



*Butt fusion machine*

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# FM -160G Butt Fusion Machine Operation Mannual

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**JILIN SONG JIANG SMART JOINT CO., LTD**

Address: Tiangang Economic Developing Region Jiaohe City Jilin Province  
China

Post Code: 132021

Tele : 0086-432-66976665 Fax :0086- 432- 66976664

<http://www.jlsjpipe.com>

Email: [info@jlsjpipe.com](mailto:info@jlsjpipe.com)

# Safety Rules According to Directives CE

(To be read carefully and apply while utilizing the FM 160g)

Due to the specific use, this machine cannot be supplied with all kind of fix and removable protection suitable to avoid any risk of accident.

The machine, therefore, must be utilized, adjusted and keep in perfect functioning conditions by skill operators.

## Warning – Rules - Obligations

The use of machine composed by electrical components and movable parts, it's always a potential danger. In order to avoid any kind of accident caused by electrical or mechanical sources it's strongly suggested to read and follow carefully the following safety rules before operating the machine.

### Transport

- ✓ **Basic Machine**, keep the maximum care while moving and it's suggested to utilize mechanical aids.
- ✓ **Facing Tool**, keep the maximum care while moving it and it's compulsory to utilize the handle also take care about the blades mounted in, it's compulsory use gloves.
- ✓ **Heating plate**, supplied with transport handle.

keep the maximum care while moving it also keep the maximum care while utilizing it due to the high temperature involved always more than 200°C, it's strongly suggested to use suitable gloves.

In order to move from one working place to the other, the facing tool and the heating plate must located into the special support. This support is heavy therefore it's necessary to utilize the maximum care to move it.

Avoid transport the components by holding from the cable and remember to use suitable gloves.

### Electrical Connections

- ✓ The machine is operated by 220 Volts therefore be sure that the power supply plug is supplied with the safety devices according to the standard requirements, also check that the power supply will be on the rang of maximum 10% of the machine's nominal tension.
- ✓ While the facing tool is connected to the power supply do not leave it into the basic machine but place it into the special support. In this position, even if the start bottom is pushed the engine does not start.
- ✓ Check regularly the cable and the plug and in case substitute by qualify personnel.
- ✓ Before carry out reparation or maintenance all the plugs must with plug out from the power supply.

### Environmental Conditions

The working area must be clean and duly lighted. It's very dangerous to utilize the machine in case of rain or in wheat conditions or close to flammable agents.

### Clothes

Keep the maximum care while utilizing the machine due to the high temperature involved on the heating plate always more than 200°C, it's strongly suggested to use suitable gloves. Avoid long clothes and avoid bracelets, necklaces that might be hooked into the machine.

**Correct machine's operation**

Remember to check and read carefully the manual before utilizing the machine and the accessories.

**Keep always the maximum attention**

After the heating plate has been disconnected temperature will be hot for some minutes.

Keep the maximum care while utilizing facing tool. Be carefully to the blades, it's strongly suggested to use suitable gloves. During the facing operation (facing tool in movement) it's forbidden to take out the shavings, Avoid utilizing the machine after drinking or drugs use.

Take care that all the people around the machine are at safety distance.

While starting operating take care to avoid leave arms between the movable and fix trolleys. It's compulsory to

**Squashing danger**

While starting operating take care to avoid leave legs or arms between the movable and fix trolleys. It's compulsory to be far the basic machine.

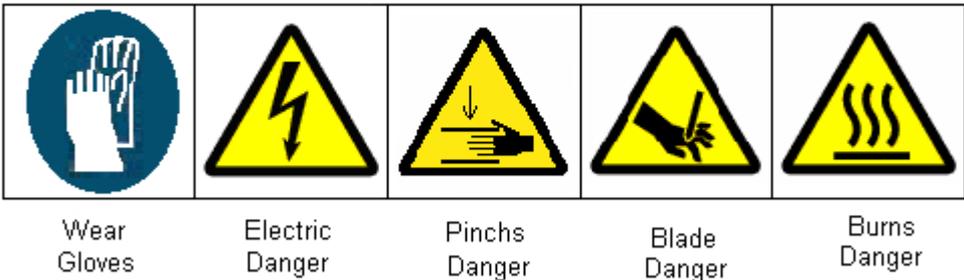
**Acoustic pollution**

The acoustic pollution of the drill engine is less than 85dB (value measured at 1 meter distance from the operator). Due to some particular cases such as too much pressure during the facing the noise should be increased, therefore it's suggested to protections.

**Important !!!**

Keep the maximum care reading and following the above Warning – Rules – Obligations the JILIN SONG JIANG SMART JONT CO. LTD decline all responsibilities if are not followed totally.

Label on machine's components showing potential dangers



## **A: Introduction**

FM-160G is a manual butt fusion machine. Combines of base machine, facer, heating plate and other parts. It's easy for operation, very light. Suitable for SDR17 pipe welding for water supply.

## **B: Parameter**

1: Welding Range: Dn160、Dn140、Dn125、Dn110、Dn90、Dn75、Dn63;

2: Voltage: 220 VAC;

4: Heater Power: 1000 W;

5: Facer Power: 750 W;

6: Total Weight: 37 Kg

## **A: Welding**

### **1. Preparation**

Connect the heater and facer plug with the sockets. Set the temperature for the heater.

Load the pipes between the clamps. Keep them in the same level.

### **2: Facing**

Move the handle on the base machine and make the motile clamp back forward. Put the facer on the spindles. Push the handle to make the motile clamp move forward until the pipe ends against the facer. Hold on the handle and press the switch for facer.

### **3: Pipe Concentricity Check**

Take out the facer and check the pipe ends and adjust the locking bolts to make the pipe on the same level.

### **4: Welding Phase**

1) When the heater temperature reaches set one, put the heater between the pipe ends, and push the handle to make the pipe ends contact with the heater. Add balanced force on the handle

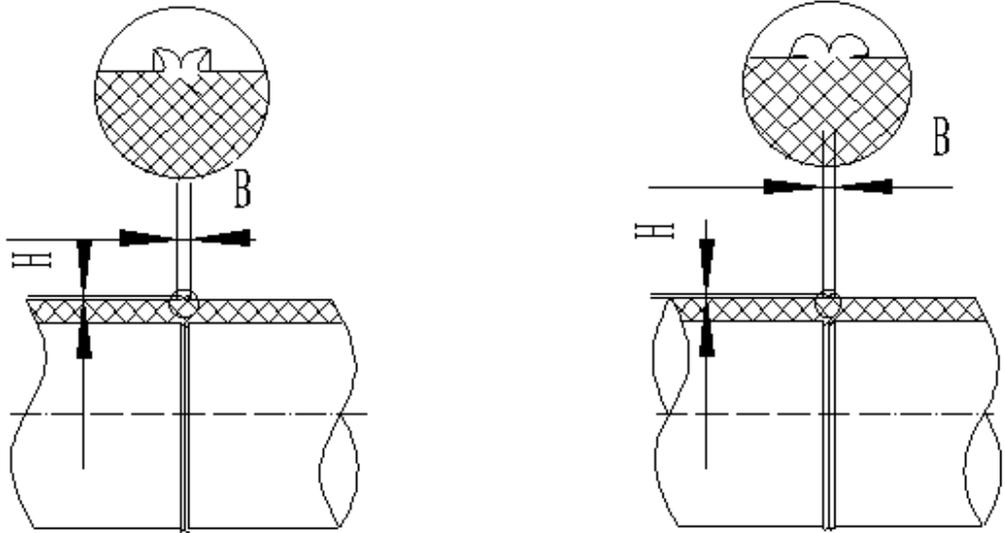
until the loop formed. This is the first phase –Preheating time  $T1=e$  seconds (e: Wall thickness of pipe) Unit: mm

2) After this phase, just hold on the handle without increasing force, keep the pipe against the heater. Maintain this status for time  $T2 = 8 \times e$  Seconds (e: Wall thickness of pipe) Unit: mm ,  $T2$  time is soaking time.

3) Then take out the heater soon (  $T3 \leq 3$  seconds).

4) Push the handle and move the motile clamp forward with proper force. The two pipe ends fused together. We call it fusion time  $T4$  which shouldn't shorter than  $T2$ ).

Picture in the right as followed is for qualified joints. The size of loop can follow as displayed in the picture.



$$B = (0.6 \sim 0.7) e; \quad H = (0.3 \sim 0.4) e$$

e: pipe wall thickness Unit: mm

Picture in the left is an unqualified joint. It's resulted from the unbalanced force.

**5)** The 5<sup>th</sup> phase for cooling, keep the joint cooling for as least 10 Mins. Then unload the pipe.

Fusion finishes.