DP-FA50 Polyurethane Foam Sprayer Manual

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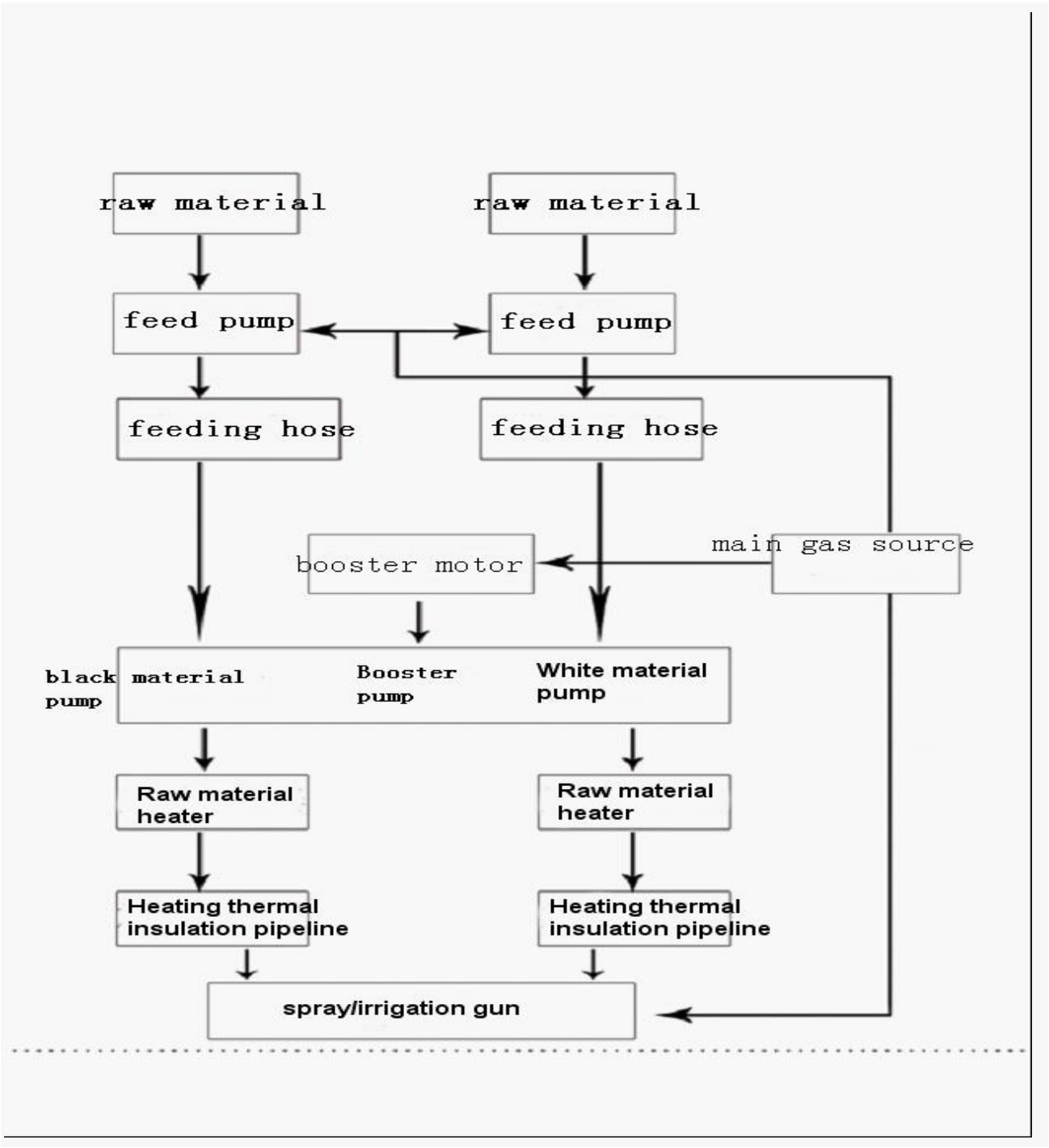


2. Technical Parameters for FA50 pu foaming machine

Raw material mixing ratio: 1: 1 or 2: 1

(Material A. Isocyanate, Material B. Polyol)

Transfer pump ratio: 8:3

Max. Output: 9.0kgs / min

Heating temperature: 0 - 80℃

Maximum feeding tube length: 90m

Maximum working pressure: 20Mpa

Heating method: A, B, C three respectively independent heating

Voltage / Power: 3-phase four line 380V / 50HZ 12KW

Pressure requirements: 0.7-0.9Mpa 1m3/min (1000L/min)

Cleaning method: air cleaner (self-cleaning)

Driving method: air-driven

Machine size: 800x700x1200mm

Gross weight: 140kgs

Length of heating hose: 15m heating insulation hose (standard)

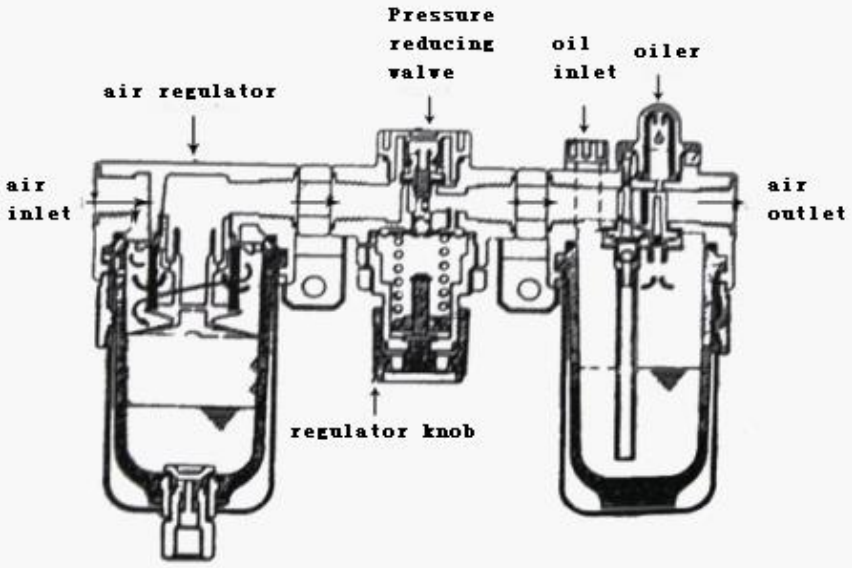
Length of tube which connected with gun: 1.5m

3. Air filter / regulator / lubricator use and requirements

Note: If the air is not clean, extremely easy to cause the air pressure regulator valve, cylinder, valve pneumatic components sealing system damage.

3-1: Air filter / regulator / lubricator is an indispensable important component of equipment, which is composed of an air filter, pressure reducing valve and the oil lubricating component, its role is shown as follows:

Figure 2



3-1.1: Air filter: this component can be filtered most of the water when air compressor working, the filtered water will stay in the lower cup of air filter.

3-1.2: Pressure relief valve: pull up the pressure regulator handle, then rotate it, clockwise=higher pressure, counter clockwise=lower pressure. Turn the pressure to the required working pressure, and then according to the working environment and length of the hose we suggest set the pressure to 0.5-0.8Mpa, and then pull down the pressure control handle to original protection position.

3-1.3: Oil mist: with the air flow the lubricating oil will be transported to every pneumatic parts from oiler cup to supply lubricant.

3-2: The using requirements for pneumatic filter / regulator / lubricator

3-2.1: if there is water in air filter lower cup, it must have water everyday, the steps as follows:

The water will be discharged when you rotate the knob on the bottom of the cup, after exhausted tighten the knob.

Warning: when you find the discharged water may touch with the device, you must use a container to take the water to avoid body injury!

3-2.2: oil mist separator lower oil cup is used for filling the lubricating oil, there are two methods to fill the lubricating oil:

1. remove the oil cup and fill the oil according to the graduate on the cup, restore it.

2. fill the lubricating oil from the filling hole on oil mist.

Note: with 22 # turbine oil, must guarantee the cleanliness of the lubricating oil!

4. Polyurethane foam spray machine installation

4-1, Raw material piping system installation:

Lsocyanate (A. black material ISO) \ Polyols (B. white material POLY) consists of a feed pump from the barrel into the host pump entrance, raw material and air pipeline are respectively connected to the polyurethane spray / irrigation gun, connect according to following steps.

Note: The device cannot be connected with any power before complete the raw material system installation.

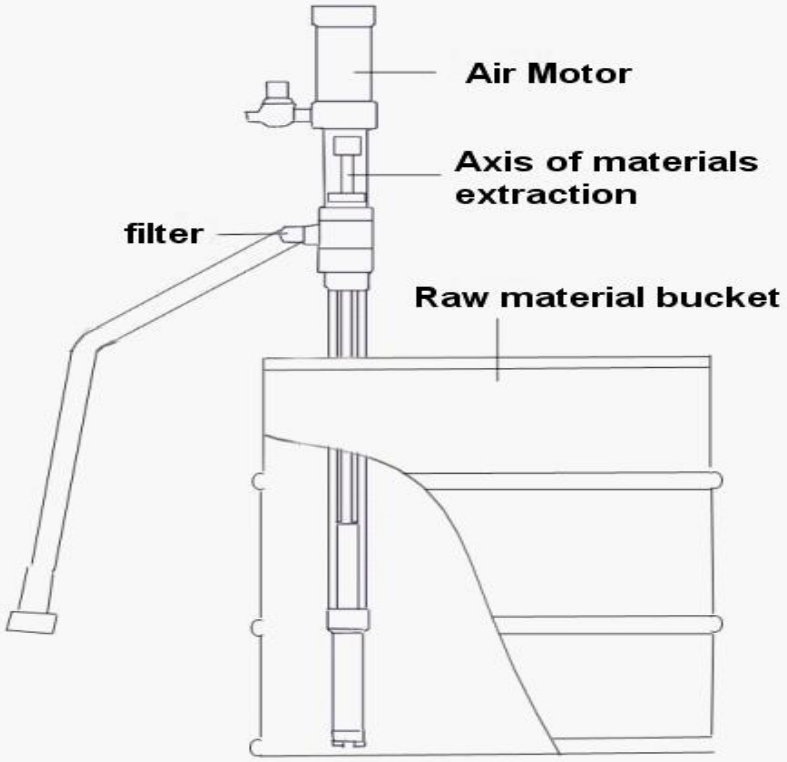
The user should note the following problems when spraying F-11 foam:

Under normal pressure, the temperature of material will be higher than 23℃, polyol composition material of foaming agent F-11 will expand strongly, the raw material will be sprayed out when you open the cover of raw material barrel at that moment. Recommended to open the cover of raw material barrel carefully, you should prepare cloth, mat and other protective applications to avoid body injury. You can hear the voice of deflation when the cover of raw material barrel opened half, you can open the cover totally when the air discharged complete.

(1) Feed pump system installation:

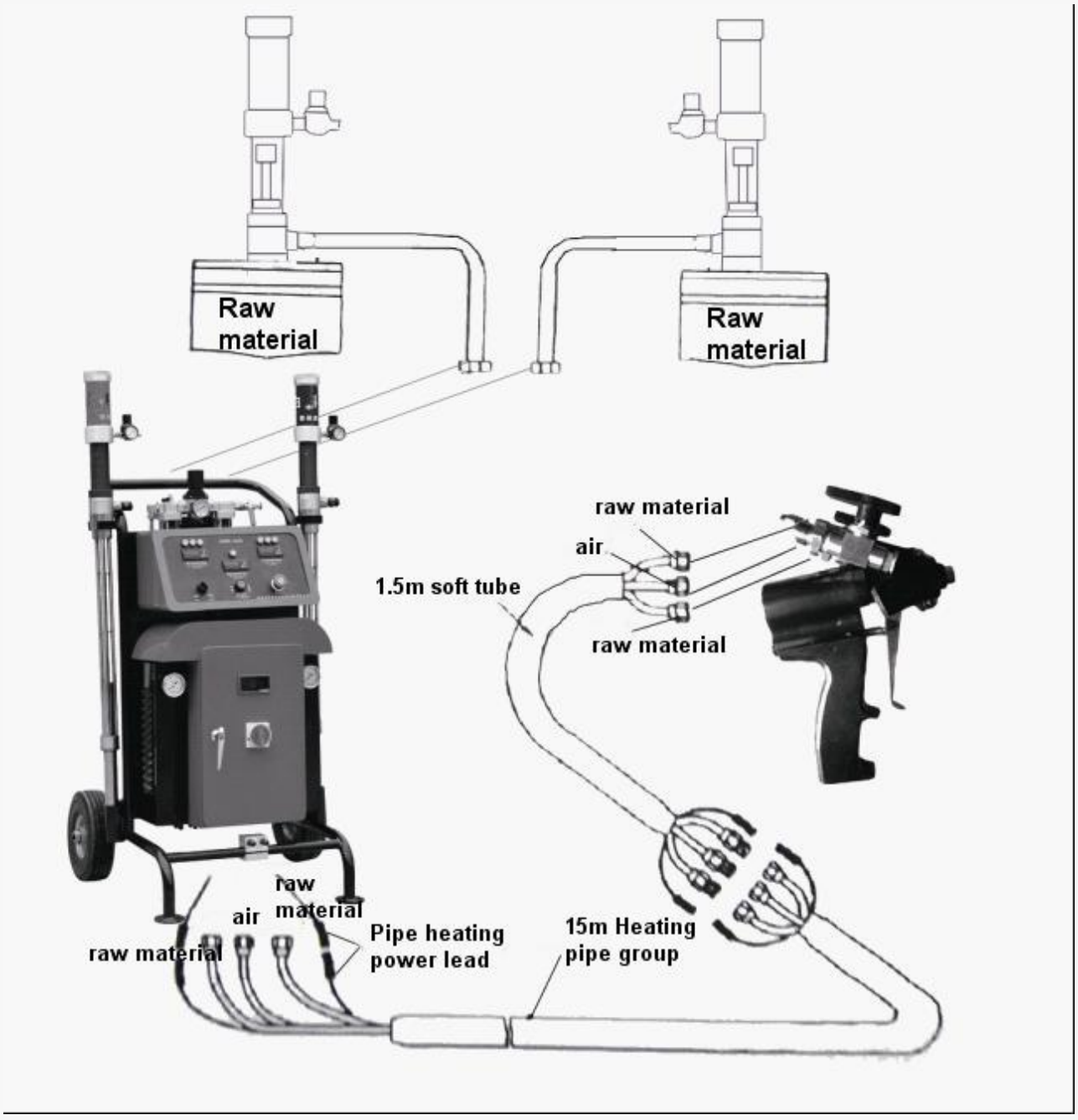
Step 1, open the feed cover, put the feed pumps to the corresponding black and white barrel. (Note: the inclination of the fee pumps cannot higher than 30°) as shown in following figure 3.

Figure 3:



Step 2, (1) Connecting the soft tube to outlet of the feed pump and inlet of the pump body. See Figure 4

Figure 4:



(2) Output system installation:

Connecting the raw material output tube group to spray / fill gun, please pay attention to the pipeline, don't connect wrong.

(3) The following picture 5 shown connected completed from the machine to the feed hose of foam spray / fill gun

Table 2

Transformer tap voltage to	12V	24V	36V	48V	60V	72V
Hose length of	15 m	30m	45 m	60 m	75 m	90 m

figure 5

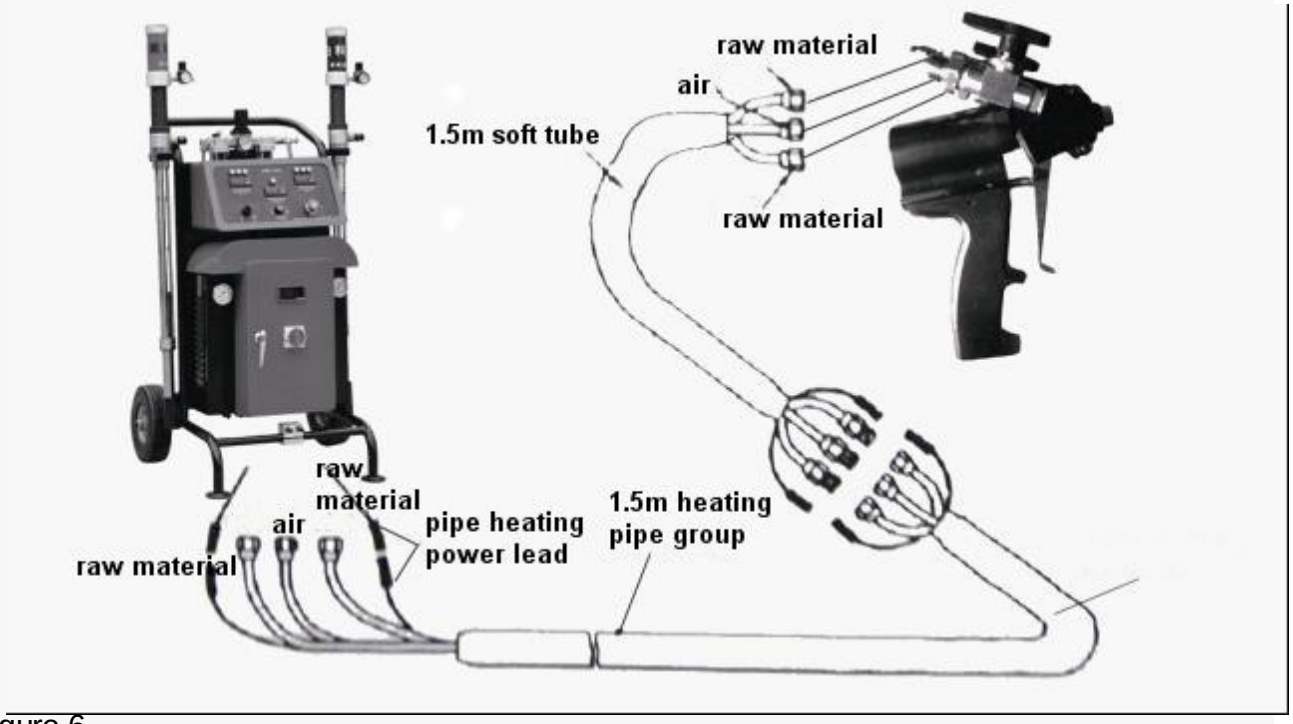
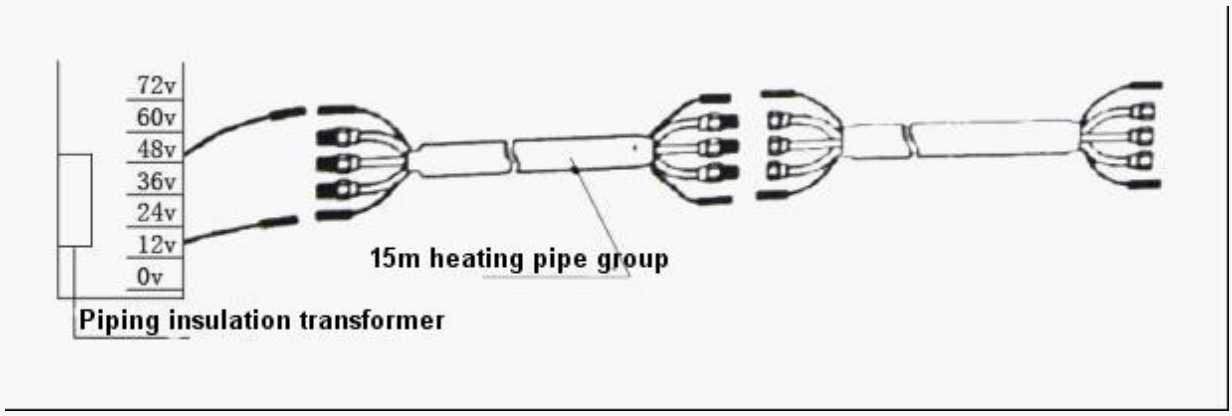


figure 6



4-2, Connection and requirements for compressed air:

The 0.5-0.8Mpa, 1m^3 / min exhaust quantity of pure source of compressed air to the host three CIS entrance joint, the diameter of air pipe is bigger than 12mm; if the length of air hose longer than 10m, the diameter of the air hose should increase to around 20mm to ensure the air pressure and capacity.

Note: if the air is not clean, extremely easy to cause the pressure reducing valve, cylinder, valve pneumatic components sealing system damage, therefore, we recommend install the air filter and oil mist in air inlet and outlet to ensure the life and the patency of the pneumatic components.

4-3, Connection and requirements of power:

Connect the five core power line to 380V 50HZ 3-phase directly, each phase of power should meet 9KW, black wire is zero line of work, thread is protective ground wire, must connect the ground protection to avoid unnecessary casualities.

The host from the five core power line end connected directly to the 380V 50HZ three-phase four wire power supply, each phase of power should satisfy 7KW, black wire for the work of the zero line, thread is protection ground, must ground protection, to avoid unnecessary injury.

Note: when power is switched ON, the internal instrument electrical parts have been charged, the power should be turned off when repair.

4-4, DP-FA50 foam spray control panel - on the panel, as shown in figure 7:

Figure7

4-5, WORK / RESET switch:

Work / reset switch self-locking button emergency stop switch

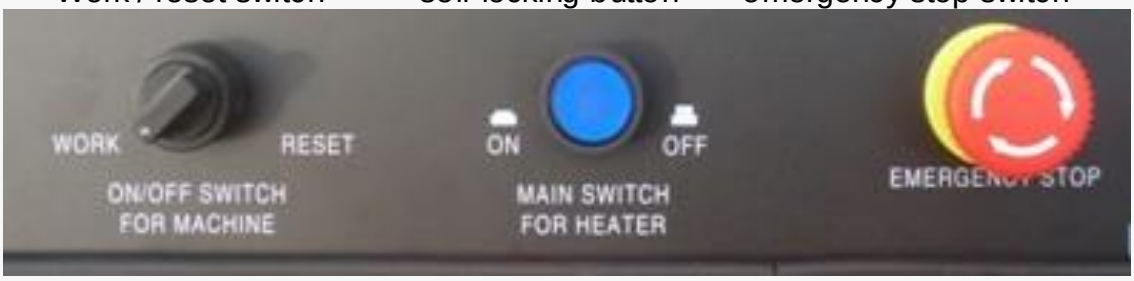


Figure 8 Figure 9 figure 10

Operation steps:

After started turn the WORK / RESET switch to WORK, the device will start to work soon; when stop or need to stop the booster pump shaft BDC, please turn the WORK / RESET switch to RESET, trigger the gun to relief the material; when the booster pump is running to the next check point, the host will automatically stop in the stop position, and then release the spray gun.

WORK / RESET switch is to protect the shaft seal of booster pump don't scratched by the crystalline black material on the pump shaft to result the shaft of the pump stopped in pump cylinder when the machine stop to work, and ensure the booster pump won't expose in the air.

4-6, Emergency quick-stop button:

When need to stop the device in case of emergency, please press the emergency stop button (Figure 10), the device will stop to work at that time, clockwise rotate the knob, it will to RESET automatically, restore to working position.

4-7, Heater temperature setting:

If you want to heat the black / white material when the power is OFF, you can press the ON/OFF button (figure 10) to make it in low position, it's energized position. Temperature control knob is switched ON, the heating system will start to work according to the temperature set before; when the button is on high position, it's OFF position. Please press the self-locking button to high position when don't need heat.

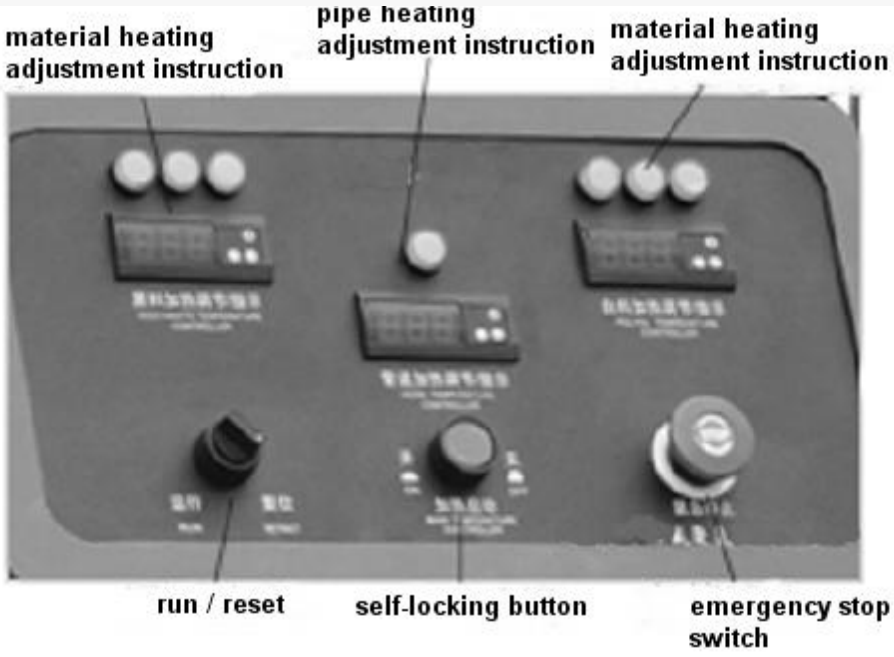
4-8, Temperature controller setting:

DP-FA50 equipment, control instrument with three temperature control instrument (see Figure 10), respectively, on the black and white material heater pipe insulation, heating temperature setting and control, can be manually adjusted to set the heating control temperature; due to the different raw materials formulations for different (mainly white material character), which contain the components are also different, if you choose the

foaming agent for F11 or 141b, where F11 boiling point is 23℃, 141b is 32℃, on the basis of gasification, typically set the temperature of F11 white material to about 25℃, 141b white to about 35℃.

Note: the temperature control instrument is multi-function control instrument, if you adjusted improper will result to the temperature control instrument locked and cannot adjust and control for error operate.

Figure 11



4-9, Main power switch:

In this apparatus, lower panel power switch is isolating switch, which controls all the electric switch, but cannot control the specific power, if you want to turn off a specific power, you need to open the electric control box cover, and then to disconnect the specific power. Note: when the power switch is disconnected, there is no power for all appliances on control panel, but input power line and from the input power line to main switch is still have power, so even if the switch is OFF, if you want to check / repair the control panel you must cut off the external main power at first.

Figure 12

4-10, Mail power control box cover:

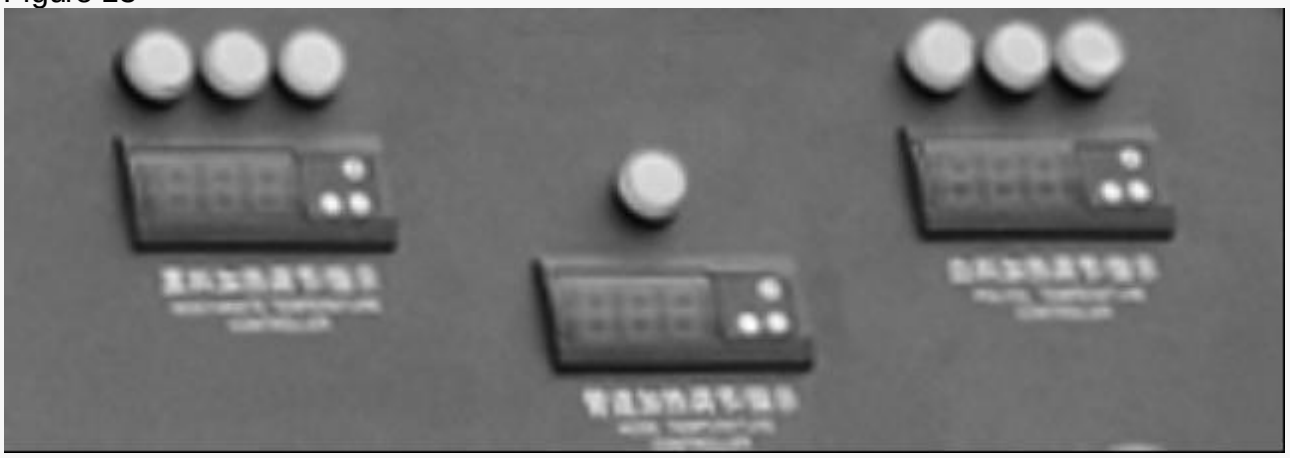
Open the control box cover, we can see a group of terminal blocks (see Table 2) according to our equipment material pipe length to adjust the relative output voltage.

In it we can also see that there are four switches, from left to right they are power switch, black material heating switch, white material heating switch, pipe heating switch, they are all closed before send out. When a link is cut, likely corresponding to this switch tripping, open the control box cover, check what the problem is, close the corresponding switch.

4-11, The relationship of pipeline temperature and voltage:

When need to heat the thermal insulation pipeline, adjust the voltage according to the length of pipe and numerical(see Table 2), and then set the temperature to desired temperature, you can see the actual heating temperature on pipeline temperature display table (see Figure 13).

Figure 13



Note: when the input power frequency is 50HZ, the voltage of pipeline heating should set according to different length of pipeline connect, it shall not exceed the prescribed voltage (see Table 2), otherwise the pipeline heating control module will often start, affect the using life.

4-12, Overheat protection:

DP-FA50 type devices, heaters and heater pipe are provided with a host of overheat protection circuit. When the actual temperature is higher than 55℃ will automatically disconnect the heating control power; if in operation process, raw material and pipeline cannot heat, maybe it's overload protection circuit cut off the power supply, appear this kind of circumstance, should first determine whether the actual temperature of material over the set temperature value, or temperature is too high, if so, heating system will recover heat automatically after the temperature is reduced.

5. Machine operation

5-1, Examination before operation:

5-1.1, pump lubricating oil cup is 2 / 3 DOP;

5-1.2, all the connections are tight?

5-1.3, check the power line connection is correct, the protective earth wire safe?

5-1.4, all the switches on control panel are in CLOSE / OFF position?

5-1.5, air regulating valve is in the OFF / CLOSE position?

Note: Do not put any part of the body in the spraying range, do not spray / irrigation at gunpoint, do not watch the gun head mixing chamber. Due to the raw materials have harmful ingredients, suggest to use mask, gloves, goggles, protective clothing and other protective applicants during spraying.

5-2, Initial start:

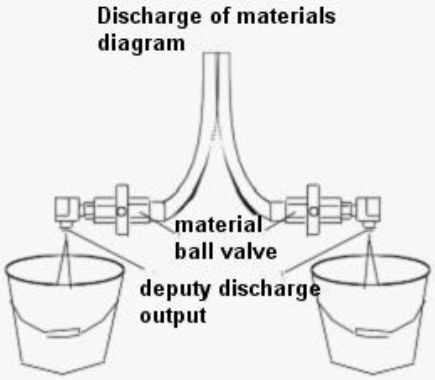
When it is confirmed that all the liquid flow pipe, air pipe and power line were connected complete and correct, can begin to operate this system, the operator must be understood the features of each part on the control panel.

Step 1: open the main instrument panel power switch ON, regulating main air pressure regulating valve button, the pressure is regulated to 0.2Mpa, the host will begin to work, make raw material filled with material system and the heating pipe, once it is filled, the device will automatically stop working.

Step 2: remove the two block feeding block on the two sides of the gun head room.

Step 3: put a clean container under two feeding block, while slowly open the feed block material conveying pipe valve, release all the air, until the material rejected smooth (Figure 13).

Figure 13



Booster pump discharge, must be opened at the same time two raw material ball valve, while close two raw material ball valve!

Step 4: when closed the two raw material valve, pressure gauge shows the material pressure values should be approximately equal, if one road is higher, the higher side feeding block material valve slightly open, so that the material will flow out, until the two pressure values are approximately equal.

Step 5: disposal flotsam reasonable and safe.

Step 6: clean feed block residues in raw, and grease, the feeding block to be fitted to the gun body, balanced tighten fastening screws feeding block, so that both sides of the feeding block and a gun head close contact, make it of no air leakage, leakage phenomenon, and a gun head flexible action.

Step 7: Straighten feeding tube group, in order to avoid the uneven heating and loss of pipeline internal electric heating sheet, respectively set black, white material heater heating temperature; setting pipeline heating temperature, adjusting the line heating current value 4A-5A, the pipeline temperature to reach the set temperature, the pipeline heating current to about 2A, when temperature reaches the set value, can improve the host air pressure to the working pressure.

Note: since the polyol will expand when they are heated, so the equipment system in the use of spraying before reperfusion, the host air pressure values are not set in working pressure value, so as to avoid the tube material due to the heating caused by damaged pressure gauge pressure is too high, or even explosion!

Step 8: regulating host air pressure valve, so that the air pressure to 0.5-0.7Mpa (reference value).

Step 9: open the first gun body air inlet switch, and then open the two feeding block material valve.

Step 10: at this moment, the entire system is ready, trigger the spray gun can spray.

Note: if stop operation, please be sure to close the two feeding block material valve, to prevent the misoperation caused by material rejected.

5-3, Daily shutdown procedure:

Note: each shutdown, should turn RUN / REST switch to RESET position, so that the pump piston in the lowest, the pump shaft completely immersed in the lubricating fluid, in order to avoid again started to damage the pump inner seal, while examining spray / fill gun, in order to prevent gun seal at work has been damaged, resulting in stop after the gun in the gun body leakage of raw materials, raw materials and the gun body internal curing, the spray gun cannot again operating / irrigation.

Step, press the self-locking button, a high level to stop heating.

Step 2, spray / irrigation gun inspection, in recognition of the irrigation gun spray / no fault, and can guarantee the normal work again, can be the next step, otherwise, should spray / irrigation gun cleaning maintenance and overhaul.

Step 3, close the main power switch OFF.

Step 4, close the air source, the pressure is "0".

Step 5, clean up the work site, confirm daily shutdown steps have been completed, check the remaining quantity of raw materials will meet again starting in need of raw materials, to prepare.

5-4, Daily maintenance:

Step 1, check the booster pump oil in the lubrication fluid quantity and color change color, serious failure of lubricating fluid, so as not to damage the seal, can use a suction bottle is sucked out failure of lubricating fluid, to fill the pure lubricating fluid to a 2 / 3 cup, and proper tightening lubricating liquid cup, prevent leakage.

Note: if the pump body oil of lubricating fluid change quickly, you need to replace the pump seal!

Step 2, the cylinder shaft is coated with a layer of grease and spread.

Step 3, according to the daily shutdown steps in the spray gun check / fill step, complete the inspection and maintenance of spray / irrigation gun.

Note: Release all the pressure and hydraulic pressure before repair and maintain the machine.

5-5, Long-term shutdown process:

Because the isocyanate raw materials are easily solidify in the air, so you have to airtight measures, all the material inlet hermetically sealed to prevent the air enter into pipeline and system, and regularly through material circulation system (15 days / times) to prevent the isocyanate solid in the system, bring unnecessary loss, when you don't need to use the equipment long time.

6. Fluid flow system and equipment inspection

Equipment operators must be aware of the following:

1. what raw material is?

2. how the device is working?

3. the normal operation of the device is what state?

4. what is the trend of raw materials in the device?

6-1, Fluid pressure gauge display abnormal examination:

Maintenance must be the first step sequence. From raw materials pressure gauge shows the pressure to determine, because of the different raw materials, different temperature and viscosity, the feeding pump and the host on the pressure on the pressure gauge numerical not necessarily equal, according to the feed pump speed to adjust the air pressure value.

Step 1, check that a lack of raw materials;

First observation of the material and foam gun color, found problems in a timely manner to stop gun check. Material shortage of a road, raw materials stress table shows the material pressure is low, this phenomenon shows that the feed pump system has occurred between the supply shortage, should check whether the appearance of the blocking phenomenon or feeding system of raw material of material shortage.

Step 2, for lack of material in a way that supply is insufficient, should from the host the furthest end overhaul beginning, from the most basic, the most visible aspects.

Step 3, raw material pressure meter display is too low, can from the following several aspects: check:

(1) the bucket have material or not ?

(2) the temperature of the material ?

A. high temperature can cause the polyol barrel foaming agent F-11 early expansion?

B. raw material bucket bottom temperature is too low, will lead to the increase of viscosity of raw materials and feed pump or material obstruction to flow out, unable to enter the system.

(3) feed pump

A. the machine is running?

B. whether open source?

C. the air source pressure is transferred to the appropriate values?

D. isocyanate ISO feeding pump shaft is dirt? Dirt the shaft without advance lubricating protection or no locking lubricating liquid cup, causing excessive material.

E. check the filter feed pump.

F. determine the other parts are no problem, and then check if there is a problem with the feed pump host, with special attention to the 3 steps of (2) B.

(4) filter: check the pump outlet filter is installed or obstruction.

(5) failure of the booster pump:

A. if the stroke occurrence loss of pressure, check the pump shaft of valve ball and feeding bowl;

B. if the next stroke losing pressure, need to check the pump at the bottom of the inlet ball.

Step 4, raw material pressure gauge shows too high, should check as follows:

A. check the jet / irrigation gun black material block filter was blocked?

B. from raw materials pressure gauge to spray / irrigation gun in the pipeline have solidification and crystallization of raw materials, the material flows not free;

C, check whether there are clogged / not free phenomenon in every parts of spray / irrigation gun to result the pressure meter shows high pressure?

In accordance with the above steps examination, found the problem must be solved as soon as possible. If will open for a long time in the air, will cause other problems, such as moisture into the system, causes the isocyanate ISO crystallization solidification.

6-2. The machine does not work.

The polyurethane foam sprayer equipment reversing system for this machine is pneumatic reversing. When the device is switched on, open the RUN / RESET switch, master cylinder

piston shaft according to the liquid flow system pressure to move the piston in the cylinder; the installation of shaft end head of the booster pump is connected with the piston of the cylinder block, its axis campaign; the cylinder piston shaft to move up and down stroke and turning point, R1 R2 distance and location determination, such as the case of the host does not move, can from the following three respects inspect:

A, cylinder operation after R1 host does not meet, please check the R1 gas path and R1 mechanical valve whether there are abnormal?

B, run R2 cylinder meet host does not refer to A overhaul;

C, the deviation for pressure gauge pressure is big, booster pump does not work, please check whether the material has been blocked; the cylinder does not move, check the AB feed pump black block filter whether have blocking phenomenon?

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