

**DATA RELATING TO THE UNIT UNDER EXAMINATION**

Comm. N° 941 <b>J</b>	s/n 05623	Customer: SANWA KENMA X TAKARA
Test start date: 12/07/2023		Testing place: <b>Castelleone (Cr) ITALY</b>
Tester: Vanetta Stefano		

Indicate the requirements of the machinery:

- |   |   |
|---|---|
| <input type="checkbox"/> VOLTAGE: 480 VOLT  | <input type="checkbox"/> ENTRY ROLLER CONVEYOR 2 m            |
| <input type="checkbox"/> FREQUENCY: 60 Hz   | <input type="checkbox"/> OUTPUT ROLLER CONVEYOR 2 m           |
| <input type="checkbox"/> PIECES INSERTION FROM THE RIGHT  | <input type="checkbox"/> Belt speed adjustment with inverter. |
| <input type="checkbox"/> MOTORIZED SUP / INF BEVELERS   | <input type="checkbox"/> HMI: TOUCH SCREEN PANEL PC.          |
| <input type="checkbox"/> Initial QM, inclinable to 45° motorized vertical axis with encoder..   | <input type="checkbox"/> LANGUAGE: JAPANESE+ENGLISH           |
| <input type="checkbox"/> EDGE POLISHING SPINDLES: N° 6  |   |
| <input type="checkbox"/> G3 MOTORIZED MPP   |   |
| <input type="checkbox"/> POLISHING BEVEL SPINDLES: N° 4   |   |
| <input type="checkbox"/> FLOATING POLISHING SPINDLES: N° 5                                      |   |
| <input type="checkbox"/> HORIZONTAL CALIBRATOR at the start of the machine to rectify the edge. |   |
| <input type="checkbox"/> Manual BAR   |   |

1. **General assembly notes**
2. **Machine assembly sequence**
3. **Oil levels and lubrication points**
4. **Check electric wiring and machine startup**

### 1) GENERAL ASSEMBLY NOTES

- Take care of tightening the screws of the safety details
- Silicone the metal elements welded in sections
- Touch up the paint where it was damaged during assembly
- Grease the screws with anti-seize paste
- Pay particular attention to the alignments of the visible casings
- Apply some sealant (e.g. Motorsil) on the screws of the front casings and painted casings

### 2) MACHINE ASSEMBLY SEQUENCE

- Conveyor belt group
- Holders group
- Reducers and edge polishing spindle block
- QM unit
- Tagliolama unit
- Chamferers unit
- 45° bevelings unit
- Doors
- Side panels and electrical boxes
- Pneumatic plant
- Hydraulic plant
- Lubrication plant
- Support bar
- General mechanical assembly
- Electrical panels and electrical machine board
- Startup
- Machine assembly finishing

### 3) OIL LEVELS AND LUBRICATION POINTS

3a Check all oil/grease levels present

- Right side oscillating reducer
- Left side oscillating reducer Riduttore nastro
- Other gearboxes lubricated for life

3b Check for lubrication points that may be present

- Check tightness of lubrication fittings
- Check that all greasing points are reached by lubricant
- Automatic greasing of main lubrication points
- Manual greasing of secondary lubrication points

### 4) CHECK ELECTRIC WIRING AND MACHINE STARTUP

- Check electrical cabinet cleanliness and check that the cabinet holes are closed with the appropriate plugs.
- Check that all connections (especially the power ones: thermal, relay, terminal block)
- are well tightened, visually check that the wires are well inserted and that there are no machining residues.
- Check that the connections on the transformers (primary and secondary) comply with the wiring diagram and the voltage shown on the machine board.
- Check that all the groups on the machine are connected and that there are no wires or cables still to be connected, otherwise connect or isolate them.
- Enclose the machine with delimitation barriers (gates or chains)
- Connect the power supply line of the machine (padlock the disconnecter knob and put a special "machine under test" sign)

- Disconnect at least one end of the various secondaries of the transformer T1,T2,T3
- Update date, time, serial number and job order on the instrument.
- Carry out the tests on the electrical system required by the EN 60205-1 standard

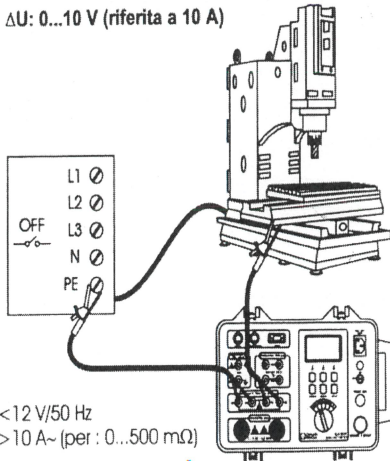
**Continuity on the protective equipotential circuit (earth circuit)**

VERIFICA DELLA CONTINUITA' DEL CIRCUITO EQUIPOTENZIALE DI PROTEZIONE	
sezione minima effettiva del conduttore di protezione della parte in prova mm <sup>2</sup>	caduta di tensione massima misurata i valori sono per una corrente di 10A V
1,0	3,3
1,5	2,6
2,5	1,9
4,0	1,4
>6,0	1,0

**DESCRIPTION OF THE TEST TO BE CARRIED OUT (see also instrument manual)**

- Place the rotary switch in the ΔU position (voltage drop);
- Select the test parameters as follows:
  - ⇒ Voltage drop threshold:
    - Press "ΔU max" key to select the wire section to be tested = X mm<sup>2</sup>
  - ⇒ Testing time:
    - Press the TIMER key and keep it pressed (for about 2 seconds) until the menu for selecting the timer value appears;
    - Press ↑↓ keys to select the test time value = 2 seconds
    - Press the EXIT key to exit this menu.
- Connect the test leads to the instrument;
- Connect the test leads to the line cabinet clamp ground bar and onto the ground wire to be tested at the endpoint (e.g. on the motor ground screw) (see FIG.11 and instrument manual). Comply with the safety rules and pay attention to how you handle the DANGEROUS VOLTAGE test probes;

$\Delta U: 0...10 \text{ V (riferita a } 10 \text{ A)}$



- Collegare i conduttori di test allo strumento ed all'oggetto testato come illustrato nella figura 11 :
- Premere il tasto START/STOP per dare inizio alla misura.
- Attendere che sia trascorso il tempo stabilito (se si è attivato il temporizzatore) oppure premere di nuovo il tasto START/STOP per interrompere la misura.
- Salvare il risultato visualizzato a scopo di documentazione (vedere le istruzioni al capitolo 5.2. su come salvare il risultato visualizzato).

$U_{\text{test}} : < 12 \text{ V/50 Hz}$   
 $I_{\text{test}} : > 10 \text{ A} \sim (\text{per } : 0...500 \text{ m}\Omega)$

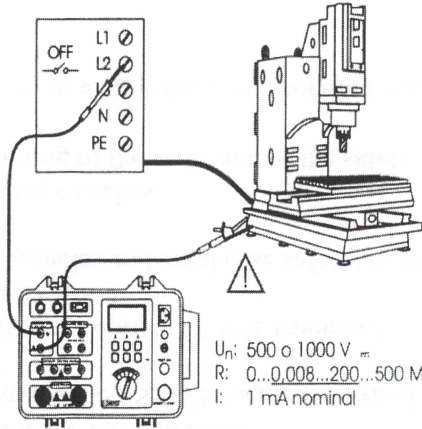
**Fig.11. Collegamento dei conduttori di test**

## Test insulation resistance

### DESCRIPTION OF THE TEST TO BE CARRIED OUT (see also instrument manual)

- Activate all the magneto-thermal protections of the motors and of T1;
- Position the rotary switch in the  $M\Omega$  position (insulation resistance);
- Select the test parameters as follows:
  - ⇒ Insulation resistance threshold:
    - Press the "Rmin" key in order to reach the menu for selecting the insulation resistance threshold;
    - Using the  $\uparrow\downarrow$  keys select the threshold = 1 MOhm
  - ⇒ Test voltage:
    - Use the "Un" key to select test voltage = 500V
  - ⇒ Testing time:
    - Press the "TIMER" key and keep it pressed (for about 2 seconds) until the menu for selecting the timer value appears;
    - Use the  $\uparrow\downarrow$  keys to select the test time value = 2 seconds
    - Press the "EXIT" key to exit this menu;
- Connect the test leads to the instrument;
- Connect the test leads to the line terminal ground bar and to one phase
- (see also instrument manual).
- Follow the safety rules and pay attention to how you handle the test probes, **DANGEROUS VOLTAGE;**

- Collegare i conduttori di test allo strumento ed all'oggetto testato come illustrato nella figura 18 :
- Premere il tasto START/STOP per dare inizio alla misura.
- Attendere che sia trascorso il tempo stabilito (se si è attivato il temporizzatore) oppure premere di nuovo il tasto START/STOP per interrompere la misura.
- Salvare il risultato visualizzato a scopo di documentazione (vedere le istruzioni al capitolo 5.2. su come salvare il risultato visualizzato).



$U_n$ : 500 o 1000 V ~  
 $R$ : 0...0,008...200...500 M $\Omega$   
 $I$ : 1 mA nominal

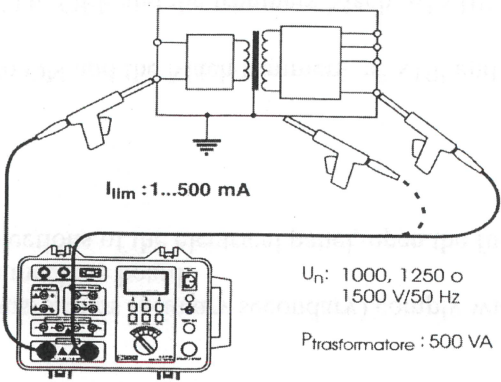
**Fig.18. Collegamento dei conduttori di test**

## Voltage test

### DESCRIPTION OF THE TEST TO BE CARRIED OUT

- Place the rotary switch in the "HV" (high voltage) position;
- Select the test parameters as follows:
  - ⇒ Trip current:
    - Press the "I" key in order to reach the tripping current selection menu;
    - Use the  $\uparrow\downarrow$  keys to select trip current = 10mA
    - Press the EXIT key to exit this menu;
  - ⇒ Test voltage:
    - Press the "Un" key to select the test voltage = 1000V;
  - ⇒ Testing time:
    - Press the TIMER key and keep it pressed (for about 2 seconds) until the menu for selecting the timer value appears;
    - Use the  $\uparrow\downarrow$  keys to select the test time value = 1 second
    - Press the EXIT key to exit this menu;
- Connect the test probes to the instrument;
- Connect the test leads to the ground bar clamp on the line and wire to be tested in the switch box;
- Follow the safety rules and pay attention to how you handle the test probes, **DANGEROUS VOLTAGE**;

- Collegare i conduttori di test allo strumento ed all'oggetto testato come illustrato nella figura 8 :
- Premere il tasto START/STOP per dare inizio alla misura.
- Attendere che sia trascorso il tempo stabilito (se si è attivato il temporizzatore) oppure premere di nuovo il tasto START/STOP per interrompere la misura.
- Salvare il risultato visualizzato a scopo di documentazione (vedere le istruzioni al capitolo 5.2. su come salvare il risultato visualizzato).



$I_{lim}$  : 1...500 mA  
 $U_n$ : 1000, 1250 o 1500 V/50 Hz  
 $P_{trasformatore}$  : 500 VA

**Fig.8. Connessione delle sonde di test**

- Restore and check that the connections on the transformers (primary secondary) comply with the wiring diagram and the voltage shown on the machine board.  
Release all the thermal and magneto-thermal protections of the electrical panel, open the fuse holder FU-0.

**PLC card configuration:**

**Standard machine PLC (1st configuration)**

- Set the Dip-Switches of the IN1 board (CT021) to ON and the Mach trimmers. n° x10<sup>1</sup> and x10° on 0.
- Set the Dip-Switches of the OUT8 board (DA021) to OFF and the trimmers Mach. n° x10<sup>1</sup> out of 0 and x10° out of 8.
- Procedure for PLC **CJ2M CPU 13 or 33 or 34**.

**PLC special machine (2nd configuration)**

- Set the Dip-Switches of the IN1 board (CT021) to ON and the trimmers Mach. n° x10<sup>1</sup> and x10° on 0.
- Set the Dip-Switches of the IN2 board (CT021) to OFF and the trimmers Mach. n° x10<sup>1</sup> out of 0 and x10° out of 4.
- Set the Dip-Switches of the OUT8 board (DA021) to OFF and the trimmers Mach. n° x10<sup>1</sup> out of 0 and x10° out of 8.
- Procedure for PLC **CJ2M CPU 13 or 33 or 34**.
- Check closure of the PLC cards with yellow levers.
- Set thermal switches according to the current absorbed by the motors and transformers
  - Adjust the magnetic setting of the general switch to minimum
  - Adjust the thermal calibration of the main switch to the nominal current value of the machine (see wiring diagram)
  - Adjust the calibration of the sequencer (voltage and intervention time)
- Check the wiring of encoders BQ51 (top diamond bevel) and BQ52 (bottom diamond bevel).
- Apply voltage to the socket that feeds the cable that goes to the machine.
- Check the supply voltage (incoming) on the main switch of the machine.
- Turn on the main switch.
- Activate thermal overload FS2 and check the correct connection of the line phases on the sequencer E3.
- Activate the thermal switches FS.T1, FS.T2, FS.GS1 ( FS.T6 only on models with conditioner) and check the output voltages.
- Set the GS1 power supply voltage (with the appropriate 24 Vdc trimmer).
- Disconnect wire "B" from the GS2 power supply, activate the FS.GS2 magneto-thermal switch and carry out the following checks:
  - Set the voltage on the GS2 power supply (with the appropriate 24 Vdc trimmer.)
  - Check the power supply voltage of the PLT (pin 24 Vdc.).
  - Insert fuses FU1 (warning lights) and FU6 (emergencies and crankcase safety) or enable the corresponding circuit breakers.
  - Activate the emergency buttons and the safety limit switches
  - By activating the key selectors, check the functioning of the same and of the safety modules.
- Insert all the other fuses (FU2,FU3,FU4,FU7,FU9,FU11) or enable the corresponding circuit breakers).
- Check all PLC INPUTS
- Turn the gear of Encoder BQ25 (slide encoder) until the zero LED lights up, place the SQ25A and SQ25B slide sensors in the correct positions (position any optional sensors).

- Make two jumpers on the carter safety devices (to exclude them) between terminal 60A and 66A and between 60B and 66B.
- Download the program in the PLT (operator panel) and the work programs.
- Download the DMs to the PLC.
- Download the program to the PLC.
- Connect the RS232 port connector of the PLC and the PLT and check the connection.
- Download the parameters to the Belt Motor Drive U19.
- Download the parameters to the ATOS E2 board.
- Enter the machine configuration (DNA).
- Adjust the time, date.
- Check the charge of the expansion vessel (40 Bar).**
- Check manual controls and diagnostics.**
- Adjust all the sensors and safety limit switches of the motorized units before resetting the machine.**
- Check that the machine has all the hydraulic hoses connected correctly (for the washing phase).
- Make sure there is oil in the hydraulic tank
- Check that the plumbing is complete (valve, fittings) for flushing.**
- Enter the test menu and activate the washing (check that everything is OK)**

**4a) TEST PHASES THAT CAN BE CARRIED OUT AT THE SAME TIME AS WASHING.**

- Mechanical adjustment of holders and tools sensor (feelers).**
- Automatic belt speed adjustment.**
- Learning of the positions (holders and tools).**
- Check correct holders up and down.**
- Check special pieces vs holders.**
- Check entry and exit polishing tools.**
- Check partial machining vs polishing tools.**
- Check of partial machining with the G3.**
- Check mixed partial machining.**
- Check alignment of the white contrast rollers under the tape**

**4b) TEST PHASES TO BE CARRIED OUT AT THE END OF WASHING**

- Pressure adjustment of the wheel rotation hydraulic circuit.**  
**M0 absorption at 160 bar with G3/L1÷L4 rotation = 25 Amp.**  
**Absorption M0 at 160 bar with rotation of L5÷L8 = 20.9 Amp.**
- Pressure regulation of the oscillating hydraulic circuit.**  
**M1 absorption at 75 bar = 17.6 Amp.**
- Pressure regulation of the oscillating hydraulic circuit.**  
**M2 absorption at 75 bar = 1.5 Amp.**
- Check wheel rotations, chamfers and discs.**
- Fix the stop plate for minimum and maximum spin adjustment G3**
- Coarse calibration of the ATOS board.**
- Oscillating unit calibration.**
- Oscillating unit reset speed.**
- Oscillating unit positioning speed.**
- Oscillating unit Manual speeds.**
- Oscillating group position adjustment at 0 – 180 – 90 degrees.**
- Slide centering on slab thickness 10 mm, 60 mm, 28 mm.**
- Position slide sensor on maximum thickness.**
- G1 and G2 motorized bevel adjustment.**

- Partial machining with G1 and G2.
- Conic chamfers with G1 and G2.
- Floating wheels group adjustment (if present as in Omega Pencil)
- QM motorized group reset (if present)
- Check operation of motorized unit QM / CALIBRATOR (if present).
- Check holders exclusion
- Check Dynamic speed operation (if present)
- Check water solenoid valves (if present)
- Connect outputs and disconnect motors
- Test the machine with all the units inserted by simulating a complete machining
- Save the work programs on the Touch screen memory.
- Remove the jumpers on the safety devices and check the circuit.
- Check alarms and messages.
- Check the closure of the electrical boxes and push-button panels
- Affix safety stickers
- Save a copy of the PLC program, of the DM, HR and E0 memories, of the PLT (HMI) program on the server, indicating the machine serial number in the name.
- Fill in the machine description file, INDICATE THE PLC AND PLT PROGRAMS USED ON THE MACHINE
- Fill in the machine test sheet
- Check wiring diagrams
- Check the fastening of all connectors on the PLC and on the PLT
- Insert the bag of desiccant salt into the PLT cabinet and PLC (main cabinet)
- Select the language of the destination country
- Disconnect the power line cable
- Place in the electrical cabinet all the available documentation of the electrical system components and the accessory spare supplies (fuses, light bulbs, relays, etc.)
- Close the passage hole for the power line cable
- General check before packing the machine
- Print a copy of the machine configuration parameter values
- Print a copy of the test sheet

Date: 25/07/2023

Signature ..... *Vautta Stefano* .....