

# PASSENGER TIRE CHANGERS

## SERVICE MANUAL



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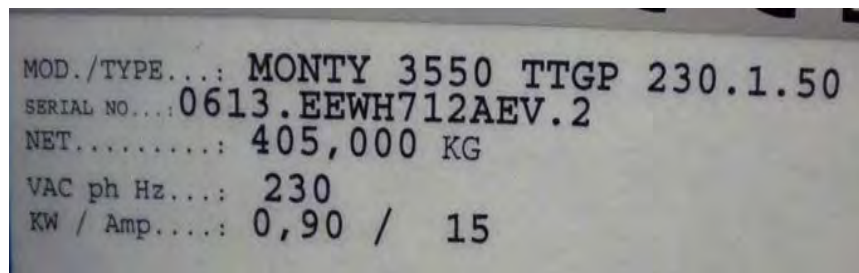
## CHAPTER 1 INTRODUCTION

### 1.1 GENERAL

This Service Manual describes maintenance, check and repair operations of the passenger tire changer under Hofmann, John Bean and Boxer brands and is for use of qualified and trained personnel only. Keep this manual constantly updated, by adding Service Bulletins related to the tire changers.

#### **IMPORTANT!**

The identification data of each machine are printed on a adhesive label attached to the cabinet of the machines. The serial number is a sequence of figures standing for the manufacturing month and year the first four numbers, followed by the machine part number and finally the progressive serial number of the machine manufactured with this specific part number.



In the sections dedicated to the check, replacement and adjustment of the components there will be reported some symbols as follows:

- ⌚ : **Total amount of working time required to check, replace and adjust the components:** this time is calculated considering the standard installation condition provided by the operator manual.
- ✂ : **List of tools required to perform the work.**
- ❗ : **Information related to the possible failure/malfunction caused by the component**

## CHAPTER 2 TOOLS AND SAFETY

### 2.1 TOOLS AND SPECIAL TOOLS

To repair and/or check these tire changer, the following standard tools are required:

- Keys** : 6mm to 30mm
- Tube type keys** : 7mm to 17mm
- Allen keys** : 2.5 mm to 12 mm
- Socket keys** : 10mm to 27mm
- Allen socket keys** : 4mm to 12mm
- Screw drivers** : Flat bed and Phillips from 1 to 5
- Multimeter** : AC, DC, A, Ohm, pF
- Lotctite and mechanical extractor**

Special tools that are required for specific tasks are:

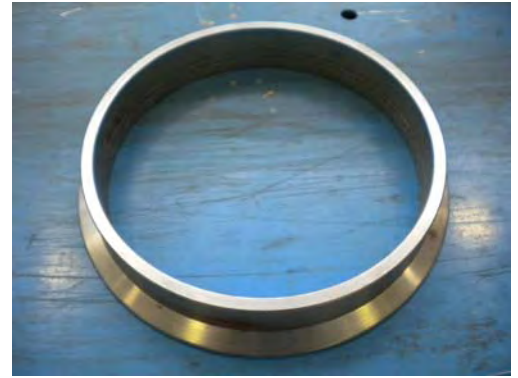
#### **20mm Ring nut socket keys:**

Use these keys to tight or loose the knees ring nuts.



**Ring to adjust the turntable run out and the rim contact # 0013549:**

Use the ring to adjust the turntable run out and to check the proper contact of the jaws to the rim.

**Electronic dynamometric key.**

Use this key to lock the potentiometer set screw with proper torque.

**Air pressure reducer # 4002916.**

Use this reducer to adjust the tilting post end stroke screws and the turntable jaws.

**Dynamometric key:**

Use this key to lock the screws with the proper torque.



### Gauge with magnetic basement:

Use this gauge to check the run out of the turntable.



## 2.2 IMPORTANT SAFETY INSTRUCTIONS

The units are CE or UL approved, but whenever using this equipment basic safety precautions should always be followed, including the following:

1. Read all instructions.
2. Do not operate equipment with a damaged power cord or if the equipment has been damaged until it has been examined by a qualified authorized service technician.
3. If an extension cord is used, a cord with a current rating equal to or more than that of the machine should be used. Cords rated for less current than the equipment may overheat. Care should be taken to arrange the cord so that it will not be tripped over or pulled.
4. Always unplug equipment from electrical outlet when not in use. Never use the cord to pull the plug from the outlet. Grasp plug and pull to disconnect.
5. To reduce the risk of fire, do not operate equipment in the vicinity of open containers of flammable liquids (gasoline).
6. Keep hair, loose fitting clothing, fingers and all parts of the body away from moving parts.
7. To reduce the risk of electric shock, do not use on wet surfaces or expose to rain.
8. Do not hammer on or hit any part of the control box.
9. Do not allow unauthorized personnel to operate the equipment.
10. Use only as described in this manual. Use only manufacturer's recommended attachments.
11. Always securely lock the wheel before starting the operation.
12. ALWAYS WEAR SAFETY GLASSES. Everyday eyeglasses only have impact resistant lenses, they are NOT safety glasses.
13. Tire changer is for indoor use only.

## 2.3 ELECTRICAL SAFETY PRECAUTIONS

Make sure the tire changer is unplugged before disconnecting any wires in preparation for replacing any electric mechanic components, cables or other items within the unit

## CHAPTER 3 AC/DC POWER DISTRIBUTION

### 3.1 LOCKOUT AND/OR TAGOUT SYSTEM PROCEDURE

1. Notify all affected employees that a lockout or tag-out system is going to be utilized and why. The authorized employee should know the electrical power the machine uses and it's hazards.
  2. If the machine or equipment is running, shut it down by the normal stopping procedure (depress the stop button, open toggle switch, etc.).
  3. Use appropriate devices to isolate the equipment from the power source(s). Stored energy (such as that in springs, elevated machine members, rotating flywheels, hydraulic systems, and air gas, steam or water pressure, etc.) must be dissipated or restrained by methods such as repositioning, blocking, bleeding down, etc.
  4. Lockout and/or tag-out the energy isolating devices with individual lock(s) or tag(s).
  5. After ensuring that no personnel are exposed, and as a check on having disconnected the energy sources, operate the push button or other normal operating controls to make certain the equipment will not operate.
- CAUTION: RETURN OPERATING CONTROL(S) TO "NEUTRAL" OR "OFF" POSITION AFTER THE TEST [DE-ENERGIZED STATE].**
6. The equipment is now locked out or tagged out.

### 3.2 ELECTRICAL REQUIREMENTS

***NOTE: ANY ELECTRICAL WIRING MUST BE PERFORMED BY LICENSED PERSONNEL. ALL SERVICE MUST BE PERFORMED BY AN AUTHORIZED SERVICE TECHNICIAN.***

Check on the plate of the machine that the electrical specifications of the power source are the same as that of the machine.

***NOTE: ANY ELECTRICAL OUTLET INSTALLATION MUST BE VERIFIED BY A LICENSED ELECTRICIAN BEFORE CONNECTING THE TIRE CHANGER.***

***NOTE: ENSURE THAT THE OUTLET HAS AN AUTOMATIC GROUND FAULT CIRCUIT BREAKER WITH A DIFFERENTIAL CIRCUIT SET AT 30 MA.***

### 3.3 AC THEORY OF OPERATIONS



Always use the "One Hand Rule" when working with AC voltages by keeping one hand in your pocket or behind your back. Before removing wires from the tire changer, always verify that the unit is "OFF". Turn off the Main Power Switch on the back and unplug the AC power cord from the AC outlet.

#### **AC DISTRIBUTION**

The tire changers are equipped by single phase and three phases turntable motors.

The voltage at which the machine is wired is printed on the serial number plate and on a tag at the end of the power cord.

The single phase power cord has 3 wires:

<b>N</b>	<b>Neutral</b>
<b>L1</b>	<b>Phase</b>
<b>PE (yellow/green)</b>	<b>Ground</b>

The three phase power cord has 4 wires:

<b>L1,L2,L3</b>	<b>Phases</b>
<b>PE (yellow/green)</b>	<b>Ground</b>

The 3 phases machines can be wired at two different voltages:

**400 VAC** (suitable for 360-415V range).

**230 VAC** (suitable for 200-250V range).

The machines can be equipped with 50 or 60 Hertz motors.

- On machines with normal electric reversing switch, the AC power supply, (+/-10% compared to the nominal one) is directly supplied to the switch.
- On machines with inverter the 230 (+/-10%) AC voltage comes in through a “ON/OFF” Power Switch placed on Inverter cover and immediately is sent via to an anti disturb filter to the Electronic Inverter.

**MAIN SWITCH Q1 ( MACHINES WITH ELECTRONIC INVERTER ONLY)**

Main switch is used to supply all electric components of the machine.



**INVERTER T1**

It converts the 230V-1Ph in 230V-3Ph to be supplied to the turntable motor M1 and also changes the motor rotational speed from 50 to 100Hz.



**TURNTABLE POTENTIOMETER P1**

The potentiometer is of 20K type and forwards the rotational and speed inputs to the inverter T1 for the motor M3.



**INVERTER SWITCH S1**

The inverter switch S1 controls the rotation and the speed of the turntable motor. There are single phase, 3 phase, single speed switch and 3 phase 2 speed switch.

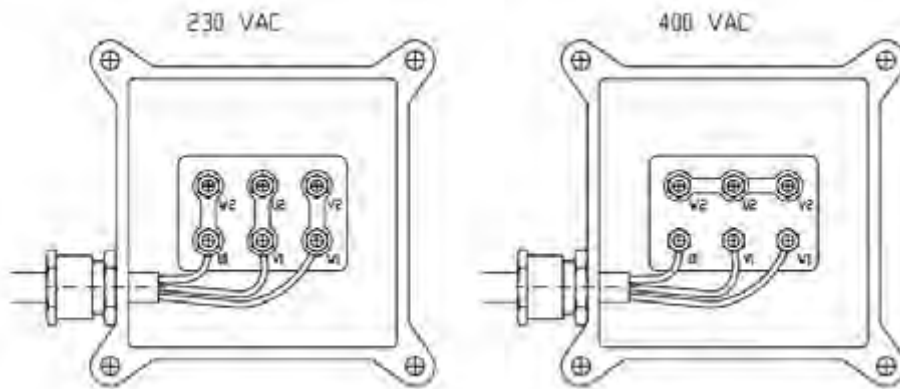


**TURNTABLE MOTOR M1**

On inverter switch models it can be single or 3 phase, single speed or 2 speed.



Three phase motors can be wired at star or delta . They are supplied by the inverter switch.



On models with electronic Inverter, the motor is supplied by the inverter T1. The motor is wired at 230Volts 3phase.

## CHAPTER 4 ELECTRIC SECTION



### **WARNING!**

**BEFORE APPROACHING THE ELECTRIC PARTS OF THE MACHINE,  
DISCONNECT THE MACHINE FROM ELECTRIC SUPPLY**

Very often electric failures are only caused by loosened wires or connectors not well fitted. Therefore it is VERY IMPORTANT BEFORE STARTING WITH ANY CONTROL AND/OR REPLACEMENT VERIFY IF ALL WIRES AND CONNECTORS ARE WELL FITTED.

#### **4.1 POWER SUPPLY CABLE ON ELECTRONIC INVERTER: CHECK AND REPLACEMENT**

⌚ : 1h

✂ : Allen keys of 3 and 5mm, small and medium screwdriver, medium cross screwdriver, faston pliers, scissors, pliers, multimeter.

ⓘ : Defective power supply cable and plug may cause the following malfunction:

1. Turning the switch on, the turntable does not turn in any direction.
2. Sometime the turntable does not turn.
3. The shut off switch of the shop shuts down.

#### **TO CHECK THE CABLE:**

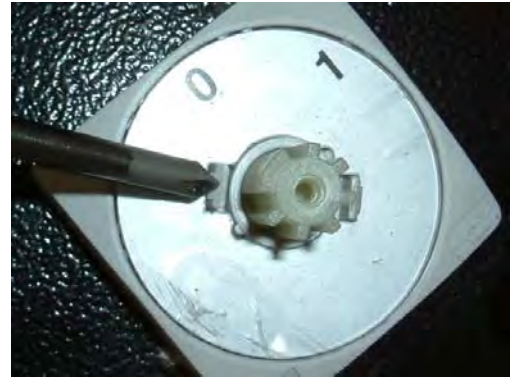
- Disconnect power supply.
- Remove the plug form the wall.
- Remove the electric box from the cabinet.



- Loosen the screw to remove switch knob.



- Remove the disc acting with a screwdriver on the side tabs
- Loose the screws and remove the frame switch.
- Take the switch out from the inverter box.



- Check wires continuity from power supply plug to main switch wires terminals.
- Cross the wire check to make sure that any wire in short circuit.

**IMPORTANT! TO CHECK GROUND (YELLOW/GREEN) WIRE, DISCONNECT THE WIRE END FROM THE TERMINAL BLOCK.**



**TO REPLACE THE CABLE:**

- Disconnect the power supply wires from the plug and switch terminals.
- Disconnect the ground wire from terminal block.
- Release cable strain relief from the inverter box.
- Remove plug from cord and take the defective cable away.
- Insert the new cable through the strain relief.

**IMPORTANT! USE ONLY APPROVED CABLES, PLUGS. GROUND WIRE MUST BE LONGER THAN THE OTHER ONES.**

- Fix new faston on inside cable ends and connect them to the switch terminals and to the plug.
- Fix the main switch to the electronic box.
- Install the disc.
- Mount again the switch knob and cover of the screw.
- Connect the ground wire to ground terminal block.
- Install plug.
- Tighten strain relief **FIRMLY**.
- Plug the machine to the wall.
- Check if the machine works fine.
- Disconnect the power supply.
- Fix the inverter box again to the cabinet.

## 4.2 POWER SUPPLY CABLE ON INVERTER SWITCH: CHECK AND REPLACEMENT

⌚ : 1h

✂ : Allen keys of 6mm, 7,8,13mm tube type key, medium cross screwdriver, pliers, multimeter.

ⓘ : Defective power supply cable and plug may cause the following malfunction:

1. Turning the switch on, the turntable does not turn in any direction.
2. Sometime the turntable does not turn.
3. The shut off switch of the shop shuts down.
4. Turntable Motor burning.
5. Turntable motor run with 1 or 2 phases

### TO CHECK THE CABLE:

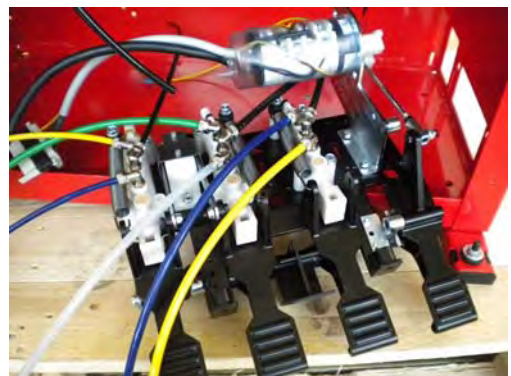
- Disconnect power supply.
- Remove the plug form the wall.
- Remove the side panel from the machine.



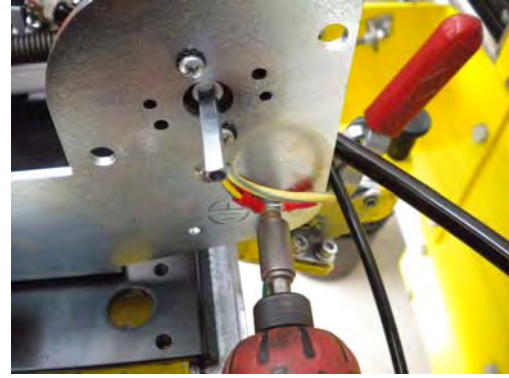
- Remove the foot pedal assembly from the cabinet.



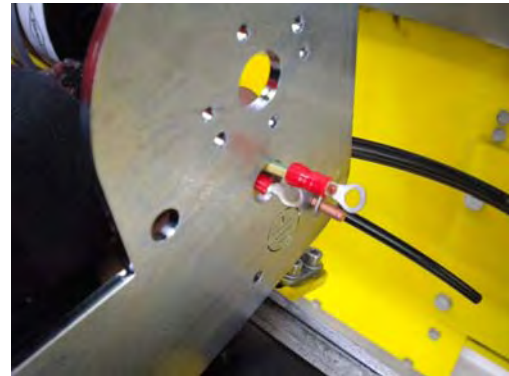
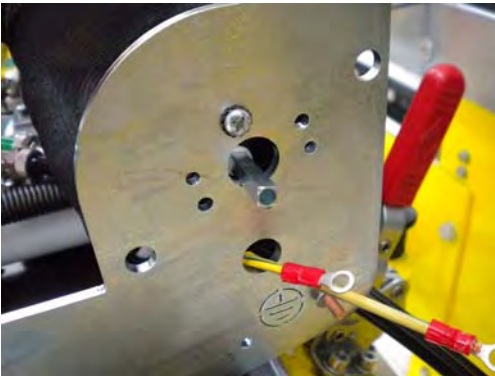
- Extract the foot pedal assembly from the cabinet.



- Disconnect the linkage from the switch shaft and disconnect the ground wires.



- Unscrew the screws that hold the switch to the bracket and remove the switch from the bracket.



- Remove the protection from the switch and disconnect the wires L1, L2 and L3 from the terminals and from the plug.



- Take a multimeter and select it in MOhm.
- Place the multimeter terminals on the ends of the same wire to check the continuity.
- Cross the wire check to make sure that any wire is in short circuit.

**IMPORTANT! TO CHECK GROUND (YELLOW/GREEN) WIRE, DISCONNECT THE WIRE END FROM THE TERMINAL BLOCK.**



**TO REPLACE THE CABLE:**

- Release cable strain relief from the power cord.
- Remove plug from cord and take the defective cable away.
- Insert the new cable through the strain relief.

**IMPORTANT! USE ONLY APPROVED CABLES, PLUGS. GROUND WIRE MUST BE LONGER THAN THE OTHER ONES.**

- Fix new faston on inside cable ends and connect them to the switch terminals and to the plug.
- Place the rubber protection on the switch.
- Connect the ground wire to ground terminal block.
- Install the switch on the bracket..
- Mount again the switch linkage and secure it with the screw.
- Tighten strain relief **FIRMLY**.
- Install the foot pedal assembly to the cabinet.
- Plug the machine to the wall.
- Check if the machine works fine.
- Disconnect the power supply.
- Install the side panel to the machine.

**4.3 INVERTER SWITCH S1: CHECK AND REPLACEMENT**

⌚ : 1h

✂ : Allen keys of 6mm, 7,8,13mm tube type key, medium cross screwdriver, pliers, multimeter.

① : Defective power supply cable and plug may cause the following malfunction:

1. Turning the switch on, the turntable does not turn in any direction.
2. Sometime the turntable does not turn.
3. The shut off switch of the shop shuts down.
4. Turntable Motor burning.
5. Turntable motor run with 1 or 2 phases

**TO CHECK THE INVERTER SWITCH:**

- Unplug the machine from the wall.
- Disconnect the wires from the motor ↪ 4.2.
- By a multi meter make sure that there is continuity between the 3 phases on the switch and the wires of the 1st speed of the motor, pressing the rotational pedal in the 1st stage.
- If there is not continuity on all 3 phases replace the switch.



**TO REPLACE THE INVERTER SWITCH:**

- Follow ↪ 4.2.

**4.4 MAIN ROTARY SWITCH Q1: CHECK AND REPLACEMENT**

⌚ : 0,5h

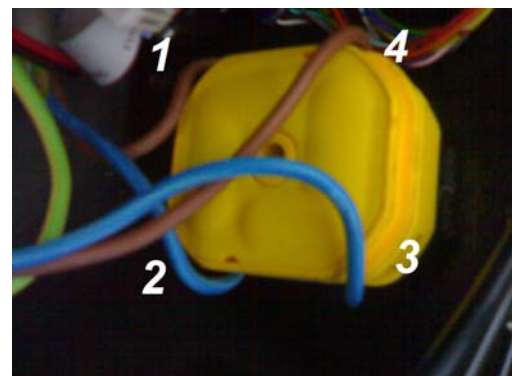
✂ : Allen keys of 3 and 5mm, small and medium screwdriver, medium cross screwdriver, faston pliers, scissors, pliers, multimeter

① : Defective main switch may cause the following malfunction:

1. Turning the switch on the turntable does not turn at all.
2. Turning the machine on the shut off switch of the shop shuts down.

**TO CHECK THE SWITCH:**

- Disconnect power supply.
- Remove the switch from the electronic box ↪ 4.1
- Disconnect all wires from the main switch and remove it with a screwdriver.
- Turn switch to “Off”. Check that there is no continuity ( $\Omega = \text{infinity}$ ) between any terminals 1,2,3 and 4.
- Turn switch to “On”. Check that there is continuity between terminals 1-2 and 3-4 ( $\Omega = 0 \sim 0,3$ ) and discontinuity between terminals 1-3 and 1-4, as well as 2-3 and 2-4
- If there is continuity the switch is in short circuit. It must be



replaced.

**TO REPLACE THE SWITCH:**

- Check that the tabs for contacts on the new switch are correctly oriented.
- Connect wires ends **FIRMLY** to the new switch terminals as shown in the appropriate electric diagram.
- Mount the switch to the electronic box ☞ 4.1.
- Connect the machine to the power supply.
- Check if the machine works fine.
- Disconnect the power supply.
- Fix the inverter box again to the cabinet.

**4.5 TURNTABLE MOTOR M1 CABLE: CHECK AND REPLACEMENT**

∞ : 1h

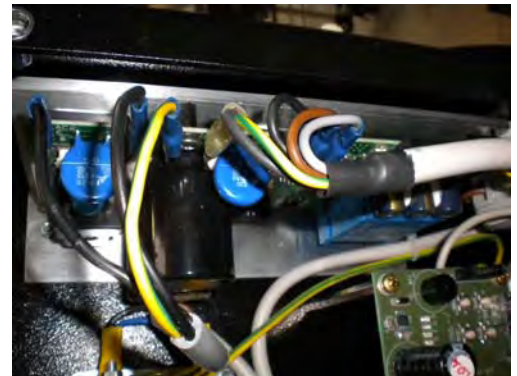
✂ : Medium screwdrivers, medium cross screwdrivers, 7mm tube type wrench, 3mm allen key, pliers, multimeter

ⓘ : Defective chuck motor cable may cause the following malfunction:

1. Low rotational torque.
2. Noisy motor.
3. Motor damaging (burning).
4. Turning the machine on the shut off switch of the shop shuts down.
5. The turntable does not turn at all.
6. Damaged Inverter.

**TO CHECK THE CABLE ON ELECTRONIC INVERTER:**

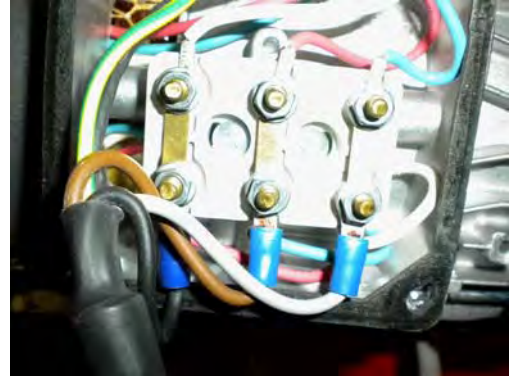
- Disconnect power supply from the wall.
- Remove the electric box from the cabinet ☞ 4.1.
- Disconnect the wires **white, brown and black** from the Inverter.



- Remove the side panel from the cabinet to access to the turntable motor M1



- Remove the motor terminals cover and disconnect all wires from terminals.
- Select the multimeter in Ohm and check if there is continuity between ends of each wire.
- Cross the wire check to make sure that wires are not in short circuit.



**TO CHECK THE CABLE ON INVERTER SWITCH:**

- Remove the foot pedal assembly from the cabinet ☞ 4.2
- Remove the switch from the pedal assembly ☞ 4.2
- Remove the motor terminals cover and disconnect all wires from terminals.
- Select the multimeter in Ohm and check if there is continuity between ends of each wire.
- Cross the wire check to make sure that wires are not in short circuit.

**TO REPLACE THE CABLE ON ELECTRONIC INVERTER:**

- Release cable strain relief on the electric box and on the motor.
- Take the wrong cable away.
- Insert the new cable through the strain relief.

**IMPORTANT! USE ONLY APPROVED CABLE. GROUND WIRE MUST BE LITTLE LONGER THAN THE OTHER ONES TO ALLOW THE GROUND IN CASE OF PHASE CABLE BREAKAGE.**

**NOTE:** Before connecting the wires ends, tighten all terminals nuts on the motor.

- Fix new fastons to the cable ends.
- Connect the wires to the motor and inverter terminals.
- Mount the motor terminal cover.

**IMPORTANT: WHEN REMOUNTING THE MOTOR TERMINALS COVER BE CAREFUL NOT TO CRUSH WIRES.**

- Plug the machine to wall.
- Turn the machine on and check if it works fine.
- Disconnect the machine from the power supply.
- Mount the side panel to the cabinet.
- Fix the electric box to the cabinet again ☞ 4.1

**TO REPLACE THE CABLE ON INVERTER SWITCH:**

- Replace the cable following ☞ 4.2

**4.6 TURNTABLE MOTOR M1 AND BELT: CHECK AND REPLACEMENT**

⌚ : 1h

✂ : 2 End keys 13,1 end key 17mm, medium cross screwdriver, 7mm tube type wrenches, 3 mm allen key, multimeter, loctite, extractor.

ⓘ : Defective centerpost motor may cause the following malfunction:

1. Motor is noisy.
2. Motor is burnt.
3. Low turntable torque.

**TO CECK THE MOTOR WHEN IT SHOWS LOW TORQUE OR IT IS NOISY:**

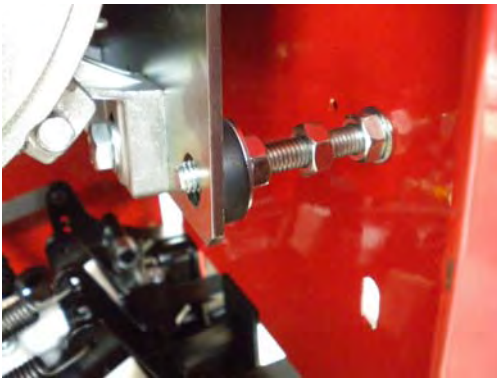
- Refer to ☞ 4.5

**TO CHECK THE MOTOR WHEN IT IS NOISY:**

- Disconnect power supply from the wall.
- Remove the side panel to access to the motor 4.4.
- Unscrew the 8mm nuts to get motor loose.



- Turn the front nut to move the motor support and loose the belt.
- Use a screwdriver in between pulley and belt and rotate the pulley to remove the belt.



- Place a screwdriver through the fan protection and turn the motor pulley by hand to make sure that the fan is well blocked to the motor shaft.
- Plug the machine to the power supply.
- Turn the machine on.



**MACHINE UNDER TENSION DANGER OF ELECTRIC SHOCK**

- Press the rotational pedal to run the motor to verify if it is noisy

**TO CHECK THE MOTOR WHEN IT IS BURNT ON ELECTRONIC INVRTER:**

- Disconnect the power supply from the machine.
- Refer to paragraph 5.4 to make sure about the wiring and the cable.
- Remove all wires and connections from the motor terminal.
- Select the multimeter in Ohm and check if there is continuity between all terminals of the motor: if there is continuity the motor must be replaced.

**TO CHECK THE MOTOR WHEN IT IS BURNT ON INVRTER SWITCH:**

- Unplug the machine from the wall.
- Disconnect the wires from the motor.
- By a multi meter make sure that there is continuity between the 3 phases on the switch and the wires of the 1st speed of the motor, pressing the rotational pedal in the 1st stage.

- If there is continuity on all 3 phases replace the motor.

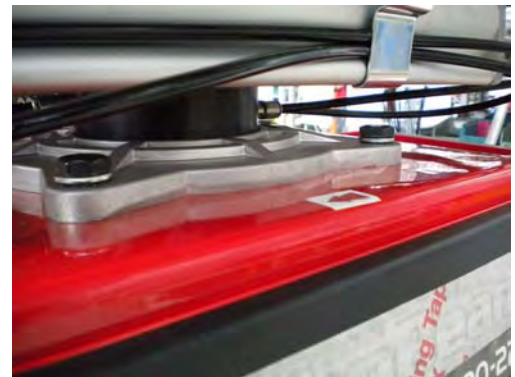
**TO REPLACE THE MOTOR:**

- Place some piece of woods under the motor to avoid any dangerous falling on the foot pedal assembly. The top one should be longer in order to be used to lift the motor during the mounting.



- Unscrew the two front bolts from the manifold to release the motor.

**IMPORTANT! HOLD THE MOTOR WITH A HAND TO AVOID ANY POSSIBILITY OF FALLING THAT COULD DAMAGE THE FOOT PDAL ASSY.**



- Disconnect the wires from terminals.
- Remove the pulley set screws.
- Remove the pulley by using an extractor tool.
- Remove the motor from its support.
- Take the new motor.
- Install the pulley by using rubber hammer.

**NOTE:** The mounting of the new pulley must be done very carefully in order to avoid motor bearings damaging.

**NOTE:** Before connecting the wires ends, tighten all terminals nuts.

- Connect the wires **FIRMLY** to motor terminals following the voltage at which the machine is supplied.
- Fix the motor on its support.
- Install the motor assy on the machine and lock it firmly.
- Mount the belt.
- Adjust the belt tension
- Plug the machine to the wall.
- Turn the machine on.



**MACHINE UNDER TENSION DANGER OF ELECTRIC SHOCK**

- Check the rotation way of the motor: If it is wrong reverse only two motor wires.
- Turn the machine off and unplug it from the wall.
- Mount the motor terminals cover.

**IMPORTANT: WHEN REMOUNTING THE MOTOR TERMINALS COVER BE CAREFUL NOT TO CRUSH WIRES.**

- Mount side panel to the cabinet.
- Turn the machine on again and check if it works fine again.

CHAPTER 5  
ELECTRONIC SECTION

**WARNING!**



**BEFORE APPROACHING THE ELECTRONIC PARTS,  
DISCONNECT THE MACHINE FROM POWER SUPPLY.**

**5.1 INVERTER T1: CHECK AND REPLACEMENT**

- ∞ : 1h
- ✂ : Voltmeter, 3mm allen key, 8mm tube type key, pliers.
- ⓘ : Defective inverter may cause the following malfunction:
  1. Motor does not turn at all.
  2. Motor turns in slow speed only
  3. Motor turns in high speed only.
  4. Motor turns in reverse direction only.
  5. Turntable does not turn in second speed.
  6. The shut off switch of the tire shop shuts off.

**TO CHECK THE INVERTER:**

- Turn the machine off.
- Remove the electric box from the cabinet 4.1.
- Disconnect the wires and the connectors from the inverter terminals marking the position.
- Turn the machine on.
- Take the multimeter and select it in VAC up to 400.
- Position the multimeter terminals on the output terminals of the inverter.
- Press the rotational pedal and check if the output is 230VAC on all three terminals


**IMPORTANT! BEFORE REPLACING THE INVERTER MAKE SURE THAT THE TURNTABLE MOTOR AND ITS WIRES ARE FINE.**



**TO REPLACE THE INVERTER:**

- Disconnect the power supply from the machine.
- Unscrew the rear screw to remove the Inverter from the box.



- Mount the new inverter.
- Connect all wires to the terminals following the correct order.
- Connect the machine to the power supply.
- Turn the machine on and check if it works fine.
- Turn the machine off.
- Disconnect the machine from power supply.
- Fix the electric box to the cabinet  4.1.
- Connect the machine to the power supply.
- Check if the machine works fine.

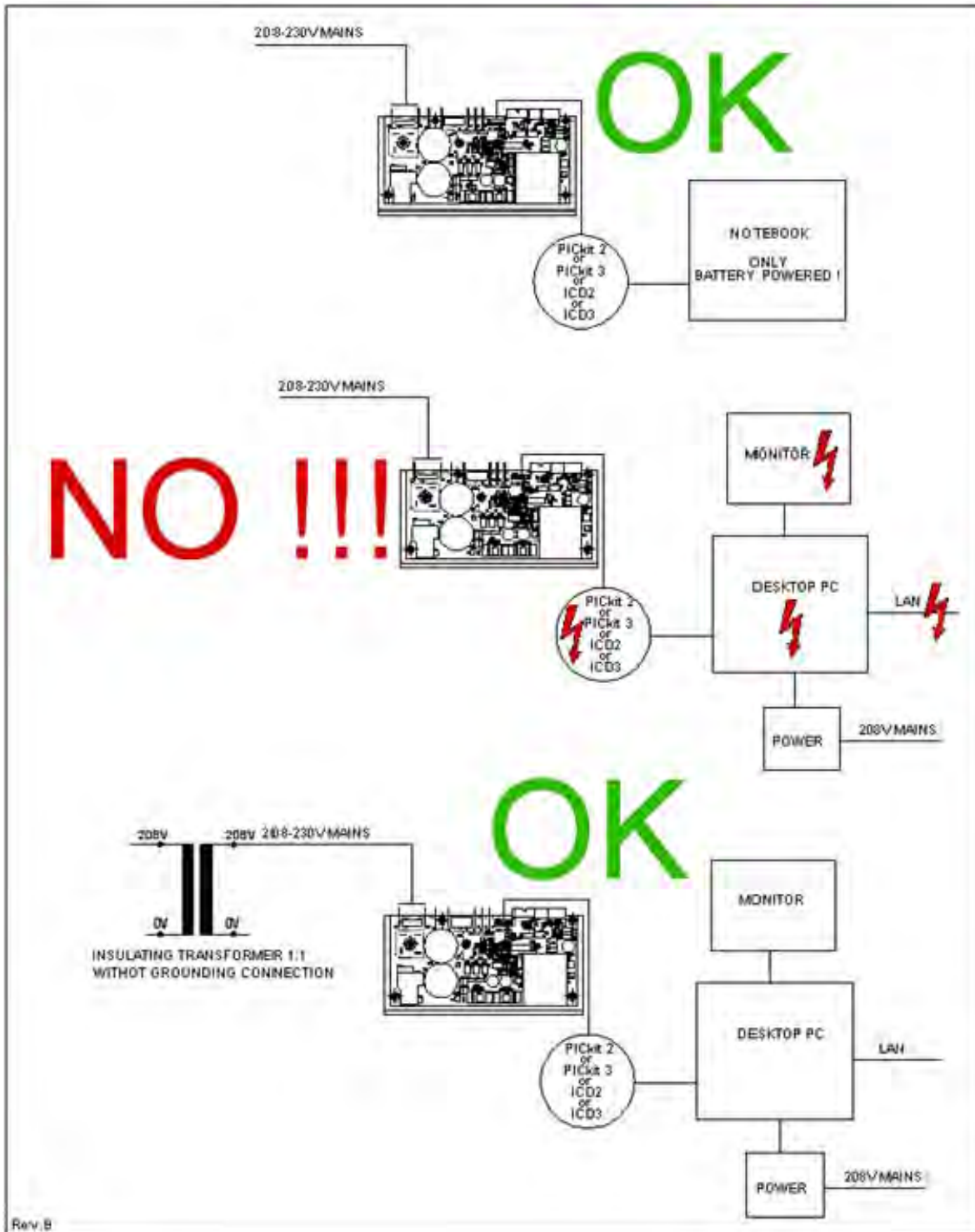
**5.2 INVERTER T: FIRMWARE UPDATE**

∞ : 2h

✂ : 3mm allen key, 8mm tube type key, pliers, medium cross screwdriver, Note book PC.

**Inverter firmware update kit**

**WARNING:** The PC used to program the inverter and the inverter can't be connected both to the mains, follow the admitted connection below.



Other admitted programmer devices : PICKit 3, ICD 2, ICD 3 from Microchip.

**WARNING:** ICD 2 and ICD 3 need specific programming cable.

## Software installation.

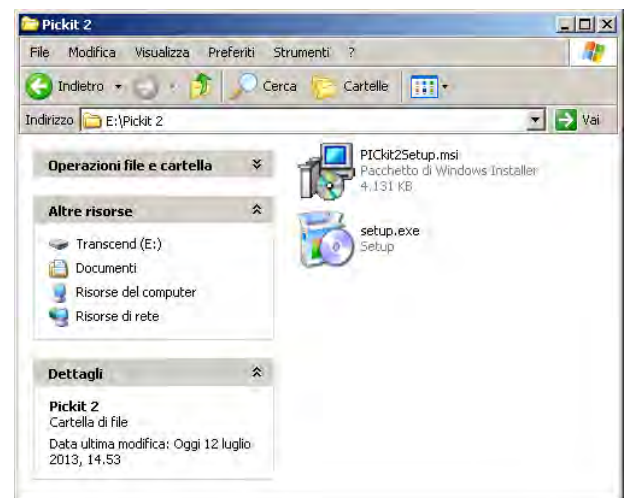
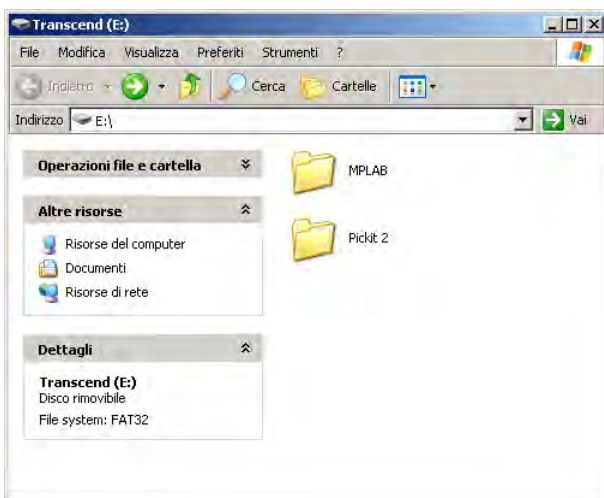
Use the programming software included in the memory stick inside the kit.

The stick contain 2 different programming software (don't use CD):

- Pickit 2 v.2.61 (Quik to install and easy to use)
- MPLAB 8.91 (More complete, but more complex to install and to use).



a) To install PICKit2 v2.61 open the folder PICKit 2 and start Setup program.



At the end of the installation a icon  will be on the desktop.

b) To install MPLAB 8.91 open the folder MPLAB and start Setup program.





At the end of the installation a icon will be on the desktop.

**Programmer connection**

a) Connect the programmer to the USB port, and the programming cable as shown below.

**WARNING:** the blue connection must be inserted in the programmer connection marked with a small triangle.



b) Connect the programming cable to the inverter programming port.

**WARNING:** The inverter must be OFF.

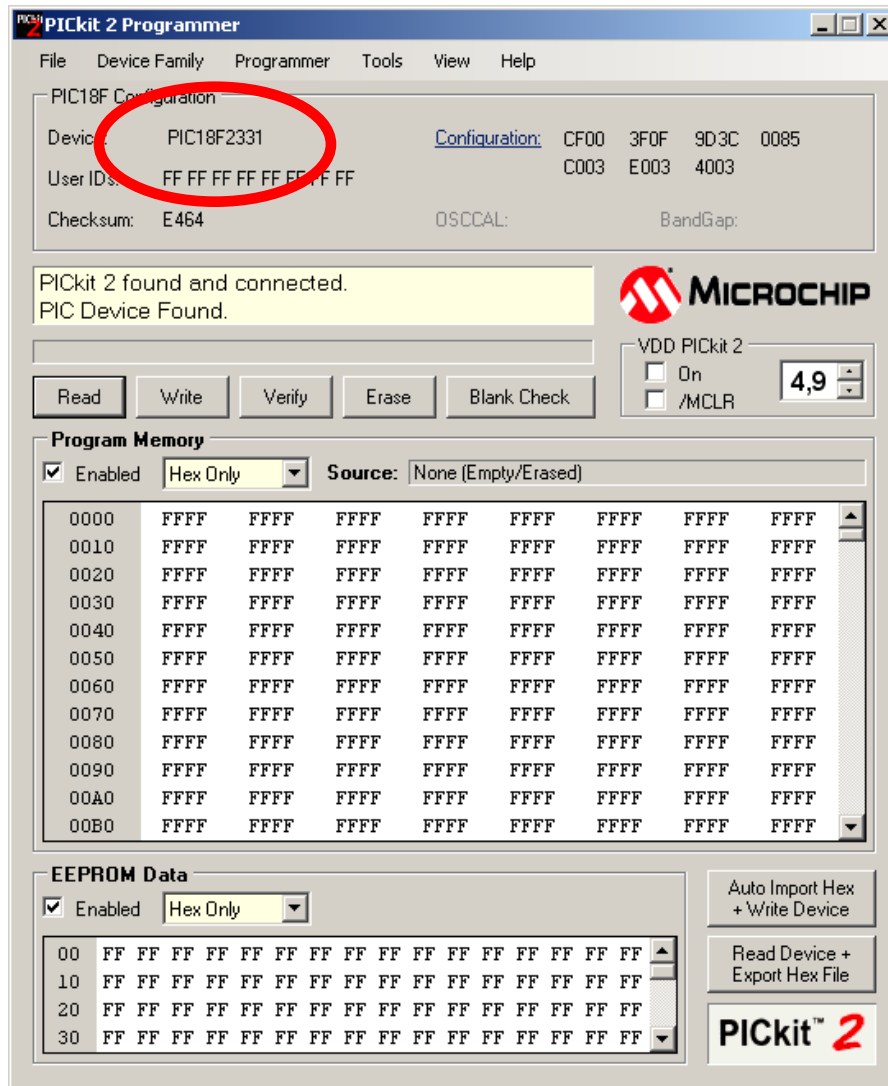


**Update firmware wit PICKit 2**



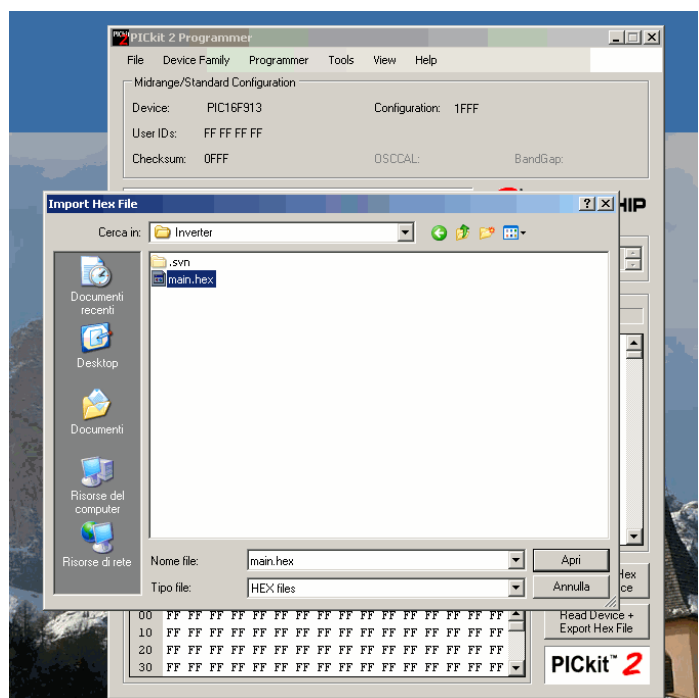
a) Start programming software with icon.

b) With Device Family -> PIC18F the programmer auto-detect the device to program. In this case PIC18F2331 (The board must be powered).

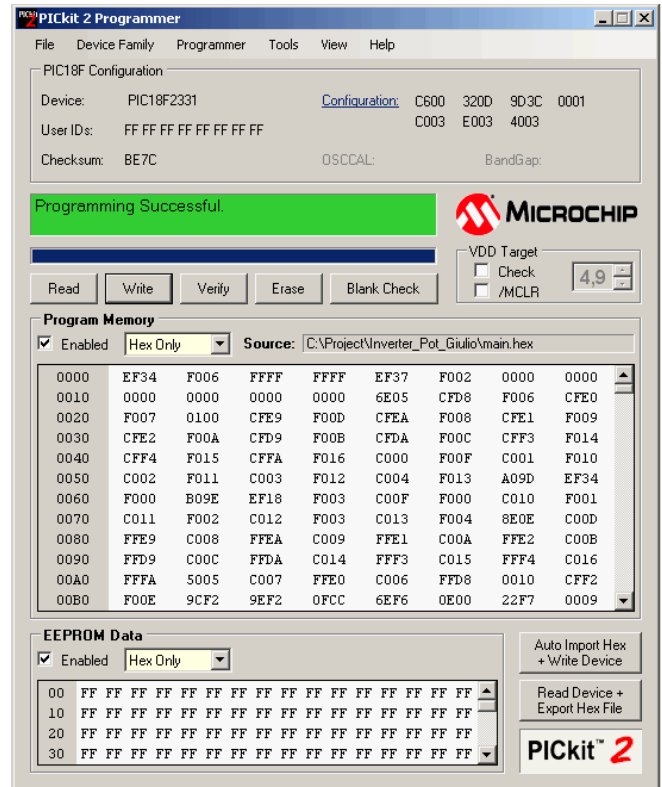


c) With File -> Import menu, load hex file as shown below.

**The last revision of firmware (hex file) will be sent by e-mail.**



d) Push the Write button to start the update procedure:  
At the end a success message is shown (green window).



e) Switch off the power and remove the programming cable.

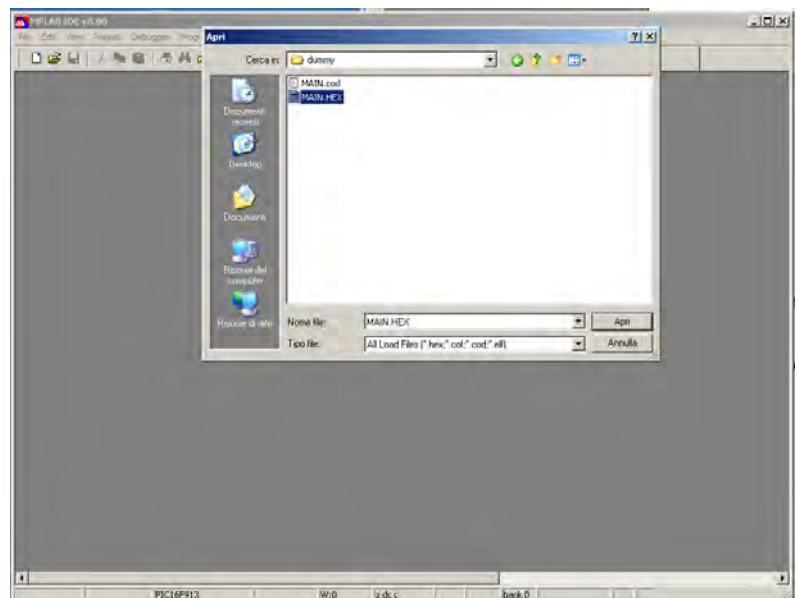
**Update firmware wit MPLAB**



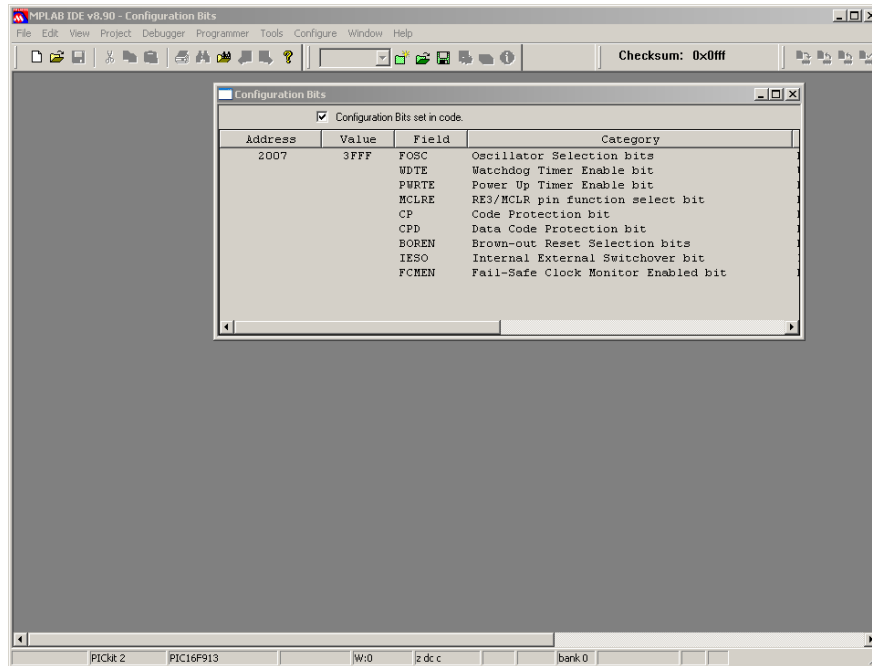
a) Start programming software with icon.

b) With File -> Import menu, load hex file as shown below.

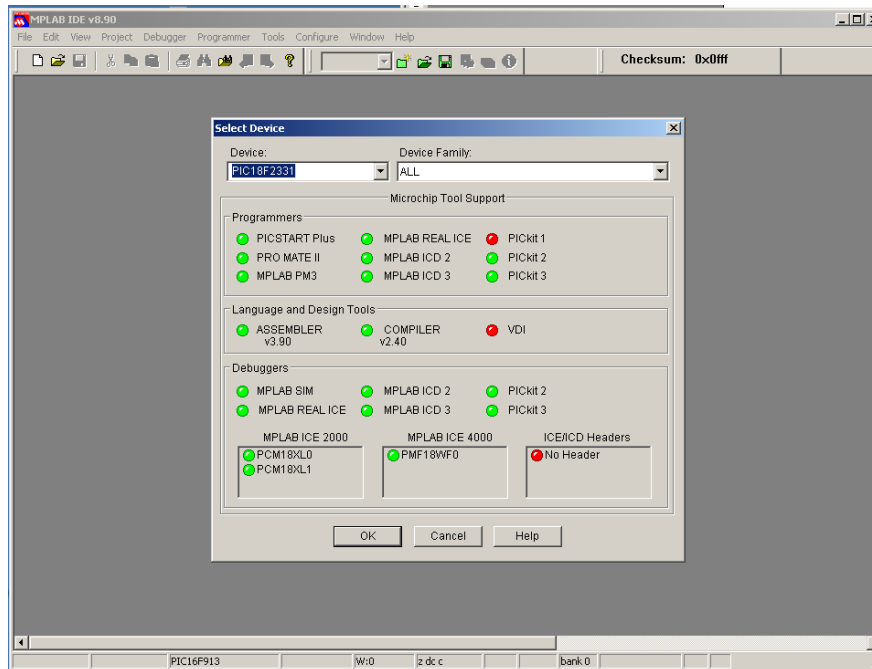
**The last revision of firmware (hex file) will be sent by e-mail.**



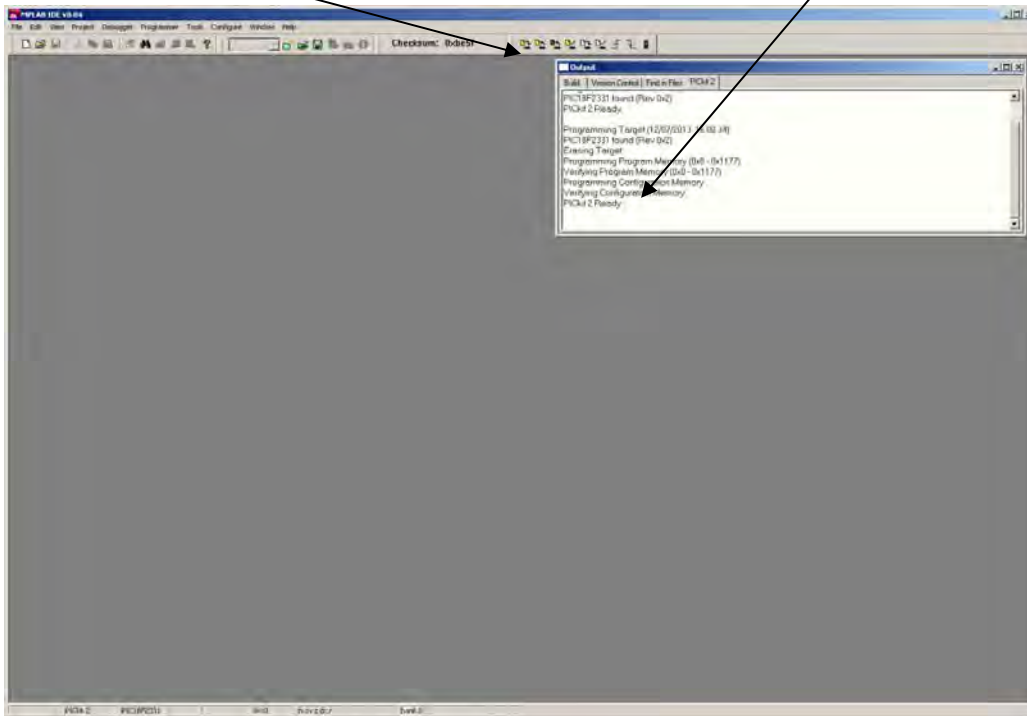
c) With Configure -> Configuration Bits... check the box Configuration Bits set in code



d) With Configure -> Select Device chose 18F2331 (device to be programmed).



- e) With Programmer -> PICkit 2 chose the programmer.
- g) Switch on the power to the board. The programming icons become active.
- g) Click on the programming icon (first at left) and wait for a finish message on the window.



- g) Switch off the power and remove the programming cable.

### 5.3 TURNTABLE POTENTIOMETER: CHECK AND REPLACEMENT

⌚ : 1h.

✂ : 2,5, 3, 4 and 5mm Allen Key, 10 and 13mm end key, 8 and 10mm tube type key, 13mm socket, medium standard screwdriver, Multimeter, electronic dynamometric key.

ⓘ : Defective potentiometer may cause the following malfunction:

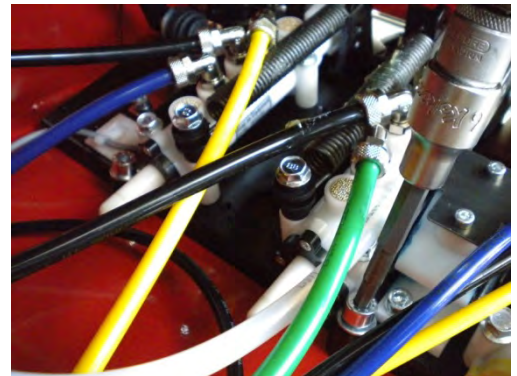
1. Turning the machine on the turntable turns itself with rotational pedal in rest position.

#### TO CHECK THE POTENTIOMETER:

- Turn the machine off.
- Remove the side panel



- Unscrew the foot pedal assy from the cabinet.



- Extract the foot pedal assy from the cabinet.



- Unscrew the inverter box from the cabinet.



- Disconnect the potentiometer connector from the Inverter.



- Remove the protection from the potentiometer.



- Take the multimeter and select Ohm.
- With the rotational pedal in rest position, place the multimeter terminals on CCW and CW terminals of the potentiometer: the multimeter display should show 20KOhm.



- Place the multimeter terminals on CCW and PX terminals of the potentiometer: pushing the rotational pedal upward the value should change constantly.



- Place the multimeter terminals on CW and PX terminals of the potentiometer: pressing the rotational pedal downward the value should change constantly.

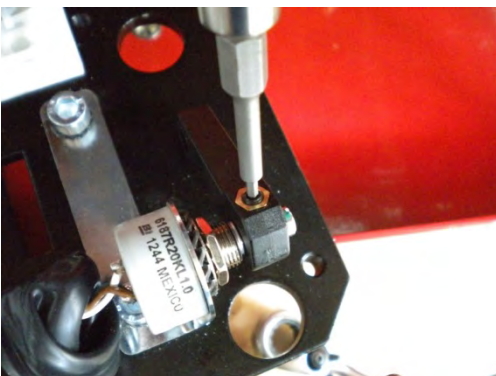


**TO REPLACE THE POTENTIOMETER**

- Remove the rod from the potentiometer linkage.



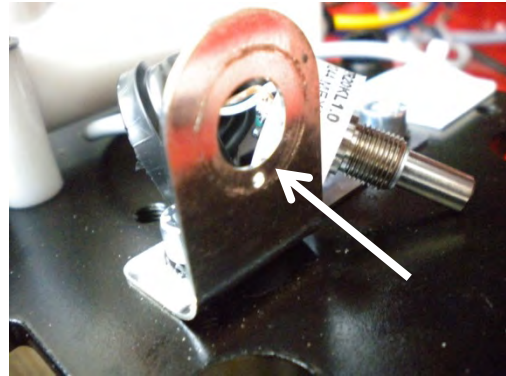
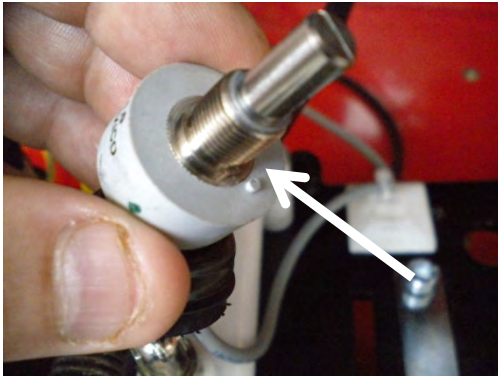
- Release the set screw that secure the linkage to the potentiometer.
- Remove the linkage from the potentiometer.



- Remove the nut from the potentiometer to release it.



- Install the new potentiometer: make sure to mount it with anti-rotational pin into the slot in the bracket.



- Tight the nut at 1,65Nm.
- Connect the potentiometer to the Inverter.
- Install the linkage with block firmly the securing screw.
- Mount the connecting rod to connect rotational pedal/potentiometer linkage: tight the screw until it will not have axial play.
- Connect the potentiometer to the Inverter.
- Adjust the potentiometer  $\approx 5.5$
- Connect the power supply.



**MACHINE UNDER TENSION DANGER OF ELECTRIC SHOCK**

- Check again if the potentiometer is properly adjusted.
- Turn off the machine.
- Mount the foot pedal assy on the cabinet.
- Route the potentiometer cable.
- Connect the machine to the power supply and check if the turntable rotates correctly.
- Disconnect the power supply.
- Mount the inverter box to the cabinet.
- Connect the power supply and the air pressure and check again if the machine is working fine.

## 5.4 POTENTIOMETER ADJUSTMENT WITH FIRMWARE 1.4.5

∞ : 1h.

✂ : 2,5, 3, 4mm Allen Key, 10 and 13mm end key, 8 and 10mm tube type key, 13mm socket, medium standard screwdriver, Multimeter, electronic dynamometric key. 5mm Allen.

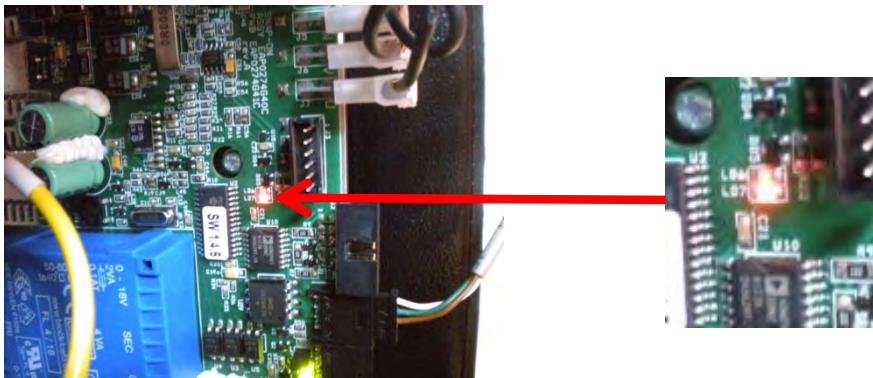
Procedure to calibrate the “zero” of the potentiometer:

- 1 Disconnect air pressure and power supply from the machine.
- 2 Remove the Inverter box from the cabinet and the foot pedal assembly 6.4
- 3 Disconnect the motor wires from the inverter terminals to avoid that the motor will start itself during the potentiometer adjustment..
- 4 Turn on the machine.



## WARNING! MACHINE UNDER TENSION. RISK OF ELECTRIC SHOCK

- 5 Unlock the securing screw of the potentiometer.
- 6 Make sure that the rotational pedal is in rest position.
- 7 Rotate the potentiometer with the screwdriver until the red led LD7 on the Inverter will remain ON.



- 8 Secure the screw of the potentiometer with the dynamometric key at 0,8Nm.
- 9 Make sure that led is still on.
- 10 Turn off the machine.
- 11 Disconnect the power supply.
- 12 Connect the motor wires to the inverter terminals.
- 13 Connect the power supply.
- 14 Turn on the machine.
- 15 Check if the turntable turns correctly.
- 16 Turn the machine off.
- 17 Mount the inverter box to the machine and install the foot pedal assembly 6.4.

## CHAPTER 6 PNEUMATIC SECTION

### 1 PNEUMATIC FUNCTION

The pneumatic section is related to all those functions and devices controlled by air pressure. The working pressure required by machine to work properly must be from 8 to 12 bar and it is reported on the sticker label.

#### 6.0.1 AIR PRESSURE CIRCUIT:

The inlet air pressure is in the air filter - lubricator assy. This assembly is bolted to the back or to the side of of the cabinet according to the models and it is equipped by a not adjustable air pressure regulator that reduces the over pressure to 10 Bar to avoid overstress to pneumatic components.

#### 6.0.2 FUNCTIONS DESCRIPTION:

The description of the pneumatic functions can be grouped into 5 phases as following:

- Air filter - lubricator assy.
- Inflation/bead seating function
- Tools cylinders function.
- Lift cylinder function.

#### 6.0.3 AIR FILTER LUBRICATOR ASSY

The air pressure is controlled by the air pressure reducer and forwarded to water separator. Two output forward the dry air to the inflator valve and to the bead seating tank. One more outlet connect the water separator to the lubricator where an adjustable screw controls the oil drops to be added to the dry air to be supplied to all pneumatic cylinders.

#### 6.0.4 INFLATION / BEAD BLASTER FUNCTION

- **INFLATION:** The dry air pressure reach the inflation spool valve. Pressing the valve pedal for half of its stroke, 1<sup>st</sup> stage, the dry air will go to the tire through to the air control valve that controls the tire inflating pressure during the inflating process. Releasing the pedal, the air contained in the tire will act the manometer showing the tire pressure. Pressing the air releasing button the tire pressure will be reduced.
- **BEAD BLASTER:** The dry air pressure reach the air tank, equipped with a pressure relief valve set up at 12 bar. The bead blaster valve is basically a diaphragm valve and it is directly bolted to the tank. When inflator / blaster pedal is in rest position, air pressure is maintained equal on both sides of the diaphragm. Fully depressing the inflation pedal and the micro valve button simultaneously, air is allowed to exhaust through the controlled valve lowering the pressure inside of the diaphragm. Reduction of air pressure moves the diaphragm down allowing air from tank to flow to bead blaster jet.

#### 6.0.5 DOUBLE ACTING CYLINDERS

- **OPENING:** The air flow arrives to the opened valve and reaches the side "A" of the cylinder. Air contained in opposite side "B" will escape through the coil valve.
- **CLOSING:** The air flow arrives to the opened valve and reaches the side "B" of the cylinder. Air contained in opposite side "A" will escape through the coil valve

#### 6.0.6 SINGLE ACTING CYLINDERS

- **OPENING:** The air flow arrives to the opened valve and reaches the side "A" of the cylinder.
- **CLOSING:** The air flow from the valve to side "A" is interrupted. Air contained in side "A" will escape through the valve due to external springs loading.

## 6.2 AIR FILTER – LUBRICATOR ASSY: CHECK AND REPLACEMENT

⌘ : 30'

⌘ : Allen key 3mm, 8 and 13mm end key, medium standard screwdriver.

① : Defective air filter lubricator assembly may cause the following malfunction:

1. Air leaking.
2. Oil leaking.
3. Incorrect air lubrication.
4. Slow pneumatic motion.

### TO CHECK THE AIR FILTER LUBRICATOR ASSY:

- Air leaking and oil leaking can be solved only if they are caused by the glasses with the replacement of the glasses. In all other cases the replacement of the whole assembly is required.

### TO REPLACE THE AIR FILTER LUBRICATOR ASSY:

- Disconnect the air pressure from the machine.
- Unplug the hoses.
- On machines with the assembly bolted to the side of the cabinet, loosen the bracket screws and remove the assy.



- On machines with the assembly bolted inside of the cabinet, remove the side panel, ¶ 4.1, and unscrew the bolt behind the tilting post cylinder.



- Install the new air filter assy.
- Plug in the air hoses.
- Make the oil level.
- Connect the air pressure.
- Make the oil lubrication adjustment.
- Check if the machine works fine again.

**TO REPLACE THE GLASSES:**

- Disconnect the air pressure from the machine.
- Turn counter clockwise the glass to remove it from the assy.
- Take the new glass and tighten it.

**IMPORTANT!**

**BEFORE TIGHTENING THE LUBRICATOR GLASS, FILL IT WITH THE RECCOMENDED OIL ONLY AS REPORTED ON THE USER MANUAL AND ON DEDICATED TAG.**



**TO CHECK THE AIR LUBRICATION:**

- Move in and out the bead breaker cylinder 'till end of stoke and make sure, looking from the top transparent cap, that lubricator supplies one drop of oil every 2 complete cycle of the lift.

**TO ADJUST THE AIR LUBRICATION:**

- Take a screwdriver and turn the regulator on top of the transparent cap. Turning clockwise the oil drops will decrease. Turning counter clockwise the oil drops will increase.



**6.3 TILTING POST CYLINDER: CHECK AND REPLACEMENT**

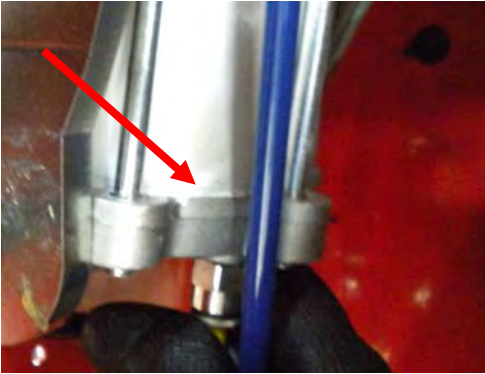
- ⌘ : 30'
- ⌘ : 8mm tube type key, 12 and 17 mm end keys, 17mm socket, pliers
- ⓘ : Defective cylinder may cause the following malfunction:
  1. Slow or no motion of the tilting post.
  2. External air leaking from the flange or from the piston rod
  3. Air leaking from fittings.
  4. Air leaking trough the valve.

**TO CHECK THE EXTERNAL AIR LEAKING**

- Disconnect air pressure.
- Remove the side panel, ¶ 4.1
- Remove the tilting post protection



- Connect the air pressure.
- Position the cylinder where it leaks air.
- Check if the leaking is in between cylinder flange-cylinder liner or if it is coming from the piston rod.



- In case of need, place some soap with water on the interested part to better see where the leaking is coming from.

**TO CHECK THE FITTING AIR LEAKING**

- Position the cylinder where it leaks air.
- Check if the leaking is in between the fitting and the cylinder flange.
- In case of need, place some soap with water on the interested part to better see where the leaking is coming from.

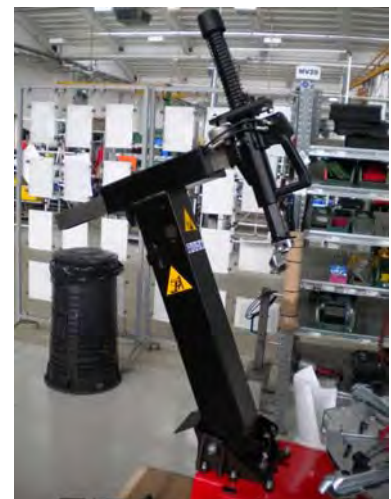
**TO CHECK THE CYLINDER WHEN TILTING POST ARM WILL NOT MOVE, OR WILL MOVE SLOWLY OR AIR LEAKING THROUGH THE TILTING POST VALVE.**

- Position the cylinder where it leaks air.
- Disconnect the air pipe where there is not any air pressure.
- If the air is getting out from the cylinder fitting, the **cylinder** is leaking air.
- If the air is getting out from the valve fitting, the **control valve** is leaking air.



**TO REPLACE THE CYLINDER**

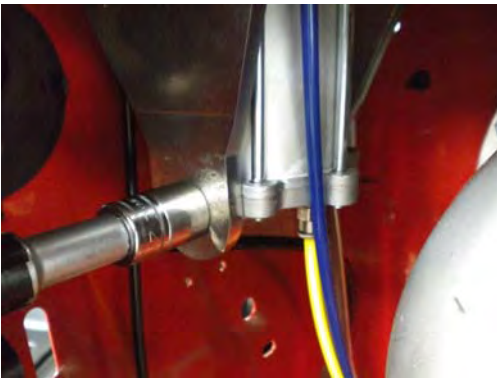
- Unplug the machine from the air pressure.
- Tilt the post backward.



- Remove the cotter pin and then slide off the pin from the cylinder.



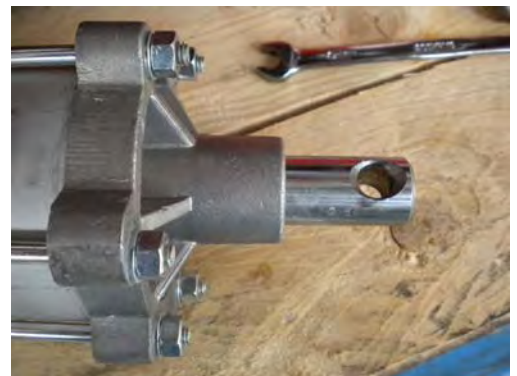
- Unlock the cylinder bolt with the end screw of 17 and the socket of 17mm and remove the screw to release the cylinder.



- Take out the cylinder and disconnect the air pipes.



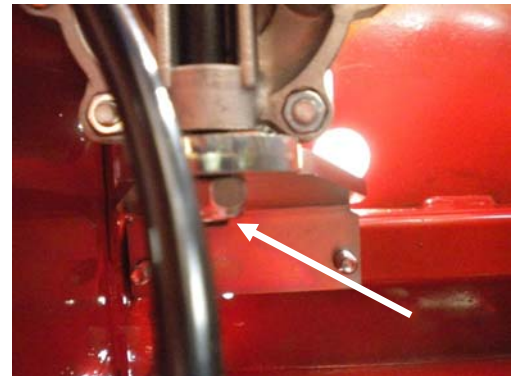
- Connect the air pipes to the new cylinder.
- Extract the piston rod of about 5cm/2"



- Place the cylinder in its place and hold it from the piston rod while installing the screw in the bottom.



- Lock the bottom screw with the self locking nut. Tighten the nut 'till the screw thread will exit from the nut.



- Fix the tilt post to the cylinder with the pin and secure with the cotter pin.
- Connect the air pressure.
- Check if the machine works fine.
- Install the tilting post cover.
- Mount the side panel.

**6.4 VERTICAL ROD LOCKING CYLINDER ON 26'': CHECK AND REPLACEMENT**

- ⌚ : 1h
- ⌘ : Allen key 4,5 and 6mm, 17mm end key, 13mm tube type key
- ⓘ : Defective vertical locking cylinders may cause the following malfunction:
  - Air leaking from the cylinder.
  - The vertical rod does not remain blocked..

**TO CHECK THE CYLINDER:**

- Remove the cylinder cover.
- Press the yellow button of the valve to block the vertical rod of the operating arm.
- Check if the cylinder is leaking air in between cylinder liner and seal.



**TO REPLACE THE CYLINDER:**

- Disconnect the air pressure and the power supply.
- Disconnect the air pipes from the cylinder.



- Unlock the adjustment screw over the cylinder head and turn it until it will out of the blocking plate range.
- Remove the washer from the cylinder.



- Unlock and remove the two front adjustment screws and the two screws with springs.



- Lift the blocking plate and extract the cylinder with robust screwdriver.



- Install the new cylinder.
- Install the washer.

- Install the two front adjustment screws and turn them until end of stroke.
- Then turn them back of two turns.
- Block the counter nuts.



- Install the two screws with springs. Tighten them for about 10mm
- Tighten the cylinder adjustment screw: when the screw will touch the washer turn the screw of two more turns.



- Connect the air pressure and the power supply.
- For the mechanical adjustment refer to chapter 7.2.
- Check if the machine works fine.

**6.5 VERTICAL ROD LOCKING CYLINDER ON 22": CHECK AND REPLACEMENT**

⌚ : 30'

⌘ : Allen key 3,4,5 and 6mm, 17mm end key, 13mm tube type key

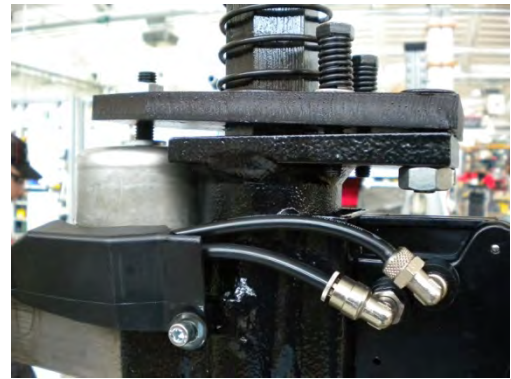
ⓘ : Defective vertical locking cylinders may cause the following malfunction:

1. Air leaking from the cylinder.
2. The vertical rod does not remain blocked.

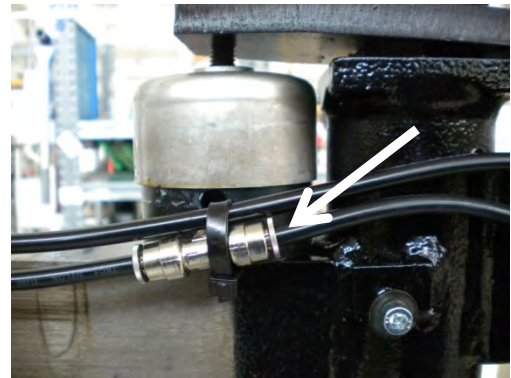
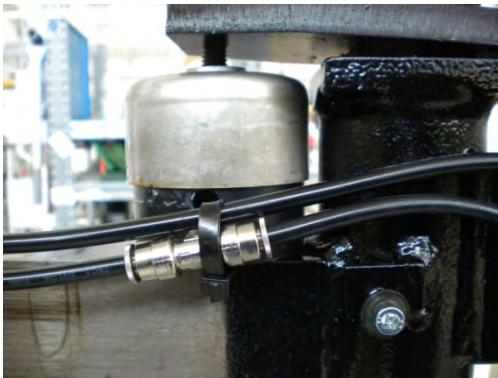
**TO CHECK THE CYLINDER**

- Disconnect the air pressure from the machine
- Remove the cover.





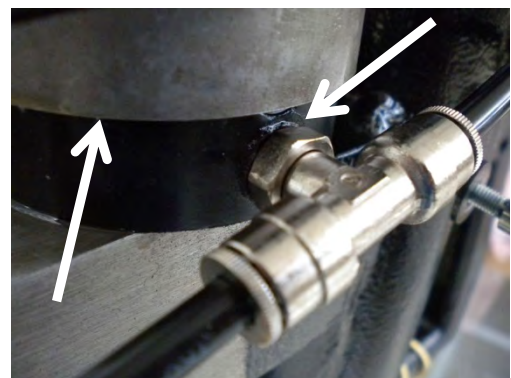
- Remove the pipes guide and check if the air is leaking in between pipes and fittings.



- In case of air leaking in between pipes and fittings, disconnect the air pressure, remove the pipes from the fitting and cut a piece of pipe to renew its end.



- Check if the cylinder is leaking from the fitting and the plastic body or in between the plastic body and the aluminum cylinder liner.

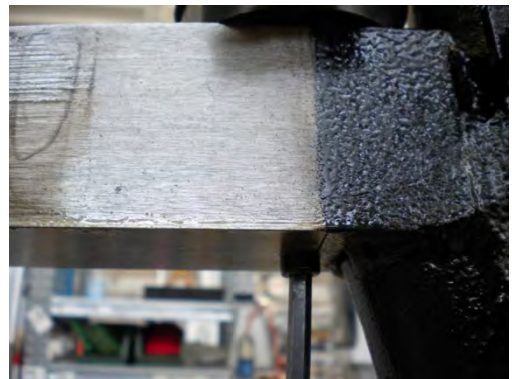


- It is also possible that cylinder is leaking air through the fixing screw underneath the arm.



**TO REPLACE THE CYLINDER**

- Disconnect the air pressure from the machine
- Cut the stripe and disconnect the air pipes.
- Remove the screw underneath the arm to release the cylinder.



- Once removed the screw, lift the blocking plate with a screwdriver and remove the cylinder.



- Remove the washer from the top of the cylinder and place it on the new cylinder.



- Secure the cylinder to the arm with fixing screw.
- Release the blocking plate.
- Connect the pipes to the cylinder.
- Connect the air pressure and make sure that the cylinder is working properly.
- Disconnect the air pressure.

- Belt the air pipes to the fitting of the cylinder.
- Mount the plastic guide.
- Mount the cover.
- Connect the air pressure and check if the machine works fine.

## 6.6 HORIZONTAL BLOCKING CYLINDER ON 26": CHECK AND REPLACEMENT

⌚ : 30'

⌘ : Allen key 4mm, 17mm end key.

ⓘ : Defective horizontal locking cylinders may cause the following malfunction:

1. Air leaking from the cylinder.
2. The horizontal rod does not remain blocked..

### TO CHECK THE CYLINDER:

- Remove the cylinder cover.



- Press the yellow button of the valve to block the horizontal arm of the operating arm.
- Check if the cylinder is leaking air in between cylinder liner and seal or from the hole on the front flange.

**NOTE: IF THE CYLINDER WILL LEAK AIR FROM THE FITTING, REPLACE THE FITTING ONLY.**

### TO REPLACE THE CYLINDER:

- Disconnect the air pressure and the power supply.
- Disconnect the air pipe from the cylinder.
- Remove the rear bolt and take out the cylinder.
- Mount the new cylinder.

**NOTE: DO NOT OVERTIGHT THE BLOT. WHEN THE SCREW HEAD AND THE NUT WILL BE IN CONTACT WITH THE CYLINDER SUPPORT, STOP THE TIGHTENING.**

- Connect the air pipe from the cylinder.
- Connect the air pressure and the power supply.
- Check if the machine works fine.
- Install the cylinder cover.



## 6.7 HORIZONTAL BLOCKING CYLINDER ON 22": CHECK AND REPLACEMENT

⌚ : 30'

⌘ : Allen key ,4,5,6 and 8mm, 13, 17 and 19mm end key.

ⓘ : Defective vertical locking cylinders may cause the following malfunction:

3. Air leaking from the cylinder.
4. The vertical rod does not remain blocked.

**TO CHECK THE CYLINDER**

- Disconnect the air pressure from the machine
- Remove the rear cover to access to the cylinder. According to the model the cylinder will be install in different configuration.



- Check where the cylinder is leaking.

**TO REPLACE THE CYLINDER**

- Disconnect the air pressure from the machine
- Remove the plastic cap over the post tilt and then remove the horizontal arm end stroke.



- Slide off the horizontal arm until the blocking plate is free and then remove blocking plate and releasing spring.



- On some models it is required to remove the rear screws with the springs and the washer in between cylinder and adjustment screw before sliding off the blocking plate.



- By pressing with a finger from the back, push off the cylinder. In some models the cylinder comes off itself



- Disconnect the air pipe. In case of air leaking in between pipes and fittings, cut a piece of pipe to renew its end and then mount the cylinder again.



- Connect the air pipe to the new cylinder.
- Place the cylinder on its side of the tilt post by pressing it in the middle with a finger.
- **DO NOT FORCE THE PLACING WITH HAMMER OR OTHER HEAVY DEVICES.**



- Position the blocking plate on the tilt post. With the left hand. The plate must be placed in between the brackets over the top of the tilt post.



- On some models, the adjustment screw must be oriented towards the cylinder while the machines section in opposite direction.



- On some other models the flaring must be oriented towards springs.



- When the locking plate is place, with the right hand slide in gently the horizontal arm until to hang up the plate.



- Place the releasing spring. Enter the spring by hand inside of the post and hold it.



- Take a screwdriver and pull up the right side of the spring.



- Adjust the position of the spring inside of the post in order to avoid any contact with arm during the sliding.



- On models with two springs adjust the position of the springs in order to center it with hole in the blocking plate and then install the screws



- Place the washer, where available, in between the cylinder and screw and slide in gently the horizontal arm to complete the assembly.



- Install the end stroke screw.
- Connect the air pressure and check if the machine is working fine.
- On models with two springs it is mandatory to adjust the horizontal spacing between tool and rim
- Mount the plastic cap of the end stroke screw.
- Mount the cylinder protection.

**6.8 VERTICAL ROD LIFT CYLINDER: CHECK AND REPLACEMENT**

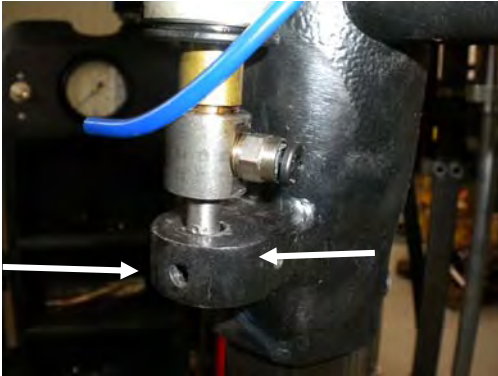
- ⌚ : 30'
- ⌘ : 3 and 4mm allen keys, 10mm 30mm end key, rubber hammer.
- ⓘ : Defective vertical rod cylinder may cause the following malfunction:
  1. Air leaking from the cylinder.
  2. The cylinder would not lift the vertical rod.
  3. The vertical rod goes down too fast and there is no way to adjust it.

**TO CHECK THE CYLINDER:**

- Pull the yellow button of the valve to allow the lifting of the vertical rod.
- Check if the cylinder is leaking air.

**TO REPLACE THE CYLINDER:**

- Disconnect the air pressure and the power supply.
- Disconnect the air pipe from the cylinder.
- Disconnect the automatic tool cylinder from the its bracket.
- Release the two set screws that secure the cylinder to the arm.
- Remove the upper screw from the vertical



- Remove the cylinder from the vertical by using the rubber hammer.
- Mount the new cylinder on the vertical rod.
- Fix the tool cylinder to the bracket.
- Secure the bottom side of the cylinder with the two set screws.
- Mount the tool cylinder again.
- Install the pipe.
- Plug the machine to air pressure and power supply.
- Check if the machine works fine again.

**6.9 VALVE WITH YELLOW BUTTON: CHECK AND REPLACEMENT**

- ⌚ : 30'
  - ✂ : Medium cross screwdriver, 3 and 4mm allen key, 10mm end key.
  - ⓘ : Defective valve may cause the following malfunction:
1. Air leaking from the valve rod or from the fittings.

**TO CHECK THE VALVE:**

- Remove the cylinder cover.





- Check if there is air leaking from the valve fittings or the valve rod.



**TO REPLACE THE VALVE:**

- Disconnect the air pressure and the power supply.
- Remove the handles



- Disconnect the air pipes from the valve.
- Remove the two bolts to dismount the valve from the arm.



- Mount the new valve to the arm.

- Connect the air pipes to the valve.
- Mount the handles.
- Connect the air pressure and the power supply.
- Check the machine works fine.
- Mount the cylinder cover.

## 6.10 HANDLE WITH VALVE: CHECK AND REPLACEMENT

⌘ : 30'

⌘ : 3,4 and 5 mm allen key.

ⓘ : Defective valve may cause the following malfunction:

2. Air leaking from the valve rod or from the fittings.

### TO CONTROL THE VALVE

- Disconnect the air pressure from the machine
- Remove the cover.



- Check if the air leaking is coming from the button or in between the handle and the sliding arm or from the fittings. If the air leaking is coming from thread of the fittings, disconnect the air pressure from the machine. Then remove the fitting/s tighten them again with Loctite or Teflon tape. If the air leaking air though the pipes disconnect the pipes from the valve and cut a piece a of pipe



## TO REPLACE THE HANDLE WITH VALVE

- Remove the pipes from the valve.



- Remove the securing screw from the handle.



- Push the handle downward to remove it from the arm.



- Take the new handle with valve and remove the tape that hold the valve components inside of the handle. Once removed the tape make sure to do not lose any valve component.
- Slide IN the new valve with handle upward on the arm.
- Place the spacer in between the handle and the arm and block it with the securing screw.
- Install the pipes.
- Connect the air pressure and check if the machine works fine.
- Install the top cover.

## 6.11 AUTOMATIC TOOL CYLINDER: CHECK AND REPLACEMENT

⌚ : 30'

⌘ : 8 allen key, 19mm end key.

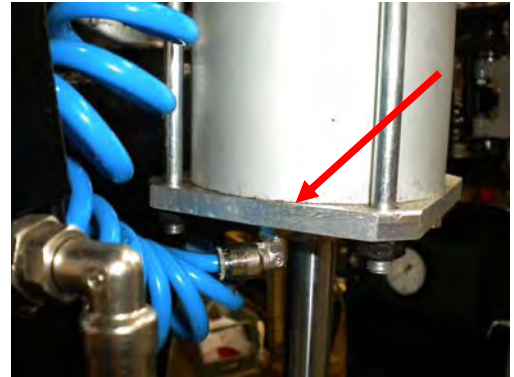
ⓘ : Defective automatic tool cylinder may cause the following malfunction:

- Air leaking from the cylinder.
- The cylinder would not lift the tire bead.

### TO CHECK THE EXTERNAL AIR LEAKING

- Position the cylinder where it leaks air.
- Check if the leaking is in between cylinder flange-cylinder liner or if it is coming from the piston rod.

- In case of need, place some soap with water on the interested part to better see where the leaking is coming from.



**TO CHECK THE FITTING AIR LEAKING**

- Position the cylinder where it leaks air.
- Check if the leaking is in between the fitting and the cylinder flange.
- In case of need, place some soap with water on the interested part to better see where the leaking is coming from.

**TO CHECK THE CYLINDER WHEN THE AUTOMATIC TOOL WILL NOT LIFT THE TIRE BEAD**

- Position the cylinder where it leaks air.
- Disconnect the air pipe where there is not any air pressure.
- If the air is getting out from the fitting, the **tool cylinder** is leaking air.
- If the air is getting out from the fitting, the **control valve** is leaking air.



**TO REPLACE THE CYLINDER:**

- Disconnect the air pressure and the power supply.
- Disconnect the air pipes from the cylinder.
- Disconnect the automatic tool cylinder from the its bracket and from the tool.



- Mount the new cylinder to upper bracket.
- Connect the air pipes to the cylinder.
- Plug the machine to the air pressure and power supply.
- Connect the automatic tool cylinder to the tool.
- Perform the adjustment of the connection automatic tool – cylinder following par. 7.2.

- Check if the machine works fine.

## 6.12 AUTOMATIC TOOL CYLINDER VALVE: CHECK AND REPLACEMENT

⌚ : 30'

✂ : 3mm allen key, 5,5 and 22mm end key.

ⓘ : Defective valve may cause the following malfunction:

1. Air leaking from the valve.
2. The cylinder would not lift the tire bead.

### TO CHECK THE VALVE:

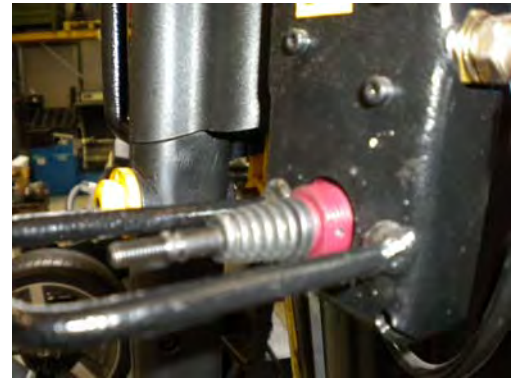
- Remove the air pipe where there is not any pressure.
- Check if the air is coming from the fitting.
- Check if the air leaking is coming from the valve body.

### TO REPLACE THE VALVE:

- Disconnect the air pressure and the power supply.
- Disconnect the air pipe from the valve.



- Remove the round knob and the fixing nut.



- Remove the 3 screws that secure the valve and the bracket together. Then disconnect the other 2 air pipes.



- Mount the new valve.

- Connect the pipes.
- Secure the valve with the nut and mount its knob.
- Plug in the air pressure and power supply.
- Check if the machine works fine again.

## 6.13 BEAD BREAKER CYLINDER: CHECK AND REPLACEMENT

⌚ : 30'

✂ : 8mm tube type key, 14 and 27mm end key, 12mm allen key, seeger pliers

ⓘ : Defective bead breaker cylinder may cause the following malfunction:

1. Air leaking from the cylinder.
2. Air leaking from the control valve.
3. The bead breaker arm will not detach the tire bead.
4. The bead breaker arm does not return in home position.

### TO CHECK THE EXTERNAL AIR LEAKING

- Remove the side panel
- Position the cylinder where it leaks air.
- Check if the leaking is in between cylinder flange-cylinder liner or if it is coming from the piston rod.
- In case of need, place some soap with water on the interested part to better see where the leaking is coming from.



### TO CHECK THE FITTING AIR LEAKING

- Position the cylinder where it leaks air.
- Check if the leaking is in between the fitting and the cylinder flange.
- In case of need, place some soap with water on the interested part to better see where the leaking is coming from.

### TO CHECK THE CYLINDER WHEN THERE IS AIR LEAKING THROUGH THE VALVE.

- Position the cylinder where it leaks air.
- Disconnect the air pipe where there is not any air pressure.
- If the air is getting out from the fitting, the **bead breaker cylinder** is leaking air.
- If the air is getting out from the fitting, the **control valve** is leaking air.



**TO REPLACE THE CYLINDER:**

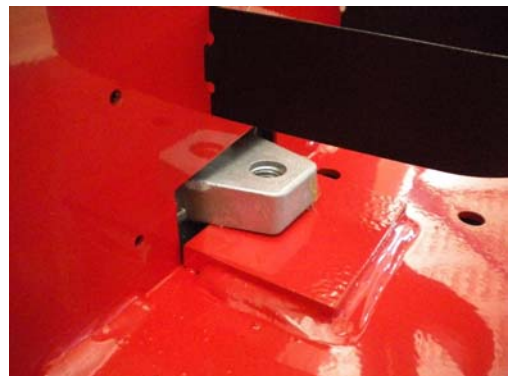
- Leave the cylinder in rest position.
- Remove the seeger ring and the nut.



- Disconnect the air pressure.
- Disconnect the air pipes.



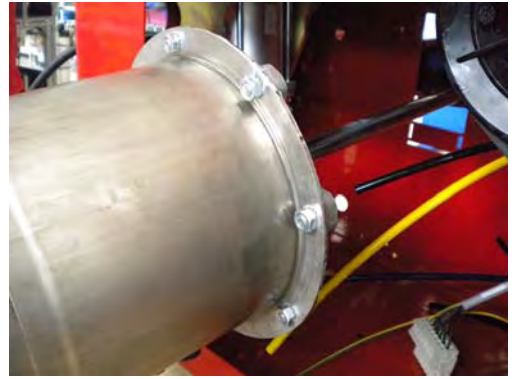
- Unscrew the two securing screws that hold the cylinder.



- Remove the defective cylinder.
- Take the new cylinder and install the washers on the piston rod and grease the brackets for the securing screws.



- Install front air pipe to the new cylinder and install in the cabinet.



- Fix the cylinder with the two securing screws to the cabinet.
- Connect the air pipes.
- Connect the air pressure.
- Tighten the nut.
- Install the seeger ring.
- Check if the machine works fine.
- Mount the side panel.

## 6.14 TURNTABLE CYLIDERS: CHECK AND REPLACEMENT

⌚ : 30' each one

✂ : 19mm end key and socket, 13mm end key.

ⓘ : Defective valve may cause the following malfunction:

1. The rims come off.
2. Air leaking from the control valve.
3. External Air leaking from the cylinder.
4. The jaws move when the clamping pedal is in middle position

### TO CHECK THE CYLINDER:

- Make sure that cylinder liner is fine and not damaged. Sometimes the cylinders leak air because of damaging from tools left on the machine cabinet.

### TO CHECK THE EXTERNAL AIR LEAKING

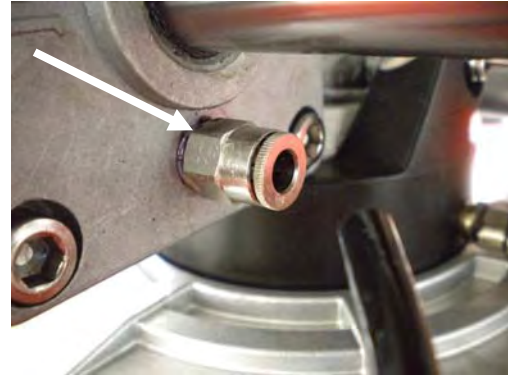
- Position the cylinder where it leaks air.
- Check if the leaking is in between cylinder flange-cylinder liner or if it is coming from the piston rod.

In case of need, place some soap with water on the interested part to better see where the leaking is coming



### TO CHECK THE FITTING AIR LEAKING

- Position the cylinder where it leaks air.
- Check if the leaking is in between the fitting and the cylinder flange.
- In case of need, place some soap with water on the interested part to better see where the leaking is coming from.



**TO CHECK THE CYLINDER WHEN THERE IS AIR LEAKING THROUGH THE VALVE.**

- Disconnect the hose without air pressure from the cylinder
- If the air pressure is getting out from the fitting, the cylinder leaks through the piston.



- If the air pressure is getting out from the hose, the leaking could be caused by the manifold revolving or the by the valve.
- Connect the hose to cylinder again.
- Disconnect the hose without air pressure from the turntable valve.
- If the air pressure is getting out from the fitting, the valve is leaking through the O rings.
- Replace the valve.



**TO REPLACE THE CYLINDER:**

- Open the turntable cylinders.
- Disconnect the air pressure from the machine.



- Release the air pipes from the cylinder



- Disconnect the air pipes from the cylinder.
- Unscrew the nuts that secure the cylinder to the bracket and then remove the washer.



- Install the new cylinder and secure it with washer and nut.
- Connect the air pipes.
- Connect the air pressure to the machine.
- Check if the machine works fine.
- Belt the air pipes again to the cylinder.

## 6.15 MANIFOLD REVOLVING: CHECK AND REPLACEMENT

⌚ : 30'

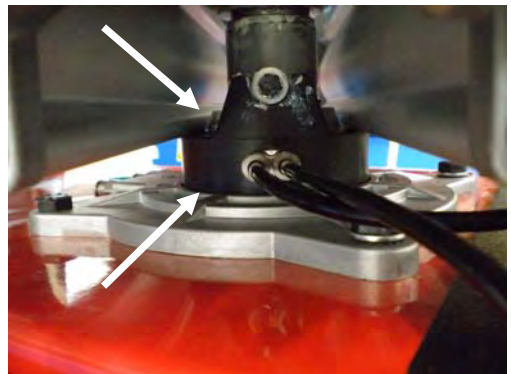
⌘ : 10 and 17mm end key and 24mm socket, 10mm tube type key.

ⓘ : Defective valve may cause the following malfunction:

1. The rims come off.
2. Air leaking from the control valve.
3. External Air leaking from the manifold.
4. The jaws move when the clamping pedal is in middle position

### TO CHECK THE EXTERNAL AIR LEAKING

- Place the turntable cylinders where there is the air leaking.
- Check if there is any air leaking from the top or the bottom of the manifold.



**TO CHECK THE AIR LEAKING FROM THE FITTINGS**

- Place the turntable cylinders where there is the air leaking.
- Check if there is any air leaking from the under pressure.

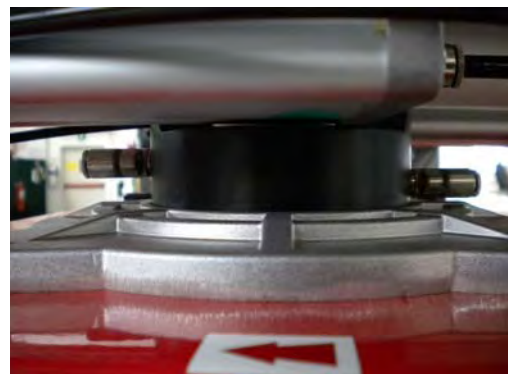
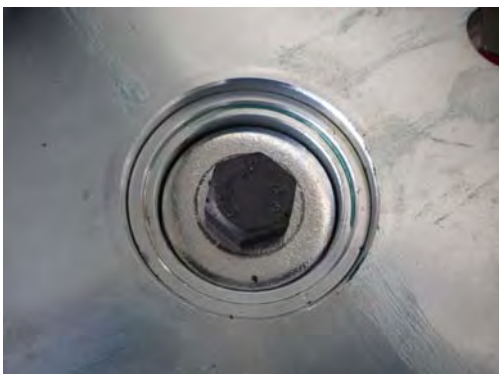
**TO CHECK THE INNER AIR LEAKING**

- Disconnect the hose without air pressure from the cylinder
- If the air pressure is getting out from the pipe, the leaking could be caused by the manifold revolving or the by the valve.
- Connect the pipe to cylinder again.
- Disconnect the pipe without air pressure from the manifold.
- If the air pressure is getting out from the fitting, the manifold is leaking through the O rings.



**TO REPLACE THE MANIFOLD O RINGS**

- Open the jaws of the turntable and disconnect the air pressure from the machine.
- Remove the top protection from the turntable.
- Unscrew the securing screw.
- Disconnect the pipes from the manifold.



- Sign the cylinder in conjunction of that one of the manifold. In order to install the manifold in same place and avoid to reverse the open/close motion of the jaws.
- Unlock the turntable from the gearbox hammering the plate with a rubber hammer.



- Remove the turntable from the gearbox.

**WARNING! THE TURNTABLE ASSEMBLY IS VERY HEAVY. LIFT IT WITH A FORK LIFT OR ASK HELP TO ANOTHER PERSON.**

**IMPORTANT! ONCE REMOVED THE TURNTABLE MAKE SURE TO DO NOT LOOSE THE ROTATIONAL TANG.**



- Remove the manifold rotational bolt and the dust proof O ring.



- Extract the manifold from the support and replace the O rings.



- Make sure that the holes on the bracket are not sharp to avoid any possible damaging of the O ring during the assembly.



- Lubricate the O rings and the bracket with white grease.
- Mount the manifold. Make sure to place the white mark or the lower fitting in opposite compared to the tang.



- Install the dust proof O ring.
- Install the rotational bolts.
- Place the tang on the gearbox shaft.



- Place the turntable on the gearbox.

**IMPORTANT! MAKE SURE TO DO NOT CRUSH PIPES.**

- Secure the turntable with the screw and Loctite.
- Place the O ring and the plastic cover.
- Connect the pipes to the manifold.
- Connect the air pressure to the machine.
- Check if the machine works fine.

**6.16 FOOT PEDAL ASSEMBLY VALVES: CHECK AND REPLACEMENT**

- ⌘ : 30' each one
- ✂ : 10, 12 and 14mm end key, 10mm tube type key.
- ⓘ : Defective valve may cause the following malfunction:

**TILTING POST VALVE**

- Slow or no motion of the tilting post.
- External air leaking from the flange or from the piston rod
- Air leaking from fittings.
- Air leaking through the valve.

**JAWS VALVE**

- The rims come off.
- Air leaking from the valve.
- The jaws move when the clamping pedal is in middle position

**BEAD BREAKER VALVE**

- Air leaking from the cylinder.
- Air leaking from the control valve.
- The bead breaker arm will not detach the tire bead.
- The bead breaker arm does not return in home position
- Bead breaker cylinder very slow.

**TO CHECK THE VALVES:**

- Remove the side panel, § 4.1.
- Check if there is any air leaking in between valve rod and the body.
- Position the cylinder where it leaks air.
- Disconnect the air pipe where there is not any air pressure.
- If the air is getting out from the fitting, the **control valve** is leaking air.

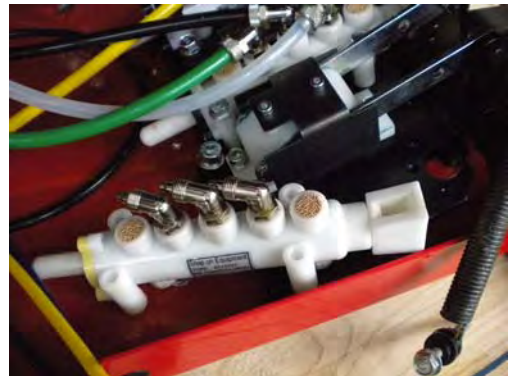
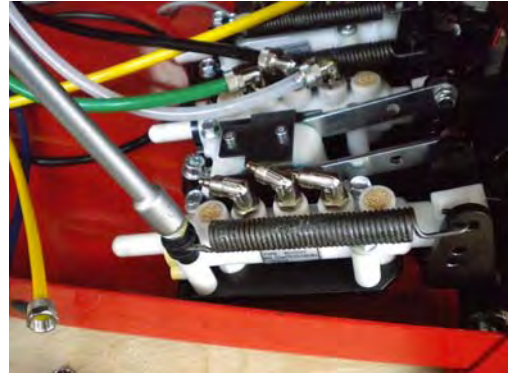


- If there will not be any leaking from the fitting and pipe, but the air is getting out from the silencer of the other fitting, the valve has an internal leaking and must be replaced.



**TO REPLACE THE VALVE:**

- Disconnect the air pressure from the machine
- Disconnect the air pipes.
- Remove the four screws to have the get the valve dismounted.



- Mount the new valve.
- Connect the air pipes.
- Plug the machine to the air pressure and to the power supply.
- Check if the machine works fine.
- Mount the side panel, 5.1.

**6.17 WHEEL LIFT CYLINDER: CHECK AND REPLACEMENT**

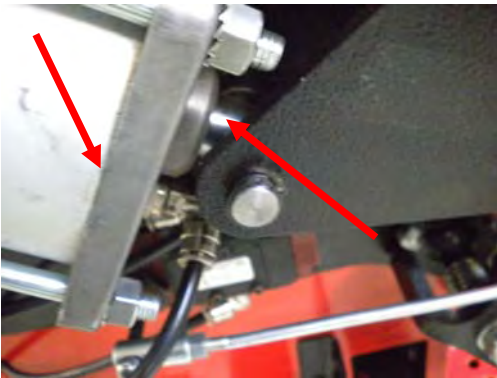
- ⌚ : 30'
- ✂ : 13mm end key, 4mm allen key, seeger pliers.
- ⓘ : Defective wheel lift cylinder may cause the following malfunction:
  1. Air leaking from the cylinder.
  2. Lift will not lift the wheels.
  3. Wheel lift does not hold the wheels.
  4. Air leaking from the valve.

**TO CHECK THE EXTERNAL AIR LEAKING**

- Remove the front cover.



- Position the cylinder where it leaks air.
- Check if the leaking is in between cylinder flange-cylinder liner or if it is coming from the piston rod.
- In case of need, place some soap with water on the interested part to better see where the leaking is coming from.



**TO CHECK THE FITTING AIR LEAKING**

- Position the cylinder where it leaks air.
- Check if the leaking is in between the fitting and the cylinder flange.
- In case of need, place some soap with water on the interested part to better see where the leaking is coming from.

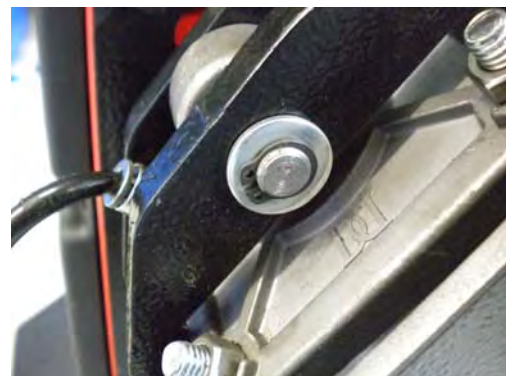
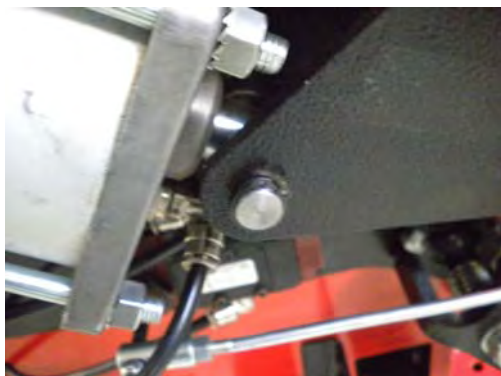
**TO CHECK THE CYLINDER WHEN LIFT WILL NOT LIFT THE TIRE BEAD**

- Position the cylinder where it leaks air.
- Disconnect the air pipe where there is not any air pressure.
- If the air is getting out from the fitting, the **lift cylinder** is leaking air.
- If the air is getting out from the fitting, the **control valve** is leaking air.



**TO REPLACE THE CYLINDER:**

- Place the lift in rest position with the board on the floor.
- Disconnect the air pressure and the power supply.
- Disconnect the pipes from the cylinder.
- Remove the seeger rings and the pins to remove the cylinder.
- Lift the lift board to exit the cylinder.



- Take the new cylinder fix it to the lift with pins and seeger rings.
- Install the pipes to the cylinder.
- Connect the air pressure to the machine.
- Check if the lift works fine.

## 6.18 WHEEL LIFT VALVE: CHECK AND REPLACEMENT

⌚ : 30'

✂ : 13mm end key, 4mm allen key, seeger pliers.

ⓘ : Defective control valve may cause the following malfunction:

1. Air leaking from the valve.
2. Lift will not lift the wheels.
3. Wheel lift does not hold the wheels.
4. Wheel lift lower itself after releasing the pedal.

### TO CHECK THE CONTROL VALVE:

- Remove the valve cover.
- Disconnect the air pipe where there is not any pressure and check if there is air leaking from the fitting.
- If there is not any air leaking from fitting and pipe but it is leaking from the air silencer, the valve must be replaced.

### TO REPLACE THE CONTROL VALVE:

- Unplug the machine from air pressure and power supply.
- Disconnect the air pipes from the valve.
- Remove the nut and the pin split.
- Unscrew the three screw to remove the valve.



- Install the new valve.
- Plug the air pipes to the valve.
- Mount the self locking nut to the valve rod.
- Plug the machine to the air pressure and to power supply.
- Adjust the raising and lowering speed of the cylinder by adjusting the two adjustable exhaust valve.
- Check if the machine works fine again.
- Mount the front cover.



## 6.19 MH CYLINDER: CHECK AND REPLACEMENT

⌚ : 30'

✂ : medium cross screwdriver, end key 19mm, allen key 8mm

ⓘ : Defective cylinder may cause the following malfunction:

1. Air leaking.
2. Low bead pushing pressure.
3. Cylinder slides down itself.

### TO CHECK THE MH CYLINDER:

- Connect the air pressure to the machine.
- Remove the plastic cover.



- Lower the cylinder and check if it is leaking from the top flange or from the fitting.
- Raise the cylinder and check if it leaks air from the lower flange or from the fitting.
- Lower the cylinder and remove the hose from the lower fitting.
- Keep pressing the control valve
- If the air comes out from the fitting the piston seal is defective.
- If the air comes out from the hose, the leaking is caused by the control valve.
- Make the same operation with the rear side.

### TO REPLACE THE CYLINDER:

- Place the arm on the turntable in order to hold the arm once without the cylinder.
- Disconnect air pressure from the machine



- Unplug the air pipes from the cylinder.
- Remove the upper and lower bolts and remove the defective cylinder.



- Install the new cylinder
- Plug in the pipes
- Connect the air pressure and check if it works fine again.
- Mount the plastic cover

## 6.20 MH CYLINDER CONTROL VALVE: CHECK AND REPLACEMENT

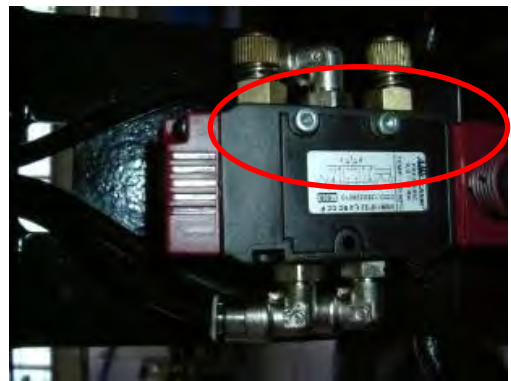
- ⌚ : 30'
- ✂ : End key 5 and 22mm, Allen key 3mm.
- ⓘ : Defective control valve may cause the following malfunction:
  1. Air leaking
  2. Low bead pushing pressure
  3. Slow MH motion

### TO CHECK THE MH CONTROL VALVE:

- Follow paragraph 7.14

### TO REPLACE THE MH CONTROL VALVE:

- Disconnect the air pressure form the machine
- Remove the joystick knob and the nut
- Remove the control valve cover.
- Unscrew the screws that secure the valve to its cover.



- Unplug the air hoses from the valve.
- Loosen the screws to take out the defective valve.
- Install the new valve and plug the air hoses.
- Connect the air pressure again.
- Adjust the lowering and raising cylinder speed by turning the two adjustable exhaust valve.



- Mount the control valve cover.
- Check if the machine works fine again.

## 6.21 BEAD INFLATING VALVE: CHECK AND REPLACEMENT

⌚ : 1h

⌘ : Medium flat screwdriver, 8,10 and 13mm end key.

ⓘ : Defective inflation spool valve may cause the following malfunction:

1. Air leaking.
2. No inflating action.
3. Air leaking from the blaster jet.

### TO CHECK THE SPOOL VALVE:

- Remove the side panel from the machine.
- Check if the mechanical components (springs, screws and linkage) are fine.
- Check if the valve is leaking air from the rear springs when the pedal is in rest position.
- Check if the valve is leaking air from front locking nuts when the pedal is in rest position.

### TO REPLACE THE SPOOL VALVE:

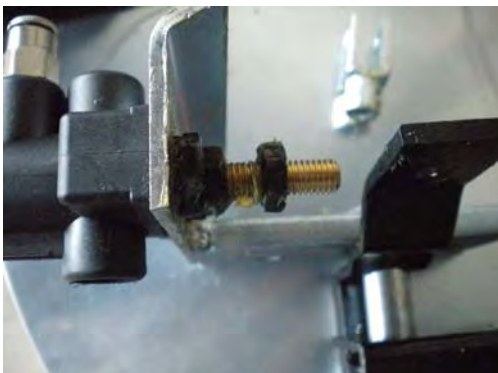
- Disconnect the air pressure and power supply from the machine.
- Remove the collar.
- Unplug the pipes from the valve.
- Remove the collar.



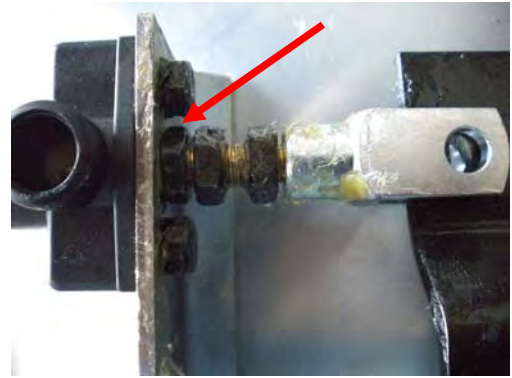
- Unlock the nut and the counter nut and remove assembly from the cabinet.



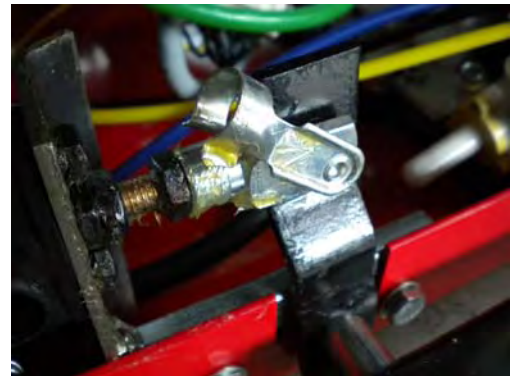
- Remove the nuts and the screws to remove the valve from the bracket.



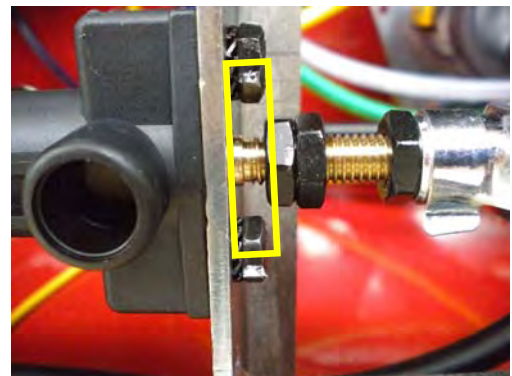
- Take the defective valve assy out and bolt the new one.
- Install the first nuts, red arrow hand, by hand 'till to eliminate any axial motion of the valve rod. Then mount all other nuts without lock them and the linkage.



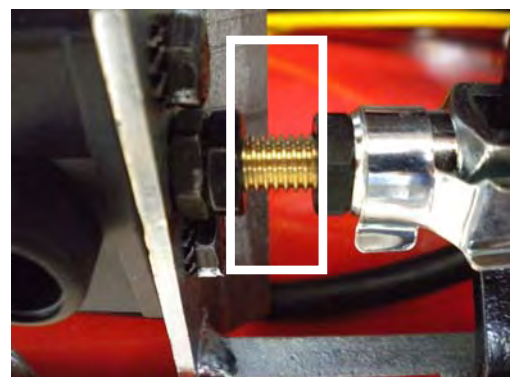
- Mount the assembly to the cabinet and mount the collar..



- Press the pedal 'till end of first stage
- Turn the nuts to set the clearance at about 5mm between the nut and the bracket.
- Lock the counter nut.



- Release the pedal.
- Now turn the linkage and the nut to set the clearance at about 8/9mm between the two nuts.
- Lock the nut to the linkage.
- Plug the pipes



- Lock the valve to the pedal with the collar.
- Plug in the air pressure.
- Pressing half of spool valve pedal the air has to come out from the inflator pipe only.
- Pressing the spool valve pedal all way down the air has to come out from the inflation hose and from the bead seating jet at the same time.
- Mount the side panel.

## 6.22 BEAD BLASTER VALVE AND AIR TANK : CHECK AND REPLACEMENT

⌚ : 1h

✂ : End key 12mm, big pliers.

ⓘ : Defective bead blaster valve may cause the following malfunction:

1. No air from air jet.
2. Air leaking from diaphragm.

### TO CHECK THE BEAD BLASTER VALVE:

- Verify if it is leaking air from the diaphragm.
- Verify if the bead seating jet is leaking air.

### TO REPLACE THE BEAD BLASTER VALVE:

- Disconnect the air pressure.
- Remove the hoses.
- Remove the valve from the tank niple.
- Mount the new valve to the niple.
- Install the hoses.
- Plug the air pressure and check if it works fine again.



## 6.23 AIR CONTROL: CHECK AND REPLACEMENT

⌚ : 30'

✂ : End key 8, 7 and 14mm, 4mm allen key.

ⓘ : Defective bead blaster valve may cause the following malfunction:

1. The valve does not stop the tire inflation.
2. The valve does not inflate the tire at all.
3. The valve leaks air.

### TO CHECK THE VALVE:

- Take a deflated wheel and inflate it.
- If the valve will show one of the above issue, it must be replaced.

### TO REPLACE THE VALVE:

- Disconnect the machine from the air pressure and power supply.
- Remove side panel from the cabinet.
- Disconnect the air pipes from the valve.
- Loosen the screws that secure the foot pedal assembly to cabinet.

- Mount the new valve.
- Secure the pedal assembly to the cabinet.
- Mount the air pipes.
- Connect the air pressure and the power supply.
- Check if the machine works fine.
- Mount the side panel.



## 6.24 MONOMETER: CHECK AND REPLACEMENT

- ⌚ : 30'
- ⌘ : End key 13, 14,15,16,17mm, Medium cross screwdriver, loctite.
- Ⓜ : SB 852 TC, SB 929 TC,
- Ⓜ : Defective manometer may cause the following malfunction:
  1. The manometer is not accurate.
  2. The manometer does not return to zero.
  3. The manometer is blocked.

### TO CHECK THE MANOMETER

- Unplug the machine from air pressure and power supply.
- Remove the steel panel from the back of the tool box.



- If the machine does not have the tool box, unscrew the screws that secure the manometer bracket to the post and unplug the air pipe from the manometer.



- Remove the pipe. Check if Loctite is blocking the pipe.



- Remove the sintered air filter absorber # 0019181 and check if the manometer returns to zero.



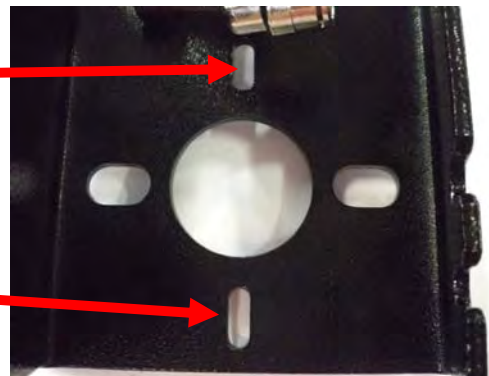
- If the manometer return to zero replace the air filter absorber only.
- If the manometer does not return to zero, replace the manometer.

**TO REPLACE THE MANOMETER**

- Remove the nipples fitting to get the manometer off. Pay attention to the washer.
- Check if there is Loctite on the hole of the manometer fitting



- Fix the new manometer to tool box with nipples fitting. Put just one drop of Loctite to seal.
- To centre the manometer to the bracket, place the plastic spacer with the protruding into the narrow slots.



- Fix the new manometer to the bracket with nipples fitting. Make sure that the washer will remain in the middle. Put just one drop of Loctite to seal.



- Tighten the sintered air filter absorber # 0019181, also with one drop of Loctite, to nipples fitting.
- Tighten the air pipe, also with one drop of Loctite, to the sintered air filter absorber.
- Mount the bracket with manometer to the post and plug the air pipe.
- Plug the machine to the air pressure and check if the manometer works fine.
- Fix the rear steel panel of the tool box.

**6.25 SPIRAL PIPES: CHECK AND REPLACEMENT**

- ⌚ : 1h for both
- ✂ : 8mm tube type, 4mm allen key, small cross screwdriver, scissors.
- ⓘ : Defective spiral pipes may cause the following malfunction:
  1. Air leaking.
  2. The spiral pipes are damaged or broken.
  3. The vertical rod cylinder does not block properly.
  4. The horizontal rod cylinder does not block properly.

**TO CHECK THE SPIRAL PIPES**

- Unplug the machine from air pressure and power supply.
- Remove the cylinders covers.



- Check if the pipes are damaged or broken or simply not well fitted to the fittings.

**TO REPLACE THE SPIRAL PIPES:**

- Disconnect the air spiral pipes from the cylinders and the fittings.



- Remove the side panel from the machine.
- Disconnect the air pipe from inside of the cabinet.
- Release the pipe strain relief and remove them from pipes protection. Then remove the protection from the bracket.



- Remove the pipes from the protection.
- Cut the old long pipe at the end of the spiral.
- Connect the new long pipe to the cut one.
- Route the new long spiral pipe through the post pulling it out from the cabinet.



- Route the new pipes through the protection.
- Fit the pipes protection to the bracket with the pipes strain reliefs.
- Plug the pipes to the cylinders and to fittings.
- Plug the machine to the air pressure and to the power supply.
- Extend the horizontal arm completely and adjust the length of the pipes.



- Secure the pipes tightening the strain reliefs.
- Slide in and out the arm to make sure that pipes are moving inside of their protection.
- Mount the plastic covers of the cylinders.

CHAPTER 7  
MECHANICAL SECTION

**7.0 MECHANICAL SECTION**

The mechanical section is connected to the centerpost, the tool and to the bead breakers adjustments. Usually this parts do not require the replacement and in any case their replacement is required after years of intensive working.

**7.1 TILTING POST ADJUSTMENT: CHECK AND REPLACEMENT**

- ⌚ : 30'
- ✂ : End keys 13,19, 24mm, allen keys 4,5,and mm6, 8mm tube type key, medium flat screwdriver, dynamometric key, air pressure reducer.
- ⓘ : Incorrect tilting post adjustment may cause the following malfunctions:
  1. Excessive play on the operating arm assembly.
  2. Tool scratches the rims.

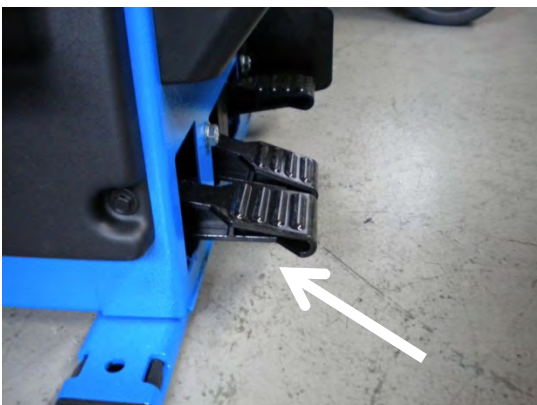
- Disconnect the machine from the air pressure.
- Connect the air pressure reducer to the air filter inlet and adjust it at 6 bar.



- Remove the tilting post front protection.



- Slide out completely the horizontal arm and block it with the front yellow button.
- Press the tilting post in the intermediate position and place the post in the middle of its stroke.



- Move the tower from the handle of the horizontal arm and check the play in between tower and support. If the tilting post will move tighten the two self - locking nuts at 90Nm / 66,4Lbft until to have removed completely the play. If necessary, use a bar to rotate the 24mm key when tighten the nuts.

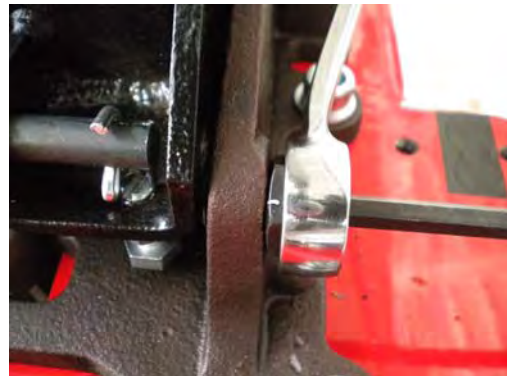
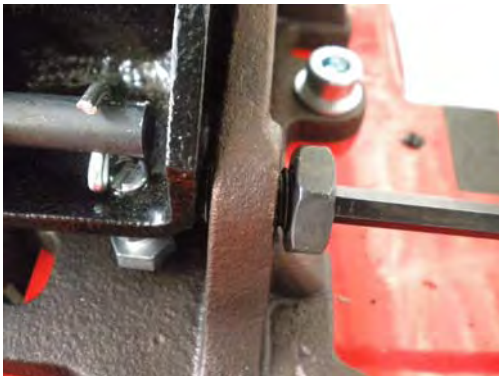


- On machines with former support move the tower from the handle of the horizontal arm and check the play in between tower and support. If the tilting post will move tighten the two self - locking nuts until to have removed completely the play. necessary, use a bar to rotate the 24mm key when tighten the nuts.



If

- Check the adjustment of the lateral set screw: it must slightly touch the post.



- Remove the front plastic protection.
- Check and eventually adjust the front adjustment screws.
- Tilt the tower back and forward some times to stabilize the cylinder air pressure.



- Take a piece of paper and place it where the adjustment screw should work on the cabinet. Tilt forward the tower and pull the paper to verify if the end stroke screws are touching the cabinet.



- If one of the screws does not touch the cabinet, unlock the related counter nut and, using a screwdriver, unscrew the screw until it will touch the cabinet.
- Hold the screw and lock the counter nut.



- Check again if both heads touch the support.
- Mount the plastic protections.
- Remove the air pressure reducer.
- Connect the main air pressure.
- Check if the machine works fine.

## 7.2 AUTOMATIC TOOL: CHECK – REPLACEMENT AND ADJUSTMENTS

⌚ : 1h

✂ : End key 10, 17 and 19mm, allen keys 3, 5, 6 and 8mm, rubber hammer, 13mm tube type key, rim of 17".

ⓘ : Defective tool may cause the following malfunctions:

1. Tool is broken.

### TO CHECK THE TOOL:

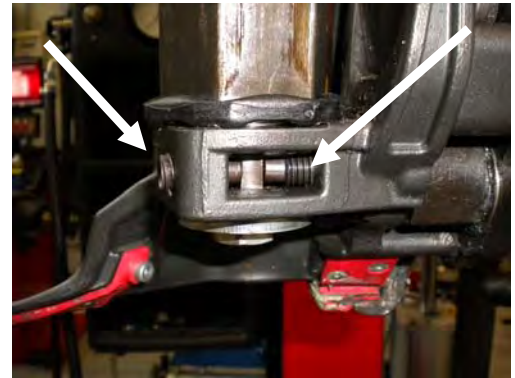
- Check if the tool is broken or mechanically damaged.

### TO REPLACE THE TOOL:

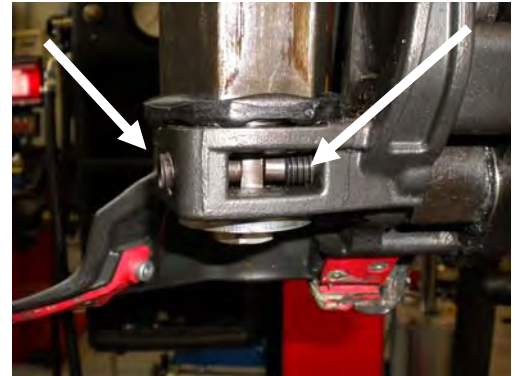
- Block the vertical rod with yellow button on the valve.
- Disconnect the tool from the cylinder.



- Loosen the screw underneath the tool and the two lateral set screws.

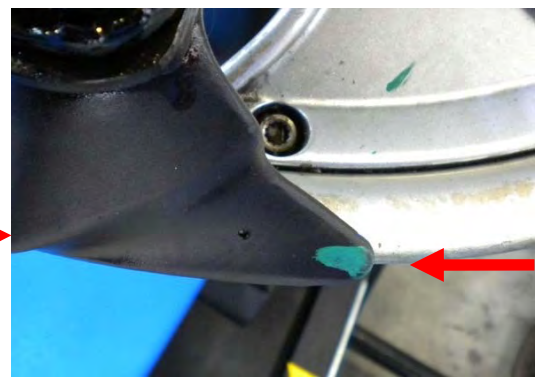


- Unlock the tool with the rubber hammer
- Remove completely the screws to complete the tool dismounting.
- Take the new tool and mount it to the vertical rod. Tighten all screws so that the tool is not rigidly locked in place but can turn through a small sector relative to the support hub.

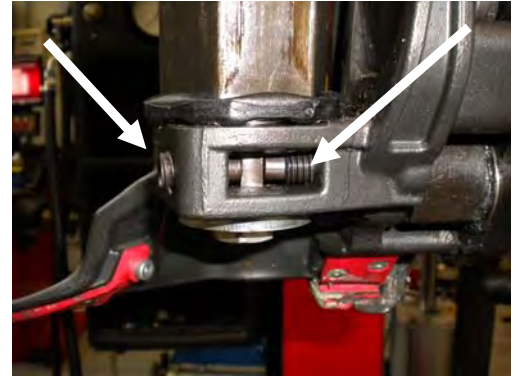


**TO ADJUST THE TOOL ORIENTATION ON THE RIM:**

- Connect the machine to air pressure and power supply.
- Block a 17" rim diameter rim in good condition to the centerpost.
- Place the tool on the rim, as normal operation, and then lock it.



- Tighten one of the two adjuster screws until the tail of the tool is aligned to the rim edge.
- Tighten both screws, keeping the tool in this position.
- Move the tool away from the edge of the rim, then tighten the screw under the tool fully home.



**TO ADJUST THE TOOL FINGER STROKE ON THE CONTROL CYLINDER:**

- Connect the ball joint to the cylinder rod.
- Move the control cylinder all way up.



- Connect the tool finger arm to the ball joint.
- If the holes are not matching, turn the ball joint until they will match.



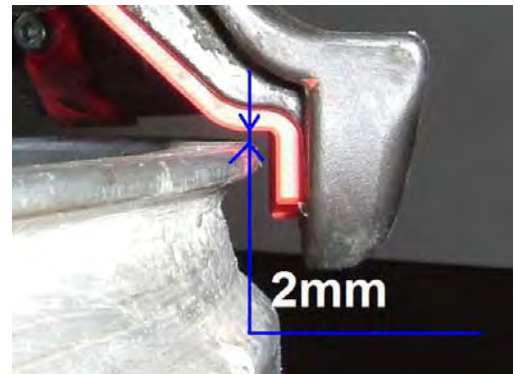
- Tighten the bolt firmly.
- Lower the finger completely: make sure that when the cylinder and tool finger will reach their end of stroke at the same time.
- In case it need a fine adjustment turns the piston rod shaft only.
- Lock the upper ball joint nut.
- Check if the machine work fine.

**TO ADJUST THE VERTICAL TOOL CLEARANCE:**

- Block a 17" rim diameter rim in good condition to the centre post.
- Unlock the front screws and tighten all way down and then turn them backward of two turns each one.
- Lock the counter nuts.
- Place the tool on the rim, as normal operation, and then lock it.



- Make sure that the clearance between plastic protection and rim is 2mm.
- If the clearance is higher, release the arm, unlock the screws and tighten them accordingly. Then lock the screws again.
- If the clearance is lower, release the arm, unlock the screws and loosen them accordingly. Then lock the screws again.
- Check if the machine works fine



**TO ADJUST THE VERTICAL ROD BLOCKING PLATE:**

- Press the yellow button valve to lower completely the vertical tool rod.



- Tighten as much as possible the vertical blocking cylinder adjustment screw in order to block the rod.
- Pull the yellow button valve all towards the operator in order to lift the vertical tool rod.
- Turn counter clockwise the vertical blocking cylinder adjustment screw until the vertical rod will move upward.



- Then perform some rod lowering and raising operations to make sure that the rod is moving smoothly.
- Block the counter nut.

**TO ADJUST THE VERTICAL ROD BLOCKING PLATE SPRINGS:**

- Block the vertical rod.
- Check if the spring are completely compressed.



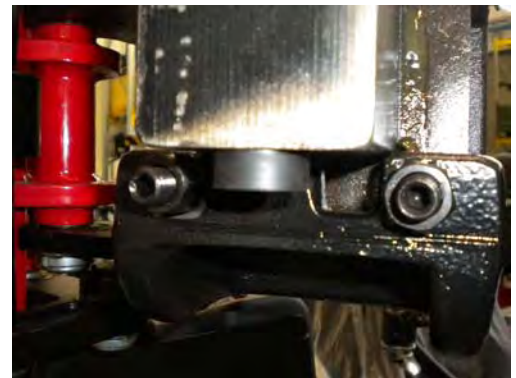
- If they are completely compressed, turn the screws back until to see some light in between of the every wire of the spring.



- Check if the machine works fine.
- Install the protection.

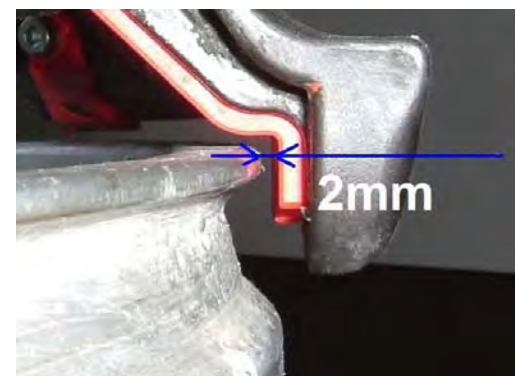
**TO ADJUST THE HORIZONTAL TOOL CLEARANCE:**

- Block a 17" rim diameter rim in good condition to the centerpost.
- Unlock the horizontal arm.
- Unlock the rear screws and tighten them all way in. Then turn them backward of two turns each one.
- Lock the counter nuts.



- Place the tool on the rim, as normal operation, and then lock it.

- Make sure that the clearance between plastic protection and rim is 2mm.
- If the clearance is higher, release the arm, unlock the screws and tighten them accordingly. Then lock the screws again.
- If the clearance is lower, release the arm, unlock the screws and loosen them accordingly. Then lock the screws again.
- Check if the machine works fine



**TO ADJUST THE HORIZONTAL ARM BLOCKING PLATE:**

- Unlock the horizontal arm.

- Unlock the 6mm counter nuts
- Tighten as much as possible the horizontal blocking cylinder adjustment set screws in order to block the arm.
- Turn counter clockwise both set screws at ½ turn every step until the horizontal arm will move smoothly again.
- Block the counter nuts again.
- Mount the protection.
- Check if the machine works fine.



**7.3 STANDARD TOOL: CHECK – REPLACEMENT AND ADJUSTMENTS**

- ⌚ : 1h
- ✂ : End key 10,13,17, allen keys 3,4,5,6 and 8mm, rubber hammer, 13mm tube type key, rim of 17".
- ⓘ : Defective tool may cause the following malfunctions:
  1. Tool is broken.
  2. The tool damaged the tires

**TO CHECK THE TOOL:**

- Check if the tool is broken or mechanically damaged. If it has damage or broken proceed with the replacement.

**TO REPLACE THE TOOL:**

- Block the vertical rod.
- Loosen the two lateral set screws and the screw underneath the tool.



- Unlock the tool with the rubber hammer from the rod.
- Remove completely the screws to complete the tool dismounting.
- Take the new tool and mount it to the vertical rod. Tighten all screws so that the tool is not rigidly locked in place but can turn through a small sector relative to the support hub

**TO ADJUST THE TOOL ORIENTATION ON THE RIM:**

- Block a 17" rim diameter rim in good condition on the turntable.
- Place the tool on the rim, as normal operation, and then lock it.
- Design a line at 90° compared to the tool at the end of the tool tail.



- The tool may result with the tail too inward or too outward compared to the rim edge.

**TOO INWARD**



**TOO OUTWARD**



- Tighten one of the two adjuster screws until the tail of the tool is aligned to the rim edge.
- Unlock and lock again the tool to make sure about the proper alignment.



**TO ADJUST THE VERTICAL TOOL CLEARANCE:**

- Remove the top cover.



- Block a 17" rim diameter rim in good condition to the centre post.
- Unlock the front screws and tighten them all way down and then turn them backward of one turn each one.
- Lock the counter nuts.



- Place the tool on the rim, as normal operation, and then lock it.
- Make sure that the clearance between plastic protection and rim is 1mm.
- If the clearance is higher, release the arm, unlock the screws and tighten them accordingly. Then lock the screws again.
- If the clearance is lower, release the arm, unlock the screws and loosen them accordingly. Then lock the screws again.
- Check if the machine works fine.



**TO ADJUST THE VERTICAL ROD BLOCKING PLATE SPRINGS:**

- Block the vertical rod.
- Check if the springs are completely compressed.



- If they are completely compressed, turn the screws back until to see some light in between of the every wire of the spring.

- Check if the machine works fine.



**TO ADJUST THE VERTICAL ROD BLOCKING PLATE ON ARM WITH AUTOMATIC TOOL LOWERING:**

- Push the yellow button valve to lower completely the vertical tool rod.

- Tighten as much as possible the vertical blocking cylinder adjustment screw in order to block the rod.
- Slide the yellow button valve all towards the operator in order to lift the vertical tool rod.
- Turn counter clockwise the vertical blocking cylinder adjustment screw until the vertical rod will move upward.



- Then perform some rod lowering and raising operations to make sure that the rod is moving smoothly.
- Block the counter nut.

**TO ADJUST THE VERTICAL ROD BLOCKING PLATE ON ARM WITH MANUAL TOOL LOWERING:**

- Press the yellow button to unlock the vertical rod. So the vertical rod must be moved up and down by hand.
- Unlock the rear set screw on the blocking plate.
- Turn the set screw until to lock the vertical rod and then turn it backward until the rod will be free again.
- Make sure that the rod is moving freely and lock the counter nut again.



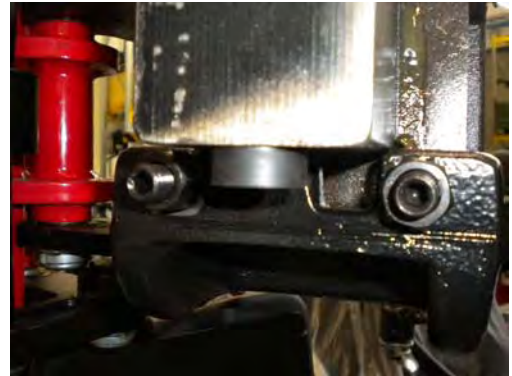
- Lock and unlock the vertical rod some times to make sure that it will work fine.
- Mount the plastic cover.
- Check if the machine works fine.

**TO ADJUST THE HORIZONTAL TOOL CLEARANCE ON AUTOMATIC TOOL VERSIONS:**

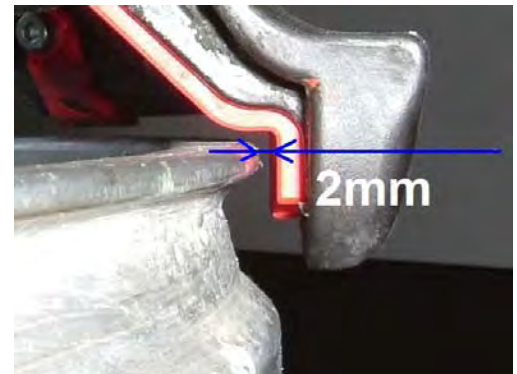
- Remove the cylinder cover.



- Block a 17" rim diameter rim in good condition to the turntable.
- Unlock the horizontal arm.
- Unlock the rear screws and tighten them all way in. Then turn them backward of two turns each one.
- Lock the counter nuts.



- Place the tool on the rim, as normal operation, and then lock it.
- Make sure that the clearance between plastic protection and rim is 2mm.
- If the clearance is higher, release the arm, unlock the screws and tighten them accordingly. Then lock the screws again.
- If the clearance is lower, release the arm, unlock the screws and loosen them accordingly. Then lock the screws again.
- Check if the machine works fine

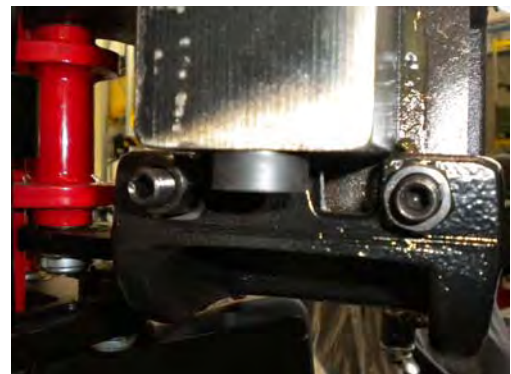


**TO ADJUST THE HORIZONTAL TOOL CLEARANCE ON 26" AND SUPER LX VERSIONS:**

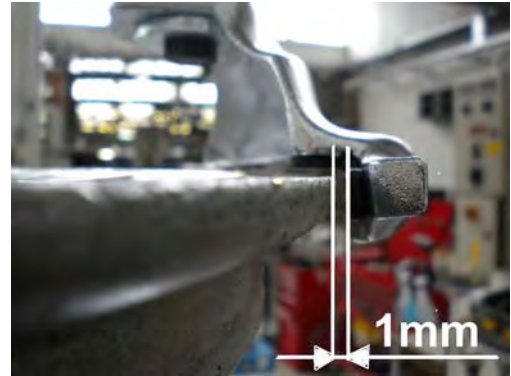
- Remove the cylinder cover.



- Block a 17" rim diameter rim in good condition to the turntable.
- Unlock the horizontal arm.
- Unlock the rear screws and tighten them all way in. Then turn them backward of one turn each one.
- Lock the counter nuts.

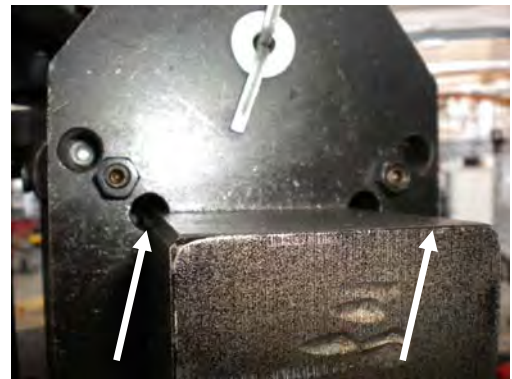


- Place the tool on the rim, as normal operation, and then lock it.
- Make sure that the clearance between plastic protection and rim is 1mm.
- If the clearance is higher, release the arm, unlock the screws and tighten them accordingly. Then lock the screws again.
- If the clearance is lower, release the arm, unlock the screws and loosen them accordingly. Then lock the screws again.
- Check if the machine works fine



**TO ADJUST THE HORIZONTAL ARM BLOCKING PLATE ON 26" AND SUPER LX VERSIONS::**

- Unlock the horizontal arm.
- Unlock the 6mm counter nuts
- Tighten as much as possible the horizontal blocking cylinder adjustment set screws in order to block the arm.
- Turn counter clockwise both set screws at ½ turn every step until the horizontal arm will move smoothly again.
- Block the counter nuts again.
- Mount the plastic protection.
- Check if the machine works fine.



**TO ADJUST THE HORIZONTAL TOOL CLEARANCE ON 22" 24" VERSIONS:**

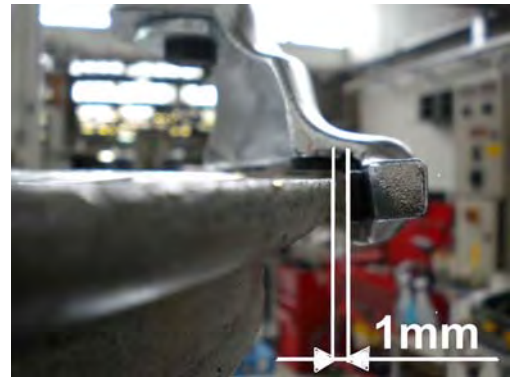
- Remove the rear cover to access to the cylinder. According to the model the cylinder will be install in different configuration.



- Block a 17" rim diameter rim in good condition to the turntable.
- Unlock the horizontal arm.
- Unlock the rear screws and tighten them all way in. Then turn them backward of one turn each one.
- Lock the counter nuts.

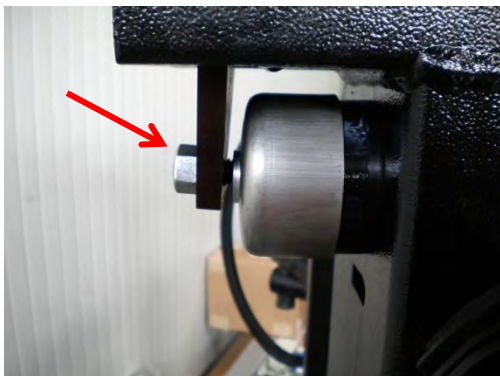


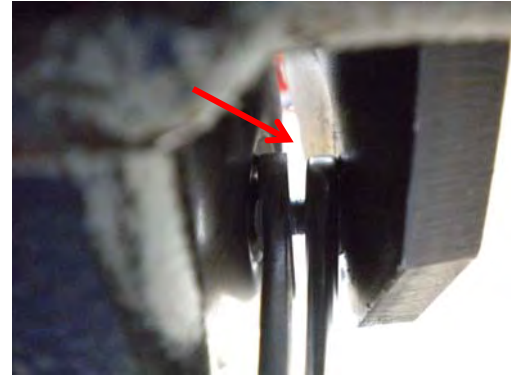
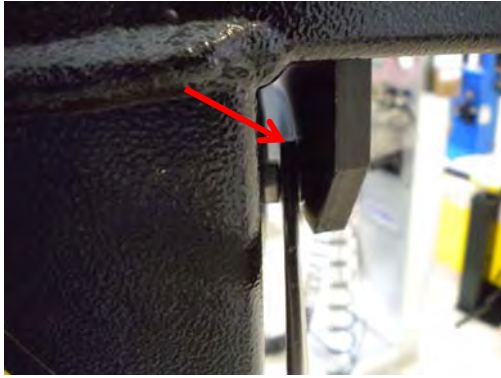
- Place the tool on the rim, as normal operation, and then lock it.
- Make sure that the clearance between plastic protection and rim is 1mm.
- If the clearance is higher, release the arm, unlock the screws and tighten them accordingly. Then lock the screws again.
- If the clearance is lower, release the arm, unlock the screws and loosen them accordingly. Then lock the screws again.
- Check if the machine works fine



**TO ADJUST THE HORIZONTAL ARM BLOCKING PLATE ON 22" 24" VERSIONS:**

- Press the yellow button to unlock the horizontal arm. So it must be backward and forward.
- Unlock the rear set screw on the blocking plate.
- Turn the set screw until to lock the horizontal arm and then turn it backward until the arm will be free again.
- Make sure that the arm is moving freely and lock the counter nut again.





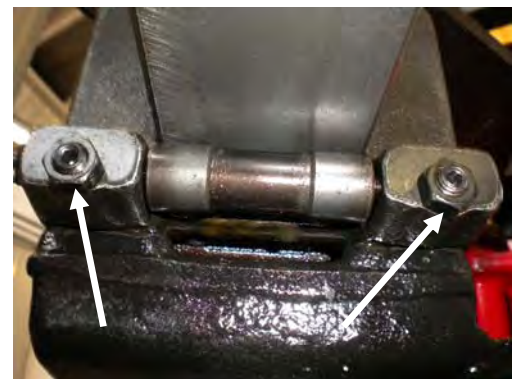
- Press the yellow button to lock the arm.
- Unlock the two counter nut and make sure that both screws are touching the blocking plate. Then lock again the counter nuts firmly.
- Lock and unlock the arm some times to make sure that it will work fine.
- Then mount again the plastic cover.
- Check if the machine works fine.

**7.4 HORIZONTAL ARM ROLLERS: CHECK AND ADJUSTMENT**

- ⌚ : 30'
- ⌘ : End keys 13mm, allen keys 4mm.
- ⓘ : Incorrect rollers adjustment may cause the following malfunctions:
  1. Excessive play on the horizontal arm.
  2. Horizontal arm does not move smoothly.

**TO CHECK THE ROLLERS:**

- Remove the horizontal arm protection.
- Unlock the horizontal arm cylinder.
- Unlock the counter nuts and then loosen the set screws to release the rollers.
- Unlock completely the front and the rear rollers



- Rotate the rollers and check if they are worn out or damaged

**TO ADJUST THE ROLLERS:**

- Tighten all 4 setscrews until to block the horizontal arm. Then turn back every one of 1/2 of a turn to get the horizontal arm free again.
- Now make a fine adjustment tightening or loosening of 1/8 of a turn every setscrew.
- When the arm will move smoothly again and there will not be excessive play on the arm, lock the counter nuts.
- Mount the cover again.

## 7.5 GEAR BOX: CHECK AND REPLACEMENT

- ⌚ : 2h
- ✂ : End keys 8,10,13,17mm, socket 24mm, Seeger pliers.
- ⓘ : Incorrect gearbox may cause the following malfunctions:
  1. Noisy rotation.
  2. Low rotation torque.
  3. Oil leaking.

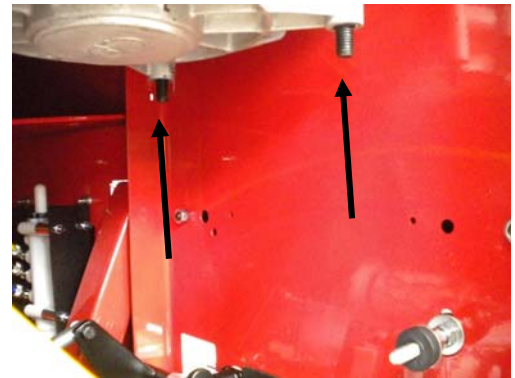
### TO CHECK GEARBOX:

- Turn the machine off or disconnect the machine from power supply.
- Remove the side panel.
- Remove the belt from the motor following ¶ 4.5
- Turn the machine on or connect it to the power supply.
- Run the motor: if it is run normally it means that the gearbox is noisy and must be replaced.

### TO REPLACE THE GEARBOX:

- Turn the machine off or disconnect the machine from power supply.
- Remove the motor ¶ 4.5.
- Remove the turntable ¶ 6.15.
- Remove the remaining 4 nuts to complete the gear box dismounting.

**BE CAREFUL! THE GEARBOX IS HEAVY AND IT COULD CRUSH A HAND.**



- Remove the pulley from the gearbox and mount it to new one.
- Mount the new gear box with 4 rear screws and nuts. Do not tighten firmly the screws and the nuts.
- Mount the motor ¶ 4.5.
- Secure all the screws and nut of the gearbox.
- Mount the belt and adjust it.
- Mount the turntable. Make sure that the tangs will be in place 6.15.
- Turn the machine on or connect it to the power supply.
- Check if the machine works fine.
- Mount the side panel.

## 7.6 TURNTABLE JAW: CHECK, REPLACEMENT AND ADJUSTMENT

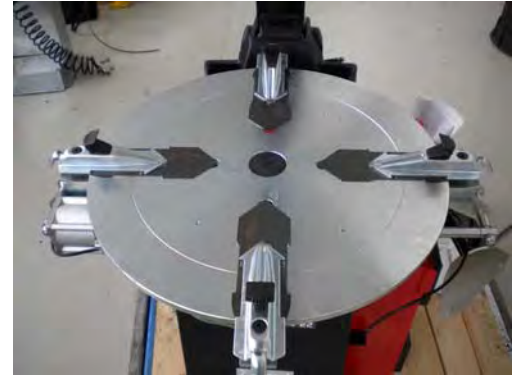
- ⌚ : 30' one or two jaws. 1h all 4 jaws.
- ✂ : End keys 24 and 17mm, allen keys 7 and 8mm, ring to adjust the run out, Loctite, air pressure reducer.
- ⓘ : Defective jaw may cause following malfunctions:
  1. Rims come off from the turntable during mounting or dismounting.

### TO CHECK THE JAWS:

- Check if the teeth of the jaws are fine or crushed, or worn out.

**TO REPLACE THE JAW**

- Open the jaws completely.



- Unscrew the bolt with the eccentric without remove it completely



- Remove the screw that hold the jaw, then remove the screw with the eccentric to have the jaw free.



- Install the new jaw with Loctite without locking the screw with the eccentric.

**TO ADJUST THE TURNTABLE JAWS:**

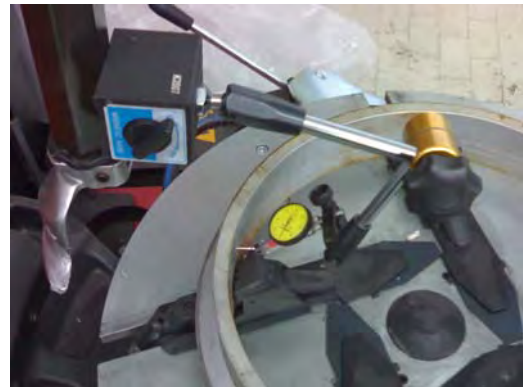
- Unplug the air pressure from the machine and apply to the air pressure inlet of the machine, an air pressure reducer with gauge.
- Plug the air pressure again to the air pressure reducer.
- Adjust the air pressure at 2bar / 30psi with air the pressure reducer.
- **IMPORTANT! DO NOT MAKE THE FOLLOWING STEPS WITHOUT THE AIR PRESSURE REDUCER OTHERWISE YOU WILL NOT BE ABLE TO ADJUST PROPERLY THE CLAMPS.**
- Press the bead breaker pedal to download the exciting air pressure still in the pneumatic circuit of the machine.



- Position the eccentric spacer beneath the bolts so that the alignment marks on the eccentric spacers are all pointed at 90° to the jaw. Insure that the positioning marks are identical to each other in relative positioning.
- Tighten the bolts while maintaining individual eccentric spacers positioning.



- Lock the run out control disk on the turntable and apply the gauge with magnetic base to the vertical hex bar.



- Place the gauge to the disk and turn the turntable to check the run out: It must be within 1mm. If the maximum run out is within 1mm skip step 12.
- Readjust the individual clamps as needed turning the eccentric spacers: moving the eccentric spacers towards the centre of the turntable, the clamps will move toward the outside of the turntable.



- Moving the eccentric spacers towards the outside of the turntable, the clamps will move toward the centre of the turntable.



- Remove the gauge with magnetic base from the vertical hex bar.
- Take a piece of paper and make sure that all 4 clamps should contact at the rim equally during the clamping operation. Readjust individual clamp if one or more clamp will not contact the rim properly.



- Lock all 4 screws firmly.
- Apply the gauge with magnetic base to the vertical hex bar and make sure that the maximum turntable run out is still within 1mm.
- Remove the gauge with magnetic base from the vertical hex bar and the disk from the turntable.
- Unplug the air pressure reducer from the air pressure inlet of the machine and plug it to air line again.
- Check if the machine works fine.

## CHAPTER 8 TROUBLE SHOOTING SECTION

**COMPLAINT 1:** Pressing the rotational pedal, the turntable does not turn in any direction, in one direction only or in second speed only..

1. Check the power supply at the wall.
2. Check the power supply plug and fuses on the wall
3. Check the power supply cable
4. Check the rotary switch.
5. Check the inverter switch.
6. Check the electronic Inverter.
7. Check the motor cable.
8. Check the potentiometer.
9. Check the motor.
10. Check the switch adjustment.
11. Call Snap On Hot Line Centre

**COMPLAINT 2:** Tilting post does not tilt or tilt very slowly or it tilts too fast.

1. Check the air pressure.
2. Check if there is air leaking from the cylinder.
3. Check if there is air leaking from the valve.
4. Check the if the mechanical adjustment are fine.
5. Call Snap On Hot Line Centre

**COMPLAINT 3:** The tool damages the rims.

1. Check if there are the plastic protections on it.
2. Check if the tool is fine
3. Check the tool clearance from the rim.
4. Check the orientation of the tool.
5. Check the turntable run out.
6. Call Snap On Hot Line Centre

**COMPLAINT 4:** The turntable does not hold the rims.

1. Check the air pressure
2. Check the teeth of the jaws.
3. Check the jaws adjustment.
4. Check if there is air leaking from the cylinder
5. Check if there air leaking from the manifold.
6. Check if there is air leaking from the valve.
7. Call Snap On Hot Line Centre

**COMPLAINT 5:** The bead breaker does not have power, or it is too slow.

1. Check the air pressure
2. Check if there is air leaking from the cylinder
3. Check if there is air leaking from the valve.
4. Call Snap On Hot Line Centre

**COMPLAINT 6:** The wheel lift does not lift the wheels.

1. Check the air pressure inlet
2. Check the air filter.
3. Check the wheel lift cylinder.
4. Check the wheel lift valve.
5. Call Snap On Hot Line Centre.

**COMPLAINT 7:** The air control does not inflate the tire.

1. Check the air control.

**COMPLAINT 8:** All pneumatic cylinders are too slow.

1. Check airline pressure inlet.
2. Check the air pressure outlet.
3. Check the air filter –lubricator assembly.

4. Call Snap On Hot Line Centre

**COMPLAINT 13:** The MH arm does not have force.

1. Check airline pressure inlet.
2. Check the air pressure outlet.
3. Check the air filter –lubricator assembly.
4. Check the MH cylinder.
5. Check the MH valve.
6. Call Snap On Hot Line Centre

**COMPLAINT 14:** The automatic tool does not lift the tire bead.

1. Check airline pressure inlet.
2. Check the air pressure outlet.
3. Check the air filter –lubricator assembly.
4. Check the automatic tool cylinder.
5. Check the automatic tool cylinder valve.
6. Call Snap On Hot Line Centre

## UPDATING GUIDE:

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