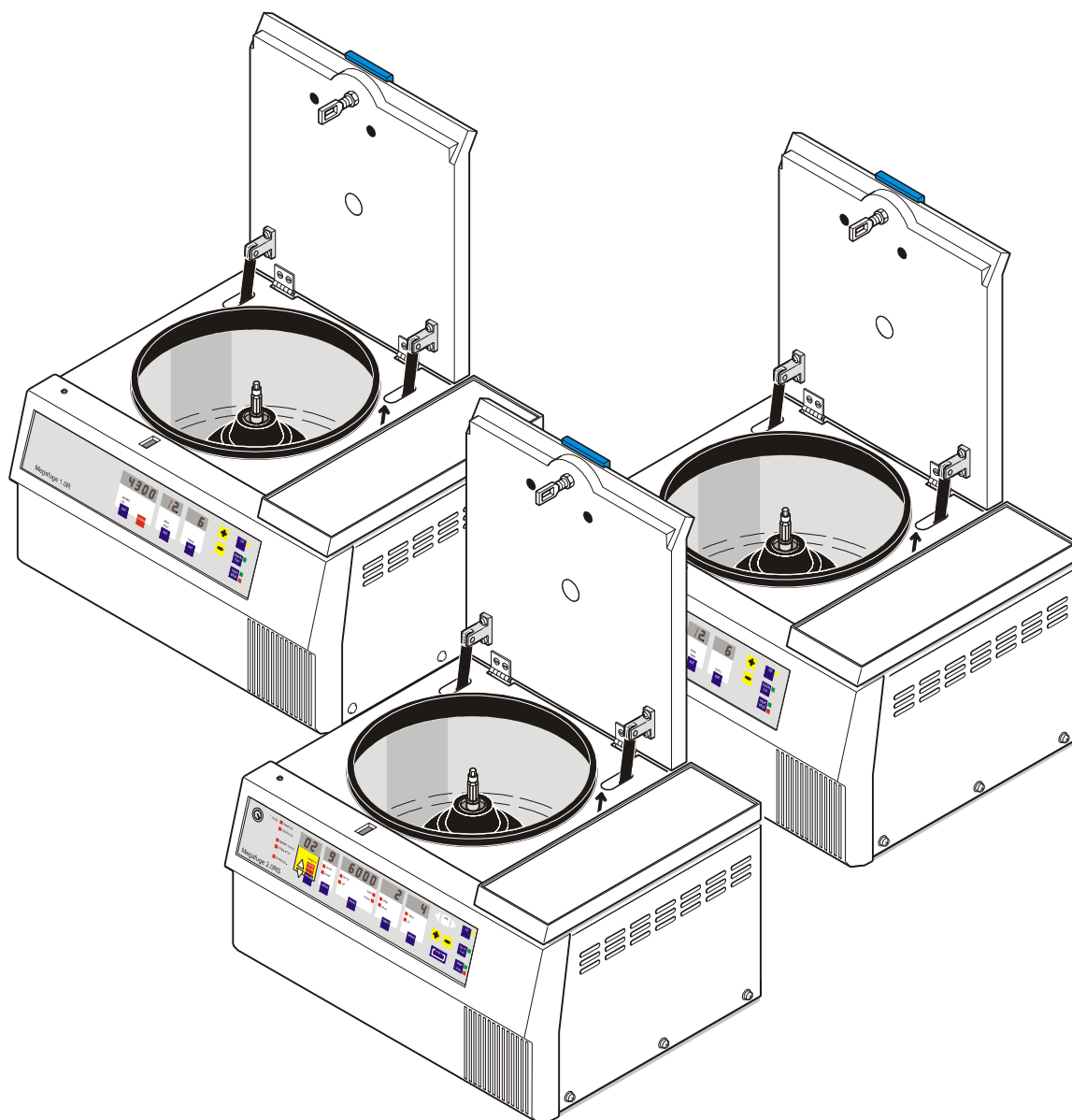

Service Manual



Megafuge 1.0R / 2.0R / 2.0RS

Cat.-No.: 75003061, 75003062, 75003082, 75003085, 75003083

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SERVICE

2.1 Servicing Schedule (Yearly Procedure)

2.1.1 Maintenance Routine without Dismantling the Centrifuge

2.1.1.1 Electrical Installation and Safety

- switch OFF the centrifuge and disconnect the unit from power
- check voltage supply and mains fusing (15 Amps slow blow characteristic)
- check condition of plug and wall socket - replace defective parts
- check cord condition and fixing - replace or refit it

2.1.1.2 Location and Mechanical Installation

- check the base (table, lorry with lockable wheels etc.) for resonance-free and stable conditions
- check for a well ventilated place and sufficient distances to walls or adjacent equipment
- check the levelling of the centrifuge - use a spirit level

2.1.1.3 Lid Locking Mechanism and Safety Device

- connect the centrifuge to power and switch ON
- check for easy lid closing and self-acting lid opening - if in disorder, readjust lid looped hook and/or hinges and smear hook slightly with grease
- open the lid and turn the rotor by hand, then close the lid and try to open it using the lid key: the lid must not be opened as long as the speed values (> 10 rpm) are indicated - if safety circuit is out of function, replace main board (see section 5)

2.1.1.4 Cleanliness of Spin Chamber and Motor Cover

- open the lid and remove the rotor (for loosening turn in arrow direction - see rim of rotor chamber)
- clean the spin chamber with a dry and absorbent cloth (remove all dust and moisture - see also 2.5 Cleaning)
- check the correct seat and condition of the motor cover and take care of the cleanliness
- of the annular slot around the motor shaft: penetrating fluids can damage the upper motor bearing

2.1.1.5 Rotor and Bucket Condition and Sealing

- check the condition of rotor and buckets (especially all supporting or stressed partitions
- as jib arms, rim of bearing surface etc.): the rotor and/or buckets must not be used any longer, if there are visible traces of mechanical damage or rust
- check the condition of rotor and/or bucket sealing and replace in case of malfunction

2.1.1.6 Rotor Fixing and Motor Shaft

- check the trouble-proof condition and clamping mechanism of the collet chuck (see operating instructions section 10) and replace it in case of malfunction
- check the condition of the drive motor shaft: the centrifuge must not be used any longer,
- if the drive shaft is damaged (bend, thread is worn out, horizontal grooves etc.)

2.1.1.7 Temperature Control Circuit

- check the thermal isolated fixing of the temperature sensor, reinstall the rotor and
- run the centrifuge at the half of the maximum rotor speed and at 4°C
- check the temperature 15 minutes later (30 minutes, when using a sealed rotor): the displayed and measured value should be approximately the same (tolerances $\pm 2^\circ$)

2.1.2 Maintenance Routine after Dismantling the Centrifuge Casing (see Section 5)

2.1.1.2 Motor Supporting Elements

- check the supporting and damping motor elements and replace them at least every 3 years (for replacement see section 5.4)

2.1.2.2 Imbalance Switch

- check the function of the imbalance switch and if necessary readjust it (adjusting procedure see 2.4)

2.1.2.3 Braking Circuit

- check the function of the braking circuit (warming up of brake resistor, even and noiseless brake effect) and replace defective parts in case of malfunction

2.1.2.4 Ventilation and Proper Air Flow

- check the function of all fans (parallel cut in and out) and the air flow direction (to motor and condenser from outside)
- check the condenser vents and if necessary clean them (see 2.5)

2.1.2.5 Lead and Screwing Connections

- check the terminal and plug connections of leads on all boards and electrical components and replace defective parts
- check the screwing connections of boards, mechanical and electrical components and re-tighten them if necessary

2.1.2.6 Protection Earth Core and Grounding Connections

- check the protection earth core for continuity and all grounding plug connectors (see also 2.6 Electrical Safety Check)
- check isolation resistance and leakage current (see 2.6)

2.2 Trouble Shooting

Error Indication	Error Cause	Possible Error Source	Corrective Procedure
"Lid" message alternates with speed values Megafuge 2.0RS "check lid" LED flashes, interval sound	Lid opened mechanically during run FORBIDDEN!	Mechanical emergency lid opening must only be used at standstill	close lid immediately, switch mains OFF/ON, press start to continue run, press stop to finish run
	circuit for lid switches and motor over-temperature switch is interrupted during run	id switches or leads are interrupted	check leads to the lid switches, if a micro switch is faulty, change lid lock assembly
		motor over temperature switch has tripped	after cooling down check temperature switch with ohmmeter
			check terminal connection XM and motor windings - approx. 5 Ohm between conductors - replace defective parts
"OPEN" message by supposedly closed lid Megafuge 2.0RS "check lid" LED on	circuit for lid switches and motor over - temperature switch is interrupted at standstill	leads to lid switches interrupted or a defective lid switch	check leads to the lid switches, if a micro switch is faulty - replace lid lock assembly
		leads to motor over-temperature switch are interrupted	check motor overtemperature switch and leads for continuity, replace faulty parts
"bAL" message alternates with speed values Megafuge 2.0RS "imbalance" LED on, interval sound	imbalance circuit has released	rotor not symmetrically loaded	open lid, check load, close lid again and start
		faulty imbalance sensor	check sensor with ohmmeter and replace if faulty
		faulty imbalance circuit	replace defective parts
*) by Megafuge 2.0RS additional system check and interval sound			

Trouble Shooting

Error Indication	Error Cause	Possible Error Source	Corrective Procedure
E-00 Flashes Megafuge 2.0RS „system check“ LED on, interval sound	Rotor didn't turn	rotor is jammed	check for easy movement, remove any jamming objects
		motor is jammed	remove drive, replace faulty parts
	faulty speed measuring easy check: power ON, open lid, turn rotor by hand and close lid - speed values should now be indicated	faulty plug or lead connections or faulty speed detection board	check plug contacts and leads - measure speed detection signal on XW1, XW3 - replace faulty parts
		faulty processing circuit on main board	replace main board
	motor didn't start	Connection: drive – main board	Check terminal and lead connection
		Defective drive	Check resistance of motor windings, replace faulty parts
		Faulty main board	Replace main board
E-02 *) flashes	Program sequence disturbed	bad ground connection	check all ground connections, tighten loose screws
E-03 *) flashes	speed measuring disturbed during run	See E-00	wait until rotor has come to standstill, then see E00
E-04 *) Flashes	faulty temperature measuring test: PT100 substitution by resistors, indication after power ON	faulty temperature sensor (PT100) or leads	check plug connection and resistance of PT100, replace faulty sensor
		effective amplifier or converter	watch the display: 100R -> (0+/-2)°C 120R-> (50+/-2)°C
E-06 *)	data lines to keyboard disturbed during operation	faulty plug contact or connecting leads	replace plug contacts or connecting leads
		faulty tracks or components	change key and indication board or main board
*) by Megafuge 2.0RS additional system check and interval sound			

Trouble Shooting

Error Indication	Error Cause	Possible Error Source	Corrective Procedure
E-07 see also operating instructions (sect. 1-11) Megafuge 2.0RS "overtemp." LED on, interval sound	chamber overtemperature indication value > 50°C during longer operation: rotor coasts to standstill without braking, cooling unit operates continuously	compressor didn't work	check voltage supply, leads, relay and compressor, replace defective parts
		loss of refrigerant	search for leakage, evacuate and refill with new refrigerant
		If ΔT is programmed: cooling power limit is reached (see Rotor Tables)	Repeat run with reduced speed
		No ΔT is programmed: defective cooling unit	search for leakage, evacuate and refill with new refrigerant
			Compressor didn't work
E-10 *)	program sequence disturbed	NV-RAM not initialised	insert the correct NV-RAM -see page 5-6
E-12 *)	temperature signal disturbed	See E-04	See E-04
E-15 *)	program sequence disturbed	reading error of NV-RAM (checksum)	if error indication occurs repeatedly change NV-RAM
E-17 *)	micro switches didn't open after pressing lid key	faulty leads or micro switches	replace defective parts
		defective lid lock	change lid lock
E-18 (see also sect. 1 –operating instructions chapt. 11)	operators error set rotor #1379:	false rotor type is installed	change rotor setting or install the true rotor #1379
		speed < 600 rpm	set the speed > 500 rpm
		low acceleration is not allowed for #1379	press brake key to switch over for high acceleration (red LED on)
E-19 *)	checksum error of NV-RAM (incorrect data)	false key board	connect the right key board
		false NV-RAM	place the right NV-RAM, watch the identification No.
*) by Megafuge 2.0RS additional system check and interval sound			

Trouble Shooting

Error Indication	Error Cause	Possible Error Source	Corrective Procedure
Displays remain dark	no mains voltage supply	mains fuse or circuit breaker failed	check fuse or circuit breaker and if necessary switch on again
		mains cord or switch or step-up transformer defective	check leads and switch and transformer, replace defective parts
		unit fuse or fuses on main board defective	replace fuse, if fuse blows again – disconnect electrical components and search for other faults
	no low voltage supply for key board	faulty connection from main board to key board	check plug connections on main and key board, check connecting leads – replace faulty parts
		defective key board	replace keyboard
		faulty main board	replace main board
	interrupted program	NV-RAM out of socket	insert the correct NV-RAM (see 3.2.2)
All displays elements are shortly illuminated	processor reset caused by electromagnetic disturbance	reduced voltage supply (< 105V)	if the voltage supply drops often, use a special transformer
		Defective compressor relay or RC-combination	check compressor relay K0 and RC-combination, replace faulty parts
		bad or missing ground connection	check all ground connections and screwing of main board
drive makes noises - no good centrifugation results	mechanical	wear out of motor rubber mounts	replace motor rubber mounts (damping elements)
		motor bearing	replace motor
	electrical	defective terminal connection or faulty lead or motor winding	Check voltage on motor terminal (see test points on main board), replace defective parts
		defective circuit	replace main board
drive accelerates but doesn't brake normally – noisy braking	faulty brake circuit	defective lead or brake resistor	check connection and leads and brake resistor 150R, replace faulty parts
		defective brake control circuit	change main board
*) by Megafuge 2.0RS additional system check and interval sound			

2.3 Test Points on Main Board

Test Points	Unit Value	Condition
mains terminal on power board	120 V AC (-10%,+15%)	all given values refer to 120V
terminal XM motor voltage measured inter 2 motor leads –voltage values must be the same between all 3 motor leads after the selected speed is reached and stopped time for power acceleration up to maximum rotor speed and braked deceleration up to the release of the LED for the lid key	70 V AC 165 V AC 245 V AC	sealed rotor #3360 1,000 rpm 3,000 rpm 6,000 rpm, acc. time: 95s, dec time: 100s
	165 V AC 230 V AC 250 V AC	Fixed angle rotor #1379 3,000 rpm 6,000 rpm 15,000 rpm, acc. time: 14s, dec time: 30s
	75 V AC 140 V AC 220 V AC	Megafuge 2.0RS Swing out rotor #8155 with bucket #8160 1,000 rpm 3,000 rpm 6,000 rpm, acc. time: 95s, dec time: 100s
motor current cable 1 cable 2 cable 3	1.7 A 1.7 A 1.7 A	soft iron, moving-iron or digital effective current measuring instrument sealed rotor #3360 set speed = 6,000 rpm
motor current cable 1 cable 2 cable 3	1.0 A 1.0 A 1.0 A	fixed angle rotor #1379 set speed = 15,000 rpm
motor current cable 1 cable 2 cable 3	1.9 A 1.9 A 1.9 A	Megafuge 2.0RS Swing out rotor #8155 with bucket #8160 set speed = 4,000 rpm
intermediate circuit voltage U_D inter PWM+ (cathode of free running diode V07, next to terminal XD) and PWM- (current control resistor R18)	330 V DC 310 V DC	at standstill during braking phase
	290 V DC 260 V DC	sealed rotor #3360 6,000 rpm shortly by max. acceleration
	305 V DC 270 V DC	fixed angle rotor #1379 set speed = 15,000 rpm shortly by max. acceleration
	300 V DC 290 V DC	Megafuge 2.0RS Swing out rotor #8155 with bucket #8160 set speed = 4,000 rpm shortly by max. acceleration

Test Points on Main Board

Test Points	Unit Value	Condition
current of intermediate circuit through control resistor R18 measured as voltage drop: $U = I \times R$	125 mV DC 400 mV DC -100 mV DC	sealed rotor #3360 set speed = 6,000 rpm shortly by max. acceleration shortly during braking phase
	105 mV DC 210 mV DC -12 mV DC	sealed rotor #1379 set speed = 15,000 rpm shortly by max. acceleration shortly during braking phase
	145 mV DC 230 mV DC -30 mV DC	Megafuge 2.0RS Swing out rotor #8155 with bucket #8160 set speed = 4,000 rpm shortly by max. acceleration shortly during braking phase
motor winding resistance inter 1 -> 2, 2 -> 3 and 1 -> 3	4.8 Ohm	motor temperature: 20°C
plug XD resistance of brake resistor	150 Ohm	resistor temperature: 20°C
plug XE imbalance switch –voltage drop inter pin 1 and 4	6,5 V DC 12,0V DC 0 V DC 12,0 V DC	Plug inserted Plug removed switch connected (plug inserted) if lead is interrupted
plug XW speed detection - voltage drop inter pin 3 and 1 inter pin 3 and 2	12,2 V DC 1,3 V DC 1,3 V DC 10,9 V DC	Plug removed Diode voltage (plug reinserted) Transistor is cut in (slot position) Transistor is cut out
terminal XG resistance of compressor wiring connection between C + R between C + S between R + S	1,1 Ohms 4,1 Ohms 5,2 Ohms	compressor temperature: 20°C
terminal XC resistance of lid solenoid	60 Ohms	not activated
plug XF voltage drop on PT 100	96 mV DC	20°C temperature indication
plug XA micro switches for lid locking	33 V DC	by open lid
terminal XB motor over temp. switch	33 V DC	by closed lid and one disconnected lead

2.4 Adjustment of Imbalance Switch

2.4.1 Meaning of Imbalance Switch

- The imbalance switch has the task to switch off the centrifuge by incorrect loading of the rotor before reaching the normal speed.
- The imbalance detector is a mechanical distance switch and reacts by passing the critical speed range (600-1000 rpm).
- The amplitude of the oscillation depends on weight and position of the imbalance, the rotor etc. For this reason no single weight can be specified to adjust the imbalance switch.

2.4.2 Adjusting Procedure

Tools and accessories:

- Sealed rotor #3360 with all buckets and counterweights (can be used for both Megafuges) check weights: 10g + 30g
- Megafuge 1.0R: swing-out rotor #2705 with 4 buckets #2252
check weights: 10g + 50g
- Megafuge 2.0R: swing-out rotor #8155 with 4 buckets #8160
check weights: 10g + 50g

Ohmmeter

- Remove the front and back panel (see section 5.1). If there is no access to the unit's back panel place a piece of paper under the left back foot and turn the centrifuge over this point at an angle of 90°.
- Install the sealed rotor #3360 or the respective swing-out rotor #2705/#8155 with buckets #2252/#8160.
- remove plug XE from main board 6. Connect Ohmmeter to plug XE of the imbalance switch.
- Turn in the adjustment screw of the imbalance distance switch so far that the Ohmmeter starts to respond. Then turn back the screw for one revolution to complete the preadjusting procedure.
- Reinsert plugs XE and XI and reconnect the unit to power.

2.4.3. Test Run Performance

- Load one bucket with the check weight of 30g (50g when using the swing-out rotor).
- Close the lid, select the fast acceleration using the brake key and then press the start key.
- The imbalance message "bal" should appear before the rotor reaches 1000 rpm.
- If no imbalance signal occurs, correct the adjustment. Exchange now the 30g/50g weight by an 10g weight and repeat the procedure.
- The rotor must reach the max. programmed speed without imbalance signal.

2.5 Cleaning of Instrument Parts

ATTENTION - WARNING!

The electrical and electronic components must not be cleaned with moist detergents!

For Cleaning the centrifuge housing or its accessories see Operating Instructions section 1 (maintenance and care).

Electronic components

Clean dusty components carefully with a dry and soft brush and remove loose dust with a vacuum cleaner.

Fans

Scratch off carefully with a knife or similar tool the crusted dirt from the fan's blades. Resulting grooves or marks must be removed subsequently with a fine abrasive cloth. Loose dirt is to remove with an absorbent cloth or vacuum cleaner.

Vent holes

Remove dirt from the vent holes all over the centrifuge's casing by using a brush and vacuum cleaner.

Condensers of cooling plant

The louvers between the condenser's heat air deflectors have to be vacuum cleaned. In case of persistent dirt the unit must be carried to an appropriate place where the condenser can be cleaned with compressed air from inside to outside. Bent heat air deflectors have to be realigned correctly

Model Specific Details

Optical

Key pad foil, identification plate, swing-out rotor types for different capacities

Megafuge 1.0R: lateral white caps (223 see 6-2)

Megafuge 2.0R: lateral screws (221) and washers (222)

Mechanical

ATTENTION! The Megafuge 2.0R is equipped with an additional metal bottom plate (235) to withstand the kinetic energy in case of a rotor crash.

Electrical

CPU (control specific data) and NV-RAM (rotor specific data - see also 3.2.3)

2.7

Electrical Safety Check

ATTENTION!

A final electrical safety check must be performed after each maintenance and/or repair!

1) Resistance check of protective conductor

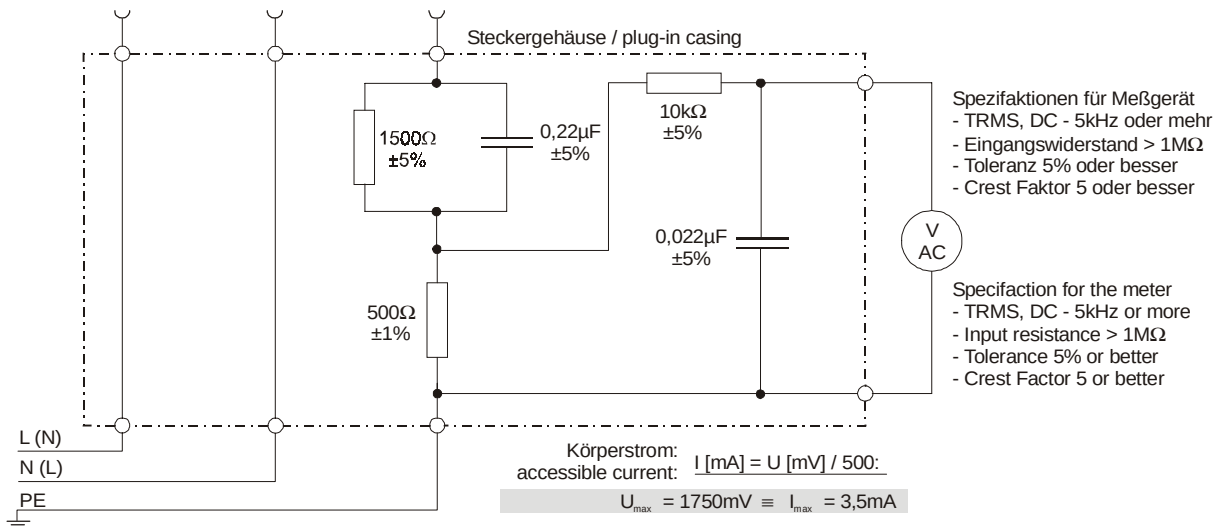
The measuring value of the resistance between the mains plug's earth pin and the earth conductors of the motor, compressor, electronic and swivel chassis and the casing must not exceed 200 mΩ.

2) Insulation resistance Check

Check also the insulation resistance between the poles of the mains plug and the earth conductor; the resistance value must be more than 2 MΩ.

3) Accessible current measured to EN 61 010

The accessible current must not exceed 3.5 mAmps in single fault condition (interrupted protection earth wire)! In accordance with the EN61010, IEC1010 and UL3101 such a fault condition can be reproduced by the following measuring circuit.



3.1 Block Functions

The Megafuge 1.0R/2.0R/2.0RS are microprocessor controlled laboratory tabletop centrifuges with induction drive motor.

Following boards and components are located inside of the unit (see block diagram page 4-1):

- Mains switch, compressor power relay K0 and unit fuse
- Main board with central processor and 2 fuses for board protection
- Indication board with key and display processor
- Three phase induction drive motor with an integrated thermal overtemperature switch (cut-out at 140°C).
- Speed detection board is mounted underneath the drive motor
- Imbalance switch with adjustable distance screw directed to the isolated contact plate
- which is mounted onto the drive motor
- Lid lock assembly with solenoid and 2 integrated micro switches
- Brake resistor mounted on a heat protection plate
- Temperature Sensor PT100 is fixed thermally isolated with a plastic clip onto a distance bushing inside the spin chamber
- Refrigeration unit (one phase induction drive motor with starting and running capacitor - controlled by a starting relay)
- Fans for cooling the motor / electronic components and the condenser of cooling unit

3.2 Main Board Functions

The main board is mounted on a metal plate behind the front panel. The components on main board are arranged in following groups (see wiring diagram page 4-2 and 4-3)

- Board fusing (2x 15 Amps.)
- Mains voltage supply for compressor control relay K1 which activates power relay K0
- Noise Filter for suppression of radio interference, caused by the fast switching power electronics (10 kHz), in accordance with the German Regulation VDE 871, grade B.
- Power pack for 3 different low voltage levels and integrated protection circuit
- Triac control circuit for lid solenoid (release magnet)
- Mains rectifier for DC intermediate circuit supplying brake control path and frequency converter
- Micro controller (central processor unit) with circuits of imbalance and speed detection and temperature control

3.2.1 Power Pack

The power pack consists of a transformer with 2 different secondary coils, each connected to bridge rectifiers and voltage regulators for the following low voltage levels:

- 1) U1 = 5V: supplies central processor, key and indication board and circuit for temperature measuring
reference potential A1: protective conductor (GND)
- 2) U2 = 12V: supplies the circuits of speed measuring and imbalance detection
reference potential A2
- U3 = 15V: stabilized - for the protection circuit: lid open, motor overtemperature and for control electronics of frequency converter
reference potential A3! mains potential!
EXERCISE CAUTION when measuring etc

Main Board Functions

3.2.2 Intermediate Circuit with Brake Chopper and Frequency Converter

The DC intermediate circuit serves as an energy store between the AC power input and the transmitted motor performance.

The intermediate circuit consists of a mains rectifier and two connected reservoir capacitors which are softly charged, continuously supplied during operation and slowly discharged after power off.

Brake Chopper

Electrical power is fed back into the intermediate circuit during motor deceleration (motor acts as generator).

This braking power is transformed into heat by brake resistor R1 (terminal XD) so that the intermediate circuit voltage does not rise to an excessive level (level remains approximately constant see test points on main board).

The brake resistor R1 is switched into the intermediate circuit by a fast switching (chopping) transistor. This transistor is controlled by the CPU via optical coupler stage.

Frequency Converter

The motor is provided 3-phased with chopped direct voltage blocks. These blocks are variable in frequency and pulse width modulation and are dephased to 120° between the motor windings.

Beginning with low frequency and small pulse width chopped blocks, both parameters will be increased up to the operators set speed. By this variation the acceleration power of the drive motor can be effected.

For deceleration the frequency and pulse width parameters will be reduced.

The frequency converter is protected against over current and over voltage.

3.2.3 Micro Controller (Central Processing Unit)

The controller block includes the central processor unit (CPU) 87C51FB and the data storage (NV-RAM) 9366 with the software identification No. for:

- | | |
|--|---------------------------------|
| ◆ CPU: 0491 (second displayed No. in speed field) | MEGAFUGE 1.0R/2.0R/2.0RS |
| ◆ RAM: 3009 (third displayed No. in speed field) | MEGAFUGE 1.0R |
| ◆ RAM: 3011 (third displayed No. in speed field) | MEGAFUGE 2.0R |
| ◆ RAM: 3011/3012 (third/fourth No. in speed field) | MEGAFUGE 2.0RS |

The second parts of these No.'s (displayed in the time field) will be upgraded if necessary.

The ROM with control program is integrated in the CPU. The most important operating parameters (e.g. the maximum data or the last operator settings) are stored in the NV-RAM.

3.3 Key and Indication Board

The key and indication board is mounted behind the front panel. A special micro controller is located on this board controlling the 7-segment displays, the control key LED's and the operating keys (see Component Plan. SZ - 1456 and 1456 - page 4-7 + 4-8). The communication with the central processor on the main board takes place via serial data lines in both directions (plug XI).

3.4 Speed Detection Board

The speed detection takes place opto-electronically through a slit in the motor shaft. A light-emitting infra-red diode and a photo-transistor are mounted on the speed detection board and located on opposing sides of the motor shaft (see page 4-9).

So 2 pulses per motor revolution are generated, by which the micro controller calculates the real rotor speed or rcf value. The speed detection board is connected to the main board via the 3-pin plug XW.

3.5 Cooling Unit with Capillary Injection

3.5.1 Refrigerant

- Type R134a
- Amount 350 g

3.5.2 Functional Description

The cooling unit consists of following components:

- Compressor power relay K0
- Starting relay with starting and running capacitor
- Compressor with connection box for starting relay
- Condenser (with radial fan)
- Drier cartridge and capillary tube
- Evaporator coil integrated in the armoured spin chamber

Temperature Control

The set temperature range is defined from 0°C to 40°C. In dependence of the set values of rotor and temperature and the real speed value the CPU calculates the correct temperature level inside the closed spin chamber.

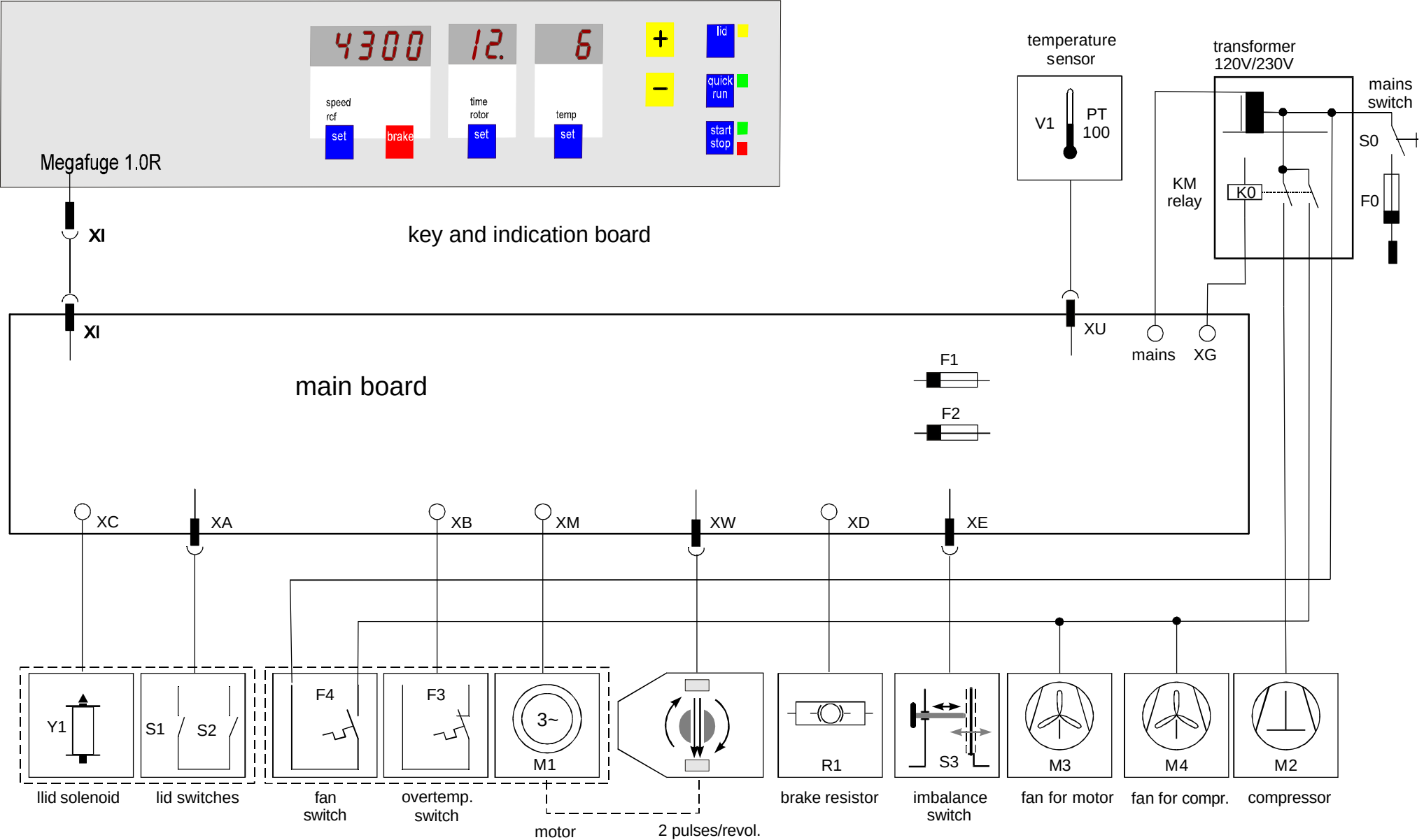
When the correct temperature level is reached, the CPU controls it by switching the compressor with aid of an additional relay K1 (mounted on main board) ON and OFF. K1 cuts in power relay K0 which energises the starting relay of the Compressor and the fan for condenser.

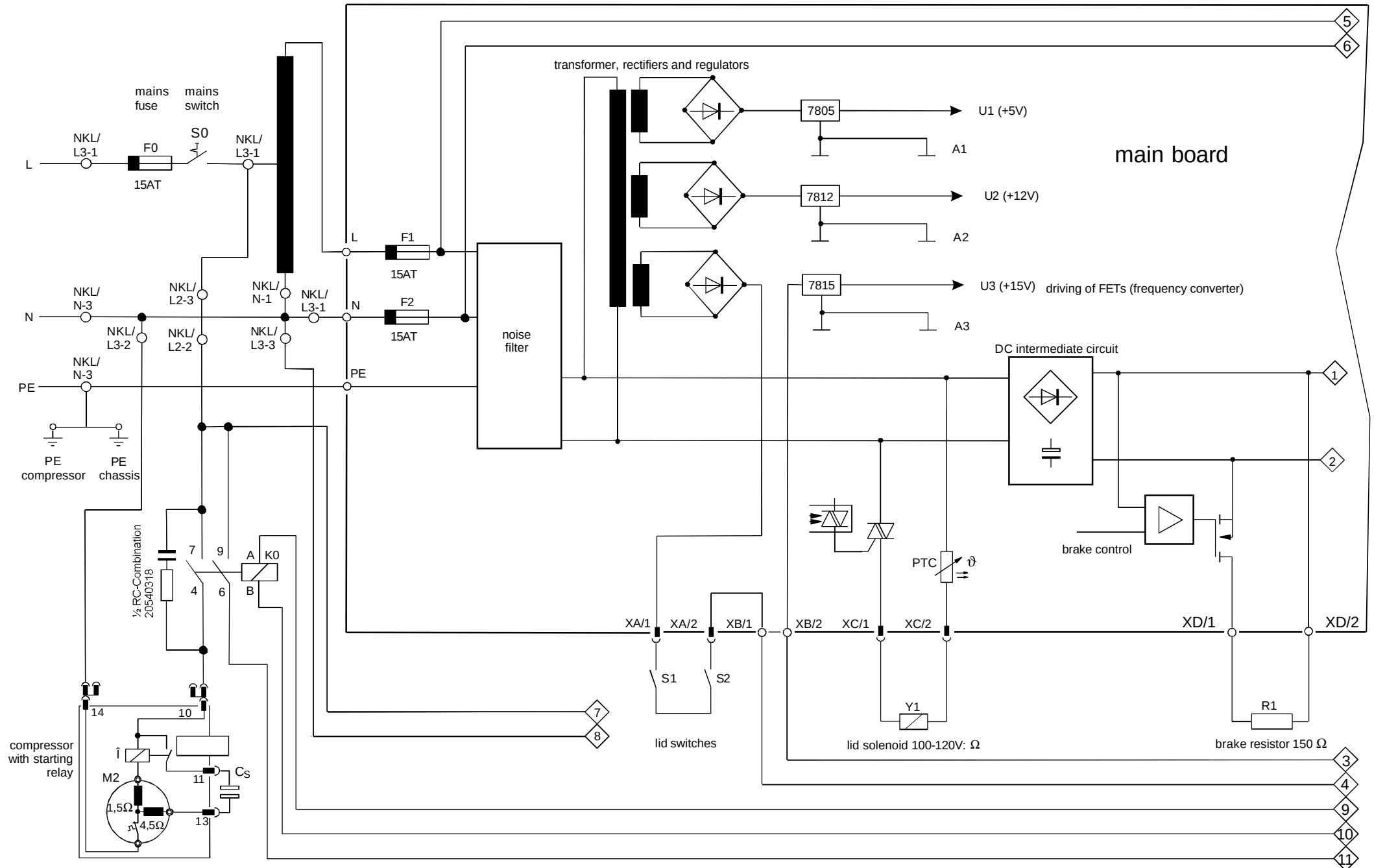
The shortest compressor cut-out phase is 60 sec.

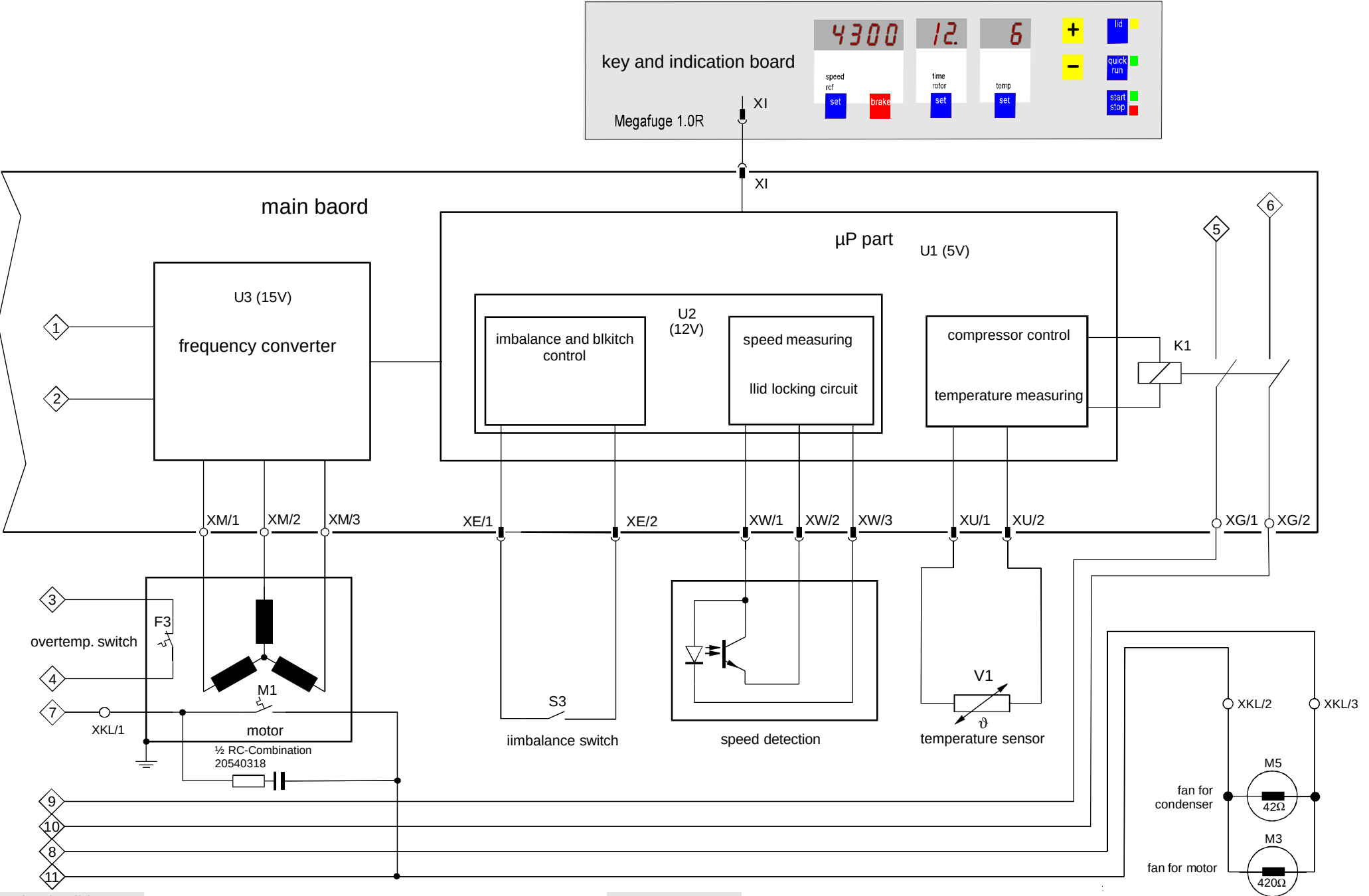
After the end of the pretempering phase (see section 1 - operating instructions - chapter 9) the indicated temperature is approx. the same as the temperature of rotor, buckets and accessories (allowed tolerances $\pm 2^\circ$).

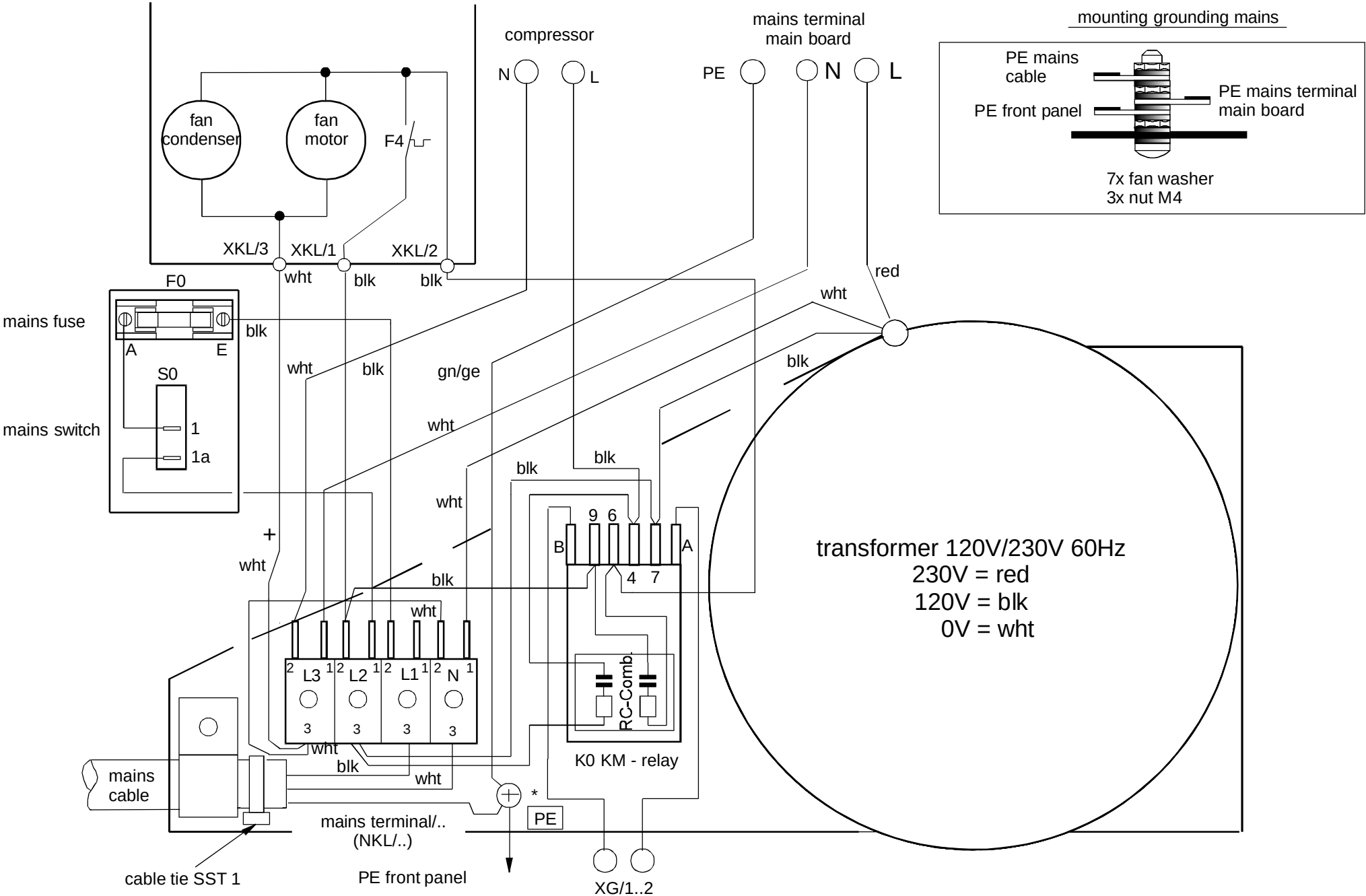
Cooling System

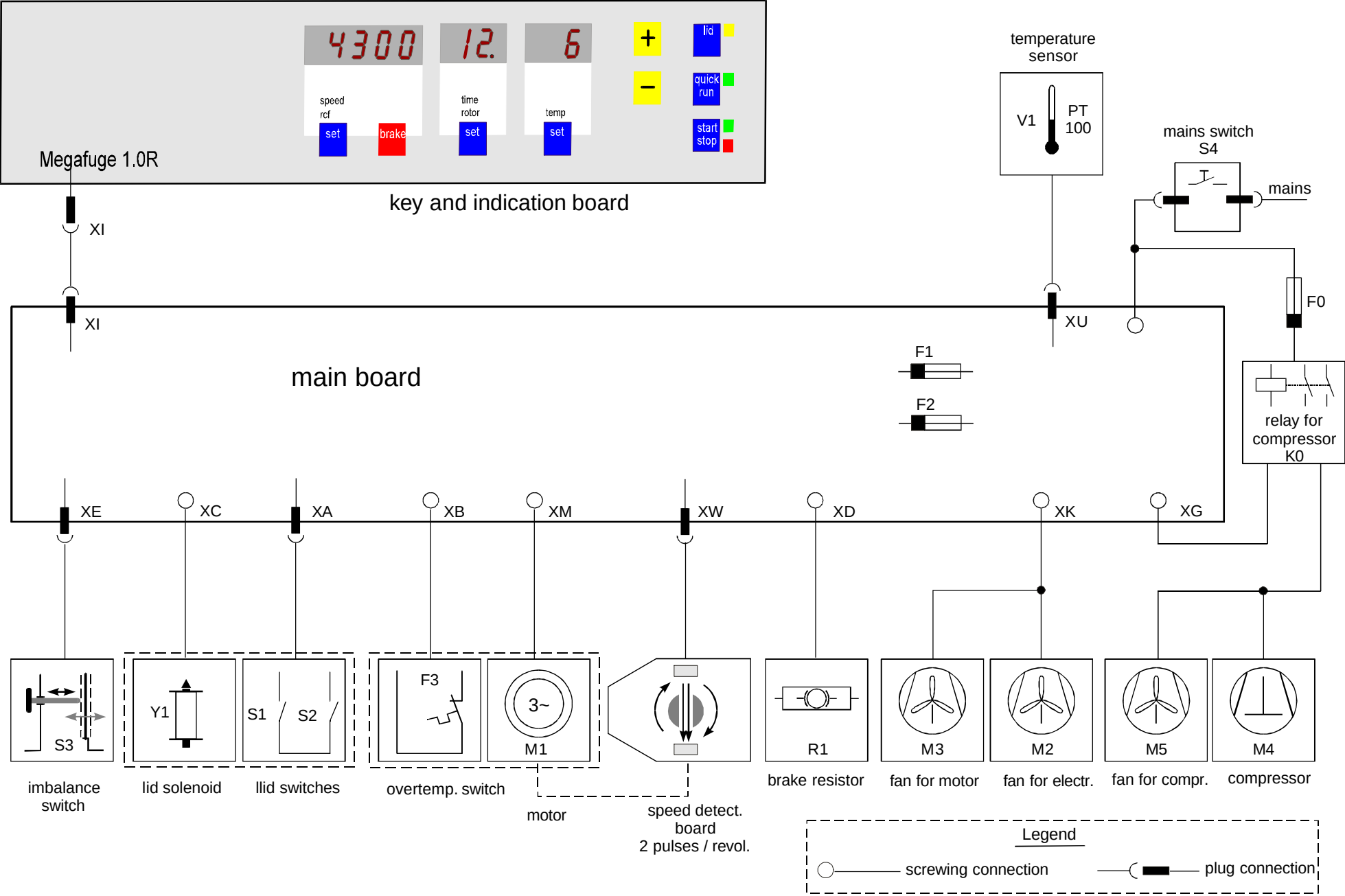
The evaporator absorbs the heat energy from the rotor chamber, the condenser emits the heat energy subsequently via the casing louvers to the room (tangible heat flow). The expansion part (capillary tubes) provides the necessary pressure drop and supplies the evaporator spiral tube with liquid refrigerant.

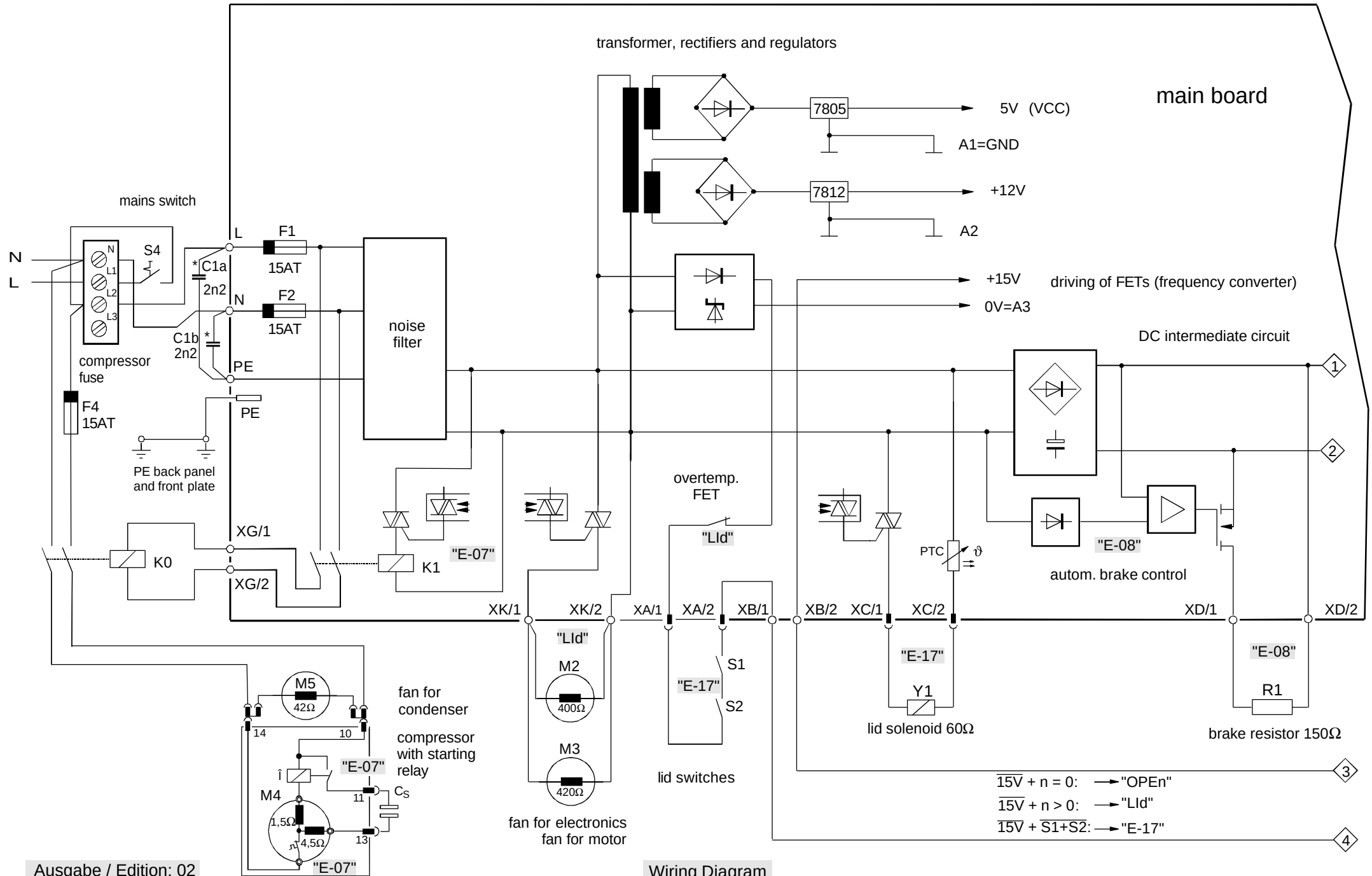


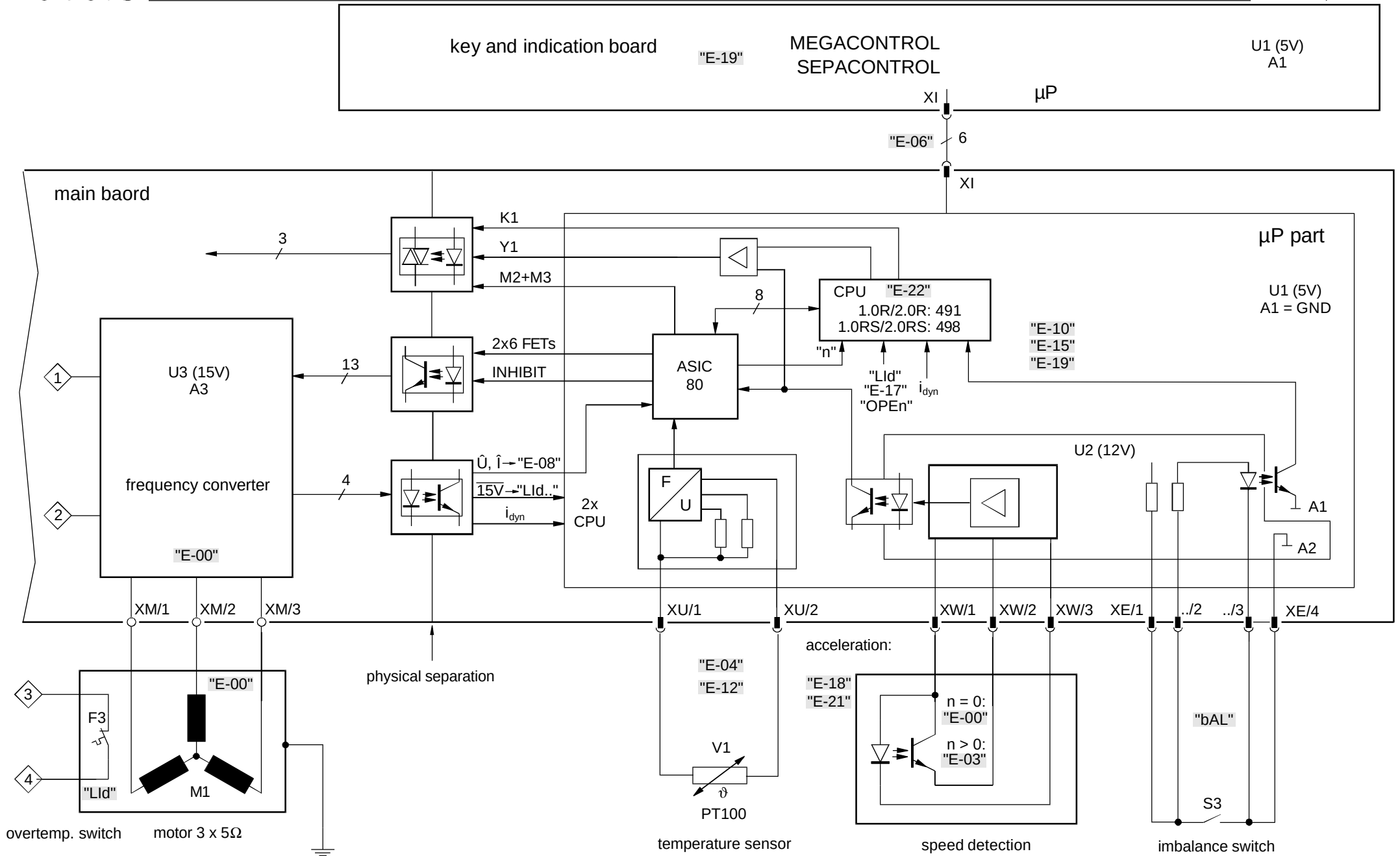


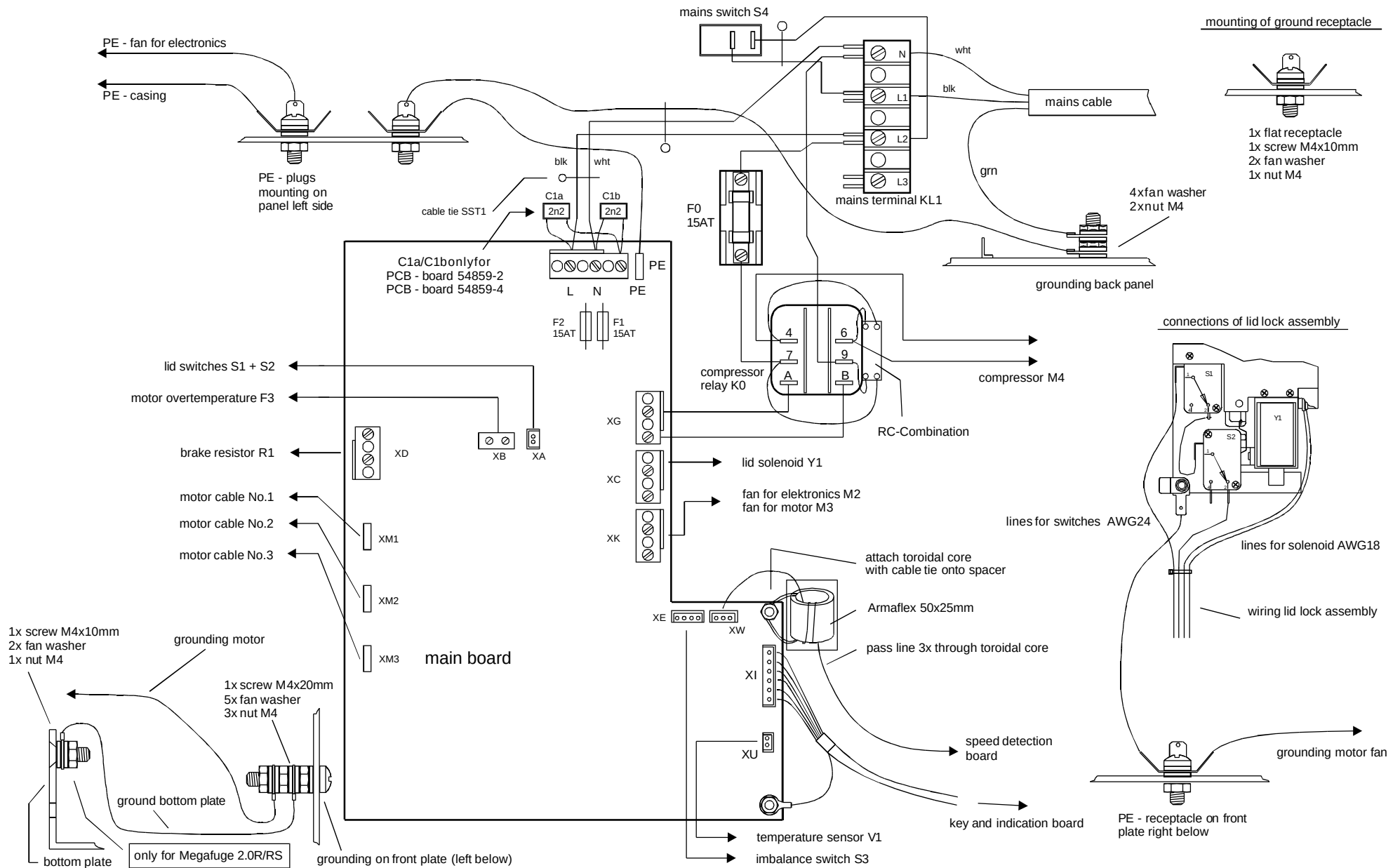


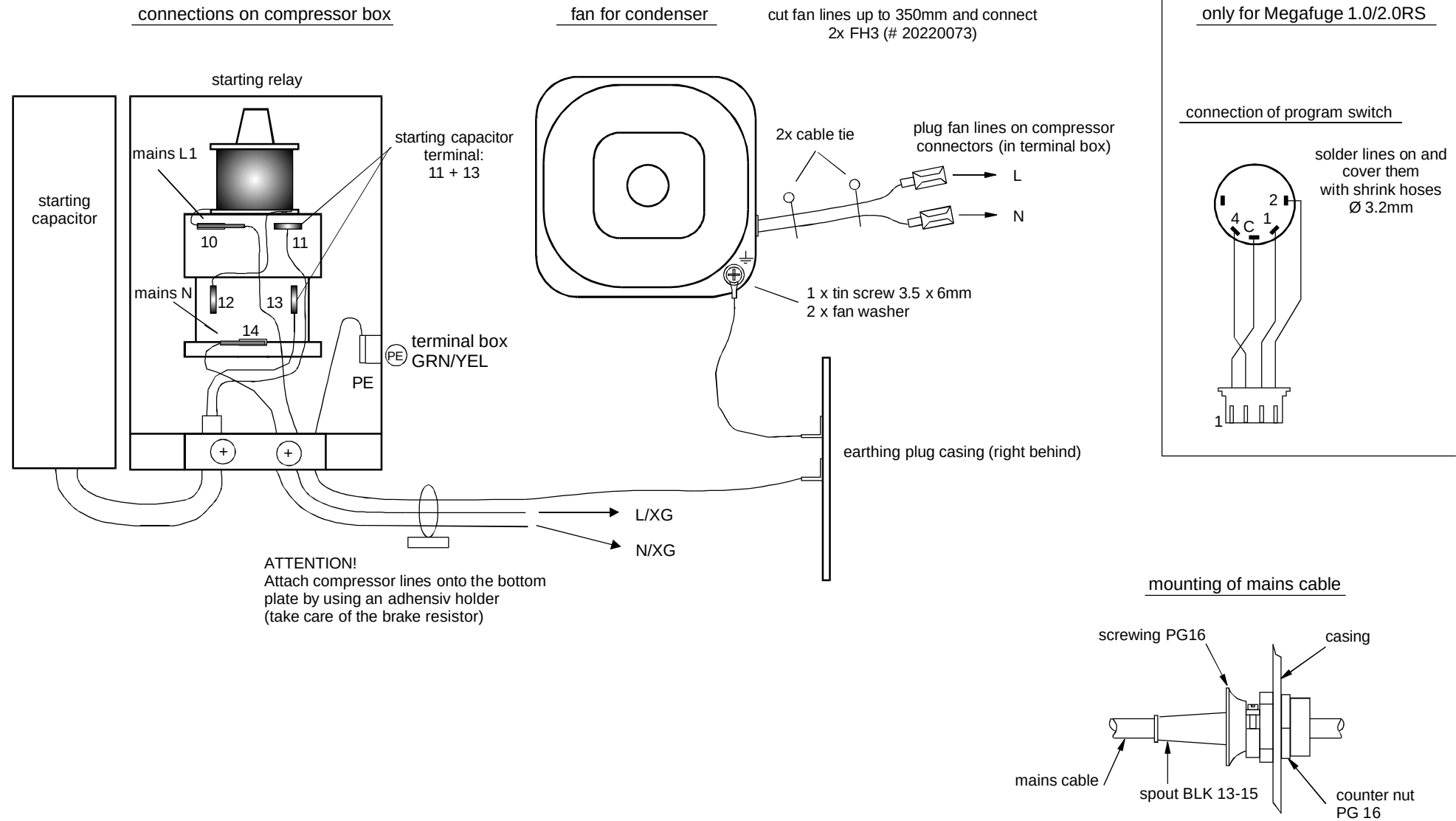


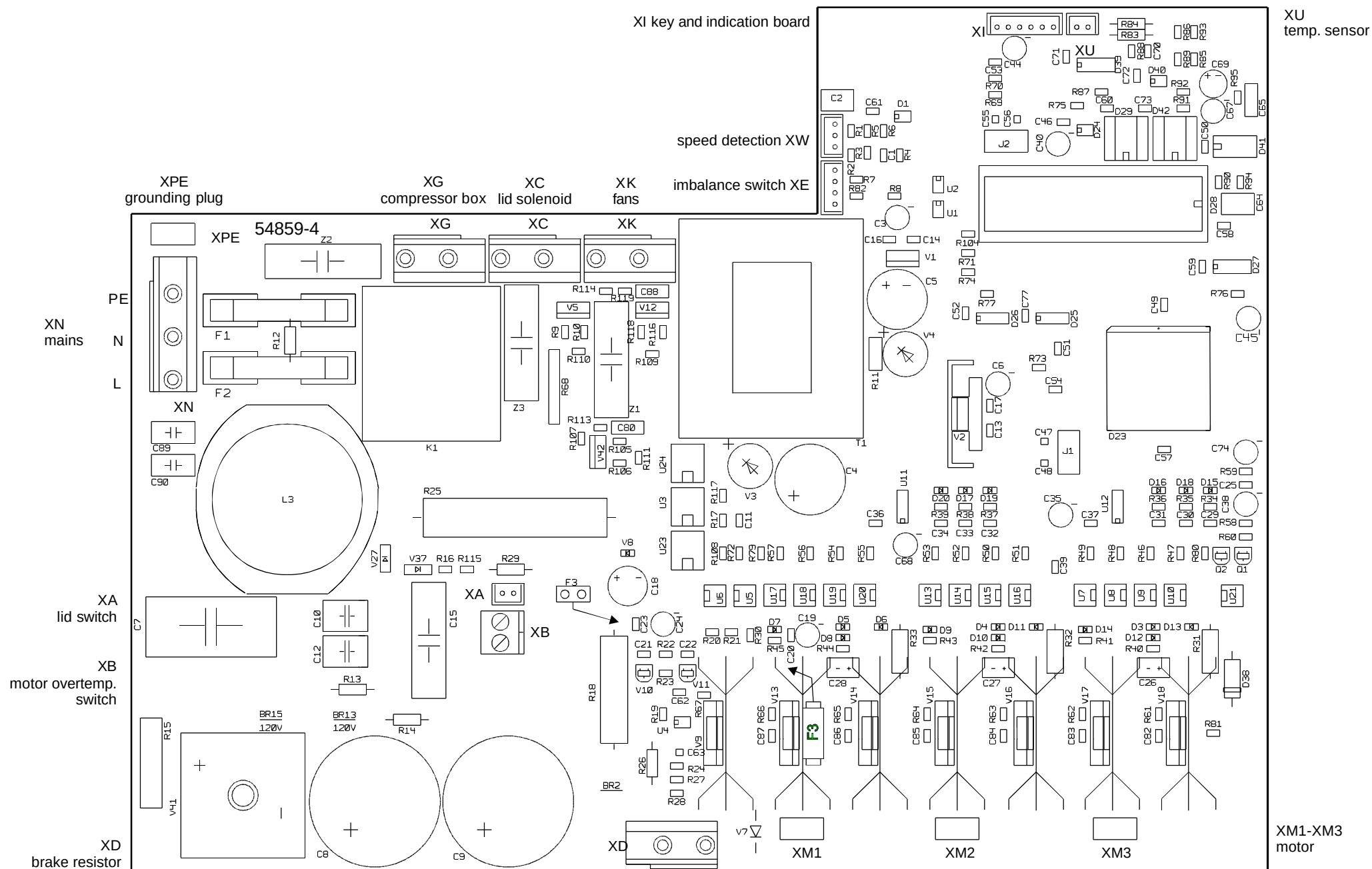


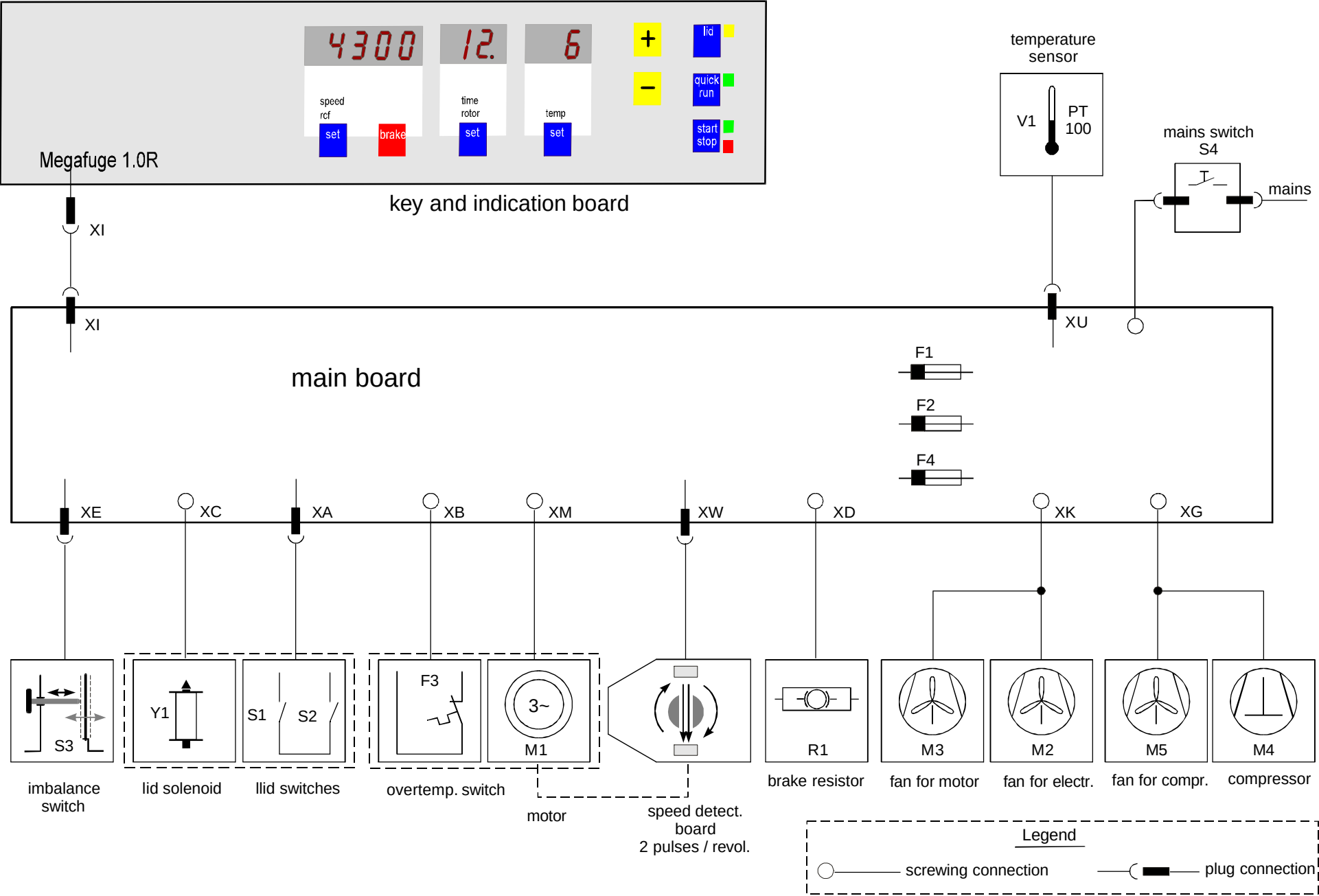


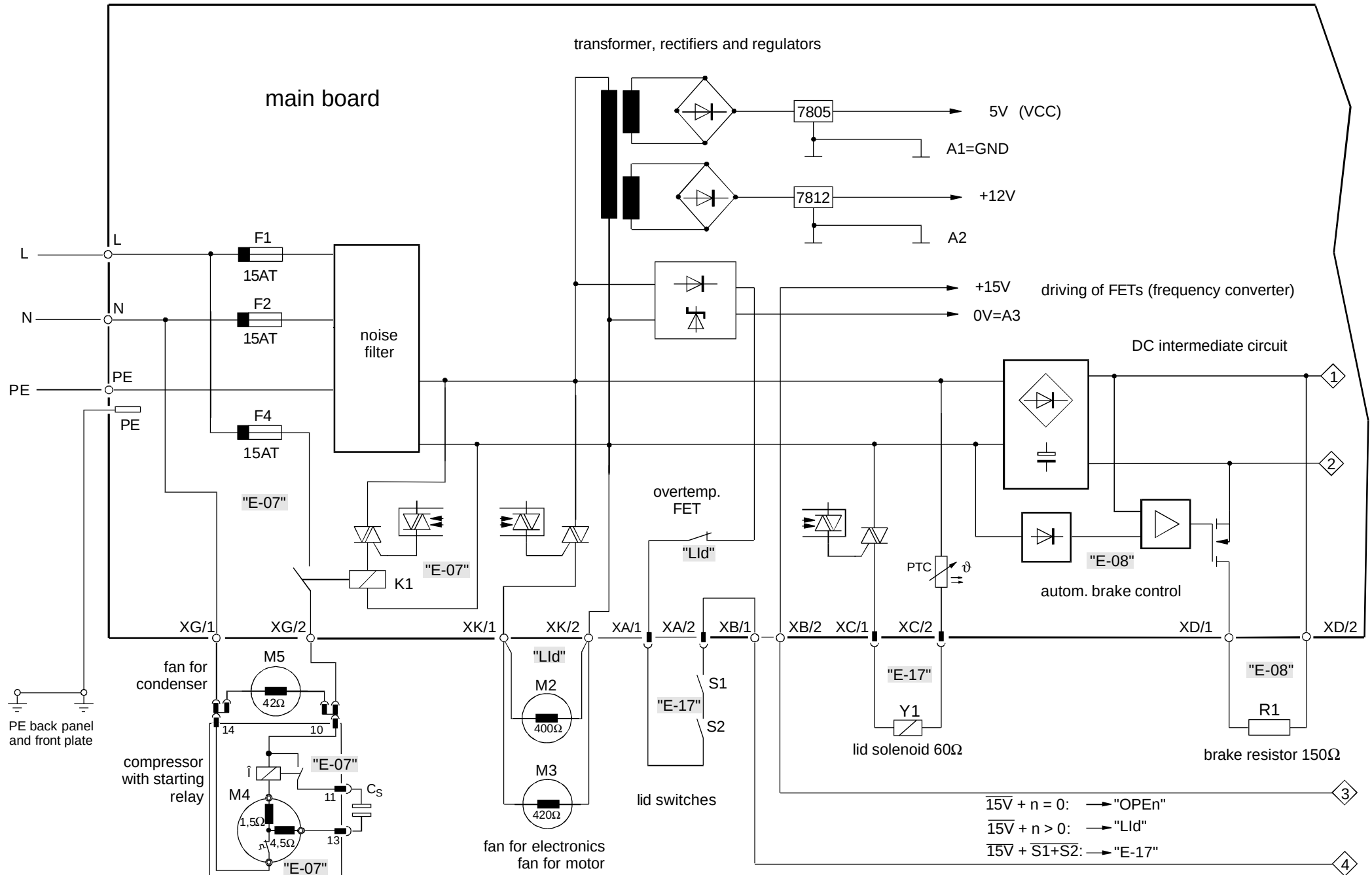


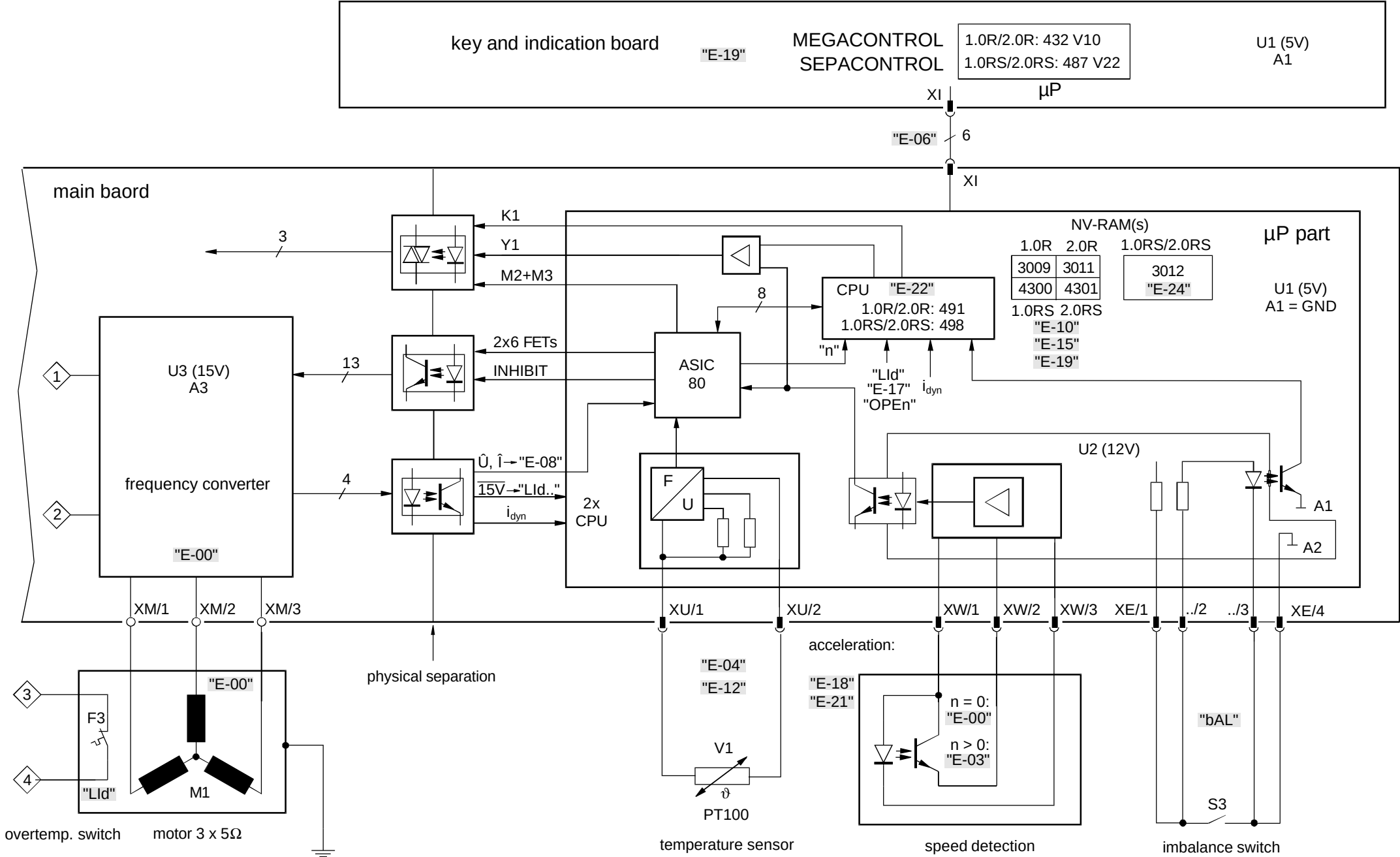


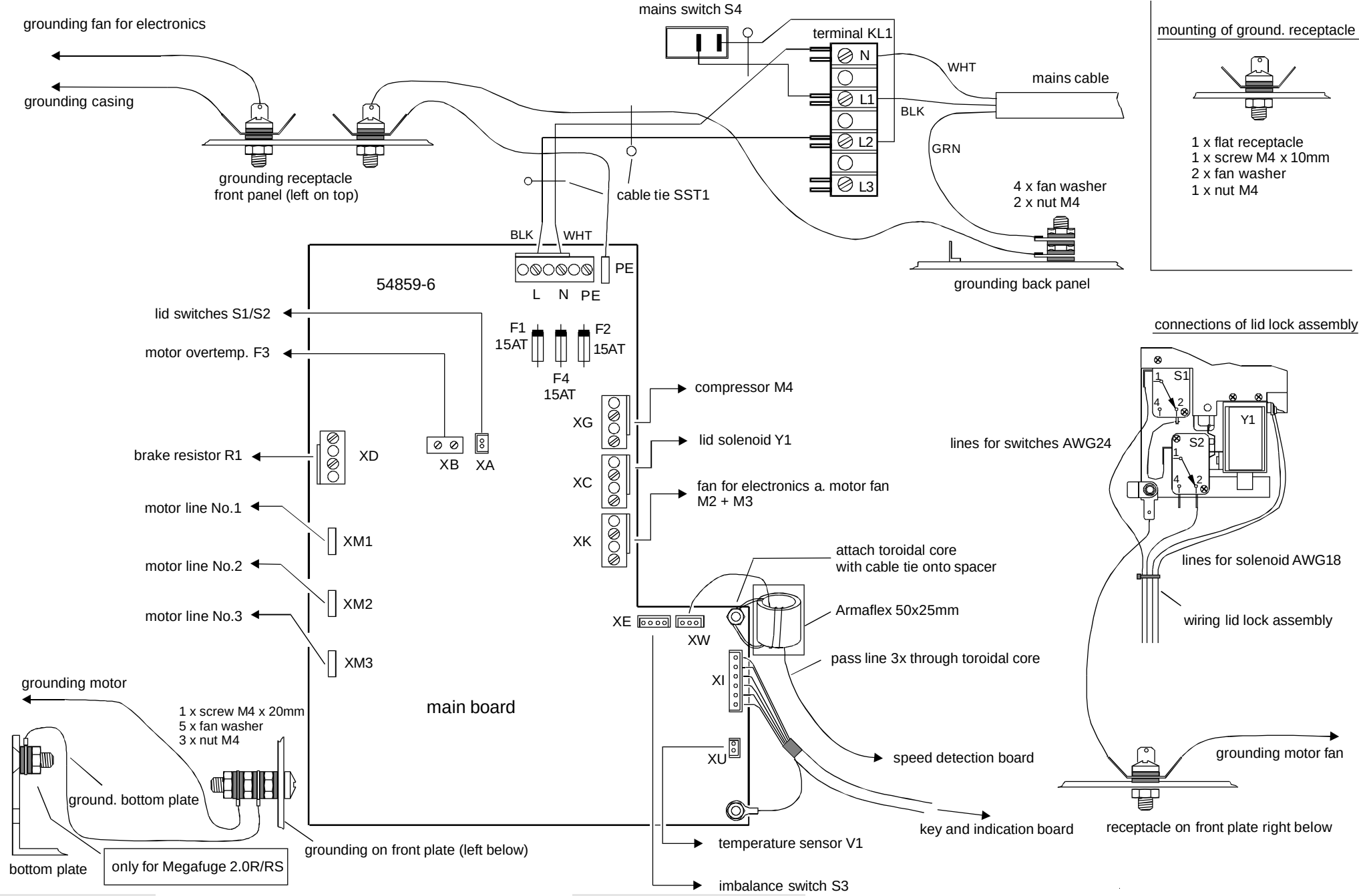


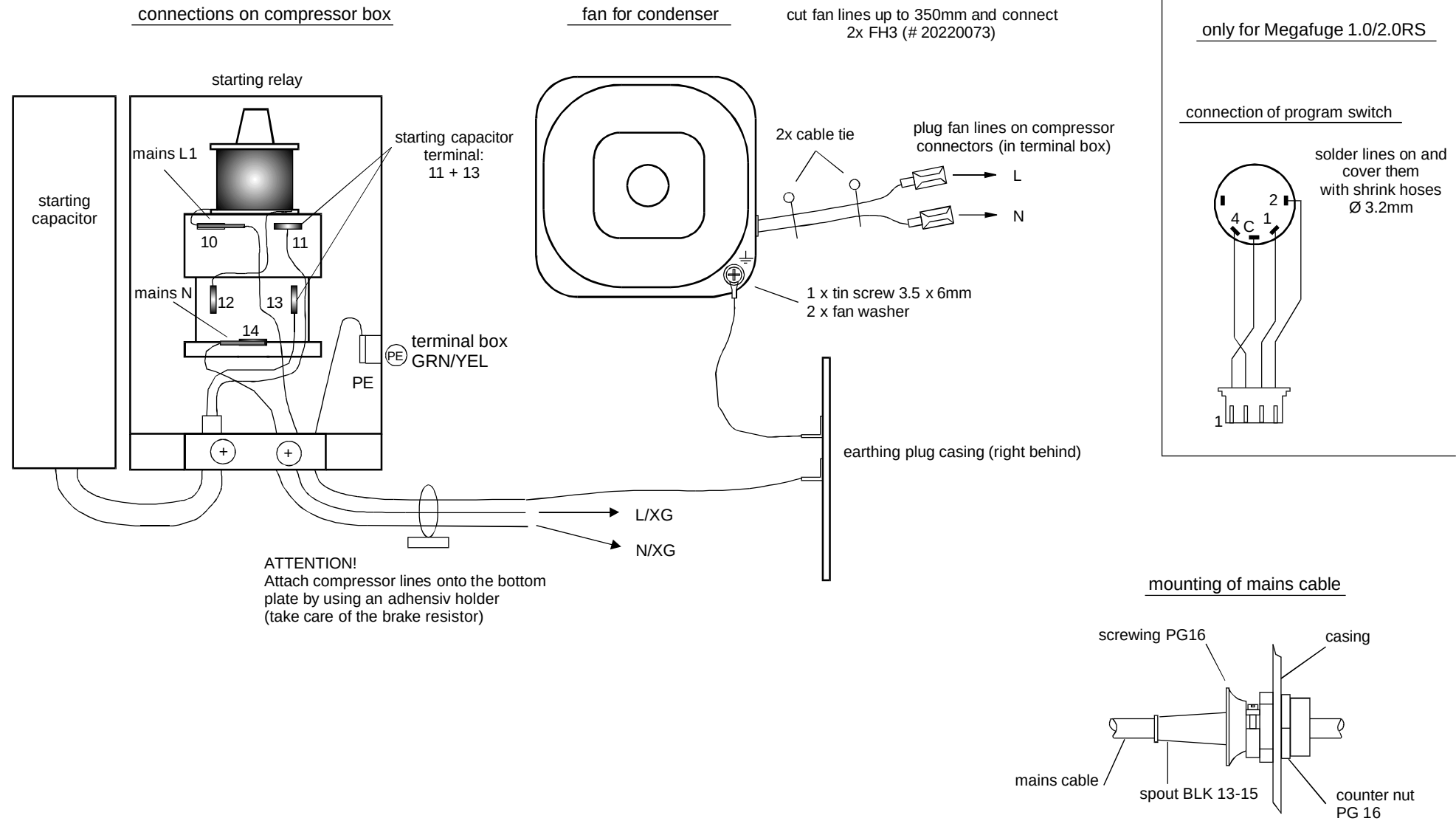


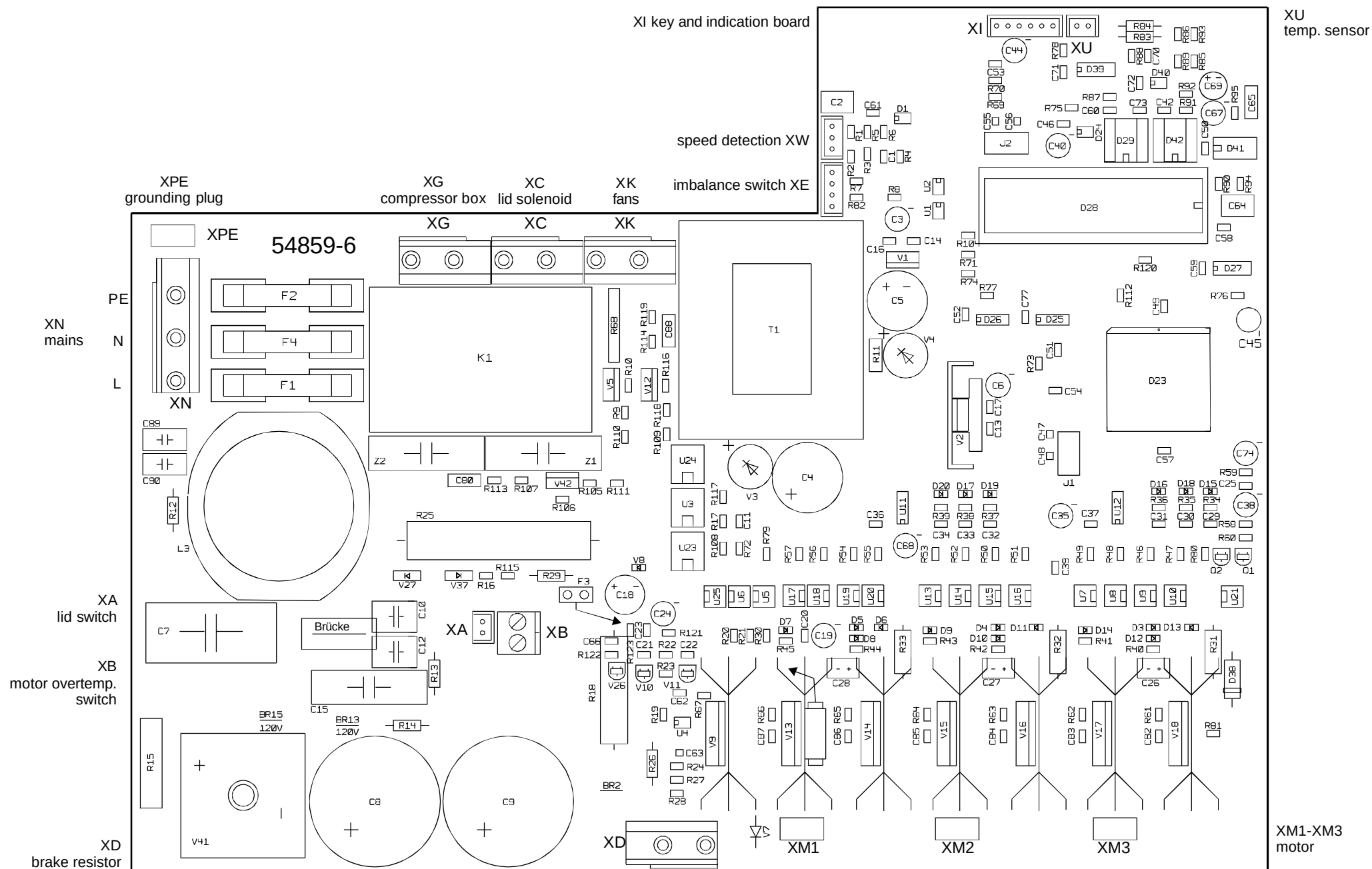


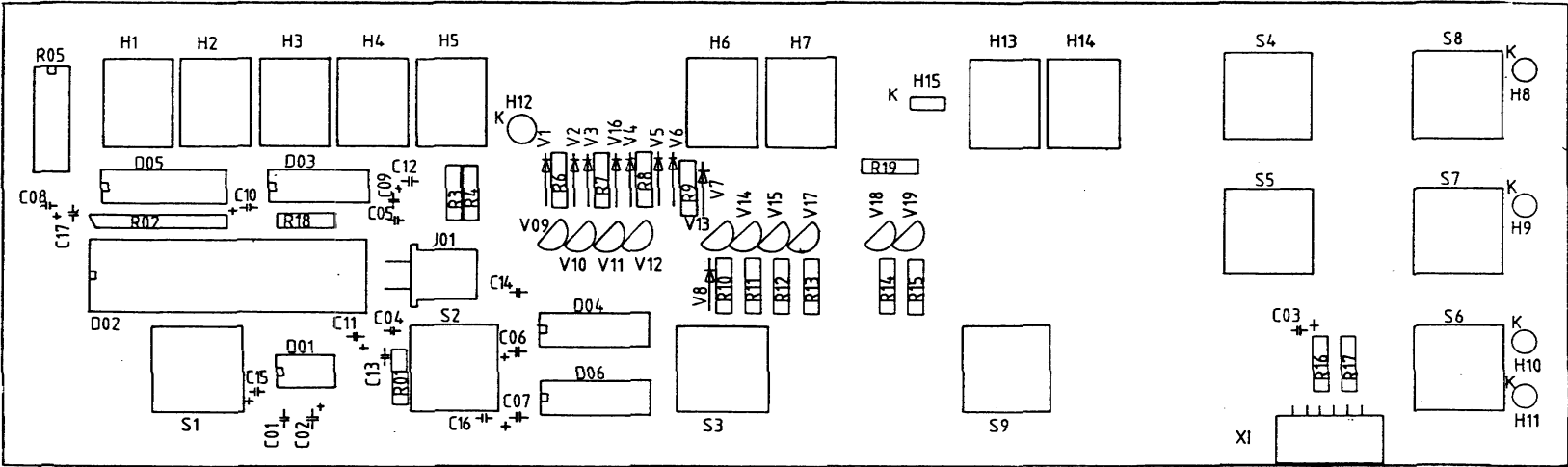












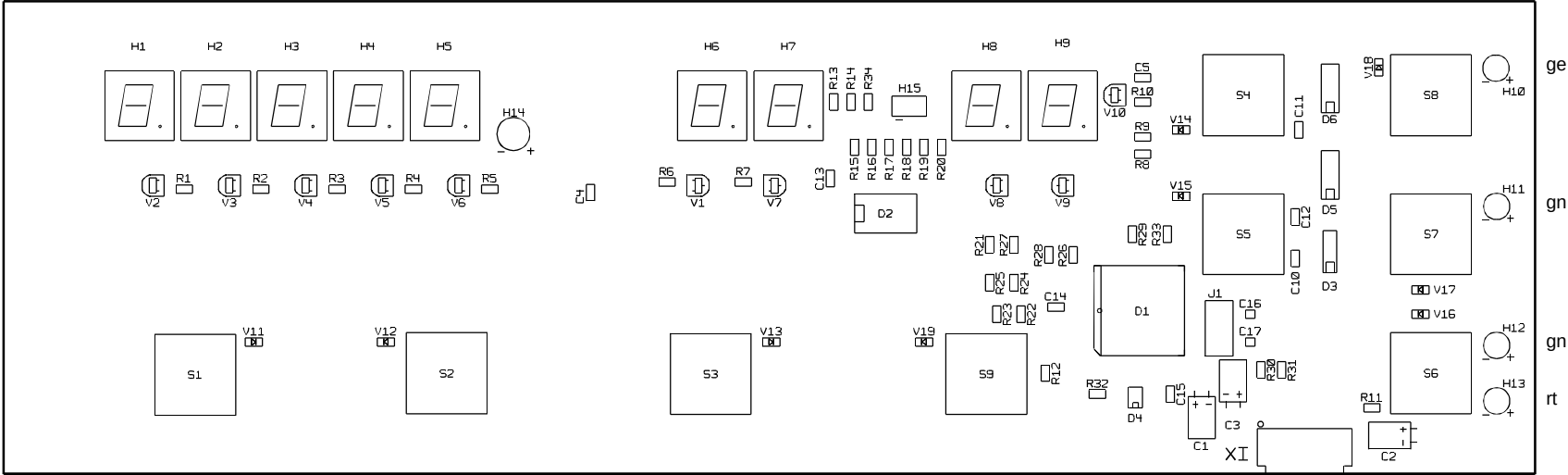
Megafuge 1.0R / 2.0R

legend:

key	name	function(s)
S01	set speed	to determine the max. speed of a run
S02	brake	to select brake on / off, fast / slow acceleration
S03	set time	to determine the duration of a run
S04	+ (plus)	to increase the value of the selected parameter
S05	- (minus)	to decrease the value of the selected parameter
S06	start / stop	to start or to stop the centrifugal run
S07	quick run	to start a short time run - keep the key pressed
S08	lid	to open the lid
S09	set temp.	to determine the temp.

indicating

elements	name	function(s)
H1 - H5	speed range	indication of speed / rcf / brake cutoff speed / rotor or bucket no.
H6, H7	time range	indication of time / "rc" for rcf / "ro" for rotor bucket no.
H8	LED lid	signal for opening the lid
H9	LED quick-run	signal for starting a short time run
H10	LED start	signal for starting
H11	LED stop	signal for stopping
H12	LED (0)	indication for brake on or quick acceleration
H13, H14	temp. range	indication of sample temp.
H15	LED minus signal	signal for negative values of °C



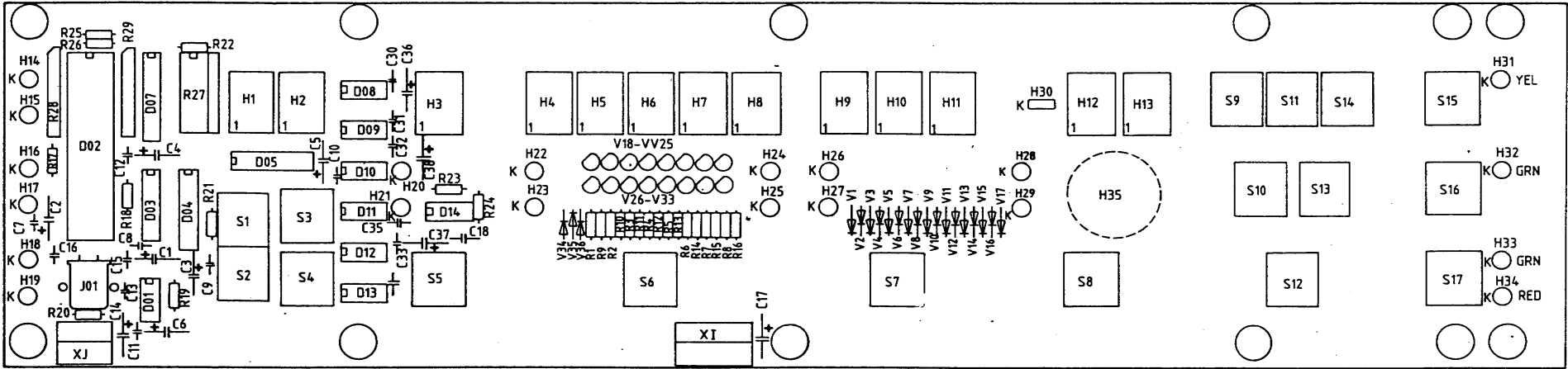
Megafuge 1.0R / 2.0R

legend:

key	name	function(s)
S01	set speed	to determine the max. speed of a run
S02	brake	to select brake on / off, fast / slow acceleration
S03	set time	to determine the duration of a run
S04	+ (plus)	to increase the value of the selected parameter
S05	- (minus)	to decrease the value of the selected parameter
S06	start / stop	to start or to stop the centrifugal run
S07	quick run	to start a short time run - keep the key pressed
S08	lid	to open the lid
S09	set temp.	to determine the temp.

indicating

elements	name	function(s)
H1 - H5	speed range	indication of speed / rcf / brake cutoff speed / rotor or bucket no.
H6, H7	time range	indication of time / "rc" for rcf / "ro" for rotor bucket no.
H8	LED lid	signal for opening the lid
H9	LED quick-run	signal for starting a short time run
H10	LED start	signal for starting
H11	LED stop	signal for stopping
H12	LED (0)	indication for brake on or quick acceleration
H13, H14	temp. range	indication of sample temp.
H15	LED minus signal	signal for negative values of °C



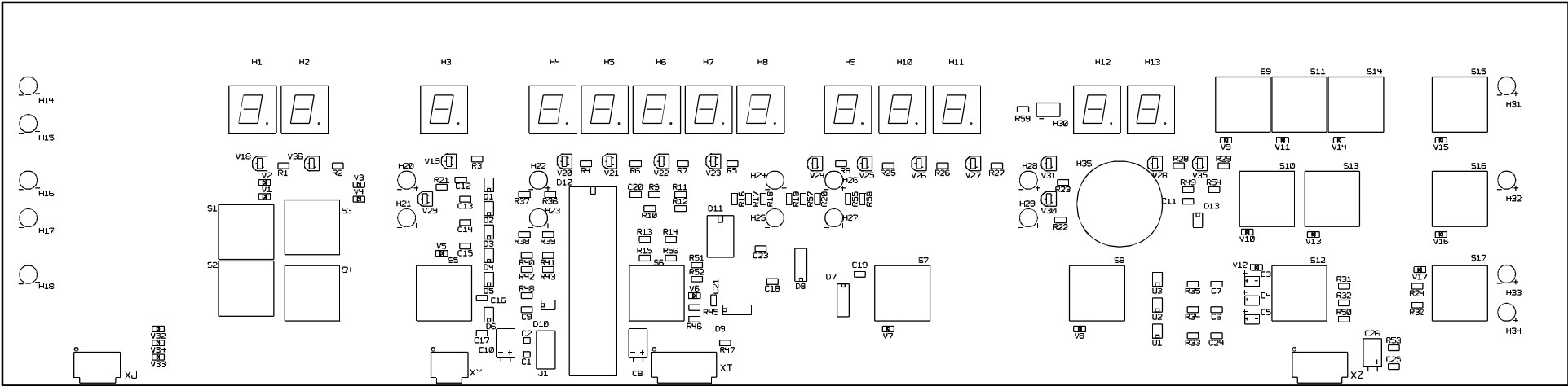
Megafuge 2.0RS

legend:

key	name	function(s)
S01, S02	program selection	to select the program number
S03	store mode	to start programming procedure
S04	execute	to stop programming procedure
S05	select accel. / decel.	selection of acceleration or deceleration
S06	select speed / rotor	selection of speed / rcf / rotor / radius
S07	select time / delay	selection of time or delay
S08	selection temp. /Δ t	selection of temp. or max. admissible overtemp range
S09	cursor left	to start the setting procedure and to change the setting position leftside
S10	+ (plus)	to increase the value of the selected parameter
S11	set	to start the setting procedure
S12	enter	to stop the setting procedure
S13	-(minus)	to decrease the value of the selected parameter
S14	cursor right	to start the setting procedure and to change the setting position rightside
S15	lid	to unlock the lid locking system
S16	quick run	to start a short timed run - keep the key pressed
S17	start stop	to start or to stop a centrifugal run

indicating

elements	name	function(s)
H1, H2	program field	for indication of program number
H3	curve field	indication of acceleration or deceleration profile
H4 - H8	speed field	indication of speed / RCF / rotor or bucket No. / radius
H9 - H11	time field	indication of centrifugation time and start delay time
H12, H13	temperature field	indication of sample temperature or difference value
H14	check lid	signal for lid open
H15	imbalance	indication of non balanced load
H16	system check	indication of electronic disturbance
H17	program error	indication of false programming
H18	overtemperature	indication of leaving the admissible overtemp. range
H20	acceleration	indication of selected acceleration profile
H21	deceleration	indication of selected deceleration profile
H22	function speed	indication of selected speed values in rpm
H23	function rcf	indication of selected rcf values (xg)
H24	function rotor	indication of selected rotor or bucket no.
H25	function radius	indication of selected radius (cm)
H26	function time	indication of selected time in h and min or full h
H27	function delay	indication of delay in h and min or full h
H28	function temp.	indication of selected sample temperature in °C
H29	function Δ t	indication of difference values to sample temp.
H30	LED minus	signal for negative values of °C
H31	LED lid	signal for opening the lid
H32	LED quick run	signal for starting a short time run
H33	LED start	signal for starting
H34	LED stop	signal for stoping



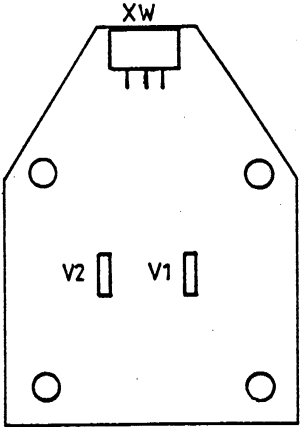
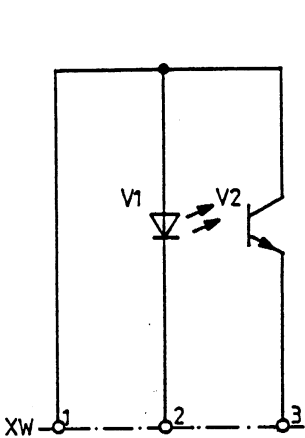
Megafuge 2.0RS

legend:

key	name	function(s)
S01, S02	program selection	to select the program number
S03	store mode	to start programming procedure
S04	execute	to stop programming procedure
S05	select accel. / decel.	selection of acceleration or deceleration
S06	select speed / rotor	selection of speed / rcf / rotor / radius
S07	select time / delay	selection of time or delay
S08	selection temp. /Δ t	selection of temp. or max. admissible overtemp range
S09	cursor left	to start the setting procedure and to change the setting position leftside
S10	+ (plus)	to increase the value of the selected parameter
S11	set	to start the setting procedure
S12	enter	to stop the setting procedure
S13	-(minus)	to decrease the value of the selected parameter
S14	cursor right	to start the setting procedure and to change the setting position rightside
S15	lid	to unlock the lid locking system
S16	quick run	to start a short timed run - keep the key pressed
S17	start stop	to start or to stop a centrifugal run

indicating

elements	name	function(s)
H1, H2	program field	for indication of program number
H3	curve field	indication of acceleration or deceleration profile
H4 - H8	speed field	indication of speed / RCF / rotor or bucket No. / radius
H9 - H11	time field	indication of centrifugation time and start delay time
H12, H13	temperature field	indication of sample temperature or difference value
H14	check lid	signal for lid open
H15	imbalance	indication of non balanced load
H16	system check	indication of electronic disturbance
H17	program error	indication of false programming
H18	overtemperature	indication of leaving the admissible overtemp. range
H20	acceleration	indication of selected acceleration profile
H21	deceleration	indication of selected deceleration profile
H22	function speed	indication of selected speed values in rpm
H23	function rcf	indication of selected rcf values (xg)
H24	function rotor	indication of selected rotor or bucket no.
H25	function radius	indication of selected radius (cm)
H26	function time	indication of selected time in h and min or full h
H27	function delay	indication of delay in h and min or full h
H28	function temp.	indication of selected sample temperature in °C
H29	function Δ t	indication of difference values to sample temp.
H30	LED minus	signal for negative values of °C
H31	LED lid	signal for opening the lid
H32	LED quick run	signal for starting a short time run
H33	LED start	signal for starting
H34	LED stop	signal for stoping



V1
infrared transmitting diode
V2
NPN phototransistor



The index numbers stated in () reappear within the breakdown drawings and the spare part lists.

5.1 Dismantling the Housing

5.1.1 Front Panel (201)

- Open the lid (Figure 1).
- **Pull out the mains plug.**
- Remove the shelf (105). (Figure 2)
- Unscrew the two Phillips screws (131) from the upper edge of the front panel. (Figure 3)
- Unscrew the two Phillips screws (132) forwards from the lower edge of the front Figure 1 panel.
- Pull the front panel (201) forwards and depose it face down on a towel in front of the unit. (Figure 4)
- Pull out plug XI (and XJ only MEGAFUGE 2.0RS) of the key and indication board.
- Refitting the front panel is performed analogously in reverse order.

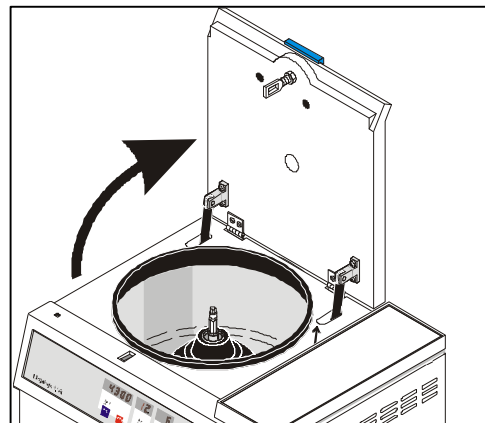


Figure 1

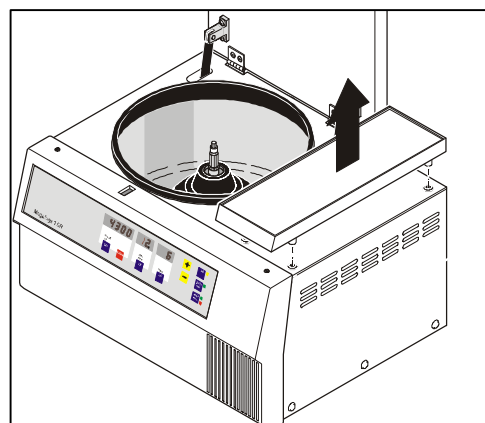


Figure 2

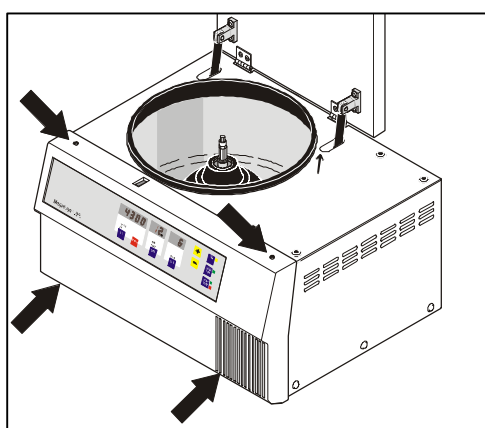


Figure 3

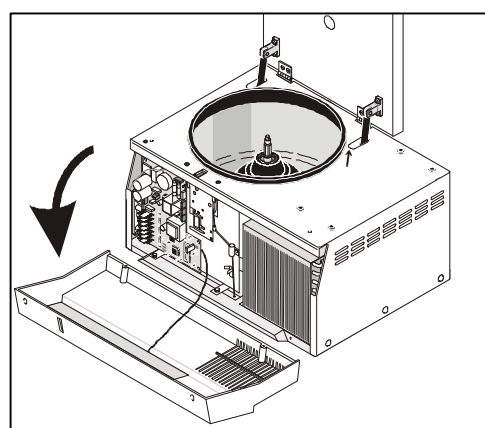


Figure 4

5.1.2 Back Panel (101)

- **Pull out the mains plug.**



Do not turn the device via the rubber feet. If the unit is not accessible from behind it must be lifted up by 2 persons and deposited onto an exposed solid foundation.

- Unscrew the 7 Phillips screws (102), unplug grounding wire and remove the back panel.

5.1.3 Rubber Flange (130)

- Unscrew the rotor in direction of arrow by means of a 6 mm socket wrench and remove it.
- Free lower rim of cover by pulling in towards the center and upwards, working all the way round to remove it (Figure 5).
- Take care to ensure that the rubber cover has not been turned inside out when attempting to replace it.

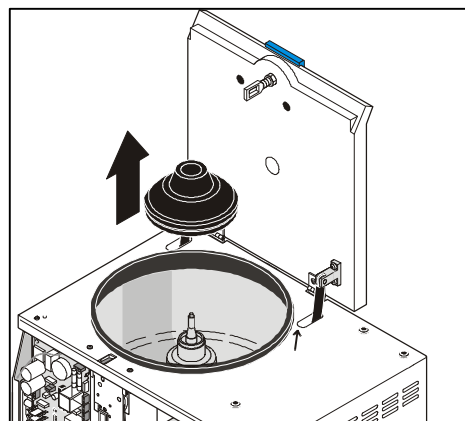


Figure 5

5.1.4 Centrifuge Casing (220)

- Remove the front panel (see 5.1.1).
- Remove the back panel (see 5.1.2).
- Remove the rubber flange (see 5.1.3).
- Unscrew the lid lock assembly, depose it carefully (see 5.2.1).
- Remove the lid (see 5.2.2).
- Unscrew all fastening screws in front (221) and in the back (226) (and on MEGAFUGE 1.0R/2.0RS additionally on the sides) and remove them with the appropriate washers (222/225).
- Pull off the earth wires on the inside panel of the casing.
- Pull the casing a little by the lower edges (A) and lift it upwards via the gas-filled lid stay (302) (B). (Figure 6)

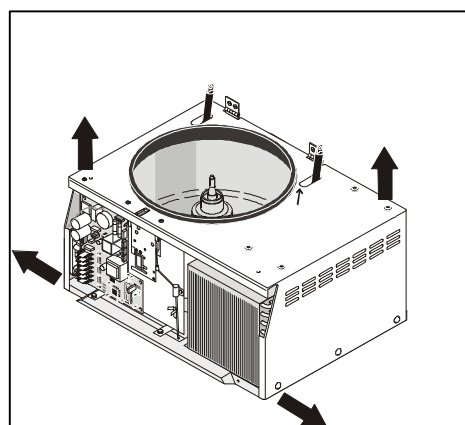


Figure 6

Dismantling the House



To reassemble, fit the rubber gasket (227) on the rim of the armoured spin chamber first. When refitting the casing, guide the gas-filled lid stay through its opening, and then work all the way round the rubber gasket, seating it over the casing rim. Only then refit all screws.

5.2 Replacing Mechanical Components

5.2.1 Lid Lock Assembly (230)

- The locking device with integrated lid switches is only available as one spare part set.
- Remove the front panel (see 5.1.1)
- Disconnect XC leads for the lid magnet and unplug XA for integrated lid switches and earthing wire (Figure 7).
- Press the plastic stopper (133) out of the bottom plate, untie the rip cord and pull it out of the guide eyes.
- Unscrew the Phillips screws (232) for the fixing claws (231); when doing so hold the locking device (Figure 8).
- Depose locking device carefully
- Transfer leads to the new locking device

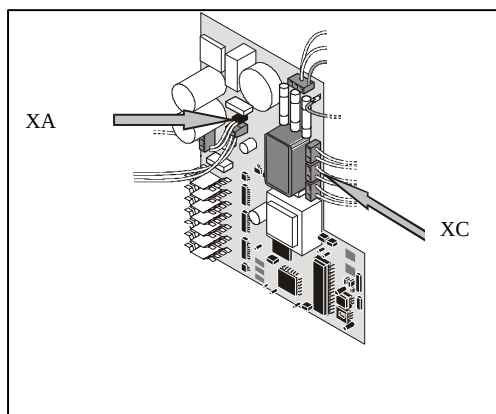


Figure 7

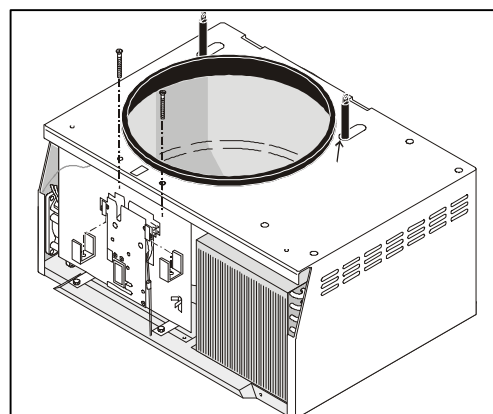


Figure 8



Adjust the lid lock assembly in such a way that the fastening bolt -attached to the lid- engages concentrically into its slot!
Check proper function by opening and closing the lid repeatedly.

5.2.2 Lid (110)

- Open the lid (Figure 1).
- Remove carefully the joint bolt (116) (Attention - with bolt notches ahead!) for the gas-filled stay (use $\varnothing$ 5 mm pin punch and hammer (Figure 9). Insert a screw driver in order to secure it from shutting itself.
- Unscrew 4 Phillips screws (114), pull out securing screw driver and remove the lid (Figure 10).
- For lid replacement transfer support of gas-filled lid stay, locking bolt and handle onto the new lid

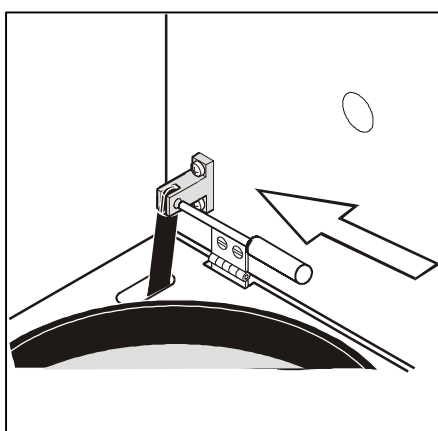


Figure 9

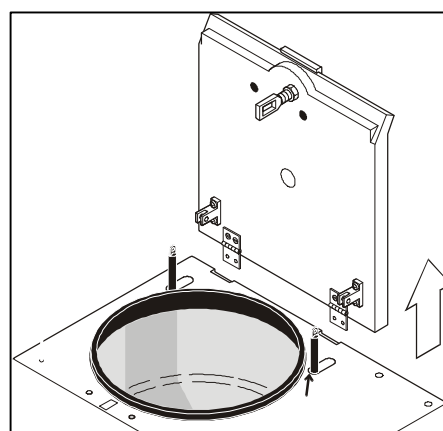


Figure 10

5.2.2 Gas-filled Lid Stays (302)



To ensure troublefree lid, opening and closing always remove both gas filled lid stays at the same time.

- Remove the centrifuge casing (see 5.1.4).
- Drive out carefully the joint bolt (306) (Attention - with bolt notches ahead!) on the lower support (303) attached to the bottom plate.
- Replace the worn out lid stays by a new one of the same force (see imprint).
- Press the joint bolt in again with combination pliers (Attention - **untouched** ahead!)
- The re-assembly is performed analogously in reverse order.

5.2.4 Device Feet (344)



After having removed the front panel, the front feet are accessible. For removal of the right and middle foot the casing (see 5.1.4) has to be removed first and the condenser and the fan must be unscrewed.

After having removed the back panel the back feet are accessible, (see 5.1.2) In order to dismantle the middle back feet, the motor condenser has to be loosened and carefully bent aside.



In order to loosen the right and middle feet you have to use a socket wrench (13 mm).

- Unscrew the nut (346) from the foot to be replaced (344) and remove the toothed spring washer (347)
- Tilt the device slightly, place a wood-block (app. 10 cm height) or similar underneath it, pull the worn-out foot downwards out and replace it by a new one.
- Reassemble the device analogously in reverse order and secure the screwing with locking lac to prevent it loosening.

5.2.5 Spin Chamber Gasket (227)

Open the lid.

Pull out the mains plug.

Press the gasket (227) inward all around and remove it from the chamber rim. (Figure 11)

Press a new gasket into any point of the chamber rim and then press it by means of a screw driver little by little behind the rim.

Thereby, you have to ensure that the rear lip of the gasket fits into the adequate support.

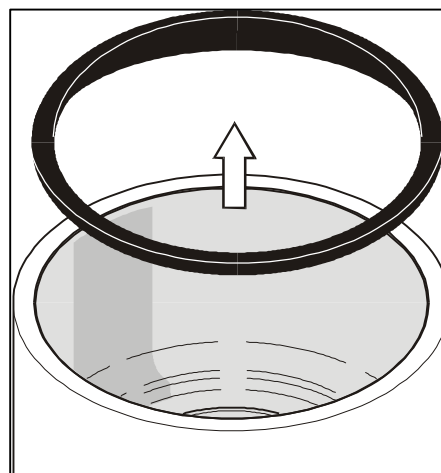


Figure 11



If there is a problem in inserting the new sealing, it is recommended to loosen the casing, insert the gasket and re-screw the casing tightly after that.

5.3 Replacing Electrical Components

5.3.1 Fuses on Main Board (241)

- Remove the front panel (see 5.1.1).
- Check the fuses and if necessary replace them by equivalent and undamaged ones.
- Perform a test run and search for blowing cause.

5.3.2 Main Board (240)

- Remove the front panel (see 5.1.1).
- disconnect all terminal connections as: mains supply, lid magnet XC, brake resistor XD, overtemperature cut out XB, fan for electronics XK and relay for compressor XG (Figure 12).
- Pull out all plug connectors as: earthing receptacle, motor XM (1,2 and 3), imbalance sensor XE, lid switches XA, speed detection XW, indication board XI and temperature sensor XU (Figure 13).
- Unscrew the fastening nuts (246) of the main board, remove the washers (247) and subsequently the board.
- Take the CPU (502) and NV-RAM (501/503) out of box (or re-use the old but troublefree components) and insert them into the empty sockets of the new main board

Notice:

NV-RAM (503) is additionally use for MEGAFUGE 2.0RS

- Mount the new board onto the distance screws.
- Do not mix up disconnected cables during re-connection.
- Reassemble the device in reverse order and perform a test run.

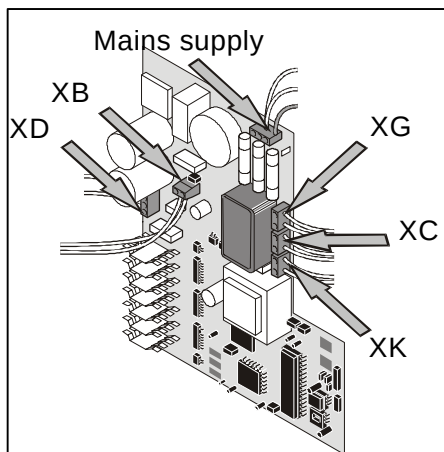


Figure 12

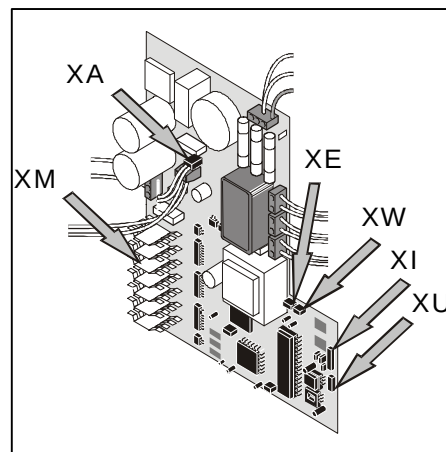


Figure 13

5.3.3 Key and Indication Board (210)

- Remove the front panel (see 5.1.1).
- Unscrew all Phillips screws (211) of the key and indication board and remove all washers and the board itself.
- Unplug XI (and XJ for MEGAFUGE 2.0RS) and transfer the connecting cables to the new board.
- Mount the new key and indication board in reverse order.
- Perform a test run.

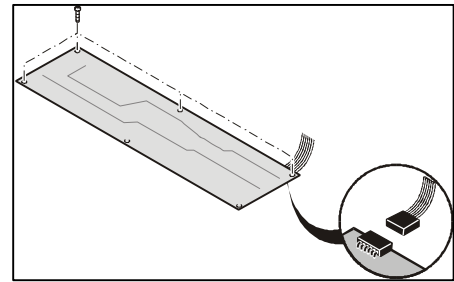


Figure 14

5.3.4 Temperature Sensor (PT100) (370)

- Remove the front panel (see 5.1.1)
- Unscrew the rotor and remove it.
- Pull out the plug of the temperature sensor.(Figure 15)
- Unscrew the shielding and the wiring.
- Unscrew the lid lock (see 5.2.1), depose it carefully.
- Unscrew the assembly plate together with the main board and turn it aside.
- Unscrew the "PG 9" nut for isolation pass-through (374) underneath the chamber by means of an opened wrench.
- Unscrew the screw (373) for the clamp (371) from the sensor (370) within the chamber.
- Press isolation pass-through out in upward direction and pull it upwards together with the sensor out of the chamber.
- Install a new temperature sensor analogously in reverse order.

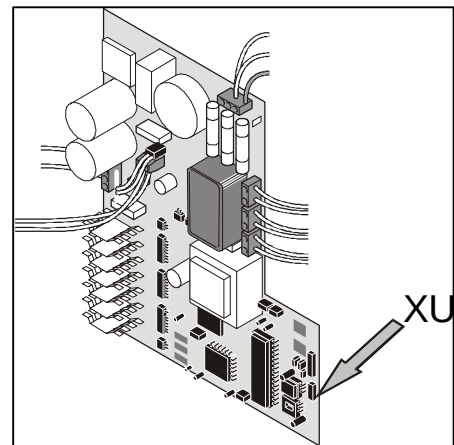


Figure 15



After reinstallation the sensor isolation pass-through and the pass-through for the chamber bore-hole must be sealed with silicone adhesive.

- Perform the test run (including temperature measure).

5.3.5 Brake Resistor (330)

- **Pull out the mains plug.**
- Remove the back panel (see 5.1.2)
- Unscrew the right angle mounting (331) from the brake resistor.
- Pull the resistor out of the left angle fitting.
- Remove the defective brake resistor out of the unit.
- Unscrew the leads and transfer them to the new brake resistor.
- The installation of the new brake resistor is performed analogously in reverse order. (Disposal of the defective brake resistor).
- Perform a test run.

5.3.6 Mains Cable (340)

- Remove the back panel (see 5.1.2)
- Disconnect the **cable's** power cores from mains terminal (160) and grounding core from back panel (101).
- Unscrew the clamp from the screwing and remove the defective cable.
- Connect and fasten the new cable in reverse order and retie the wiring harness.
- Perform a test run.

5.3.7 Fan for Electronics (260)

- Dismantle the casing (see 5.1.4)
- Disconnect XK leads for the electronic fan and earthing wire
- Unscrew the Phillips screws (261)
- Install the new fan in reverse order
- Perform a test run and reassemble the unit completely.

5.4 Replacing of Drive Components

5.4.1 Drive Motor (310)

- Remove the rubber flange (see 5.1.3).
- Remove the casing (see 5.1.4).
- Unplug the leads for motor XM (1, 2 and 3) and overtemperature switch XB (Figure 16).
- Unscrew the 3 M6 nuts (311) with a 10 mm socket wrench and remove them together with the toothed discs (312).
- Lift the motor a little, unscrew the grounding receptacle, disconnect the plug on the speed detection board XW and remove the motor out of the spin chamber (Figure 17).
- For motor replacement transfer the speed detection board to new motor (see 5.4.3).
- Reassemble the motor analogously in reverse order.
- Perform a test run and check the sense of rotation (see imprinted arrow direction) and mix up 2 leads on terminal XM in case of disorder.

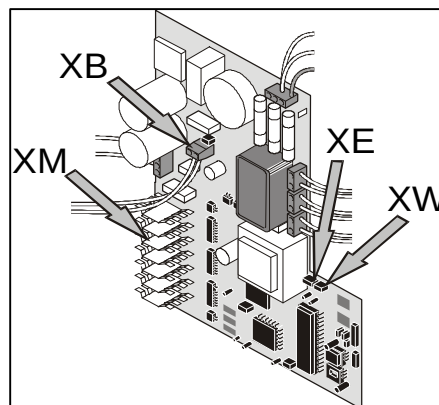


Figure 16

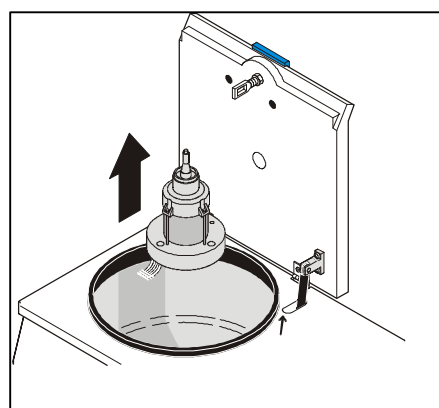


Figure 17

5.4.2 Motor supports (314)



The anti-vibration mounts (314) have to be replaced every 3 years.
The 6 double-sided sandpaper discs (313) have to be replaced, too.
The anti-vibration mounts may only be replaced in sets.

Remove the drive motor (see 5.4.1).

Support the left side of the unit with blocks of approx. 10 cm height (Figure 18).

Unscrew 3 hexagon head screws (316) and replace all three anti-vibration mounts (314) as well as the 6 sandpaper discs (313).

Fasten the new motor supports evenly (use a torque key: 10 Nm) and secure the screws (316) and nuts (311) with screw locking lac, reassemble the device in reverse order and perform a test run.

5.4.3 Speed Detection Board (320)

- Remove the drive motor (see 5.4.1).
- Mark board position, unscrew 4 Phillips screws (322) and remove them together with washers (321).
- Take off the speed detection board (320).
- Do the re-assembly in reverse order.

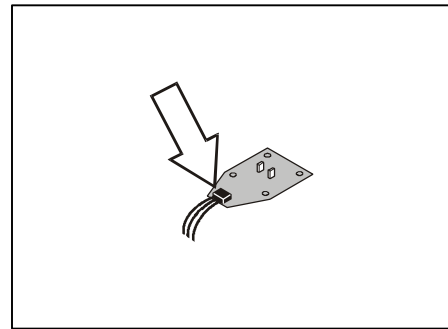


Figure 19

5.4.4 Imbalance Switch (Page 6-3a)

The imbalance switch consist of 2 components. The adjustable component is screwed to the bottom plate with anti-vibration damping. The contact counter panel is attached to the motor with insulation. In order to dismantle the counter panel, the rubber cover (360) has to be removed.

- Remove the back panel (see 5.1.2).
- Support the left feet of the device (see Fig. 18) and unscrew both screwing 364) of the imbalance switch from below.
- Pull out the imbalance switch and disconnect the plug connections (351) from the imbalance switch, transfer the vibration damper (360) to the new imbalance switch.
- Re-establish the plug connections with the imbalance switch; the re-assembly is to be performed analogously in reverse order.

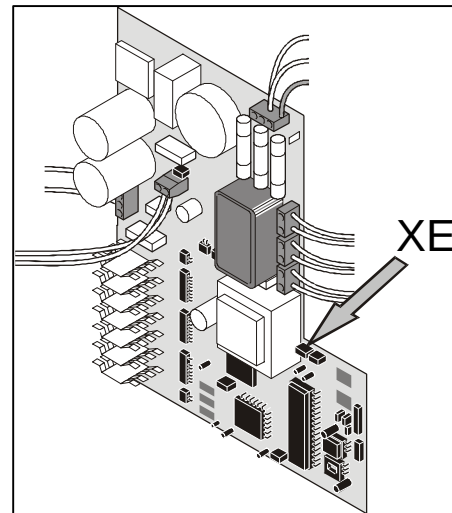


Figure 20



ATTENTION -IMPORTANT!

After the installation, the imbalance switch has to be re-adjusted. Here to see adjusting instructions, section 2, page 11.

- Perform a test run and check the imbalance switch.

5.4.5 Motor Fan (341)

- Remove the casing (see 5.1.4).
- Remove the lid lock (see 5.2.1).
- Unscrew the assembly plate together with the main board and turn it carefully aside.
- Disconnect the lead of motor fan from terminal XK on the main board.
- Unscrew the 2 fastening screws (343) and remove them together with the appropriate washers (342).
- Pull the fan (341) forwards out of the casing.
- Disconnect the earth lead from the fan and transfer it to the new fan.
- The installation of the new fan is performed analogously in reverse order.
- Perform a test run and reassemble the unit completely.

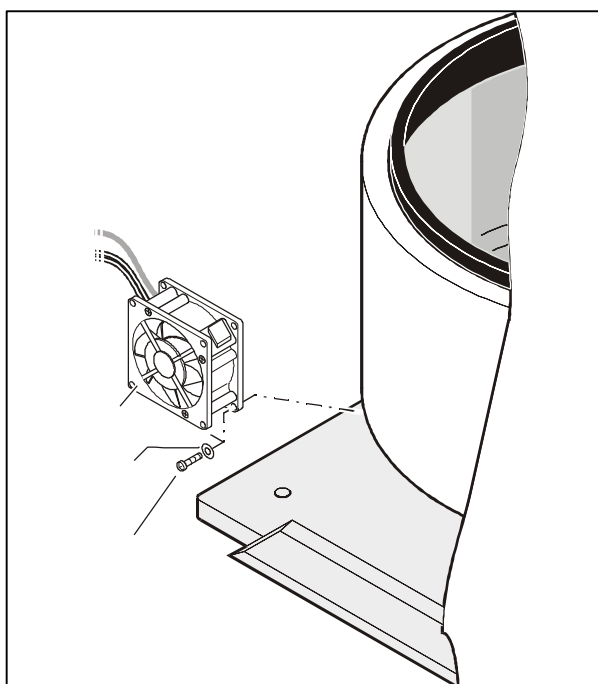


Figure 21

5.5 Replacing Cooling Components

5.5.1 Condenser Fan

- Remove the casing (see 5.1.4)
- Detach leads of the condenser fan from the start relay (of the compressor connection box (see Page 4-5).
- Remove the 2 fastening screws (411) of the fan supporting angle (410) together with their appropriate locking rings (412) and washers (413). (Figure 22)
- Unscrew the condenser (406) and bend it carefully aside.
- Bend the filter (403) with capillary slightly towards the compressor.
- Remove the condenser fan motor (414) and the fan wing (415) with the holding angles laterally from the unit (Figure 23).
- The installation of the new fan is performed analogously in reverse order.
- Perform the test run.



The fan must to be switched on and off in parallel with the compressor!

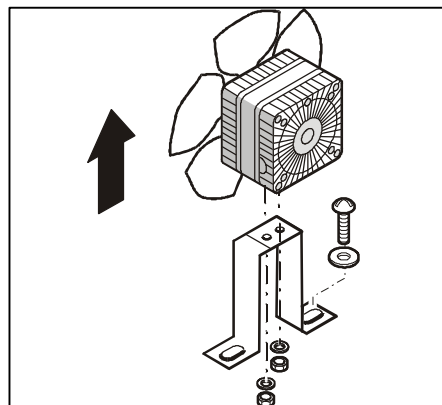


Figure 22

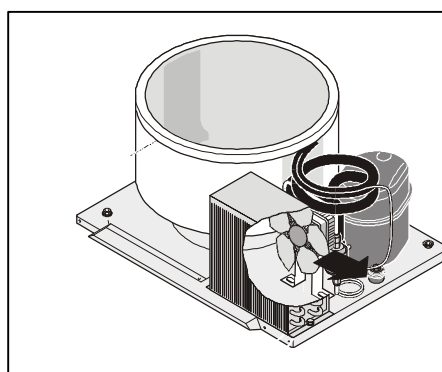


Figure 23

5.5.2 Components of the Cooling Circuit

When working on the cooling circuit the general guidelines regarding the handling of refrigerants must be observed.

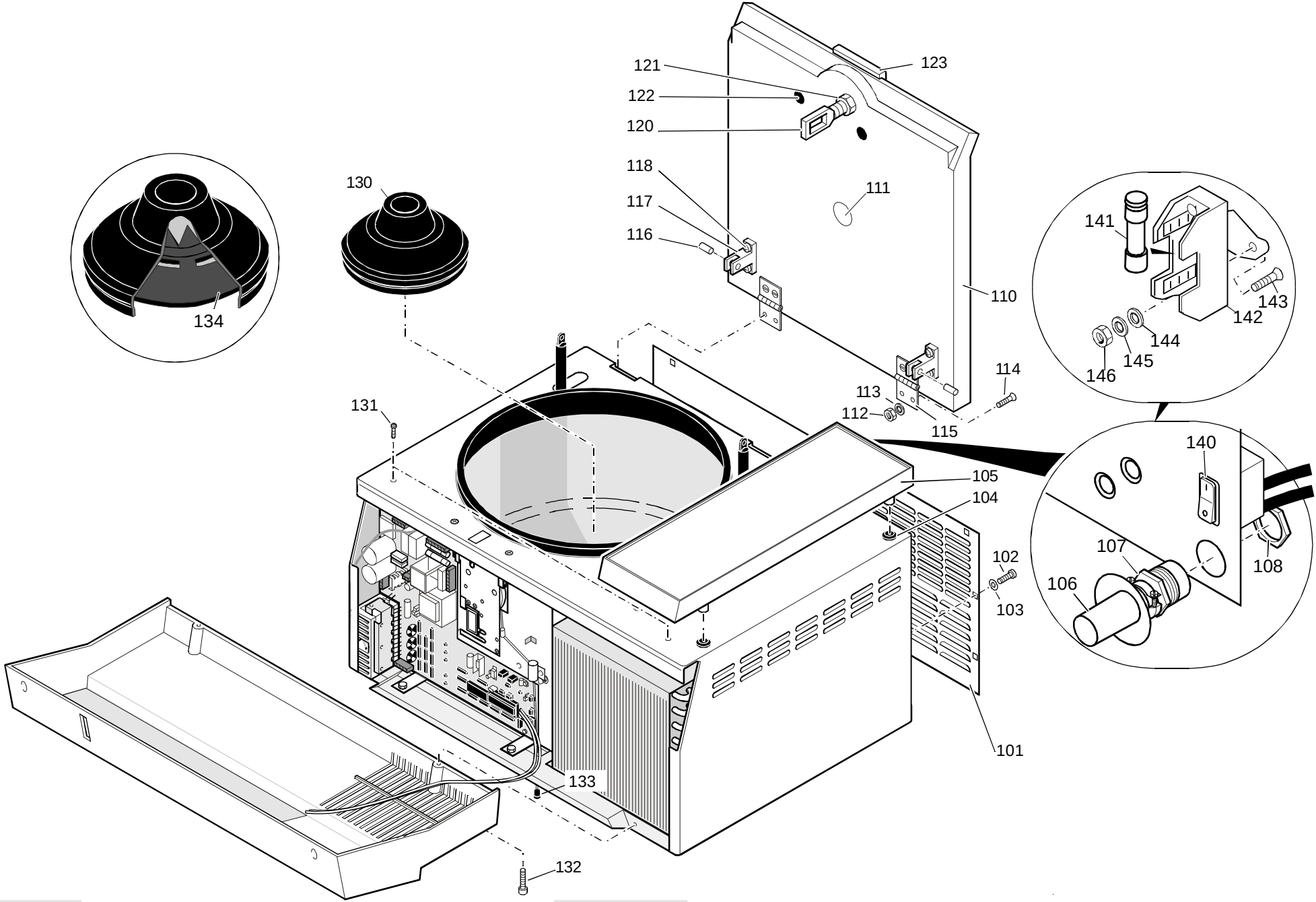
Refrigerant: 134a, CFC-free
Filling quantity: 350 g

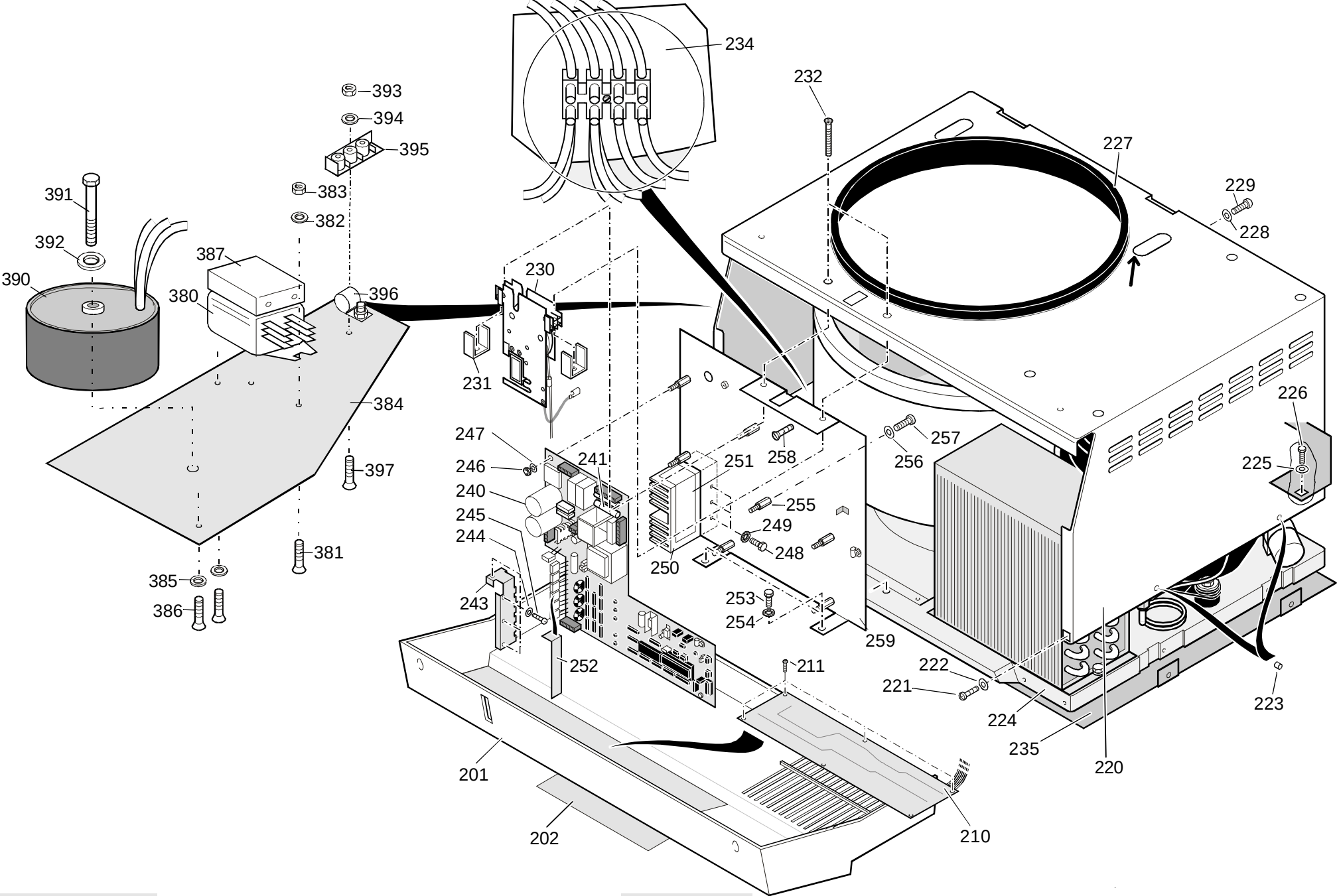


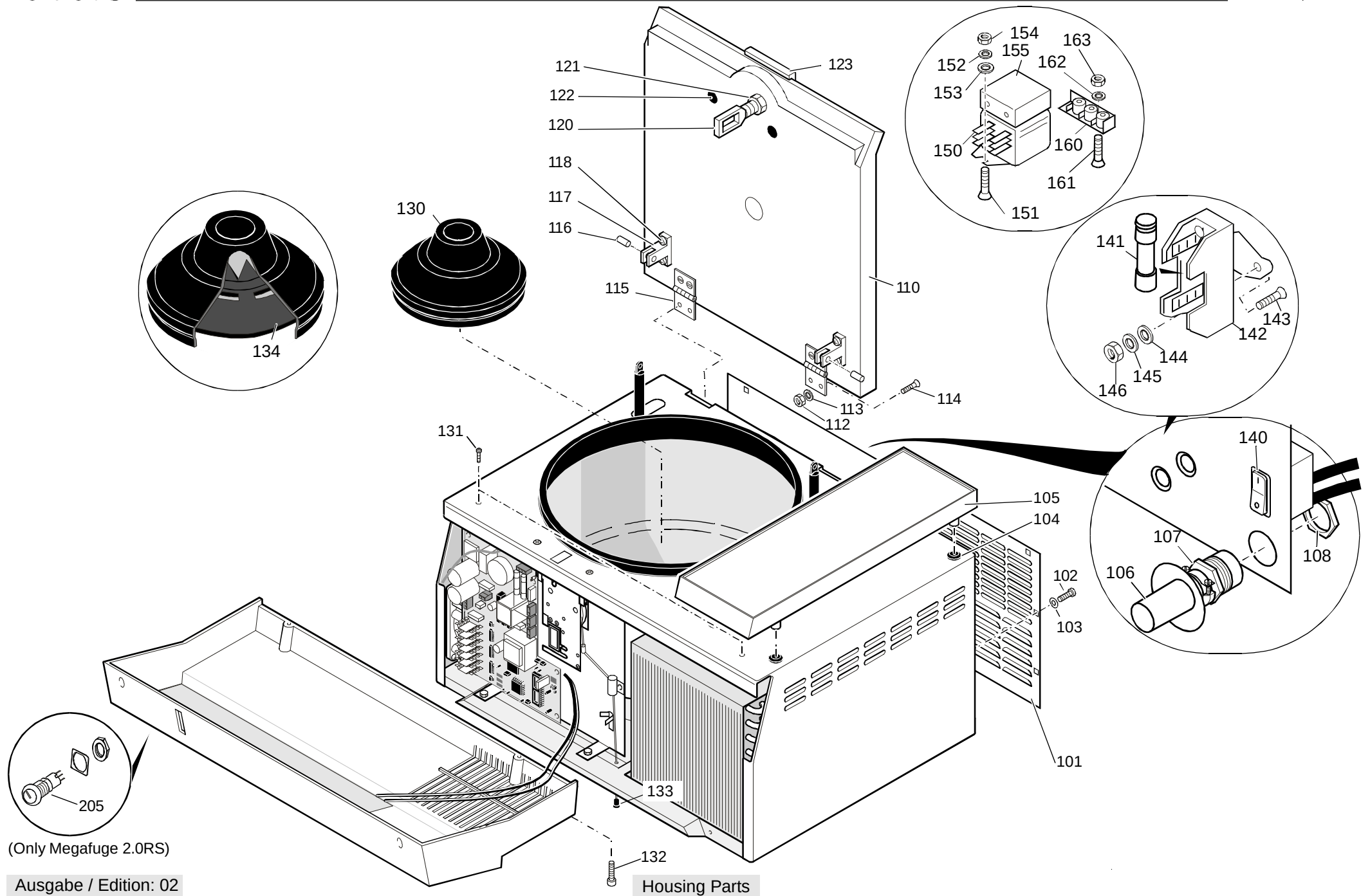
Important Note!
Don't use hoses and manifold gauge which are contaminated with oil of **non** CFC-free refrigerants.

Procedure

- Let the refrigerant suck out and fill into (recycling bottle of R134a).
- Replace faulty parts and also the dryer.
- Let a little amount of dry nitrogen gas stream through the tubes during welding.
- Do the evacuation and refill the system with the exact amount of refrigerant over a new external dryer (check with a balance).





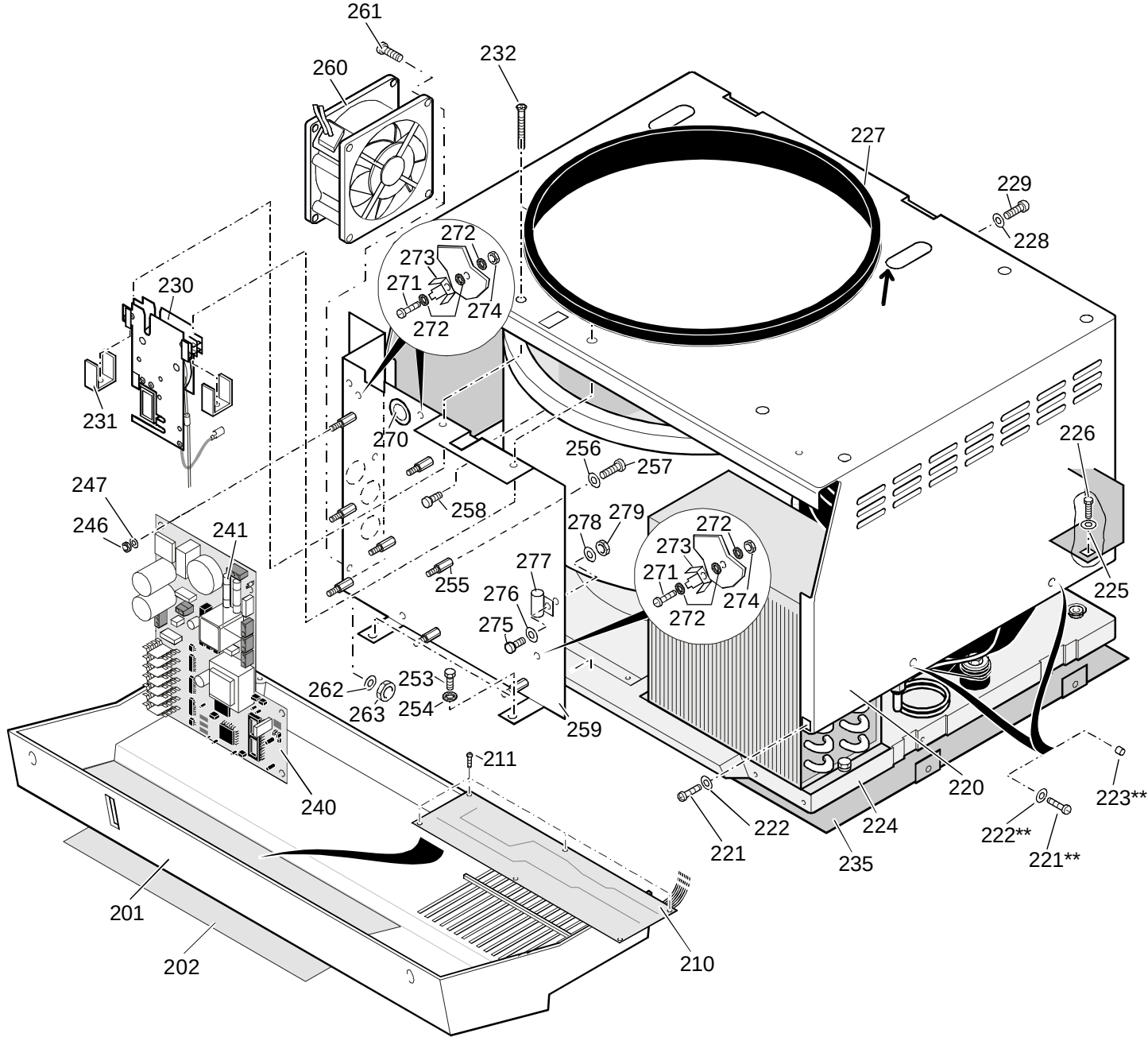


(Only Megafuge 2.0RS)

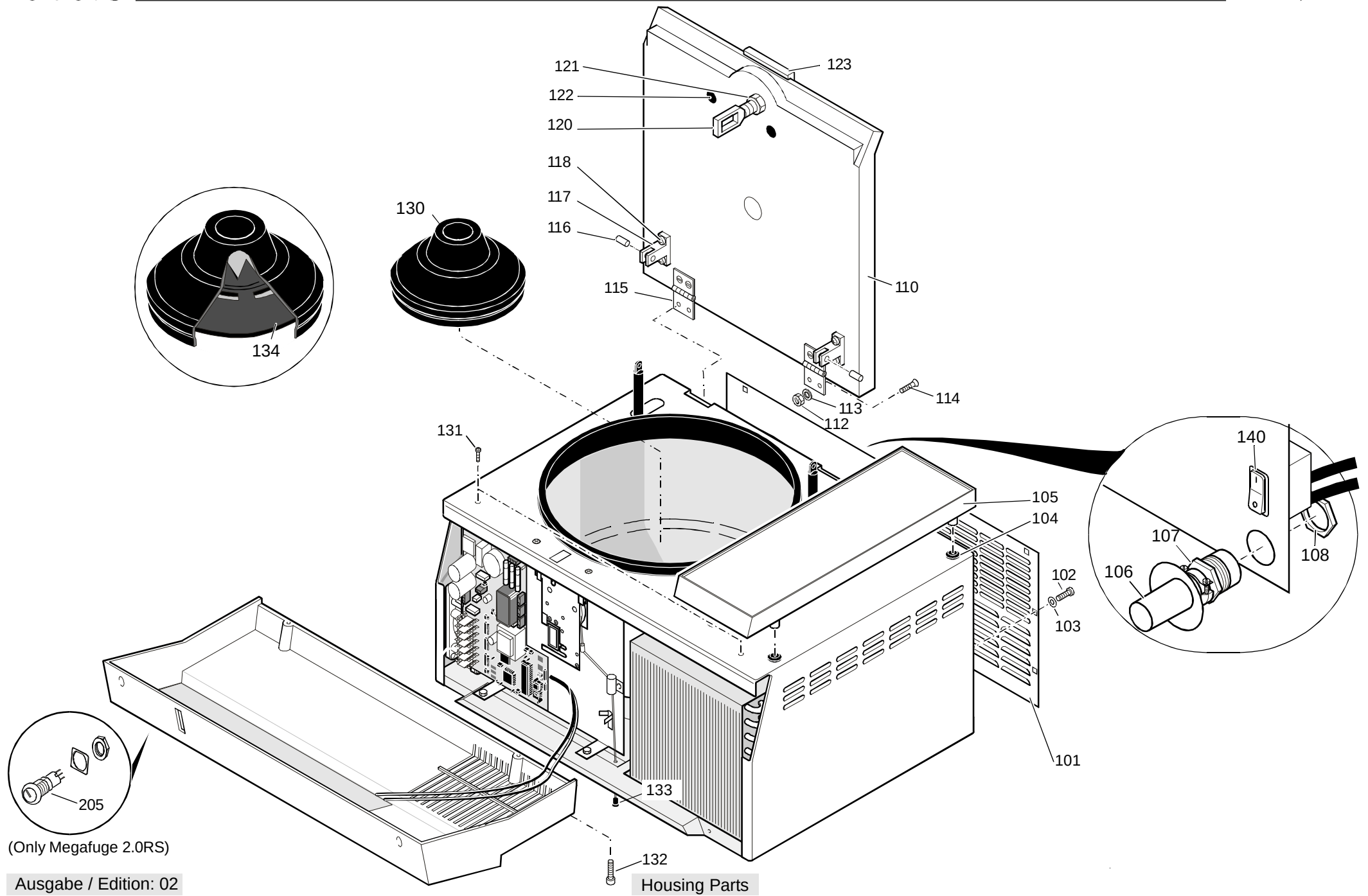
Ausgabe / Edition: 02

07.09.99 AH

Housing Parts



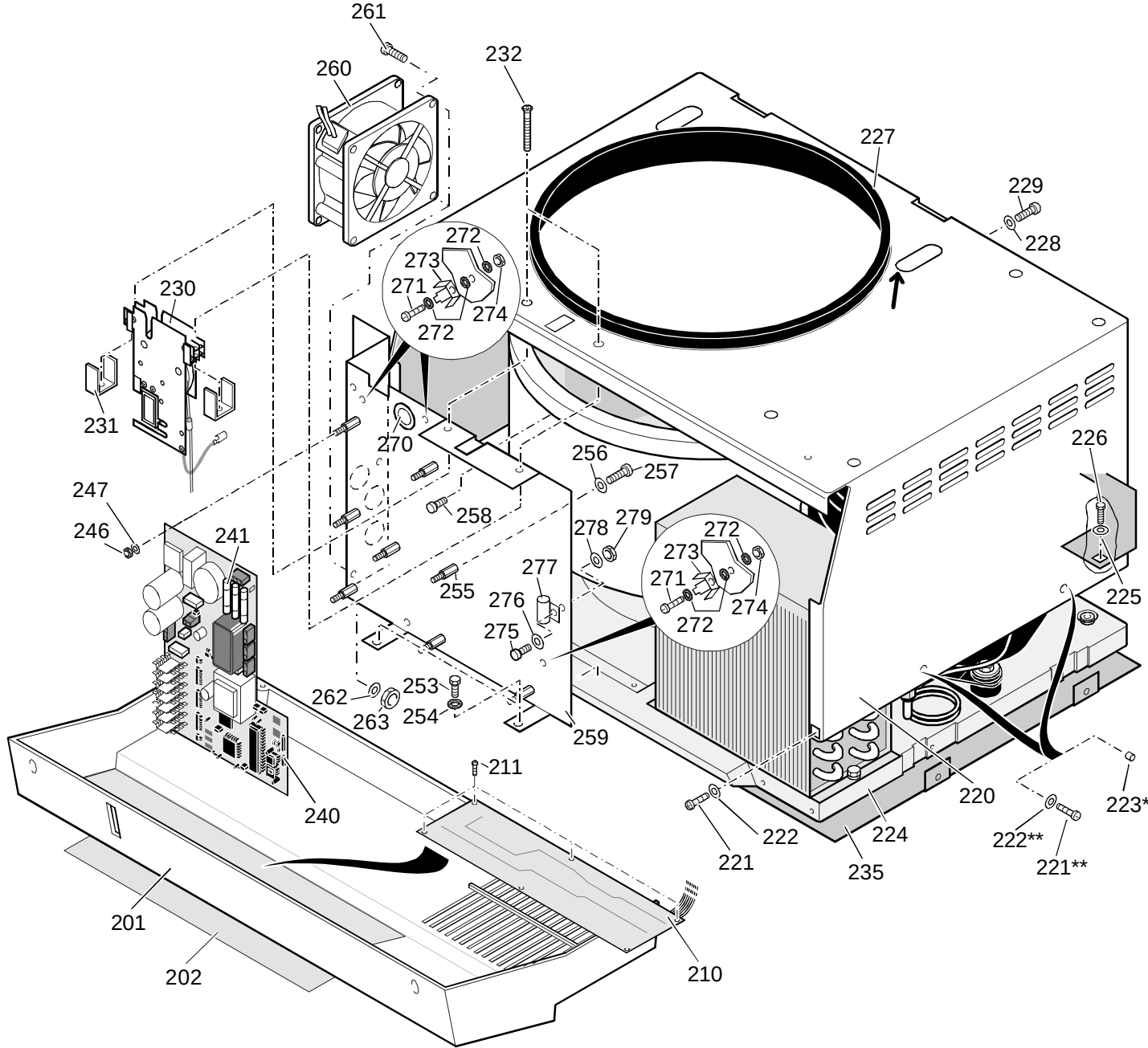
* Megafuge 1.0R
** Megafuge 2.0R



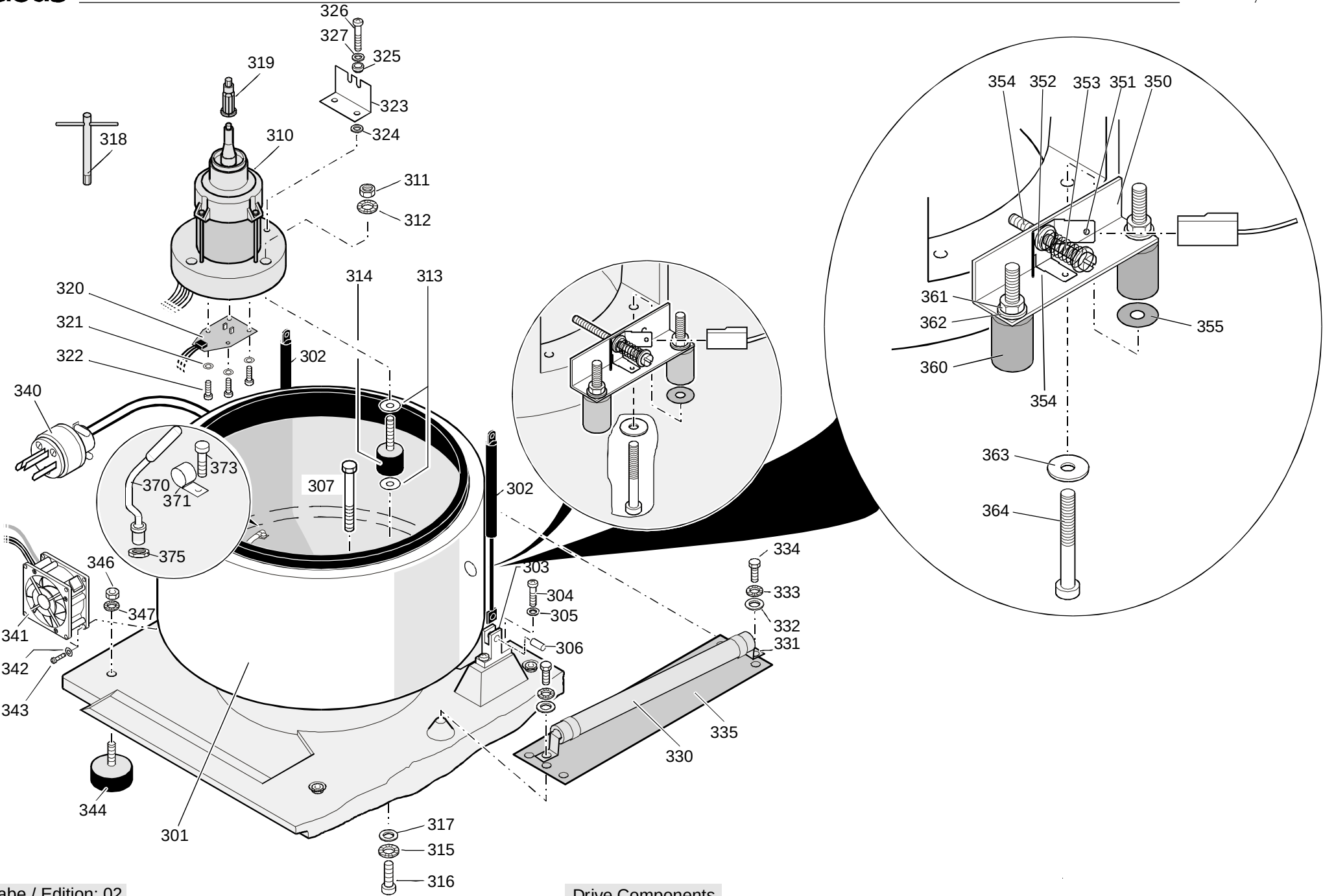
(Only Megafuge 2.0RS)

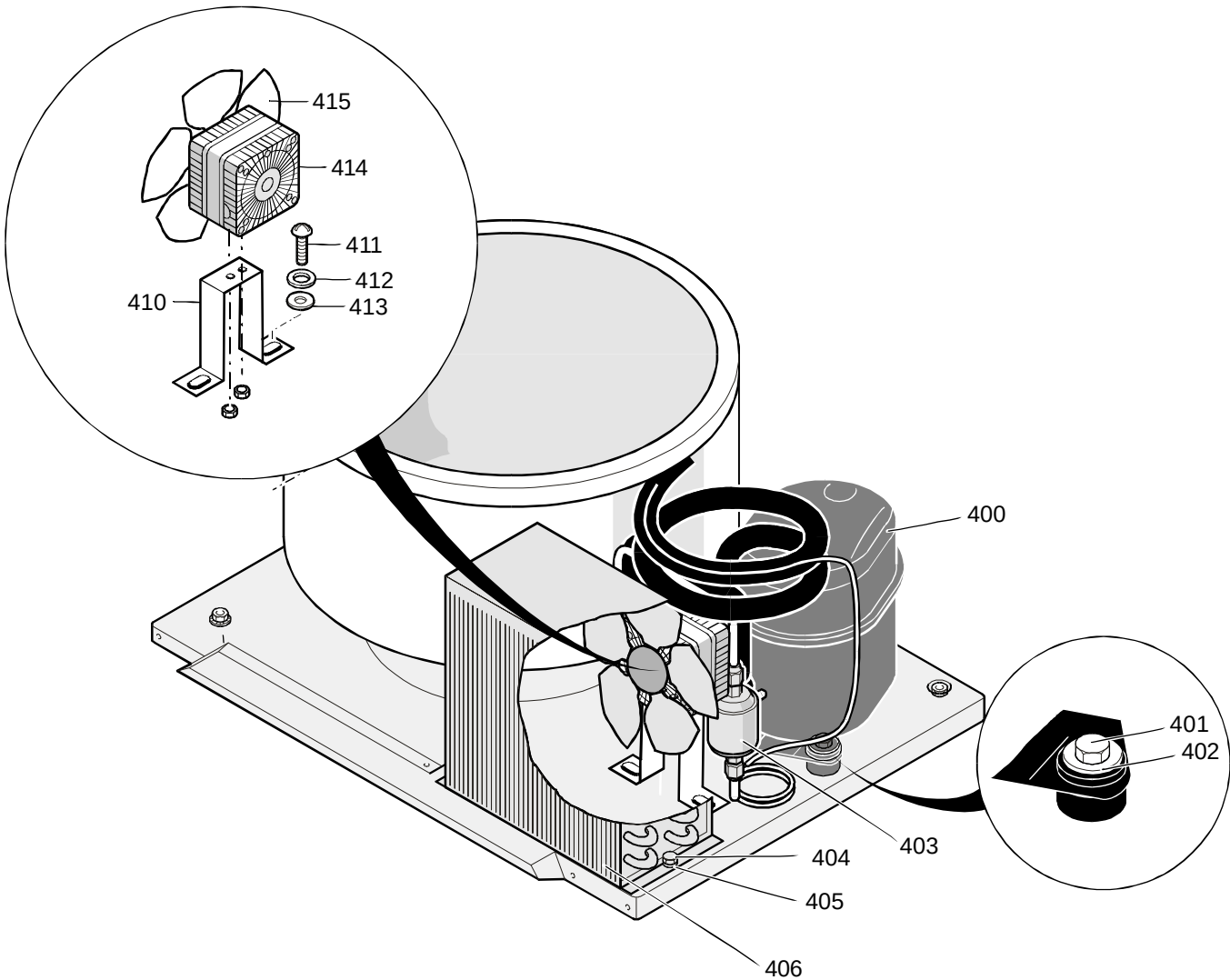
Ausgabe / Edition: 02

07.09.99 AH

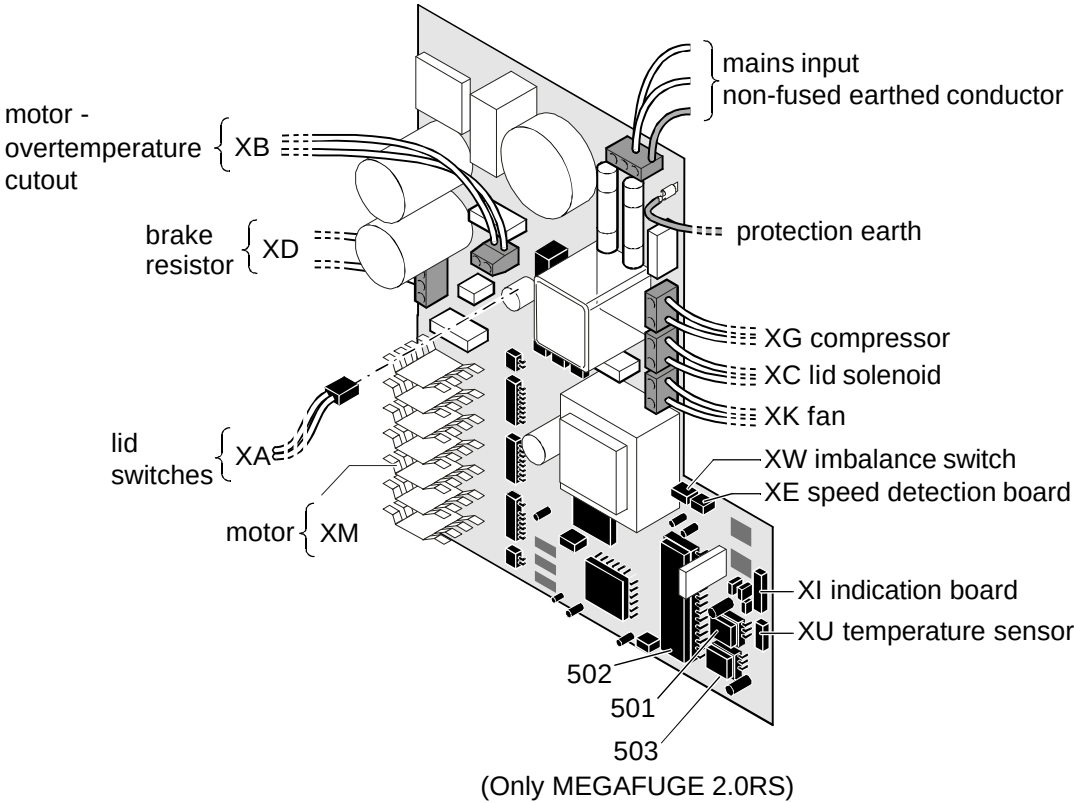


* Megafuge 1.0R
** Megafuge 2.0R

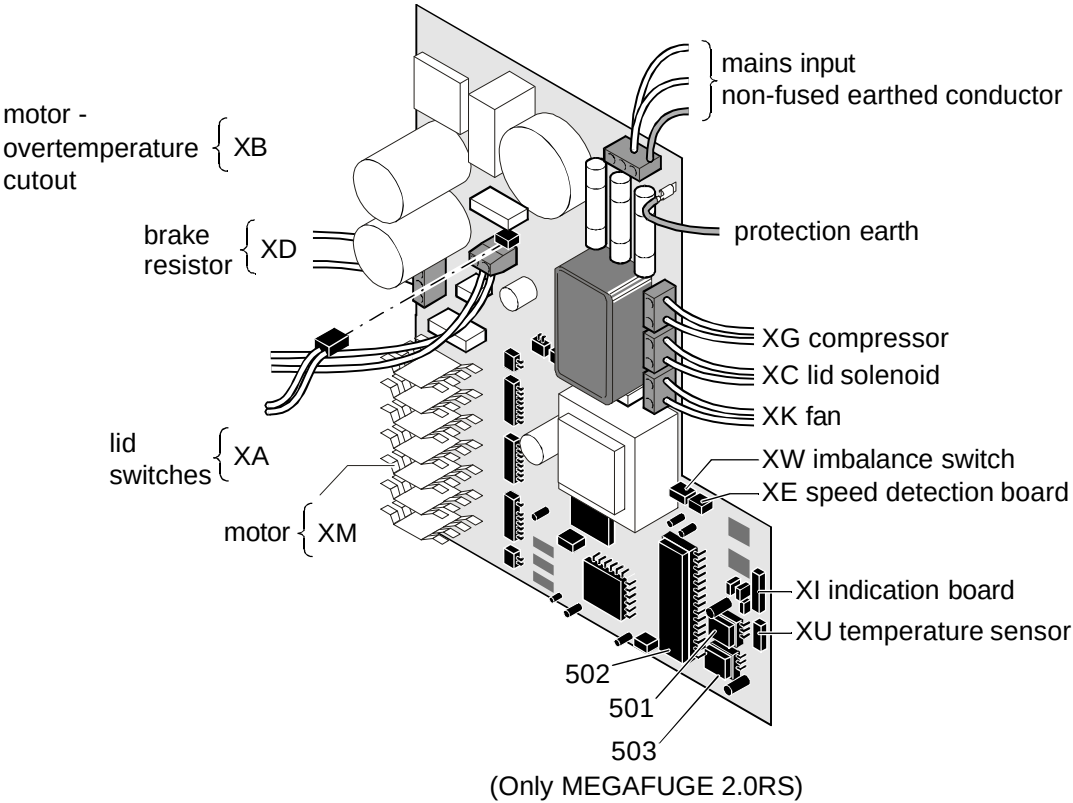




Main board 23 I



Main board 23 II



TECHNICAL BULLETIN

MEGAFUGE 1.0R / 2.0R / 2.0RS

Table of Contents – Section 7

TB. No.	Change	Date	Page	Edition
241/B35	List of main boards, processors and NV-Rams (Edition 03 is only valid)	05/93	7 - 2	03
264/B49	Software update for new rotors	01/94	7 – 3	01
268/B52	New refrigerant R134a	04/94	7 – 4	01
269/B53	Technical rework (new main board 23 – fan cooled)	04/94	7 – 5	01
273/B55	New attachment of motor lines	11/94	7 – 6	01
293/U60	Compressor relay on main board (Layout 54859-6)	03/97	7 –7+8	01

Technical Bulletin 241/B

Main boards, Microprocessors and NV-Ram's for our Centrifuges

For easy spare part order, see the following table:

ATTENTION – NOTICE!

FOR PROBER OPERATION, THE CORRECT PROCESSOR AND NV-RAM MUST BE INSTALLED IN THE MAIN BOARD.

In case of a main board replacement exchange also generally:

1. the CPU (central processing unit)
2. the NV-RAM (parameter storage)

Exceptions see following table.

Centrifuge	Cat. No. unit	Cat. no. Main Board	Cat. no. Processor	Cat. no. NV-RAM
Biofuge 13 Canlab	75003613	20150072	*	12901046
Biofuge 15 Baxter	75003604	20150036	12140427	*
Biofuge 15 Canlab	75003619	20150036	12140427	*
Biofuge 13R Baxter	75003582	20150065	12000461	12904089
Biofuge 15R Baxter	75003592	20150065	12000461	12904108
Clinifuge	75003538	20150076	*	12901066
Haemofuge Baxter	75003522	20150072	*	12901049
Megafuge 1.0 Baxter	75003492	20150056	12000460	12903000
Megafuge 1.0 Canlab	75003493	20150056	12000460	12903000
Megafuge 1.0R Baxter	75003062	20150067	12000464	12904088
Megafuge 3.0R Baxter	75008104	20150081	12000473	12904117

*** Parts are included with the main board all other main boards come without processor and / or NV-RAM.**

Technical Bulletin 264/B

1. **Engineering change:** Software upgrade due new rotor types.

2. **Reference to unit:**

Centrifuge	Rotor Cat. No.	New NV-RAM - (or *E-PROM) - Cat. No.	Processor Cat. No	available since
Type	[#]	[#]		
Biofuge 13	3757	70901048 V01		-----
Biofuge 13R	3757	70904089 V05		09.12.93
Biofuge 15 1)	3042	70903001 V02		01.12.93
Biofuge 15R	3042	70904090 V07		28.01.94
Contifuge 17RS	3042	70003599 V15 *		04.03.94
Biofuge 22R	3042	70005384 V15 *		04.03.94
Biofuge 28RS	3042	70003674 V20 *		11.03.94
Megafuge 1.0R	3041	70904088 V03	70000464 V14	11.01.94
Megafuge 2.0R	3041	70903006 V04	70000472 V05	11.01.94

1) ATTENTION! Order special CPU to initialise NV-RAM if soldered.

3. **Reason for change:** Introduction of new rotor types.

4. **Validity:** The recommended measure is only to perform in case of customer wishes (mailed request from - see appendix).

5. **Procedure:** Exchange of determined NV-RAM or EPROM.

Notice:

On Megafuge 1.0R / 2.0R also the CPU must be changed (Cat. No. see table before).

ATTENTION! CMOS component - discharge yourself before touching.

Notice:

Attention to **BIOFUGE 15** when NV-RAM is soldered on main board.

In this case a special CPU must be ordered to initialise the soldered NV-RAM.

Ordering sentence: (2222-11 NV - Init. - processor for 0427 V11 with Rotors 3042 and 3754 for Biofuge 15).

Performance:

- pull out mains plug

- remove processor out of socket

- insert initialising CPU

- reconnect mains plug and wait for completion of the self check routine

- disconnect the power cord and reinsert the removed CPU

- perform test run

6. **Appendix:** supplement for rotors

Technical Bulletin No. 268/B

1. Engineering change:

Introduction of the new CFC-free refrigerant R134a

Important note:

Field reworking of old units can not be performed supplementary.

2. Reference to unit:

The change is effective for:

MEGAFUGE 1.0R	Cat. No. 3062	Serial No. 210270
MEGAFUGE 2.0R	Cat. No. 3082	Serial No. 210443

Notice:

All units being equipped with cooling systems of the new refrigerant R134a are to identify by watching the instrument label. The Cat.-No. will have the addition of /01 (e.g. 75003062/**01**).

3. Reason for change:

Technical improvement with the view of an environmental friendly refrigerant.

4. Procedure:

The pages describing the above mentioned rework are marked with an "a".

Please add these pages to the Service Manual (see 5.).

5. Appendix:

Title	Drag. No.	Edition	Section / Page
Cooling Unit with Capillary Injection	SZ - 1227/B	0 3	3 - 5a + 6a
Disassembly of Instrument Parts	SZ - 1216/B	0 2	5 - 12
Parts List MEGAFUGE 1.0R	Cat. No. 3062	0 3	
Parts List MEGAFUGE 2.0R	Cat. No. 3082	0 2	

Technical Bulletin No. 269/B

1. Technical rework of units referring to 2.

Following parts have been reworked.

- main board
- NV-RAM
- CPU
- chassis of main board
- fan for electronics
- motor
- imbalance switch
- casing
- without block heat sink
- new cat. no.
- new cat. no.
- form has been changed
- new added
- longer leads
- longer leads
- slots added

Cat- No's. see
Spare parts lists

Important note:

Field reworking of old units can not be performed.

New NV-RAM and / or CPU must not be inserted to the old main board.

2. Reference to unit:

The change is effective for:

MEGAFUGE 1.0R cat. no. 3062 Serial No. 212615

MEGAFUGE 2.0R cat. no. 3082 Serial No. 212369

Notice:

All units being equipped with the new main board are to identify by watching the instrument label. The Cat.-No. will have the addition of /02 (e.g. 75003492/02).

3. Reason for change:

Technical improvement

4. Procedure:

The pages describing the above mentioned rework are marked with an "a".

Please add these pages to the Service Manual (see 5.).

5. Appendix:

Title	Drag. No.	Edition	Section / Page
Test Points on Main Board	SZ - 1222/B	0 3	2 - 5a + 6a
Block Diagram	SZ - 1450/B	0 2	4 - 1a
Wiring Diagram	SZ - 1451/B	0 2	4 - 2a + 3a
Wiring Connection	SZ - 1152/B	0 2	4 - 4a + 5a
Component Plan Main Board	SZ - 1153/B	0 2	4 - 6a
Disassembly of Instrument Parts	SZ - 1216/B	0 2	5 - 5a + 6a
Explosion Drawing	SZ - 1217/B	0 3	6 - 1a, 2a + 5a
Parts List MEGAFUGE 1.0	Cat. No. 3490	0 4	
Parts List MEGAFUGE 2.0	Cat. No. 3482	0 3	
Table of Contents - Section 7	SZ - 1197/B	0 3	7 - 1

Technical Bulletin No. 273/B

1. New attachment of motor lines.

2. Reference to unit:

This revision is valid for:

Megafuge 1.0 / 2.0 and Megafuge 1.0R / 2.0R equipped with the new ASIC main board.

Beginning with serial no. 216002 this revision has been proceeded in factory.

Important note:

All units being equipped with the ASIC main board are to identify by watching the instrument label.

The Cat.- No. of Megafuge 1.0 and 2.0 have got the addition of /01 and the Cat. No. of Megafuge 1.0R/2.0R have got the addition of /02 (e.g. 75003492/02).

3. Reason for change:

Up to this revision the motor lines have been attached on the main board fan by using a wire tie .

This could be lead to a damage of the electrical isolation and over there to a short circuit to ground.

4. Validity:

This revision is to proceed during maintenance or repair.

Attention!

Stocked units in field offices and sales departments have to be checked and worked over if necessary.

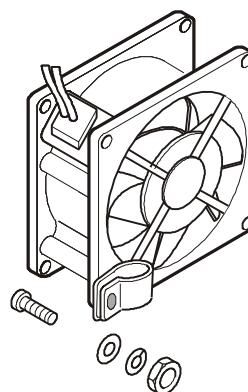
5. Procedure:

Cut off the wire tie (fixed to the fan's casing) and mount a cable clip to prevent the motor lines from being touched the by fan blades.

Use the lower boring on the left side of the fan and fix the clip with a M4 screw (see picture).

6. Required Parts:

clip	Cat. No.
screw M4 x 10	20220286
washer	20460095
securing washer VSK4	20480130
nut M4	20480244
	20420076



Technical Bulletin No. 293/U60

1. Engineering Change

Compressor relay on main board

2. Reference to Units

This change is valid for all variants of the **refrigerated one** and **two litre Megafuges**.
Changes are effective for in table given and all following Serial No's.

Centrifuge	Cat-No.	Serial No.
Megafuge 1.0R	3061/02	231.792
	3062/02	227.981
Megafuge 2.0R	3082/02	226.097
	3085/02	
Megafuge 2.0RS	3083/02	230.974

2. Reason for Change

Economies. Fuse and relay mounted on the back panel are no longer used. Improvement of operational reliability by an additional hardware over-current cut out (same error message as over-voltage: E08)

3. Validity

These changes are only to perform on units before the above mentioned Serial No's. if the stocked old main boards (layout No.'s before 54859-6) are used up.

The main board with the layout No. 54859-6 is completely compatible to the old one's, this is why the store number (Cat. No.) was not changed. Relay and fuse mounted on the unit's back panel need **not** to be replaced.

ATTENTION!

Old main boards must not be installed in the above mentioned units with **removed** relay and fuse on back panel!

5. Modification

Performance for modification see Service Manual 5.3.2 page 5 - 6. The following appended pages are to add or to replace on Service Manual.

6. Appendix

Title	Drawing No.	Edition	Section - Page
Block Diagram	55.825	02	4 - 1
Wiring Diagram	55.826/1+2	02	4 - 2+3
Connection Diagram	55.827/1+2	02	4 - 4+5
Component Plan	55.259	02	4 - 6
Break Down Drawing	MG1R_E1 3	04	6 - 1
Table of Contents		06	7 - 1

7. Required / Outgoing Parts

Required	Num.	Cat.-No.	Outgoing	Cat.-No.
main board -6 (No. was not changed)	1	20150092	main board -4/-5 relay fuse fuse holder	20150092 20130186 20230168 20230167

8. Stockage / Obsolete Parts

The old main board -4/-5 is to be used up further on for all refrigerated one and two litre Megafuges **before** the a.m. Serial No.'s.

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003061 - 01

MEGAFUGE 1.0R 120V 60HZ

from Serial-No. 208909

to Serial-No. 231791

Index	Partno.	Text
00101	70022666	BACK PANEL
00102	20460094	SCREW M 4 X 8
00103	20480130	WASHER 4,3
00104	20290187	CABLE ENTRY
00105	20022401	DEPOSITE
00106	20290320	CABLE ENTRY
00107	20220107	CORD GRIP
00108	20220106	NUT
00109	20420026	NUT
00110	20002695	LID WITH WINDOW
00112	20420077	HEXAGONAL NUT M5
00113	20480200	WASHER
00114	20430212	SCREW M 5 X 16
00115	20052364	HINGE
00116	20490287	PIN
00117	20023748	HINGE BRACKET
00118	20460143	SCREW M5X28
00120	20052842	LID HOOK
00121	20420121	NUT M 10 X 1,25
00122	20460112	SCREW M 4 X 16
00123	20051919	HANDLE
00130	20022576	RUBBER FLANGE
00131	20460095	SCREW PHILIPS M4 X 10
00132	20510052	SCREW M4 X 10
00133	20310316	CLIP
00134	20056085	INSOLATION
00140	20180589	SWITCH
00141	20230168	FUSE 15A T
00142	20230167	FUSE HOLDER
00143	20460112	SCREW M 4 X 16
00144	20480130	WASHER 4,3
00145	20480244	LOCK WASHER
00146	20420076	HEXAGONAL NUT M4
00150	20130186	RELAY
00151	20460095	SCREW PHILIPS M4 X 10
00152	20480244	LOCK WASHER
00153	20480130	WASHER 4,3
00154	20420076	HEXAGONAL NUT M4
00155	20540318	RC-COMBINATION

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003061 - 01

MEGAFUGE 1.0R 120V 60HZ

from Serial-No. 208909

to Serial-No. 231791

Index	Partno.	Text
00160	20220490	TERMINAL CLAMP
00161	20440291	SCREW
00162	20480130	WASHER 4,3
00163	20420076	HEXAGONAL NUT M4
00201	20022402	FRONT COVER
00202	20055573	FOIL
00210	20150044	INDICATION AND KEY BOARD
00211	20460122	SCREW 3X6
00220	70055370	HOUSING
00221	20460094	SCREW M 4 X 8
00222	20480224	WASHER A 4,3
00223	20310264	CAP
00224	20022578	BOTTOM PLATE
00225	20480224	WASHER A 4,3
00226	20460094	SCREW M 4 X 8
00227	20290516	SEAL
00228	20480200	WASHER
00229	20460096	SCREW M5X10
00230	70003724	LID LOCK
00231	70022477	FIXING CLAMP
00232	20440306	SCREW M5X40
00240	20150092	MAINBOARD
00241	20230172	FUSE 15 A
00246	20420076	HEXAGONAL NUT M4
00247	20480244	LOCK WASHER
00253	20460095	SCREW PHILIPS M4 X 10
00254	20480130	WASHER 4,3
00255	20220426	SPACER
00256	20480244	LOCK WASHER
00257	20460095	SCREW PHILIPS M4 X 10
00258	20440285	SCREW
00259	70055369	FRONTPANEL
00260	20210341	FAN
00261	20460090	SCREW M4X12
00262	20480244	LOCK WASHER
00263	20420076	HEXAGONAL NUT M4
00270	20290534	NOZZLE
00271	20460095	SCREW PHILIPS M4 X 10
00272	20480108	FAN WASHER A 4,3

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003061 - 01

MEGAFUGE 1.0R 120V 60HZ

from Serial-No. 208909

to Serial-No. 231791

Index	Partno.	Text
00273	20180138	CONNECTOR
00274	20420076	HEXAGONAL NUT M4
00301	70904031	EVAPORATOR
00302	20310309	GAS LID STAY
00303	20023748	HINGE BRACKET
00304	20460096	SCREW M5X10
00305	20480167	FAN WASHER A 5,1
00306	20490287	PIN
00307	20460104	SCREW M4X25
00310	20210332	MOTOR
00311	20420070	NUT M 6
00312	20480251	SECURING WASHER
00313	10104080	WASHER (SAND)
00314	20052555	ANTI VIBRATION MOUNT
00315	20480251	SECURING WASHER
00316	20430220	SCREW M6X25
00317	20480193	WASHER
00318	20360047	BOX SPANNER
00319	70003100	COLLET CHUCK
00320	20150028	SPEED CONTROL BOARD
00321	20480242	SECURING WASHER
00322	20460098	SCREW M 3 X 6
00323	70022632	BRACKET
00324	20250071	WASHER
00325	20220484	SPACER
00326	20460090	SCREW M4X12
00327	20480244	LOCK WASHER
00330	20160685	RESISTOR 150R 150W
00331	20220483	ANGLE
00332	20480200	WASHER
00333	20480167	FAN WASHER A 5,1
00334	20430258	SCREW M5X12
00335	70038969	INSULATING SHEET
00340	70002287	POWER SUPPLY CABLE
00341	20210325	FAN
00342	20480244	LOCK WASHER
00343	20460095	SCREW PHILIPS M4 X 10
00344	20300059	FOOT
00346	20420078	NUT

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003061 - 01

MEGAFUGE 1.0R 120V 60HZ

from Serial-No. 208909

to Serial-No. 231791

Index	Partno.	Text
00347	20480158	WASHER
00350	70023955	BRACKEL
00351	20180138	CONNECTOR
00352	20480130	WASHER 4,3
00353	20028940	SPRING
00354	20470081	SCREW M4 X 30
00355	10104080	WASHER (SAND)
00360	20020732	ANTI VIBRATION MOUNT
00361	20420070	NUT M 6
00362	20480251	SECURING WASHER
00363	20250085	WASHER 6,4
00364	20510125	SCREW M6 X 40
00370	70902547	TEMP. SENSOR
00371	20220286	GRIP 6,5
00373	20440309	SCREW M4 X 35
00375	20220100	NUT PG 9
00400	20240465	COMPRESSOR
00401	20430048	SCREW M 8 X 35
00402	20480158	WASHER
00403	20240453	FILTERDRYER
00404	20430216	SCREW M 6 X 12
00405	20480251	SECURING WASHER
00406	20022579	CONDENSOR
00410	20210306	ANGLE
00411	20430216	SCREW M 6 X 12
00412	20480251	SECURING WASHER
00413	20480193	WASHER
00414	20210323	MOTOR FAN
00415	20210308	FAN BLADE
00501	70903009	EEPROM MEGA 1.0R
00502	70000491	PROCESSOR

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003061 - 02

MEGAFUGE 1.0R 120V 60HZ

from Serial-No. 231792

to Serial-No.

Index	Partno.	Text
00101	70022666	BACK PANEL
00102	20460094	SCREW M 4 X 8
00103	20480130	WASHER 4,3
00104	20290187	CABLE ENTRY
00105	20022401	DEPOSITE
00106	20290320	CABLE ENTRY
00107	20220107	CORD GRIP
00108	20220106	NUT
00109	20420026	NUT
00110	20002695	LID WITH WINDOW
00112	20420077	HEXAGONAL NUT M5
00113	20480200	WASHER
00114	20430212	SCREW M 5 X 16
00115	20052364	HINGE
00116	20490287	PIN
00117	20023748	HINGE BRACKET
00118	20460143	SCREW M5X28
00120	20052842	LID HOOK
00121	20420151	NUT M10 X 1.25
00122	20460112	SCREW M 4 X 16
00123	20051919	HANDLE
00130	20022576	RUBBER FLANGE
00131	20460095	SCREW PHILIPS M4 X 10
00132	20510052	SCREW M4 X 10
00133	20310316	CLIP
00140	20180589	SWITCH
00201	20022402	FRONT COVER
00202	20055573	FOIL
00210	20150044	INDICATION AND KEY BOARD
00211	20460122	SCREW 3X6
00220	70055370	HOUSING
00221	20460094	SCREW M 4 X 8
00222	20480224	WASHER A 4,3
00223	20310264	CAP
00224	20022578	BOTTOM PLATE
00225	20480224	WASHER A 4,3
00226	20460094	SCREW M 4 X 8
00227	20290516	SEAL
00228	20480200	WASHER

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003061 - 02

MEGAFUGE 1.0R 120V 60HZ

from Serial-No. 231792

to Serial-No.

Index	Partno.	Text
00229	20460096	SCREW M5X10
00230	70003724	LID LOCK
00231	70022477	FIXING CLAMP
00232	20440306	SCREW M5X40
00240	20150092	MAINBOARD
00241	20230172	FUSE 15 A
00246	20420076	HEXAGONAL NUT M4
00247	20480244	LOCK WASHER
00253	20460095	SCREW PHILIPS M4 X 10
00254	20480130	WASHER 4,3
00255	20220426	SPACER
00256	20480244	LOCK WASHER
00257	20460095	SCREW PHILIPS M4 X 10
00258	20440285	SCREW
00259	70055369	FRONTPANEL
00260	20210341	FAN
00261	20460090	SCREW M4X12
00262	20480244	LOCK WASHER
00263	20420076	HEXAGONAL NUT M4
00270	20290534	NOZZLE
00271	20460095	SCREW PHILIPS M4 X 10
00272	20480108	FAN WASHER A 4,3
00273	20180138	CONNECTOR
00274	20420076	HEXAGONAL NUT M4
00301	70904031	EVAPORATOR
00302	20310309	GAS LID STAY
00303	20023748	HINGE BRACKET
00304	20460096	SCREW M5X10
00305	20480167	FAN WASHER A 5,1
00306	20490287	PIN
00307	20460104	SCREW M4X25
00310	20210332	MOTOR
00311	20420070	NUT M 6
00312	20480251	SECURING WASHER
00313	10104080	WASHER (SAND)
00314	20052555	ANTI VIBRATION MOUNT
00315	20480251	SECURING WASHER
00316	20430220	SCREW M6X25
00317	20480193	WASHER

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003061 - 02

MEGAFUGE 1.0R 120V 60HZ

from Serial-No. 231792

to Serial-No.

Index	Partno.	Text
00318	20360047	BOX SPANNER
00319	70003100	COLLET CHUCK
00320	20150028	SPEED CONTROL BOARD
00321	20480242	SECURING WASHER
00322	20460098	SCREW M 3 X 6
00323	70022632	BRACKET
00324	20250071	WASHER
00325	20220484	SPACER
00326	20460090	SCREW M4X12
00327	20480244	LOCK WASHER
00330	20160685	RESISTOR 150R 150W
00331	20220483	ANGLE
00332	20480200	WASHER
00333	20480167	FAN WASHER A 5,1
00334	20430258	SCREW M5X12
00335	70038969	INSULATING SHEET
00340	70002287	POWER SUPPLY CABLE
00341	20210325	FAN
00342	20480244	LOCK WASHER
00343	20460095	SCREW PHILIPS M4 X 10
00344	20300059	FOOT
00346	20420078	NUT
00347	20480158	WASHER
00350	70023955	BRACKEL
00351	20180138	CONNECTOR
00352	20480130	WASHER 4,3
00353	20028940	SPRING
00354	20470081	SCREW M4 X 30
00355	10104080	WASHER (SAND)
00360	20020732	ANTI VIBRATION MOUNT
00361	20420070	NUT M 6
00362	20480251	SECURING WASHER
00363	20250085	WASHER 6,4
00364	20510125	SCREW M6 X 40
00370	70902547	TEMP. SENSOR
00371	20220286	GRIP 6,5
00373	20440309	SCREW M4 X 35
00375	20220100	NUT PG 9
00400	20240465	COMPRESSOR

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003061 - 02

MEGAFUGE 1.0R 120V 60HZ

from Serial-No. 231792

to Serial-No.

Index	Partno.	Text
00401	20430048	SCREW M 8 X 35
00402	20480158	WASHER
00403	20240453	FILTERDRYER
00404	20430216	SCREW M 6 X 12
00405	20480251	SECURING WASHER
00406	20022579	CONDENSOR
00410	20210367	START UNIT F 21EV
00411	20430216	SCREW M 6 X 12
00412	20480251	SECURING WASHER
00413	20480193	WASHER
00414	20210366	FAN
00415	20210308	FAN BLADE
00501	70903009	EEPROM MEGA 1.0R
00502	70000491	PROCESSOR

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003062 - 01

MEGAFUGE 1.0 R, 120 V/60 HZ

from Serial-No.

to Serial-No.

Index	Partno.	Text
00101	70022666	BACK PANEL
00102	20460094	SCREW M 4 X 8
00103	20480130	WASHER 4,3
00104	20290187	CABLE ENTRY
00105	20022401	DEPOSITE
00106	20290320	CABLE ENTRY
00107	20220107	CORD GRIP
00108	20220106	NUT
00110	70904042	REPLACED BY 20002695 (LID)
00111	20022340	WINDOW
00112	20420077	HEXAGONAL NUT M5
00113	20480200	WASHER
00114	20430212	SCREW M 5 X 16
00115	20052364	HINGE
00116	20490287	PIN
00117	20023748	HINGE BRACKET
00118	20460143	SCREW M5X28
00120	20052842	LID HOOK
00121	20420121	NUT M 10 X 1,25
00122	20460112	SCREW M 4 X 16
00123	20051919	HANDLE
00130	20022576	RUBBER FLANGE
00131	20460095	SCREW PHILIPS M4 X 10
00132	20510052	SCREW M4 X 10
00133	20310316	CLIP
00134	20056085	INSOLATION
00140	20180589	SWITCH
00141	20230168	FUSE 15A T
00142	20230167	FUSE HOLDER
00143	20440298	SCREW M4X12
00144	20480130	WASHER 4,3
00145	20480244	LOCK WASHER
00146	20420076	HEXAGONAL NUT M4
00201	20022402	FRONT COVER
00202	20022648	KEY FOIL
00210	20150044	INDICATION AND KEY BOARD
00211	20460122	SCREW 3X6
00220	70022580	HOUSING
00221	20460094	SCREW M 4 X 8

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003062 - 01

MEGAFUGE 1.0 R, 120 V/60 HZ

from Serial-No.

to Serial-No.

Index	Partno.	Text
00222	20480224	WASHER A 4,3
00224	20022578	BOTTOM PLATE
00225	20480224	WASHER A 4,3
00226	20460094	SCREW M 4 X 8
00227	20290516	SEAL
00228	20480200	WASHER
00229	20460096	SCREW M5X10
00230	70003700	LID LOCK ASSY
00231	70022477	FIXING CLAMP
00232	20440306	SCREW M5X40
00234	20220183	TERMINAL
00240	20150067	MAIN BOARD
00241	20230172	FUSE 15 A
00243	70053916	ANGLE SHEET
00244	20480244	LOCK WASHER
00245	20460099	SCREW
00246	20420076	HEXAGONAL NUT M4
00247	20480244	LOCK WASHER
00248	20430207	SCREW M 4 X 10
00249	20480244	LOCK WASHER
00250	20053685	HEAT SINK
00251	20053908	INSULATING FOIL
00252	20054234	INSULATING FOIL
00253	20460095	SCREW PHILIPS M4 X 10
00254	20480130	WASHER 4,3
00255	20220426	SPACER
00256	20480244	LOCK WASHER
00257	20460095	SCREW PHILIPS M4 X 10
00258	20440285	SCREW
00259	70022629	FRONT COVER
00301	70904031	EVAPORATOR
00302	20310309	GAS LID STAY
00303	20023748	HINGE BRACKET
00304	20460096	SCREW M5X10
00305	20480167	FAN WASHER A 5,1
00306	20490287	PIN
00307	20460104	SCREW M4X25
00310	20210317	MOTOR
00311	20420070	NUT M 6

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003062 - 01

MEGAFUGE 1.0 R, 120 V/60 HZ

from Serial-No.

to Serial-No.

Index	Partno.	Text
00312	20480251	SECURING WASHER
00313	10104080	WASHER (SAND)
00314	20052555	ANTI VIBRATION MOUNT
00315	20480251	SECURING WASHER
00316	20430220	SCREW M6X25
00317	20480193	WASHER
00318	20360047	BOX SPANNER
00319	70003100	COLLET CHUCK
00320	20150028	SPEED CONTROL BOARD
00321	20480242	SECURING WASHER
00322	20460098	SCREW M 3 X 6
00323	70022632	BRACKET
00324	20250071	WASHER
00325	20220484	SPACER
00326	20460090	SCREW M4X12
00327	20480244	LOCK WASHER
00330	20160685	RESISTOR 150R 150W
00331	20220483	ANGLE
00332	20480200	WASHER
00333	20480167	FAN WASHER A 5,1
00334	20430258	SCREW M5X12
00335	70038969	INSULATING SHEET
00340	70002287	POWER SUPPLY CABLE
00341	20210325	FAN
00342	20480244	LOCK WASHER
00343	20460095	SCREW PHILIPS M4 X 10
00344	20300059	FOOT
00346	20420078	NUT
00347	20480158	WASHER
00350	70023955	BRACKEL
00351	20180138	CONNECTOR
00352	20480130	WASHER 4,3
00353	20028940	SPRING
00354	20470081	SCREW M4 X 30
00355	10104080	WASHER (SAND)
00360	20020732	ANTI VIBRATION MOUNT
00361	20420070	NUT M 6
00362	20480251	SECURING WASHER
00363	20250085	WASHER 6,4

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003062 - 01

MEGAFUGE 1.0 R, 120 V/60 HZ

from Serial-No.

to Serial-No.

Index	Partno.	Text
00364	20510125	SCREW M6 X 40
00370	70904040	TEMP. SENSOR
00371	20220286	GRIP 6,5
00372	20054394	SPACER
00373	20440309	SCREW M4 X 35
00375	20220100	NUT PG 9
00380	20130217	RELAIS
00381	20440023	SCREW M3 X 8
00382	20480124	WASHER
00383	20420069	HEXAGONAL NUT M3
00384	70054295	TRANSFORMER CHASSIS
00385	20480157	WASHER
00386	20430034	SCREW M6X25
00387	20540318	RC-COMBINATION
00390	20170296	TRANSFORMER
00391	20430038	SCREW M6 X 55
00392	20480157	WASHER
00393	20420076	HEXAGONAL NUT M4
00394	20480130	WASHER 4,3
00395	20220490	TERMINAL CLAMP
00396	20220548	CLAMP
00397	20440291	SCREW
00400	20240445	COMPRESSOR
00401	20430048	SCREW M 8 X 35
00402	20480158	WASHER
00403	20240363	DRYING CARTRIGE
00404	20430216	SCREW M 6 X 12
00405	20480251	SECURING WASHER
00406	20022579	CONDENSOR
00410	20210306	ANGLE
00411	20430216	SCREW M 6 X 12
00412	20480251	SECURING WASHER
00413	20480193	WASHER
00414	20210323	MOTOR FAN
00415	20210308	FAN BLADE
00501	70904088	NV-RAM
00502	70000464	PROCESSOR MEGAFUGE 1.0R VER

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003062 - 02

MEGAFUGE 1.0 R, 120 V/60 HZ

from Serial-No.

to Serial-No.

Index	Partno.	Text
00101	70022666	BACK PANEL
00102	20460094	SCREW M 4 X 8
00103	20480130	WASHER 4,3
00104	20290187	CABLE ENTRY
00105	20022401	DEPOSITE
00106	20290320	CABLE ENTRY
00107	20220107	CORD GRIP
00108	20220106	NUT
00110	20002695	LID WITH WINDOW
00112	20420077	HEXAGONAL NUT M5
00113	20480200	WASHER
00114	20430212	SCREW M 5 X 16
00115	20052364	HINGE
00116	20490287	PIN
00117	20023748	HINGE BRACKET
00118	20460143	SCREW M5X28
00120	20052842	LID HOOK
00121	20420121	NUT M 10 X 1,25
00122	20460112	SCREW M 4 X 16
00123	20051919	HANDLE
00130	20022576	RUBBER FLANGE
00131	20460095	SCREW PHILIPS M4 X 10
00132	20510052	SCREW M4 X 10
00133	20310316	CLIP
00134	20056085	INSULATION
00140	20180589	SWITCH
00141	20230168	FUSE 15A T
00142	20230167	FUSE HOLDER
00143	20440298	SCREW M4X12
00144	20480130	WASHER 4,3
00145	20480244	LOCK WASHER
00146	20420076	HEXAGONAL NUT M4
00201	20022402	FRONT COVER
00202	20022648	KEY FOIL
00210	20150044	INDICATION AND KEY BOARD
00211	20460122	SCREW 3X6
00220	70022580	HOUSING
00221	20460094	SCREW M 4 X 8
00222	20480224	WASHER A 4,3

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003062 - 02

MEGAFUGE 1.0 R, 120 V/60 HZ

from Serial-No.

to Serial-No.

Index	Partno.	Text
00223	20310264	CAP
00224	20022578	BOTTOM PLATE
00225	20480224	WASHER A 4,3
00226	20460094	SCREW M 4 X 8
00227	20290516	SEAL
00228	20480200	WASHER
00229	20460096	SCREW M5X10
00230	70003700	LID LOCK ASSY
00231	70022477	FIXING CLAMP
00232	20440306	SCREW M5X40
00234	20220183	TERMINAL
00240	20150067	MAIN BOARD
00241	20230172	FUSE 15 A
00243	70053916	ANGLE SHEET
00244	20480244	LOCK WASHER
00245	20460099	SCREW
00246	20420076	HEXAGONAL NUT M4
00247	20480244	LOCK WASHER
00248	20430207	SCREW M 4 X 10
00249	20480244	LOCK WASHER
00250	20053685	HEAT SINK
00251	20053908	INSULATING FOIL
00252	20054234	INSULATING FOIL
00253	20460095	SCREW PHILIPS M4 X 10
00254	20480130	WASHER 4,3
00255	20220426	SPACER
00256	20480244	LOCK WASHER
00257	20460095	SCREW PHILIPS M4 X 10
00258	20440285	SCREW
00259	70022629	FRONT COVER
00301	70904031	EVAPORATOR
00302	20310309	GAS LID STAY
00303	20023748	HINGE BRACKET
00304	20460096	SCREW M5X10
00305	20480167	FAN WASHER A 5,1
00306	20490287	PIN
00307	20460104	SCREW M4X25
00310	20210317	MOTOR
00311	20420070	NUT M 6

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003062 - 02

MEGAFUGE 1.0 R, 120 V/60 HZ

from Serial-No.

to Serial-No.

Index	Partno.	Text
00312	20480251	SECURING WASHER
00313	10104080	WASHER (SAND)
00314	20052555	ANTI VIBRATION MOUNT
00315	20480251	SECURING WASHER
00316	20430220	SCREW M6X25
00317	20480193	WASHER
00318	20360047	BOX SPANNER
00319	70003100	COLLET CHUCK
00320	20150028	SPEED CONTROL BOARD
00321	20480242	SECURING WASHER
00322	20460098	SCREW M 3 X 6
00323	70022632	BRACKET
00324	20250071	WASHER
00325	20220484	SPACER
00326	20460090	SCREW M4X12
00327	20480244	LOCK WASHER
00330	20160685	RESISTOR 150R 150W
00331	20220483	ANGLE
00332	20480200	WASHER
00333	20480167	FAN WASHER A 5,1
00334	20430258	SCREW M5X12
00335	70038969	INSULATING SHEET
00340	70002287	POWER SUPPLY CABLE
00341	20210325	FAN
00342	20480244	LOCK WASHER
00343	20460095	SCREW PHILIPS M4 X 10
00344	20300059	FOOT
00346	20420078	NUT
00347	20480158	WASHER
00350	70023955	BRACKEL
00351	20180138	CONNECTOR
00352	20480130	WASHER 4,3
00353	20028940	SPRING
00354	20470081	SCREW M4 X 30
00355	10104080	WASHER (SAND)
00360	20020732	ANTI VIBRATION MOUNT
00361	20420070	NUT M 6
00362	20480251	SECURING WASHER
00363	20250085	WASHER 6,4

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003062 - 02

MEGAFUGE 1.0 R, 120 V/60 HZ

from Serial-No.

to Serial-No.

Index	Partno.	Text
00364	20510125	SCREW M6 X 40
00370	70904040	TEMP. SENSOR
00371	20220286	GRIP 6,5
00373	20440309	SCREW M4 X 35
00375	20220100	NUT PG 9
00380	20130217	RELAIS
00381	20440023	SCREW M3 X 8
00382	20480124	WASHER
00383	20420069	HEXAGONAL NUT M3
00384	70054295	TRANSFORMER CHASSIS
00385	20480157	WASHER
00386	20430034	SCREW M6X25
00387	20540318	RC-COMBINATION
00390	20170296	TRANSFORMER
00391	20430038	SCREW M6 X 55
00392	20480157	WASHER
00393	20420076	HEXAGONAL NUT M4
00394	20480130	WASHER 4,3
00395	20220490	TERMINAL CLAMP
00396	20220548	CLAMP
00397	20440291	SCREW
00400	20240445	COMPRESSOR
00401	20430048	SCREW M 8 X 35
00402	20480158	WASHER
00403	20240363	DRYING CARTRIGE
00404	20430216	SCREW M 6 X 12
00405	20480251	SECURING WASHER
00406	20022579	CONDENSOR
00410	20210306	ANGLE
00411	20430216	SCREW M 6 X 12
00412	20480251	SECURING WASHER
00413	20480193	WASHER
00414	20210323	MOTOR FAN
00415	20210308	FAN BLADE
00501	70904088	NV-RAM
00502	70000464	PROCESSOR MEGAFUGE 1.0R VER

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003062 - 03

MEGAFUGE 1.0 R, 120 V/60 HZ

from Serial-No. 210270

to Serial-No. 212614

Index	Partno.	Text
00101	70022666	BACK PANEL
00102	20460094	SCREW M 4 X 8
00103	20480130	WASHER 4,3
00104	20290187	CABLE ENTRY
00105	20022401	DEPOSITE
00106	20290320	CABLE ENTRY
00107	20220107	CORD GRIP
00108	20220106	NUT
00110	20002695	LID WITH WINDOW
00112	20420077	HEXAGONAL NUT M5
00113	20480200	WASHER
00114	20430212	SCREW M 5 X 16
00115	20052364	HINGE
00116	20490287	PIN
00117	20023748	HINGE BRACKET
00118	20460143	SCREW M5X28
00120	20052842	LID HOOK
00121	20420121	NUT M 10 X 1,25
00122	20460112	SCREW M 4 X 16
00123	20051919	HANDLE
00130	20022576	RUBBER FLANGE
00131	20460095	SCREW PHILIPS M4 X 10
00132	20510052	SCREW M4 X 10
00133	20310316	CLIP
00134	20056085	INSULATION
00140	20180589	SWITCH
00141	20230168	FUSE 15A T
00142	20230167	FUSE HOLDER
00143	20440298	SCREW M4X12
00144	20480130	WASHER 4,3
00145	20480244	LOCK WASHER
00146	20420076	HEXAGONAL NUT M4
00201	20022402	FRONT COVER
00202	20022648	KEY FOIL
00210	20150044	INDICATION AND KEY BOARD
00211	20460122	SCREW 3X6
00220	70022580	HOUSING
00221	20460094	SCREW M 4 X 8
00222	20480224	WASHER A 4,3

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003062 - 03

MEGAFUGE 1.0 R, 120 V/60 HZ

from Serial-No. 210270

to Serial-No. 212614

Index	Partno.	Text
00223	20310264	CAP
00224	20022578	BOTTOM PLATE
00225	20480224	WASHER A 4,3
00226	20460094	SCREW M 4 X 8
00227	20290516	SEAL
00228	20480200	WASHER
00229	20460096	SCREW M5X10
00230	70003700	LID LOCK ASSY
00231	70022477	FIXING CLAMP
00232	20440306	SCREW M5X40
00234	20220183	TERMINAL
00240	20150067	MAIN BOARD
00241	20230172	FUSE 15 A
00243	70053916	ANGLE SHEET
00244	20480244	LOCK WASHER
00245	20460099	SCREW
00246	20420076	HEXAGONAL NUT M4
00247	20480244	LOCK WASHER
00248	20430207	SCREW M 4 X 10
00249	20480244	LOCK WASHER
00250	20053685	HEAT SINK
00251	20053908	INSULATING FOIL
00252	20054234	INSULATING FOIL
00253	20460095	SCREW PHILIPS M4 X 10
00254	20480130	WASHER 4,3
00255	20220426	SPACER
00256	20480244	LOCK WASHER
00257	20460095	SCREW PHILIPS M4 X 10
00258	20440285	SCREW
00259	70022629	FRONT COVER
00301	70904031	EVAPORATOR
00302	20310309	GAS LID STAY
00303	20023748	HINGE BRACKET
00304	20460096	SCREW M5X10
00305	20480167	FAN WASHER A 5,1
00306	20490287	PIN
00307	20460104	SCREW M4X25
00310	20210317	MOTOR
00311	20420070	NUT M 6

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003062 - 03

MEGAFUGE 1.0 R, 120 V/60 HZ

from Serial-No. 210270

to Serial-No. 212614

Index	Partno.	Text
00312	20480251	SECURING WASHER
00313	10104080	WASHER (SAND)
00314	20052555	ANTI VIBRATION MOUNT
00315	20480251	SECURING WASHER
00316	20430220	SCREW M6X25
00317	20480193	WASHER
00318	20360047	BOX SPANNER
00319	70003100	COLLET CHUCK
00320	20150028	SPEED CONTROL BOARD
00321	20480242	SECURING WASHER
00322	20460098	SCREW M 3 X 6
00323	70022632	BRACKET
00324	20250071	WASHER
00325	20220484	SPACER
00326	20460090	SCREW M4X12
00327	20480244	LOCK WASHER
00330	20160685	RESISTOR 150R 150W
00331	20220483	ANGLE
00332	20480200	WASHER
00333	20480167	FAN WASHER A 5,1
00334	20430258	SCREW M5X12
00335	70038969	INSULATING SHEET
00340	70002287	POWER SUPPLY CABLE
00341	20210325	FAN
00342	20480244	LOCK WASHER
00343	20460095	SCREW PHILIPS M4 X 10
00344	20300059	FOOT
00346	20420078	NUT
00347	20480158	WASHER
00350	70023955	BRACKEL
00351	20180138	CONNECTOR
00352	20480130	WASHER 4,3
00353	20028940	SPRING
00354	20470081	SCREW M4 X 30
00355	10104080	WASHER (SAND)
00360	20020732	ANTI VIBRATION MOUNT
00361	20420070	NUT M 6
00362	20480251	SECURING WASHER
00363	20250085	WASHER 6,4

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003062 - 03

MEGAFUGE 1.0 R, 120 V/60 HZ

from Serial-No. 210270

to Serial-No. 212614

Index	Partno.	Text
00364	20510125	SCREW M6 X 40
00370	70904040	TEMP. SENSOR
00371	20220286	GRIP 6,5
00373	20440309	SCREW M4 X 35
00375	20220100	NUT PG 9
00380	20130217	RELAIS
00381	20440023	SCREW M3 X 8
00382	20480124	WASHER
00383	20420069	HEXAGONAL NUT M3
00384	70054295	TRANSFORMER CHASSIS
00385	20480157	WASHER
00386	20430034	SCREW M6X25
00387	20540318	RC-COMBINATION
00390	20170296	TRANSFORMER
00391	20430038	SCREW M6 X 55
00392	20480157	WASHER
00393	20420076	HEXAGONAL NUT M4
00394	20480130	WASHER 4,3
00395	20220490	TERMINAL CLAMP
00396	20220548	CLAMP
00397	20440291	SCREW
00400	20240465	COMPRESSOR
00401	20430048	SCREW M 8 X 35
00402	20480158	WASHER
00403	20240453	FILTERDRYER
00404	20430216	SCREW M 6 X 12
00405	20480251	SECURING WASHER
00406	20022579	CONDENSOR
00410	20210306	ANGLE
00411	20430216	SCREW M 6 X 12
00412	20480251	SECURING WASHER
00413	20480193	WASHER
00414	20210323	MOTOR FAN
00415	20210308	FAN BLADE
00501	70904088	NV-RAM
00502	70000464	PROCESSOR MEGAFUGE 1.0R VER

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003062 - 04

MEGAFUGE 1.0 R, 120 V/60 HZ

from Serial-No. 212615

to Serial-No. 227980

Index	Partno.	Text
00101	70022666	BACK PANEL
00102	20460094	SCREW M 4 X 8
00103	20480130	WASHER 4,3
00104	20290187	CABLE ENTRY
00105	20022401	DEPOSITE
00106	20290320	CABLE ENTRY
00107	20220107	CORD GRIP
00108	20220106	NUT
00109	20420026	NUT
00110	20002695	LID WITH WINDOW
00112	20420077	HEXAGONAL NUT M5
00113	20480200	WASHER
00114	20430212	SCREW M 5 X 16
00115	20052364	HINGE
00116	20490287	PIN
00117	20023748	HINGE BRACKET
00118	20460143	SCREW M5X28
00120	20052842	LID HOOK
00121	20420151	NUT M10 X 1.25
00122	20460112	SCREW M 4 X 16
00123	20051919	HANDLE
00130	20022576	RUBBER FLANGE
00131	20460095	SCREW PHILIPS M4 X 10
00132	20510052	SCREW M4 X 10
00133	20310316	CLIP
00134	20056085	INSULATION
00140	20180589	SWITCH
00141	20230168	FUSE 15A T
00142	20230167	FUSE HOLDER
00143	20440298	SCREW M4X12
00144	20480130	WASHER 4,3
00145	20480244	LOCK WASHER
00146	20420076	HEXAGONAL NUT M4
00150	20130186	RELAY
00151	20460095	SCREW PHILIPS M4 X 10
00152	20480244	LOCK WASHER
00153	20480130	WASHER 4,3
00154	20420076	HEXAGONAL NUT M4
00155	20540318	RC-COMBINATION

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003062 - 04

MEGAFUGE 1.0 R, 120 V/60 HZ

from Serial-No. 212615

to Serial-No. 227980

Index	Partno.	Text
00160	20220490	TERMINAL CLAMP
00161	20440291	SCREW
00162	20480130	WASHER 4,3
00163	20420076	HEXAGONAL NUT M4
00201	20022402	FRONT COVER
00202	20022648	KEY FOIL
00210	20150044	INDICATION AND KEY BOARD
00211	20460122	SCREW 3X6
00220	70055370	HOUSING
00221	20460094	SCREW M 4 X 8
00222	20480224	WASHER A 4,3
00223	20310264	CAP
00224	20022578	BOTTOM PLATE
00225	20480224	WASHER A 4,3
00226	20460094	SCREW M 4 X 8
00227	20290516	SEAL
00228	20480200	WASHER
00229	20460096	SCREW M5X10
00230	70003724	LID LOCK
00231	70022477	FIXING CLAMP
00232	20440306	SCREW M5X40
00240	20150092	MAINBOARD
00241	20230172	FUSE 15 A
00246	20480244	LOCK WASHER
00247	20420076	HEXAGONAL NUT M4
00253	20460095	SCREW PHILIPS M4 X 10
00254	20480130	WASHER 4,3
00255	20220426	SPACER
00256	20480244	LOCK WASHER
00257	20460095	SCREW PHILIPS M4 X 10
00258	20440285	SCREW
00259	70055369	FRONTPANEL
00260	20210341	FAN
00261	20460090	SCREW M4X12
00262	20480244	LOCK WASHER
00263	20420076	HEXAGONAL NUT M4
00270	20290534	NOZZLE
00271	20460095	SCREW PHILIPS M4 X 10
00272	20480108	FAN WASHER A 4,3

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003062 - 04

MEGAFUGE 1.0 R, 120 V/60 HZ

from Serial-No. 212615

to Serial-No. 227980

Index	Partno.	Text
00273	20180138	CONNECTOR
00274	20420076	HEXAGONAL NUT M4
00301	70904031	EVAPORATOR
00302	20310309	GAS LID STAY
00303	20023748	HINGE BRACKET
00304	20460096	SCREW M5X10
00305	20480167	FAN WASHER A 5,1
00306	20490287	PIN
00307	20460104	SCREW M4X25
00310	20210332	MOTOR
00311	20420070	NUT M 6
00312	20480251	SECURING WASHER
00313	10104080	WASHER (SAND)
00314	20052555	ANTI VIBRATION MOUNT
00315	20480251	SECURING WASHER
00316	20430220	SCREW M6X25
00317	20480193	WASHER
00318	20360047	BOX SPANNER
00319	70003100	COLLET CHUCK
00320	20150028	SPEED CONTROL BOARD
00321	20480242	SECURING WASHER
00322	20460098	SCREW M 3 X 6
00323	70022632	BRACKET
00324	20250071	WASHER
00325	20220484	SPACER
00326	20460090	SCREW M4X12
00327	20480244	LOCK WASHER
00330	20160685	RESISTOR 150R 150W
00331	20220483	ANGLE
00332	20480200	WASHER
00333	20480167	FAN WASHER A 5,1
00334	20430258	SCREW M5X12
00335	70038969	INSULATING SHEET
00340	70002287	POWER SUPPLY CABLE
00341	20210325	FAN
00342	20480244	LOCK WASHER
00343	20460095	SCREW PHILIPS M4 X 10
00344	20300059	FOOT
00346	20420078	NUT

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003062 - 04

MEGAFUGE 1.0 R, 120 V/60 HZ

from Serial-No. 212615

to Serial-No. 227980

Index	Partno.	Text
00347	20480158	WASHER
00350	70023955	BRACKEL
00351	20180138	CONNECTOR
00352	20480130	WASHER 4,3
00353	20028940	SPRING
00354	20470081	SCREW M4 X 30
00355	10104080	WASHER (SAND)
00360	20020732	ANTI VIBRATION MOUNT
00361	20420070	NUT M 6
00362	20480251	SECURING WASHER
00363	20250085	WASHER 6,4
00364	20510125	SCREW M6 X 40
00370	70902547	TEMP. SENSOR
00371	20220286	GRIP 6,5
00373	20440309	SCREW M4 X 35
00375	20220100	NUT PG 9
00400	20240465	COMPRESSOR
00401	20430048	SCREW M 8 X 35
00402	20480158	WASHER
00403	20240453	FILTERDRYER
00404	20430216	SCREW M 6 X 12
00405	20480251	SECURING WASHER
00406	20022579	CONDENSOR
00410	20210306	ANGLE
00411	20430216	SCREW M 6 X 12
00412	20480251	SECURING WASHER
00413	20480193	WASHER
00414	20210323	MOTOR FAN
00415	20210308	FAN BLADE
00501	70903009	EEPROM MEGA 1.0R
00502	70000491	PROCESSOR

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003062 - 05

MEGAFUGE 1.0 R, 120 V/60 HZ

from Serial-No. 227981

to Serial-No.

Index	Partno.	Text
00101	70022666	BACK PANEL
00102	20460094	SCREW M 4 X 8
00103	20480130	WASHER 4,3
00104	20290187	CABLE ENTRY
00105	20022401	DEPOSITE
00106	20290320	CABLE ENTRY
00107	20220107	CORD GRIP
00108	20220106	NUT
00109	20420026	NUT
00110	20002695	LID WITH WINDOW
00112	20420077	HEXAGONAL NUT M5
00113	20480200	WASHER
00114	20430212	SCREW M 5 X 16
00115	20052364	HINGE
00116	20490287	PIN
00117	20023748	HINGE BRACKET
00118	20460143	SCREW M5X28
00120	20052842	LID HOOK
00121	20420151	NUT M10 X 1.25
00122	20460112	SCREW M 4 X 16
00123	20051919	HANDLE
00130	20022576	RUBBER FLANGE
00131	20460095	SCREW PHILIPS M4 X 10
00132	20510052	SCREW M4 X 10
00133	20310316	CLIP
00134	20056085	INSULATION
00140	20180589	SWITCH
00201	20022402	FRONT COVER
00202	20022648	KEY FOIL
00210	20150044	INDICATION AND KEY BOARD
00211	20460122	SCREW 3X6
00220	70055370	HOUSING
00221	20460094	SCREW M 4 X 8
00222	20480224	WASHER A 4,3
00223	20310264	CAP
00224	20022578	BOTTOM PLATE
00225	20480224	WASHER A 4,3
00226	20460094	SCREW M 4 X 8
00227	20290516	SEAL

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003062 - 05

MEGAFUGE 1.0 R, 120 V/60 HZ

from Serial-No. 227981

to Serial-No.

Index	Partno.	Text
00228	20480200	WASHER
00229	20460096	SCREW M5X10
00230	70003724	LID LOCK
00231	70022477	FIXING CLAMP
00232	20440306	SCREW M5X40
00240	20150092	MAINBOARD
00241	20230172	FUSE 15 A
00246	20480244	LOCK WASHER
00247	20420076	HEXAGONAL NUT M4
00253	20460095	SCREW PHILIPS M4 X 10
00254	20480130	WASHER 4,3
00255	20220426	SPACER
00256	20480244	LOCK WASHER
00257	20460095	SCREW PHILIPS M4 X 10
00258	20440285	SCREW
00259	70055369	FRONTPANEL
00260	20210341	FAN
00261	20460090	SCREW M4X12
00262	20480244	LOCK WASHER
00263	20420076	HEXAGONAL NUT M4
00270	20290534	NOZZLE
00271	20460095	SCREW PHILIPS M4 X 10
00272	20480108	FAN WASHER A 4,3
00273	20180138	CONNECTOR
00274	20420076	HEXAGONAL NUT M4
00301	70904031	EVAPORATOR
00302	20310309	GAS LID STAY
00303	20023748	HINGE BRACKET
00304	20460096	SCREW M5X10
00305	20480167	FAN WASHER A 5,1
00306	20490287	PIN
00307	20460104	SCREW M4X25
00310	20210332	MOTOR
00311	20420070	NUT M 6
00312	20480251	SECURING WASHER
00313	10104080	WASHER (SAND)
00314	20052555	ANTI VIBRATION MOUNT
00315	20480251	SECURING WASHER
00316	20430220	SCREW M6X25

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003062 - 05

MEGAFUGE 1.0 R, 120 V/60 HZ

from Serial-No. 227981

to Serial-No.

Index	Partno.	Text
00317	20480193	WASHER
00318	20360047	BOX SPANNER
00319	70003100	COLLET CHUCK
00320	20150028	SPEED CONTROL BOARD
00321	20480242	SECURING WASHER
00322	20460098	SCREW M 3 X 6
00323	70022632	BRACKET
00324	20250071	WASHER
00325	20220484	SPACER
00326	20460090	SCREW M4X12
00327	20480244	LOCK WASHER
00330	20160685	RESISTOR 150R 150W
00331	20220483	ANGLE
00332	20480200	WASHER
00333	20480167	FAN WASHER A 5,1
00334	20430258	SCREW M5X12
00335	70038969	INSULATING SHEET
00340	70002287	POWER SUPPLY CABLE
00341	20210325	FAN
00342	20480244	LOCK WASHER
00343	20460095	SCREW PHILIPS M4 X 10
00344	20300059	FOOT
00346	20420078	NUT
00347	20480158	WASHER
00350	70023955	BRACKEL
00351	20180138	CONNECTOR
00352	20480130	WASHER 4,3
00353	20028940	SPRING
00354	20470081	SCREW M4 X 30
00355	10104080	WASHER (SAND)
00360	20020732	ANTI VIBRATION MOUNT
00361	20420070	NUT M 6
00362	20480251	SECURING WASHER
00363	20250085	WASHER 6,4
00364	20510125	SCREW M6 X 40
00370	70902547	TEMP. SENSOR
00371	20220286	GRIP 6,5
00373	20440309	SCREW M4 X 35
00375	20220100	NUT PG 9

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003062 - 05

MEGAFUGE 1.0 R, 120 V/60 HZ

from Serial-No. 227981

to Serial-No.

Index	Partno.	Text
00400	20240465	COMPRESSOR
00401	20430048	SCREW M 8 X 35
00402	20480158	WASHER
00403	20240453	FILTERDRYER
00404	20430216	SCREW M 6 X 12
00405	20480251	SECURING WASHER
00406	20022579	CONDENSOR
00410	20210377	ANGLE
00411	20430216	SCREW M 6 X 12
00412	20480251	SECURING WASHER
00413	20480193	WASHER
00414	20210376	FAN
00415	20210308	FAN BLADE
00501	70903009	EEPROM MEGA 1.0R
00502	70000491	PROCESSOR

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003082 - 01

from Serial-No.

to Serial-No. 210442

Index	Partno.	Text
00101	70022666	BACK PANEL
00102	20460094	SCREW M 4 X 8
00103	20480130	WASHER 4,3
00104	20290187	CABLE ENTRY
00105	20022401	DEPOSITE
00106	20290320	CABLE ENTRY
00107	20220107	CORD GRIP
00108	20220106	NUT
00110	20002695	LID WITH WINDOW
00112	20420077	HEXAGONAL NUT M5
00113	20480200	WASHER
00114	20430212	SCREW M 5 X 16
00115	20052364	HINGE
00116	20490287	PIN
00117	20023748	HINGE BRACKET
00118	20460143	SCREW M5X28
00120	20052842	LID HOOK
00121	20420121	NUT M 10 X 1,25
00122	20460112	SCREW M 4 X 16
00123	20051919	HANDLE
00130	20022576	RUBBER FLANGE
00131	20460095	SCREW PHILIPS M4 X 10
00132	20510052	SCREW M4 X 10
00133	20310316	CLIP
00140	20180589	SWITCH
00141	20230168	FUSE 15A T
00142	20230167	FUSE HOLDER
00143	20440298	SCREW M4X12
00144	20480130	WASHER 4,3
00145	20480244	LOCK WASHER
00146	20420076	HEXAGONAL NUT M4
00201	20022402	FRONT COVER
00202	20054824	FOIL MEGAFUGE 2.0R
00210	20150044	INDICATION AND KEY BOARD
00211	20460122	SCREW 3X6
00220	70022580	HOUSING
00221	20460094	SCREW M 4 X 8
00222	20480224	WASHER A 4,3
00224	20022578	BOTTOM PLATE

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003082 - 01

from Serial-No.

to Serial-No. 210442

Index	Partno.	Text
00225	20480224	WASHER A 4,3
00226	20460094	SCREW M 4 X 8
00227	20290516	SEAL
00228	20480200	WASHER
00229	20460096	SCREW M5X10
00230	70003700	LID LOCK ASSY
00231	70022477	FIXING CLAMP
00232	20440306	SCREW M5X40
00234	20220183	TERMINAL
00235	70022653	BASE
00240	20150067	MAIN BOARD
00241	20230172	FUSE 15 A
00243	70053916	ANGLE SHEET
00244	20480244	LOCK WASHER
00245	20460099	SCREW
00246	20420076	HEXAGONAL NUT M4
00247	20480244	LOCK WASHER
00248	20430207	SCREW M 4 X 10
00249	20480244	LOCK WASHER
00250	20053685	HEAT SINK
00251	20053908	INSULATING FOIL
00252	20054234	INSULATING FOIL
00253	20460095	SCREW PHILIPS M4 X 10
00254	20480130	WASHER 4,3
00255	20220426	SPACER
00256	20480244	LOCK WASHER
00257	20460095	SCREW PHILIPS M4 X 10
00258	20440285	SCREW
00259	70022629	FRONT COVER
00301	70904031	EVAPORATOR
00302	20310309	GAS LID STAY
00303	20023748	HINGE BRACKET
00304	20460096	SCREW M5X10
00305	20480167	FAN WASHER A 5,1
00306	20490287	PIN
00307	20460104	SCREW M4X25
00310	20210317	MOTOR
00311	20420070	NUT M 6
00312	20480251	SECURING WASHER

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003082 - 01

from Serial-No.

to Serial-No. 210442

Index	Partno.	Text
00313	10104080	WASHER (SAND)
00314	20052555	ANTI VIBRATION MOUNT
00315	20480251	SECURING WASHER
00316	20430220	SCREW M6X25
00317	20480193	WASHER
00318	20360047	BOX SPANNER
00319	70003100	COLLET CHUCK
00320	20150028	SPEED CONTROL BOARD
00321	20480242	SECURING WASHER
00322	20460098	SCREW M 3 X 6
00323	70022632	BRACKET
00324	20250071	WASHER
00325	20220484	SPACER
00326	20460090	SCREW M4X12
00327	20480244	LOCK WASHER
00330	20160685	RESISTOR 150R 150W
00331	20220483	ANGLE
00332	20480200	WASHER
00333	20480167	FAN WASHER A 5,1
00334	20430258	SCREW M5X12
00335	70038969	INSULATING SHEET
00340	70002287	POWER SUPPLY CABLE
00341	20210325	FAN
00342	20480244	LOCK WASHER
00343	20460095	SCREW PHILIPS M4 X 10
00344	20300059	FOOT
00346	20420078	NUT
00347	20480158	WASHER
00350	70023955	BRACKEL
00351	20180138	CONNECTOR
00352	20480130	WASHER 4,3
00353	20028940	SPRING
00354	20470081	SCREW M4 X 30
00355	10104080	WASHER (SAND)
00360	20020732	ANTI VIBRATION MOUNT
00361	20420070	NUT M 6
00362	20480251	SECURING WASHER
00363	20250085	WASHER 6,4
00364	20510125	SCREW M6 X 40

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003082 - 01

from Serial-No.

to Serial-No. 210442

Index	Partno.	Text
00370	70904040	TEMP. SENSOR
00371	20220286	GRIP 6,5
00372	20054394	SPACER
00373	20440309	SCREW M4 X 35
00375	20220100	NUT PG 9
00380	20130217	RELAIS
00381	20440023	SCREW M3 X 8
00382	20480124	WASHER
00383	20420069	HEXAGONAL NUT M3
00384	70054295	TRANSFORMER CHASSIS
00385	20480157	WASHER
00386	20430034	SCREW M6X25
00387	20540318	RC-COMBINATION
00390	20170296	TRANSFORMER
00391	20430038	SCREW M6 X 55
00392	20480157	WASHER
00393	20420076	HEXAGONAL NUT M4
00394	20480130	WASHER 4,3
00395	20220490	TERMINAL CLAMP
00396	20220548	CLAMP
00397	20440291	SCREW
00400	20240445	COMPRESSOR
00401	20430048	SCREW M 8 X 35
00402	20480158	WASHER
00403	20240363	DRYING CARTRIGE
00404	20430216	SCREW M 6 X 12
00405	20480251	SECURING WASHER
00406	20022579	CONDENSOR
00410	20210306	ANGLE
00411	20430216	SCREW M 6 X 12
00412	20480251	SECURING WASHER
00413	20480193	WASHER
00414	20210323	MOTOR FAN
00415	20210308	FAN BLADE
00501	70903006	NV-RAM MEGAFUGE 2.0 R VERS.03
00502	70000472	PROCESSOR MEGAFUGE 2.0 R VER

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003082 - 02

from Serial-No. 210443

to Serial-No. 212368

Index	Partno.	Text
00101	70022666	BACK PANEL
00102	20460094	SCREW M 4 X 8
00103	20480130	WASHER 4,3
00104	20290187	CABLE ENTRY
00105	20022401	DEPOSITE
00106	20290320	CABLE ENTRY
00107	20220107	CORD GRIP
00108	20220106	NUT
00110	20002695	LID WITH WINDOW
00112	20420077	HEXAGONAL NUT M5
00113	20480200	WASHER
00114	20430212	SCREW M 5 X 16
00115	20052364	HINGE
00116	20490287	PIN
00117	20023748	HINGE BRACKET
00118	20460143	SCREW M5X28
00120	20052842	LID HOOK
00121	20420121	NUT M 10 X 1,25
00122	20460112	SCREW M 4 X 16
00123	20051919	HANDLE
00130	20022576	RUBBER FLANGE
00131	20460095	SCREW PHILIPS M4 X 10
00132	20510052	SCREW M4 X 10
00133	20310316	CLIP
00134	20056085	INSULATION
00140	20180589	SWITCH
00141	20230168	FUSE 15A T
00142	20230167	FUSE HOLDER
00143	20440298	SCREW M4X12
00144	20480130	WASHER 4,3
00145	20480244	LOCK WASHER
00146	20420076	HEXAGONAL NUT M4
00201	20022402	FRONT COVER
00202	20054824	FOIL MEGAFUGE 2.0R
00210	20150044	INDICATION AND KEY BOARD
00211	20460122	SCREW 3X6
00220	70022580	HOUSING
00221	20460094	SCREW M 4 X 8
00222	20480224	WASHER A 4,3

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003082 - 02

from Serial-No. 210443

to Serial-No. 212368

Index	Partno.	Text
00224	20022578	BOTTOM PLATE
00225	20480224	WASHER A 4,3
00226	20460094	SCREW M 4 X 8
00227	20290516	SEAL
00228	20480200	WASHER
00229	20460096	SCREW M5X10
00230	70003700	LID LOCK ASSY
00231	70022477	FIXING CLAMP
00232	20440306	SCREW M5X40
00234	20220183	TERMINAL
00235	70022653	BASE
00240	20150067	MAIN BOARD
00241	20230172	FUSE 15 A
00243	70053916	ANGLE SHEET
00244	20480244	LOCK WASHER
00245	20460099	SCREW
00246	20420076	HEXAGONAL NUT M4
00247	20480244	LOCK WASHER
00248	20430207	SCREW M 4 X 10
00249	20480244	LOCK WASHER
00250	20053685	HEAT SINK
00251	20053908	INSULATING FOIL
00252	20054234	INSULATING FOIL
00253	20460095	SCREW PHILIPS M4 X 10
00254	20480130	WASHER 4,3
00255	20220426	SPACER
00256	20480244	LOCK WASHER
00257	20460095	SCREW PHILIPS M4 X 10
00258	20440285	SCREW
00259	70022629	FRONT COVER
00301	70904031	EVAPORATOR
00302	20310309	GAS LID STAY
00303	20023748	HINGE BRACKET
00304	20460096	SCREW M5X10
00305	20480167	FAN WASHER A 5,1
00306	20490287	PIN
00307	20460104	SCREW M4X25
00310	20210317	MOTOR
00311	20420070	NUT M 6

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003082 - 02

from Serial-No. 210443

to Serial-No. 212368

Index	Partno.	Text
00312	20480251	SECURING WASHER
00313	10104080	WASHER (SAND)
00314	20052555	ANTI VIBRATION MOUNT
00315	20480251	SECURING WASHER
00316	20430220	SCREW M6X25
00317	20480193	WASHER
00318	20360047	BOX SPANNER
00319	70003100	COLLET CHUCK
00320	20150028	SPEED CONTROL BOARD
00321	20480242	SECURING WASHER
00322	20460098	SCREW M 3 X 6
00323	70022632	BRACKET
00324	20250071	WASHER
00325	20220484	SPACER
00326	20460090	SCREW M4X12
00327	20480244	LOCK WASHER
00330	20160685	RESISTOR 150R 150W
00331	20220483	ANGLE
00332	20480200	WASHER
00333	20480167	FAN WASHER A 5,1
00334	20430258	SCREW M5X12
00335	70038969	INSULATING SHEET
00340	70002287	POWER SUPPLY CABLE
00341	20210325	FAN
00342	20480244	LOCK WASHER
00343	20460095	SCREW PHILIPS M4 X 10
00344	20300059	FOOT
00346	20420078	NUT
00347	20480158	WASHER
00350	70023955	BRACKEL
00351	20180138	CONNECTOR
00352	20480130	WASHER 4,3
00353	20028940	SPRING
00354	20470081	SCREW M4 X 30
00355	10104080	WASHER (SAND)
00360	20020732	ANTI VIBRATION MOUNT
00361	20420070	NUT M 6
00362	20480251	SECURING WASHER
00363	20250085	WASHER 6,4

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003082 - 02

from Serial-No. 210443

to Serial-No. 212368

Index	Partno.	Text
00364	20510125	SCREW M6 X 40
00370	70904040	TEMP. SENSOR
00371	20220286	GRIP 6,5
00372	20054394	SPACER
00373	20440309	SCREW M4 X 35
00375	20220100	NUT PG 9
00380	20130217	RELAIS
00381	20440023	SCREW M3 X 8
00382	20480124	WASHER
00383	20420069	HEXAGONAL NUT M3
00384	70054295	TRANSFORMER CHASSIS
00385	20480157	WASHER
00386	20430034	SCREW M6X25
00387	20540318	RC-COMBINATION
00390	20170296	TRANSFORMER
00391	20430038	SCREW M6 X 55
00392	20480157	WASHER
00393	20420076	HEXAGONAL NUT M4
00394	20480130	WASHER 4,3
00395	20220490	TERMINAL CLAMP
00396	20220548	CLAMP
00397	20440291	SCREW
00400	20240465	COMPRESSOR
00401	20430048	SCREW M 8 X 35
00402	20480158	WASHER
00403	20240453	FILTERDRYER
00404	20430216	SCREW M 6 X 12
00405	20480251	SECURING WASHER
00406	20022579	CONDENSOR
00410	20210306	ANGLE
00411	20430216	SCREW M 6 X 12
00412	20480251	SECURING WASHER
00413	20480193	WASHER
00414	20210323	MOTOR FAN
00415	20210308	FAN BLADE
00501	70903006	NV-RAM MEGAFUGE 2.0 R VERS.03
00502	70000472	PROCESSOR MEGAFUGE 2.0 R VER

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003082 - 03

from Serial-No. 212369

to Serial-No. 226096

Index	Partno.	Text
00101	70022666	BACK PANEL
00102	20460094	SCREW M 4 X 8
00103	20480130	WASHER 4,3
00104	20290187	CABLE ENTRY
00105	20022401	DEPOSITE
00106	20290320	CABLE ENTRY
00107	20220107	CORD GRIP
00108	20220106	NUT
00109	20420026	NUT
00110	20002695	LID WITH WINDOW
00112	20420077	HEXAGONAL NUT M5
00113	20480200	WASHER
00114	20430212	SCREW M 5 X 16
00115	20052364	HINGE
00116	20490287	PIN
00117	20023748	HINGE BRACKET
00118	20460143	SCREW M5X28
00120	20052842	LID HOOK
00121	20420151	NUT M10 X 1.25
00122	20460112	SCREW M 4 X 16
00123	20051919	HANDLE
00130	20022576	RUBBER FLANGE
00131	20460095	SCREW PHILIPS M4 X 10
00132	20510052	SCREW M4 X 10
00133	20310316	CLIP
00134	20056085	INSULATION
00140	20180589	SWITCH
00141	20230168	FUSE 15A T
00142	20230167	FUSE HOLDER
00143	20440298	SCREW M4X12
00144	20480130	WASHER 4,3
00145	20480244	LOCK WASHER
00146	20420076	HEXAGONAL NUT M4
00150	20130186	RELAY
00151	20460095	SCREW PHILIPS M4 X 10
00152	20480244	LOCK WASHER
00153	20480130	WASHER 4,3
00154	20420076	HEXAGONAL NUT M4
00155	20540318	RC-COMBINATION

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003082 - 03

from Serial-No. 212369

to Serial-No. 226096

Index	Partno.	Text
00160	20220490	TERMINAL CLAMP
00161	20440291	SCREW
00162	20480130	WASHER 4,3
00163	20420076	HEXAGONAL NUT M4
00201	20022402	FRONT COVER
00202	20054824	FOIL MEGAFUGE 2.0R
00210	20150044	INDICATION AND KEY BOARD
00211	20460122	SCREW 3X6
00220	70055370	HOUSING
00221	20460094	SCREW M 4 X 8
00222	20480224	WASHER A 4,3
00224	20022578	BOTTOM PLATE
00225	20480224	WASHER A 4,3
00226	20460094	SCREW M 4 X 8
00227	20290516	SEAL
00228	20480200	WASHER
00229	20460096	SCREW M5X10
00230	70003724	LID LOCK
00231	70022477	FIXING CLAMP
00232	20440306	SCREW M5X40
00235	70022653	BASE
00240	20150092	MAINBOARD
00241	20230172	FUSE 15 A
00246	20480244	LOCK WASHER
00247	20420076	HEXAGONAL NUT M4
00253	20460095	SCREW PHILIPS M4 X 10
00254	20480130	WASHER 4,3
00255	20220426	SPACER
00256	20480244	LOCK WASHER
00257	20460095	SCREW PHILIPS M4 X 10
00258	20440285	SCREW
00259	70055369	FRONTPANEL
00260	20210341	FAN
00261	20460090	SCREW M4X12
00262	20480244	LOCK WASHER
00263	20420076	HEXAGONAL NUT M4
00270	20290534	NOZZLE
00271	20460095	SCREW PHILIPS M4 X 10
00272	20480108	FAN WASHER A 4,3

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003082 - 03

from Serial-No. 212369

to Serial-No. 226096

Index	Partno.	Text
00273	20180138	CONNECTOR
00274	20420076	HEXAGONAL NUT M4
00301	70904031	EVAPORATOR
00302	20310309	GAS LID STAY
00303	20023748	HINGE BRACKET
00304	20460096	SCREW M5X10
00305	20480167	FAN WASHER A 5,1
00306	20490287	PIN
00307	20460104	SCREW M4X25
00310	20210332	MOTOR
00311	20420070	NUT M 6
00312	20480251	SECURING WASHER
00313	10104080	WASHER (SAND)
00314	20052555	ANTI VIBRATION MOUNT
00315	20480251	SECURING WASHER
00316	20430220	SCREW M6X25
00317	20480193	WASHER
00318	20360047	BOX SPANNER
00319	70003100	COLLET CHUCK
00320	20150028	SPEED CONTROL BOARD
00321	20480242	SECURING WASHER
00322	20460098	SCREW M 3 X 6
00323	70022632	BRACKET
00324	20250071	WASHER
00325	20220484	SPACER
00326	20460090	SCREW M4X12
00327	20480244	LOCK WASHER
00330	20160685	RESISTOR 150R 150W
00331	20220483	ANGLE
00332	20480200	WASHER
00333	20480167	FAN WASHER A 5,1
00334	20430258	SCREW M5X12
00335	70038969	INSULATING SHEET
00340	70002287	POWER SUPPLY CABLE
00341	20210325	FAN
00342	20480244	LOCK WASHER
00343	20460095	SCREW PHILIPS M4 X 10
00344	20300059	FOOT
00346	20420078	NUT

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003082 - 03

from Serial-No. 212369

to Serial-No. 226096

Index	Partno.	Text
00347	20480158	WASHER
00350	70023955	BRACKEL
00351	20180138	CONNECTOR
00352	20480130	WASHER 4,3
00353	20028940	SPRING
00354	20470081	SCREW M4 X 30
00355	10104080	WASHER (SAND)
00360	20020732	ANTI VIBRATION MOUNT
00361	20420070	NUT M 6
00362	20480251	SECURING WASHER
00363	20250085	WASHER 6,4
00364	20510125	SCREW M6 X 40
00370	70902547	TEMP. SENSOR
00371	20220286	GRIP 6,5
00373	20440309	SCREW M4 X 35
00375	20220100	NUT PG 9
00400	20240465	COMPRESSOR
00401	20430048	SCREW M 8 X 35
00402	20480158	WASHER
00403	20240453	FILTERDRYER
00404	20430216	SCREW M 6 X 12
00405	20480251	SECURING WASHER
00406	20022579	CONDENSOR
00410	20210306	ANGLE
00411	20430216	SCREW M 6 X 12
00412	20480251	SECURING WASHER
00413	20480193	WASHER
00414	20210323	MOTOR FAN
00415	20210308	FAN BLADE
00501	70903011	EEPROM MEGAFUGE 2.0R
00502	70000491	PROCESSOR

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003082 - 04

from Serial-No. 226097

to Serial-No.

Index	Partno.	Text
00101	70022666	BACK PANEL
00102	20460094	SCREW M 4 X 8
00103	20480130	WASHER 4,3
00104	20290187	CABLE ENTRY
00105	20022401	DEPOSITE
00106	20290320	CABLE ENTRY
00107	20220107	CORD GRIP
00108	20220106	NUT
00109	20420026	NUT
00110	20002695	LID WITH WINDOW
00112	20420077	HEXAGONAL NUT M5
00113	20480200	WASHER
00114	20430212	SCREW M 5 X 16
00115	20052364	HINGE
00116	20490287	PIN
00117	20023748	HINGE BRACKET
00118	20460143	SCREW M5X28
00120	20052842	LID HOOK
00121	20420151	NUT M10 X 1.25
00122	20460112	SCREW M 4 X 16
00123	20051919	HANDLE
00130	20022576	RUBBER FLANGE
00131	20460095	SCREW PHILIPS M4 X 10
00132	20510052	SCREW M4 X 10
00133	20310316	CLIP
00134	20056085	INSULATION
00140	20180589	SWITCH
00201	20022402	FRONT COVER
00202	20054824	FOIL MEGAFUGE 2.0R
00210	20150044	INDICATION AND KEY BOARD
00211	20460122	SCREW 3X6
00220	70055370	HOUSING
00221	20460094	SCREW M 4 X 8
00222	20480224	WASHER A 4,3
00224	20022578	BOTTOM PLATE
00225	20480224	WASHER A 4,3
00226	20460094	SCREW M 4 X 8
00227	20290516	SEAL
00228	20480200	WASHER

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003082 - 04

from Serial-No. 226097

to Serial-No.

Index	Partno.	Text
00229	20460096	SCREW M5X10
00230	70003724	LID LOCK
00231	70022477	FIXING CLAMP
00232	20440306	SCREW M5X40
00235	70022653	BASE
00240	20150092	MAINBOARD
00241	20230172	FUSE 15 A
00246	20480244	LOCK WASHER
00247	20420076	HEXAGONAL NUT M4
00253	20460095	SCREW PHILIPS M4 X 10
00254	20480130	WASHER 4,3
00255	20220426	SPACER
00256	20480244	LOCK WASHER
00257	20460095	SCREW PHILIPS M4 X 10
00258	20440285	SCREW
00259	70055369	FRONTPANEL
00260	20210341	FAN
00261	20460090	SCREW M4X12
00262	20480244	LOCK WASHER
00263	20420076	HEXAGONAL NUT M4
00270	20290534	NOZZLE
00271	20460095	SCREW PHILIPS M4 X 10
00272	20480108	FAN WASHER A 4,3
00273	20180138	CONNECTOR
00274	20420076	HEXAGONAL NUT M4
00301	70904031	EVAPORATOR
00302	20310309	GAS LID STAY
00303	20023748	HINGE BRACKET
00304	20460096	SCREW M5X10
00305	20480167	FAN WASHER A 5,1
00306	20490287	PIN
00307	20460104	SCREW M4X25
00310	20210332	MOTOR
00311	20420070	NUT M 6
00312	20480251	SECURING WASHER
00313	10104080	WASHER (SAND)
00314	20052555	ANTI VIBRATION MOUNT
00315	20480251	SECURING WASHER
00316	20430220	SCREW M6X25

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003082 - 04

from Serial-No. 226097

to Serial-No.

Index	Partno.	Text
00317	20480193	WASHER
00318	20360047	BOX SPANNER
00319	70003100	COLLET CHUCK
00320	20150028	SPEED CONTROL BOARD
00321	20480242	SECURING WASHER
00322	20460098	SCREW M 3 X 6
00323	70022632	BRACKET
00324	20250071	WASHER
00325	20220484	SPACER
00326	20460090	SCREW M4X12
00327	20480244	LOCK WASHER
00330	20160685	RESISTOR 150R 150W
00331	20220483	ANGLE
00332	20480200	WASHER
00333	20480167	FAN WASHER A 5,1
00334	20430258	SCREW M5X12
00335	70038969	INSULATING SHEET
00340	70002287	POWER SUPPLY CABLE
00341	20210325	FAN
00342	20480244	LOCK WASHER
00343	20460095	SCREW PHILIPS M4 X 10
00344	20300059	FOOT
00346	20420078	NUT
00347	20480158	WASHER
00350	70023955	BRACKEL
00351	20180138	CONNECTOR
00352	20480130	WASHER 4,3
00353	20028940	SPRING
00354	20470081	SCREW M4 X 30
00355	10104080	WASHER (SAND)
00360	20020732	ANTI VIBRATION MOUNT
00361	20420070	NUT M 6
00362	20480251	SECURING WASHER
00363	20250085	WASHER 6,4
00364	20510125	SCREW M6 X 40
00370	70902547	TEMP. SENSOR
00371	20220286	GRIP 6,5
00373	20440309	SCREW M4 X 35
00375	20220100	NUT PG 9

75003082 - 04

from Serial-No. 226097

to Serial-No.

Index	Partno.	Text
00400	20240465	COMPRESSOR
00401	20430048	SCREW M 8 X 35
00402	20480158	WASHER
00403	20240453	FILTERDRYER
00404	20430216	SCREW M 6 X 12
00405	20480251	SECURING WASHER
00406	20022579	CONDENSOR
00410	20210377	ANGLE
00411	20430216	SCREW M 6 X 12
00412	20480251	SECURING WASHER
00413	20480193	WASHER
00414	20210376	FAN
00415	20210308	FAN BLADE
00501	70903011	EEPROM MEGAFUGE 2.0R
00502	70000491	PROCESSOR

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003083 - 01

MEGAFUGE 2.0RS 120V 60HZ

from Serial-No.

to Serial-No. 230974

Index	Partno.	Text
00101	70022666	BACK PANEL
00102	20460094	SCREW M 4 X 8
00103	20480130	WASHER 4,3
00104	20290187	CABLE ENTRY
00105	20022401	DEPOSITE
00106	20290320	CABLE ENTRY
00107	20220107	CORD GRIP
00108	20220106	NUT
00110	20002695	LID WITH WINDOW
00112	20420077	HEXAGONAL NUT M5
00113	20480200	WASHER
00114	20430212	SCREW M 5 X 16
00115	20052364	HINGE
00116	20490287	PIN
00117	20023748	HINGE BRACKET
00118	20460143	SCREW M5X28
00120	20052842	LID HOOK
00121	20420121	NUT M 10 X 1,25
00122	20460112	SCREW M 4 X 16
00123	20051919	HANDLE
00130	20022576	RUBBER FLANGE
00131	20460095	SCREW PHILIPS M4 X 10
00132	20510052	SCREW M4 X 10
00133	20310316	CLIP
00134	20056085	INSULATION
00140	20180589	SWITCH
00141	20230168	FUSE 15A T
00142	20230167	FUSE HOLDER
00143	20460112	SCREW M 4 X 16
00144	20480130	WASHER 4,3
00145	20480244	LOCK WASHER
00146	20420076	HEXAGONAL NUT M4
00150	20130186	RELAY
00151	20460095	SCREW PHILIPS M4 X 10
00152	20480244	LOCK WASHER
00153	20480130	WASHER 4,3
00154	20420076	HEXAGONAL NUT M4
00155	20540318	RC-COMBINATION
00160	20220490	TERMINAL CLAMP

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003083 - 01

MEGAFUGE 2.0RS 120V 60HZ

from Serial-No.

to Serial-No. 230974

Index	Partno.	Text
00161	20440291	SCREW
00162	20480130	WASHER 4,3
00163	20420076	HEXAGONAL NUT M4
00201	20054982	
00202	20904123	PANEL W FOIL
00205	20180601	KEY SWITCH
00210	20150029	INDICATION AND KEY BOARD
00211	20460122	SCREW 3X6
00220	70055370	HOUSING
00221	20460094	SCREW M 4 X 8
00222	20480224	WASHER A 4,3
00224	20022578	BOTTOM PLATE
00225	20480224	WASHER A 4,3
00226	20460094	SCREW M 4 X 8
00227	20290516	SEAL
00228	20480200	WASHER
00229	20460096	SCREW M5X10
00230	70003724	LID LOCK
00231	70022477	FIXING CLAMP
00232	20440306	SCREW M5X40
00235	70022653	BASE
00240	20150092	MAINBOARD
00241	20230172	FUSE 15 A
00246	20420076	HEXAGONAL NUT M4
00247	20480244	LOCK WASHER
00253	20460095	SCREW PHILIPS M4 X 10
00254	20480130	WASHER 4,3
00255	20220426	SPACER
00256	20480244	LOCK WASHER
00257	20460095	SCREW PHILIPS M4 X 10
00258	20440285	SCREW
00259	70055369	FRONTPANEL
00260	20210341	FAN
00261	20460090	SCREW M4X12
00262	20480244	LOCK WASHER
00263	20420076	HEXAGONAL NUT M4
00301	70904031	EVAPORATOR
00302	20310309	GAS LID STAY
00303	20023748	HINGE BRACKET

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003083 - 01

MEGAFUGE 2.0RS 120V 60HZ

from Serial-No.

to Serial-No. 230974

Index	Partno.	Text
00304	20460096	SCREW M5X10
00305	20480167	FAN WASHER A 5,1
00306	20490287	PIN
00307	20460104	SCREW M4X25
00310	20210332	MOTOR
00311	20420070	NUT M 6
00312	20480251	SECURING WASHER
00313	10104080	WASHER (SAND)
00314	20052555	ANTI VIBRATION MOUNT
00315	20480251	SECURING WASHER
00316	20430220	SCREW M6X25
00317	20480193	WASHER
00318	20360047	BOX SPANNER
00319	70003100	COLLET CHUCK
00320	20150028	SPEED CONTROL BOARD
00321	20480242	SECURING WASHER
00322	20460098	SCREW M 3 X 6
00323	70022632	BRACKET
00324	20250071	WASHER
00325	20220484	SPACER
00326	20460090	SCREW M4X12
00327	20480244	LOCK WASHER
00330	20160685	RESISTOR 150R 150W
00331	20220483	ANGLE
00332	20480200	WASHER
00333	20480167	FAN WASHER A 5,1
00334	20430258	SCREW M5X12
00335	70038969	INSULATING SHEET
00340	70002287	POWER SUPPLY CABLE
00341	20210325	FAN
00342	20480244	LOCK WASHER
00343	20460095	SCREW PHILIPS M4 X 10
00344	20300059	FOOT
00346	20420078	NUT
00347	20480158	WASHER
00350	70023955	BRACKEL
00351	20180138	CONNECTOR
00352	20480130	WASHER 4,3
00353	20028940	SPRING

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003083 - 01

MEGAFUGE 2.0RS 120V 60HZ

from Serial-No.

to Serial-No. 230974

Index	Partno.	Text
00354	20470081	SCREW M4 X 30
00355	10104080	WASHER (SAND)
00360	20020732	ANTI VIBRATION MOUNT
00361	20420070	NUT M 6
00362	20480251	SECURING WASHER
00363	20250085	WASHER 6,4
00364	20510125	SCREW M6 X 40
00370	70902547	TEMP. SENSOR
00371	20220286	GRIP 6,5
00373	20440309	SCREW M4 X 35
00375	20220100	NUT PG 9
00400	20240465	COMPRESSOR
00401	20430048	SCREW M 8 X 35
00402	20480158	WASHER
00403	20240453	FILTERDRYER
00404	20430216	SCREW M 6 X 12
00405	20480251	SECURING WASHER
00406	20022579	CONDENSOR
00410	20210306	ANGLE
00411	20430216	SCREW M 6 X 12
00412	20480251	SECURING WASHER
00413	20480193	WASHER
00414	20210323	MOTOR FAN
00415	20210308	FAN BLADE
00501	70903012	NV RAM
00502	70000490	PROCESSOR
00503	70904301	EEPROM MEGAFUGE 2.0R

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003083 - 02

MEGAFUGE 2.0RS 120V 60HZ

from Serial-No. 230975

to Serial-No.

Index	Partno.	Text
00101	70022666	BACK PANEL
00102	20460094	SCREW M 4 X 8
00103	20480130	WASHER 4,3
00104	20290187	CABLE ENTRY
00105	20022401	DEPOSITE
00106	20290320	CABLE ENTRY
00107	20220107	CORD GRIP
00108	20220106	NUT
00110	20002695	LID WITH WINDOW
00112	20420077	HEXAGONAL NUT M5
00113	20480200	WASHER
00114	20430212	SCREW M 5 X 16
00115	20052364	HINGE
00116	20490287	PIN
00117	20023748	HINGE BRACKET
00118	20460143	SCREW M5X28
00120	20052842	LID HOOK
00121	20420121	NUT M 10 X 1,25
00122	20460112	SCREW M 4 X 16
00123	20051919	HANDLE
00130	20022576	RUBBER FLANGE
00131	20460095	SCREW PHILIPS M4 X 10
00132	20510052	SCREW M4 X 10
00133	20310316	CLIP
00134	20056085	INSULATION
00140	20180589	SWITCH
00201	20054982	
00202	20904123	PANEL W FOIL
00205	20180601	KEY SWITCH
00210	20150161	PCB, DISPLAY - SEPA
00211	20460122	SCREW 3X6
00220	70055370	HOUSING
00221	20460094	SCREW M 4 X 8
00222	20480224	WASHER A 4,3
00224	20022578	BOTTOM PLATE
00225	20480224	WASHER A 4,3
00226	20460094	SCREW M 4 X 8
00227	20290516	SEAL
00228	20480200	WASHER

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003083 - 02

MEGAFUGE 2.0RS 120V 60HZ

from Serial-No. 230975

to Serial-No.

Index	Partno.	Text
00229	20460096	SCREW M5X10
00230	70003724	LID LOCK
00231	70022477	FIXING CLAMP
00232	20440306	SCREW M5X40
00235	70022653	BASE
00240	20150092	MAINBOARD
00241	20230172	FUSE 15 A
00246	20420076	HEXAGONAL NUT M4
00247	20480244	LOCK WASHER
00253	20460095	SCREW PHILIPS M4 X 10
00254	20480130	WASHER 4,3
00255	20220426	SPACER
00256	20480244	LOCK WASHER
00257	20460095	SCREW PHILIPS M4 X 10
00258	20440285	SCREW
00259	70055369	FRONTPANEL
00260	20210341	FAN
00261	20460090	SCREW M4X12
00262	20480244	LOCK WASHER
00263	20420076	HEXAGONAL NUT M4
00301	70904031	EVAPORATOR
00302	20310309	GAS LID STAY
00303	20023748	HINGE BRACKET
00304	20460096	SCREW M5X10
00305	20480167	FAN WASHER A 5,1
00306	20490287	PIN
00307	20460104	SCREW M4X25
00310	20210332	MOTOR
00311	20420070	NUT M 6
00312	20480251	SECURING WASHER
00313	10104080	WASHER (SAND)
00314	20052555	ANTI VIBRATION MOUNT
00315	20480251	SECURING WASHER
00316	20430220	SCREW M6X25
00317	20480193	WASHER
00318	20360047	BOX SPANNER
00319	70003100	COLLET CHUCK
00320	20150028	SPEED CONTROL BOARD
00321	20480242	SECURING WASHER

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003083 - 02

MEGAFUGE 2.0RS 120V 60HZ

from Serial-No. 230975

to Serial-No.

Index	Partno.	Text
00322	20460098	SCREW M 3 X 6
00323	70022632	BRACKET
00324	20250071	WASHER
00325	20220484	SPACER
00326	20460090	SCREW M4X12
00327	20480244	LOCK WASHER
00330	20160685	RESISTOR 150R 150W
00331	20220483	ANGLE
00332	20480200	WASHER
00333	20480167	FAN WASHER A 5,1
00334	20430258	SCREW M5X12
00335	70038969	INSULATING SHEET
00340	70002287	POWER SUPPLY CABLE
00341	20210325	FAN
00342	20480244	LOCK WASHER
00343	20460095	SCREW PHILIPS M4 X 10
00344	20300059	FOOT
00346	20420078	NUT
00347	20480158	WASHER
00350	70023955	BRACKEL
00351	20180138	CONNECTOR
00352	20480130	WASHER 4,3
00353	20028940	SPRING
00354	20470081	SCREW M4 X 30
00355	10104080	WASHER (SAND)
00360	20020732	ANTI VIBRATION MOUNT
00361	20420070	NUT M 6
00362	20480251	SECURING WASHER
00363	20250085	WASHER 6,4
00364	20510125	SCREW M6 X 40
00370	70902547	TEMP. SENSOR
00371	20220286	GRIP 6,5
00373	20440309	SCREW M4 X 35
00375	20220100	NUT PG 9
00400	20240465	COMPRESSOR
00401	20430048	SCREW M 8 X 35
00402	20480158	WASHER
00403	20240453	FILTERDRYER
00404	20430216	SCREW M 6 X 12

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003083 - 02

MEGAFUGE 2.0RS 120V 60HZ

from Serial-No. 230975

to Serial-No.

Index	Partno.	Text
00405	20480251	SECURING WASHER
00406	20022579	CONDENSOR
00410	20210306	ANGLE
00411	20430216	SCREW M 6 X 12
00412	20480251	SECURING WASHER
00413	20480193	WASHER
00414	20210323	MOTOR FAN
00415	20210308	FAN BLADE
00501	70903012	NV RAM
00502	70000490	PROCESSOR
00503	70904301	EEPROM MEGAFUGE 2.0R

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003085 - 01

MEGAFUGE 2.0R 120V 60HZ

from Serial-No. 209462

to Serial-No. 236013

Index	Partno.	Text
00101	70022666	BACK PANEL
00102	20460094	SCREW M 4 X 8
00103	20480130	WASHER 4,3
00104	20290187	CABLE ENTRY
00105	20022401	DEPOSITE
00106	20290320	CABLE ENTRY
00107	20220107	CORD GRIP
00108	20220106	NUT
00110	20002695	LID WITH WINDOW
00112	20420077	HEXAGONAL NUT M5
00113	20480200	WASHER
00114	20430212	SCREW M 5 X 16
00115	20052364	HINGE
00116	20490287	PIN
00117	20023748	HINGE BRACKET
00118	20460143	SCREW M5X28
00120	20052842	LID HOOK
00121	20420121	NUT M 10 X 1,25
00122	20460112	SCREW M 4 X 16
00123	20051919	HANDLE
00130	20022576	RUBBER FLANGE
00131	20460095	SCREW PHILIPS M4 X 10
00132	20510052	SCREW M4 X 10
00133	20310316	CLIP
00134	20056085	INSULATION
00140	20180589	SWITCH
00141	20230168	FUSE 15A T
00142	20230167	FUSE HOLDER
00143	20460112	SCREW M 4 X 16
00144	20480130	WASHER 4,3
00145	20480244	LOCK WASHER
00146	20420076	HEXAGONAL NUT M4
00150	20130186	RELAY
00151	20460095	SCREW PHILIPS M4 X 10
00152	20480244	LOCK WASHER
00153	20480130	WASHER 4,3
00154	20420076	HEXAGONAL NUT M4
00155	20540318	RC-COMBINATION
00160	20220490	TERMINAL CLAMP

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003085 - 01

MEGAFUGE 2.0R 120V 60HZ

from Serial-No. 209462

to Serial-No. 236013

Index	Partno.	Text
00161	20440291	SCREW
00162	20480130	WASHER 4,3
00163	20420076	HEXAGONAL NUT M4
00201	20022402	FRONT COVER
00202	20055575	FOIL MEGAFUGE 2.0 R
00210	20150044	INDICATION AND KEY BOARD
00211	20460122	SCREW 3X6
00220	70055370	HOUSING
00221	20460094	SCREW M 4 X 8
00222	20480224	WASHER A 4,3
00224	20022578	BOTTOM PLATE
00225	20480224	WASHER A 4,3
00226	20460094	SCREW M 4 X 8
00227	20290516	SEAL
00228	20480200	WASHER
00229	20460096	SCREW M5X10
00230	70003724	LID LOCK
00231	70022477	FIXING CLAMP
00232	20440306	SCREW M5X40
00235	70022653	BASE
00240	20150092	MAINBOARD
00241	20230172	FUSE 15 A
00246	20420076	HEXAGONAL NUT M4
00247	20480244	LOCK WASHER
00253	20460095	SCREW PHILIPS M4 X 10
00254	20480130	WASHER 4,3
00255	20220426	SPACER
00256	20480244	LOCK WASHER
00257	20460095	SCREW PHILIPS M4 X 10
00258	20440285	SCREW
00259	70055369	FRONTPANEL
00260	20210341	FAN
00261	20460090	SCREW M4X12
00262	20480244	LOCK WASHER
00263	20420076	HEXAGONAL NUT M4
00301	70904031	EVAPORATOR
00302	20310309	GAS LID STAY
00303	20023748	HINGE BRACKET
00304	20460096	SCREW M5X10

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003085 - 01

MEGAFUGE 2.0R 120V 60HZ

from Serial-No. 209462

to Serial-No. 236013

Index	Partno.	Text
00305	20480167	FAN WASHER A 5,1
00306	20490287	PIN
00307	20460104	SCREW M4X25
00310	20210332	MOTOR
00311	20420070	NUT M 6
00312	20480251	SECURING WASHER
00313	10104080	WASHER (SAND)
00314	20052555	ANTI VIBRATION MOUNT
00315	20480251	SECURING WASHER
00316	20430220	SCREW M6X25
00317	20480193	WASHER
00318	20360047	BOX SPANNER
00319	70003100	COLLET CHUCK
00320	20150028	SPEED CONTROL BOARD
00321	20480242	SECURING WASHER
00322	20460098	SCREW M 3 X 6
00323	70022632	BRACKET
00324	20250071	WASHER
00325	20220484	SPACER
00326	20460090	SCREW M4X12
00327	20480244	LOCK WASHER
00330	20160685	RESISTOR 150R 150W
00331	20220483	ANGLE
00332	20480200	WASHER
00333	20480167	FAN WASHER A 5,1
00334	20430258	SCREW M5X12
00335	70038969	INSULATING SHEET
00340	70002287	POWER SUPPLY CABLE
00341	20210325	FAN
00342	20480244	LOCK WASHER
00343	20460095	SCREW PHILIPS M4 X 10
00344	20300059	FOOT
00346	20420078	NUT
00347	20480158	WASHER
00350	70023955	BRACKEL
00351	20180138	CONNECTOR
00352	20480130	WASHER 4,3
00353	20028940	SPRING
00354	20470081	SCREW M4 X 30

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003085 - 01

MEGAFUGE 2.0R 120V 60HZ

from Serial-No. 209462

to Serial-No. 236013

Index	Partno.	Text
00355	10104080	WASHER (SAND)
00360	20020732	ANTI VIBRATION MOUNT
00361	20420070	NUT M 6
00362	20480251	SECURING WASHER
00363	20250085	WASHER 6,4
00364	20510125	SCREW M6 X 40
00370	70902547	TEMP. SENSOR
00371	20220286	GRIP 6,5
00373	20440309	SCREW M4 X 35
00375	20220100	NUT PG 9
00400	20240465	COMPRESSOR
00401	20430048	SCREW M 8 X 35
00402	20480158	WASHER
00403	20240453	FILTERDRYER
00404	20430216	SCREW M 6 X 12
00405	20480251	SECURING WASHER
00406	20022579	CONDENSOR
00410	20210306	ANGLE
00411	20430216	SCREW M 6 X 12
00412	20480251	SECURING WASHER
00413	20480193	WASHER
00414	20210323	MOTOR FAN
00415	20210308	FAN BLADE
00501	70903011	EEPROM MEGAFUGE 2.0R
00502	70000491	PROCESSOR

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003085 - 02

MEGAFUGE 2.0R 120V 60HZ

from Serial-No. 236014

to Serial-No.

Index	Partno.	Text
00101	70022666	BACK PANEL
00102	20460094	SCREW M 4 X 8
00103	20480130	WASHER 4,3
00104	20290187	CABLE ENTRY
00105	20022401	DEPOSITE
00106	20290320	CABLE ENTRY
00107	20220107	CORD GRIP
00108	20220106	NUT
00109	20420026	NUT
00110	20002695	LID WITH WINDOW
00112	20420077	HEXAGONAL NUT M5
00113	20480200	WASHER
00114	20430212	SCREW M 5 X 16
00115	20052364	HINGE
00116	20490287	PIN
00117	20023748	HINGE BRACKET
00118	20460143	SCREW M5X28
00120	20052842	LID HOOK
00121	20420151	NUT M10 X 1.25
00122	20460112	SCREW M 4 X 16
00123	20051919	HANDLE
00130	20022576	RUBBER FLANGE
00131	20460095	SCREW PHILIPS M4 X 10
00132	20510052	SCREW M4 X 10
00133	20310316	CLIP
00134	20056085	INSOLATION
00140	20180589	SWITCH
00201	20022402	FRONT COVER
00202	20055575	FOIL MEGAFUGE 2.0 R
00210	20150044	INDICATION AND KEY BOARD
00211	20460122	SCREW 3X6
00220	70055370	HOUSING
00221	20460094	SCREW M 4 X 8
00222	20480224	WASHER A 4,3
00224	20022578	BOTTOM PLATE
00225	20480224	WASHER A 4,3
00226	20460094	SCREW M 4 X 8
00227	20290516	SEAL
00228	20480200	WASHER

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003085 - 02

MEGAFUGE 2.0R 120V 60HZ

from Serial-No. 236014

to Serial-No.

Index	Partno.	Text
00229	20460096	SCREW M5X10
00230	70003724	LID LOCK
00231	70022477	FIXING CLAMP
00232	20440306	SCREW M5X40
00235	70022653	BASE
00240	20150092	MAINBOARD
00241	20230172	FUSE 15 A
00246	20420076	HEXAGONAL NUT M4
00247	20480244	LOCK WASHER
00253	20460095	SCREW PHILIPS M4 X 10
00254	20480130	WASHER 4,3
00255	20220426	SPACER
00256	20480244	LOCK WASHER
00257	20460095	SCREW PHILIPS M4 X 10
00258	20440285	SCREW
00259	70055369	FRONTPANEL
00260	20210341	FAN
00261	20460090	SCREW M4X12
00262	20480244	LOCK WASHER
00263	20420076	HEXAGONAL NUT M4
00270	20290534	NOZZLE
00271	20460095	SCREW PHILIPS M4 X 10
00272	20480108	FAN WASHER A 4,3
00273	20180138	CONNECTOR
00274	20420067	NUT
00301	70904031	EVAPORATOR
00302	20310309	GAS LID STAY
00303	20023748	HINGE BRACKET
00304	20460096	SCREW M5X10
00305	20480167	FAN WASHER A 5,1
00306	20490287	PIN
00307	20460104	SCREW M4X25
00310	20210332	MOTOR
00311	20420070	NUT M 6
00312	20480251	SECURING WASHER
00313	10104080	WASHER (SAND)
00314	20052555	ANTI VIBRATION MOUNT
00315	20480251	SECURING WASHER
00316	20430220	SCREW M6X25

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003085 - 02

MEGAFUGE 2.0R 120V 60HZ

from Serial-No. 236014

to Serial-No.

Index	Partno.	Text
00317	20480193	WASHER
00318	20360047	BOX SPANNER
00319	70003100	COLLET CHUCK
00320	20150028	SPEED CONTROL BOARD
00321	20480242	SECURING WASHER
00322	20460098	SCREW M 3 X 6
00323	70022632	BRACKET
00324	20250071	WASHER
00325	20220484	SPACER
00326	20460090	SCREW M4X12
00327	20480244	LOCK WASHER
00330	20160685	RESISTOR 150R 150W
00331	20220483	ANGLE
00332	20480200	WASHER
00333	20480167	FAN WASHER A 5,1
00334	20430258	SCREW M5X12
00335	70038969	INSULATING SHEET
00340	70002287	POWER SUPPLY CABLE
00341	20210325	FAN
00342	20480244	LOCK WASHER
00343	20460095	SCREW PHILIPS M4 X 10
00344	20300059	FOOT
00346	20420078	NUT
00347	20480158	WASHER
00350	70023955	BRACKEL
00351	20180138	CONNECTOR
00352	20480130	WASHER 4,3
00353	20028940	SPRING
00354	20470081	SCREW M4 X 30
00355	10104080	WASHER (SAND)
00360	20020732	ANTI VIBRATION MOUNT
00361	20420070	NUT M 6
00362	20480251	SECURING WASHER
00363	20250085	WASHER 6,4
00364	20510125	SCREW M6 X 40
00370	70902547	TEMP. SENSOR
00371	20220286	GRIP 6,5
00373	20440309	SCREW M4 X 35
00375	20220100	NUT PG 9

Spare-Part-List

Kendro Laboratory Products

Plant Osterode

75003085 - 02

MEGAFUGE 2.0R 120V 60HZ

from Serial-No. 236014

to Serial-No.

Index	Partno.	Text
00400	20240465	COMPRESSOR
00401	20430048	SCREW M 8 X 35
00402	20480158	WASHER
00403	20240453	FILTERDRYER
00404	20430216	SCREW M 6 X 12
00405	20480251	SECURING WASHER
00406	20022579	CONDENSOR
00410	20210306	ANGLE
00411	20430216	SCREW M 6 X 12
00412	20480251	SECURING WASHER
00413	20480193	WASHER
00414	20210323	MOTOR FAN
00415	20210308	FAN BLADE
00501	70903011	EEPROM MEGAFUGE 2.0R
00502	70000491	PROCESSOR