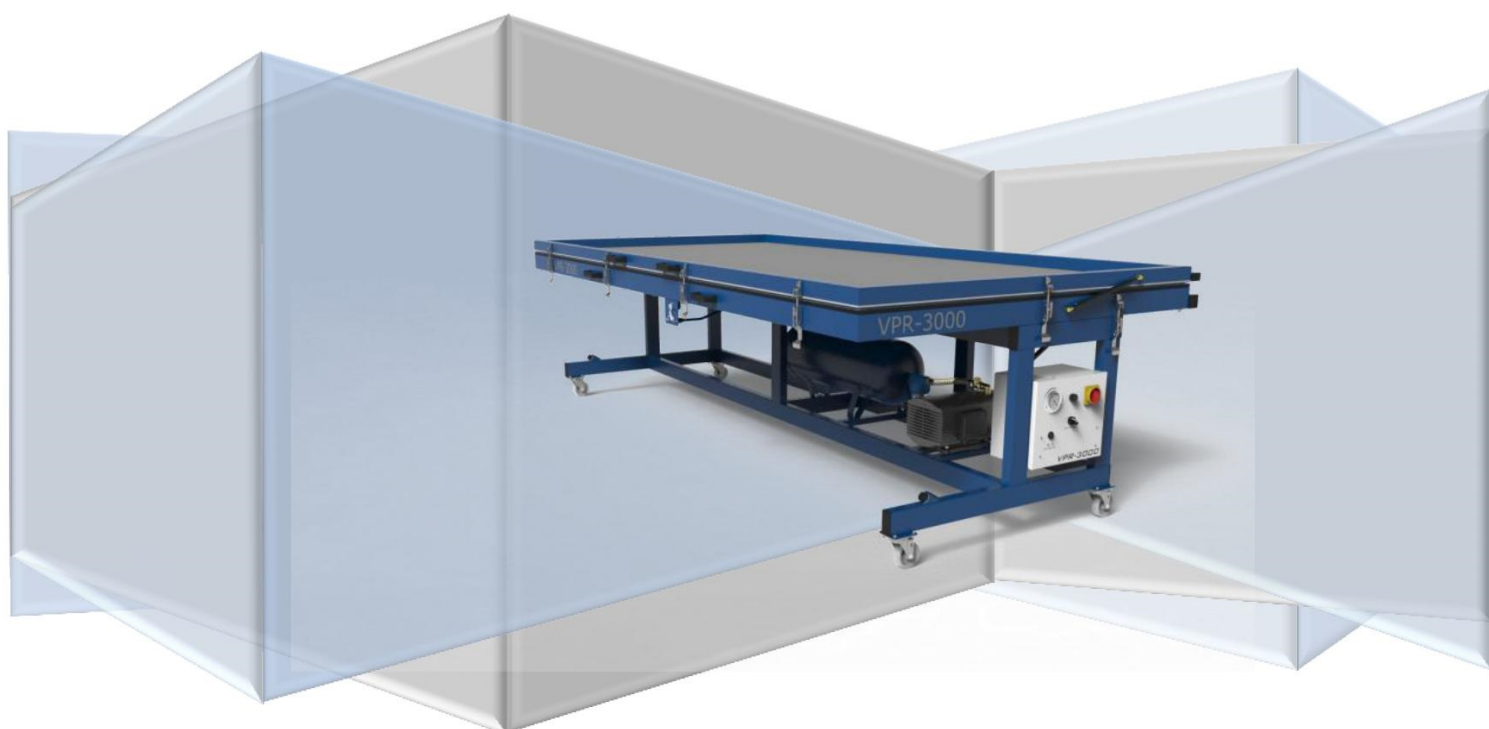


ISTRA-A SIA

TECHNICAL PASSPORT

VACUUM PRESS VPR-3000/3500



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Model	VPR-3000
Working table size, (length x width) , mm:	3000 x 1500
Pump capacity, kW:	0,75
Vacuum pump output , M3/h:	25
Operational vacuum, kg/cm2 (bar):	-0,85
Protection level:	IP53
Noise level, Db.:	<70
Power, V:	400V 50Hz 3PH
Outline dimensions, mm :	3100 x 1600 x 900
Weight, kg:	200

TECHNICAL DATA

Vacuum membrane presses VPR series is designed for a woodworking.

AREA OF APPLICATION

✓ **Veneering:**

Can use in furniture production, in construction of interior and exterior, also in rail, marine, air, auto productions. How also for individual custom parts.

✓ **2D Coating:**

Coating of simple profiles for furniture and interior.

✓ **2D bend-glued parts:**

Manufacturing of curved parts.



1. Installation and connection

1.1. Unloading

Vacuum press is delivered already assembled. Unloading is done using lift truck with forks.



Unloading of vacuum press has to be done by using lift trucks that are designed to lift corresponding weight (you can see the weight of the press in the technical specifications).



All procedures during unload of the press have to be performed by personnel that has the right to work with lifting mechanisms and all safety regulations have to be observed.

1.2. Installation

Installation of vacuum press VPR-3000 does not require specific preparatory work. Press is installed on the floor that has hard even horizontal surface. Press is not fastened to the floor. After installation it is required to ground the press, for this purpose press has special bolted joint.



It is recommended to install press in dry and well ventilated premises where temperature is +15 – 30°C. It is recommended to install press in the room so that operational personnel have free access to it.

1.3 Connection to the electrical network

Vacuum press VPR-3000 is developed for electric network with three-phase voltage 400w, power frequency 50 Hz. Press is supplied by five-core cable connected directly to power panel.

Connection and, if necessary, replacement of power cable should be made only by the expert of manufacturer or electric-skilled personnel of consumer, which have been instructing about service of press by manufacturer. Power cable should be accessible after connection.



After installation, the vacuum press must be grounded, for which there is a special case in the bolted connection (see pic 1).



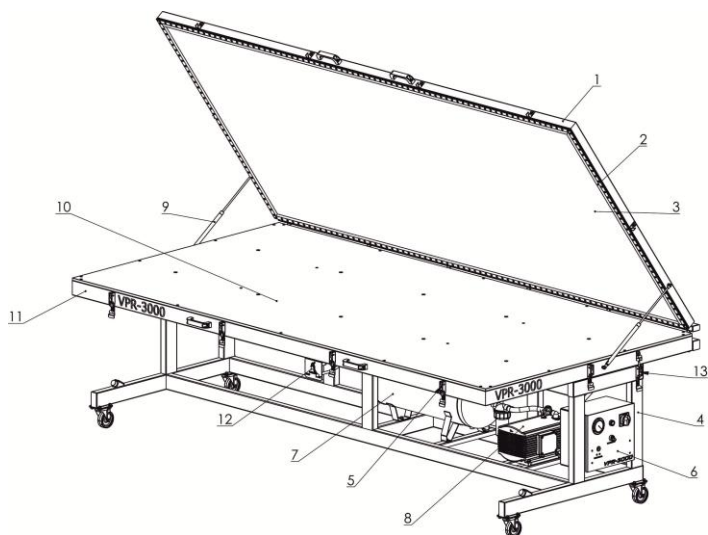
After connection it is necessary to check if vacuum pump rotation is correct. It is done by starting vacuum press in **short run** using the manual mode. Switcher [6] (picture 3) has to be set in the position "1". If rotation is not correct (gauge hand [1] stayed in the same place) it is necessary to change phasing on the supply terminals.

2. Construction of the press

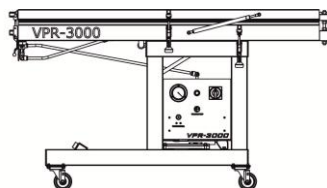
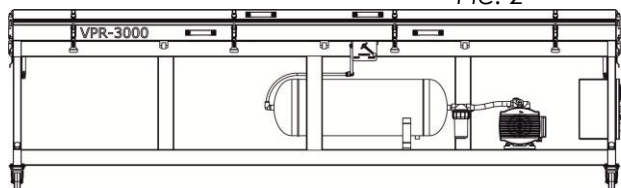
2.1 Main parts of the press

(See Picture.2)

- [1] – membrane frame
- [2] – membrane frame seal
- [3] – membrane
- [4] – main frame
- [5] – membrane frame claps
- [6] – control unit
- [7] – pressure tank
- [8] – vacuum pump
- [9] – gas absolver
- [10] – operation desk
- [11] – main frame
- [12] – vacuum valve
- [13] – main frame clamps



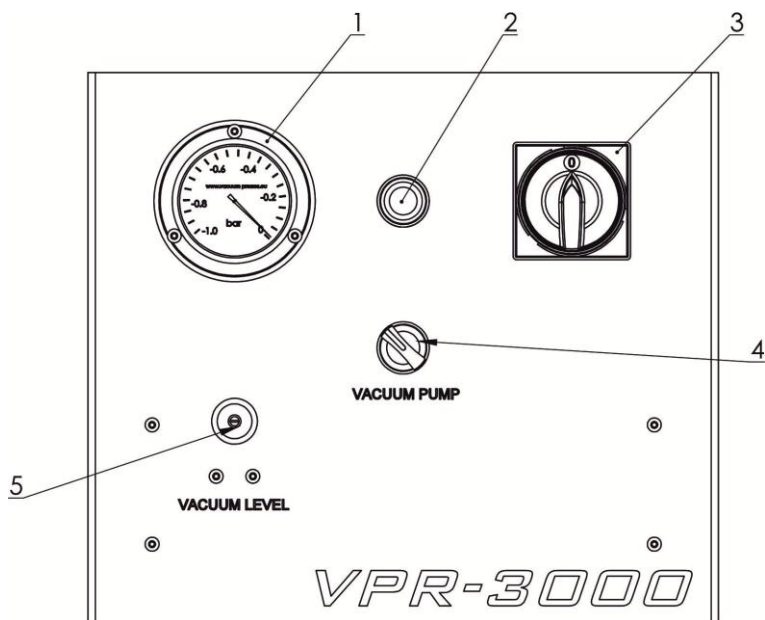
Pic. 2



2.2 Control panel elements

(See Picture.3)

- [1] – vacuum gauge
- [2] – vacuum pump indicator
- [3] – main switch
- [4] – vacuum pump switch
- [5] – heating indicator
- [6] – vacuum pump switch
- [7] – heating switch
- [8] – vacuum level control relay
- [9] – main switch



pic. 3

3. Operation procedure

3.1. Preparation and operation

Table #1

Nº	Steps	Functions
1	2	3
1	Turn on master switch [3]	Set main switch in position «ON»
2	If worktable frame is litted raise it [11]	
3	Open membrane frame clamps [1]. Raise membrane frame up top	
4	Put on operation desk part or template [10]	Will use recommendations. Please see chapter 5
5	Lied the membrane frame and and close clamps [5] check	

	hermiticity	
6	Turn of pressing	Set switch «Vac. Pump» [4] in position «1». Signal lamp [2] will be active.  Valve of vacuum pressing operation [12] must be in position «Pressing»
7	Stop pressing	Set switch «Vac. Pump» [4] in position «0».
8	Unlock membrane	Set handle of valve [12] in position «STOP»
9	Raise the frame with the membrane [1]	Open lock. Raise by hand

4. Electric circuit

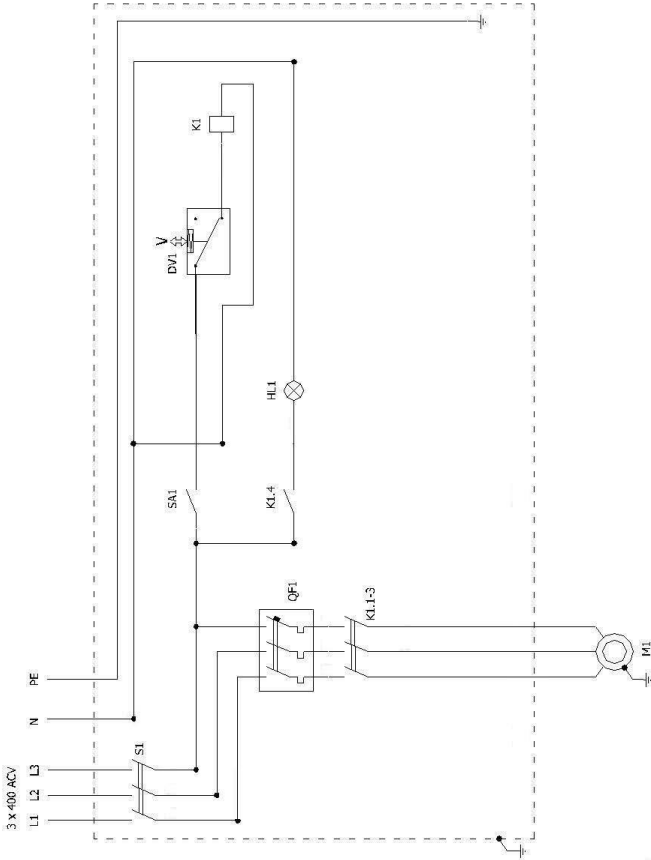
Electric circuit of vacuum press is shown on picture 4.
Elements of electric circuit.

Table #2

No	Indication on the circuit	Title	Functional purpose
1	2	3	4
1	S1	Main power switch	Supplies power to the circuit
2	QF1	Automatic cutoff switcher	Protection of vacuum pump
3	SA1	Switch	Turns on vacuum pump circuit
4	MV1	Vacuum pump	Create vacuum in vacuum system.
5	KM1	Contactor	Turns on vacuum pump
6	DV1	Vacuum relay	Control of vacuum level in system.
7	HL1	Signal lamp	Displays that vacuum pump is ON

Engine control circuit of vacuum pump is connected by switch SA1, electrical voltage 220W of AC current moves to vacuum relay DV1, which connects coil of relay K1. Contacts of relay K1.1-3 starts-up engine of vacuum pump M1. After coming up to necessary vacuum level -0.85 bar in working chamber, vacuum relay disconnect electric supply from relay K1. Vacuum pump is disconnected. After relieving of vacuum up to

0, 75÷0,1Bar, vacuum relay starts relay K1 again, and cycle repeats. Thus, specified amount of vacuum is automatically supported in working chamber. Signal lamp HL1 which is connected through contact of relay K1.4 displays working vacuum pump engine. Engine circuit breaker QF1 protects vacuum pump engine. Engine circuit breaker QF1 protects vacuum pump engine.



pic. 4

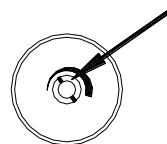
Electrical voltage for electric circuit diagram is provided by power switch S1, supplied by special lock. It allows avoiding non-authorized starting of press.

5. Pneumatic circuit

5.1 Vacuum system contour

Vacuum system (picture 6) is equipped with its own vacuum pump MV1 [8], receiver (pressure tank) VZS1 and filter LF1 [7] (picture 2). Value of vacuum in the system is controlled by detector DV1 and is maintained automatically. Vacuum and its value are shown on the vacuum gauge J1 scale [1].

Vacuum pump is turned off if pressure reaches -0,85 bar. This level of pressure is set by the manufacturer. Usually vacuum pump is turned off when pressure is -0,85 bar and height above sea level is 150m. If you are situated 750m above sea level it is necessary to lower critical pressure value by 0.05 bar (0,75bar). To it you have to turn screw regulator of the detector DV1 [6]



Pic.5

that is positioned in the left part of the control panel using screwdriver. To reduce vacuum – turn left, to increase – turn right (picture 6).



If vacuum pump did not turn of in 5 minutes or if only partial vacuum is reached it means that there is leakage somewhere in the system. If pump does not turn of and you are situated above 150m above sea level it might be necessary to adjust pressure set point as described above. Pump should never operate more than 45 minute in row without stopping.

6. Main faults

Table #3

Nº	Trouble	Trouble cause	Troubleshooting method
1	2	3	4
1	Fault of vacuum pump	Power supply voltage is off	Check continuity of power cable
			Check automatic circuit breaker
2	Fault of vacuum pump	Vacuum sensor DV1 power supply voltage 220W is off	Check power supply voltage 220W on vacuum sensor DV1
		Damage of relay K1	Check coil of relay K1

3	Impossible to stop vacuum pump	Damage of vacuum sensor DV1	Check continuity of pipes in vacuum system
4	Impossible to come up to specified vacuum level in working chamber	Damage of pipes in vacuum system	Check continuity of pipes in vacuum system
		Damage of membrane	Check continuity of membrane
			Check sealer
5	Presence of voltage on the body of press (electric shock)	Damage of ground circuit	Check grounding of press body.

If there are other than above mentioned faults (Table 3) or local service personnel cannot perform repairs it is necessary to contact manufacturer or dealer.

7. Maintenance of vacuum press

- It is necessary to review and clean operational surface of vacuum press periodically, do not allow mechanical damages;
- *If vacuum press is packaged with oil vacuum pump:*



Make of oil for usage in vacuum pump is shown on the body frame of vacuum pump.

- Regularly monitor level of oil in vacuum pump[6];
- After 300 working hours but not rarely then once in 3 month it is necessary to change oil in vacuum pump [5]. Procedure is done according to the passport of vacuum pump [5].
- Once a month filter of pressure tank [8] should be cleaned;
- It is necessary to perform cleaning of the control board at least once in 6 months. In case of dusty conditions cleaning should be performed more

8. Safety regulations

All operations should be performed observing safety regulations that are obligatory for given territory.

It is necessary to carefully familiarize oneself with given below instructions and safety regulations and read other chapters of this passport before installing press, connecting it to the power network and system of compressed air and before operating press.

Loading and unloading of the press should be done by using specific loading equipment that is appropriate for the weight and size of the press.

All installation, start-up and service works should be done by qualified and specially trained personnel that is acquainted with local regulations and standards and have experience in working with such equipment.

Connection to the power network and to the system of compressed air should be done according to regulations and standards of the installation territory and according to the requirements of chapter 1 of this manual.



It is obligatory to ground press.

Before performing service works it is required to disconnect press from power network.

A personnel that is going to operate press has to be trained by the manufacturer or dealer and has to familiarize oneself with local safety regulations and work instructions.

They are necessary to contact manufacturer or dealer if there are any questions regarding installation, connection, operation or servicing the press.



It is prohibited when working with press to:

- leave foreign objects under press lid;
- leave operating press without supervision;
- use press for processing products and materials that the press is not designed to use.



It is prohibited to operate press if:

- there is no grounding or it is damaged;
- power supply cord is damaged;
- humidity level is elevated or there is water where the press is placed;
- vacuum pump oil level is lower than critical level;
- press body frame is damaged or vacuum system or electrical equipment is damaged;
- there is no specially trained personnel to operate this press.

Safety labels on the equipment:



Caution! Electrical voltage.



Grounding place.



Caution! High temperature.

9. General information

Individual modification of vacuum press, its power circuit, system of vacuum and compressed air regulation and supply is strictly prohibited without receiving written approval from manufacturer!

It is not allowed to operate press in a wrong way and it is not allowed to disregard requirements and rules of this passport. In this conditions are disregarded equipment can become dangerous

Equipment is delivered fully assembled and ready for operation, also operational test has been run before delivery.

Manufacturer has the right to alter electric circuit of the press or its constructions if these alterations do not worsen working efficiency and safety of the press.

10. Attached documentation

- Vacuum pump passport.
- Temperature controller passport.

Manufacturer: "ISTRA-A"

Item number: _____

Manufactured date: _____

Delivery date: _____

Contact information: phone: +371 29377912

Phone/fax: +371 7250154

e-mail: istraa@mail.ru

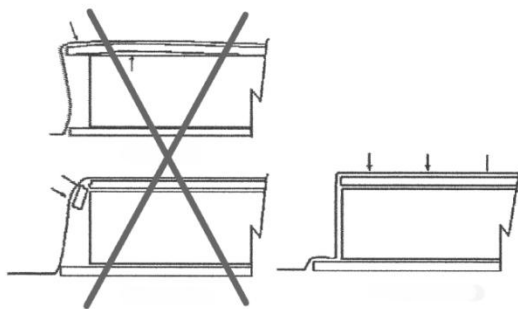
11. Operations rules

11.1. Pressing of plywood

Pressing of plywood in vacuum press occurs by means of interfacial layer. Interfacial layer is any sheet material not less 3 mm thick, completely covering veneer surface. Use of interfacial layer helps to distribute pressure throughout of panel and to press more qualitative. Following key rules should be observed:

Pressed veneer should not directly touch membrane and plate.

Size of the top spacer should correspond to the size of pressed panel (spacer thickness - 3-6 mm)



pic 7

If size of spacer exceeds size of the panel, spacer can be broken. Overhanging of spacer will be sufficient to lower pressure upon distance up to 5 cm from edge of the panel (Fig.3). Thicker spacer (1 cm) can exceed the panel up to 8 mm, not reducing the quality of pressing.

11.2. Pressing of laminate.

Vacuum press can be used for pressing of layered plastics with the same kind of glue, as for veneer. The plastics pressed in such way are characterized by high durability of glued surfaces.

Layered plastics pressing is carried out in the same way as veneer, behind following exception: the top spacer is not necessary, though it is desirable to protect a membrane from contact with sharp edges of laminate.

11.3. Manufacturing of arcuate plywood.

Manufacturing of arcuate plywood by form needs observance of follow recommendations:

11.3.1. Bending plywood (thickness 3, 6, 9 mm) is more appropriate. Though it is possible to use usual 3 - 5 mm plywood, however bending plywood minimizes force of straightening owing to its flexibility that allows bending by more abrupt radius.

11.3.2. For manufacture of fixed form (to minimize straightening) use at least 2 layers of bending plywood.

The more number of used layers - the less force of straightening. Use of veneer strip with cross-section arrangement of fibers between two layers of bending plywood will allow to stabilize the panel.

11.4. Manufacturing of double-layer product.

Manufacturing of double-layer veneered product can be very useful for pressing of arcuate plywood. Grind double-layer product manually or by wide grinding belt, then put it to the profile panel to avoid grinding inside of structure. Besides, you can stabilize unmanageable buckled veneer between thick spacers. Stabilized veneer glues well with arcuate panel. If double-layer product and the panel have not stuck together properly, it will not affect to appearance of veneer, there will be no blister.

11.4.1. For manufacturing of double-layer product put the layer perpendicularly to facing veneer. Put glue on the layer. It is necessary to operate quickly, as veneer will be twisted during glue absorption.

11.4.2. After pressing of double-layer product between spacers and before its pressing to the profile panel leave product slightly pressed between spacers to prevent rolling.

11.5. Gluing

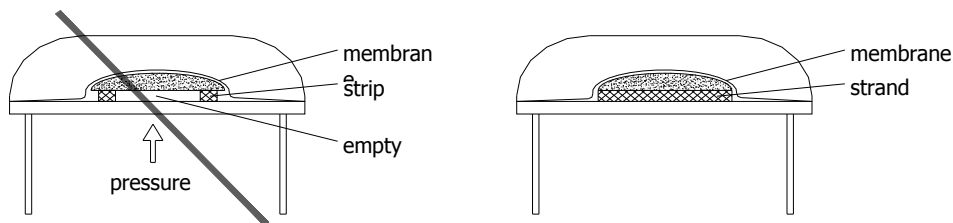
11.5.1. PVA (white glue) and Aliphatic - gum (yellow glue)

Both these types of premium glue are multipurpose and fit for veneering of small and average panels by steady plane veneer. They fasten quickly and are convenient for work with buckled or crutch veneer with beautiful and complex texture of grain.

11.5.2. To define sufficient amount of glue is important, as to choose its grade.

Surplus of glue can lead to weak fixation or lifting of veneer. For definition of quantity of glue lead the simple test. Prepare 3 samples 30x30cm. Paste broad-ringed wood, for example mahogany, oak, ash, etc. to undercoat. Put thin layer of glue on the first sample, normal - on the second and thick layer - on the third sample. When samples will be taken from press, examine them. Small amount of glue on surface of veneer is a parameter of correct glue quantity. The insufficient quantity of glue will not be visible on surface. Surplus of glue will appear on entire surfaces of veneer. It is important to test just broad-ringed wood, as glue will not be visible on close-grained wood surface.

11.5.3. Use single-piece support working with press. It is forbidden to use a two-piece or crannied support (see pic.8)

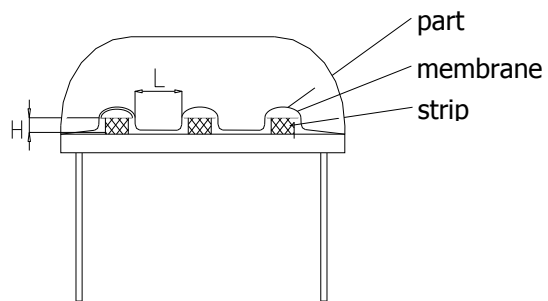


11.5.4. Observe following rules pasting of several products simultaneously

base height should not be less than 30 mm, $H \geq 30$ mm;

condition $L \geq 3H$ should be observed; where L - distance between glued products, H – base height (see pic. 9)

Non-observance of PP 11.5..3 and 11.5.4 Recommendations may cause damage of press table or breakage of membrane.



pic 9