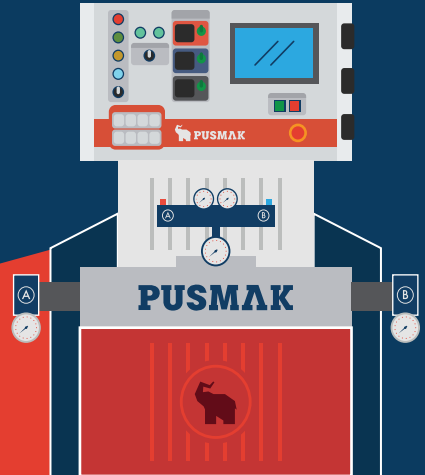




PUSMAK®



KPX-50

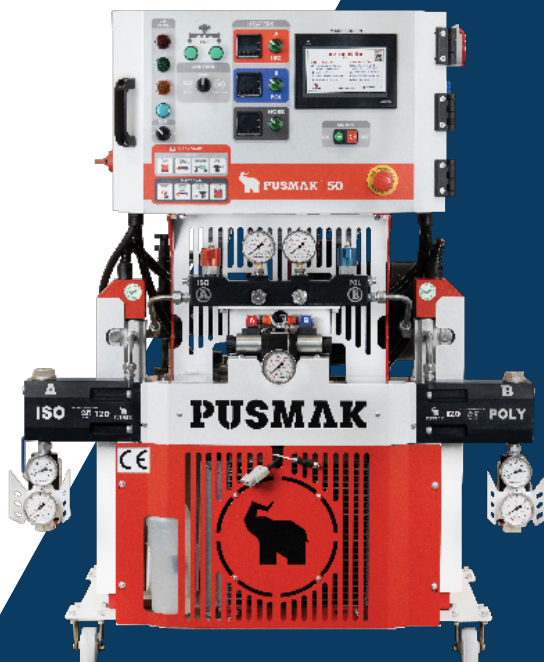
**SPRAY POLYUREA,
POLYURETHANE FOAM
MACHINE**

User's Manual

PUSMAK KPX-50 PU-FOAM AND POLYUREA SPRAY MACHINE USER'S MANUAL



Read all warnings and instructions in this manual before starting the machine. Save this manual.



Important Safety Instructions

Hydraulic, Heated, Plural Component Proportioner for spraying polyurethane foam and polyurea coatings. Not for outdoor use.

For professional use only. Operate with care in explosive atmospheres or hazardous locations.

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Warnings

The following warnings are for the setup, use, grounding, maintenance, and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbol refers to procedure-specific risk. Refer back to these warnings. Additional, product-specific warnings may be found throughout the body of this manual where applicable.

SEVERE ELECTRIC SHOCK HAZARD



This equipment can be powered by more than 110 V. Contact with this voltage will cause death or serious injury



- Turn off and disconnect power at main switch before disconnecting any cables and before servicing equipment.

- This equipment must be grounded. Connect only to grounded power source.

- All electrical wiring must be done by a qualified electrician and comply with all local codes and regulations.

Warnings

TOXIC FLUID OR FUMES



Toxic fluids or fumes can cause serious injury or death if splashed in the eyes or on skin, inhaled or swallowed.

- Read Safety Data Sheet (SDS) for handling instructions and to know the specific hazards of the fluids you are using, including the effects of long-term exposure.
- When spraying, servicing equipment, or when in the work area, always keep work area well ventilated and always wear appropriate personal protective equipment. See Personal Protective Equipment warnings in this manual.
- Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.

PERSONAL PROTECTIVE EQUIPMENT



Always wear appropriate personal protective equipment and cover all skin when spraying, servicing equipment, or when in the work area. Protective equipment helps prevent serious injury, including long-term exposure; inhalation of toxic fumes, mists or vapors; allergic reaction; burns; eye injury and hearing loss. This protective equipment includes

but is not limited to:

- A properly fitting respirator, which may include a supplied-air respirator, chemically impermeable gloves, protective clothing and foot coverings as recommended by the fluid manufacturer and local regulatory authority.
- Protective eyewear and hearing protection.

SKIN INJECTION HAZARD



High-pressure fluid from dispensing device, hose leaks, or ruptured components will pierce skin. This may look like just a cut, but it is a serious injury that can result in amputation



Get immediate surgical treatment.



- Engage trigger lock when not spraying.
- Do not point dispensing device at anyone or at any part of the body.
- Do not put your hand over the fluid outlet.
- Do not stop or deflect leaks with your hand, body, glove, or rag.
- Replace worn or damaged parts immediately.
- Check hoses and couplings daily.
- Tighten all fluid connections before operating the equipment and before cleaning, checking, or servicing equipment.
- Follow the Pressure Relief Procedure when you stop dispensing



Warnings

FIRE AND EXPLOSION HAZARD



Flammable fumes, such as solvent and paint fumes, in work area can ignite or explode. Paint or solvent flowing through the equipment can cause static sparking. To help prevent fire and explosion: Use equipment only in well ventilated area. Eliminate all ignition sources; such as pilot lights, cigarettes, portable electric lamps, and plastic drop clothes (potential static sparking).



- Ground all equipment in the work area. See Grounding instructions.
- Never spray or flush solvent at high pressure.
- Keep work area free of debris, including solvent, rags and gasoline. Do not plug or unplug power cords, or turn power or light switches on or off when flammable fumes are present.
- Use only grounded hoses.
- Hold gun firmly to side of grounded pail when triggering into pail. Do not use pail liners unless they are anti-static or conductive.
- Stop operation immediately if static sparking occurs or you feel a shock. Do not use equipment until you identify and correct the problem.
- Keep a working fire extinguisher in the work area.

PRESSURIZED ALUMINUM PARTS HAZARD



Use of fluids that are incompatible with aluminum in pressurized equipment can cause serious chemical reaction and equipment rupture. Failure to follow this warning can result in death, serious injury, or property damage.

- Do not use dimethyl, methylene chloride, other halogenated hydrocarbon solvents or fluids containing such solvents.
- Do not use chlorine bleach.
- Many other fluids may contain chemicals that can react with aluminum. Contact your material supplier for compatibility.

PLASTIC PARTS CLEANING SOLVENT HAZARD



Many solvents can degrade plastic parts and cause them to fail, which could cause serious injury or property damage.



- Use only compatible water-based solvents to clean plastic structural or pressure-containing parts.
- See Technical Data in this and all other equipment instruction manuals. Read fluid and solvent manufacturer's MSDSs and recommendations.

Warnings

EQUIPMENT MISUSE HAZARD



Misuse can cause death or serious injury.



- Do not operate the unit when fatigued or under the influence of drugs or alcohol.
- Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See Technical Data in all equipment manuals.
- Use fluids and solvents that are compatible with equipment wetted parts. See Technical Data in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request MSDS from distributor or retailer.
- Do not leave the work area while equipment is energized or under pressure.
- Turn off all equipment and follow the Pressure Relief Procedure when equipment is not in use.
- Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only.
- Do not alter or modify equipment. Alterations or modifications may void agency approvals and create safety hazards.
- Make sure all equipment is rated and approved for the environment in which you are using it.
- Use equipment only for its intended purpose. Call your distributor for information.
- Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.
- Do not kink or over bend hoses or use hoses to pull equipment.
- Keep children and animals away from work area.
- Comply with all applicable safety regulations.

MOVING PARTS HAZARD



Moving parts can pinch, cut or amputate fingers and other body parts.



- Keep clear of moving parts.
- Do not operate equipment with protective guards or covers removed.
- Equipment can start without warning. Before checking, moving, or servicing equipment, follow the Pressure Relief Procedure and disconnect all powersources.

BURN HAZARD



Equipment surfaces and fluid that is heated can become very hot during operation. To avoid severe burns:

- Do not touch hot fluid or equipment.

Important Isocyanate Information

Isocyanates (ISO) are catalysts used in two component materials

Isocyanate Conditions

								
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Spraying or dispensing fluids that contain isocyanates creates potentially harmful mists, vapors, and atomized particulates.

- Read and understand the fluid manufacturer's warnings and Safety Data Sheet (SDS) to know specific hazards and precautions related to isocyanates.
- Use of isocyanates involves potentially hazardous procedures. Do not spray with this equipment unless you are trained, qualified, and have read and understood the information in this manual and in the fluid manufacturer's application instructions and SDS.
- Use of incorrectly maintained or mis-adjusted equipment may result in improperly cured material, which could cause off gassing and offensive odors. Equipment must be carefully maintained and adjusted according to instructions in the manual.
- To prevent inhalation of isocyanate mists, vapors and atomized particulates, everyone in the work area must wear appropriate respiratory protection. Always wear a properly fitting respirator, which may include a supplied-air respirator. Ventilate the work area according to instructions in the fluid manufacturer's SDS.
- Avoid all skin contact with isocyanates. Everyone in the work area must wear chemically impermeable gloves, protective clothing and foot coverings as recommended by the fluid manufacturer and local regulatory authority. Follow all fluid manufacturer recommendations, including those regarding handling of contaminated clothing. After spraying, wash hands and face before eating or drinking.
- Hazard from exposure to isocyanates continues after spraying. Anyone without appropriate personal protective equipment must stay out of the work area during application and after application for the time period specified by the fluid manufacturer. Generally this time period is at least 24 hours.
- Warn others who may enter work area of hazard from exposure to isocyanates. Follow the recommendations of the fluid manufacturer and local regulatory authority. Posting a placard such as the following outside the work area is recommended:

 WARNING 	
TOXIC FUMESHAZARD	
DO NOT ENTER DURING SPRAY FOAM APPLICATION OR FOR _____ HOURS AFTER APPLICATION IS COMPLETE	DO NOT ENTER UNTIL: DATE : _____ TIME : _____

Important Isocyanate Information

Material Self-Ignition

				
Some materials may become self-igniting if applied too thick. Read material manufacturer's warnings and SDS.				

Keep Components A and B Separate

				
Cross-contamination can result in cured material in fluid lines which could cause serious injury or damage to equipment. To prevent cross-contamination: • Never interchange component A and component B wetted parts. • Never use solvent on one side if it has been contaminated from the other side.				

Changing Materials

NOTICE				
Changing the material types used in your equipment requires special attention to avoid equipment damage and downtime.				
• When changing materials, flush the equipment multiple times to ensure it is thoroughly clean. • Always clean the fluid inlet strainers after flushing. • Check with your material manufacturer for chemical compatibility. • When changing between epoxies and urethanes or polyureas, disassemble and clean all fluid components and change hoses. Epoxies often have amines on the B (hardener) side. Polyureas often have amines on the B (resin) side.				

Moisture Sensitivity of Isocyanates

Exposure to moisture (such as humidity) will cause ISO to partially cure, forming small, hard, abrasive crystals that become suspended in the fluid.

Eventually a film will form on the surface and the ISO will begin to gel, increasing in viscosity.

NOTICE
Partially cured ISO will reduce performance and the life of all wetted parts. • Always use a sealed container with a desiccant dryer in the vent, or a nitrogen atmosphere. Never store ISO in an open container. • Keep the ISO pump wet cup or reservoir (if installed) filled with appropriate lubricant. The lubricant creates a barrier between the ISO and the atmosphere. • Use only moisture-proof hoses compatible with • Never use reclaimed solvents, which may contain moisture. Always keep solvent containers closed when not in use. • Always lubricate threaded parts with an appropriate lubricant when reassembling.

NOTE: The amount of film formation and rate of crystallization varies depending on the blend of ISO, the humidity, and the temperature.

Pusmak KPX-50 Specifications

High performance spray polyurethane foam machine

Pusmak's hydraulically driven KPX 50 proportioning machine is engineered and manufactured for spray foam contractors. With its precise proportioning capacity, it assures contractors with a very well proportioned mixture of two components. The machine is equipped with all necessary technical feature to supply enough pressure and flow for high performance.

Maximum hydraulic power capacity of 200 bar - 2900 psi and pre-heater system with total power of 12.4 kw enable users to apply spray foam with double spray guns in all seasons. KPX 50's hose heating system is manufactured to enable use different types of heated hoses.

Error control automation allows user to limit pressure tolerance range and check the error history for diagnosing any potential problems. The simple and useful electrical and electronical design of machine makes it easy for user to check everything easily. Specially designed phase control and correction system prevents the costly repairs resulting from misconnection to electricity plugs.

	Metric	Imperial
Weight Ağırlık	315 kg	694 lbs
Supply Voltage Besleme Gerilimi	380 V	230 V
Number of Phases Faz Sayısı	3	3
Frequency Frekans	50Hz	60Hz
Preheater Power Ön Isıtıcı Gücü	12,4kW	12,4kW
Maximum Hose Heater Power Maksimum Hortum Isıtıcı Gücü	4.8 kW	4.8 kW
Installed Power Kurulu Güç	22,6kW	22,6kW
Power Source Güç Kaynağı	Hydraulic	Hydraulic
Maximum Hose Length Maksimum Hortum Uzunluğu	105 m	344 ft
Component Type Komponent Tipi	Two Component	Two Component
Approximate Output Per Cycle Devir Başına Yaklaşık Çıkış	360 g	0.79 lbs
Maximum Flow Maksimum debi	14.8 kg/min	32.6 lbs/min
Mixture Ratio Karışım Oranı	1:1	1:1
Maximum Fluid Temperature Maksimum Akışkan Sıcaklığı	80°C	176°F
Maximum Working Pressure Maksimum Çalışma Basıncı	200 bar	2900 psi
Height Yükseklik	135 cm	53 in
Width Genişlik	105 cm	41 in
Length Uzunluk	75 cm	30 in

Typical Installation



The Puskak KPX 50 is a high-performance, hydraulically driven proportioning machine specifically engineered for professional spray polyurethane foam and polyurea applications. At the core of our system is the KPX 50 proportioner, which ensures a precisely balanced mixture of components to deliver superior results for contractors. Our integrated setup includes high-quality Puskak transfer pumps for seamless raw material flow, advanced heated hose systems to maintain optimal temperatures,

and air-purged spray guns designed for precision and durability. By utilizing Puskak's specialized moisture barriers and error-control automation, our products provide a reliable, efficient, and long-lasting solution for the most demanding industry requirements.

Machine Parts

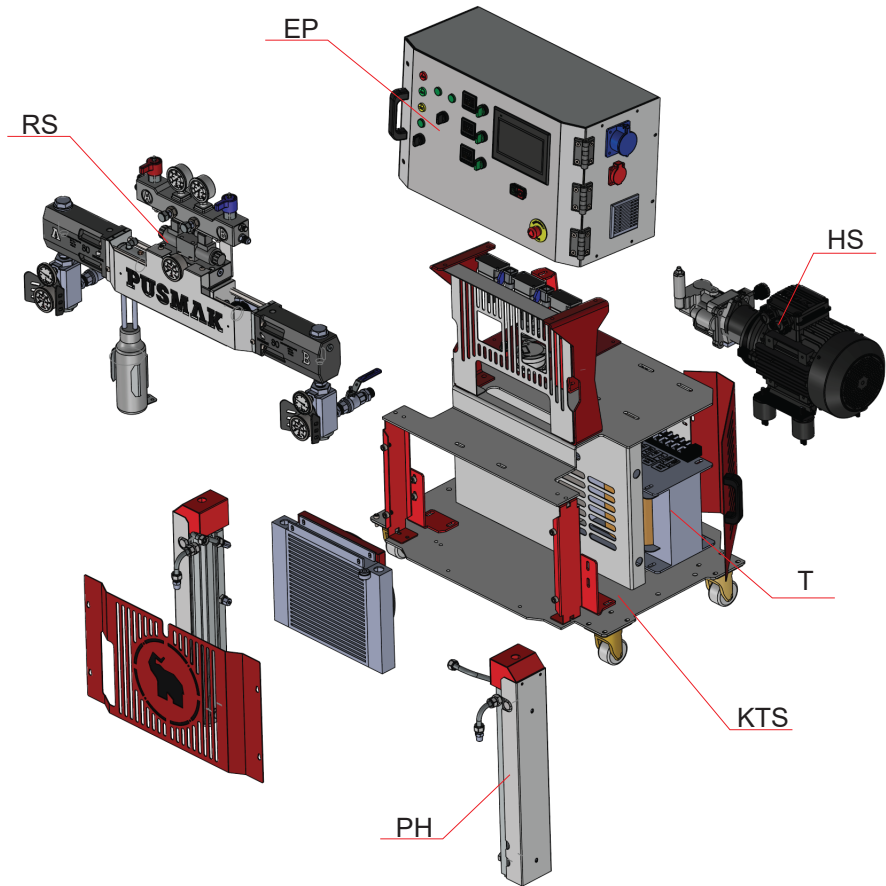


Figure-2

- 1- Electric Panel (EP)
- 2 - Hydraulic System (HS)
- 3 - Reactor System (RS)
- 4 - Body (KTS)
- 5 - Pre-Heaters (PH)
- 6 - Transformer (T)

Machine Part Details

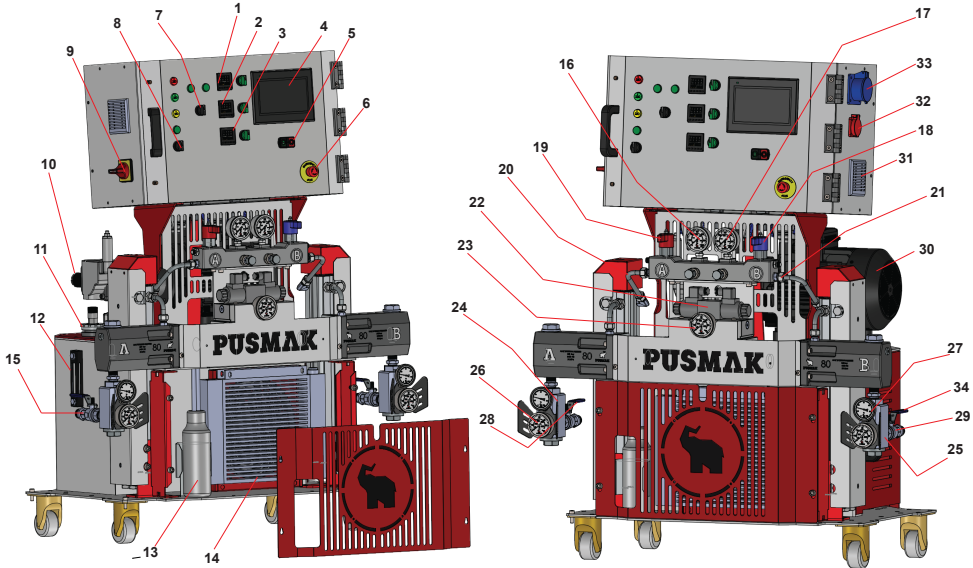


Figure-3

- | | |
|---|---|
| 1 - A isocyanate heater adjustment screen. | 17 - Polyol raw material output pressure manometer. |
| 2 - B Polyol heater adjustment screen. | 18 - B Polyol raw material pressure release valve. |
| 3 - Hose heat adjustment screen. | 19 - A isocyanate raw material pressure release valve. |
| 4 - Control screen. | 20 - Isocyanate pressure transmitter. |
| 5 - Hydraulic Engine Start-Stop. | 21 - Polyol pressure transmitter. |
| 6 - Emergency stop. | 22 - Hydraulic valve. |
| 7 - Spray-Circulation mode selection. | 23 - Hydraulic valve pressure manometer. |
| 8 - Screen Switch. | 24 - Isocyanate input filter. |
| 9 - Main Switch. | 25 - Polyol input filter. |
| 10 - Hydraulic Pump (Adjustment valve). | 26 - A Isocyanate fluid input pressure manometer. |
| 11 - Hydraulic oil tank cover. | 27 - B Polyol Transfer pump fluid input pressure manometer. |
| 12 - Hydraulic oil level. | 28 - Isocyanate raw material input valve. |
| 13 - DOTP tank for A side of the reactor . | 29 - B Polyol raw material input. |
| 14 - Hydraulic oil cooler. | 30 - Electric motor. |
| 15 - A isocyanate raw material input. | 31 - Ventilating fan. |
| 16 - Isocyanate raw material output pressure manometer. | 32 - Mono-phase plug. |
| | 33 - Tri-phase plug. |
| | 34 - Polyol raw material input valve. |

Dimentions

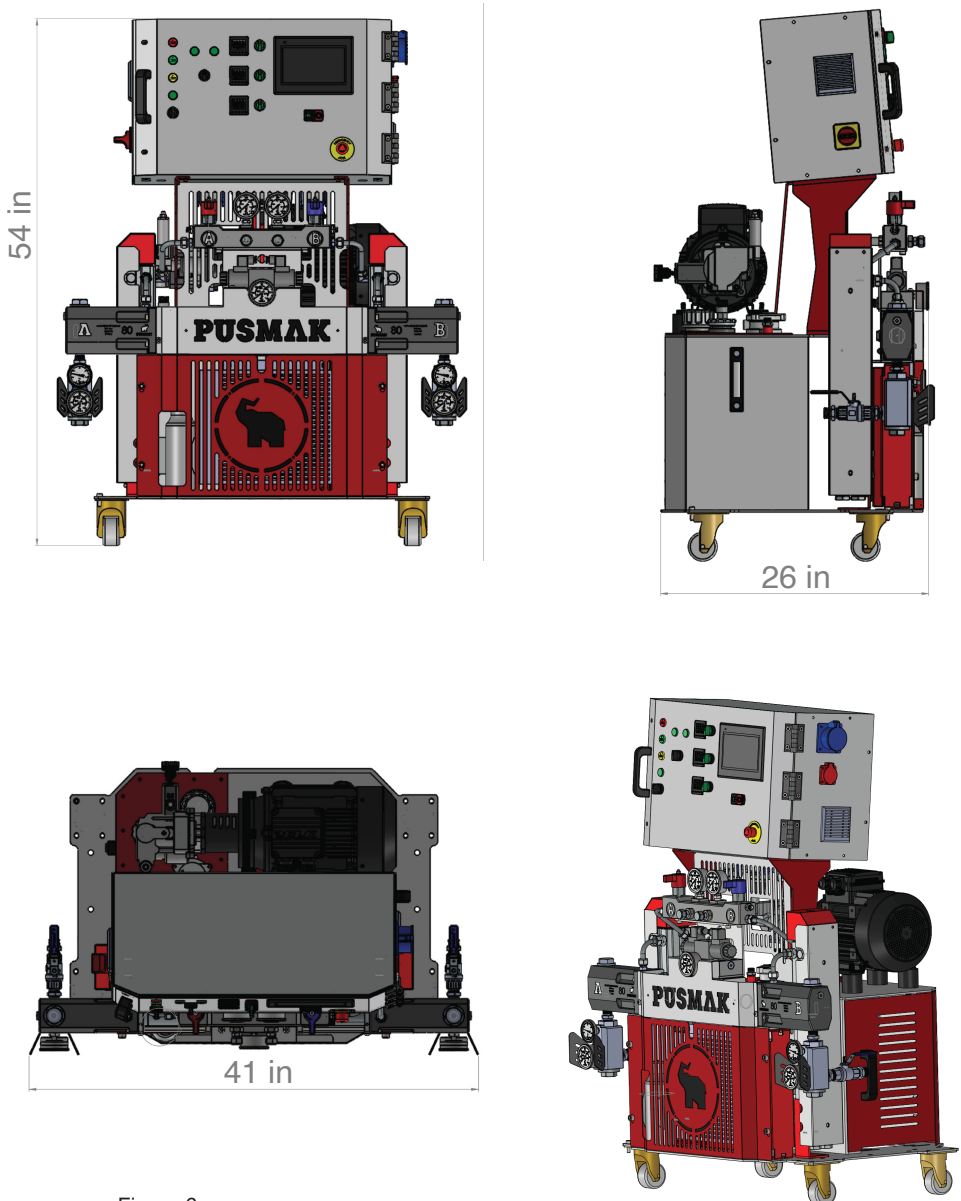


Figure-6

Preperation before Use

- Check the raw material levels in both A and B barrels before and during use.
- Check the DOTP oil (for iso side) in reactor before and during use.

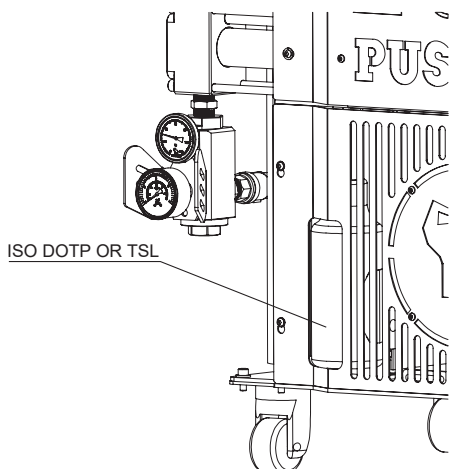


Figure-7

- Check the raw material in the barrels, machine body, pumps and all hoses after long breaks (more than 20 days) in case of any foaming.
- Check the raw materials input filters and clean if there are particles inside.

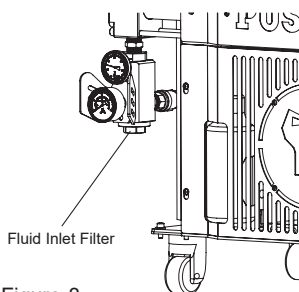


Figure-8

- Check the air input in the transfer pumps and be sure there is high pressure air in the hoses. Turn on the air valve if everything works properly.

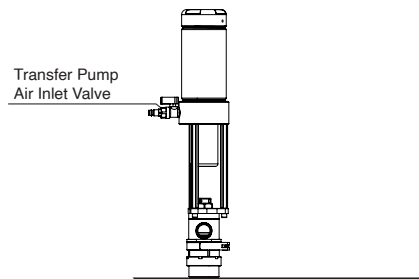


Figure-9

- Turn on the raw materials input valves which are in machine.
- Be sure that the spray gun is cleaned properly. You should have Dimethyl Formamide (DMF) to clean the parts of the gun when it is needed.
- An air drier is needed in the compressor. Make sure that you have one.



Instructions for operating Safely (Follow Step by Step)

Start:

1. Connect the machine to the power supply. (For example; 400V 3P 50Hz or 230V 3P 60Hz)
2. Check the voltages on L1,L2,L3 and be sure that they are around 110 (Exm; L1~110V L2~110 L3~110)
3. If there is any major difference between L1, L2, L3 check and fix the electric power supply.
4. Turn on the main switch on the left side of electrical panel.
5. Turn on the "Start Switch" on the front panel of the panel.
6. Before pressing on "Start Switch" choose the working mode (Spray/Circulation)

Turn Off:

1. Press on Stop Switch and be sure that electric motor is stopped.
2. Turn the front vales to RELIEF directions to relief the machine and turn them back to SPRAY side when it is relieved.
3. Turn off the pre-heater swithces.
4. Turn off the screen switch.
5. Turn off the main switch.
6. Turn off the air valves on Transfer Pumps.

Operation of the Machine

CAUTION

Proper system setup, startup, and shutdown procedures are critical to electrical equipment reliability. The following procedures ensure steady voltage. Failure to follow these procedures will cause voltage fluctuations that can damage electrical equipment and void the warranty.



Crossover of the material already used with A and B side may cause serious damages to your skin. Never displace parts of A side with parts of B side in your machine.

To run the machine, please do the followings;

- a.** Turn on the main switch.

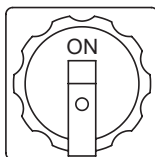


Figure-12

- b.** Turn Screen Power switch ON

SCREEN
SWITCH

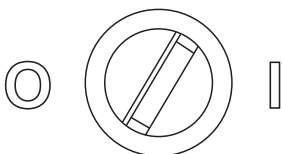
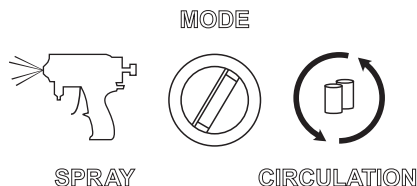


Figure-13



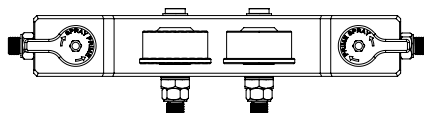
- c.** Turn on the air compressor and air drier.

- d.** Because the system is three-phase be sure that phases are connected correctly in the main fuse.

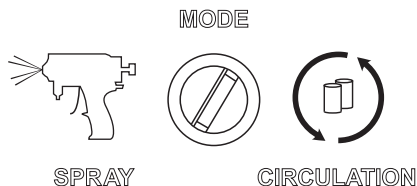
- e.** Check out if all the assembly steps are done well, you can also follow them from installation video by scanning QR code.



- f.** If there is any need for the raw materials to be mixed, use a barrel mixer before running the machine.



- g.** Turn the direction valve to the recirculation side as shown in the figure above.



h. At first start take the machine to recirculation mode to adjust pressure and heat.

I. Turn on Iso (A) and Polyol (B) pre-heaters to heat up the raw materials (Isocyanate and Polyol).

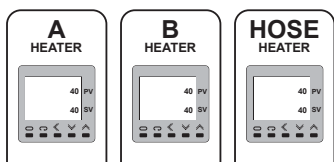


Figure-15

j.  Tune ON hose heater

k. Be sure that raw material got heated to desired degree before spraying. You can set the temperature of the heaters by the buttons below the heaters screens.

l. When you have done with all the steps that are explained bellow press on START switch shown on figure.

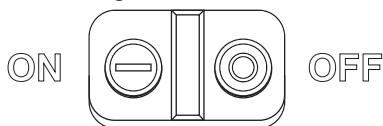


Figure-16

			
Thermal expansion can cause over-pressurization, resulting in equipment rupture and serious injury, including fluid injection. Do not pressurize system when preheating hose.			

			
This equipment used with heated fluid can cause equipment surfaces to become very hot. To avoid severe burns: - Do not touch hot fluid or equipment. - Do not turn on hose temperature without fluid in hoses. - Allow equipment to cool completely before touching it. - Wear gloves if fluid temperature exceeds 110F (34oC).			

m. Turn on the valves by placing two containers in front of the valve manifold as shown and start the machine. At first there will be liquid flow mixed with air. Continue operating the machine until the air in the machine runs out and stop the machine when a stable fluid flow is obtained.

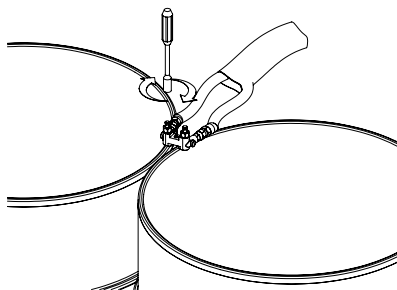


Figure-17

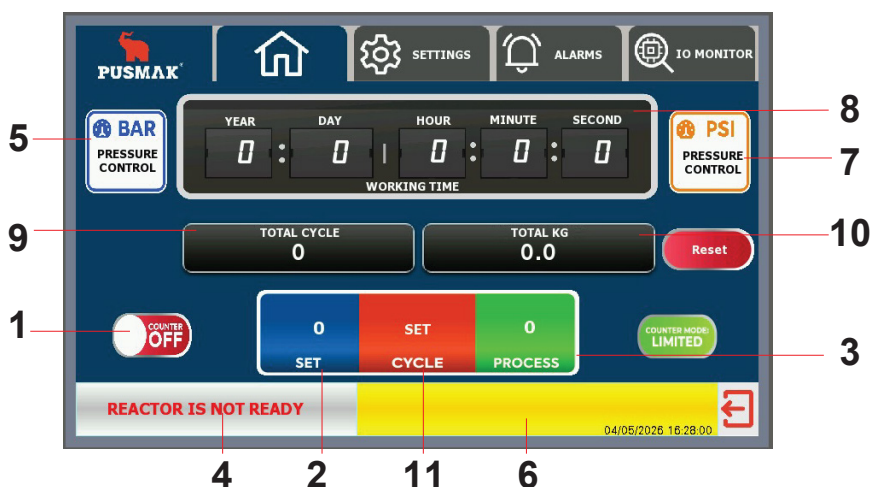
KPX 50 Control Screen Module

Language options



A. Homepage

Main screen



1. Shows if the counter is active or passive.(on-off)

2. Button for target cycle number. Before starting work you need to save your target cycle and set.

3. Shows the current cycle of the machine. Counter counts up till the target cycle number and the machine stops automatically when it reaches up to the target number.

4. Shows reactor's condition.

5. Shows the pressures of the both side in terms of BAR.

6. Alarm screen.

7. Shows to pressures of the both side in terms of PSI.

8. Total working time of machine.

9. This parameter shows the total cycle of the machine since first start.

10. Total kg of the process. When setting a new target and total kg start from zero (0).

11. To count the kilogram of raw material, press the set button.

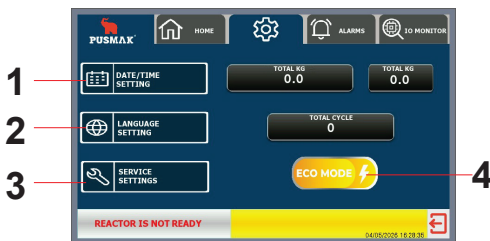
In order to limit the raw materials apply this formula.

Target lbs / 0.738 =

Example : 200 lbs limit

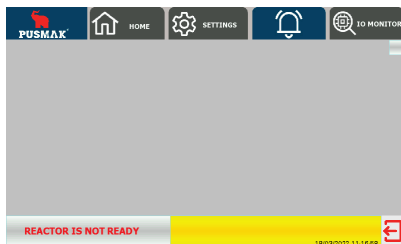
200/0.738 = 271 cycle*

B. Settings



1. Date and time setting page .
2. Language setting page.
3. Service settings.
4. Eco Mode.

C. Alarms



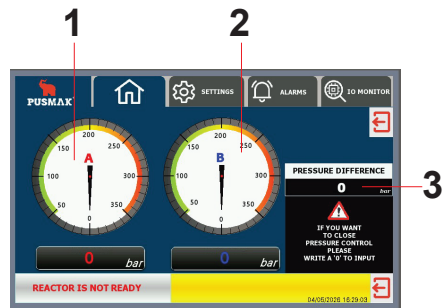
1. Alarms screen shows the alarms in the machine. Red light on the left side of the item shows the alarm pointed out.

D. IO Monitor



1. IO Monitor screen shows the inputs and outputs of the electronics parts of system. If anything goes wrong, it can be checked out from this screen

E. Pressure Control Screen



1. The pressure of Iso(A) side.
2. The pressure of the Polyol (B) side.
3. Pressure balance screen where user sets the maximum pressure difference between A and B sides. When the difference between two components exceeds the limit, machine will stop automatically. You can passivate this feature by entering the pressure balance as '0' (zero).

Heater Controller Module

There are three heater controllers on your machine. One for hose heating system and two for pre-heaters. Refer to the instructions below



Setting up as PID controller

To set the controller as PID controller, adjust the CNTL (control) parameter.

1. Press the 1st button (level button) for 3 seconds until IN-T is displayed.
2. Then briefly press the 2nd button (mode button) several times until CNTL is displayed.
3. As you can see, this parameter reads ONOF (ON-OFF). With the arrow up button change this to PID (PID).
4. Then press the 1st button again until the controller resets.
The controller is now set as PID controller. We recommend changing the PID values. The simplest way to do this is by using autotune.

Run Autotune

For accurate controlling the correct PID parameters are important. These can be calculated by using the autotune function.

1. Using the up and down buttons, set the desired temperature (set value).
2. Press the 1st button briefly until L.ADJ is displayed
3. Then press the 2nd button until the AT parameter is displayed.
4. Using the up button, select AT-2
5. After a few seconds the tune message lights up. As long as this message is on, the controller is learning the process to configure the correct parameters.
6. Then briefly press the 1st button again. The temperature will be displayed again and the tune message will remain there.

CAUTION

Running autotune may take some time, depending on your process. To guarantee the correct settings, do not interrupt this process. If autotune still has not completed after 2 hours, please contact the Pusmak technical service.

7. As long as the tune message is on, the controller is tuning. During this process the temperature will vary. Do not interrupt the tuning process.

When the message is no longer displayed, the parameters have been set correctly and controlling will be stable. During tuning, the temperature may rise above the set value. If this is not desirable, then you may also select AT-1. The controller will now commence tuning at 40% of its capacity, which will cause tuning to be slower and less excessive.

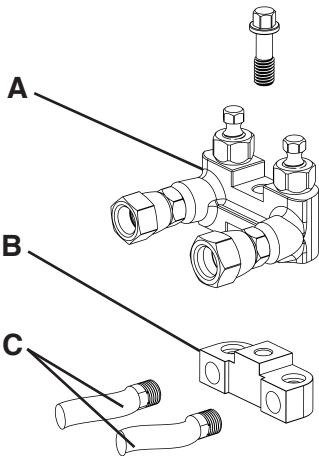
Fluid Circulation

Circulation through Gun Manifold

NOTICE

To prevent equipment from damage, do not circulate fluid containing a blowing agent without consulting with your material supplier regarding fluid temperature limits.

Recirculation of the fluid through the gun manifold accelerates the hose preheating process. Install the gun fluid manifold (A) to the accessory circulation kit (B). Connect the high-pressure circulation lines (C) to the circulation manifold



Route the recirculation lines back to the relevant component A or B supply barrel.

WHY RECIRCULATE ?

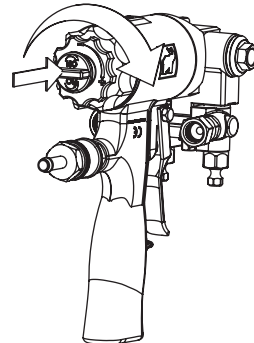
It is important to run your machine in circulation mode in order to prevent blockages that may occur in the hoses of your machine. For this reason, be sure to circulate the machine for 10-15 minutes before starting your work. 10-15 minutes of recirculation is enough once every 10 days when your machine is not working.

Spray



How to Use Spray Gun

1. Before you spray, make sure that the gun safety lock is turned off.



2. Connect the fluid manifold valve to the heated hose then to the gun.
3. Connect the air hose to the gun.
4. Turn on the fluid valves on manifold until the end. Do not use too much force. (Maximum torque is 17.56 Nm)

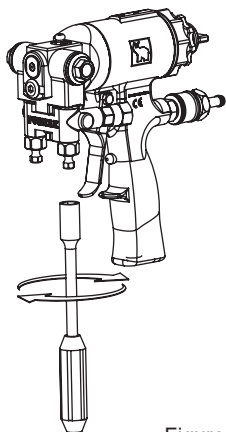
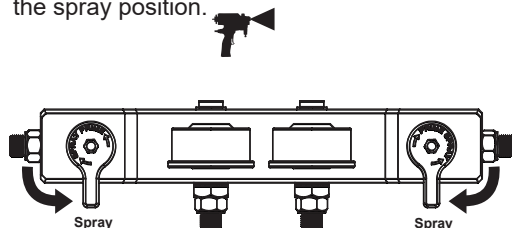


Figure-25

5. Set the pressure RELIEF / SPRAY valves to the spray position.



6. Be sure that the switches of heaters are turned on and the heat level is at desired value.
7. Depending on the machine model, the pressure values can be set accordingly.
8. Check the manometers to be sure that the pressure of two components is balanced. Up to 20% imbalance is a tolerable rate at first.

9. If you have a pressure imbalance, STOP the motor and then turn the '**Relief/Spray**' valves on the side of **Relief/CIRCULATION**.  After you relived the machine, turn the valves on SPRAY side and start it again.

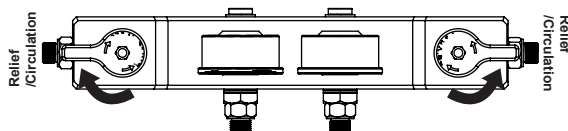


Figure-27

10. To run the reactor press Start button.

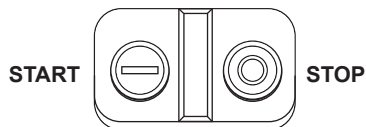


Figure-28

11. Turn on the safety lock of the gun.

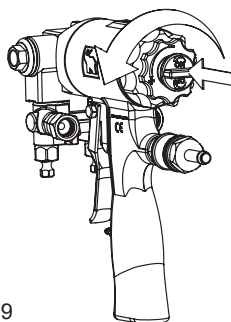


Figure-29

12. If you need to test the gun try it on a spare sheet or a box and set the pressure and temperature to get the desired results.
13. After finishing spray or in time of breaks more than 2-3 minutes, take the machine to RELIEF position.

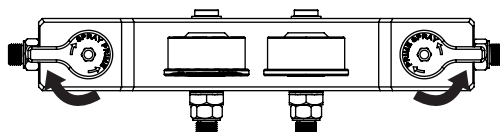


Figure-29

14. In order to get a high quality spray, the heat and the pressure of the raw materials must be at suggested levels.

15. There are different sizes of nozzles for Pusmak spray guns. *Please contact Pusmak Technical Service to guide you about the best size for your work.*

2. TURN OFF the valves of the spray gun manifold.

NOTICE

To prevent crossover on impingement guns, never open fluid manifold valves or trigger gun if pressures are imbalanced.

Shutdown

NOTICE

Following up the correct system installation, start-up and shutdown procedures are important for the reliability of electrical equipment. The following procedures ensure that a constant voltage is obtained. Failure to follow these procedures may result in voltage fluctuations that may damage electrical equipment and cause the warranty to be avoid.

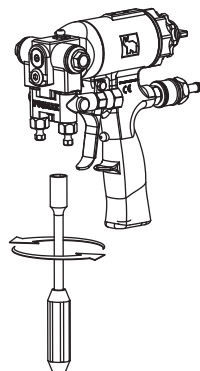


Figure-31

3. Press STOP button.

1. Unlock the gun safety to OFF position.

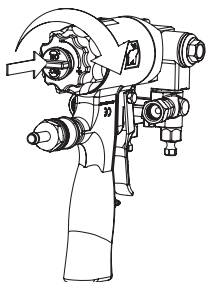
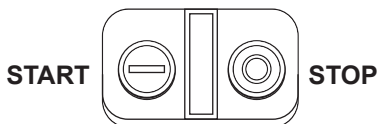


Figure-30



4. Set all heating switches to the OFF position.

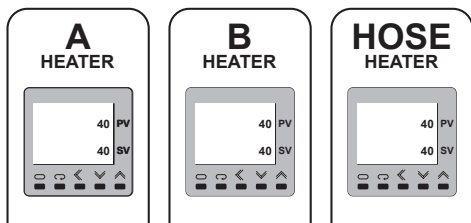


Figure-33

5. Turn the valves to RELIEF position. This will relief the pressure on the machine setup.

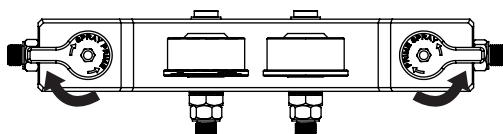
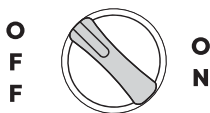


Figure-34

6. TURN OFF the screen switch.

SCREEN SWITCH



7. TURN OFF the main switch.

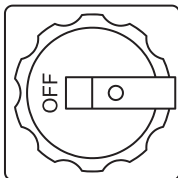


Figure-36

8. Set the air compressor to the off position.

Pressure Relief Procedure



This equipment stays pressurized until pressure is manually relieved.

To help prevent serious injury from pressurized fluid, such as skin injection, splashing fluid and moving parts, follow the pressure Relief Procedure when you stop spraying and before cleaning, checking, or servicing equipment.

9. Discharge the pressure in the gun and apply the gun closure procedure. You can refer to *SP 2 Spray Gun user's manual*

10. Turn off gun fluid inlet valves A and B.

11. Direct the fluid to barrels. Set the pressure RELIEF/ SPRAY valves to the pressure RELIEF (PRIME) position. Make sure the value on manometer drops to 0.

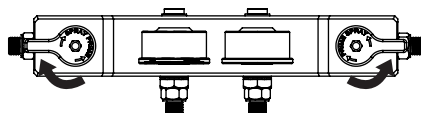


Figure-40

12. Disconnect the gun air line and disconnect the gun fluid manifold.

13. Turn off the transfer pumps air input.

Instructions for Hose Connection

Pusmak offers two types of heated hoses. PH15 and PH30. Here are the technical specifications and instructions on how to use them.

PH15 Heated Hose

PH15 is a universal type of heated hose. It can be added end-to-end. Depending on the machine, the maximum hose length can go up to 120 meters.

This type of hoses are suggested upon the request of customer.

Maximum Operating Pressure	240 bar	3500 psi
Maximum Heating Power	500 Watt	500 Watt
Inside Diameter	9.5 mm	3/8 inch
Weight	16 kg	35.3 lbs
Length	15 m	50 ft

PH30 Heated Hose

The PH30 heated hose with a length of 30 meters is a durable product that responds to all requests of customers. Both spray foam and polyurea applications can be performed with a PH30 under different temperatures for an optimum performance.

Maximum Operating Pressure	240 bar	3500 psi
Maximum Heating Power	1000 Watt	1000 Watt
Inside Diameter	9.5 mm	3/8 inch
Weight	32 kg	70.5 lbs
Length	30 m	100 ft

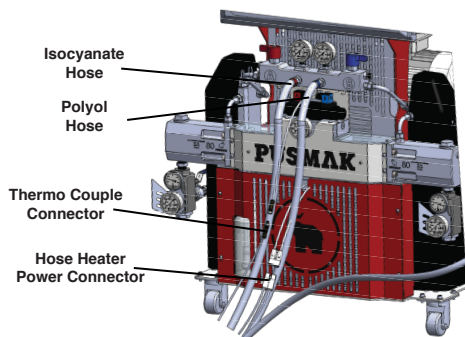
PH3 Whip Hose

The heated whip PH3 ultra-flexible hose segment designed to connect the main line of the heated hoses to the spray gun when working with polyurethane foam and polyurea.

Thanks to the use of high-tech thermal insulation, our whip hoses are 30% thinner and more elastic than standard market analogues, which ensures maximum maneuverability in hard-to-reach places. These whip hoses are fully compatible with proportioners from other global brands with a similar type of thermocouple and are supplied in a wear-resistant protective shell, eliminating the need for additional refinement before starting the work.

Maximum Operating Pressure	240 bar	3500 psi
Maximum Heating Power	100 Watt	100 Watt
Inside Diameter	6.35 mm	1/4 inch
Weight	3,2 kg	7 lbs
Length	3 m	10 ft

Hose Connection to Machine

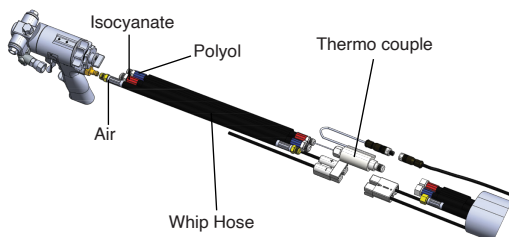


1. Be sure that the transformer output connections are made properly. (*See the transformer connection chart on the next pages)
2. Be sure that the thermo couple and electrical sockets are connected properly.
3. Be sure that the sides of raw materials are connected properly. A- Isocyanate (Red) and B- Polyol (Blue-Black ect.)
4. Make sure that the copressor air hose is connected to the corresponding hose in the system.

Whip Hose and Gun Connection

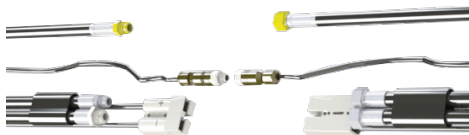
Pay Attention:

- to the thermo couple connection between hose and the whip hose.
- to the connection of air, isocyanate and polyol hoses.
- to the crossing of isocyanate and polyol hoses in whip hose.



PH 15 Hose Connections

PH 15 is an end-to-and type of hose. At the end of every 15 meters you need to connect the hoses and cables as shown in the figure.



Electric Connection Adjustment for Hose Heating System According to Hose Length & Type

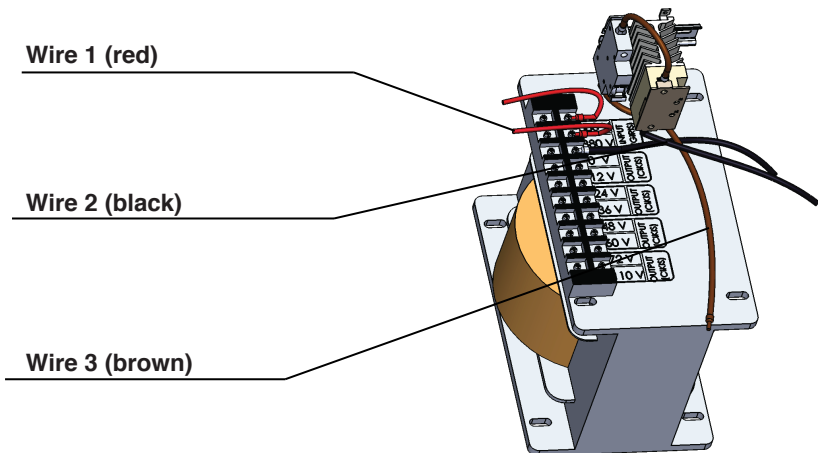
Both PH 30 and PH 15 hose types can be used with all of Pusmak Spray machines. Refer to the chart below for adjusting electrical connections for the hose heating system.

Pay attention;

1. You only need to change the cable (- or +) that goes to the fuse in order to adjust the hose length and and type. The other cable (- or +) is fixed on 0V (Common) stage on transformer. You must not change the common one.
2. While screwing the clamp be sure that you use minimum 8 Nm power.
3. INPUT connector is a main electricity supplier. DO NOT change.
4. Wire 1 (red*) wires come from main electrical panel. These wires are power input of transformer.
5. Wire 2 (black*) wires directly go to the hose connector.
6. Wire 3 (brown*) wire is used for selecting voltage for different hose types. (If you want to change hose type or length, you must change voltage according to the table below.)

**Colors may change but connection stages are permanent.*

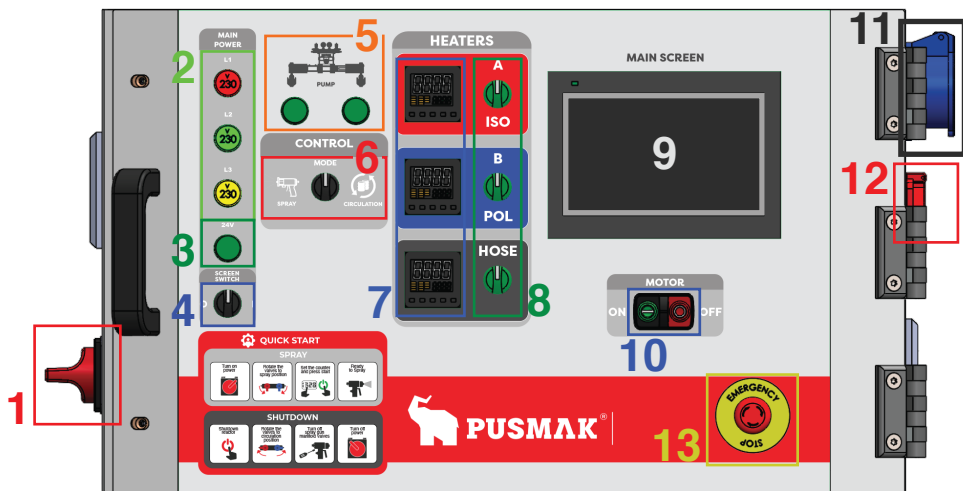
*** Voltage values can vary. For more information contact support team.*



Type	VOLTAGE - HOSE LENGTH RELATIONS								
	0V	13V	23,5V	34,5V	45V	56V	67V	78V	88V
PH30	Common	---	30m	---	60m	---	90m	---	120m
PH15	Common	15m	30m	45m	60m	75m	90m	105m	120m

Understanding the Electrical Panel

Buttons and Switches



1 – Main Switch; This switch is used to turn the main supply power on and off.

2 – Voltage Indicators; It is used to check the main energy before starting the machine.

3 – 24 V Active Indicator; It used to check whether the 24V power supply unit voltage is sufficient.

4 – Screen Switch; It is used to turn on the power of control components electricity (temperature controller, screen, switches)

5 – Pump Direction Indicators; It shows the direction of the piston movement in the reactor.

6 – Mode Selector Switch; It is used to select the machine working mode (circulation and spray modes)

7 – Temperature Controllers; They are used to control the temperature with PID.

8 – Heater Switches; They are used

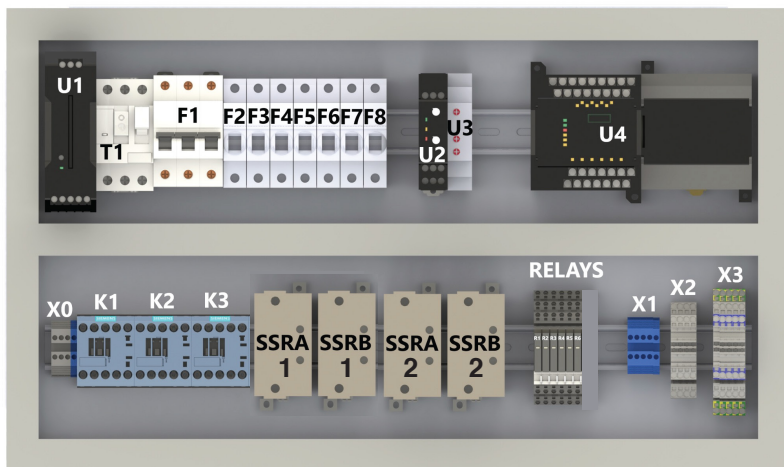
to turn on or turn off the preheaters of the machine.

9 – Main Screen; It displays the machine working parameters. Also the parameters can be set by user.

10 – Start And Stop Button; It is used to start or stop the hydraulic pump.

11 – Emergency Stop Button; In an emergency, it stops the machine.

Electrical Panel

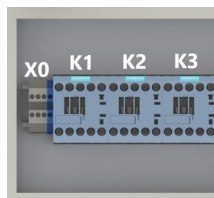


Power & Fuses



- U1:** 24 Vdc Power Supply
- U2:** Phase Sequence Controlling Relay
- U3:** Phase Saving Relay
- T1:** Thermal Relay For Hydraulic Motor Security
- F2:** Hose Heater Phase Fuse
- F3:** Hose Heater Phase Fuse
- F4:** A Side Heater Fuse
- F5:** B Side Heater Fuse
- F6:** Power Supply Fuse
- F7:** Screen Control Unit's Fuse
- F8:** 24v Power Output Fuse

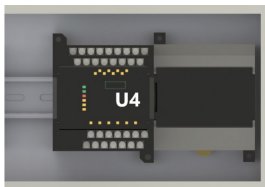
Contactors and Power Input



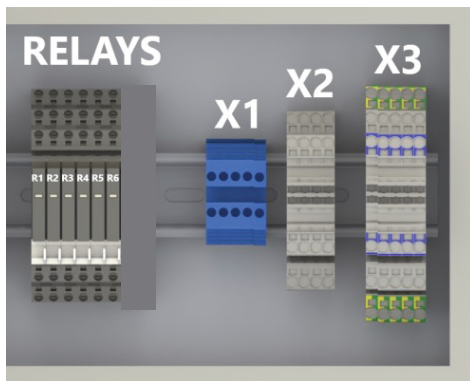
- X0:** R S T Phases, Neutral, Ground Terminals.
- K1:** Hydraulic Motor Direction 1 Contactor
- K2:** Hydraulic Motor Direction 2 Contactor
- K3:** Heater System Contactor

Programmable Logic Controller

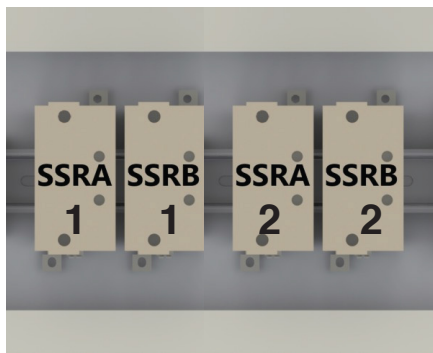
Outputs & Relays



U4: Main unit for controlling the machine. In the right side; it has an analog module for reading pressure transmitter data.



Solid State Relays And Controlling Temperature



R1: Screen Control Relay
R2: Motor Direction 1 Coil
R3: Motor Direction 2 Coil
R4: Heater Coil
R5: Valve A
R6: Valve B
X1: Neutral Bridge
X2: Hose Thermo couple, Valve Outputs, Hose Heater SSR
X3: Proximity Sensors(A-b), Pressure Transmitter Inputs.(A-b)

X0: R S T Phases, Neutral, Ground Terminals.

K1: Hydraulic Motor Direction 1 Contactor

K2: Hydraulic Motor Direction 2 Contactor

K3: Heater System Contactor

Troubleshooting KPX Series PU Machine

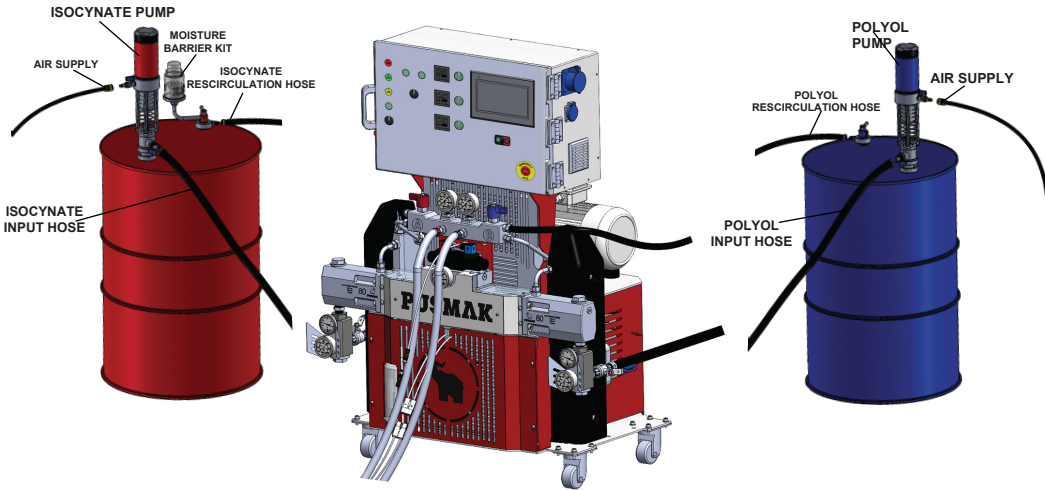
F000	Spray Mode High Pressure Failure	•Make sure the compressor and transfer pumps are both running. •Make sure that the raw material inlet valves are open. •Make sure that the raw material inlet filters are clean. •Make sure the inlet filters of the spray gun are clean. •Make sure the spray gun is completely clean and all raw material paths are clear. •Remember to clean the spray gun after each use.
F001	Pressure Imbalance Failure	•Equalize the raw material pressure with the help of valves. •Make sure the valves of the transfer pumps are open. •Make sure that the raw material inlet valves are open. •Make sure that there is no raw material leakage, if there is, identify the part that caused the leakage. •Make sure the inlet filters of the spray gun are clean. •Make sure the spray gun is completely clean and all raw material paths are clear. •Enter a value above the constantly occurring pressure differences. •Set the value to "0" to turn it off.
F002	Emergency Stop Failure	•After checking your safety, turn the latch slightly to release it.
F003	Motor Thermal Failure	•Check thermal relay that causes the motor overload. •Check your main power supply. •Make sure your electric motor is running.
F004	Target Cycle Completed	•Indicates that you have reached the target loop, rewrite the target loop and "set" it.
F005	Low Voltage Failure	•Measure the energy level coming to the panel. •Increase the tolerance of the electronic component named "U3" clockwise. •If the error still continues, contact the Pusmak Technical Service.
F006	Circulation Mode High Pressure	•Put the flow valves in circulation mode. •Make sure that the digital pressure and the pressure values on the valve block are equal. •Identify the high pressure circulation hose and clear the blockage.

Transfer Pump Connection Prosedure

Pusmak's TP Transfer pumps are required to feed your proportioner spray machine. It is designed to transfer the liquid from barrels to the spray system. Transfer pumps perform in any work environment.

Professionally used to transfer isocyanate and Polyol from barrel to the proportioner. Designed for durability with less maintenance need. Provides consistent flow with high or lower viscosity materials.

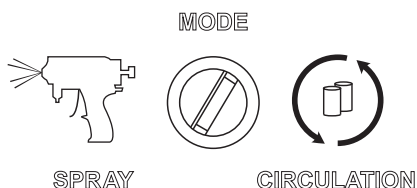
Required Air Pressure	6–8 Bar
Maximum Output Pressure	50 Bar
Maximum Flow	19 L/Min
Spark	Non Sparking
Maximum Ambient Temperature	50°C
Maximum Fluid Temperature	88°C
Hose Diameter	5/16 İnç
Height	140 Cm
Weight	9,5 Kg
Diameter	9 Cm



1. Be sure that the air valve, air jack etc. are fixed well on the pumps.
2. The clamp to fix the transfer pump to the barrel should be fixed well. It can be fixed independently from the pump.
3. Pay attention to the labels on the pumps. Be sure to fix the Red (PUMP A) to isocyanate and the Blue (PUMP B) to Polyol barrels.
4. Be sure to connect the isocyanate pump to A-Side of the machine and Polyol pump to B-Side of the machine.
5. Be sure that the supply hoses for material are fixed well on the pumps and on the input sides of machine.

Maintenance

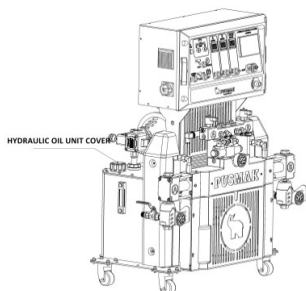
Follow the instructions under Pressure Relief Procedure, before starting any maintenance procedure.



Preventive Maintenance Schedule

The operating frequency and conditions of the system determine how often maintenance is required. Create a preventive maintenance schedule when and what type of maintenance are needed, then create a regular schedule for the control of your system. Here are the preventive checks to be done regularly.

- 1- Check the hydraulic and fluid connections daily for leaks.
- 2- In case of any leaks try to identify the cause of the leaks and contact Pusmak Technical Service for solving the problem.
- 3- Check the hydraulic fluid level at regular intervals. If necessary, make proper hydraulic oil reinforcement.

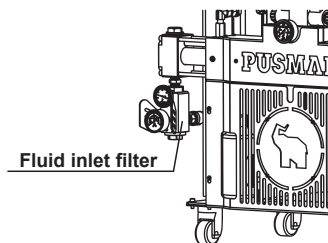


4- After 60 tons of chemical spray, the seals and o-rings should be changed fully.

5- Reactor Lubrication System :

Check the DOTP oil level and condition every day. Fill or replace as needed. Change the oil when color or density changes are observed. Change the DOTP oil according to the table below. Check the level of ISO pump in a routine intervals. Change the hydraulic oil when its color goes dark. Timing of oil-change varies according to the working environment. The color change is a result of very tiny leakages of isocyanate from reactor gaskets during work. Under normal conditions, oil-change is not needed in less than 3-4 weeks of working.

6- Check the fluid inlet filter regularly.



Make sure that the raw material you use is transported under the correct transportation conditions and stored closed. Be sure that the raw material flowing through the system is clean. Inlet filters can get dirty over time, and the frequency of cleaning inlet filters may vary according to circumstances. While removing the strainer, place a container under the strainer bottom to collect the discharged material.

Remove the sieve from the strainer manifold. Clean properly using a suitable solvent and then let it dry by shaking. More than 25% of sieve holes should not be blocked. If more than 25% of the sieve holes are blocked, change the handpiece. Check the gate and change if necessary. Replace used seals as

they wear out.

7- To prevent crystallisation, do not expose component A to moisture in the air. If you removed the hoses related to the ISO, reconnect them as quick as possible.

8- Clean the gun mixing chamber inlets regularly. (See Spray Gun's users manual.)

9- Check and clean the gun inlet filters and valves regularly. (See Spray Gun's users manual)

10- Use clean, dry, oil-free compressed air to avoid dust build-up on control modules, fans and motor. You can do this by attaching the air gun that comes with your machine set to your compressor.

11- Keep the vent holes in bottom of the machine, on electrical panel and on two sides of transformer box open. Do not attempt to interfere with the cooling elements of the cabinet part of the machine

Switching From Polyurethane Foam to Polyurea

When switching from polyurea to polyurethane foam follow the instructions below;

- Polyurea is sprayed at a higher temperature and pressure than PU foam.
- Pressure ranges are usually between 170-200 Bar
- Ideal heat level for polyurea applications is between 65 – 75 oC.

Crossing from Polyurethane Foam to Polyurea

- First of all, this is not recommended as it will reduce the lifetime of the machine.
- Place your transfer pumps in polyurea barrels and remove your gun from the hose.
- Start the machine and wait until polyurea raw material to reach until the end of hose.
- Connect your gun into the heated hose and

your machine is ready to spray.

The pressure should be increased from the hydraulic pump. After the machine gets to ideal pressure, do not forget to lock the pressure locking system. The pressure lock is located in the same place as the hydraulic pump pressure setting.

Changing Pump Lubricant

1. Follow instructions for pressure relief
 2. Remove the lubrication cabinet from the bracket and remove the lid from the cabinet. While keeping the cap on a suitable container, remove the check valve and wait for the oil to drain. Attach the check valve back to the inlet hose.
 3. Evacuate the tank and wash with clean oil.
 4. When the tank is washed and cleaned, fill it with fresh oil.
 5. Attach the housing to the cover assembly and place it on the bracket.
- NOTE: In order to ensure that the isocyanate crystals settle at the base and feed these crystals to the feed tank and thus prevent return to the pump, the return tube must reach the bottom of the tank.
6. Then the lubrication system is ready for operation. No preparation work is needed.

Table 1: DOTP Oil Change Frequency

Ambient Temperature	Suggested Frequency
(-17°)-(32°) C (0°)-(90°) F	18 Month
(32°C +) 90° F +	12 Month

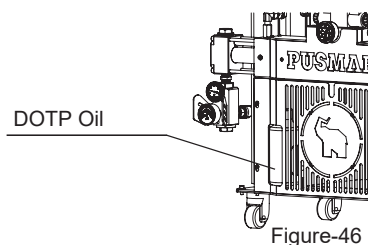


Figure-46
Reactor lubrication system

Potential Errors and Solutions

If the machine is running but the fuse blows or the fuse ampere is low, you need to change the fuse with a higher amperage one.

If reactor works and one of the chemicals reaches to the pistons and the other component does not, there occurs a high level of pressure imbalance. The probable reason may be one of below.

- Chemicals in barrels may be finished. Check the level of chemicals in barrels.
- Filters may be clogged.
- The air input to transfer pumps may be disconnected. Make sure that they are connected.
- Try to start the transfer pump of the side without raw material by removing it from the barrels. If there is a possible blockage, you will observe.

If there is no activity in reactor, there won't be raw material flow through the spray gun. In such cases;

- Check electric motor's rotation. Be sure its turning direction is clockwise. If the motor turns the wrong way, contact Pusmak Technical Service. If there is no activity there, check electrical phases.
- If the electric motor works but there isn't any activity in reactor and hydraulic pump, check the hydraulic oil level.
- If the motor works but hydraulic pumps does not, and there is high noise, the coupler may be damaged. Contact Pusmak Technical Service to get assistance for changing coupler.
- If the electric motor works but there is no pumping in hydraulic pump, hydraulic pump should be checked.
- Check out the hydraulic pump's valves.
- Check out the magnetic sensors in the reactor.
- The fuse may be blown out if there is no electricity in motor.

After a long term of use, approximately 2000 working hours, there may occur some pressure cut or imbalances. In such cases;

- The o-rings and seals may be damaged and this may cause leaks, pressure cut or imbalances. After 2000 hours of use, all the o-rings and seals in both the machine and the transfer pumps must be changed with new ones.
- Check out the input check valves for leaks that may be caused by a long term use.
- Relief/Spray valves may have been damaged. Make sure that they are working properly.

In the cases where the problem with heat values of the raw material;

- Pre-heaters may be damaged because of high electricity voltage and need to be changed.
- Disconnections in thermo couple and cables may result in such cases.

If the spray gun does not spray properly;

- The heat values of the raw materials may be low.
- One of the chemicals may not be transferred to the machine.
- The spray gun may be clogged.
- There may be a pressure imbalance in raw materials.

NOTE: The hydraulic reactor pressure must be balanced. (Output pressure value of raw material varies according to product. (Min 90 bar . Max see product specifications))

NOTE 2: The fuse inside the construction network panel must be min 32Amp. If lower, the fuse will blow out.

MAINTENANCE PROCEDURE FOR PUSMAK SPRAY MACHINERY AND EQUIPMENT

Inspection

Inspect hydraulic and fluid lines for leaks daily.

1. Clean up all hydraulic leaks; identify and repair the cause of leak.
2. Inspect fluid inlet filters daily, see below.
3. Inspect ISO lubricant level and its condition daily; Refill or replace if necessary.
4. Check the hydraulic oil level weekly. Remove the cover plate (CP) and check the hydraulic oil level on dipstick (DS). The oil level must be between indent marks (IM) on dipstick. Refill as required with approved hydraulic oil.

If the oil is dark in color, change the oil and filter.

1. Protect the ISO from exposure to atmospheric moisture to prevent crystallization.
2. Clean the inlets of spray gun' nozzle regularly.
3. Clean the check valve inlets of the spray gun regularly.
4. Use compressed air to prevent dust build-up on the control boards, fan and motor.

Raw Material Inlet Filters

1. Use proper chemicals, follow the proper storage ways and operating procedures, to minimize the exposure of the ISO side to moisture.
2. Clean the ISO inlet filters during daily startup.
3. During the flow of the raw material to the machine, it immediately cleans any isocyanate residues and minimizes moisture contamination.
4. Close the fluid inlet valve on the transfer pump inlet and shut off the appropriate feed pump. This prevents material from being pumped while cleaning the screen.
5. Place a container under the strainer manifold (59d) to catch fluid. Remove the strainer plug (59j).
6. Remove the strainer manifold. If more than 25% of the mesh is blocked, inspect the gasket and replace as required.
7. Ensure the pipe plug (59k) is screwed into the strainer plug (59j). Install the strainer plug with the screen (59g) and gasket (59h) in place and tighten. Do not overtighten. Let the gasket make the seal.
8. Open the fluid inlet valve, ensure that there is no leaks, and wipe the equipment clean. Proceed with operation

Pump Lubrication System

Check the condition of the ISO pump lubricant daily.
Change the lubricant if it becomes jelly, its color darkens, or it becomes diluted with isocyanate.
Gel formation is due to moisture absorption by the pump lubricant. The interval between changes depends on the environment in which the equipment is operating. The pump lubrication system minimizes exposure to moisture, but some contamination is still possible.
Lubricant discoloration is due to continual seepage of small amounts of isocyanate past the pump packings during operation. If the packings are operating properly, lubricant replacement due to discoloration should not be necessary more often than every 3 weeks.

To change pump lubricant:

1. Relieve pressure.
2. Lift the lubricant reservoir out of the bracket and remove the container from the cap. Holding the cap over a suitable container, remove the check valve and allow the lubricant to drain. Reattach the check valve to the inlet hose.
3. Drain the reservoir and flush it with clean lubricant.
4. When the reservoir is flushed clean, fill with fresh lubricant.
5. Thread the reservoir onto the cap assembly and place it in the bracket.
6. Push the larger diameter supply tube approximately 1/3 of the way into the reservoir.
7. Push the smaller diameter return tube into the reservoir until it reaches the bottom.
Important: The return tube (RT) must reach the bottom of the reservoir, to ensure that isocyanate crystals will settle to the bottom and not be siphoned into the supply tube (ST) and returned to the pump.
8. The lubrication system is ready for operation. No priming is required.

Flushing

Flush equipment only in a well-ventilated area. Do not spray flammable fluids. Do not turn on heaters while flushing with flammable solvents.

Flush out old fluid with new fluid, or flush out old fluid with a compatible solvent before introducing new fluid.

1. Use the lowest possible pressure when flushing.
2. All fluid components are compatible with common solvents. Use only moisture-free solvents.
3. To flush feed hoses, pumps, and heaters separately from heated hoses, set PRESSURE RELIEF/SPRAY valves to PRESSURE RELIEF. Flush through bleed lines.
4. To flush entire system, circulate through gun fluid manifold (with manifold removed from gun).
5. To prevent moisture from reacting with isocyanate, always leave the system dry or filled with a moisture-free plasticizer or oil. Do not use water.

PERIODIC MAINTENANCE INSTRUCTIONS

SITUATIONS TO BE CONSIDERED AT EACH OPENING

1. Check the power supply value between 110-120V one by one.
2. Check the hydraulic oil level.
3. Check the transfer pumps.
4. Check the compressor and air flow.
5. Make sure the spray gun is clean and in working order

*** Have the machine circulate every 10 days. (Including the heated hose.) Make sure that there is no part that gets clogged by freezing.

MAINTENANCE TO BE DONE EVERY 3 MONTHS

1. Check the DOTP oil. If it is dirty change it.
2. Clean the machine's inlet filters.
3. Check the hydraulic structure contamination indicator, If the oil is contaminated, change the oil.
4. Replace the dehumidifier. (slikogel)

MAINTENANCE TO BE DONE EVERY 1 YEAR

1. Replace the seals and o-rings of the transfer pumps.
2. Change the inlet filters of Machine.

MAINTENANCE OF EVERY 3 YEARS

1. Replace the hydraulic oil.

*** Perform these operations with the "Pusmak Makina" technical team.

WARRANTY CONDITIONS for Pusmak Products

Pusmak warrants all equipment, which is manufactured by Pusmak and bearing its name to be free from defects in material and workmanship on the date of sale to the original purchaser for use. With the exception of any special, extended or limited warranty published by Pusmak, Pusmak will repair or replace any part of the equipment determined by Pusmak to be defective, for a period of 12 months or 2000 hours from the date of assembly by Pusmak staff. This warranty is valid only when the equipment is installed, operated and maintained in accordance with Pusmak's written recommendation in user's manual supplied together with machine.

This warranty does not cover, and Pusmak shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non-Pusmak component parts. Nor shall Pusmak be liable for malfunction, damage or wear caused by the incompatibility of Pusmak equipment with structures, accessories, equipment or materials not supplied by Pusmak, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Pusmak.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Pusmak distributor for verification of the claimed defect. If the claimed defect is verified, Pusmak will repair or replace any defective parts free of charge. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

This warranty is exclusive, and is in lieu of any other warranties, express or implied, including but not limited to warranty of merchantability or warranty of fitness for a particular purpose. Pusmak's sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within one (1) years of the date of sale.

Pusmak makes no warranty, and disclaims all implied warranties of merchantability and fitness for a particular purpose, in connection with accessories, equipment, materials or components sold but not manufactured by Pusmak. These items sold, but not manufactured by Pusmak (such as electric motors, switches, hose, etc.), are subject to the warranty, if any, of their manufacturer. Pusmak will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

Some products do carry special, extended, or limited warranties outside of the Pusmak Standard Warranty. The warranty for each product is found on the back of the instruction form or parts list included with the product or in the product manual. None of the physically thorn or damaged parts or the parts that necessitates change on a regular basis such as orings, filters, felts, cartridges etc. inculed in warranty.

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CERTIFICATE of WARRANTY

Please complete the following details and retain with the original purchase docket

Owner' Name:.....

Address:

Suburb:..... State: Postcode:

Model No(s): Serial No:

Date of Purchase:/...../..... Invoice No:

Store from which product was purchased:

Installer's Name: Installer's Telephone Number:

Turkey

FOR SERVICE OR WARRANTY SERVICE CALL

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