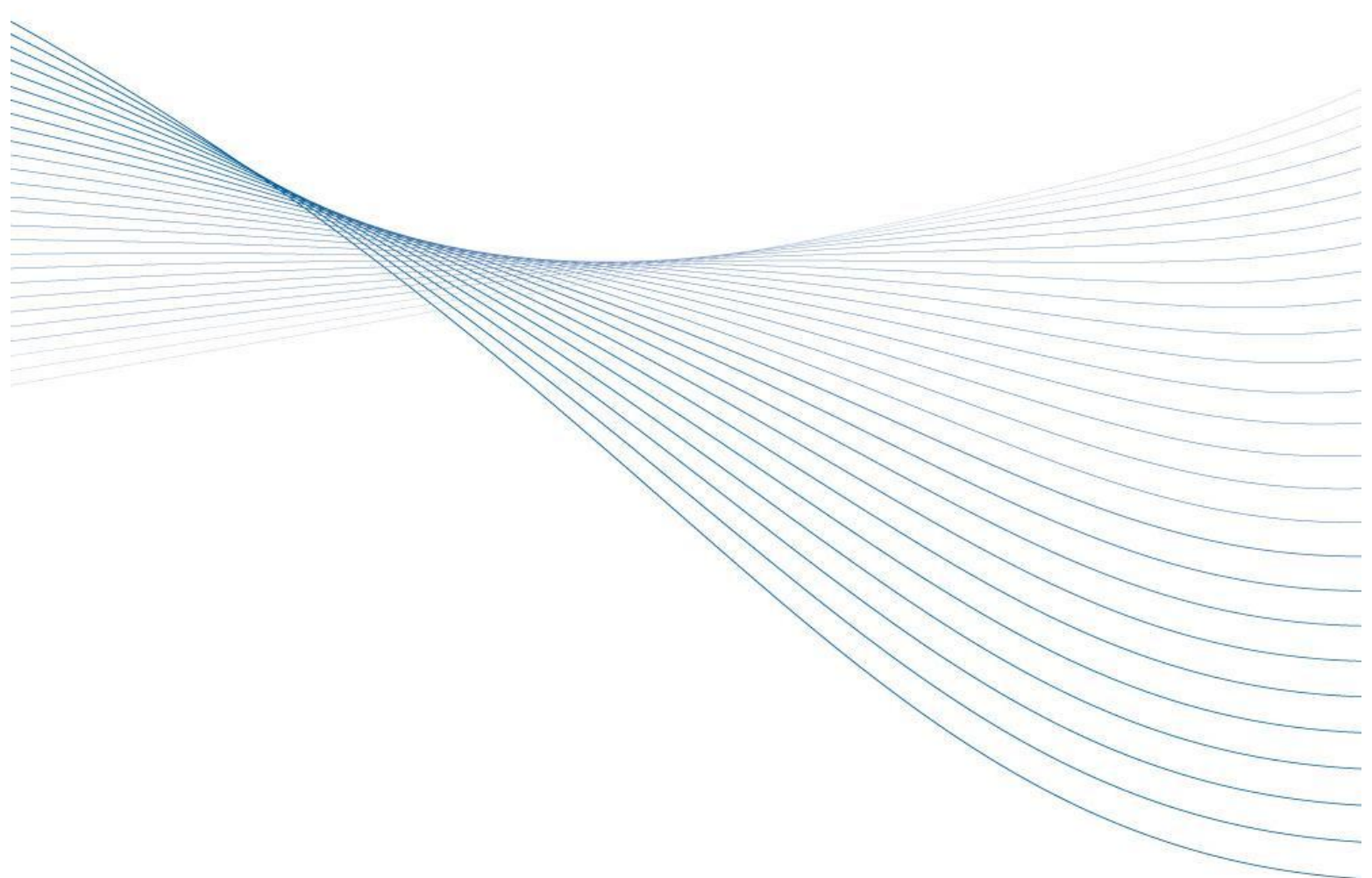




ProtoPlace S – Dispensing procedure

Tutorial



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This document is a translation of a Slovenian original.

Introduction

This tutorial leads you through the process of preparation, installation and use of dispensing unit on the ProtoPlace S device.

Warnings

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Note: Data can be altered without prior notice.

Original Instructions

LPKF is not liable for any damage occurring due to improper use of these instructions.

Safety notes

Before using the device, carefully read the **User manual** and familiarize yourself with the device. Carefully read the chapter Safety notes.

Contents

1. Preparation of the solder paste
2. Installation of the dispensing unit
3. Dispensing procedure

1. Preparation of the solder paste

Take a cartridge with solder paste or some other medium out of the fridge at least 2 hours before use.



CAUTION The medium should be allowed to warm up to ambient temperature before opening.

In case the solder paste is not stored in the cartridge, use the following procedure:

- Take an empty syringe with a plunger and fill it with the solder paste.
- Take an empty syringe, insert a piston in.
- Take a "Luer-lok"*.
- Mount the fitting on the empty syringe.
- Connect the filled syringe to the other side of the cartridge fitting.
- Move the solder paste from filled to the empty cartridge by pushing the plunger.

*Note: "Luer-lok" is a registered trademark of Becton Dickinson company.



An even better solution is using the plunger on both syringes, and repeating the moving process back and forth from one to the other syringe a couple of times. This process will remove possible air bubbles in the paste and warm it up. After the process is finished, replace the plunger with a cartridge piston.

2. Installation of the dispensing unit



Image_1

- 1.) Mount the cartridge adapter with the connection tube on the filled syringe.

- Insert the cartridge adapter into the syringe (Image_1).
- Turn the cartridge to fix it with the adapter (Image_2, Image_3).



Image_2



Image_3



Image_4

- 2.) Set an adequate dosing needle to the cartridge (Image_4).



Image_5

- 3.) Insert the assembled cartridge in the cartridge carrier and fix it with a Hex L Allen-key.
 - Insert the cartridge in the carrier (Image_5).
 - Fix it with a Hex L Allen key (Image_6).



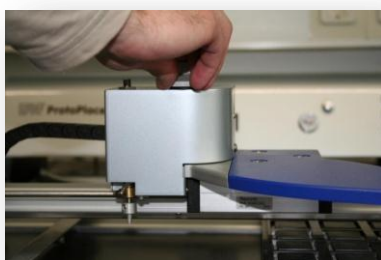
Image_6



Image_7

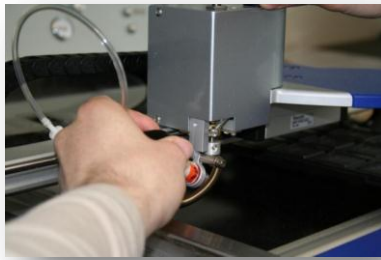
4.) Manipulator head in basic position (Image_7).

- Mount the dispenser unit to the manipulator and connect the air tube to the rear side of the manipulator (white air plug).



Image_8

- Push the manipulator head down (Image_8).



- Insert the dispenser unit into the manipulator head in a way that the sledge, which is located on the cartridge carrier, catches the groove inside the manipulator (Image_9, _9a, _9b and _9c).

For a successful mount, the manipulator head must stay in lower position.

Image_9



Image_9a



Image_9b



Image_9c



- Push the dispenser unit up to the stop. Dower fixes the dispenser unit into guidance. (Image_10).

Image_10



- View of the mounted dispenser unit (Image_11).

Image_11



- Stretch the spring and stick its end on the fixing pin (Image_12 and _12a).

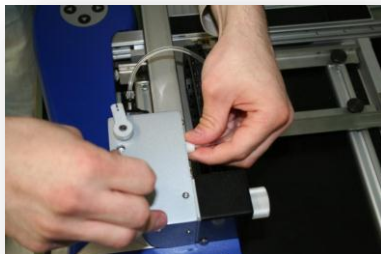
Image_12



Image_12a



Image_13



Image_13a

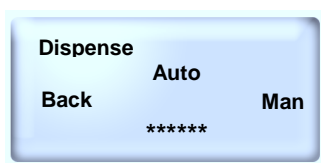
- Connect the air tube to the air connection outlet located on the rear side of the manipulator head (Image_13 and _13a).

3. Dispensing procedure

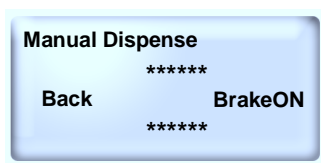
3.1. Setting the dispensing unit



- Switch the machine ON.
- Select **Dispense** mode by pressing the \triangle key on the keypad.



- Select manual mode in the basic **Dispense** menu. Press the \triangleright key on the keypad, to select **Man** mode.



- With manual dispensing, the dispensing medium leaks out of the cartridge for the duration of time, which is equal to the time the foot switch is pressed. When the switch is released the leaking from the cartridge stops.



- Set the air pressure with the pressure regulator knob between 2 and 5 bars (0.2 to 0.5 MPa). The setting of air pressure depends on the medium viscosity and the needle diameter mounted on the syringe.



LPKF Recommends:

When a Fine pitch solder paste (type 4) and the smallest needle diameter are used, the maximum air pressure can be set.



- Press to the foot switch to activate leaking of the medium from the cartridge.

- Observe leaking of the medium from the cartridge and increase or reduce air pressure.

- Release the foot switch.

- Observe if the medium stops leaking immediately after releasing the foot switch (non-drop function).



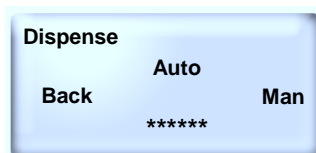
- For media with high viscosity (rare media), besides pressure vacuum is also used.

Vacuum is used in case pressure is not supplied, so the medium doesn't leak out of the dosing needle, or remains at the same level.

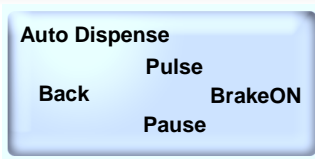
Set the dispensing vacuum by rotating **disp vacuum** knob.

- Increase vacuum in case the medium doesn't stop leaking or reduce vacuum in case medium goes to high up into the cartridge.

- When you are satisfied with the leaking of the medium in manual mode, you can switch to automatic mode (if you would like to use this mode).



- Select automatic mode in the basic **Dispense** menu. Press the \triangle key on the keypad, to select **Auto** mode.



- Depending on the surface dimension or the volume of the drop to be dispensed, the length of the **Pulse** should be set.
Press the \triangle key on the keypad, to set the length of the **Pulse**.

- The pulse duration can be set by setting the time in seconds.
Press the \triangle key on the keypad, to select **Inc** which prolongs the time, or ∇ key to select **Dec** which shortens the time.
The scale of the impulse is set in the range between 0.1 and 9.0 seconds, in steps 0.1 second.
Default setting is 0.5 second.

- The duration of the pulse together with air pressure defines the quantity of pressed out medium and volume of the drop.

- The Pause function determines the speed of repetition of the Pulse function. The time between two impulses should be long enough that you will be able to come from one point to another point.

- The time of the pulse is set by using the \triangle and ∇ keys, by selecting the function, **Inc** or **Dec**.
Pause is set within the range from 0.1 to 2.0 seconds in steps of 0.1 second.
- Default value is 0.5 seconds.



When the lengths of the Pulse and Pause are set correctly, the foot switch can be pressed all the time. Only moving from one to another position is necessary.



CAUTION!!!

The quantity of the pressed out medium regarding the set parameters can vary, because of changing the viscosity of the medium.

Viscosity of media is prescribed by manufactures and it can vary during work. Viscosity is varies due to several causes:

- changes of the ambient temperature,
- influence of lamps on the manipulator, which is mounted near the cartridge,
- moving of the media inside the cartridge (compression and stretching) and so on.

Please be careful and observe leaking of the medium all the time. If necessary, change some of the parameters (air pressure, vacuum, impulse duration ...) during the operation.

3.2. Using the dispensing unit

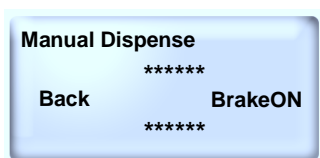


- Set the height of the dispensing needle.
There are two ways to set the height of it:
 - set it to the level of the picking needle,
 - set it to the level where it touches the printed circuit board.

Manual Dispensing

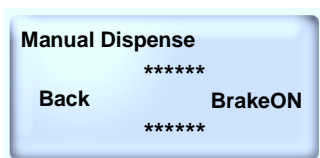
Manual dispensing is used when we are presented with a great number of variously sized soldering pads that do not follow each other in a certain sequence. With manual dispensing, the dispensing medium leaks out of the cartridge for the duration of time, which is equal to the time the switch is pressed. When the switch is released the leaking from the cartridge stops.

Basic method



- The needle is carried above the dispensing area and put near the dispensing position.
- When satisfied with the position, the foot switch is pressed and the solder paste is dosed on the pad.

Advanced method



- The needle is carried above the dispensing area and put near the dispensing position.
- Press the ▷ key on the keypad and choose the function, **BrakeON**. All three axes are blocked and fine adjustment of the micro-table is possible.
- When satisfied with the position, the foot switch is pressed and the solder paste is dosed on the pad.

Manual Dispense

***** BrakeOFF

- At any time, when axes are blocked, we can simply release the brakes with the function, **BrakeOFF**.

Manual Dispense

Back BrakeON

- By pressing the < key on the keyboard we choose the **Back** function, which takes us back to the basic **Dispense** menu.

Automatic Dispensing

The function of automatic dispensing is applied when we have a large number of soldering pads of the same size, which follow each other in a certain sequence. When using automatic dispensing, the length of the impulse must be set, by which the quantity of pressed-out medium and the speed of its repetition is determined.

Basic method

Auto Dispense
Pulse
Back BrakeON
Pause

- The needle is carried above the dispensing area and put near the dispensing position.
- When satisfied with the position, the foot switch is pressed and solder paste is dosed on the pad.
- The quantity of solder paste is previously set with the »Pulse« option.



You can also activate the dosing with the dispensing needle, but this is rarely used.

Advanced method

Auto Dispense
Pulse
Back BrakeON
Pause

- The needle is carried above the dispensing area and put near the dispensing position.
- Press the > key on the keypad to choose the function, **BrakeON**. All three axes are blocked and fine adjustment of the micro-table is possible.



Pulse and **Pause** options can also be adjusted with brakes turned on.

Auto Dispense
***** Pulse BrakeOFF
Pause

- At any time, when axes are blocked, we can simply release the brakes with the **BrakeOFF** function.

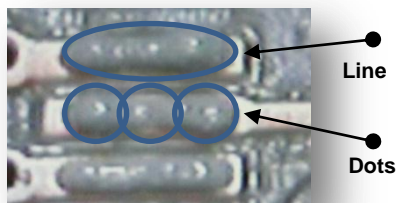
- When satisfied with the position, the foot switch is pressed and solder paste is dosed on the pad.



The quantity of solder paste is previously set with the **Pulse** option.

Auto Dispense
Back Pulse BrakeON
Pause

- By pressing the \triangleleft key on the keyboard we choose the **Back** function, which takes us back to the basic **Dispense** menu.



LPKF recommends:

For rectangular pads, where one dot is usually not enough, drawing of the line or making a few dots one after another is recommended.

CAUTION!!!



CAUTION!!

- After completion of the dispensing function, it is necessary to remove the dispensing needles from the cartridges and thoroughly clean them.
- The cartridges must be suitably closed on both sides. Use the attached caps.
- Store it in a cold place.



Store the solder paste syringes according to the instructions of the manufacturer. Store syringes tip down in a refrigerator!

[illegible][illegible]