Pressure Chamber
Compact Version

GROUP 8	TEST & CALIBRATION
NO.	**8709.0000**
VERSION / DATE / NAME	01 / 03.2019 / Zi

Fig.: Pressure Chamber, Heavy Duty Table, Table Top Housing (automatic operation)

DESCRIPTION

This unit model 8709 is a pressure/vacuum chamber for calibrating barometric instruments (aneroid barometers, barometric sensors, barographs, etc.).

MECHANICAL DESIGN

(Refer to figure page 2)

The housing of the pressure chamber (1) consists of a welded, ribbed steel construction and a rectangular door flange. The front panel door (2) consists of a solid steel frame holding a full-sized acrylic glass pane. The sealing is also achieved by an O-seal in the flange. When closing the door with four hand wheels (4) a uniform sealing pressure is applied - without any influence from the hinges.

Inside the pressure chamber a vibrating table (model 8712) may be operated, connected to an external power supply of 12 VDC. From a crossbar mount (5) several instruments that are to be tested e.g. aneroid barometers, may be suspended.

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For connecting a standard test barometer or other external instruments, two air inlets (6) are provided on the left of the chamber. As a reference sensor a precision digital barosensor is used. The reference sensor is connected to the pressure chamber by means of a hose. On the right of the chamber 6 electric feed-through terminals (7) are provided, e.g. for connection of barometric sensors. At the base (8) the main control levers are located:
The switch valve "pressure/vacuum" (9), the controlling valve for the pump connection (10) which enables to close and to open, i.e. to regulate the air inlet from the pump, the controlling valve (11) which is regulating or cutting of the input of the outside air to the chamber, and the push-button switch (12) to operate the vacuum pump.

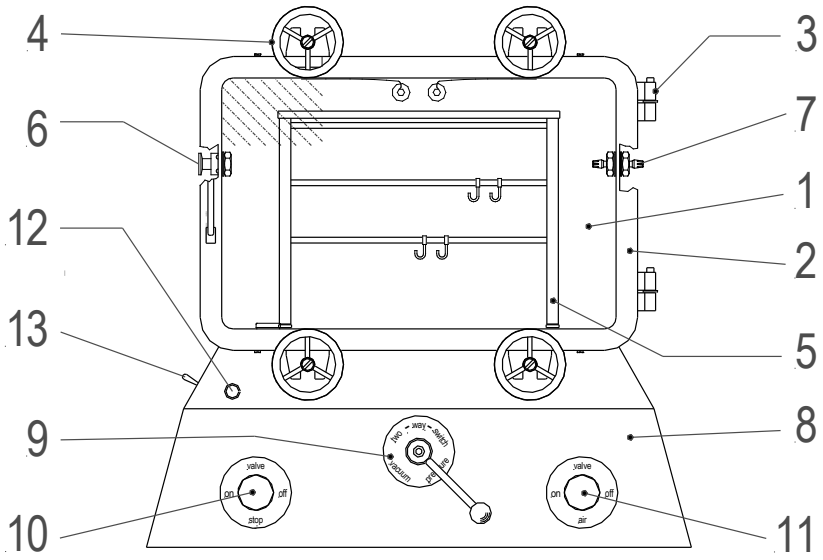
The pressure chamber lighting is switched ON and OFF with the switch (13) on the left side of the socket.

The vacuum pump is located inside the chamber base.

Typically, a heavy duty table (type 8720.2000) will be used to set up the pressure chamber.

Pressure chamber with base is covered with a protective coating of blue varnish RAL 5010 (the inside of the pressure chamber is white RAL 9010). Connecting nozzles and hand wheels are made of chrome-plated brass resp. steel.

MECHANICAL DESIGN



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TECHNICAL DATA

PRESSURE CHAMBER

Operating range:	500...1100 hPa
Volume of cabinet:	approx. 65 l
Test space:	approx. 550 x 350 x 350 mm
Air inlets:	2 ea. NW 10
Electric feed-through connections:	6 ea. terminals, Ø 4 mm
Power supply:	230 VAC
Dimensions:	refer to dimension sketch page 4
Weight:	approx. 107 kg

HEAVY DUTY TABLE

Dimensions:	refer to dimension sketch page 4
Weight:	approx. 65 kg

VIBRATING TABLE

Power consumption:	1.2 W
Power supply:	12 VDC
Dimensions:	approx. 300 x 515 mm

VACUUM PUMP

Nominal air intake capacity:	2.4 m³ / h
Nominal motor rating:	148 W (230 V / 50 Hz)
Weight:	approx. 9,6 kg

(For further technical data refer to operating instructions "Oil Lubricated Vacuum Pump", model 8750).

ACCESSORIES

2 pce rubber tube, red
length 1 m, completed with rubber hose and additional tube clamp.

ORDERING CODE

Pressure chamber, compact version, incl. vacuum pump and lighting	**8709.0000**
Measuring cable set	**8710.0000.03**
Vibrating table	**8712.0000**
Heavy duty table	**8720.2000**
Table top housing with reference sensor (manual operation)	**8777.0000**
Table top housing with reference sensor (automatic operation) (NOTE: Reference sensor is built-in the pressure chamber)	**8777.5000**

ADDITIONAL SYSTEM ACCESSORIES

Mobile PC control unit	**1000.0062**
PC with WINDOWS operation software	**1000.0089**
PDU (Power Distribution Unit)	**1000.0129**
Ethernet / network interface cable	**1032.2200**
COMGRAPH32 Software	**1029.3002**
Combined temperature / humidity sensor (indoor wall mounting)	**3032.8000**

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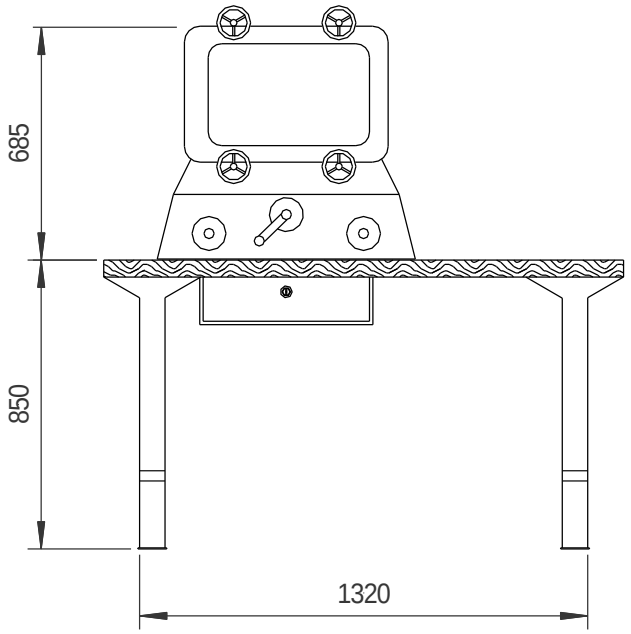
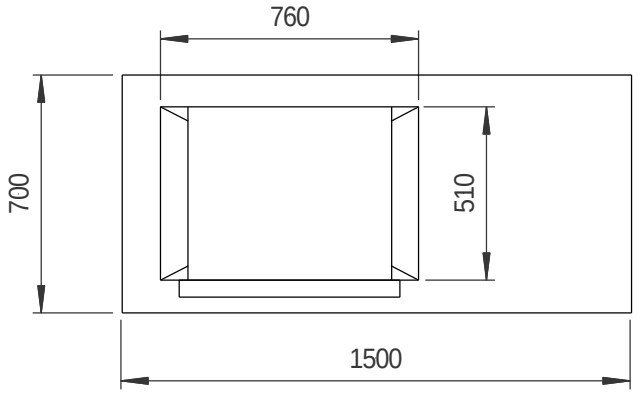
DIMENSION SKETCH

(Size in mm)





OPERATING INSTRUCTIONS

INSTALLATION

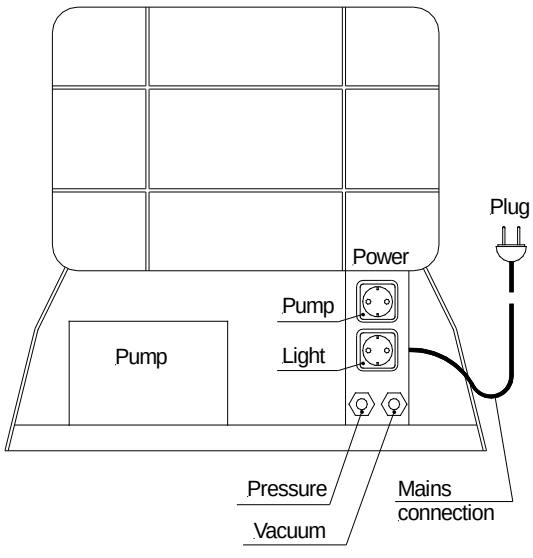
When using heavy duty table (8720.2000), the pressure chamber is placed on the table by means of a suitable lifting tool.

The mains connection to a 230 V, 50 Hz socket has to be made.

The vacuum pump is equipped with shock absorbing rubber mounts and it is placed inside the chamber base. The pump, model 8750 requires no lubrication.
However - even for this unit - the instruction manual must be precisely followed.
The pump is already equipped with suitable vacuum hoses at the factory. These are only drawn up onto the nozzles at the rear of the chamber base. The hoses are marked as follows:

V = vacuum, this hose is connected to the nozzle on the left. "A" means exhaust or pressure hose. This one is connected to the nozzle on the right (ref. to drawing).

The pump type 8750 is equipped with an overpressure protection valve.



Pressure chamber 8709, rear view

Likewise two electric sockets are located at the rear for connecting the vacuum pump and the lighting system. After plugging in power cable (230 VAC/50 Hz) the unit is ready for use.

OPERATION

CLOSING AND OPENING THE FRONT DOOR

After closing the front panel door, close attention should be paid to tightening the handwheels "crosswise" - lightly at first, then firmly in the same sequence. The handwheels are so dimensioned that no additional tools for clamping down are needed. When the pressure chamber is opened after measurements are completed - it must be carefully watched that valve (11) is opened and pressure is thereby equalized between chamber and ambient air.

TESTING FOR LEAKS

It is recommended to test the pressure chamber for leaks before actually starting measurements. The test is carried out by creating an excess pressure as well as a subpressure of 50 to 100 hPa in the chamber and to compare readings of the barometer with eachother. It must be noted that at first a period of pressure deviations and distribution is observed in the chamber when pressure is not stable, yet. Only after approx. ½ hour measurements may be compared with eachother! The stabilizing period can be shortened - after having gained some experience - by increasing pressure above the desired level and then letting air escape again through the pressure equalizing valve. Similarly one may proceed with vacuum measurements. When comparing the readings of indicated pressure it must be noted that the temperature may change during the observing period and a mathematical correction may have to be applied. If an unwarranted high loss of pressure or vacuum is observed, valves 10 and 11 must be checked for a tight fit and also the position of the connecting hose to the precision barosensor. Equally the four handwheels at the front panel door must be checked for tightness. If necessary it should further be examined if larger dirt particles or any foreign matter may have become lodged in the O-seal of the front door or at the top flange - which may impair sealing.

TESTING OF DIRECT READING,
analogue or digital instruments
(e.g. aneroid barometers, barographs)

The instruments should be positioned or suspended (crossbar mount) in a way that correct readings may be taken by avoiding errors of parallax. Regulating the chamber to the various pressure levels is done with valves 9, 10 and 11 as previously described.

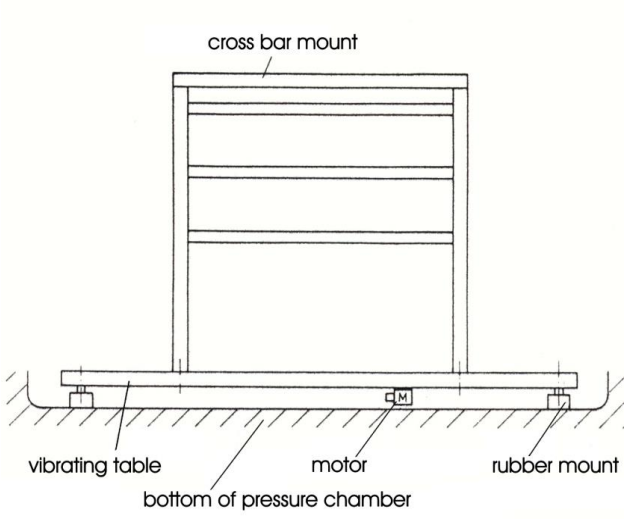
TESTING OF BAROMETRIC SENSORS
with electric output

Connecting the power supply as well as transmitter the measured values (e.g. to an external DVM) can be done by using the 6 feed-through terminals.

ATTENTION:
Conducting voltages through these terminals is allowed only up to max. 50 V according to VDE specification.

USING THE VIBRATING TABLE, TYPE 8712

The vibrating table is supplied completely assembled. This unit is equipped with four rubber mounts and can be set up directly in the pressure chamber.



Vibrating Table, Type 8712 (working principle)

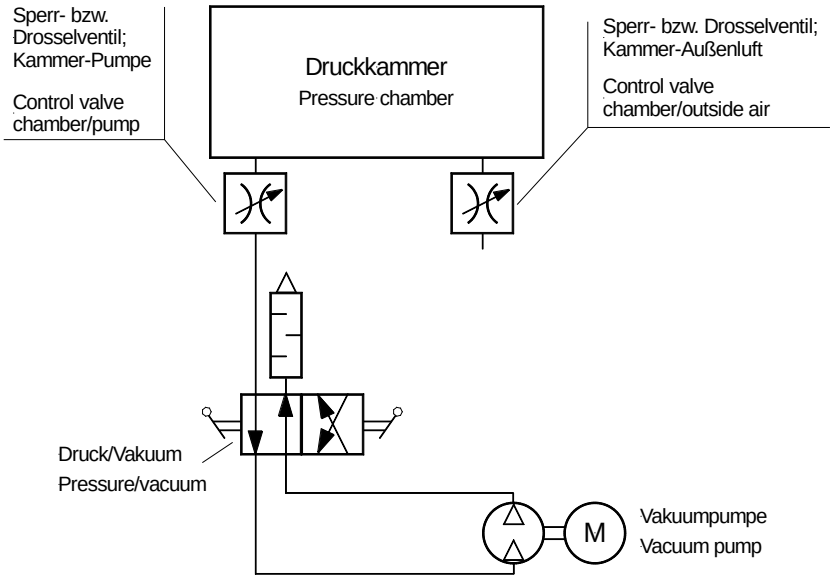
The crossbar mount is screwed to the vibrating table (two screws, M4). The supply circuit to the vibrating motor consists of two electric sockets mounted to the top plate of the vibrating table with extension to the outside through use of banana plugs and the feed-through terminals. A power supply of 12 VDC at a power consumption of 1.2 W is required. It should have a push-button or toggle switch. The vibrating table should only be operated at intervals of 2 to 3 seconds which is sufficient in order to loosen mechanism of instruments under test.

MAINTENANCE

Attention must be paid to the maintenance instructions in the operating manual of the "Vacuum Pump". The further equipment is maintenance-free!

After a long operating period the rubber hose and the O-seals should be checked for cracks etc. and should be exchanged if necessary.

PRESSURE/VACUUM DIAGRAM (MANUAL OPERATION)



WORKING DIAGRAM, PRESSURE CHAMBER