CNC CAT
3rd km Veria-Agia Varvara
59100, Veria, Imathia, Greece
Tel: +30 2117707270, +30 2331091222
Fax: +30 2331091020
e-mail: info@cnccat.gr

Quick-Start Guide

Tool changer adapter for: Kress FM-6990E, FME-530, FME-800 and FME-1050, Suhner UAD25-RF and UAL23-RF, Proxxon BFW 40/E, "China-Spindle"

Important notes:

Please observe the included information for the lubricant distribution run first! It is very important for the service life of the ball bearings!

Never activate the changing process while the engine is turning This might cause severe injuries! Moreover, it causes the immediate destruction of the air seals of the system.

Operate the adapter only in the fixture of your machine, since it acts as cooling element and avoids overheating of the ball bearings.

Insert the adapter spindle in your machine fixture to the stop (refer to page 4), otherwise the ball bearings might be squeezed.

The adapter is **suitable for clockwise rotation only** (viewed from above)!

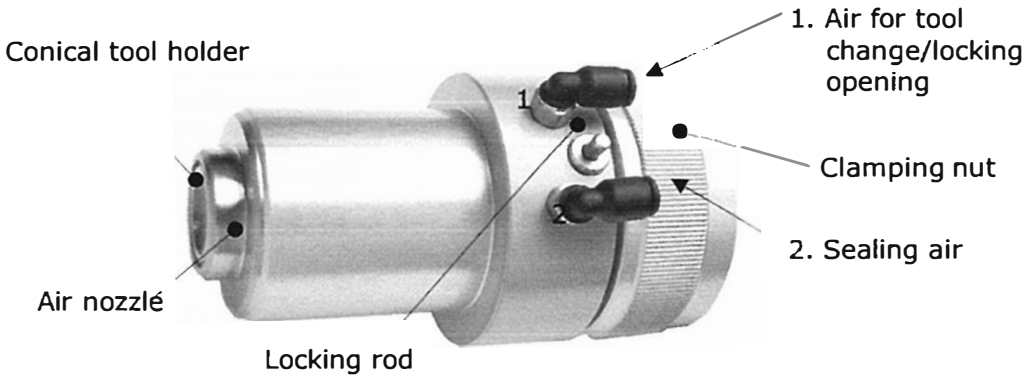
In order to guarantee a reliable and safe changing process, **a minimum pressure of 8 bars is required.**

The adapter is appropriate for **speeds of up to 28.000 rpm.**

Dear customer,

By purchasing the tool changer made by USOVO, you have decided on a precise high-quality product. The tool changer is appropriate for milling and engraving in metal, plastic material and wood. Please thoroughly read these instructions before the first use in order to be able to operate safely and professionally with the tool changer and its accessories.

Imperatively make sure that it is correctly connected to the air hoses. Mixing up the air hoses might destroy the ball bearing seals!

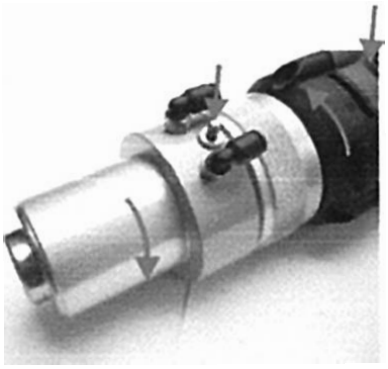


Assembly of the tool changer on the milling spindle

The tool adapter simulates a collet chuck and a cap nut. Remove the cap nut and the collet chuck from your spindle - they are not required. Insert the mil-ling spindle from the top into the adapter (1). Block the shaft of the adapter by pressing the locking rod and block the shaft of the milling spindle. Then turn the whole adapter on the shaft of the spindle (tightening by hand is
sufficient!). Then the spindle is connected to the shaft. Turn the clamping nut until the milling spindle is firmly mounted in the fixture (3).

1

2

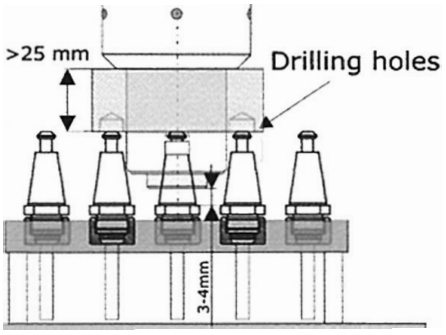


3

Machining the spindle holding fixture
(Only required for holding fixtures thicker than 25 mm and simultaneous use of a USOVO tool magazine)

Since the distance of the tools in the tool fixture only amounts to 30 mm, it is necessary to add 2 clearances from the bottom to the milling spindle adapter of 43 mm (depending on the assembly direction of the magazine in X- or Y-direction).

This is necessary, since the spindle travels very far down when changing the tool, otherwise the spindle holder would touch down on the neighboring tools (refer to exemplary drawing).



Please measure the necessary depth of the hole on your machine.

The distance of one hole to the other amounts to 60 mm (30 mm from the center).

Functional description of the tool change

Getting tool:

Travel to the position of the required tool and lower the spindle with opened collet chuck. The ideal hole point is about 3 to 4 mm before the spindle touches the tool (refer to illustration).

Stop the travel at this position and close the collet chuck. Then the tool is firmly attached to the spindle and it can travel upwards together with the spindle.

The tool deposit is performed the opposite **way.**

The control of the change function is generally executed via macros. This allows a comfortable adaptation to all conditions.

Disassembly of the milling spindle from the tool change adapter

Unscrew the clamping nut of the 43 mm holding fixture until it is possible to move the adapter. Press the locking rod (5) in and block the shaft of the milling spindle. Then it is possible to turn out the adapter from the milling spindle.

Replacing the ball bearing/Replacing the air seals

Unscrew the air nozzle using tongs (4). Block the shaft by inserting the locking rod. Unscrew the locking nut using a wrench with an opening of 21 from the shaft (5). If there is a tool holding fixture in the cone, please remove it first. If it does not work due to a defective air seal, you can simply pull out the holding fixture to the front (strenght > 220N!).

Then pull the spindle out of the housing (6).

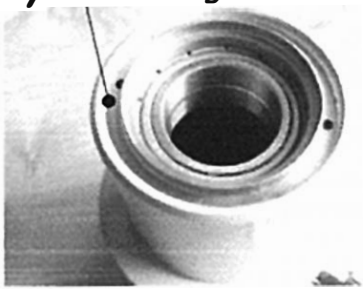
Unscrew the retaining nut of the ball bearing downward using an appropriate tool (7). Then it is possible to push out the ball bearings downward. In the center of the shaft you will find the bottom sealing washer.

4

5

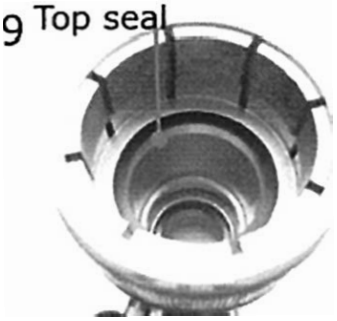
6

7 Retaining nut



8

9 Top seal



View from the top onto the top sealing washer (9) in its nut. It is important that the smooth side of the seal is showing upward.

Solving the problem if the tool changing might be undependable

1. If the operating pressure is too low, it might happen that the tool change does not work dependable. Usually, the switch-on pressure (lower pressure limit) is set too low so that the compressor starts running not before it has reached 5-6 bar. This low pressure often is not enough.

You can use the tool changing system with a pressure up to 10 bar. Higher pressure means higher reliability of operation. The recommended operating pressure range is 8-10 bar.

2. To enhance the reliability of the tool change there is the possibility of mounting an additional relay valve directly on the spindle. This reduces the restraining effect of a (eventually) too long air hose.

In this case please connect the compressor and the access P of the relay valve with an additional air hose (diameter: 6 mm). Please also connect valve outlet A with the air connection for the tool change of the spindle (as short as possible).

Please connect the existing 4 mm air hose with the control input (pilot) of the valve. The incoming air now switches the relay valve. When it switches, air streams directly to the internal pneumatic cylinder of the spindle. Thereby it works with full pressure.

<u>For this purpose you need the following valve and the following fittings:</u>

1 x 3/2-way pneumatic valve, G 1/8" (pilot MS), closed (NC)

2 x plug-and-socket connection for 6 mm hose to l/8[11]

1 x plug-and-socket connection for 4 mm hose to MS for the pilot inlet at the valve. You can use the existing plug-and-socket connection of the tool change air connection of the spindle.

1 x angle plug-and-socket connection for the spindle (MS - 0 6 mm)

1 x air hose, outside-diameter: 6 mm in required length