Struers
Ensuring Certainty

CitoVac

Instruction Manual

Original Instructions

CE

Doc. no.: 15927025-01_B_en
Date of release: 2025.01.10

Table of Contents

1 About this manual

CAUTION
Struers equipment must only be used in connection with and as described in the Instruction Manual supplied with the equipment.

Note
Read the Instruction Manual carefully before use.

Note
If you want to view specific information in detail, see the online version of this manual.

2 Safety

2.1 Intended use

For professional materialographic impregnating or gluing of materials for further materialographic inspection. The machine must be operated only by skilled/trained personnel.

The machine is designed to be used only with Struers consumables specifically designed for this purpose and this type of machine.

The machine is for use in a professional working environment (e.g. a materialographic laboratory).

Do not use the machine for:	Impregnating or gluing of materials other than solid materials suitable for materialographic studies. In particular, the machine must not be used for any type of explosive and/or flammable material, and materials or consumables which are not stable under vacuum.
Model:	CitoVac

2.2 CitoVac safety precautions

2.2.1  Read carefully before use

1. Ignoring this information and mishandling of the equipment can lead to severe bodily injuries and material damage.
2. The machine must be installed in compliance with local safety regulations. All functions on the machine and any connected equipment must be in working order.
3. The operator must read the safety precautions and Instruction Manual, as well as relevant sections of the manuals for any connected equipment and accessories. The operator must read the Instruction Manual and, where applicable, the Safety Data Sheets for the applied consumables.
4. The machine must be operated only by skilled/trained personnel.
5. The machine must be placed on a safe and stable support table that is able to carry at least 20 kg (45 lbs).
6. Never use vacuum lids other than the ones delivered from Struers.
7. If any cracks occur in the vacuum lid, it must be replaced immediately.
8. Make sure that the compressed air and vacuum are switched off before removing the hoses.
9. Use only consumables (resins and hardeners) that are suitable for vacuum impregnation. See the Safety Data Sheet (SDS) on Struers.com for relevant hazards and precautions.

10. We recommend that you install the machine in a well-ventilated and well-lit (300 lux) fume hood.
11. In case of fire, alert bystanders and the fire brigade. Use a powder fire extinguisher. Do not use water.
12. Struers equipment must only be used in connection with and as described in the Instruction Manual supplied with the equipment.
13. The machine is designed to be used only with Struers consumables specifically designed for this purpose and this type of machine.
14. If the equipment is subjected to misuse, incorrect installation, alteration, neglect, accident or incorrect repair, Struers will accept no responsibility for damage to the user or the equipment.
15. Dismantling of any part of the equipment, during service or repair, should always be performed by a qualified technician (electromechanical, electronic, mechanical, pneumatic, etc.)

2.3 Safety messages

Struers uses the following signs to indicate potential hazards.

ELECTRICAL HAZARD
This sign indicates an electrical hazard which, if not avoided, will result in death or serious injury.

DANGER
This sign indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

WARNING
This sign indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

CRUSHING HAZARD
This sign indicates a crushing hazard which, if not avoided, could result in minor, moderate or serious injury.

HEAT HAZARD
This sign indicates a heat hazard which, if not avoided, can result in minor, moderate or serious injury.

CAUTION
This sign indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

Emergency stop
Emergency stop

General messages

Note
This sign indicates that there is a risk of damage to property, or a need to proceed with special care.

Hint
This sign indicates that additional information and hints are available.

2.4 Safety messages in this manual

CAUTION
Struers equipment must only be used in connection with and as described in the Instruction Manual supplied with the equipment.

ELECTRICAL HAZARD
Switch off the electrical power supply before installing electrical equipment.
The machine must be earthed (grounded).
Make sure that the actual electrical power supply voltage corresponds to the voltage stated on the name plate of the machine.
Incorrect voltage can damage the electrical circuit.

CAUTION
Before operation, check that the lid is not cracked or has fissures, or it might implode when exposed to vacuum.

CAUTION
Prolonged exposure to loud noises may cause permanent damage to a person's hearing.
Use hearing protection if the exposure to noise exceeds the levels set by local regulations.

3 Get started – introduction

3.1 Device description

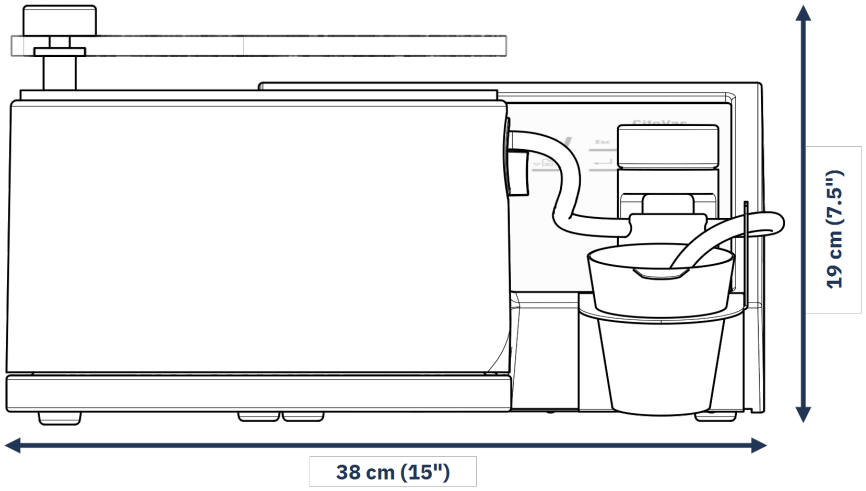
CitoVac is a vacuum unit for impregnating of porous solid and stable (non-explosive) materials with Struers impregnation (mounting) materials specially designed for vacuum impregnation. The level of vacuum and process time can be adjusted during the process.

The vacuum chamber is closed by a spring loaded transparent lid and the nozzle of the disposable tube for dosing of the impregnation (mounting) material. The impregnation process starts by placing the specimens in a mounting cup, place the mounting cup(s) in the vacuum chamber and setting up the process parameters. A disposable tube is mounted, and the vacuum valve is closed. The operator starts the unit manually and closes the vacuum chamber

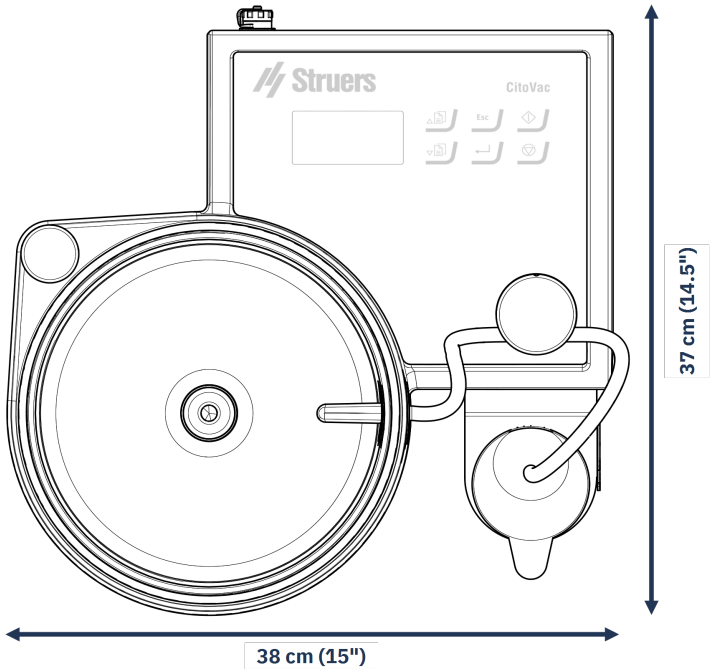
by pressing the lid down on the pivot joint. The cup with mixed impregnating material is placed in the cup holder and the operator manually opens the vacuum valve to let the impregnation material flow into the mounting cups. The unit stops automatically and the mounting cup with the specimen can be removed. The disposable tube is removed together with remained impregnation material.

3.2 Dimensions

Front view



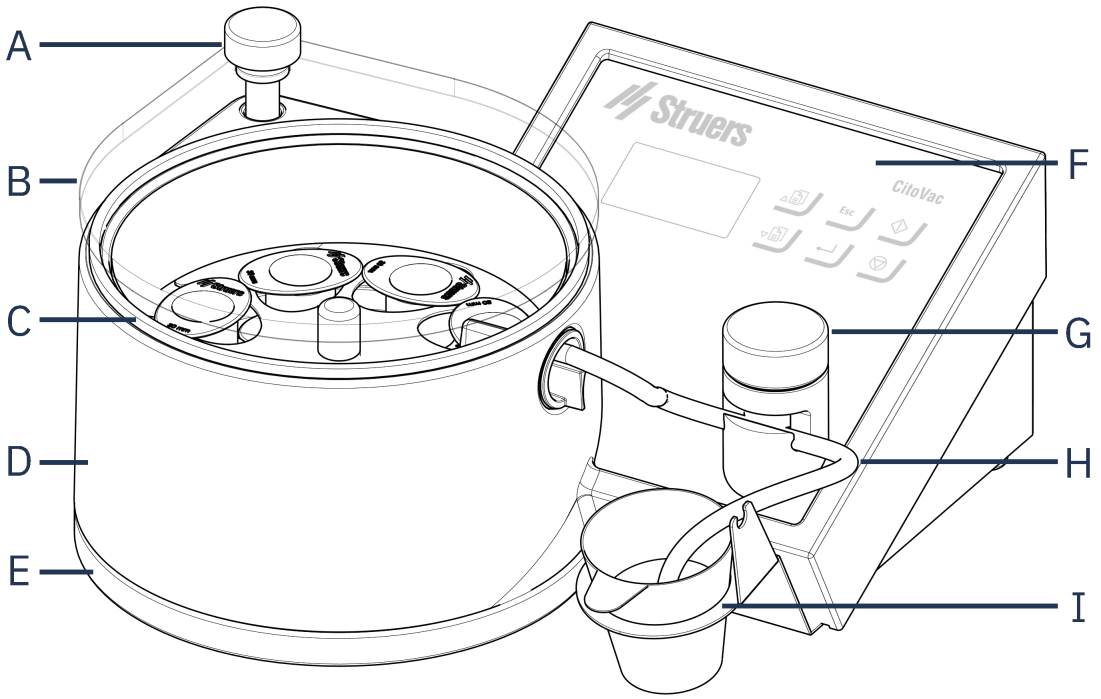
Footprint



Vacuum chamber	
Inner diameter	200 mm (8")
Inner height	100 mm (4")

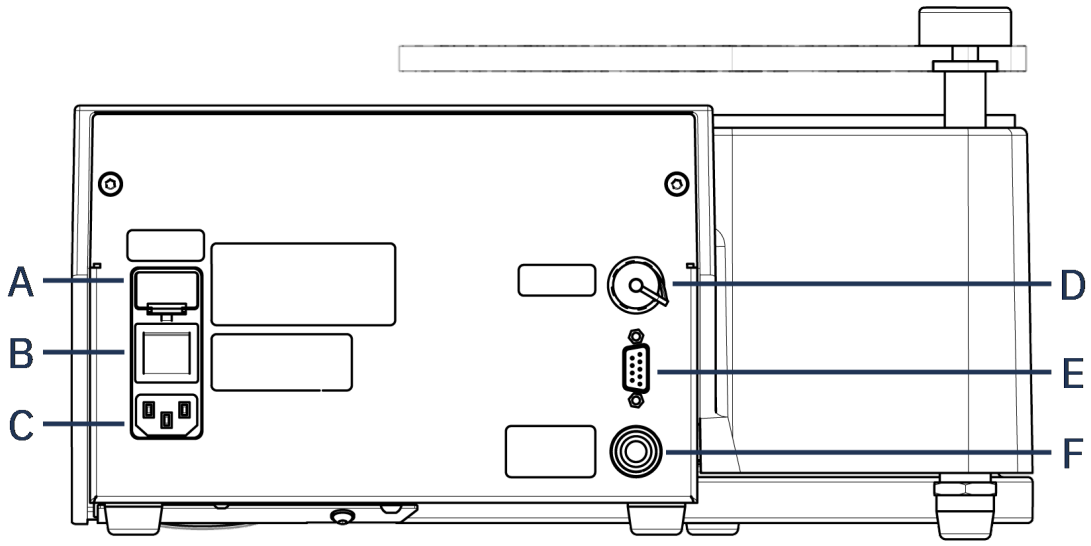
3.3 Overview

Front view



A	Pivot joint of the lid	**F**	Front panel
B	Lid	**G**	Vacuum valve
C	Gasket	**H**	Dispensing tube
D	Vacuum chamber	**I**	Mixing cup holder
E	Wheel for rotating mounting cups		

Rear view



A	Fuse	**D**	Communication socket to control unit
B	Main switch	**E**	Communication socket
C	Power supply	**F**	Compressed air / vacuum connection

3.4 Accessories and consumables

Accessories

For information about the available range, see the CitoVac brochure:

- The Struers Website (http://www.struers.com)

Consumables

The machine is designed to be used only with Struers consumables specifically designed for this purpose and this type of machine.

Other products may contain aggressive solvents, which dissolve e.g. rubber seals. The warranty may not cover damaged machine parts (e.g. seals and tubes), where the damage can be directly related to the use of consumables not supplied by Struers.

For information about the available range, see: The Struers Website (http://www.struers.com).

4 Installation

4.1 Unpack the machine

CRUSHING HAZARD
Take care of your fingers when handling the machine.
Wear safety shoes when handling heavy machinery.

Note
We recommend that you keep all original packaging and fittings for future use.

Procedure

1. Cut the packing tape on the top of the box.
2. Remove the bag of loose parts.
3. Carefully lift the machine from the box, supporting from underneath the machine.

4.2 Check the packing list

The packing box contains the following items:

Pcs.	Description
1	CitoVac
2	Electrical power supply cables
1	Universal mounting cup holder (inside vacuum chamber)
1	Hose for vacuum
1	Coupling for vacuum hose
2	Hose clamps
1	Gasket for vacuum chamber
1	Instruction Manual set

Consumables

Pcs.	Description
1	Chamber protector (inside vacuum chamber)
1	Mixing cup
1	Dispensing tube

4.3 Lift the machine

Weight	
CitoVac	9.5 kg (21 lbs)

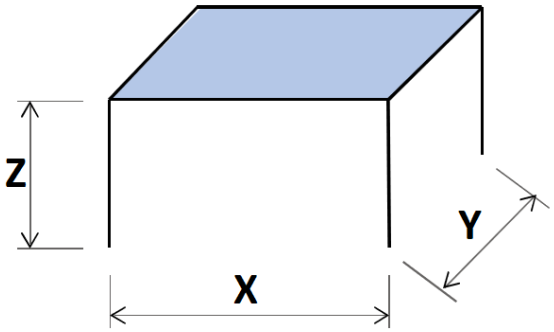
- Lift the machine by grasping underneath the base of the machine from the left side and the right side.

4.4 Location

CRUSHING HAZARD
Take care of your fingers when handling the machine.
Wear safety shoes when handling heavy machinery.

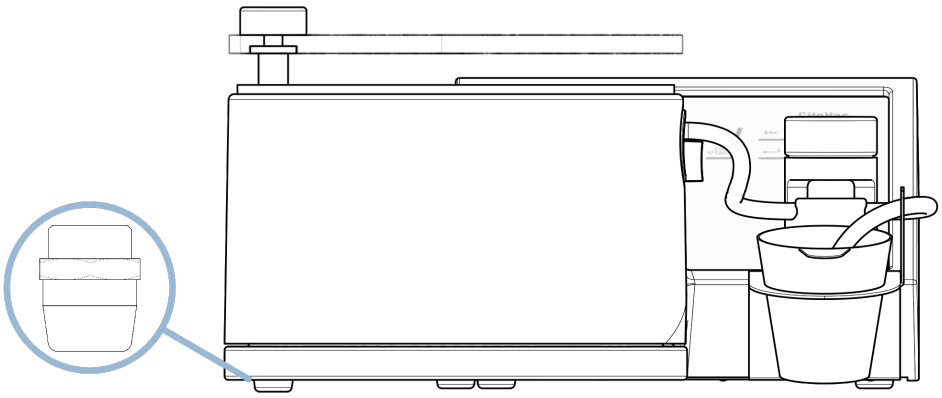
- The machine must be placed on a safe and stable table with an adequate working height. The table must be able to carry at least the weight of the machine and the accessories.

Recommended workbench dimensions	
X:	92 cm (36.2")
Y:	90 cm (35.4")
Z:	80 cm (31.5")



- The machine must be placed close to the electrical power supply.
- The machine must rest securely with all 4 feet on the table.
- Make sure that there is sufficient space around the machine for service access.
- Make sure that there is enough room in front of the machine: 100 cm (40").
- Make sure that there is enough room behind the machine for the connections: approx. 10 cm (4").
- Make sure that there is enough room on the left side of the machine to fully open the lid: approx. 8 cm (3").

Level the machine



- Use the adjustable foot to level the machine.

Exhaust

Note
Impregnation materials such as epoxy may produce fumes. The machine should only be operated where ample ventilation is possible, e.g. in a fume hood.

Illumination

- Make sure that the work station has adequate lighting. Avoid direct glare (dazzling light sources within the operator's line of vision) and reflected glare (reflections of light sources).

  A minimum of 300 Lumen is recommended to illuminate the controls and other work areas.

Ambient conditions		
Operating environment	Surrounding temperature	Operation: 5 - 40°C (41 - 104°F)
		Storage: 0 - 60°C (32 - 140°F)
	Humidity	Operation: < 95% RH non-condensing
		Storage: < 90% RH non-condensing

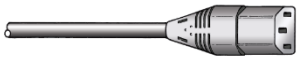
4.5 Power supply

ELECTRICAL HAZARD
Switch off the electrical power supply before installing electrical equipment.
The machine must be earthed (grounded).
Make sure that the actual electrical power supply voltage corresponds to the voltage stated on the name plate of the machine.
Incorrect voltage can damage the electrical circuit.

Note
For more information, see Technical data ► 36.

4.5.1 Connection to the machine

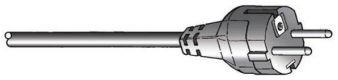
Both cables are equipped with an IEC 320 cable connector. Connect the cable connector to CitoVac.



4.5.2 Single-phase supply

Electrical power supply cable with 2-pin plug (European Schuko)

The 2-pin plug (European Schuko) is for use on single-phase electrical power connections.

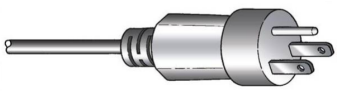


The leads must be connected as follows:

Yellow/Green	Earth (ground)
Brown	Line (live)
Blue	Neutral

Electrical power supply cable with 3-pin plug (North American NEMA 5-15P)

The 3-pin plug (North American NEMA 5-15P) is for use on single-phase electrical power connections.



The leads must be connected as follows:

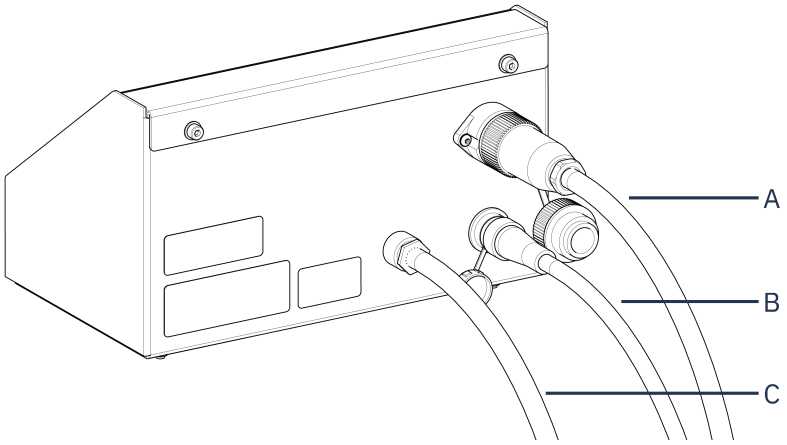
Green	Earth (ground)
Black	Neutral
White	Line (live)

4.6 Compressed air and vacuum

Note
For more information, see Technical data ► 36.

1. Mount the coupling on the vacuum hose and secure it with a hose nipple.
2. Connect the vacuum hose to the rear of the machine.
3. Mount the hose on the compressed air / vacuum supply.

External vacuum pump



A Power supply to vacuum pump (four-pole plug)

B Communication cable, connected to the machine

C Power supply cable

CitoVac models for use with an external vacuum pump can be connected to the vacuum pump using a Cooli-1 control unit.

1. Connect the machine and the Cooli-1 control unit using the supplied communication cable.
2. Mount a cable with a four-pole plug on the power lead from the vacuum pump and connect it to the Cooli-1 control unit.

Note
The vacuum pump must have local main voltage (the same as connected to the Cooli-1 control unit).

Note
The cable for the vacuum pump is ordered separately (Catalog number 15763604).
The cable must be installed on the vacuum pump by a qualified technician.

Vacuum / compressed air hose

- Make sure that the hose does not have any sharp bends.

  If you require a longer hose, we recommend that you choose a hose with a larger internal diameter, to ensure a sufficient flow.

4.7 Noise

For information on the sound pressure level, see Technical data ► 36.

CAUTION
Prolonged exposure to loud noises may cause permanent damage to a person's hearing.
Use hearing protection if the exposure to noise exceeds the levels set by local regulations.

5 Transport and storage

If, at any time after the installation, you have to move the unit or place it in storage, there is a number of guidelines we recommend that you follow.

- Package the unit securely before transportation. Insufficient packaging could cause damage to the unit and will void the warranty. Contact Struers Service.
- We recommend that you use the original packaging and fittings.

5.1 Transport

1. Discard the dispensing tube and mixing cup.
2. Disconnect power and compressed air/vacuum.
3. Move the machine to its new location.

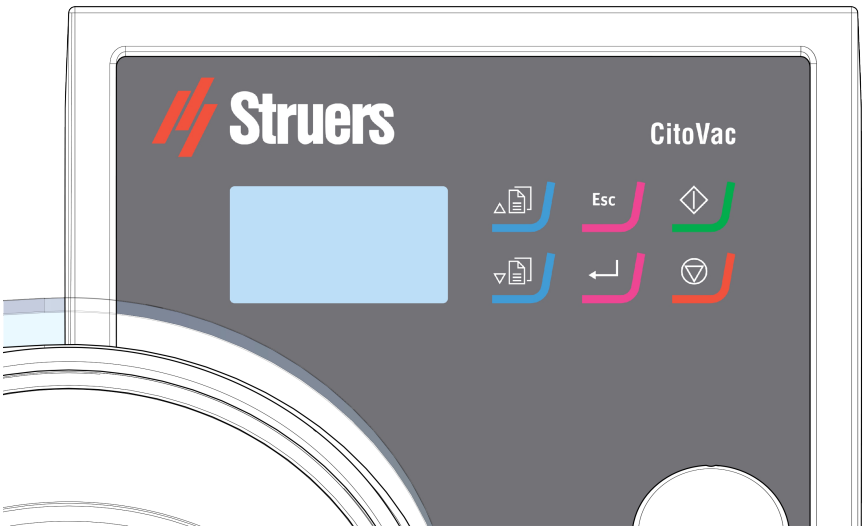
5.2 Storage

If the machine is bound for long-time storage or shipping:

1. Clean the machine.
2. Wrap the machine in plastic (place desiccant (silica gel) with the machine).
3. Place the machine in the transport box and tape it closed.

6 Operate the device

6.1 Control panel



Button	Function
	**Up menu key** Moves highlighted menu items upwards, increases values of selected parameters, and moves the cursor to the left in menus.
	**Down menu key** Moves the highlighted menu item downwards, decreases values of selected parameters, and moves the cursor to the right in menus.
	**Esc** Moves one step backward in menus.
	**Enter** Selects highlighted menu items and enters (saves) modified parameter values.

Button	Function
	**Start** Starts the vacuum process.
	**Stop** Stops the vacuum process: – Press once to pause the process. – Press twice to cancel the process.

6.2 Start-up

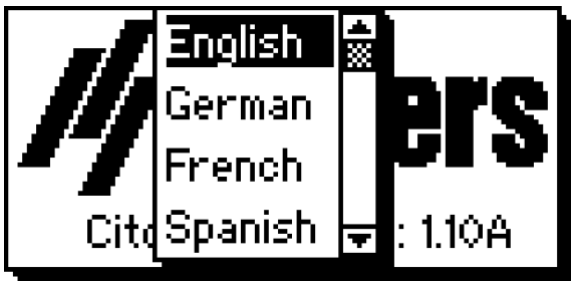
When you switch on the machine, the splash screen shows the version of the installed software.

Start-up - the first time

The first time you switch on the machine, you will be prompted to select the language you want to use.

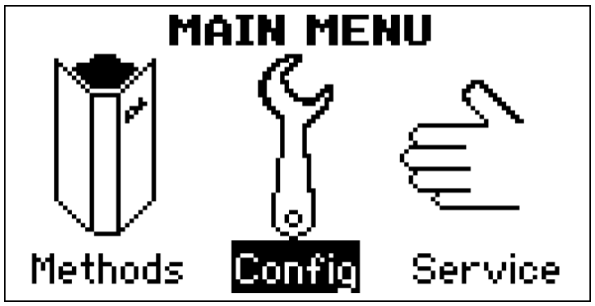
If needed, use the controls on the control panel to change the settings. SeeConfiguration ► 20.

Select language



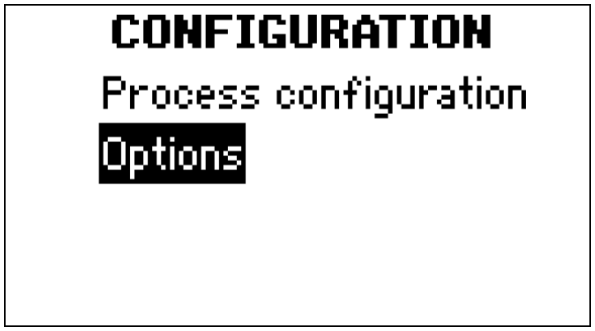
- Select the language you want to use. If needed, you can change the language from the **Options** menu. See Configuration ► 20.

6.3 Configuration

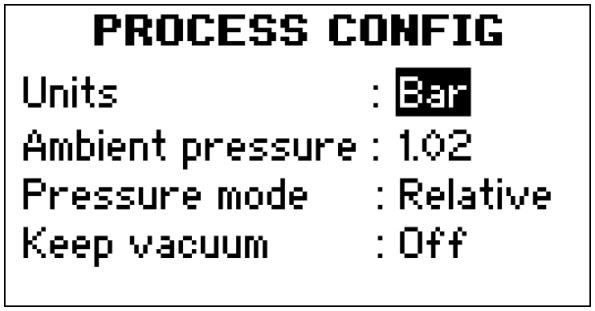


From the **Config** menu you can access a number of settings and parameters.

- From the **Main menu**, select **Config**.



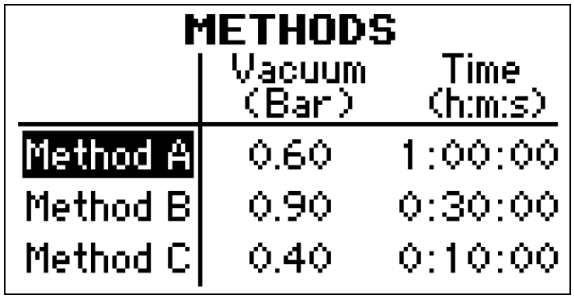
Process configuration



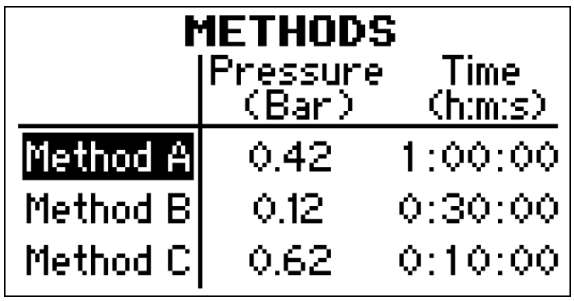
Parameter	Description
Units	Units can be set to Bar (default), kPa or PSI.
Ambient pressure	The machine measures the difference in relative pressure and not the actual absolute pressure. The actual value of ambient pressure can be input for greater accuracy. This is particularly important when using the **Absolute** pressure mode.

Parameter	Description
Pressure mode	The pressure mode can be set to **Absolute** or **Relative**. The difference in pressure between the ambient pressure and the pressure inside the chamber is measured.
Keep vacuum	– **On**: The vacuum is maintained after the process is complete. – **Off** (default): The vacuum is released after the process is complete.

Pressure modes



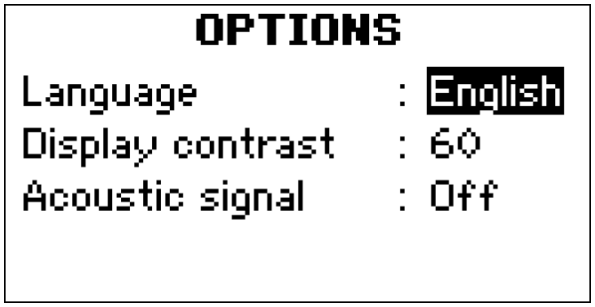
– **Relative**: The method display shows: **Vacuum**.



– **Absolute**: The absolute pressure is calculated using the value of **Ambient pressure** set in **Process config**.

  The method display shows: **Pressure**.

Options



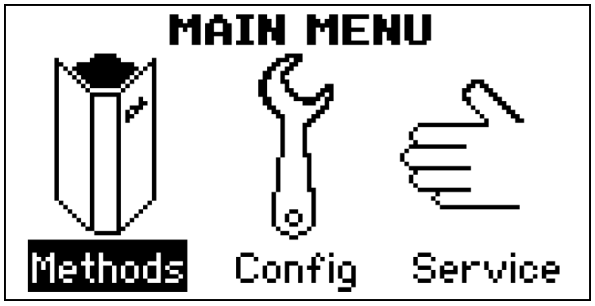
You can configure the following parameters:

Parameter	Description
Language	Select the language you wish to use in the software. The language can be set to English (default), German, French, Spanish or Italian.
Display contrast	You can adjust the display to make it easier to view. – Default value: 60. – Adjustment range: 1-100.
Acoustic signal	**On**: – A beep is heard when the mounting process has been completed. – Beeps are heard when control buttons are pressed. **Off**: – The acoustic signal is disabled.

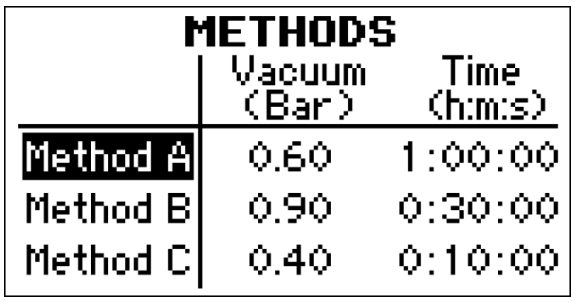
6.4 Select a method

There are three built-in methods (**A**, **B**, and **C**) where you can easily set and save the pressure / vacuum and process time.

From the **Main menu**:



1. Select **Methods**.



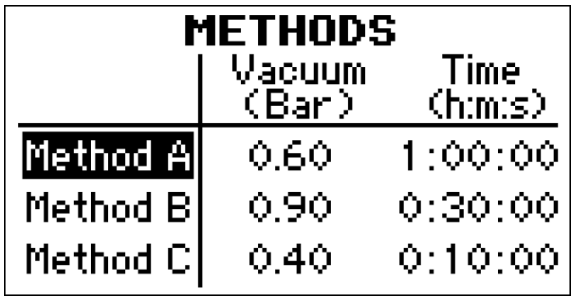
2. Select one of the three programmed methods.

   The **Vacuum** and **Process time** settings for each method will be displayed.

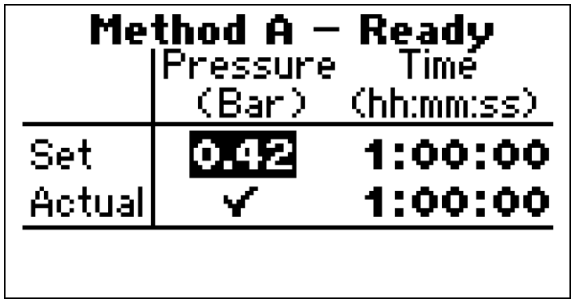
6.5 Edit a method

Each of the three methods can be edited and saved.

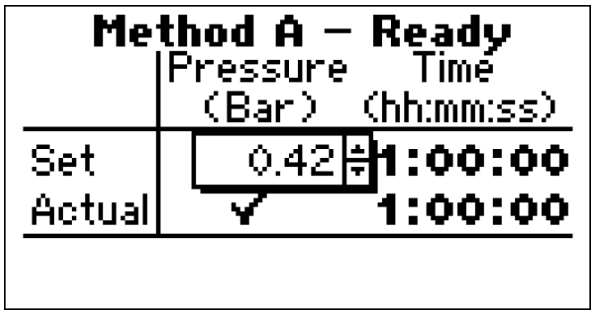
From the **Methods** menu:



1. Select a method.



2. Select a parameter.

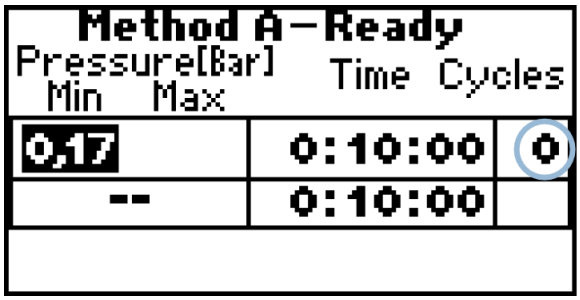


3. Set the value of the parameter.
4. Press Enter to save the value.

6.6 Run a process without cycles

From the **Methods** menu:

1. Select a method.



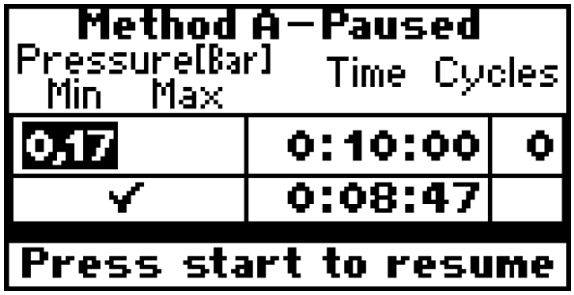
2. Set **Cycles** to **0**.
3. Close the lid and press Start.

The screen will change to show the process view.

Once the process is completed, the screen will show: **Completed successfully**.

Pause the process

1. Press Stop once to pause the process.



The screen will change to show that the method is paused.

Hint
You can edit a method while the process is paused.
E.g. if the vacuum is to high and bubbles start to appear in the impregnation material.

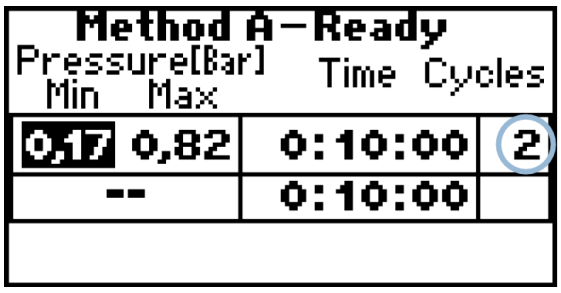
2. Press Start to resume the process, or press Stop to stop the process.

6.7 Run a process with cycles

Cycles are fluctuations from high to low vacuum. The time for the two pressure levels is set in **Process configuration** menu. See Configuration ► 20.

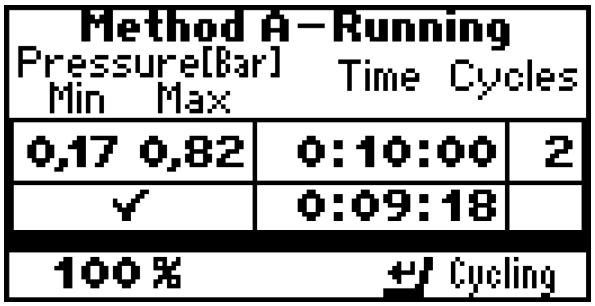
From the **Methods** menu:

1. Select a method.



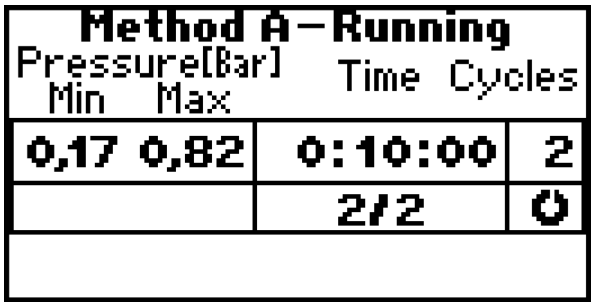
2. Set the number of cycles. You can set up to 10 cycles.
3. Set the **Min** and **Max** pressure.
4. Close the lid and press Start.

   The screen will change to show the process view.

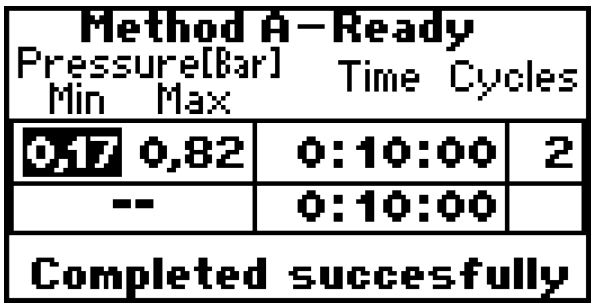


   Once vacuum is reached, the screen will show a check mark. The machine is ready to start the cycling process.

5. Press Enter to start the cycling process.



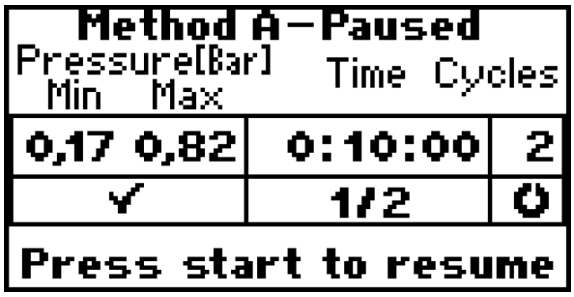
   While the cycles are running, the cycle number is shown as a count down.



   Once the process is completed, the screen will show: **Completed successfully**.

Pause the process

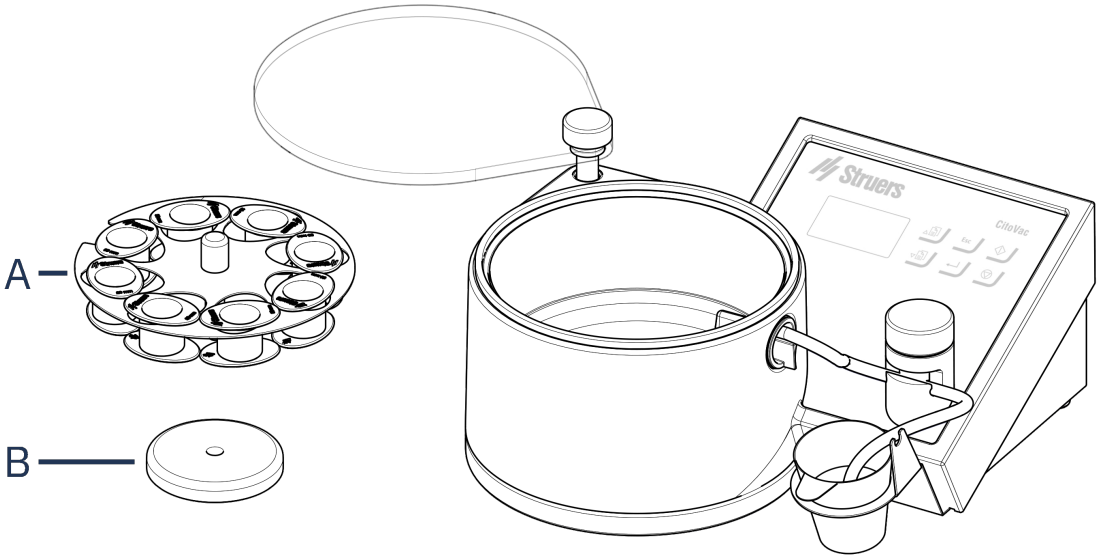
1. Press Stop once to pause the process.



The screen will change to show that the method is paused.

2. Press Start to resume the process, or press Stop to stop the process.

6.8 Prepare the impregnation



A Mounting cup holder	**B** Support for the cup holder

1. Place a clean and dry specimen in a suitable mounting cup.

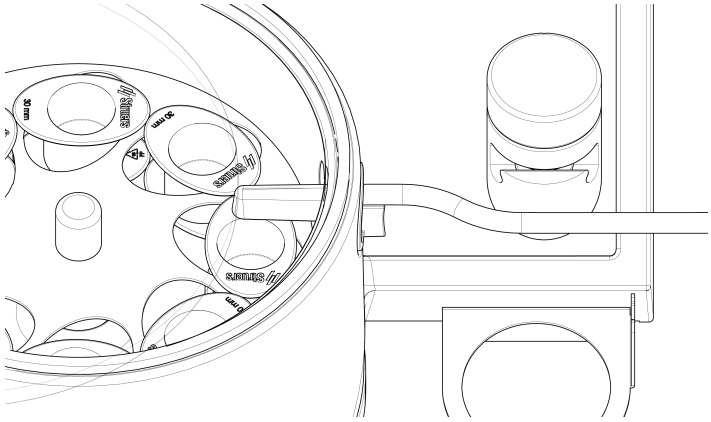
Hint
Clean and degrease the specimens before the impregnation.

2. Check that the chamber protector is in place.
3. Place the mounting cups in the vacuum chamber.
4. Check that each of the cups will be directly under the nozzle of the dispensing tube by turning the rotating wheel.

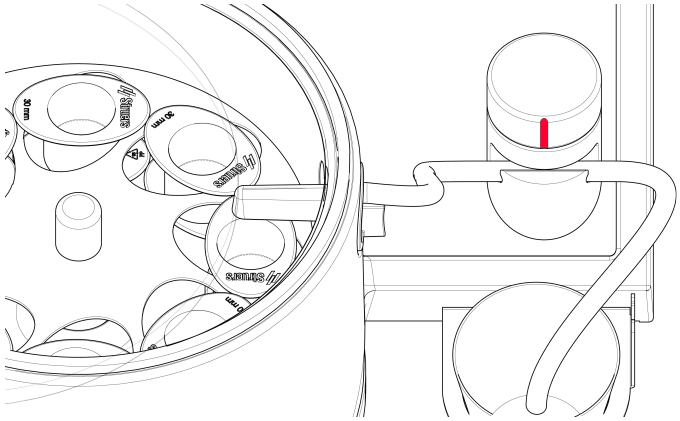
Check the vacuum chamber

CAUTION
Before operation, check that the lid is not cracked or has fissures, or it might implode when exposed to vacuum.

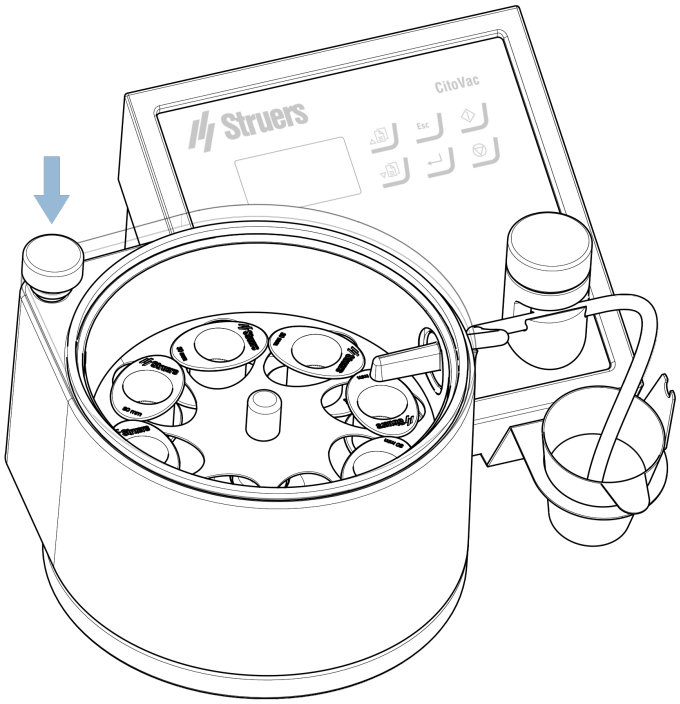
1. Check that the gasket is clean and undamaged.
2. Put the nozzle of the dispensing tube through the opening in the vacuum chamber and press it firmly into place.



3. Position the dispensing tube in the groove of the vacuum valve.
   - The valve must be fully open (the line on the valve should be facing front).
   - Stretch the tube slightly to ease correct positioning in the groove.



   - The groove on the valve handle must face the front of the machine.
4. Turn the lid so that it is directly over the chamber.
5. Close the vacuum valve.
6. Press Start.



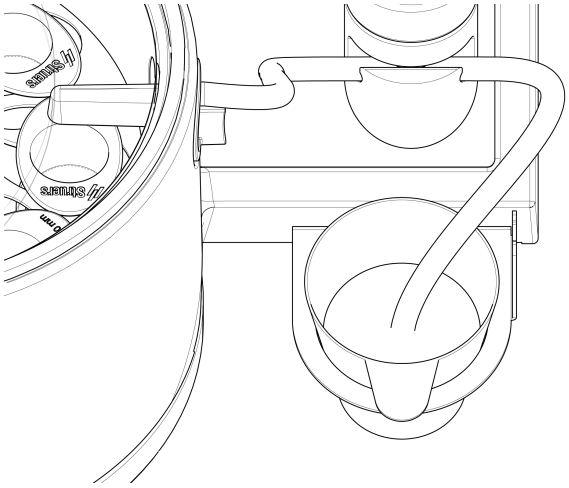
7. Press down on the pivot joint of the lid until it forms a seal with the vacuum chamber.

Note
Make sure that the lid is directly over the chamber and that there are no leaks around the edges.
Should some leaking occur, release the vacuum, reposition the lid and reapply vacuum.

6.9 Impregnation

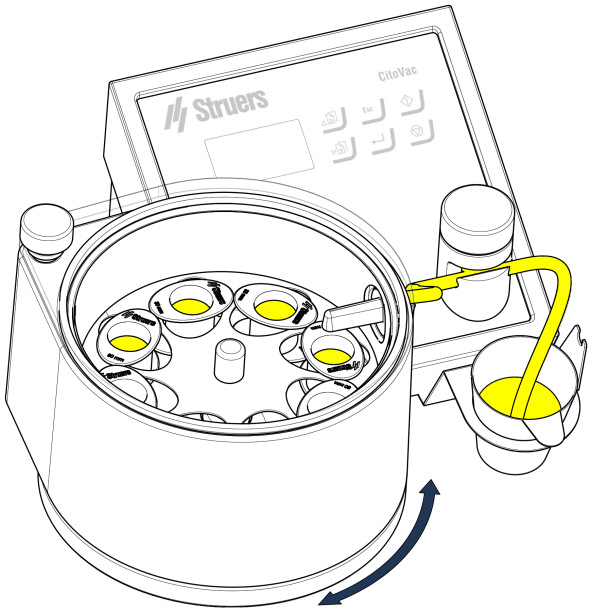
When the specimens have been under vacuum for an appropriate time (from a couple of minutes for not very porous specimens up to half an hour for very porous specimens), you can start the impregnation process:

1. Place the mixing cup with the ready-mixed impregnation material in the holder.



2. Place the end of the dispensing tube in the bottom of the cup

Note
Check that the tube is near the bottom of the cup, otherwise air can be sucked into the system and cause splashing in the vacuum chamber.



3. Turn the holder with the mounting cups until one of the cups is directly under the dispensing tap.

4. Slowly open the vacuum valve until the impregnation material runs into the cup with an appropriate flow.
5. When the specimen is covered with impregnation material, turn off the flow.

6. Turn the holder so that the next mounting cup is under the dispensing tap and repeat the filling procedure.

   Repeat until all mounting cups have been filled up. If necessary, refill the mixing cup with impregnation material.

7. When all cups have been filled, press Stop to release the vacuum.

Hint
Release the vacuum, even if there is time left in the method. This will avoid the formation of air bubbles in the mount.

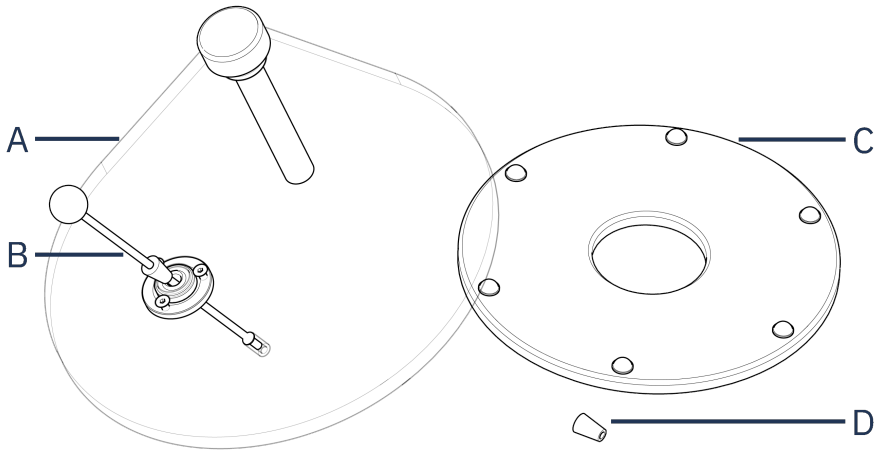
Hint
You can heat the epoxy resin (max. 40°C / 104°F) before pouring it over the specimen. This gives the mixture a lower viscosity, thus ensuring a more thorough penetration into the pores of the specimen while filling the cups.

Hint
When the vacuum pressure is too high, some of the components in the epoxy evaporate, and can cause air bubbles to appear in the mount. This can be avoided by reducing the vacuum pressure.
You can pause the impregnation process while you adjust the vacuum setting accordingly.

6.10 Gluing (accessory)

Hint
To avoid splashes in the vacuum chamber, prevent air from being sucked into the dispensing tube. This can happen if the amount of material in the mixing cup is too small.

Avoid splashes in the vacuum chamber by



A	Lid	**C**	Support ring
B	Pressing rod	**D**	Spare rubber plug for pressing rod

1. Place the lid with the pressing rod on the machine.
2. Place the support ring underneath the holder, so that it does not move when gluing.

3. Apply a suitable amount of mounting material or epoxy to the specimen.

   One drop is usually enough.
4. Place the specimen with the glued surface up.
5. Place a glass slide on the specimen.
6. Set the vacuum to maximum (pressure to minimum) and press Start.
7. Press the glass slide with the pressing rod and gently move the slide back and forth.
8. When the specimen is firmly stuck to the slide, press Stop.
9. Remove the slide with the glued specimen and wait for it to harden.

7 Maintenance and service

Proper maintenance is required to achieve the maximum up-time and operating lifetime of the machine. Maintenance is important in ensuring continued safe operation of your machine.

The maintenance procedures described in this section must be carried out by skilled or trained personnel.

7.1 General cleaning

To ensure a longer lifetime for your machine, we strongly recommend regular cleaning.

Note
Do not use a dry cloth as the surfaces are not scratch resistant.
Grease and oil can be removed with ethanol or isopropanol.

Note
Do not use acetone, benzol or similar solvents.

If the machine is not to be used for a longer period of time

- Clean the machine and all accessories thoroughly.

7.2 Daily

- Clean all accessible surfaces with a soft, damp cloth.

7.3 Monthly

7.3.1 Clean the lid

- Clean the lid periodically with ethyl alcohol.

Note
Do not use acetone, benzol or similar solvents.

7.3.2 The vacuum chamber gasket

- Check the vacuum chamber gasket at regular intervals to ensure there is no wear or damage.

Note
If you experience problems with persistent leaks, replace the gasket.

To replace the gasket:

1. Hold the two ends of the new gasket together and slot it into the groove in the vacuum chamber.
2. Carefully press the gasket into the groove, making sure that it is seated evenly around the chamber.
3. Check the vacuum to ensure there are no leaks.

   If you notice any leaks, take the gasket out and reposition it.

Note
Clean thoroughly if the machine is not to be used for a longer period of time.

8 Spare parts

Technical questions and spare parts

If you have technical questions or when you order spare parts, state serial number and voltage/frequency. This information is stated on the name plate of the machine.

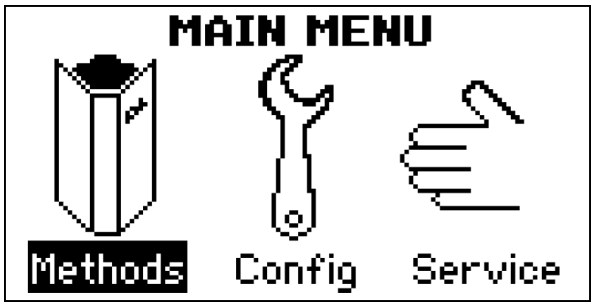
For further information, or to check the availability of spare parts, contact Struers Service. Contact information is available on Struers.com.

9 Service and repair

We recommend that a regular service check be carried out yearly.

Note
Service must only be performed by a qualified technician (electromechanical, electronic, mechanical, pneumatic, etc.).
Contact Struers Service.

9.1 Service menu



The **Service** menu is accessed from the **Main menu**.

Vacuum quality test	Tests the vacuum.
Reset configuration	Resets the configuration to factory settings.
Reset methods	Resets methods to factory settings.

10 Troubleshooting

While running a process, the screen will display if the set vacuum has been reached.

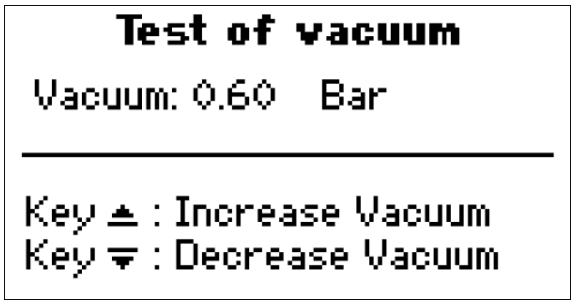
✓ : The vacuum setting has been reached

-- : The vacuum setting has not been reached

If the vacuum cannot be reached, a message will appear to inform you about this problem and will allow you to proceed with the process or to stop it.

10.1 Vacuum quality test

To check the vacuum, use the **Vacuum quality test** function from the **Service** menu:



1. Check that the vacuum valve is closed properly.
2. Check that the nozzle of the dispensing tube is firmly in place.
3. Check the gasket in the vacuum chamber.
4. Check that the compressed air / vacuum supply is functioning adequately, for example, that there are no bends or kinks in the hose.

   If the problem persists, contact Struers Service.

11 Disposal

Equipment marked with a WEEE symbol contains electrical and electronic components and must not be disposed of as general waste.

Contact your local authorities for information on the correct method of disposal in accordance with national legislation.

For disposal of consumables and recirculation fluid, follow local regulations.

12 Technical data

12.1 Technical data

Power	Voltage/frequency	200 - 240 V / 50 - 60 Hz (100 - 120 V / 50 - 60 Hz)
	Power, constant	0.031 A
	Power, intermittent	0.030 - 0.031 A
	Power, max	0.106 A
	Current spikes (usually start-up and start of operation)	0.039 A
Air supply **CitoVac with built-in ejector**	Compressed air	4.5 - 6 bar (65 - 87 psi)
	Recommended air quality	Class-3 as specified in ISO 8573-1
	Consumption of compressed air	12.5 L/min (3.2 GPM)
	Hose connection	Ø 1/4"
	Vacuum (at compressed air 6 bar)	860 mBar (645 mm Hg)
Air supply **CitoVac for External pump**	Recommended vacuum	min. 900 mBar (min. 675 mm Hg)
	Recommended output	~30 L/min (~8 GPM)
	Hose connection	5/16"
Software and electronics	Controls	Touch pad
	Display	LCD 3.1" with backlight
Safety standards		See the Declaration of Conformity
REACH		For information about REACH, contact your local Struers office.
Operating environment	Surrounding temperature	5-40°C (41-104°F)
	Humidity	< 95% RH non-condensing
Residual Current Circuit Breaker (RCCB)		Type A, 30 mA (or better) is recommended

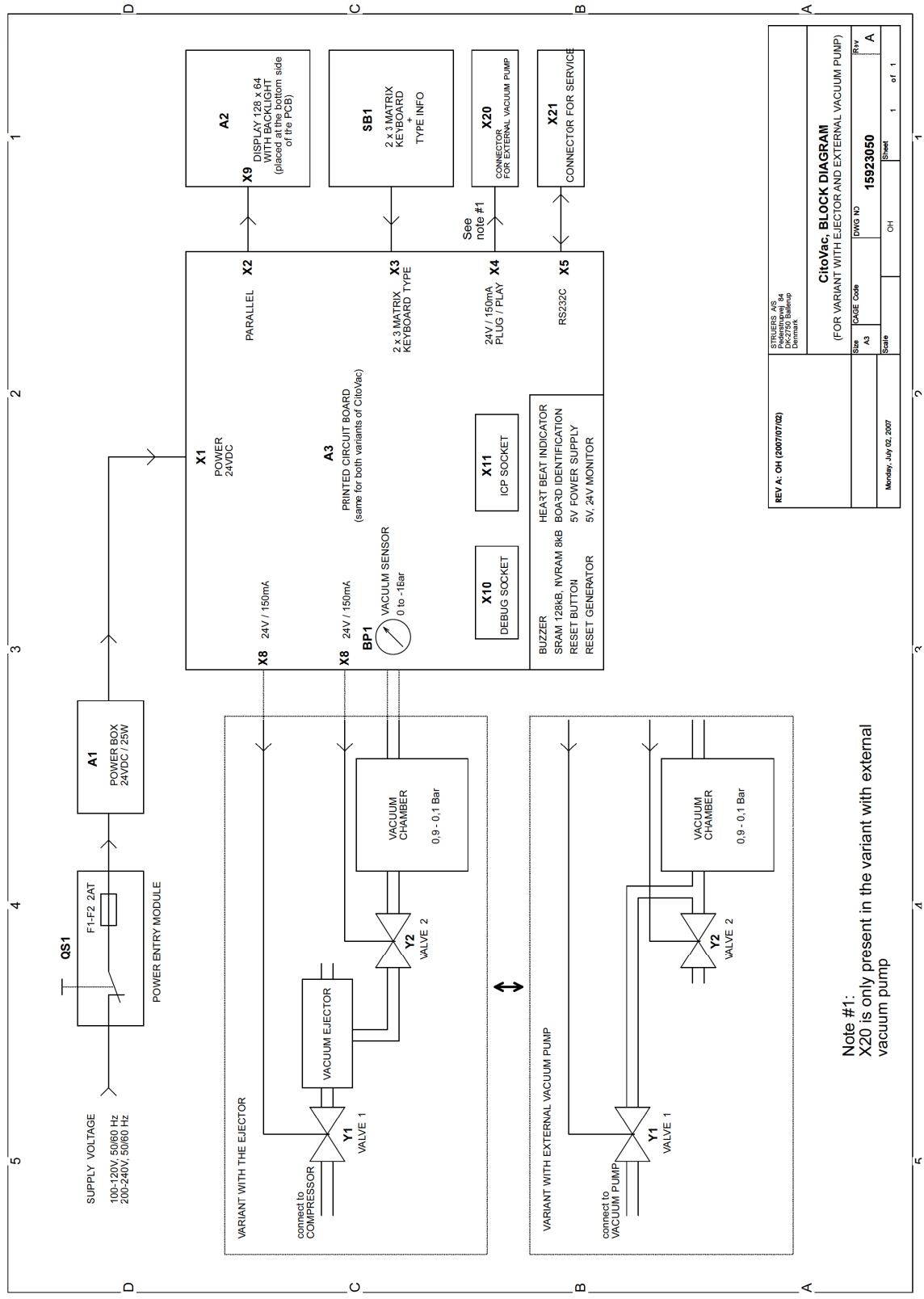
Noise level	A-weighted sound emission pressure level at workstations	LpA = 67 dB(A) (measured value). Uncertainty K = 4 dB Measurements made in accordance with EN ISO 11202
Vibration level	Declared vibration emission	N/A
Dimensions and weight	Outer dimensions:	–
	Width	38 cm (15")
	Depth	37 cm (14.5")
	Height	19 cm (7.5")
	Weight	9.5 kg (21 lbs)
	Vacuum Chamber:	–
	Inner diameter	Ø 20 cm (Ø 7.9")
	Inner height	10 cm (4")

12.2 Diagrams

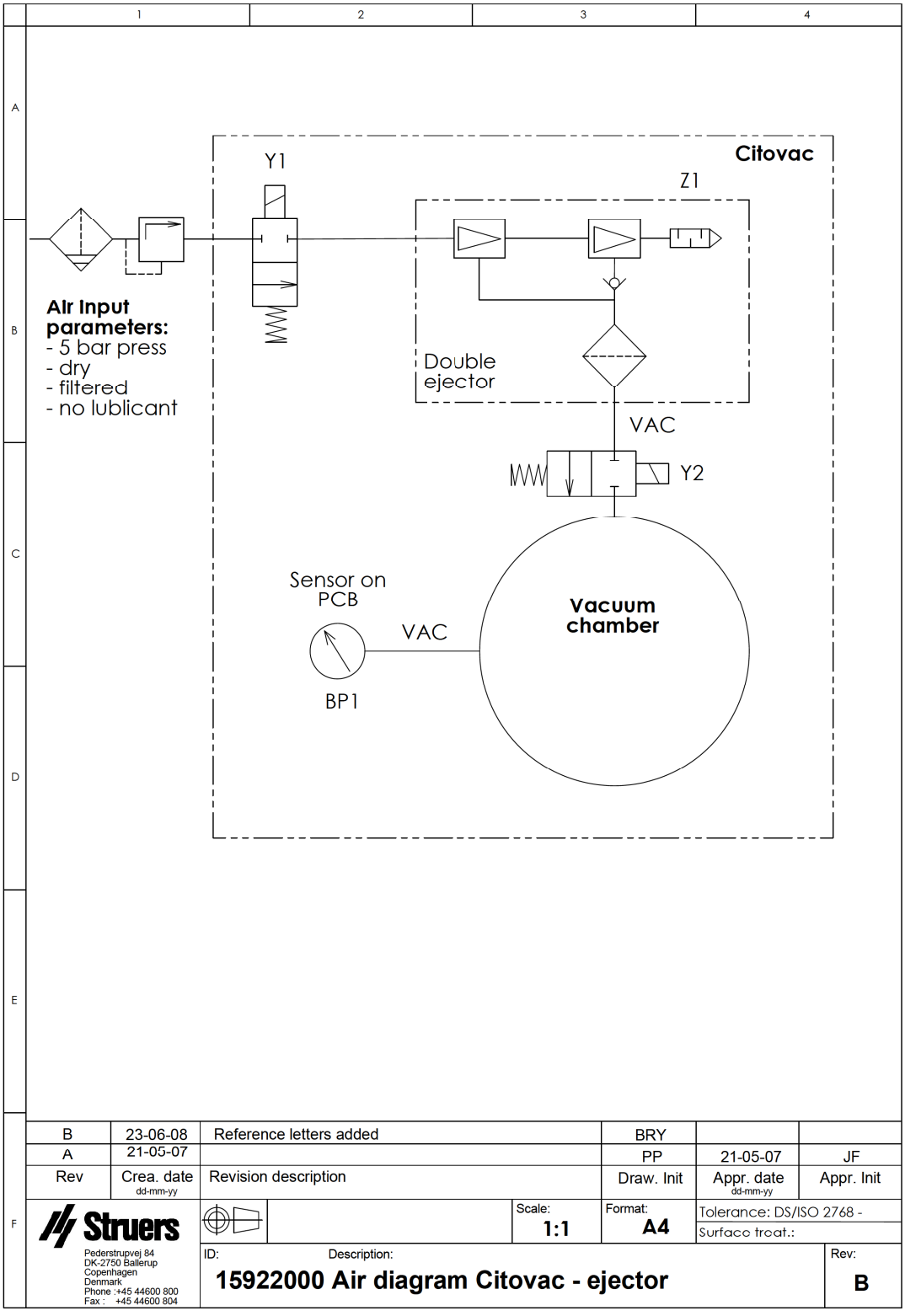
Note
If you want to view specific information in detail, see the online version of this manual.

Title CitoVac	No.
Block diagram	15923050 ► 38
Air diagram - with ejector	15922000 ► 39
Air diagram - without ejector	15922001 ► 40
Circuit diagram	See the diagram number on the name plate of the equipment, and contact Struers Service via Struers.com.

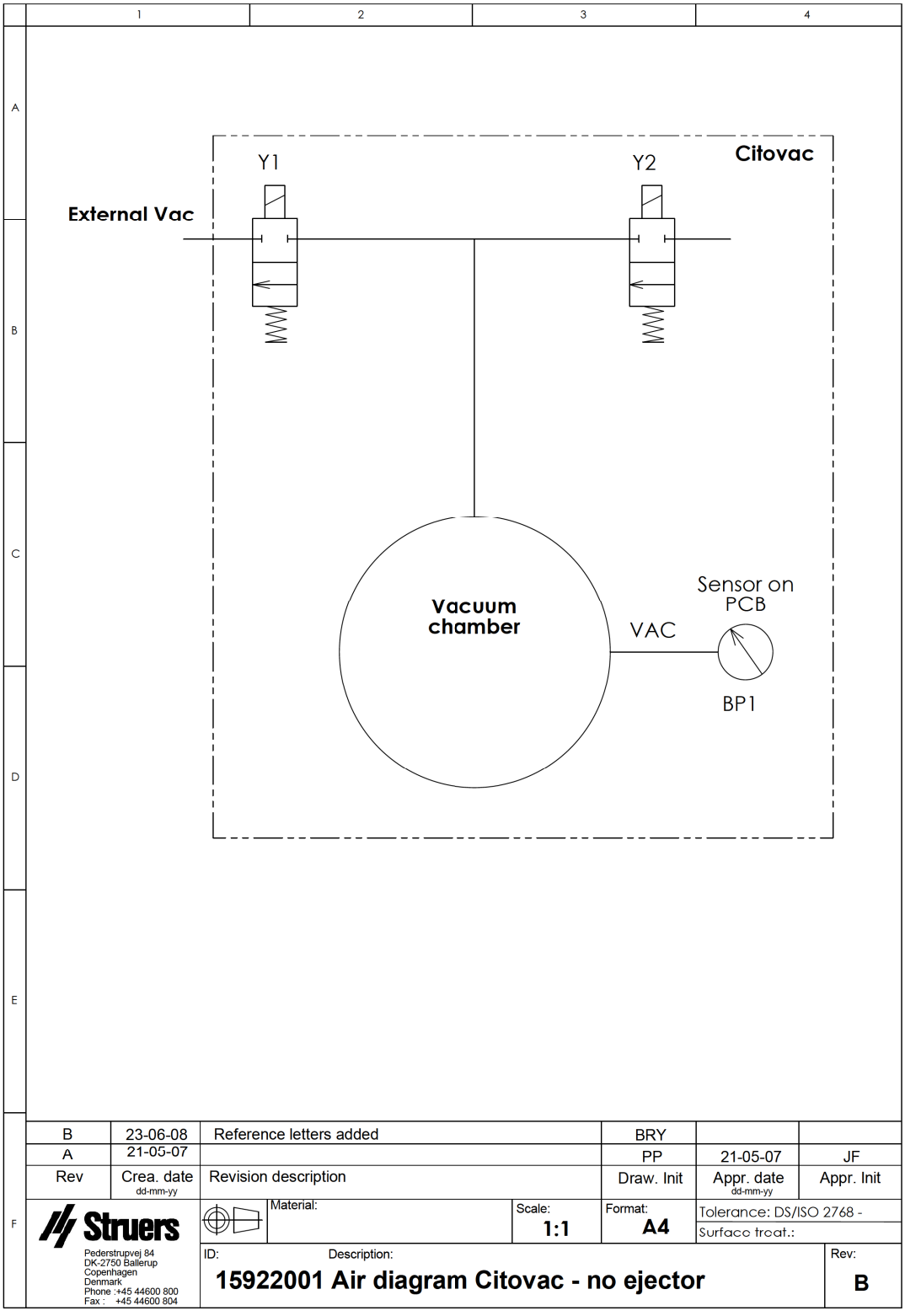
15923050


A2
X9 DISPLAY 128 x 64
WITH BACKLIGHT
(placed at the bottom side of the PCB)
SB1
2 x 3 MATRIX
KEYBOARD
+
TYPE INFO
X20
CONNECTOR
FOR EXTERNAL VACUUM PUMP
X21
CONNECTOR FOR SERVICE
See note #1
X1
POWER
24VDC
X2
PARALLEL
X3
2 x 3 MATRIX
KEYBOARD TYPE
X4
24V / 150mA
PLUG / PLAY
X5
RS232C
A3
PRINTED CIRCUIT BOARD
(same for both variants of CitoVac)
X11
ICP SOCKET
X10
DEBUG SOCKET
BP1
VACUUM SENSOR
0 to -1Bar
X8 24V / 150mA
X8 24V / 150mA
BUZZER
SRAM 128kB, NVRAM 8kB
RESET BUTTON
RESET GENERATOR
HEART BEAT INDICATOR
BOARD IDENTIFICATION
5V POWER SUPPLY
5V, 24V MONITOR
A1
POWER BOX
24VDC / 25W
QS1
F1-F2 2AT
POWER ENTRY MODULE
SUPPLY VOLTAGE
100-120V, 50/60 Hz
200-240V, 50/60 Hz
VARIANT WITH THE EJECTOR
VACUUM EJECTOR
VACUUM CHAMBER
0,9 - 0,1 Bar
Y2
VALVE 2
Y1
VALVE 1
connect to COMPRESSOR
VARIANT WITH EXTERNAL VACUUM PUMP
VACUUM CHAMBER
0,9 - 0,1 Bar
Y2
VALVE 2
Y1
VALVE 1
connect to VACUUM PUMP
Note #1:
X20 is only present in the variant with external vacuum pump
REV A: OH (20070702)
STRUERS A/S
Pederstrupvej 84
DK-2750 Ballerup
Denmark
CitoVac, BLOCK DIAGRAM
(FOR VARIANT WITH EJECTOR AND EXTERNAL VACUUM PUMP)
Size A3
DAGE Code
DWG NO 15923050
Rev A
Scale
OH
Sheet 1 of 1
Monday, July 02, 2007

15922000


Citovac
Y1
Z1
Air Input parameters:
- 5 bar press
- dry
- filtered
- no lublicant
Double ejector
VAC
Y2
Sensor on PCB
VAC
Vacuum chamber
BP1
B 23-06-08 Reference letters added BRY
A 21-05-07 PP 21-05-07 JF
Rev Crea. date dd-mm-yy Revision description Draw. Init Appr. date dd-mm-yy Appr. Init
Struers
Pederstrupvej 84
DK-2750 Ballerup
Copenhagen
Denmark
Phone :+45 44600 800
Fax : +45 44600 804
Scale: 1:1
Format: A4
Tolerance: DS/ISO 2768 -
Surface treat.:
ID:
Description:
15922000 Air diagram Citovac - ejector
Rev: B

15922001



B	23-06-08	Reference letters added	BRY		
A	21-05-07		PP	21-05-07	JF
Rev	Crea. date dd-mm-yy	Revision description	Draw. Init	Appr. date dd-mm-yy	Appr. Init

Struers
Pederstrupvej 84
DK-2750 Ballerup
Copenhagen
Denmark
Phone :+45 44600 800
Fax : +45 44600 804

Material:
Scale: 1:1
Format: A4
Tolerance: DS/ISO 2768 -
Surface treat.:

ID: Description: **15922001 Air diagram Citovac - no ejector**
Rev: **B**

12.3 Legal and regulatory information

FCC notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Pursuant to Part 15.21 of the FCC Rules, any changes or modifications to this product not expressly approved by Struers ApS could cause harmful radio interference and void the user's authority to operate the equipment.

13 Manufacturer

Struers ApS
Pederstrupvej 84
DK-2750 Ballerup, Denmark
Telephone: +45 44 600 800
Fax: +45 44 600 801
www.struers.com

Responsibility of the manufacturer

The following restrictions should be observed, as violation of the restrictions may cause cancellation of Struers legal obligations.

The manufacturer assumes no responsibility for errors in the text and/or illustrations in this manual. The information in this manual is subject to change without notice. The manual may mention accessories or parts not included in the supplied version of the equipment.

The manufacturer is to be considered responsible for effects on safety, reliability, and performance of the equipment only if the equipment is used, serviced, and maintained in accordance with the instructions for use.

Struers
Ensuring Certainty

Based on: 15927901 D

Declaration of Conformity

Manufacturer	Struers ApS • Pederstrupvej 84 • DK-2750 Ballerup • Denmark
Name	CitoVac
Model	N/A
Function	Vacuum impregnation unit
Type	592
Cat. no.	05926119, 05926219
Serial no.	

CE Module H, according to global approach **EU**

We declare that the product mentioned is in conformity with the following legislation, directives and standards:

2006/42/EC	EN ISO 12100:2010, EN 60204-1:2018,EN 60204-1-2018/Corr.:2020,
2011/65/EU	EN 63000:2018
2014/30/EU	EN 61000-3-2:2014, EN 61000-3-3:2013, EN 61000-6-2:2005, EN 61000-6-2:2005/Corr.:2005, EN 61000-6-3:2007, EN 61000-6-3:2007/A1:2011, EN 61000-6-3-A1-AC:2012
Additional standards	NFPA 79, FCC 47 CFR Part 15 Subpart B

Authorized to compile technical file/
Authorized signatory

Date: [Release date]

Struers
Ensuring Certainty

en	For translations see
bg	За преводи вижте
cs	Překlady viz
da	Se oversættelser på
de	Übersetzungen finden Sie unter
el	Για μεταφράσεις, ανατρέξτε στη διεύθυνση
es	Para ver las traducciones consulte
et	Tõlked leiate aadressilt
fi	Katso käännökset osoitteesta
fr	Pour les traductions, voir
hr	Za prijevode idite na
hu	A fordítások itt érhetők el
it	Per le traduzioni consultare
ja	翻訳については、
lt	Vertimai patalpinti
lv	Tulkojumus skatīt
nl	Voor vertalingen zie
no	For oversettelser se
pl	Aby znaleźć tłumaczenia, sprawdź
pt	Consulte as traduções disponíveis em
ro	Pentru traduceri, consultați
se	För översättningar besök
sk	Preklady sú dostupné na stránke
sl	Za prevode si oglejte
tr	Çeviriler için bkz
zh	翻译见

www.struers.com/Library