

20040429

INSTRUCTION MANUAL

Ultrasonic Welding Machine (Arm Changeable Type)

LWU - 3015 - 3



QUEEN LIGHT ELECTRONIC IND., LTD.

Warning Signs / Stickers

Various Signs / Stickers are stuck on the machine to provide additional instructions for the safe operation of the unit.

Customers who are operating this machine **must follow** these instructions very carefully to ensure safe operation of the machine.

We detail below illustrations of the warning signs / stickers together with an explanation of relative meaning.

a: Warning for High Voltage Electric Power



Be care for Electric Shock from the high voltage wire cable.

b: Caution to Prevent Hands Fingers Touch Danger Done.



Hands Fingers may be Injured.

c: Caution to Prevent Hands Fingers Touch Hot Part.



May be injured if touches such Hot part.

d: Caution to operate machine Without Guards, Covers.



The machine operation without safety covers and guards must be cause for injury.

e: Earthling is necessary.



Customer is required to place earth line here.

f. Caution for poisonous gas may be created.



Hot air may creates some kind of Gases that would be poisonous.

CAUTION

It is strongly recommended that Customer must be aware of several notes in prior the machine operation as mentioned below together with the contents on the SAFETY MANUAL.

1 : Make sure to connect the proper **INPUT-POWER** stated on the machine name plate.

(Refer page No.4 in the safety manual.)

2 : Always make sure to perform **GROUNDING WORK** in view of the necessity to ground for the purpose of safety. (Refer page No.8 in the safety manual)

3 : Absolutely **DO NOT USE** in a state with the panels and safety covers of the machine proper removed.

4 : **MAINTENANCE PERSONEL BE AWARE.**

Always make sure to **CUT OFF** the power and air connected to the machine when parts inside the machine are to be touched.

5 : We shall not be liable for any accidents or troubles taking place as the result of **MISTAKEN USE** in a manner not stated in this manual and safety manual or **faults** received from other machines or **improper repairs and modifications**.

6 : This machine has been set at the **factory** for standard production use accordingly to the application indicated by the manufacturer. Major deviations or extreme setting of pressures, speed, material thickness should be adjusted for.

7 : It is recommended to consult **OUR SALES AGENCY** in your country or our engineer in charge of servicing when doubts arise in use of this machine.

8 : Assurance is made doubly sure regarding the contents of this manual so that there are no mistakes, however, your advise on the matter when you become aware of any mistakes is much appreciated.

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Regional agency:

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<Beginning>

We are shipping you the products to have been properly adjusted and tested, though, if you find any defect, please contact our branch office or authorized distributor in your district.

Please check out the points below after unpacking.

- Damages during the shipment
- Loose bolts or screws at each part or wiring.

<Installation>

Choose an appropriate place taking the work efficiency into account.

- Flat and hard floor
- No waist and no dust.
- Dry and breathable room with no humidity.
- No rain drop.

Firmly fix the machine by making the level adjustment after the installation is over.

<Preparation>

Hook up the air hose and power cable after the installation.

1. Air line hook up

The Main Air Regulator is provided at the lower part of the machine. Hook up an air compressor and adjust the regulator to 0.5Mpa air pressure. Choose an air compressor with the capacity specified in the specification sheet.

Exhaust water once a day, not to be collected in the air regulator, by pushing the drain cock under the regulator. Use dry air instead of wet air as much as possible not to increase water and etc. in the regulator and to avoid leaks to the solenoid valve or cylinder, resulting in operational failure. Pay attention not to collect much water in case that dry water is not possible.

2. Power hook up (Should be executed by authorized operators only)

Caution: Confirm the Main Power Switch is off.

Caution: Confirm that the power source is within $\pm 10\%$ of the rated voltage specified on the name plate. Proper operation cannot be guaranteed unless the supply voltage is within the range. The name plate is sealed close to the main power switch.

<Operating procedure>

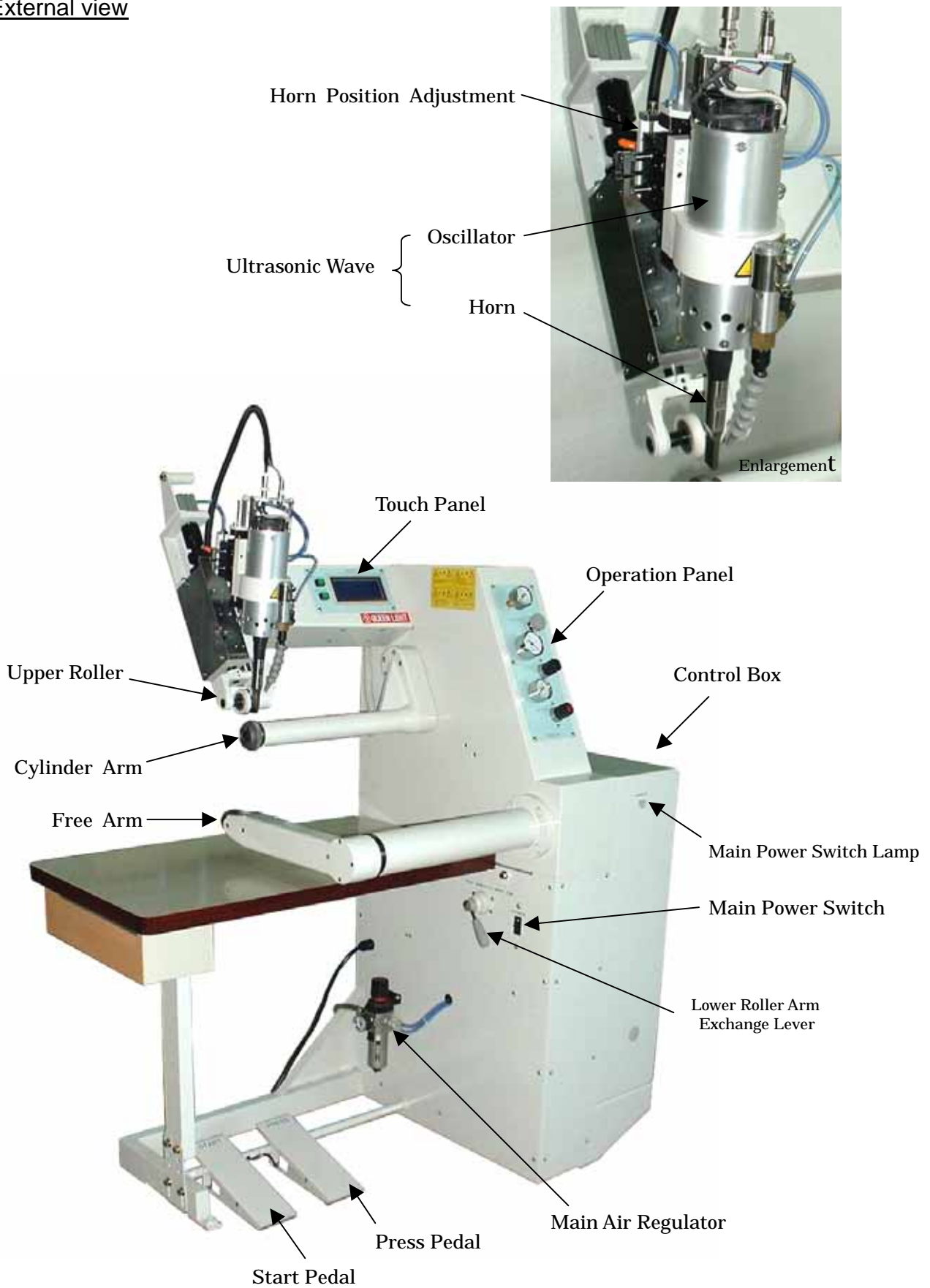
1. Take out water in the air regulator.
(Make it rule to take it out once a day before or after operation.)
2. Confirm the Main Air Regulator is set to 0.5Mpa.
3. Turn on the Main Power Switch.
4. Exchange the arm if necessary.
5. Lower the Horn by pressing the Horn Press Switch and confirm the Horn Target Point. Adjust the Horn Press, Bottom Dead Center, Horn's Slant and Right & Left Positioning, and etc. After the confirmation, lift the Horn by pressing the Horn Press button again.
6. Change the display on the LCD Touch-Panel by pressing the "OSC" key. Now, the oscillation is ready. Cold air is sent from the portion nearby the Lower Roller.
7. Change the display on the LCD Touch-Panel by pressing the "Horn" key. Now, the operation is ready.
8. Confirm the figure of the AMP Control voltmeter inside the Control Box. (Voltage can be changed with the knob placed at the center of the slidax transformer.)
9. Place the fabric between the Upper and Lower Rollers and step the Press Pedal to clamp it.
10. Operation starts when the Start Pedal is stepped.

<Cautions at operation>

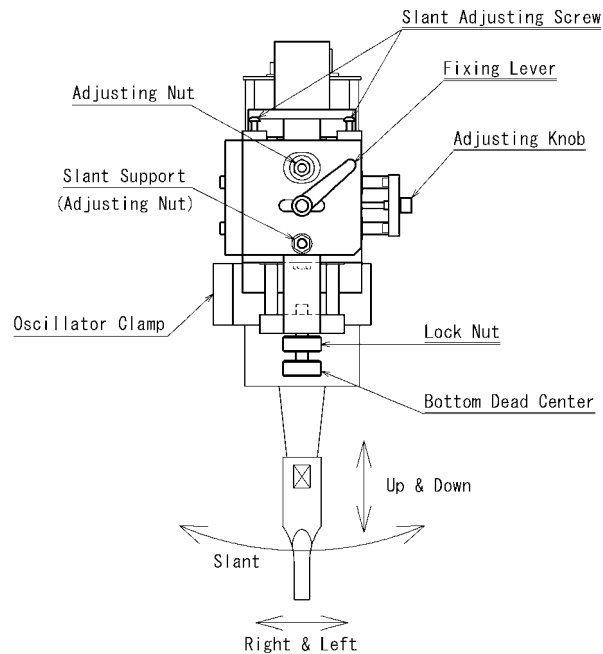
1. High voltage may generate inside of the ultrasonic oscillator. Turn off the Main Power Switch whenever the inspection and etc. are done. Do not use air pressure and etc., for the purpose of cooling the Oscillator, because air usually includes little water that may result in short circuit inside the Oscillator.
2. Pay utmost attention not to pinch your fingers between the Horn and Roller during the operation. Your fingers may be burnt.

< Descriptions of each part >

External view



< Horn position adjustment >



This machine welds by means of ultrasonic wave.

The position between the Horn and Roller is one of the most important points in the ultrasonic welding.

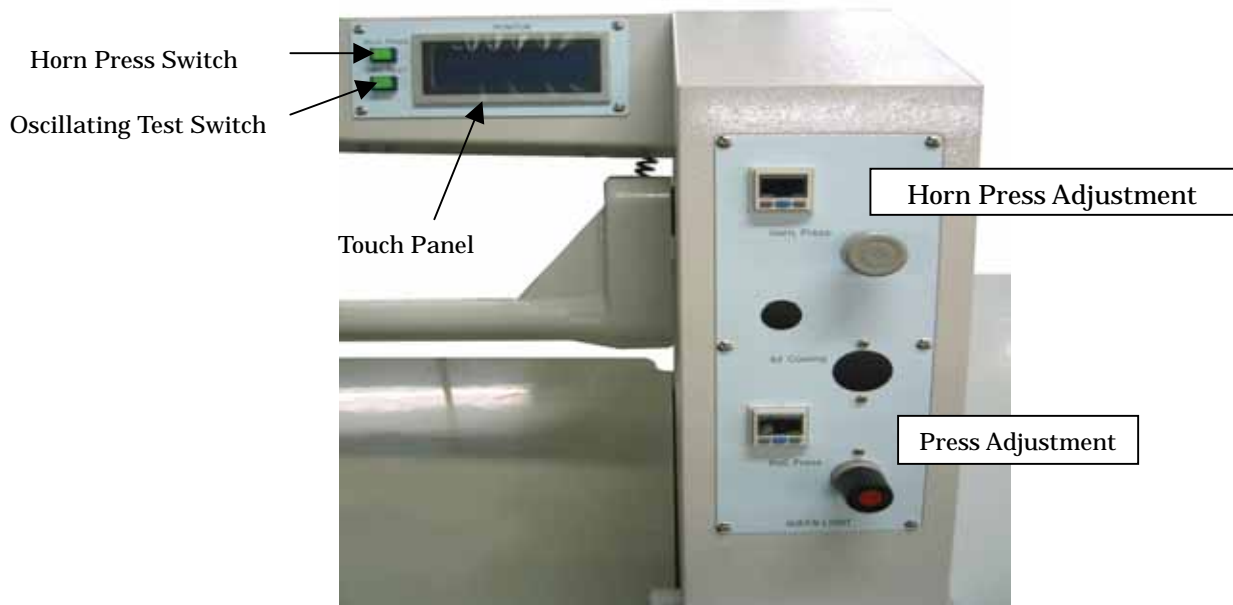
Upper and lower position adjustment: Decide the Horn's lowest dead center by means of the Bottom Dead Center. The screw adjusts the welding strength. Lowering the Bottom Dead Center, while decreased by raising it, increases the strength. Having the Bottom Dead Center free may be necessary depending on fabrics. In such a case, make the Horn Press Adjustment, instead

Right and left position adjustment: Loosen the Fixing Lever and adjust the Horn position by the Adjusting Knob.

Slant Adjustment: Loosen the Fixing Lever and adjust the Horn's slant by the Slant Adjusting Screw. Adjust it to have the Lower Roller and the edge of the Horn even.

The whole part of the Horn tilts around the central Slant Support. It is necessary to confirm the right and left position of the Horn, because the position may change while the slant is adjusted.

< Operation Panel >



Horn Press adjustment

The “Horn Press” knob provided on the Operation Panel can adjust the horn pressure. The pressure can be adjusted by turning the knob clockwise or anti-clockwise (The pressure increases by turning it clockwise, while decreases by anti-clockwise revolution).

The display of the horn press appears only when the Horn is down. Lower the Horn whenever the pressure is adjusted.

Below is a cross-reference between the displayed pressure and the horn pressure in computation.

Displayed pressure	Pressure in computation
0.1 MPa	31 N (3.2kgf)
0.2 MPa	63 N (6.4kgf)
0.3 MPa	94 N (9.6kgf)
0.4 MPa	125 N (12.8kgf)

Note: The Horn Press may change welding results. In general, the more pressure increases, the more welding power increases. Too much pressure may terminate the fabric feeding and expands the welding part, and results in poor outer appearance. It is recommended, therefore, to have the Horn Press as low as possible.

Upper Roller Press adjustment

The "Roller Press" knob provided on the Operation Panel can adjust the upper roller pressure. Pull the knob forward to unlock it and adjust the pressure by turning it clockwise or anti-clockwise. Adjust it to appropriate pressure by observing the figures on the Pressure Gauge. After the adjustment is made, push the knob backward to lock it.

The display of the roller press appears only when the Upper Roller is down. Lower the Upper Roller whenever the pressure is adjusted.

Below is a cross-reference between the displayed pressure and the roller pressure in computation.

Displayed pressure	Pressure in computation
0.1 MPa	49 N (5kgf)
0.2 MPa	98 N (10kgf)
0.3 MPa	147 N (15kgf)
0.4 MPa	196 N (20kgf)

Note: Too much roller pressure may cause bending of the Cylinder Arm or Free Arm and breaks the level between the Lower Roller and the edge of the Horn, and results in varied welding results. Set it as low as possible. After the adjustment is completed, check out the level between the Lower Roller and the edge of the Horn.

Horn Press Switch

This can lower the Horn only. Press it for lowering and repeat it for lifting the Horn. Confirm the position between the Horn and Lower Roller before the switch is pressed.

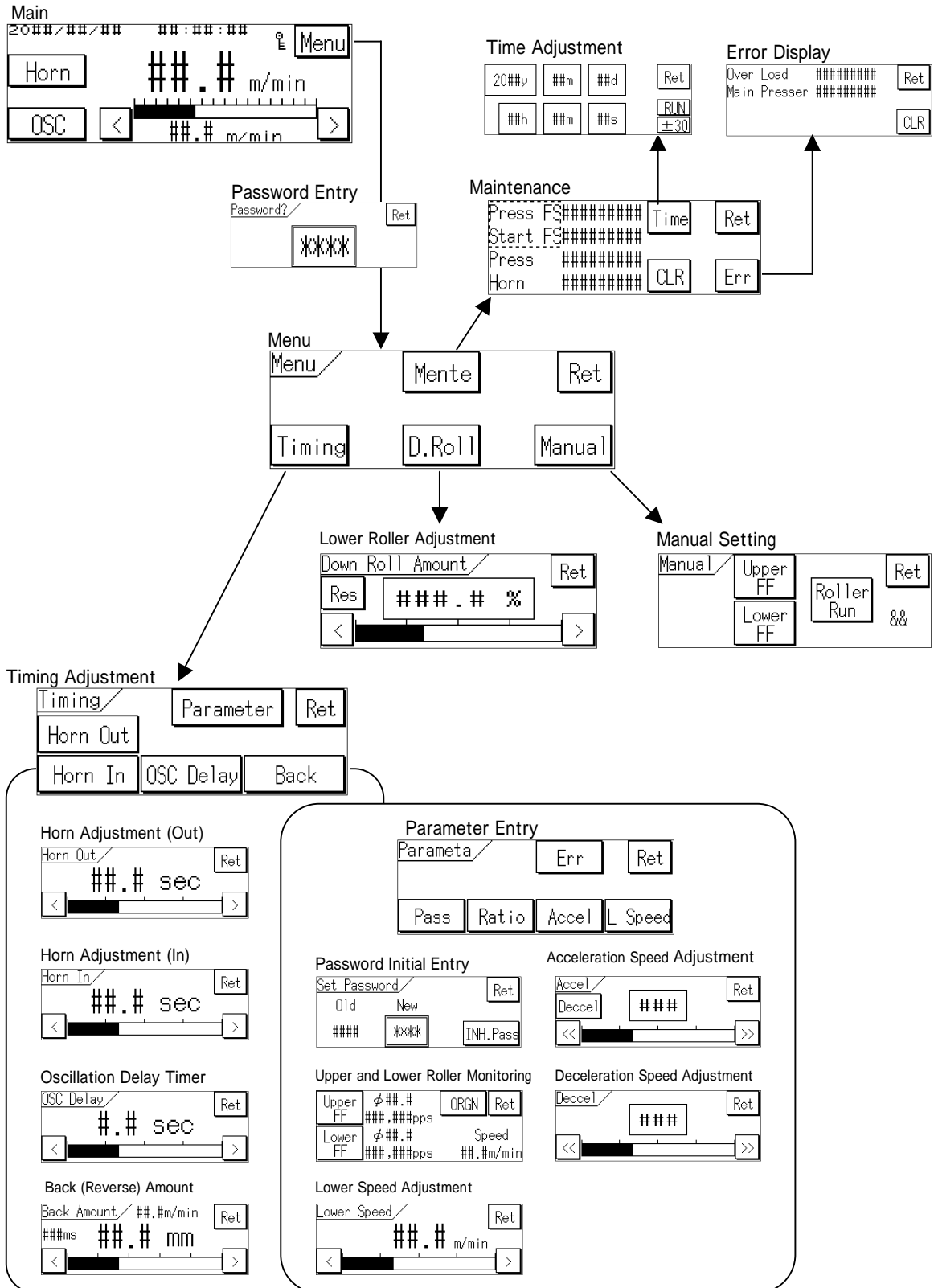
Oscillating Test Switch

This can use for manual oscillation.

The switch is usable only when the "OSC" key turns over and the Horn is down.

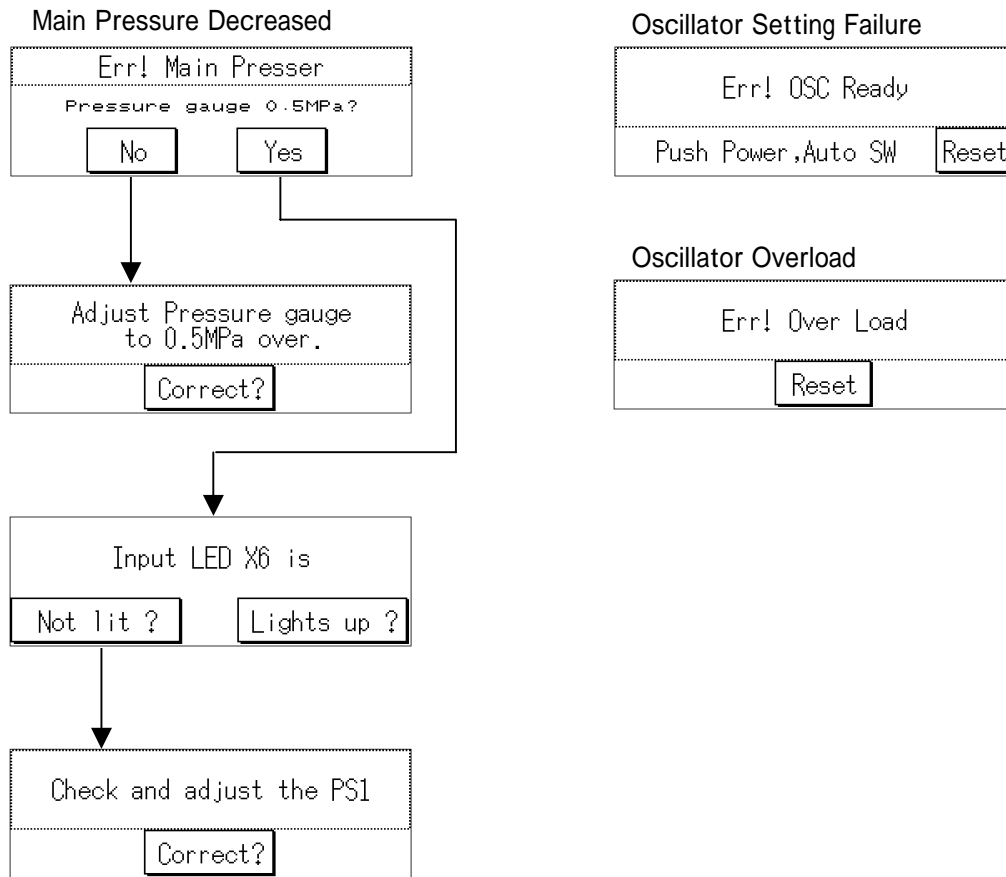
<Touch Panel>

Screen Change-over Flow Chart



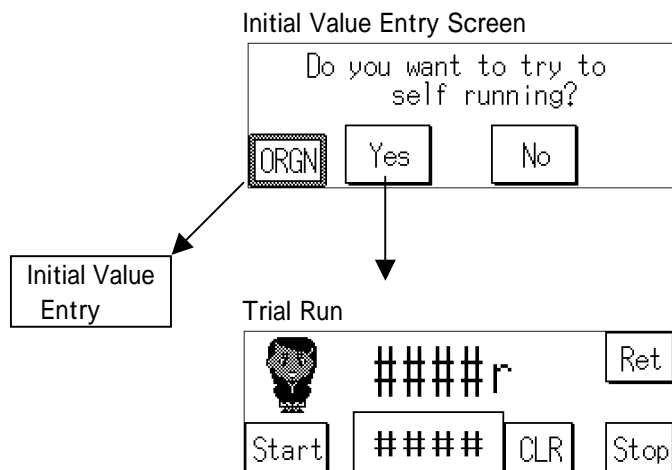
Error Displays

Proceed with the messages given when errors are displayed.

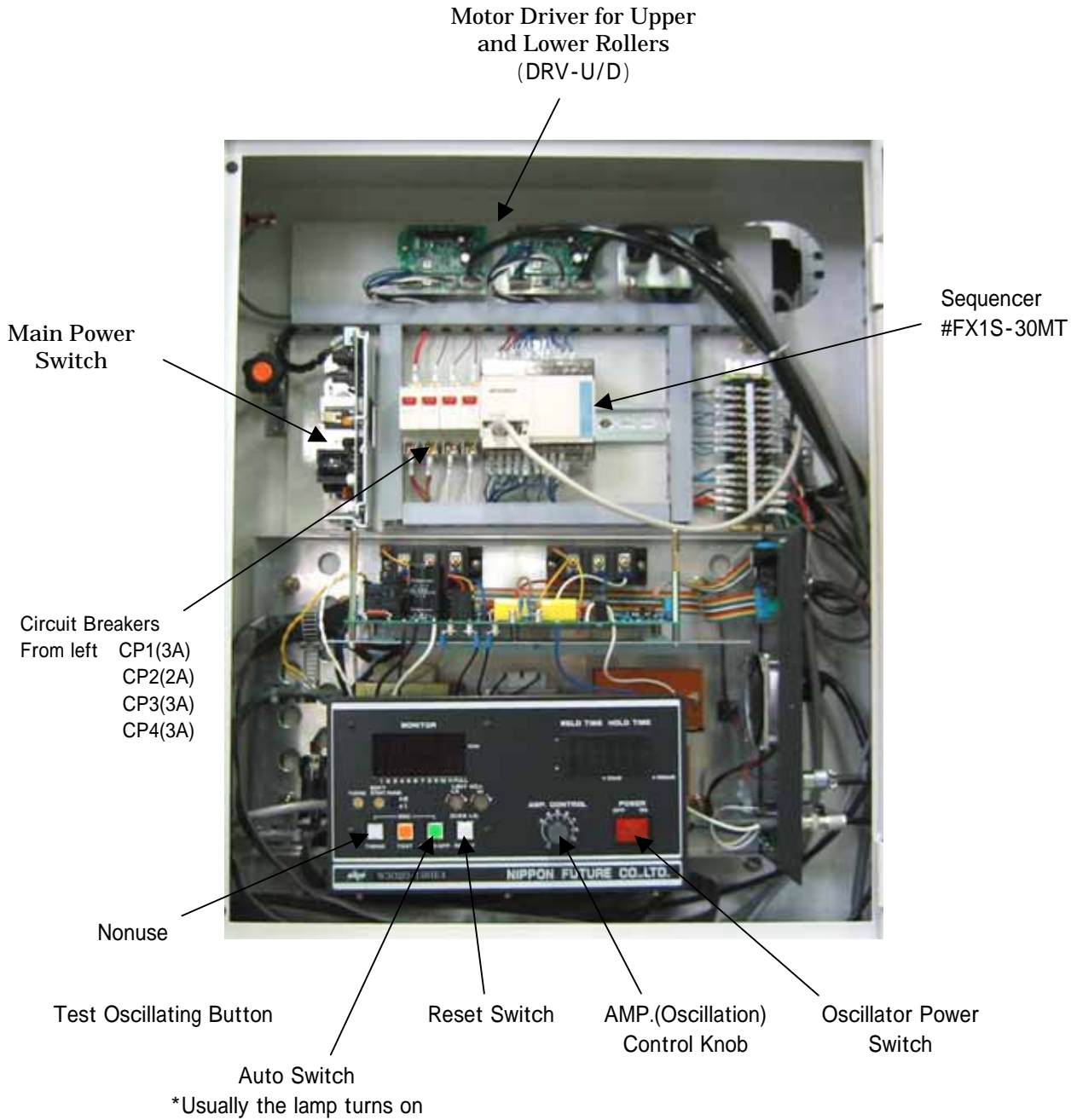


Initial Value Entry & Trial Run

Initial Valve Entry screen appears while the upper left on the maintenance Screen (Main Screen Menu Mente) is continuously pushed.



<Control Box>



* Oscillation cannot be carried out while the auto lamp of the Ultrasonic Oscillator turns off.

<Summary of Ultrasonic Welding>

This machine carries out welding by means of ultrasonic wave.

Below are factors in deciding the welding conditions of the Ultrasonic Machine.

- Ultrasonic Oscillating Frequency: This machine is fixed to 27kHz.
- Amplitude at the horn edge: The AMP. Control Knob inside the Control Box adjusts the amplitude. The more voltage raises, the more amplitude increases and stronger welding can be achieved.
- Horn Press: The Horn Press Knob provided on the Operation Panel adjusts the horn pressure. The more pressure increases, the stronger welding can be achieved.
- Roller Feeding Speed: It can be adjusted on the Touch Panel. The more feeding speed increases, the more welding power decreases and results in weaker welding.
- Horn Target Point: Welding power is changed by adjustment of the Horn's slant as well as Bottom Dead Center. Welding power increases while the Bottom Dead Center is lowered. There may be a case to adjust it by the Horn Press having the Bottom Dead Center free. Making the slant adjustment, as well as having the edge of the Horn and Lower Roller surface even, carries out stable and equal welding.

Beside, welding power may be increased by overheat of the Horn or Roller caused by continued operation. In this case, welding quality won't be even, that it is essential to cool them down as possible not to be heated