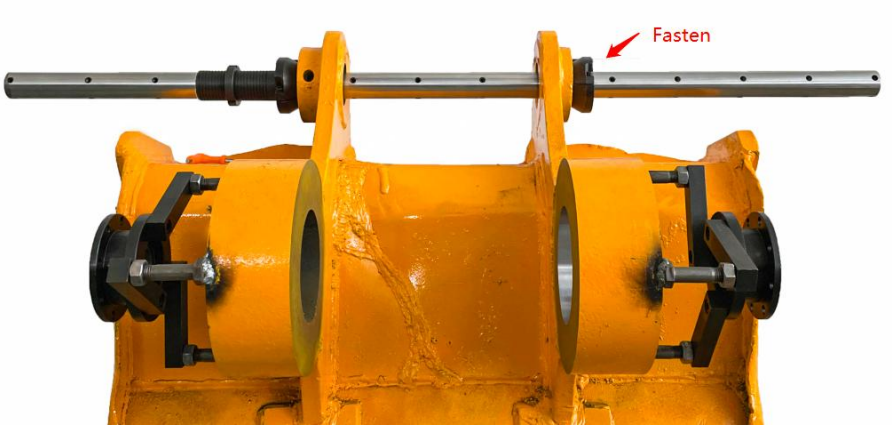
PROLINE
Industrial

Operation Manual

Portable Line Boring & Welding Machine

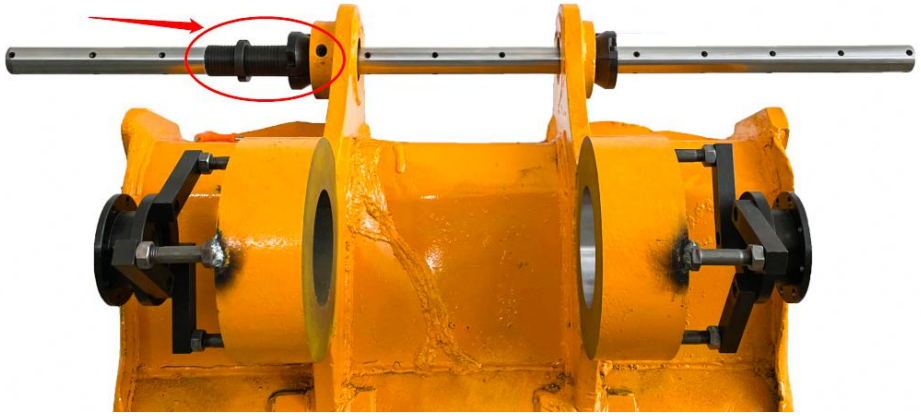
Centering Hole diameter 55~160mm

1.Set up centering cone and insert boring bar through holes.

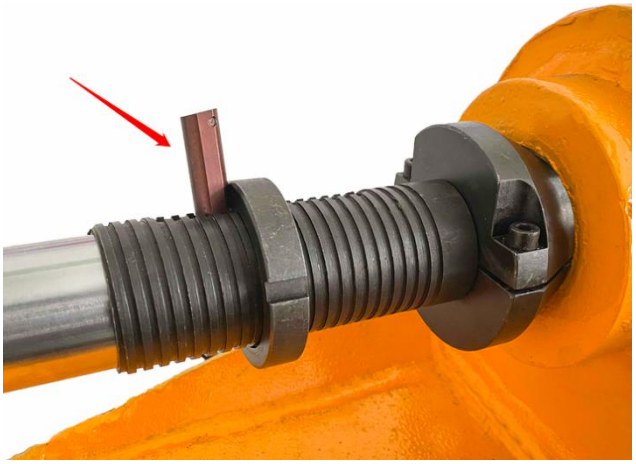


2. Lock this end by bolt

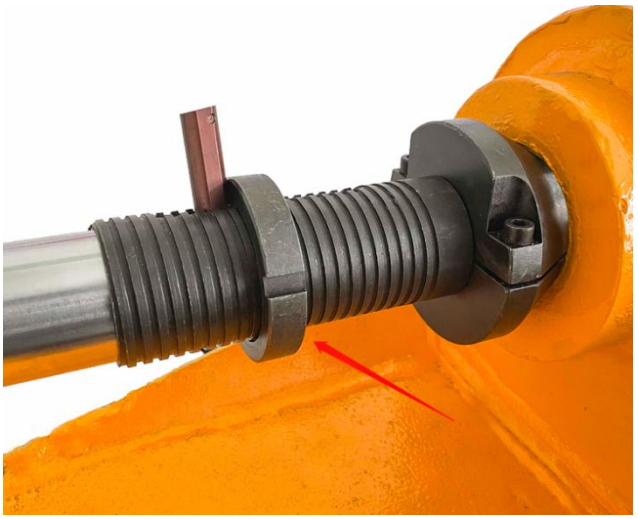
3. Inserted with the positioning sleeve



4. Install one insert holder（any kinds） into boring bar hole (the purpose is fasten this side centering cone.)



5.Use crescent wrench fasten positioning sleeve nut , in order to push this side centering cone fasten in the hole .



6.Tighten the centering cone bolt ,then remove the positioning sleeve, centering work complete.

Small cone can centering hole diameter
(55mm- -105mm)

Big cone can centering hole diameter
(95mm- 160mm)

Hole diameter ≥160mm

1. 3-Jaw Centering Tool Installation

①Screw the nut into the bolt 2~3 cm away

②Spin the knob to the proper position

③Use a wrench to tighten the nut

④Screw the fixing block in

⑤Finally insert into the centering ring

① 

② 

③ 

④ 

⑤ 

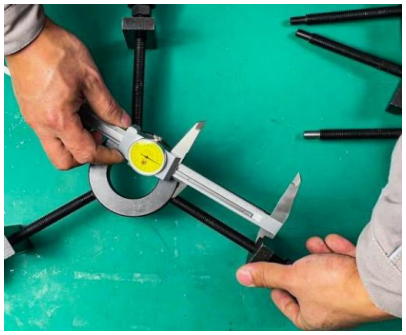
①Measure the diameter of the workpiece

②Adjust the centering tool based on this data (roughly set the center position)

③Ensure the data is correct then fix it by welding.

① 

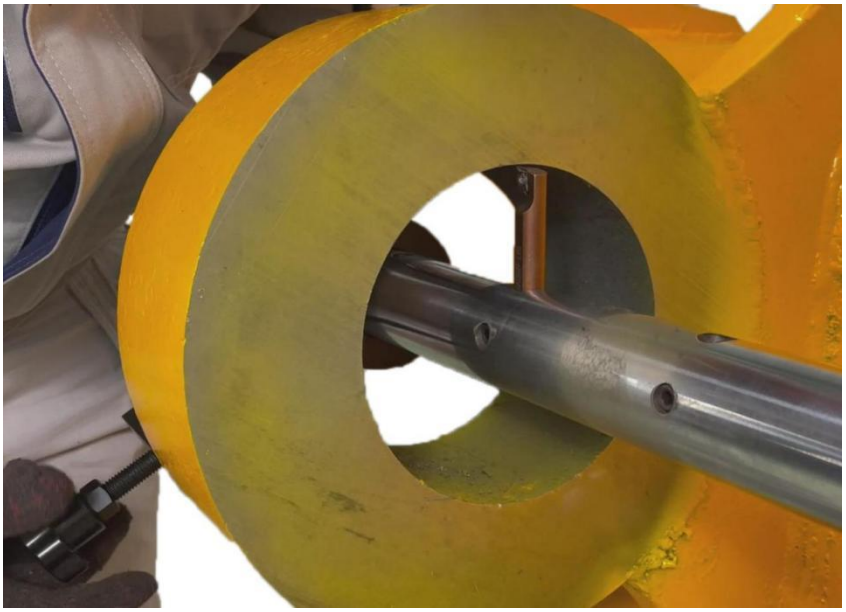
② 

② 

③ 

3. Install the boring bar into the centering tool, and install the insert holder to the boring bar.

Rotate the boring bar and observing the distance between insert holder and the end face of workpiece to adjust the knob. Make sure the boring bar pulling and pushing smoothly.



If site working piece need reach align centerline ,same as original piece at factory. Site team need find out one XYZ center coordinates at site , to fix line boring bar position.

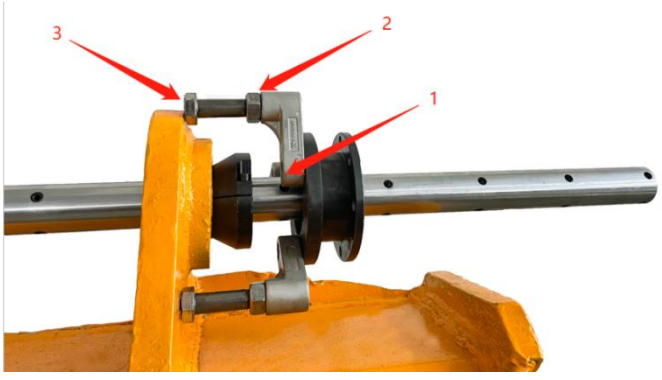
II.Bearing bracket installation

Fit bearing bracket into the boring bar, fasten No 1 place bolt . and adjust bracket three bolts into equal location .

Adjust #3 bolts length properly in order to keep enough space to remove centering cone later .

In #3 bolts , you need adjust bolt length, make each bolt surface tightly touch on machining piece surface , pay attention all three bolts need touch . if two bolts touch ,one bolt did not touch tightly , it will cause boring bar jam ,can not be pull out later .

Tighten #2 bolts (try shorter the screw length , shorter can minimize the vibration) , then don't welding three legs. Leave enough space to remove the cones after the brackets are welded in place.



Remove the centering cone. Pulling and pushing boring bar manually to test the bar slides smoothly or not , rotating the boring bar to pull out . If it can't be pulled out , first check three legs in #3 location , is it all three legs tightly touch on surface or not ,it may causes the bearing bracket out of concentricity. Remove bolt and reinstall it.

Anti-Vibration Bracket Modular Installation

If the distance is too long between two bearing brackets, anti-vibration should be installed in the middle to prevent the boring bar vibration.

Anti-vibration bracket installation method:
Put the anti-vibration bracket into the middle of the two bearing bracket, adjust the anti-bracket plate length then can be welded to the machining piece, tighten the screw, and then fix it by welding.

III Motor Modular Installation

Motor modular flange side connect with bearing bracket flange (make sure that the flange contact surface damage to loss central alignment, otherwise the boring bar may not be pull out after installation)

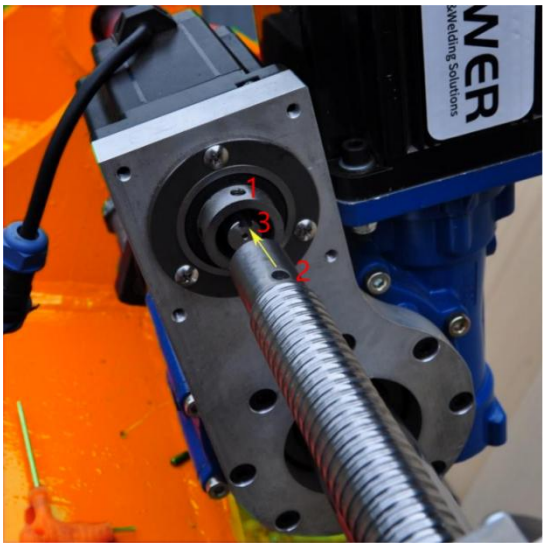
Axial Feed Unit (AFU) Installation

Hole #1

Hole #2

Key slot #3

Screw bar inserted into the motor, (make sure that two holes and the motor key slot are kept in the same line before installing the screw, so that the screw can be installed in the key slot.



The screw tail need keep about 4mm height outside , if the tail height is too high, it is not proper installed in the key slot. If too short automatic feeding can not work properly .

The ball screw and ball bearing in the AFU should be assembled in one piece modular, it cannot be disassembled, otherwise it needs to be returned to the factory for inspection.

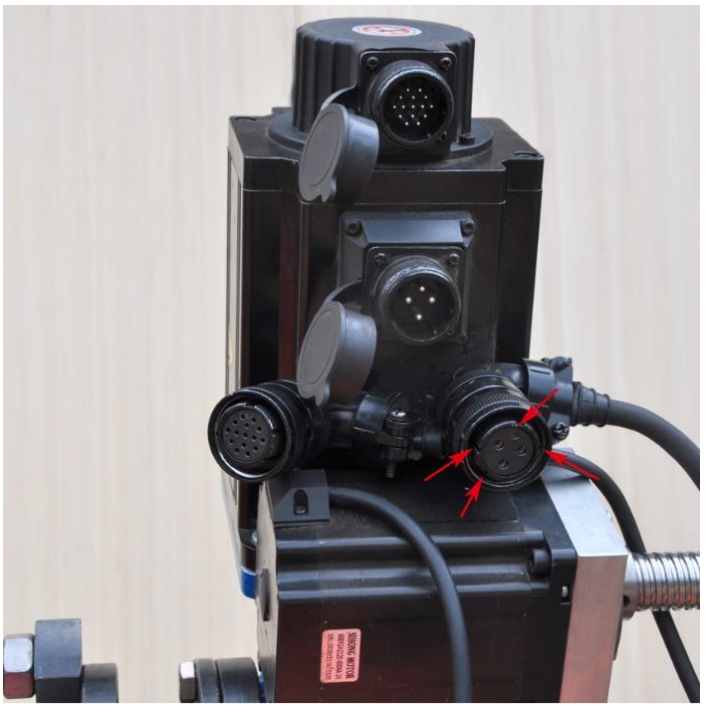
Feed screw bar maximum single stroke is 240mm ,if you need more feed stroke . you can reset feed bolt ,then you can have more feed space . in principle , feed is 240+N

Set boring bar into AFU, and use the location screw to fix the boring bar through the bearing.

(Keep enough boring bar feeding stroke to prevent overfeeding. Otherwise it will cause the permanent damage to the AFU.)

IV Control Box Connection

Power cable connection port has positioning key slot



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No 1 is welding machine control cable.

No 2 is gas feeding cable.

No 3 is welding wire feeding cable.

Note: The interface pins are forbidden to collide and bend, please pay attention to dust .

V Insert Holder Installation

Use the caliper measure the machining piece hole diameter to select proper insert holder.

Insert holder length	Boring holes diameter
45mm	70mm- -88mm
55mm	88mm- -106mm
65mm	106mm- -124mm
75mm	124mm- -142mm
85mm	142mm- -160mm

70mm

Boring holes diameter smaller than 70mm, it need central type insert holder.

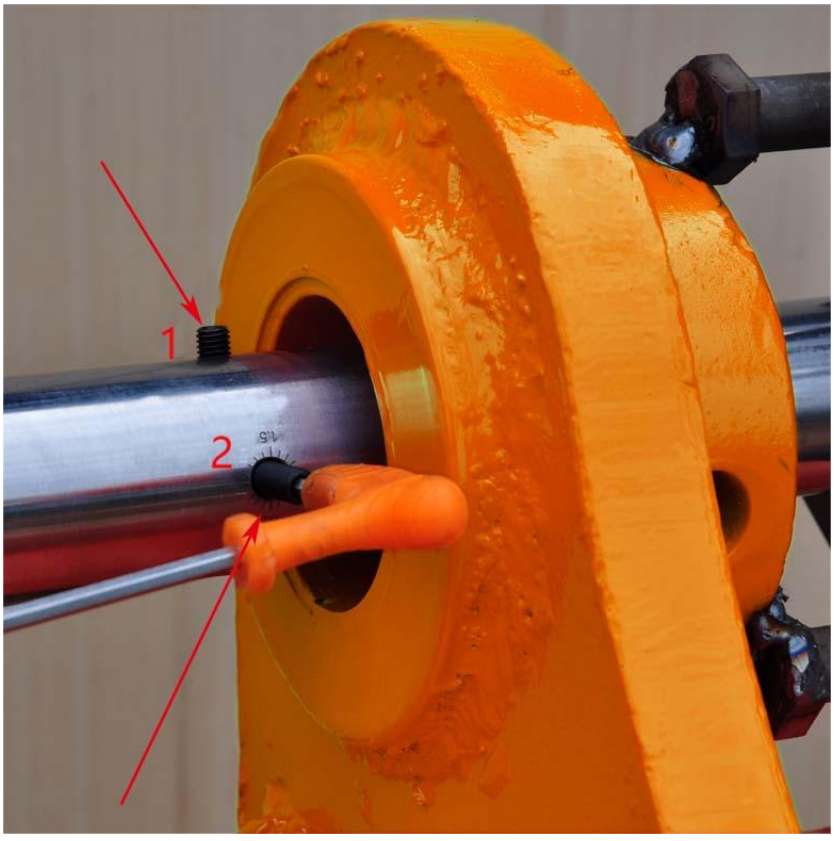
Pick proper boring bar hole to install the insert holder (boring bar hole diameter 14mm).

If insert holder length is too long , you can cut off insert holder length as you need .

Horizontal hole is insert holder position fixation hole.

(#1 hole)

The bottom vertical hole（#2 hole） is insert holder depth distance setting hole. It has a scale on it , one circle round screw movement is 2.4mm depth, half round circle is 1.2mm depth, and the rough boring cut depth should be less than 6mm. Reduce the cutting thickness according to the material hardness.



At the beginning portable line boring work start , it needs to be slowly manually feed the boring bar first, machining the bore surface smooth at first round ,after line boring sound heard normal .then it can switch Automatic stroke feeding from manual boring. During line boring, if the cutting process can not work properly or the boring surface is not smooth, please check the insert is worn out or not.

替换：When the line boring work start, the boring bar needs to be fed slowly and manually to produce a smooth finish on the first round. When the surface is smooth and free of noise, the machine can be switched from manual feeding to automatic feeding mode.

Hole boring steps/accuracy is divided into rough boring, semi-fine boring, and fine boring. Rough boring accuracy ≥ 2mm on single side, semi-fine boring accuracy ≤ 1mm, and fine boring ≤ 0.3mm.

Boring Diameter Range

55mm- 160mm,35mm(40mm)(300mm) The standard boring range is 55mm-160mm, if you need boring smaller or large holes, it need use boring bar 35mm (minimum boring 40mm) or tool holder(maximum boring 300mm)

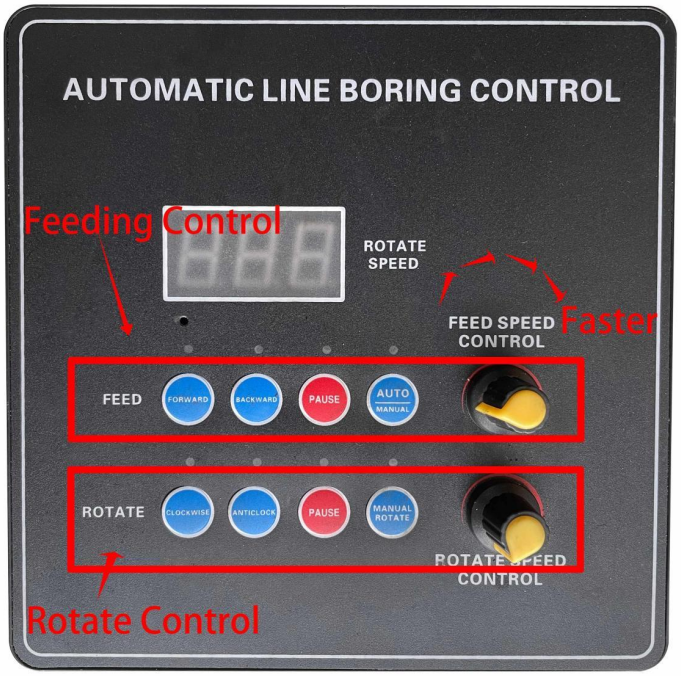
Tool Holder Installation (125-- 300mm)

Use the caliper measure the machining piece hole diameter to adjust tool holder. Select the proper position to install the insert holder. After adjusting to the proper position, fix the insert holder through the horizontal hole in the tool holder.

VI Automatic Boring Control

1. Screw bar feeding forward (must operate it when boring bar is in rotating)
2. Screw bar feeding backward (must operate it when boring bar is in rotating)
3. Stop feeding (pause) . press this button , red lamp light on , screw bar feeding is stop , screw bar can not manual forwarding or backward)
4. Manual and automatic switching . in automatic position (red lamp light on) , you can not rotate screw bar manually . in manual position (red lamp light off) , you can rotate screw bar manually .
5. Feeding speed (slow← , fast→) , this button left end is meaning " screw bar feeding no speed ".
If the cut thickness big , boring bar feeding speed can not move fast . bigger hole diameter speed need slow .
6. Boring bar rotate positive direction (the tool holder insert side) , No 9 and No 6 need light on in the same time , then it can rotate
7. Boring bar rotate negative direction (the tool holder insert back side) , No 9 and No 6 need light on in the same time , then it can rotate
8. Boring bar rotate stop . boring bar rotating blocking ,and can not rotate manually . you need press No 9 button first to switch into manual rotate .
9. Against power supply , boring bar will be blocking by control system , after press 9 button (red lamp light off) you can rotate boring bar by manually . example replace or adjust the tool holder need this setting .
10. Boring rotate speed (slow← , fast→)

1. Screw bar move forward
2. Screw bar move backward
3. Screw bar stop feeding
4. Manual and automatic switching
5. Screw bar feed speed +
6. Screw bar feed speed—
7. Boring bar clockwise rotate
8. Boring bar anticlockwise rotate
9. Boring bar stop
10. Boring bar blocking by control system , after press 9 button , you can rotate boring bar by manually . example replace or adjust the tool holder need this setting .
11. Boring bar rotate speed increase +
12. Boring bar rotate speed reduce —



Notice:
When ① ② is feeding forward or backward , the boring bar must be rotate . if boring bar is static , but you automatic control boring bar feeding forward or back , it easy break the tool holder or jam boring bar.
③ When the feeding is stop, manual feeding can not work.
④The manual feed light is off, and the automatic feed light is on.
⑤ Feed speed adjustment. When the cutting amount is large, the feeding speed should not be too fast.
⑥ When the rotate is clockwise, the clockwise light and the manual rotate light should be on.
⑦ When the rotate is anticlockwise, the anticlockwise light and the manual rotate light should be on.
⑧ The boring bar stops rotating, the bar is locked at this time, and manual rotate light is on.
⑨ If need to manual rotate the bar, you need keep ⑧ light on,and press ⑨ light off.
⑩ Rotate speed adjustment, when the aperture is below 150, the speed should not be lower than 150 rpm.

The boring bar automatic axial feeding speed should be gradually increased, the Automatic feed can not read data on control box (Adjust the axial feed speed according to the site conditions and materials)

After boring works completed, remove insert holder and boring bar . (control box power need cut off first)

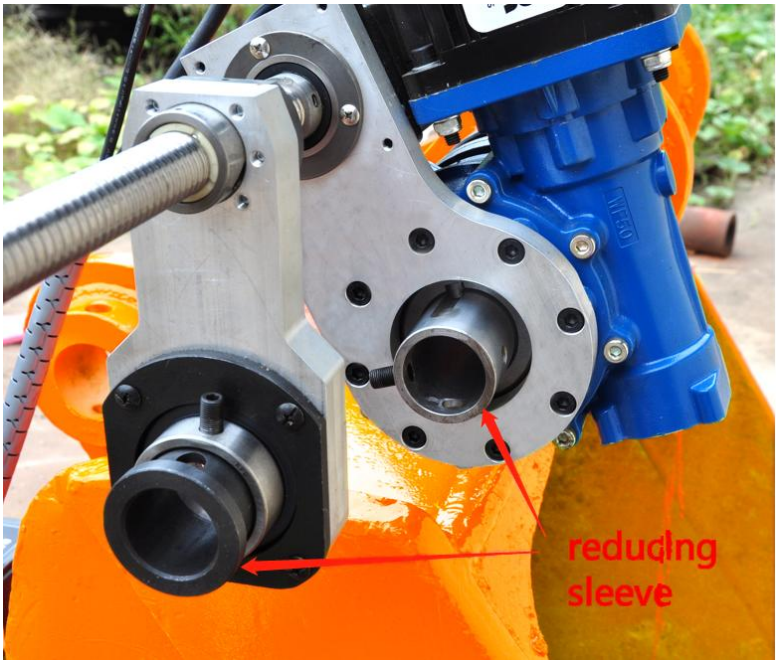
Normal operation panel display

VII Automatic Internal Welding Control

Connect the welding wire to the wire feeder. If it is European type interface, install the welding wire plug converter from tools box .
The welding wire 2-wire aviation plug connected to control box 2-wire aviation interface. Then insert into welding torch.

50mm*200mm，50mm*60mm

50mm*200mm reducing sleeve set into gear box, and 50mm*60mm reducing sleeve set into feed bearing (hole to hole)



Welding bar divide in several pieces ,as modular design. Welding bar can easy assembly or disassembly.

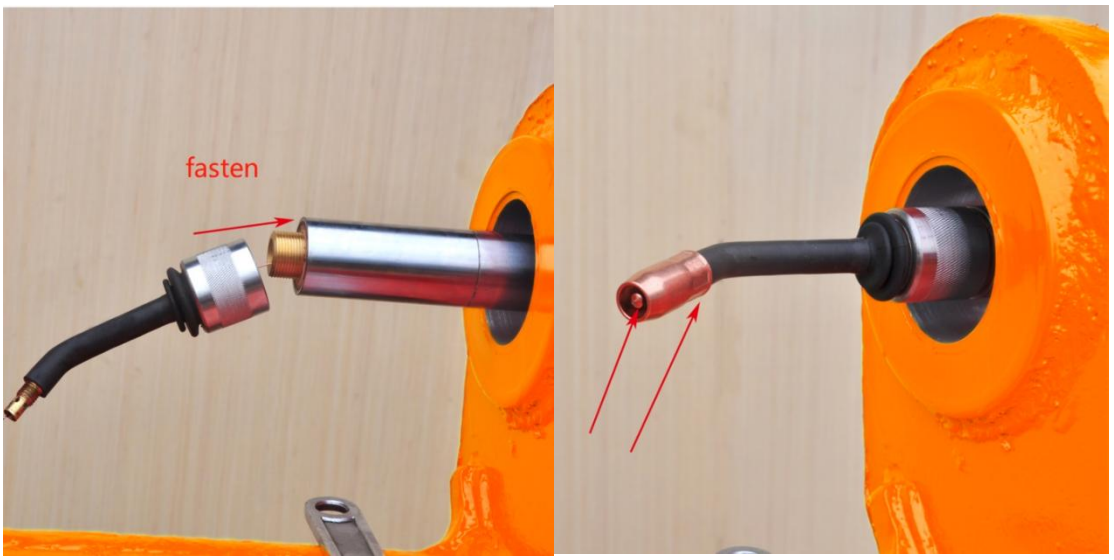
Adjust length according to the site conditions (please pay attention ,welding bar end tail coated with nylon, it should be installed at end)

Bore welding maximum single stroke is 100mm ,if you need more feed stroke. You can reset feed bolt in reducing sleeve and screw bar feed bearing ,then you can have more feed space . in principle , feed is 100+N

The welding torch head tail connect to welding machine torch head , it should tightly connect ,or else this connection position may burn .

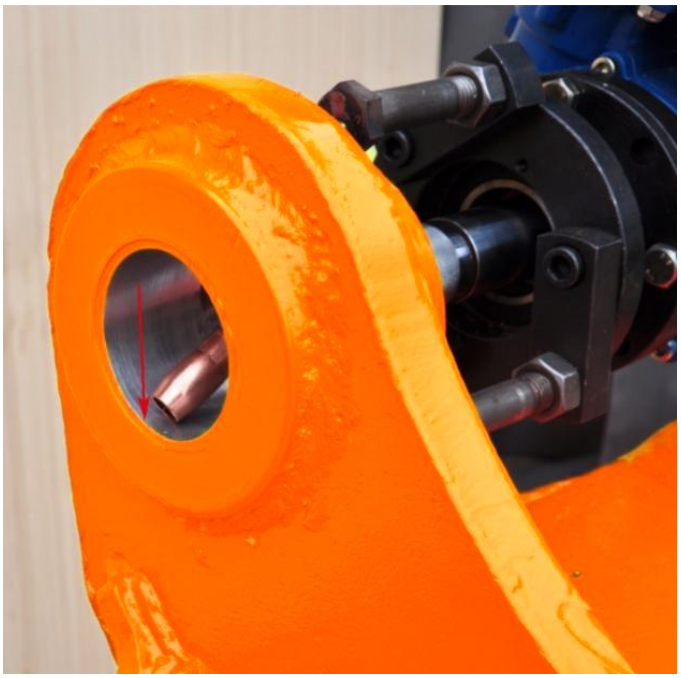
Then deliver the wire electrode out to install the conductive nozzle and the protective nozzle,

(inside the protective nozzle should coated with anti-blocking cream or anti-blocking agent)



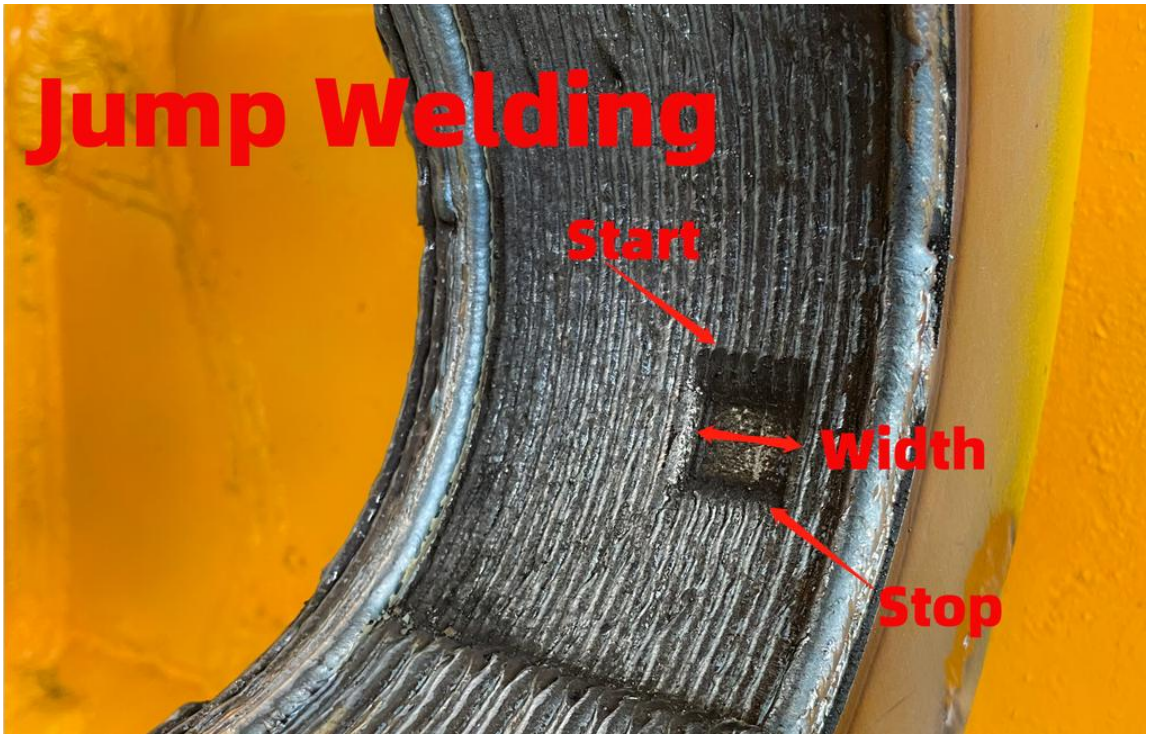
Anti-blocking cream or anti-blocking agent must put , or else it will jam during welding.

Adjust the welding torch head angle, (welding torch head keep in same line with welding bar), leave 1-2mm space between protective nozzle
and welding surface, rotate the nozzle to inspect nozzle to hole surrounding distance is roughly same.
The distance tolerance surrounding cannot be too big. (Welding torch head can be adjusted). Against proper distance adjustment, the welding can be start when welding bar reducing sleeve screw locked.



Measure hole diameter, Input exactly hole diameter and then press welding button to start. At the end, press the welding button to stop.

Skip/jump welding, Press the jump welding button in the starting point, then a gap about 1.5cm arc length will be formed. And it will continue to work automatically. When the required width is reached press the jump welding button at any position to end the welding.



Sector welding, adjust the welding torch head to the position where you need to start sector welding, input the arc length we need to weld, (in control box , increase 1 = 5 mm arc length), then press sector welding button to start, when the required width is reached, press sector welding button to stop.

1. Hole diameter +
2. Hole diameter -
3. Arc length of sector welding +
4. Arc length of sector welding -
5. Welding screw bar feeding forward
6. Welding screw bar feeding backward
7. Start welding or stop
8. Welding bar idling run (without welding run)
9. With No 8 together , no feeding spot welding repair
10. Welding bar Reverse stroke feeding
11. Start or stop of sector welding
12. Jump welding start or stop

Normal operation panel display

Notice:

1.2.Measure and Input the exactly hole diameter.

3.4.The arc length of the sector welding, 1 = 5 mm arc length

5.6.Welding bar feed forward or backward（Can only operate before welding start）

7. Press welding directly after entering the diameter , start and stop switching.

8. The welding bar is idling run , no other movement.

9. And it can be welded in one same spot, not forward or backward

10. Welding bar feeding direction , it is from front to back . in the other side , it is opposite moving direction .

11.When the sector welding start or stop, it is necessary to input the arc length of the sector welding.

12. Press jump welding after welding to the position of the butter hole, and then press jump welding again after passing the butter hole to end.

Welding machine model applicable data

200-260: suitable for 0.8mm wire electrode, Welding current: 110-125. Voltage: 18.5-19

300-380: suitable for 1.0mm wire electrode, Welding current: 95-105. Voltage: 17.5-18.5

410-500:suitable for 1.2mm wire electrode, Welding current: 80-95. Voltage: 17-18

(The data given is only suitable for reference. Due to the different models of welding machines, there will be some differences in the data. Please adjust the data to the appropriate data according to the data range.)

350 suggest if new operator in line boring works what kind of gas is best to use?
Answer: You can use ordinary carbon dioxide (CO_2), if you need better, you can use (He +Ar+CO_2) (He+Ar+CO_2).

Machine Maintenance

● Portable line boring and welding machine in storage, the key slot should be coated with anti-rust oil. The boring bar should lay properly to prevent deformation.

● Each bearing, bearing seat, anti-vibration bracket, anti-vibration bracket plate, positioning cone and reducing sleeve should clean and coat anti-rust oil after operation.

● Store the welding wire properly, do not fold or press it to effect wire feeding smoothly.

● Feed modular device should clean, coat anti-rust oil and pack for storage (ball bearing andscrew bar cannot be disassembled).

● Motor modular clean and pack, do not need coat anti-rust oil. Wiring interface ports need to be clean.

● Control box clean, put it in wooden box to prevent moisture, water and long-term sunshine exposure. Wiring interface ports need clean.

● The tool holder need clean and storage with anti-rust oil.

SAFETY

Please pay careful attention to the safety notices printed in this manual.

Safety notices call your attention to specific hazardous situations that you may encounter when operating the machine.

Examples of safety notes used in this manual are defined below,

Observe the following safety precautions when operating or working around the machine.

Personal Protective Equipment - Always wear appropriate personal protective equipment when operating this machine.

Fireproof clothing with long sleeves and long legs is recommended when operating this machine.

Hot chips on the workpiece may burn or cut exposed skin.

Work Area - Keep the work area around the machine clear of clutter.

Wires and hoses connected to the machine. Keep other wires and hoses away from the work area.

Handling - Some machine components are very heavy.

Whenever possible, use proper lifting equipment and rigging to lift the machine or its components.

Moving Parts - Except for stationary operating controls, avoid touching moving parts with hands or tools while the machine is in operation. Remove gloves and organize hair, clothing, jewelry, and pocket items to keep them from getting caught in moving parts.

Sharp Edges - Cutting tools and workpieces have sharp edges that can easily cut skin.

Wear protective gloves and exercise caution when handling cutting tools or workpieces.

Wear protective gloves and handle with caution when handling knives or workpieces.

Hot surfaces - during operation, motors, pumps, HPU and cutting tools

Can generate enough heat to cause severe burns. Note labels on hot surfaces and avoid contact with bare skin until machine cools.