DYMET – 423

Quick Start

Installation Recommendations





Position the tool at the workplace.



Connect up the input air.



Use the appropriate connector.



Connect up the electric power.

Standard plug with the ground pin is used.



There is grounding bolt at the side wall of the tool.



Switch on automatic fuse.



Switch on electric power.

The power consumption without air flow does not exceed 5 W.

Maximum power consumption with air flow may reach 3.3 kW.



Open air cock at the spraying gun.

Partial air cock opening is prohibited. It should be open or closed up to the stop.



Switch on the air flow by the "Air" switch.



Use the pressure regulator to adjust the input air pressure.

Pull up and rotate the regulator knob to regulate input air pressure.

Push down the regulator knob to fix it.



Input air pressure must be regulated with air flow on.

The minimal input air pressure with air flow on must exceed 5 bars.

The correct tool operation is provided if the input air pressure is not less then 5 bars. Input air pressure must be adjusted and checked with the air flow on. Operation with input air pressure below 5 bars causes tool malfunction.



Joint the flexible powder pipe of the spraying gun and the flexible pipe of the powder feeders output.



Put the powder to the powder feeder to begin spraying.

Switch off the air before putting the powder to avoid the unexpected powder spray.



Don't use very small powder volume.

The powder feeder valve should be covered by powder for proper operation.



The powder feed rate increases when the powder level drops below the valve top.



This very small powder level may cause powder supply overflow.



Fill the powder up to the wire loop top. This level allows convenient operation.



Adjust the powder feed rate.

Because of the limitation of the air flow rate (about 5–6 g/s of compressed air), the air flow load by powder should not exceed 0.5 g/s.

Due to the difference of the flow ability of different powders the powder feed rate regulator scale is marked in arbitrary units.



To measure powder supply the powder pipe may be disjoined from the feeder.



Switch the powder feed on and get the powder portion to weight.

The feed rate is calculated by dividing the portion weight to the getting time.

The optimal feed is 0.3 - 0.5 g/s.



Do not forget to join feeder pipe back after the measurements.



The correct powder feed rate for the practical applications may be adjusted without the precise feed rate measurements.

Set the powder feed rate regulator value to the minimal position (for example "1") and spray coating line at the metal substrate (use temperature mode "3") while moving the nozzle at the speed of about 1 cm/s.



Check the coating line thickness and if the thickness is less then 0.5 mm increase the powder feed rate value by 0.5–1 units.

Repeat this procedure until the coating line thickness rich the value of about 0.5 mm (keep the nozzle transverse speed of 1 cm/s).

To achieve maximum powder particles acceleration for the high quality coatings deposition the powder feed rate must be kept at the minimal necessary level.



The air and powder supply is executed by the handle button pushing.

The panel switches must be off.



Incomplete pushing switches on the air supply.



Up to the stop pushing switches on the powder supply.



Air supply may be switched on by the "Air" switch at the control panel.



To switch on the powder supply use "Powder" switch.



The powder feeder operation is indicated by the green light at the control panel.



If the powder feeder operates but the powder is not supplied into the nozzle one should check the clogging of the powder channel.

Disjoint the flexible powder pipes and with the <u>air on</u> check the injection pressure (vacuum) at the end of the pipe of the spraying gun.

The correct injection pressure (vacuum) must be in the range of 0.3 - 0.6 bars and may be distinctly felt by finger.



The injection pressure (vacuum) may disappear as a result of clogging of the injection nipple by large foreign debris.

The internal diameter of the injection nipple with ceramic washers is 1.4 mm.

The clogging may also occur as a result of the very high powder feed rate.



Disjoint flexible pipe and the steel tube at the spraying gun and remove the nipple clogging. The piece of 1 mm wire may be used to clean the nipple.

Switch air on and check the injection pressure at the end of the flexible pipe.

Restore the joint and check the injection pressure at the end of the flexible pipe of the spraying gun.



Be careful while rejoining the powder channel. Don't leave any kink at the flexible pipe.

The presence of the kinks at the pipe may cause the intermittent powder supply.



The correct joint keeps the pipe smooth and does not reduce the pipe cross section.



If the injection pressure (vacuum) is good but there is no powder supply, look for the clogging of the powder feeder.

Remove the powder from the powder feeder.



Switch on powder feeder to quicken powder removal.

Powder feeder regulator may be turned right up to stop, but don't forget to return it back to the position of adjusted powder supply.



Carefully remove the valve from the powder feeder.

Small rhombic string at the valve bottom prevents valve withdrawal when the feeder is turned upside-down.



With the valve removed the powder feeder may be looked through.

Disjoint flexible pipe from the feeder bottom and clean the powder feeder clogging.



Put the valve back after the powder feeder cleaning.

Check the valve positioning every time after the powder removal. Push gently the valve loop if the feeder exit is not closed by the valve.



The valve closes powder feeder exit in normal position.

The valve with the loop vibrates when the handle button or powder switch is on and powder moves down to the feeder exit.

The loop rotates slowly when the powder is loaded.



The wall vibrator shakes off the powder from the feeder walls. It operates with 2 seconds of vibrating and 8 seconds of pause intervals.

If the air is off, the powder is not supplied to the nozzle, but is accumulated at the bottom section of powder feeder.



If the powder was accumulated at the bottom section of the powder feeder, the switching air on may cause the overloading of the flow by accumulated powder.

So, don't switch air on with the nozzle directed to the spraying object.

Switch on and switch off the air flow several times to clean the powder line.



To spray thick (> 50 micrometers) coatings at steel, cast iron and other hard substrates preliminary abrasive treatment of the surface is required. Abrasive treatment may be used to clean rust dirty surface also. Put abrasive powder to the second powder feeder.

The second powder feeder is also used to spray alternately layers of coatings of different materials.



The second powder feeder is connected to the powder line by switching the panel switch. The respective indicator lights when the feeder is connected.

Powder feeders are marked by respective numbers "A" and "B" at the sides.



Black button at the back wall of the spraying gun may be used to switch powder feeders. Panel switch does not operate with this button on. Switch off this button to use panel switch.

Use powder feeder covers to avoid the powder line clogging.

Remove the powder from the powder feeder when the operation is finished. Storing the powder in the feeder causes the powder wetting and caking, resulted in the powder line clogging. Store the powder in the tightly closed package.



The temperature mode of spraying is adjusted discretely by the mode switch.

At mode "0" the air flow heating is switched off and spraying does not produces coatings. This mode may be used for workpieces cleaning by the air flow, abrasive blasting of easily melted metals and glass surfaces, etc.

Use mode "0" to clean the tool powder line.



The mode switch positions "1" – "5" are indicated by the mode number indicators and red "heater ready to action" indicator.



Switching on the air flow at modes "1" – "5" causes the air heating, indicated by red light at the back side of the spraying gun.

Green indicator "Ready" at the control panel lights when the chosen temperature is reached.



The air supply is indicated by the blue light "Air" at the panel.

The locking relay automatically blocks the heating system at input air pressure below 4 bars. Blue light "Air" at the panel becomes dim.

Nevertheless the proper tool operation is guaranteed only at <u>the input air</u> pressure above 5 bars.

The use of input air pressures below 5 bars is prohibited.

Adjust and check the input air pressure only with the air flow on.



Choose the temperature mode on the base of requirements to the spraying process and the required coating quality.

Mode "3" is applicable in the most cases.

The decrease of the mode number causes the increase of the coating quality and the decrease of the deposition efficiency. The mode number increase is followed by the deposition efficiency increase and coating quality degradation. Use modes "1" – "3" to spray hermetic coatings.

Use manufacturer technical support to choose the operation temperature mode for special applications.



The increase of the input air pressure causes the improvement of both the deposition efficiency and the coating quality.

However the input air pressure increase requires the increase of the total air consumption.

The increase of the input air pressure also causes the drop of the nozzle injection pressure (vacuum) and the decrease of the powder carrying flow in the powder line. Don't use the input air pressure above 7.5 bars to avoid powder pipe clogging.



Because of the nozzle erosion by the abrasive particles the reach-through hole occurs in the nozzle wall after the passing of about 2 kilograms of powder.

The supersonic nozzle is combined of the main part and replaceable nozzle insert as a changeable element eroded by powders.



Unscrew the nozzle insert holder and remove the worn-out nozzle insert.



Put the new nozzle insert into the nozzle and gently fix it by the holder.

New nozzle inserts for the round nozzle CK20 may be ordered as "<u>nozzle insert K6"</u>

Avoid the risk of the skin burn while replacing the nozzle insert.



Flat nozzle CII9 may be used to spray thin uniform metal coatings.



To replace round nozzle CK20 by flat nozzle C Π 9 disjoin flexible pipe and metal powder pipe at the spraying gun.



Unscrew the nozzle by hand without great effort.



Insert and screw flat nozzle $C\Pi 9$ into the spraying gun.



Joint the flexible pipe and metal powder pipe at the spraying gun.

Don't leave any kink at the flexible pipe.



The correct joint keeps the pipe smooth and does not reduce the pipe cross section.



Put the flat nozzle insert tight into the nozzle.

Fix the insert gently by the holder.

Don't apply great effort to avoid insert crushing.



Replacement life of the flat insert is about 1 kilogram of powder.

Replace the worn-out insert.

New nozzle inserts for the flat nozzle CII9 may be ordered as "nozzle insert $\underline{\Pi 9}$ ».

Avoid the risk of the skin burn while replacing the nozzle insert.



Typical deposition efficiency of the flat nozzle C Π 9 for most of powders is less then that of the round nozzle CK20.

Use the nozzle CK20 to spray thick local coatings.



The nozzle positioning at the spraying gun is adjusted by the deformable washer.

The washer thickness is already adjusted by manufacturer.

Use new deformable washer only in the case of the lost of the formerly adjusted washer.



The powder pipes positions will not coincide after the putting of the new washer.



To adjust the deformable washer thickness use two wrenches.



Tighten the washer to the coincidence of the powder pipes positions.

Use two wrenches. The use of one wrench may cause the spraying gun damage.



The spraying gun handle may be removed from the gun.

To remove the handle unscrew the fixing screws and disjoint the cable.



Remove the handle.



The spaying gun without the handle may be fastened to the automated system holder.



Use the cable for the remote control of the air and the powder supply.



Connect the cable to the "Remote" socket at the back wall.

The air and powder supply, powder feeder switch and temperature settings are controlled by closing the respective contacts.

Order special DYMET-423-USB driver to control the operation by computer.



Use the remote control to create the automatic spraying systems.



Use the preventive nozzle inserts exchange at the automated spraying process to avoid the operation with the worn-out nozzle insert.

Don't elongate the powder feed line length at the automated operation to avoid the intermittent powder supply.



The total powder feed line length is shorter then the air and electric cable length.

To increase the total powder feed line length additional pipe may be inserted into the pipes joint place Use the increase of the powder feed line length only in special needs. The increase of the powder feed line length causes the time delay of the powder supply, the decrease of transporting flow rate, the increase of the possibility of powder pipe clogging.

Reduce the powder feed rate when the powder line length is increased.



Check the air cleaning system regularly.

Remove condensed water from the air cleaning system.

Use external oil separating system in the case of regular condensed oil entry.

The oil penetration to the spraying gun causes the tool damage.



The spraying distance for most powders should be in the range of 5 - 15 mm.

The jet direction should be perpendicular to the surface treated. The deflection up to 20 degrees has low influence to the spraying process. The deposition efficiency at 45 degrees deflection drops down by 4–5 times.

Use <u>http://dymet.info/en/app.html</u> or manufacturer technical support to choose the powder and the operation temperature mode for various applications.

Technical support Email <u>ocps@obninsk.com</u> or <u>info@dymet.net</u> Phone +7-48439-21781