

# **Digital Cold Wire Feeder**

## **Operating Manual**

**Model No - DCWF-V1.**

**Warpp Engineers Pvt Ltd.**

Source of **Reliable** welding and cutting equipment.

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Thank you for selecting WARPP brand Digital cold wire feeder. In order to keep you safe away from unexpected accidents, and enjoy full benefits offered by our quality products during welding, please read the instruction in details prior to operation. Complying with procedures defined in this manual is always appreciated.

## IMPORTANT

**Read this manual carefully before installing, commissioning or operating this product.**

### NOTICE :-

The installation, operation and maintenance guidelines set out in this manual will enable you to maintain the equipment in peak condition and achieve maximum efficiency with your welding operation. Please read these instructions carefully to become aware of every advantage.

### CAUTION :-

Only experienced personnel familiar with the operation and safe practice of welding equipment should install and / or use this equipment.

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## Section 1

### Safety Precautions :-

#### WARNING

These Safety Precautions are for your protection. They summarize precautionary information from the references listed in

Additional Safety Information section. Before performing any installation or operating procedures, be sure to read and follow the safety precautions listed below as well as all other manuals, material safety data sheets, labels, etc. Failure to observe Safety Precautions can result in injury or death.

#### A. Arc Welding

Arc Welding can be hazardous. Protect yourself and others from possible serious injury or death. Keep children away. In welding, as in most jobs, exposure to certain hazards occurs. Welding is safe when precautions are taken. The safety information given below is only a summary of the more complete safety information that will be found in the Safety Standards listed at the end of this section. Read and follow all Safety Standards. Have all installation, operation, maintenance and repair work performed only by qualified people.

#### B. Electric Shock

Touching live electrical parts can cause fatal shocks or severe burns. The electrode and work circuit is electrically live whenever the output is on. The input power circuit and machine internal circuits are also live when power is on. When using mechanized wire feed, the wire, wire reel, drive roll housing and all metal parts touching the welding wire are electrically live. Incorrectly installed or improperly grounded equipment is a hazard.

1. Do not touch live electrical parts.
2. Wear dry, hole-free insulating gloves and appropriate body protection.
3. Disconnect input power before installing or servicing this equipment.
4. Properly install and ground this equipment according to the operation manual.

5. Always verify the supply ground-check and be sure that input power cord ground wire is properly connected to ground terminal in disconnect box or that cord plug is connected to a properly grounded receptacle outlet.
6. When making input connections, attach proper grounding conductor first - double check connections.
7. Frequently inspect input power cord for damage or bare wiring. Replace cord immediately if damaged - bare wiring can kill.
8. Turn off all equipment when not in use.
9. If earth grounding of the work-piece (JOB) is required, ground it directly with a separate cable - do not use work clamp or work cable.
10. Do not touch electrode if you are in contact with the work, ground, or another electrode from a different machine.
11. Use only well-maintained equipment. Repair or replace damaged parts at once. Maintain unit according to manual.
12. Wear a safety harness if working above floor level.
13. Keep all panels and covers securely in place.
14. Clamp work cable with good metal to metal contact to work-piece or worktable as near the weld as practical.

### **C. Arc Rays**

Arc rays can burn eyes and skin; noise can damage hearing; flying slag or sparks can injure eyes.

Arc rays from the welding process produce intense visible and invisible (ultraviolet and infrared) rays that can burn eyes and skin. Noise from some processes can damage hearing. Chipping, grinding and weld cooling throw off pieces of metal or slag.

1. Use approved ear plugs or ear muffs if noise level is high.
2. Use a welding helmet fitted with a proper shade of filter to protect your face and eyes when welding or watching.
3. Wear approved safety glasses with side shields.
4. Use protective screens or barriers protect others from flash and glare; warn others not to watch the arc.
5. Wear protective clothing made from durable, flame-resistant material (wool and leather) and foot protection where necessary.

### **D. Fumes and Gases**

Fumes and gases can be hazardous to your health. Welding produces fumes and gases. Breathing these fumes and gases can be hazardous to your health.

1. Keep your head out of the fumes. Do not breathe the fumes.
2. If inside, ventilate the area and/or use exhaust at the arc to remove welding fumes and gases.
3. If ventilation is poor, use an approved air-supplied respirator.
4. Read the Material Safety Data Sheets (MSDS) and the suppliers instruction for metals, consumables, coatings, cleaners, and degreasers.

5. Work in a confined space only if it is well ventilated, or while wearing an air-supplied respirator. Always have a trained watch person nearby.
6. Do not weld in locations near cleaning, or spraying operations. The heat and rays of the arc can react with vapors to form highly toxic and irritating gases.
7. Do not weld on coated metals, such as galvanized, lead or cadmium plated steel, unless the coating is removed from the weld area, the area is well ventilated, and if necessary, while wearing an air-supplied respirator. The coatings and any metals containing these elements can give off toxic fumes if welded.

### **E. Cylinders**

Cylinders can explode if damaged. Shielding gas cylinders contain gas under high pressure. If damaged, a cylinder can explode. Since gas cylinders are normally part of the welding process, be sure to treat them carefully.

1. Protect compressed gas cylinders from excessive heat, mechanical shocks, slag, open flames, sparks, and arcs.
2. Install cylinders in an upright position by securing to a stationary support or cylinder rack to prevent falling or tipping.
3. Keep cylinders away from any welding or other electrical circuits.
4. Never weld on a pressurized cylinder - explosion will result.
5. Use only correct shielding gas cylinders, regulators, hoses and fittings designed for the specific application; maintain them and associated parts in good condition.
6. Turn face away from valve outlet when opening cylinder valve.
7. Keep protective cap in place over valve except when cylinder is in use or connected for use.
8. Read and follow instructions on compressed gas cylinders, associated equipment as per applicable Standards.

### **F. Welding**

Welding can cause fire or explosion. Welding on closed containers, such as tanks, drums, or pipes, can cause them to blow up. Sparks can fly off from the welding arc. The flying sparks, hot work-piece (JOB), and hot equipment can cause fires and burns. Accidental contact of electrode to metal objects can cause sparks, explosion, overheating, or fire. Check and be sure the area is safe before doing any welding.

1. Protect yourself and others from flying sparks and hot metal.
2. Do not weld where flying sparks can strike flammable material.
3. Remove all flammables within 35 ft. (10.7 m) of the welding arc. If this is not possible, tightly cover them with approved covers.
4. Be alert that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas.
5. Watch for fire, and keep a fire extinguisher nearby.
6. Do not weld on closed containers such as tanks, drums, or pipes, unless they are properly prepared.
7. Connect work cable to the work as close to the welding area as practical to prevent welding current traveling long, possibly unknown paths and causing electric shock and fire hazards.

8. Wear oil-free protective garments such as leather gloves, heavy shirt, cuffless trousers, high shoes, and a cap.

## **G. Moving Parts**

Moving parts, such as fans, rotors, and belts can cut fingers and hands and catch loose clothing.

1. Keep all doors, panels, covers, and guards closed and securely in place.
2. Have only qualified people remove guards or covers for maintenance and troubleshooting as necessary.

## **H. To reduce magnetic fields in the work place, use the following procedures:**

### **ELECTRIC AND MAGNETIC FIELDS : -**

May be dangerous. Electric current flowing through any conductor causes localized Electric and Magnetic Fields (EMF). Welding and cutting current creates

EMF around welding cables and welding machines. Therefore:

1. Keep cables close together by twisting or taping them.
2. Arrange cables to one side and away from the operator.
3. Do not coil or drape cables around the body.
4. Keep welding power source and cables as far away as practical.
5. Connect work clamp to work-piece (JOB) as close to the weld as possible.
6. Welders having pacemakers should consult their physician before welding. EMF may interfere with some pacemakers.
7. Exposure to EMF may have other health effects which are unknown.
8. Welders should use the following procedures to minimize exposure to EMF:
  - A. Route the electrode and work cables together. Secure them with tape when possible.
  - B. Never coil the torch or work cable around your body.
  - C. Do not place your body between the torch and work cables. Route cables on the same side of your body.

### **The following definitions apply to DANGER, WARNING, CAUTION found throughout this manual:**

#### **DANGER**

Used to call attention to immediate hazards which, if not avoided, will result in immediate, serious personal injury or loss of life.

#### **WARNING**

Used to call attention to potential hazards which could result in personal injury or loss of life.

#### **CAUTION**

Used to call attention to hazards which could result in minor personal injury.

## **Section 2**

### **System Components**

The Warpp Digital cold wire feeder will accurately feed 0.8 mm, 1.0 mm, 1.2 mm, 1.6 mm (0.8 to 1.6 mm) hard and soft wires for mechanized TIG or plasma welding. The system consists of a D.C. motor-driven four feed roll assembly, spool adapter, and a wire guide positioner. The positioner incorporates X-Y-Z movements of the wire tip.

The basic components of the wire feeder are:

Wire drive unit: consists of motor, drive housing, wire spool assembly, spool holder to feed wire.

Wire Feed Accessory : feed rolls, inlet guides, outlet guides, and tips for 0.8 mm, 1.0 mm, 1.2 mm, 1.6 mm (0.8 to 1.6 mm) hard and soft wire. Order kits separately for desired wire size.

### **Maintenance**

Periodically clean the drive rolls of dirt and chips. Occasionally check the wear of liners, tips and guides.

Always replace fuse with one of equal value 5 amp fast blow. If this equipment does not operate properly stops work immediately and investigate the cause of the malfunction. Maintenance work must be performed by an experienced person, and electrical work by a trained electrician. Do not permit untrained person to inspect, or clean, or repair this equipment. Use only recommended replacement parts.

### **Warning**

Maintenance and electrical work must be performed by experienced and trained personnel.

### **Caution**

Whenever repairs are required, always turn all power controls off and disconnect all electrical cables from power supply.



**Figure 1: - Digital Cold Wire Feeder.**

### **Section 3**

#### **A. Digital cold wire feeder Features: -**

- 1) 4 Seven segment display.**
- 2) Saves all the set parameter in the internal EEPROM.**
- 3) Compact and lightweight design.**
- 4) Equipped with plastic spool holder and cover.**

## B. How to operate the digital key pad.

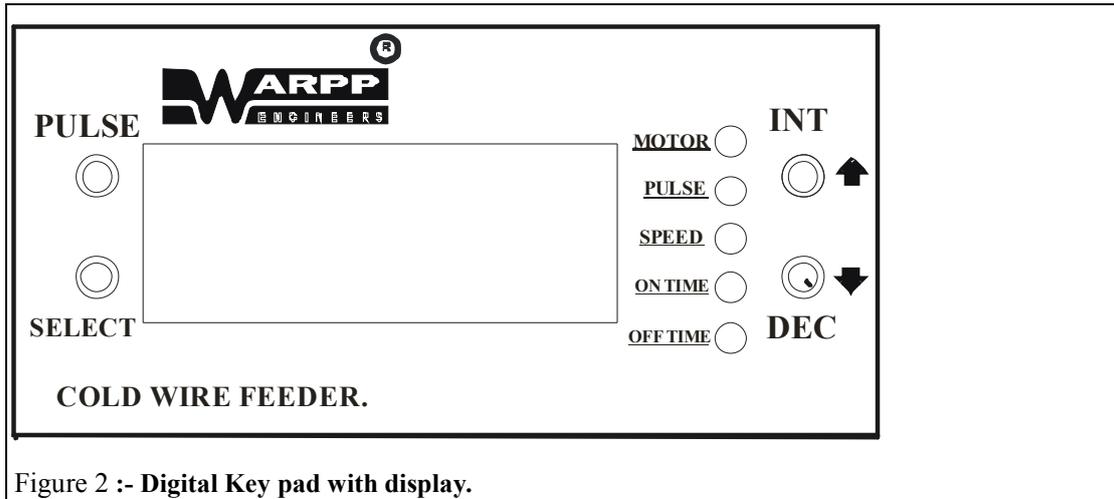


Figure 2 :- Digital Key pad with display.

The digital keypad includes two parts: The Display panel and keypad. The display panel provides the parameter display and shows the operation status of the Digital Cold Wire Feeder and the keypad provides programming and control interfacing.

### Digital key pad Description : -

| S.No | Digital Key pad Function   | Key Pressed.               |
|------|--|----------------------------|
| 1    | Increment Switch can be used to increment speed, on time and off time.                                 | INT is Increment switch. ▲ |
| 2    | Decrement Switch can be used to decrement speed, on time and off time.                                 | DEC is Decrement switch. ▼ |
| 3    | PULSE switch is for turning the pulse mode ON or OFF.  | PULSE mode ON/OFF switch.  |
| 4    | SELECT switch is for selecting SPEED setting mode, ON TIME setting mode and the OFF TIME setting mode. | SELECT switch.             |

### C. SETTING : -

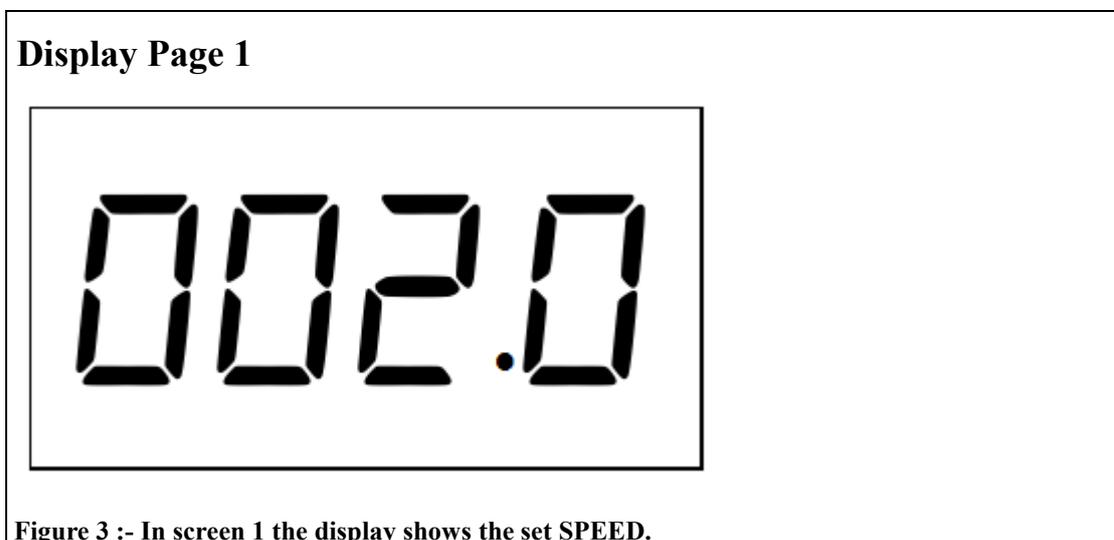


Figure 3 :- In screen 1 the display shows the set SPEED.

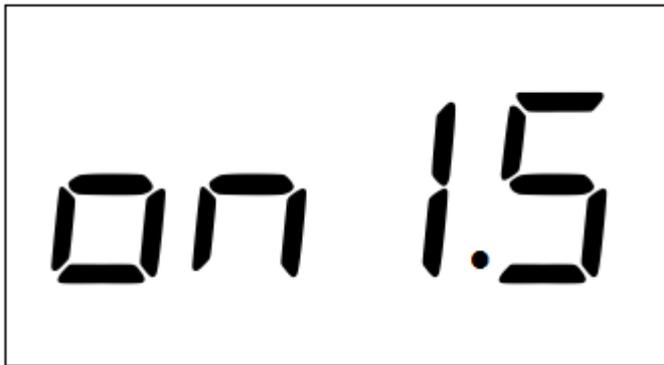
#### **D. SPEED : -**

- 1) Use INT ▲ as an increment switch or use DEC ▼ as an decrement switch to set the desired speed from 0.1 meter per minute minimum to 10 meter per minute maximum.
- 2) While setting if the speed is set to 0000 the motor will turn stop and it will stop feeding the filler wire.
- 3) While setting the SPEED the speed LED will turned ON and the display will show the set SPEED in screen 1 as shown in the figure 3.

#### **E. PULSE MODE SETTING : -**

- 1) Pulse mode can be turned on by just pressing pulse switch. After the pulse mode has been turned on the motor will start feeding the filler wire in pulse mode and the pulse mode LED indicator will also turned on.
- 2) In pulse mode the motor indicator will start blinking indicating the status of the motor.

#### **Display Page 2**



**Figure 4 :- In screen 2 the display shows the set ON TIME in pulse mode.**

- 3) The ON TIME and the OFF TIME of the motor in pulse mode can be set by turning on the pulse mode and then pressing the SELECT switch to get into the ON TIME setting mode and use INT as an increment switch or use DEC as an decrement switch to set the desired ON TIME from 0.1 second minimum to 9 seconds maximum.
- 4) While setting the ON TIME the ON TIME LED will turned ON and the display will show the set ON TIME in screen 2 as shown in the figure 4.

## Display Page 3

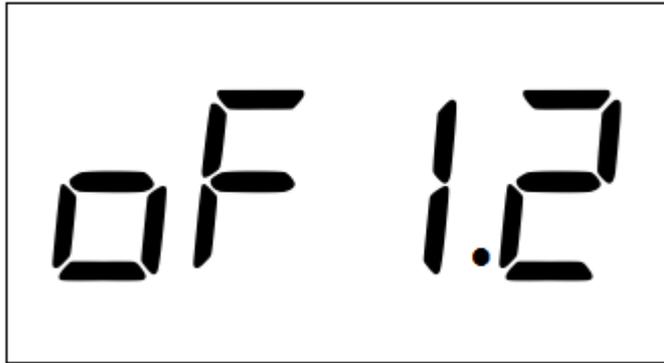


Figure 5 :- In screen 3 the display shows the set OFF TIME in pulse mode.

- 5) To set the OFF TIME once again press SELECT switch to get into the OFF TIME setting mode and use INT as an increment switch or use DEC as an decrement switch to set the desired OFF TIME from 0.1 second minimum to 9 seconds maximum.
- 6) While setting the OFF TIME the OFF TIME LED will turned ON and the display will show the set OFF TIME in screen 3 as shown in the figure 5.
- 7) After the setting is Complete if the Digital cold wire feeder machine is turned off all the parameter's which were set will be saved in the internal Microcontroller EEPROM or the memory and will be saved until it has been changed and turned off again.
- 8) The setting of SPEED , ON TIME and the OFF TIME will only be saved when Digital cold wire feeder machine is turned off will be saved until it has been changed and turned off again.

### F. Please Note : -

- 1) The wire from the job connector to the job is compulsory to isolate the machine from unwanted high frequency (HF) noise.
- 2) The earthing to the machine through the three pin mains cord supply is compulsory to avoid shock and to ground unwanted high frequency (HF) noise.
- 3) The setting of the ON TIME and the OFF TIME can be done only when the pulse mode has been turned on.

## Section 4

### 1) Wire Feeder structure:

Wire Feeder structure, as Figure 6:

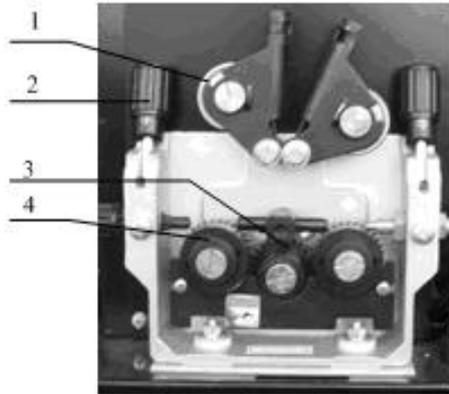


Figure 6 :-

**(1) Pressing Handle**

**(2) Wire Pressing Roller**

**(3) Driving Gear**

**(4) Wire Feed Roller**

### 2) Wire Feeder Roller and Installation

There is a scale for wire feeding pressure on the Pressing Handle, Different materials and sizes of the wires are corresponding to different pressures value, refer to Table 1 and Figure 6 and Figure 7 for detail. The data in the table is only for reference, the actual pressure regulator

norms must be adjusted based on torch model, cable length, type of welding torch, welding wire type and size.

- Type 1 for hard wire, such as carbon steel wire, stainless steel wire.
- Type 2 for soft wire, such as Aluminum wire and AL alloys wire, copper wire and cooper Alloy wire.
- Type 3 for flux cored wire.

Regulating the pressure of feeding rollers with the pressure handle, ensure the wire go through the guiding tube smoothly, and there should be a bit brake force where the wire come out from the conductive tip to avoid the wire feed rollers skidding.

Note: Too much pressure will cause wire crushed, and the wire coating will be damaged, and it will cause feed rollers wear out, and increase the wire feeding resistance

| TYPE | DIAMETER |            |            |            |
|------|----------|------------|------------|------------|
|      | SCALE    | $\phi 0.8$ | $\phi 1.0$ | $\phi 1.2$ |
| 1    | 3        | 3          | 2.5        | 2.5        |
| 2    | 3.5      | 3.5        | 3          | 3          |
| 3    | —        | —          | 3          | 3          |

Table 1:-

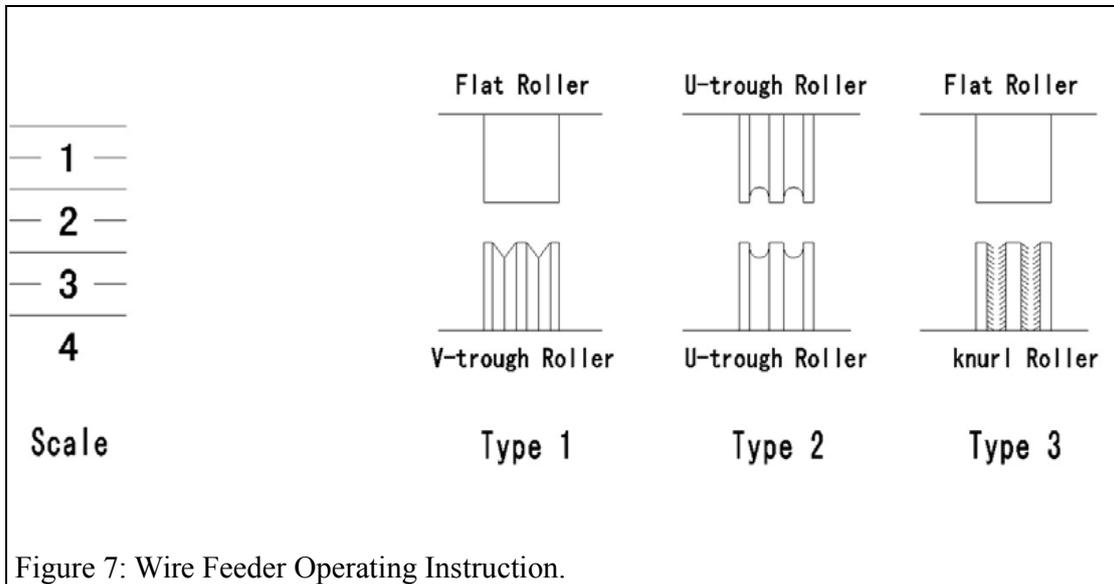
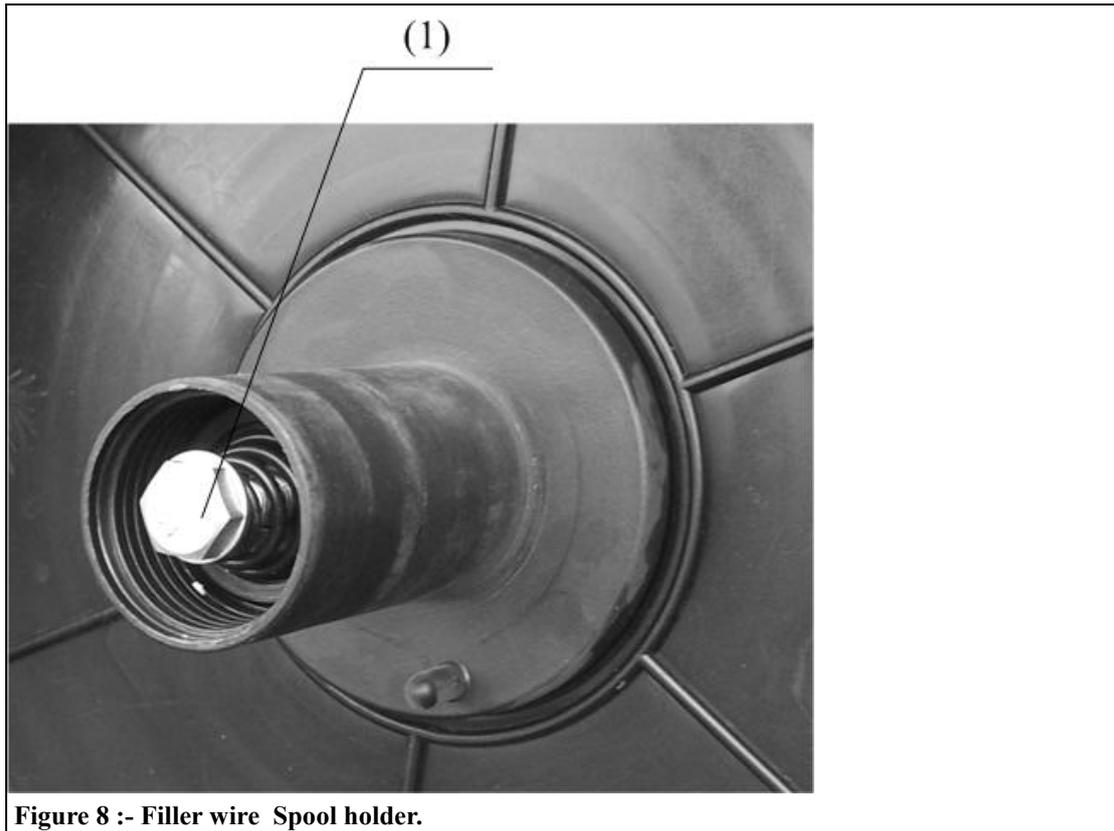


Figure 7: Wire Feeder Operating Instruction.

## Section 5

### Brake force of wire spool adjustment

Use screw wrench to turn the Brake Force Control Screw (#1) as shown in Figure 8. The brake force must be appropriate, ensure the wire round the wire spool will not become too loose and prevent the wire scattering. If the brake force is too large, it will increase the wire-feeding load. Generally the faster the wire is feeding, the greater is the brake force.



**Figure 8 :- Filler wire Spool holder.**

## **Section 6**

**Specifications :-**

**AC Auxiliary supply: - 230V AC to 250V AC.**

**Frequency: - 50 Hz**

**Wire size :- 0.8 mm, 1.0 mm, 1.2 mm, 1.6 mm (0.8 to 1.6 mm) hard and soft wire.**

**Wire Type :-** 1. Carbon steel, 2. Alternate steel, 3. Aluminum, 4. Stainless steel, 5. Silicon bronze.

**Approx Weight : - 20 Kg .**

**Dimension :-**

**Length :- 70 Centimeter.**

**Breath :- 35 Centimeter.**

**Height :- 46 Centimeter.**

**(Specification subject to change as development is a continuous process.)**

## **Appendix A**

### **1. General**

The user is responsible for installing and using the arc welding equipment according to the manufacturer's instructions. If electromagnetic disturbances are detected, then it shall be the responsibility of the user of the arc welding equipment to resolve the situation with the technical assistance of the manufacturer. In some cases this remedial action may be as simple as earthing the welding circuit, see note. In other cases it could involve constructing an electromagnetic screen enclosing the welding power source and the word

complete with associated input filters. In all cases electromagnetic disturbances shall be reduced to the point, where they are no longer troublesome.

***NOTE: The welding circuit may not be earthed for safety reasons. Changing the earthing arrangements should only be authorized by a person who is competent to assess whether the changes will increase the risk of injury.***

## 2. Assessment of area

Before installing arc welding equipment the user shall make an assessment of potential electromagnetic problems in the surrounding area. The following shall be taken into account:

- 1) Other supply cables, control cables, signaling and telephone cables, above, below and adjacent to the arc welding equipment;
- 2) Radio and television transmitters and receivers;
- 3) Computer and other control equipment;
- 4) Safety critical equipment, for example guarding of industrial equipment;
- 5) The health of the people around, for example the use of pacemakers and hearing aids;
- 6) Equipment used for calibration or measurement;
- 7) The immunity of other equipment in the environment is compatible. The user shall ensure that other equipment being used in the environment is compatible. This may require additional protection measures;
- 8) The time of day that welding or other activities are to be carried out.

## 3. Methods of reducing emissions

### 1) Public supply system

Arc welding equipment should be connected to the public supply system according to the manufacturer's recommendations. If interference occurs, it may be necessary to take additional precautions such as filtering of the public supply system. Consideration should be given to shielding the supply cable of permanently installed arc welding equipment, in metallic conduit or equivalent. Shielding should be electrically continuous its length. The shielding should be connected to the welding power source so that good electrical contact is maintained between the conduit and the welding power source enclosure.

### 2) Maintenance of the arc welding equipment

The arc welding equipment should be routinely maintained according to the manufacturer's recommendations. All access and service doors and covers should be closed and properly fastened when the arc welding equipment is in operation. The arc welding equipment should not be modified in any way, except for those changes and adjustments covered in the manufacturer's instructions. In particular, the spark gaps of arc striking and stabilizing devices should be adjusted and maintained according to the manufacturer's recommendations.

### 3) Welding cables

The welding cables should be kept as short as possible and should be positioned close together, running at or close to the floor level.

### 4) Equipotent bonding

Bonding of all metallic components in the welding installation and adjacent to it should be considered. However, metallic components bonded to the work piece will increase the risk that the operator could receive an electric shock by touching these metallic

components and the electrode at the same time. The operator should be insulated from all such bonded metallic components.

5) Earthling of the work piece

Where the work piece is not bonded to earth for electrical safety, nor connected to earth because of its size and position, for example ships hull or building steel work, a connection bonding the work piece to earth may reduce emissions in some, but not all instances. Care should be taken to prevent the earthing of the work piece increasing the risk of injury to users, or damage to other electrical equipment. Where necessary, the connection of the work piece to earth should be made by a direct connection to the work piece, but in some countries where direct connection is not permitted, the bonding should be achieved by suitable capacitance, selected according to national regulations.

6) Screening and shielding

Selective screening and shielding of other cables and equipment in the surrounding area may alleviate problems of interference. Screening of the entire welding installation may be considered for special applications.

**Thank you for selecting WARPP brand Digital Cold Wire Feeder.**

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