

# Photo report

## wi\_8\_f\_2500\_r8\_MegaBore2014

### Part 1, Part 2 and Part 3

Photo report 07.30.2014 / 14.10.2014 /21.12.2014  
CNC Fanuc 18i control exchange on Sinumerik 802 Dsl  
"Hans-Peter Widmer"

A hole in the casing of the Mega Bore CNC machine has caused water damage. The roof was leaking. The Fanuc 18i was considerably damaged. It was so complicated that we have decided to replace the controller with a new Sinumerik 802 D. A two-time repair by Fanuc Switzerland was unsuccessful.



P3) The old Fanuc panel is replaced.



P1) That was a lamp. Above where the screw was a hole. That was the reason why the CNC Fanuc 18 i was destroyed.



P4) Interior of the old panel. It is remarkable that here a 50-pin cable connects to the front CNC CNC rear. We will replace this with a Profibus cable, 2-pole.



P2) The extremely harsh climate in Angola, see the devices cheaply produced in 2 years from then.



P5) Alberto in the preparation of the expansion of Fanuc material.



P6) expansion of Fanuc



P9) Mixed and cable networks. Strikingly, the manufacturer has the 0 head, as well as power, made for the 220 volt with various colors. Cables were too short, have been extended with cables of different colors. Some in the cable channel were soldered together!



P7) Thick cables are in use here. The thickest is 80 mm / 2.



P8) Converted cable



P10) Converted control Fanuc 18i material.



P11) The Z-motor. The X motor has a brake. There are 7 KW feed motors.



P12) The Fanuc spindle motor seen in Angola after a short period of use, very battered. The climate is very strong here. Impellers crumble in the rule.



P15) Panel remodeling in preparation



P13) Yoba in the development of the main motor. He removed the V-belt.



P16) Yoba builds the Sinumerik 802. The front plate is made of stainless steel. The boys realize that tapping on stainless steel is persistent.



P14) Since the new motor is a motor foot, we had to make a standing frame hole. We install the same engine on all machines. Thus, the spare parts inventory is easier.



P17) Here is the goods required by the new engine. Since we have the same motors on all machines, we have a ratio of 1: 3 make.



P18) Alberto prepares the installation.



P21) Here we make the security system underst, more safeguards. No thin and thick wires without protection.



P19) The machine Mega Bore weighs over 20 tons



P22) Front 80 mm / 2, rear 10 mm / 2. Unsure we close the 10 mm / 2 directly to a fuse.



P20) Since there are cables with 80 mm / 2. Since the engine is operated in the country of origin 115/220 volts, this thick cables have been installed.



P23) A large transformer which reduces the 230/400 volts to 115/220 volts.



P24) We had to explain to the boys when they do not cover drilling, there may be a pop when turning because chips are not allowed in the electricity and electronics. That's why everything has to be covered when drilling.



P27) The Fanuc encoder has much fretting because it's mounted without Achsflechtfehler clutch. So how do we do it with the donors that we build on the Siemens CNC.



P25) Soon, everything installed fine and it still has a little vacant position.



P28) Carlo prepares the new CNC control before. We are happy because they know them inside and outside.



P26) The old Fanuc encoder (left) is coming off. A new (right) is mounted.



P29) The fact is, there are significantly fewer cables that hang around there. Surely only 30%. Optical and much more pleasant to use.



P30) The necessary conversion material was made available in Switzerland and comes to us via DHL.



P33) And already Carlo has the CNC off: We all have 110 volts from the panel and have only 24 volts. This has the advantage that no one should expect an electric shock.



P31) A photo of the turret of the machine without cover. It is an Italian turret Baruffaldi.



P34) The X motor with the new brake. The brake has been made so that all the same feed motors can be used.



P32) We will soon make the first test's with external 24 volts.



P35) The whole engine design 1: 3 stocky. A belt, H300, 70 mm wide, so probably no belt breakage occurs.



P36) brake cylinder. The cylinder is used as a standard. ,



P39) The machine has a faulty lubrication. Only when oil came, the brown sliding coating abrasion appeared.



P37) Robust, proprietary brake construction. Braked with switch and unrestrained. Set so that a pressure below 3 bar is detected.



P40)



P38) Little space for placement at the 60 ° slant bed CNC lathes arrangement.



P41) Lubrication tag. The ball screw gets a double quantity of oil.



P42) Additional lubrication points for the Z-axis. Normal makes a good mechanical engineer at short stroke machines more lubrication points in the travel axis. Mega Bore made only in the Z axis. If again thread is cut with a moving stroke of less than 200 mm, the carriage is long, inadequately lubricated by only one lubricating point. We now represent 3 lubrication points per track. Ideal would be 5 lubrication points for the long carriage. Dch then we would have to remove the slide.

control. The X-axis got too much oil, the Z axis far too little. That's why now is the 2nd spindle Kugelroll- already back defective. She sounds like a tractor transmission.



P44A) New lubrication chart. The in training maintenance people have to draw everything. Under grips with 0:06 quantities. Great land with dossier units 0.16 and the ballscrews with the double amount of 0.32



P43) lubricating material is grown.



P45) Carlo (left) and Alberto (right) prepare the lubrication.



P44) New Dossier unit for controlled lubrication. The CNC lathe Mega Bore has just oil pumped, without volume



P46) The more oil came, the more wear of the sliding coating came out because it ran dry a long time.





P47) New X braking system

Hydraulic hoses are damaged badly, as they were contaminated to a hard edge.

Lubrication is replaced by a pulse lubrication so that all lubrication points are also working properly.

Sorry, we could not get ready faster the Mega Bore CNC lathe. We found new problems again and again. We want to do everything so that when the machine is in operation, a little disturbing failures production. We still need about 2-3 days for detail work (without the documentation and scheme, is what we do after that). Now we should first try a surgeon rotate with the machine.

Special that we made on the machine:

- X- and Z-drive with our Omron engines, so that we have all the same engines. This means minimal loss of production by spare parts.
- For this reason, we have designed and manufactured a special brake solution. We do not need a special motor in which the brake.
- Spindle drive: Since we were taken away from the camp for deep hole drilling machine. The scheduled by us was thus no longer available. So we have one of the Graziano CNC lathe expanded. There is a newer must be installed.
- Cable breaks have complicated the conversion: Limit switch and limit switch cable breaks in the cable channel. Unfortunately, the cables are not as used in Europe, drag chains and oil resistant cable.
- When 32-pin ribbon cable between the CNC and the electrical cabinet, were from Poland 34 only 19 threads well. Rest all broken. Whether this had something to do with the water damage that we have not been studied. Wiring diagram before adjustment.



P48) The newly renovated CNC lathe Mega Bore is now in production.

End photo report

Location: Malongo Camp. Angola, Cabinda

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**Technical notes on the reshaping Mega Drill CNC Lathe Fanuc 18i on Sinumerik 802 Dsl summer 2014th**

Tag findings: 22/12/2014 Summary hpw

Cable break the emergency limit of the X and Z-axis. In the cable channel was a breaking point, the front of the food has always attached 200 mm the sled still. Because everything was connected, the error could be detected only very troublesome. It was a signal to CNC made, the Achsendlagen- switch. The cables are 4 pole and not kabelschlepp- rated cables.

Leadership of the Z-axis to run dry. Also rust. Lubrication must have stopped working properly for a long time.

Z ball screw makes extremely loud noises. It must be replaced. Again, the lubrication was dry. You must be replaced with units Dossier

Scheme many pages with components that are not included. For the maintenance of a disgrace. All options have their own scheme page. But now all options were on the scheme. What options do we have, was very difficult to determine. Normal such wiring diagram should not be taken for a manufacturing company.

Many cable and bridge were hidden in the cable ducts, then what the upkeep seriously affected for troubleshooting.

Lubrication: The ball screw of the Z-axis has too little lubrication. The 2nd spindle is noisy, it must be ordered a replacement. The Z-guide has strong corrosion. The lubrication must be extended with 2 more lubrication points. It has only one lubricating point in the Z axis. The headstock makes off at various speeds and comic resonance noise. Bearing damage is not excluded. At least one bearing bias voltage may not be enough available, which explains the vibration.

The alignment of the headstock is extremely difficult. A plate breakage can already get into trouble the heavy headstock. The headstock, for example, of 0.4 mm taper, straightening is very difficult, because all the plates have to go. Loosen the screws with a heavy 2-meter long pipe, then a still remain the headstock when tightening is somewhat

difficult because he always has a tendency to move through the high deadweight. Therefore, it is almost like the lottery, can orient the spindle at a train as it can be done easily with all flat lathes. Also the provided support by the machine manufacturer is far too unstable, as it could be a big help.

End report H.P Widmer 12.20.2014