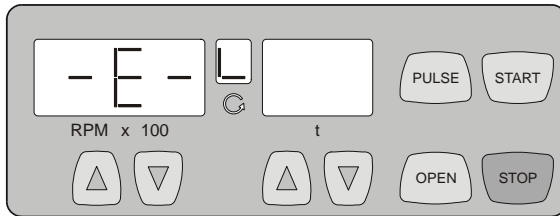


## 5 Error messages

The error messages will be indicated in the speed display of the control panel.  
e.g. :



### 5.1 Perform a MAINS RESET

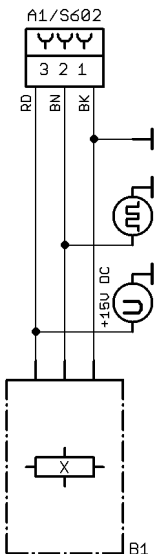
- Switch off the mains switch (switch position "0").
- Wait at least 10 seconds and then switch on the mains switch again (switch position "I").

### 5.2 Brief description

Display.	Fault	Brief description	Page
- 1 -	Tacho error	Tacho pulses break down during the run	10
- 2 -	Mains interrupt	Mains interrupt	10
- 3 -	Imbalance	Imbalance on the motor axle	11
- 4 -	Communication	Communication error	11
- 5 -	Overload	Fault in the motor or the motor control	11
- 6 -	Overvoltage	Mains is out of the tolerance	12
- 7 -	Overspeed	Overspeed detected	12
- 8 -	Undervoltage	Mains is out of the tolerance	12
- 9 -	Overtemperature	Overtemperature in the motor	13
	Versions Error	No speed indication	14
		False machine version adjusted	
- b -	Speed error	Speed too low	13
- c -	Controller-Watchdog	Fault in electronics (A1)	13
- d -	Lid lock error	Fault in lid lock system	14
- E -	Short circuit	Short circuit in electronics (A1)	14

### 5.3 Description and elimination of errors

#### – 1 – Tacho error



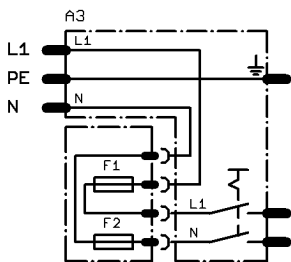
Speedometer pulses break down during the centrifugation run.

The rotor slows down without braking until it stops.

No further user operation possible.

- Reset error code:  
Wait 2 minutes until the safety time is passed and the rotation indicator has stopped to turn. Then perform a MAINS RESET.
- Speed sensor (B1) is defective or has loose contact on plug. Measure supply voltage on plug S602 / Electronics (A1) pin 1 – pin 3 (+15 VDC). Measure speedometer pulses on plug S602 / Electronics (A1) pin 1 – pin 2 (signal, 1 pulse per revolution).
- Electronics (A1) is defective.

#### – 2 – Mains interrupt



Mains interrupt during the centrifugation run.

During the interruption of the mains supply the rotor slows down without braking until it stops.

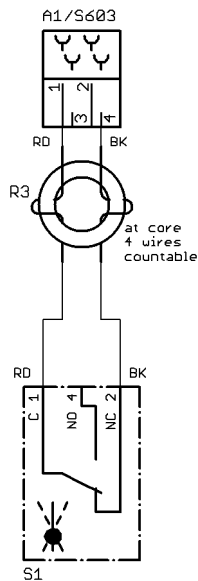
After the interruption of the mains supply the rotor slows down braked until it stops.

After the rotor is at standstill the lid can be opened.

No further user operation possible.

- Reset error code:  
Open the lid and press the **START** key or perform a MAINS RESET.
- Power failure.
- Loose contact in the mains cable or in the appliance plug (A3) or in the internal electrical wiring.
- Electronics (A1) is defective.

### – 3 – Imbalance



Imbalance on the motor axle.

The rotor slows down braked until it stops.  
After the rotor is at standstill the lid can be opened.

- Reset error code:  
Open the lid or perform a MAINS RESET.
- Weight difference in rotor components.
- Imbalance switch (S1) disadjusted (Adjustment see chapter 6.5, pg. 18).
- Imbalance switch (S1) is defective or not connected.  
Remove plug S603 and measure between pin 1 and pin 4 (switch is a break contact).  
Switch closed:  $\approx 0 \Omega$   
Switch opened:  $\infty \Omega$
- Electronics (A1) is defective.

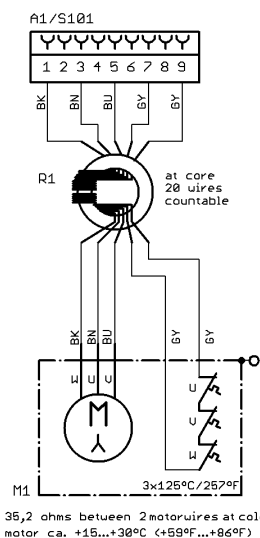
### – 4 – Communication

Communication error between control panel (A2) and electronics (A1).

The rotor slows down without braking until it stops.  
No further user operation possible.

- Reset error code:  
Perform a MAINS RESET.
- Loose contact in flat ribbon cable (W1).
- Control board (A2) is defective.
- Electronics (A1) is defective.

### – 5 – Overload



Electronics detects overload.

The rotor slows down without braking until it stops.  
No further user operation possible.

- Reset error code:  
Perform a MAINS RESET.
- Motor is defective (Ball bearings of the motor defective or resistance of the motor coils too low).  
Check the ball bearings of the motor for easy movement.  
Remove plug S101 and check at the plug pin1, pin 2, pin 3 the resistance ( $\approx 35,2 \Omega$ ) of the motor coils.
- Electronics (A1) is defective.

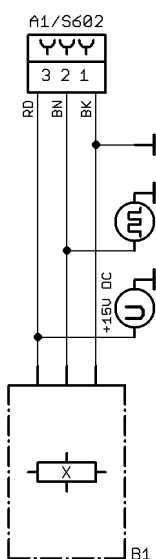
### – 6 – Overvoltage

#### Overvoltage

The rotor slows down without braking until it stops.  
No further user operation possible.

- Reset error code:  
Perform a MAINS RESET.
- Mains voltage is too high. Admissible mains voltage see chapter 10.3, pg. 29.
- Electronics (A1) is defective.

### – 7 – Overspeed



Overspeed. The speed measured by the speed sensor (B1) is 250 RPM higher than the maximum speed of the rotor.

The rotor slows down without braking until it stops.  
No further user operation possible.

- Reset error code:  
Perform a MAINS RESET.
- Speed sensor (B1) defective.  
Measure supply voltage on plug S602 / Electronics (A1) pin 1 – pin 3 (+15 VDC).  
Measure speedometer pulses on plug S602 / Electronics (A1) pin 1 – pin 2 (signal, 1 pulse per revolution).
- Electronics (A1) is defective.

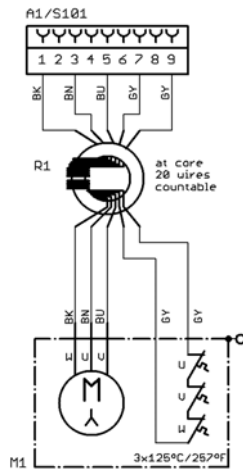
### – 8 – Undervoltage

#### Undervoltage

The rotor slows down without braking until it stops.  
No further user operation possible.

- Reset error code:  
Perform a MAINS RESET.
- Mains voltage is too less. Admissible mains voltage see chapter 10.3, pg. 29.
- Electronics (A1) is defective.

### – 9 – Overtemperature

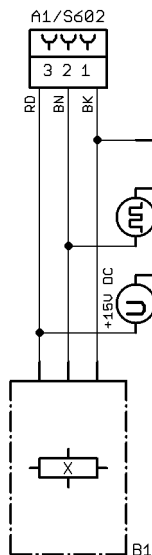


Overtemperature in the motor. Temperature > 125°C / 257°F.

The rotor slows down without braking until it stops.  
No further user operation possible.

- Reset error code:  
Perform a MAINS RESET.
- Motor is defective.  
Temperature in the motor is higher than 125°C / 257°F.
- Overtemperature switches in the motor are defective.  
Remove plug S101 and measure at the plug pin 7 – pin 9 :  
Switch closed:  $\approx 0 \Omega$   
Switch open:  $\infty \Omega$
- Electronics (A1) is defective.

### – b – Speed error



The set speed is not reached.

The rotor slows down without braking until it stops.  
No further user operation possible.

- Reset error code:  
Perform a MAINS RESET.
- Speed sensor (B1) is defective or has loose contact on plug.  
Measure supply voltage on plug S602 / Electronics (A1)  
pin 1 – pin 3 (+15 VDC).  
Measure speedometer pulses on plug S602 / Electronics (A1) pin  
1 – pin 2 (signal, 1 pulse per revolution).
- Motor is defective (Ball bearings of the motor defective or  
resistance of the motor coils too low).  
Check the ball bearings of the motor for easy movement.  
Remove plug S101 and check at the plug pin1, pin 2, pin 3 the  
resistance ( $\approx 35,2 \Omega$ ) of the motor coils.
- Electronics (A1) is defective.

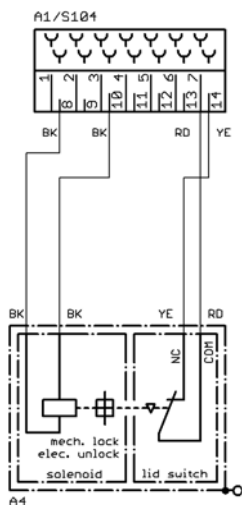
### – c – Controller-Watchdog

Watchdog in electronics.  
Discrepancy in program procedure.

The rotor slows down without braking until it stops.  
No further user operation possible.

- Reset error code:  
Perform a MAINS RESET.
- Electronics (A1) is defective.

### – d – Lid lock error



The microswitch at the lid lock has opened during the centrifugation run.

The rotor slows down without braking until it stops.

No further user operation possible.

- Reset error code:  
Perform a MAINS RESET.
- An emergency unlocking was performed during the centrifugation run.
- Microswitch at the lid lock (A4) is defective or has loose contact on plug.  
Remove plug S104 and measure at the plug pin 7 – pin 14:  
Lid closed:  $\approx 0 \Omega$   
Lid open:  $\infty \Omega$
- Mechanical defect at the lid lock.
- Electronics (A1) is defective.

### – E – Short circuit

Current consumption of the motor is too high.

The rotor slows down without braking until it stops.

No further user operation possible.

- Reset error code:  
Perform a MAINS RESET.
- Electronics (A1) is defective.

## 5.4 Defects without Error indications

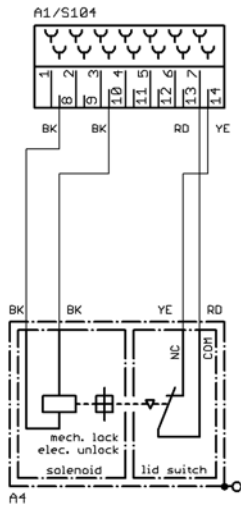
### No speed indication / Machine-Version-Error

Wrong machine version adjusted.

After switching on the centrifuge the speed indicator extinguish and in the time indicator appears the set machine version.

- Set the machine version C as described in chapter 6.1, pg. 16.

### The lid can not be opened

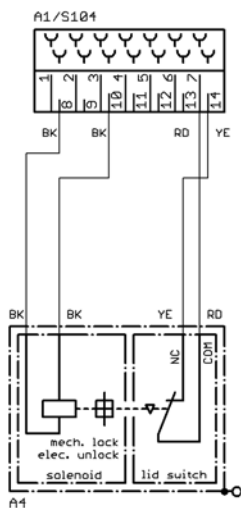


The lid can not be opened.

With the closed lid the symbol "L" (lid open) illuminates in the rotation indicator ☉.

- Open the lid by using the emergency release.
- Microswitch at the lid lock (A4) is defective or has loose contact on plug.  
Remove plug S104 and measure at the plug pin 7 – pin 14:  
Lid closed:  $\approx 0 \Omega$   
Lid open:  $\infty \Omega$
- Electronics (A1) is defective.

### The lid can not be opened

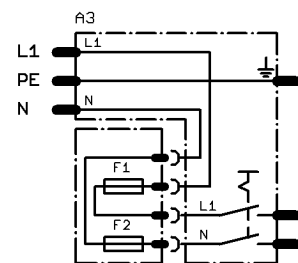


The lid can not be opened.

With the closed lid the symbol "—" (lid closed) illuminates in the rotation indicator ☉.

- Open the lid by using the emergency release.
- Magnet at the lid lock (A4) is defective or has loose contact.  
Remove plug S104 and measure at the plug pin 8 – pin 10:  
Magnet faultless:  $\approx 1 \text{ K}\Omega$ .
- Electronics (A1) is defective.

### No display



No mains supply on control panel.

No operation possible.

- No mains supply. Check the mains supply.
- Mains input fuses F1, F2 are defective. Check the mains input fuses.
- Electronics (A1) is defective.  
Measure the mains voltage on electronics (A1), plug S102L – S102N.  
If the green LED on the electronics (A1) lights up, the supply voltage for the control panel at plug S601 / Electronics (A1) pin 1 (GND) – pin 4 (+5V) will be present.
- Control panel (A2) is defective.
- Flat ribbon cable to control panel (A2) is defective.