

TECHNICAL MANUAL SHAKEMATIC 1095

DANGER: CUTTING FINGERS & GLASS BREAKAGE

The motor is very strong.

If the machine is tested with the cover off **beware of the risk of cutting fingers.**

If the machine is tested with glass tubes in position and doors or covers are off **beware of the risk that the tube/s loosens and breaks**

WARNING: The apparatus should be disconnected while making any adjustments, but will need to be connected to the power supply for checking operation. Perten Instruments AB can accept no responsibility for any accidents which may occur during apparatus repair or adjustment. If in doubt, contact Perten Instruments AB, SWEDEN.

CONTENTS	PAGE
REMOVAL OF COVERS	2
REMOVAL OF COVER AND DOORS	2
MANUAL OPENING OF DOORS	2
CRITICAL ADJUSTMENTS.....	3
ADJUSTMENT/REPLACEMENT OF THE DOORS.....	3
ADJUSTMENT/REPLACEMENT OF TUBE HOLDERS	4
ADJUSTMENT/REPLACEMENT OF MOTOR	4
ADJUSTMENT/REPLACEMENT OF DOOR LOCK SOLENOID.....	5
TROUBLESHOOTING AND LED ERROR MESSAGES	6
DOORS DO NOT OPEN	6
LEAKAGE	6
TUBE STOPPER DOES NOT FIT INTO TUBE	6
EXPLANATION OF BLINKING PUSH BUTTON LEDs AND LEDs ON CONTROL BOARD	7
SPAREPARTS LIST SHAKEMATIC	8
ELECTRONIC DRAWINGS SHAKEMATIC	11
DOOR SENSOR BOARD	11
CONTROL BOARD	12
CHANGE OF FUSES	15

REMOVAL OF COVERS

Removal of cover and doors



1. Open the doors and disconnect from the power supply. If doors cannot be open see below – manual opening of doors.
2. Remove the 2 inset screws at the rear bottom (2.5 mm inset).
3. Remove the 4 inset screws at the front bottom, 2 close to the warning label and 2 on sides.
4. Lift the cover carefully – noting that the **doors will fall out** - about **10 cm** and **remove the 25 pin contact** at the rear bottom close to the capacitor. Then lift off the cover
5. No adjustments should be necessary if just removing and reassembling the cover.

Manual opening of doors



1. Disconnect from power supply.
2. Without scratching the paint carefully remove small plastic cover for manual door release hole.
3. Insert a screwdriver or similar and manually press down on the screw or inset screw head. Doors should open.

CRITICAL ADJUSTMENTS

Adjustment/replacement of the doors

1. Mount the door loosely. Each hinge has 2 allen screws.
2. On the door there are 2 L-shaped plates:

The upper plate is the sensor plate and goes into the sensor.

Carefully check that the plate does not break the sensor when the door is closed.

Check that the plate is centred in the sensor gap.

The lower plate is the locking plate. The locking plate has elongated holes and can be adjusted vertically. Adjust the locking plate so the door can be locked in place.

3. Then check alignment:

Check that the door is aligned with the bottom plate, the side of the cover and top of the cover.

a) For example, right hand door side should be flush with right hand side. The door should not be outside or inside of the bottom plate. Side adjustments are made with the hinges.

b) For example the door front should be aligned flush with the bottom plate and flush with the top of the cover. Front adjustments are made with hinges as well as the bottom stop and also by adjusting the entire locking mechanism towards the front or towards the back of the Shakematic.

c) The bottom stop can be adjusted with the 2 allen screws on the bottom side of the bottom plate.

d) The locking mechanism is adjusted by loosening the 2 (4mm allen) screws on the underside of the mechanism.

4. The front gap between the doors is important for a professional look. Gap should be 2.3 +/- 0.7 mm
5. The difference in height between doors is important for a professional look and should be max +/- 1 mm

Check that door locks and opens properly by repeating locking and opening several times.
Re-adjust if necessary.

Adjustment/replacement of tube holders

The lower tube holder is not adjustable.

1. Disconnect from power supply.
2. Loosely mount the upper tube holder.
3. Insert a glass tube
4. Push down the shaker arm in the bottom position.
5. Push down on the upper tube holder and fix the screws medium hard.
6. Lift up arm to check. The rubber ring should be slightly compressed and the spring loaded ball should barely be seen.

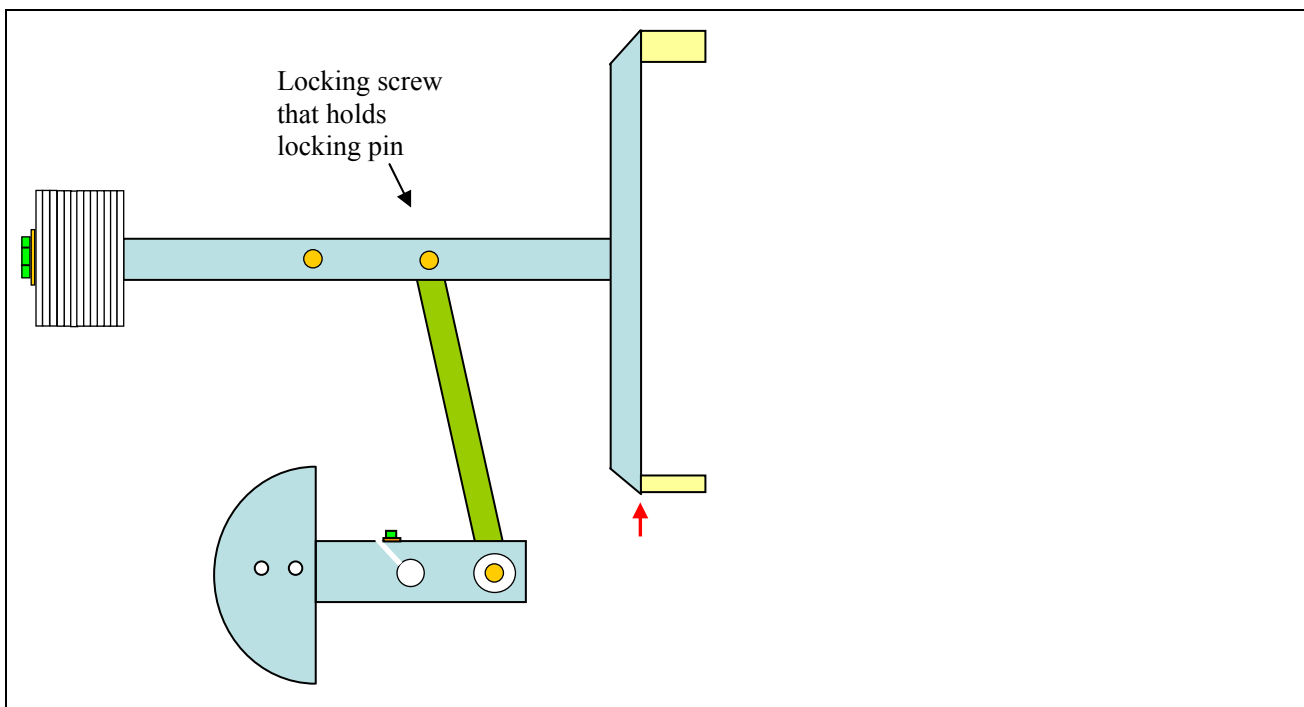
Repeat step 4-5 till perfection and check with several tubes if possible. Fasten screws properly

Adjustment/replacement of motor

To replace the motor

1. Disconnect from power supply and remove cover and doors.
2. Loosen the small allen screw on the right shaker arm and press out the locking pin.
3. Fold down the lever so that it will not hinder the motor to be pushed to the side.
4. Loosen the 2 screws that clamp each side of motor axis.
5. Remove 4 allen screws that hold the motor support from underside of bottom plate.
6. Push the motor with support to the side
7. Remove the motor from the motor support - 4 inset screws.
8. Replace motor and re-assemble.

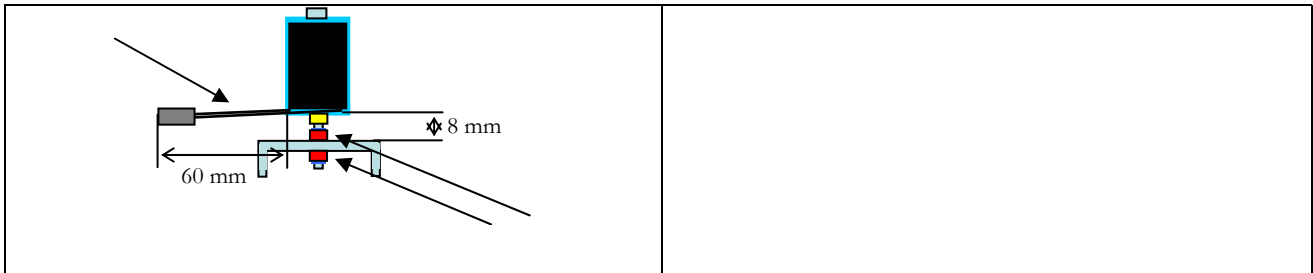
There should be no adjustments required? Måste sitta centrerat?



Adjustment/replacement of door lock solenoid

To replace door lock solenoid:

1. Disconnect from power supply.
2. Remove the entire locking assembly by removing the 2 screws on the underside (4 mm allen).
- 3.



TROUBLESHOOTING AND LED ERROR MESSAGES

Doors do not open

See adjusting the doors and manual opening of doors.

Leakage

Tubes are made of glass and although they have very tight specifications a non-conforming tube may be found. If the tube upper part (inner diameter) is too wide there may be a leakage. Do not use such tubes.

If the upper part (rim) is damaged there may be a leakage. Do NOT use damaged tubes.


If the rubber ring on the tube stopper is missing or damaged there may be a leakage do not use such tube stoppers.

Tube stopper does not fit into tube



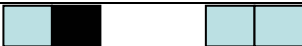
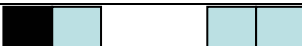
Tubes are made of glass and although they have very tight specifications a non-conforming tube may be found. If the tube upper part (inner diameter) is too narrow the tube stopper may not fit into the tube. Do not use such tube.

If the tube stopper itself is too wide it may not fit. Do not use such tube stoppers.

Explanation of blinking push button LEDs and LEDs on control board



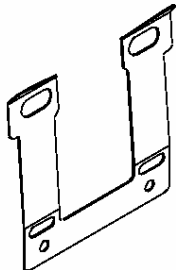
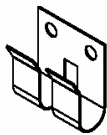
	Blinking or steady push button LEDs
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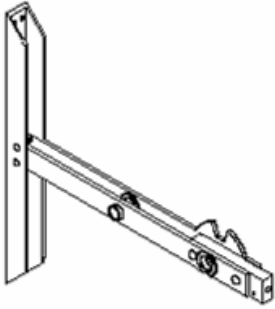
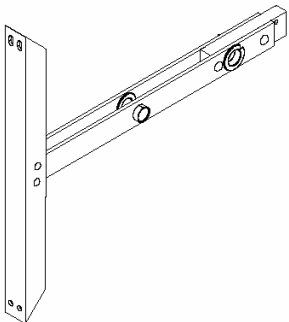
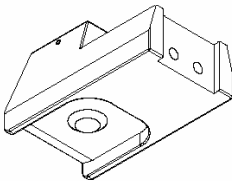
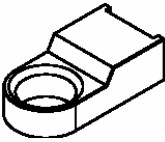
Left push button	Explanation	Right push button	Explanation
Green blinking	Close the doors <i>After power on:</i> Open and close doors again	Yellow steady	Power is ON
Green steady	Ready		
Red steady	Shaking		
Green/Red blinking	Doors not correctly closed or door lock sensors faulty. See LEDs below to find which sensor is faulty.		
Red blinking and →		Yellow blinking	Shortcut in motor drive transistors. See LEDs below to find which transistor



Explanation of LEDs on control board			
Leds are numbered H1-H7 from left to right as seen from the back of the Shakematic 1095			
LED	Component		Note
H1			Right lock sensor on right side faulty on door sensor board (as seen from front)
H2			Left on right side
H3			Right on left side
H4			Left on left side
H6	V09		Transistor V09 faulty on control board
H7	V08		Transistor V08 faulty on control board

Note: Both sensors/transistors in each pair must function to avoid single error fault as required by CE regulations.

SPAREPARTS LIST SHAKEMATIC

Part no.	Description	Figure
10.92.15	Open push button (yellow)	
10.92.18	Start push button (green/red)	
31.70.39	Small cover for manual door release hole	
10.92.25	Door lock solenoid	
10.91.12	Door (right side)	
10.91.13	Door (left side)	
10.91.25	Door locking spring	
10.91.24	Door pop-open spring	
10.92.06	Shakematic Door Sensor board	
10.92.03	Shakematic Control board	

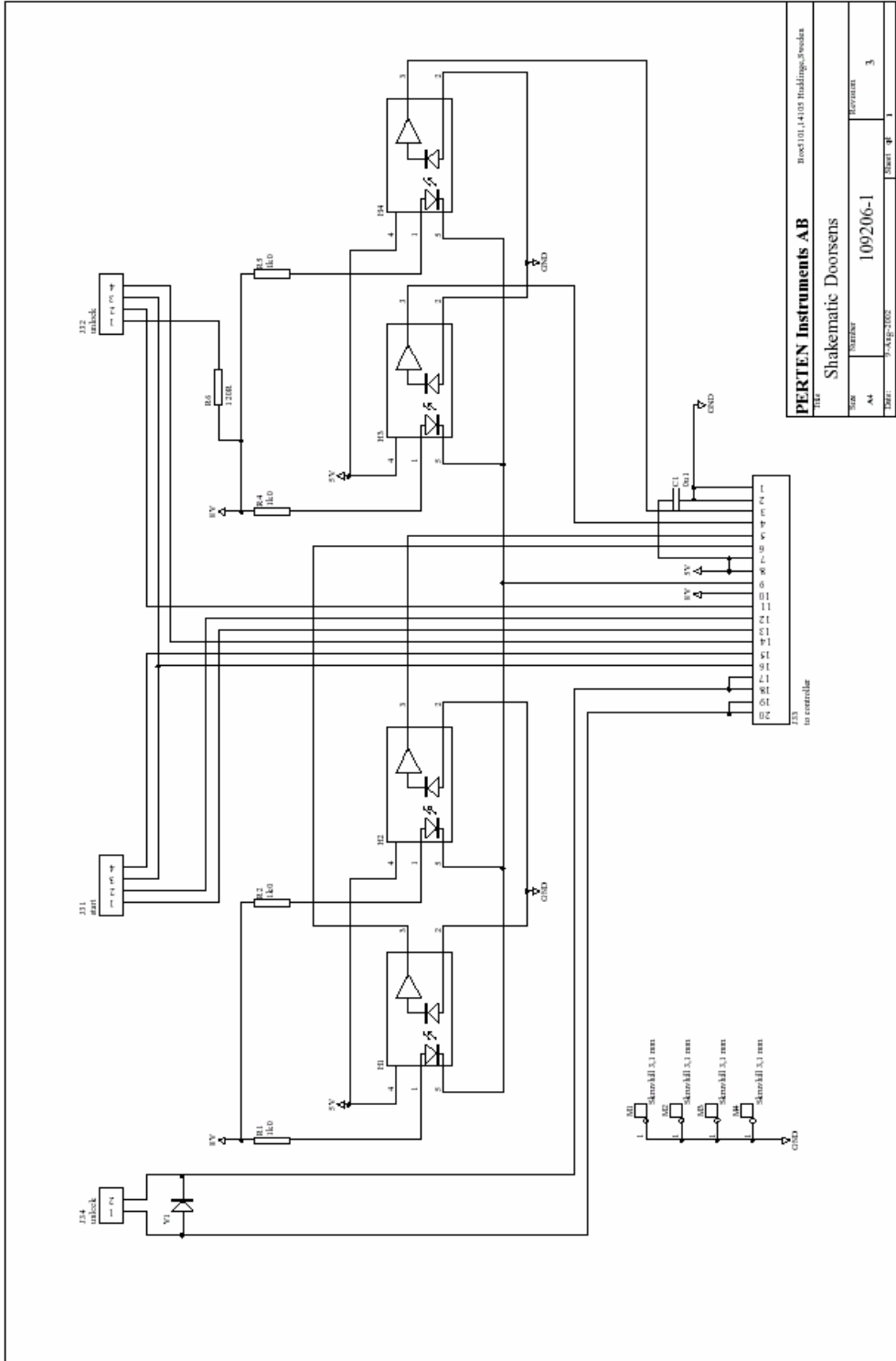
10.91.41	Shaker arm assy. (left side complete as shown on picture)	
10.92.75	Stop position opto switch (for left side shaker arm)	
10.91.42	Shaker arm assy (right side complete as shown on picture)	
10.98.28	Tube holder (upper)	
10.90.29	Tube holder (lower)	
10.92.72	Motor (complete with cable and connector)	
90.92.12	Transformer – Shakematic	
17.31.79	Power inlet module	Same type as FN1700 & FN1900
90.16.10	fuse T1AL 250V (5 x 20 mm, 230 V ~)	
90.19.20	fuse T2AL 250V ceramic (6.3 x 32 mm 115 V ~)	
10.01.18	Mains power cable (230V)	
10.01.19	Mains power cable (115V)	
10.92.31	Rubber feet (1 piece)	

10.90.70	Tube stopper (1 piece)	
10.91.45	Label (how to remove tube)	

For other spare parts please contact Perten Instruments AB.

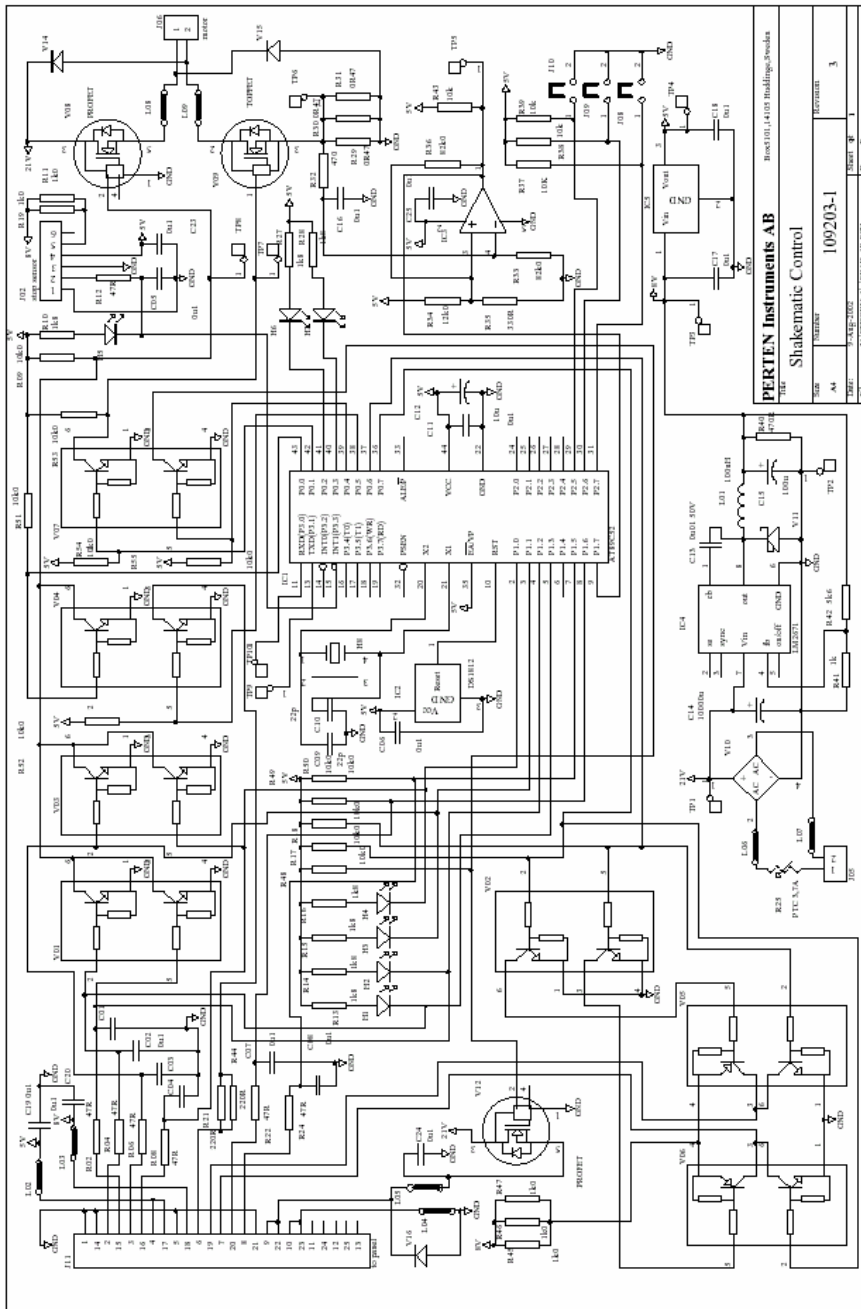
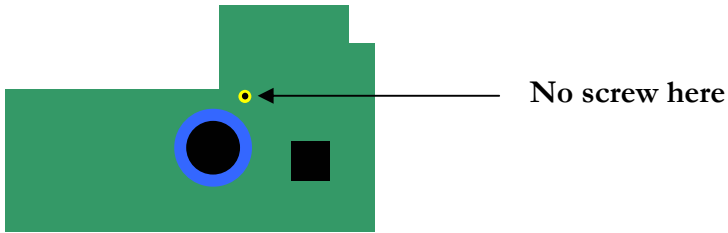
ELECTRONIC DRAWINGS SHAKEMATIC

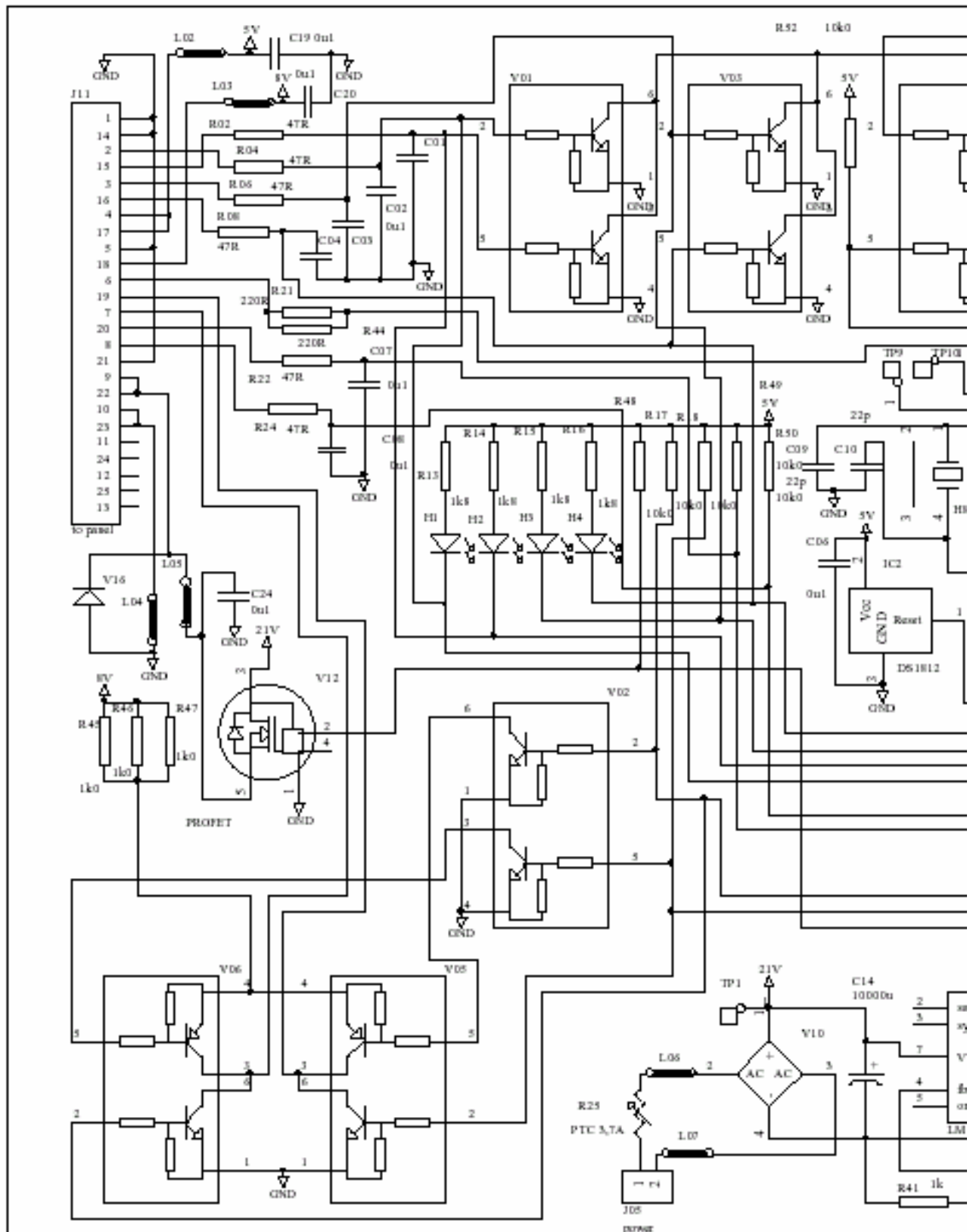
Door sensor board

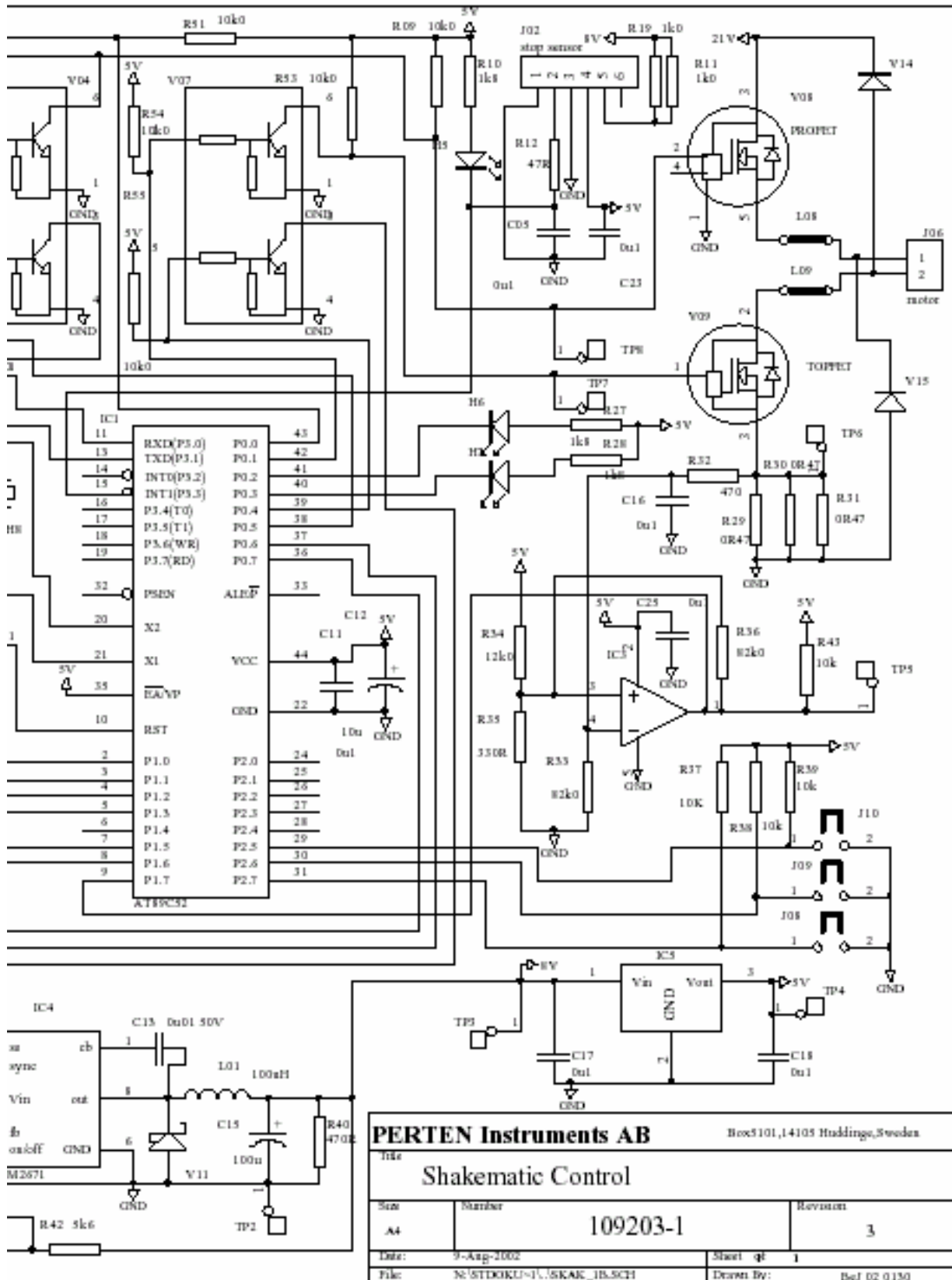


Control board

Note that one screw should not be mounted.







Change of fuses



WARNING: To prevent operator injury or damage to the apparatus, disconnect the apparatus from the mains supply before changing fuses.

NOTE: The Shakematic 1095 can be set for 230V~ or 115V~ by just changing the fuse and turning the fuse holder so that the appropriate text 230 or 115 is shown in the window. Mains frequency 50 or 60 Hz does not affect the Shakematic 1095.

1. Disconnect the apparatus. (Remove the mains power cable).
2. Use a small screwdriver to open the left side of the lid covering the fuse holder. See figure II:1 and II:2.

Pictures are for FN1700 but the assembly is the same for the Shakematic 1095.

3. Use the screwdriver to remove the fuse holder. Remove the fuse (fuses) from the holder.



Figure II:1. Fuse holder removed and fuse coverlid open. (230V; 5x20 mm fuse)

Pictures are for FN1700 but the assembly is the same for the Shakematic 1095.

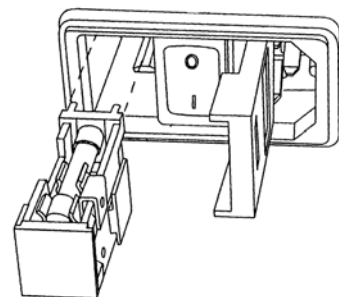


Figure II:2. Fuse holder removed and fuse coverlid open. (115V; 6.3x32 mm fuse)

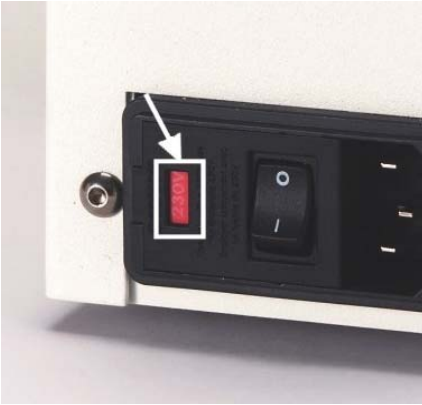
Pictures are for FN1700 but the assembly is the same for the Shakematic 1095

230V~ instruments

Check your mains supply:

1. If your mains supply is 230V~ use a fuse marked T1AL 250 V. The fuse size is 5 x 20 mm, spare part number 90.16.10. Insert the new fuse (fuses) in the fuse holder. The fuses will remain in place via the spring loaded holder.

2. Turn the fuse holder so that the text 230 points to the left and press in the fuse holder into the power module.
3. Close the fuse cover lid firmly so it snaps into position. Check that the text 230V can be seen in the small window, see Figure II:3.
4. Reconnect the apparatus to the mains power.



*Figure II:3. Check that the correct voltage can be seen in the small window.
Pictures are for FN1700 but the assembly is the same for the Shakematic 1095*

115V~ instruments

Check your mains supply:

If your mains supply is 115V~ use a fuse marked T2AL 250V ceramic. The fuse size is 6.3 x 32 mm, spare part number 90.19.20. Insert the new fuse (fuses) in the fuse holder. The fuses must be kept in place by squeezing with your fingers.

Turn the fuse holder so that the text 115 points to the left and press in the fuse holder into the power module.

Close the fuse cover lid firmly so it snaps into position. Check that the text 115V can be seen in the small window, see Figure II:3.

Reconnect the apparatus to the mains power.