Piper-Plus Quick Start

Out of the box setup

1) Mount Rail to Pipe

(BRR or PSR determined on carriage configuration)

BRR-3250-XX (Two people are recommended)

- Place rail over pipe so that rack teeth face away from weld joint, as shown in (Fig. 1.1)
- Locate the edge of the rail 8" from the center of the weld joint
- Rotate rail so hinge is on top and latches are on the bottom
- Rotate rail to center hinge at top of pipe
- Bring open sections together at bottom of pipe, and secure with latches (Fig. 1.2)
- Support foot tension can be adjusted as needed for non-slip fit

Fig. 1.1

Fig. 1.2

PSR-2000-XX (Two people are recommended)

- Place rail over pipe so that rack teeth face away from weld joint, as shown in (Figure 1.3, Detail)
- Locate the edge of the rail 8" from the center of the weld joint
- Rotate rail to center latches at bottom of pipe (Figure 1.4)
- Bring open sections together, at bottom of pipe, and secure with latches (Figures 1.3 and 1.4)
- Align rail and adjust feet as needed for no-slip fit (Fig. 1.5 and 1.6)

Fig. 1.3

Fig. 1.3 Detail

Fig. 1.4

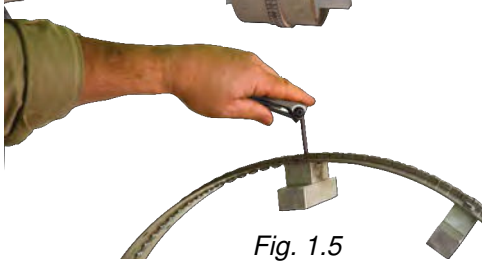


Fig. 1.5

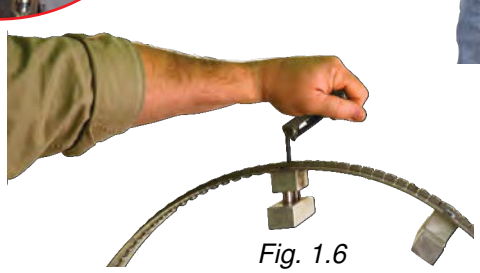


Fig. 1.6

Fig. 1.5 Shows foot retracted, while **Fig. 1.6** shows foot fully extended. Allen wrench, supplied with machine, adjusts all leg supports to align ring with pipe and make secure, non-slip, fit. For best results adjust all leg/feet assemblies evenly, so that ring rail is concentric with pipe.

2) Mount Tractor to Rail

- Open carriage release mechanism (Fig. 2.1, Item A) and drive pinion clutch (Fig. 2.1, Item B)
- Place carriage on the rail carefully aligning wheels with rail. Engage carriage release mechanism (Fig. 2.1, Item A)
- With carriage properly mounted to the rail engage the drive gear using drive gear mechanism (Fig. 2.1, Item B)
- Ensure the drive gear has fully engaged the gear rack. If gear mesh is too tight, too loose or on improper height, refer to the instruction manual for adjustment procedure.

Fig. 2.1

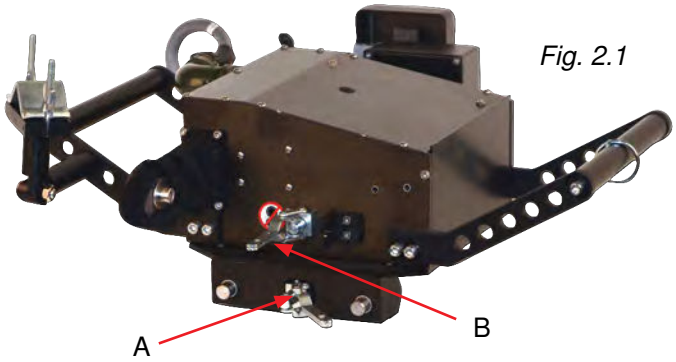
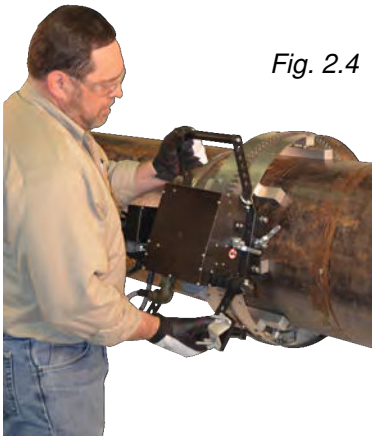


Fig. 2.2

Fig. 2.3

Fig. 2.4



3) Mounting Torch and Welding Umbilical Cable to Tractor

- Secure the torch mounting block (Fig. 3.1, Item A), into the torch clamp (Fig. 3.2, Item A) on the automatic height control
- Connect control cable (Fig 3.1, Item B) to the tractor connector socket (Fig. 3.2, Item B)
- Secure cable (Fig 3.1, Item C) into strain relief support (Fig. 3.2, Item C) to allow sufficient slack in the cable to eliminate strain on the weaver and automatic height assembly
- Install the spring loaded latch on the umbilical cable as needed and hook to support ring on handle (Fig. 3.2, Item D) for additional cable support

Fig. 3.1

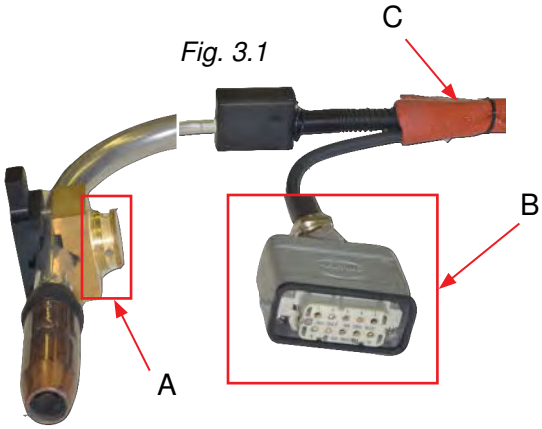
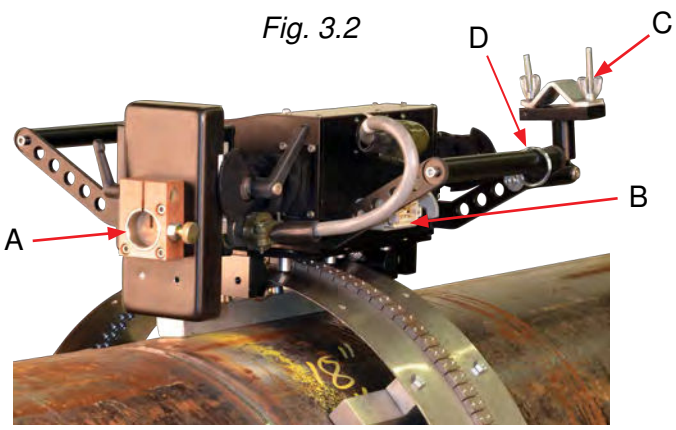


Fig. 3.2



4) Connections to Control Box

- **Ethernet**- Connect “metal end” of ethernet cable (Fig. 4.2, Item A) into ethernet receptacle (Fig. 4.1, Item B) on Piper-Bug power control box
- **Pendant-** Connect pendant control cable (Fig 4.3, Item A) into pendant control cable receptacle (Fig 4.1, Item A) on Piper-Bug power control box
- **Tractor-** Connect connector (Fig. 4.6, Item A) to Piper-Bug control box receptacle (Fig 4.1, Item D)
- **Weld Shielding Gas-** Input- Connect brass connector (Fig. 4.4, Item A) to (Fig. 4.1, Item E)
  Output- Connect brass quick connect fitting (Fig. 4.5, Item A) to female receptacle (Fig. 4.1 Item F)
- **Input Power-** Connect input power cable (Fig. 4.1, Item G) to proper voltage power connection

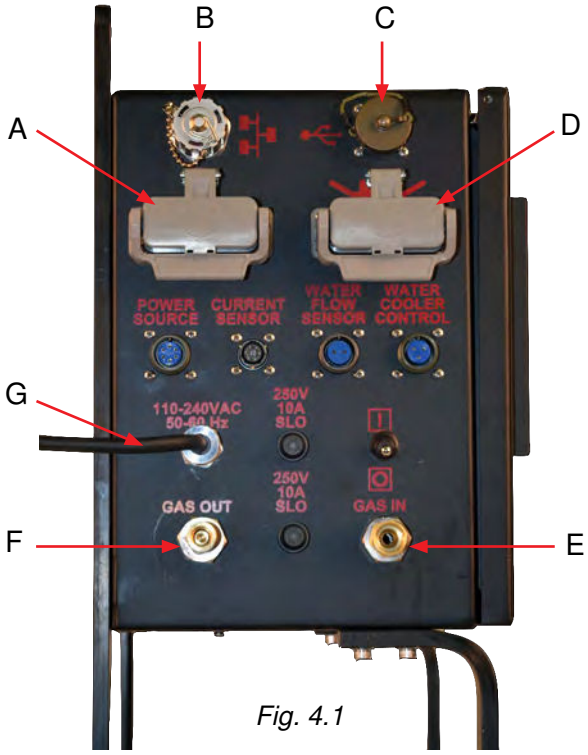
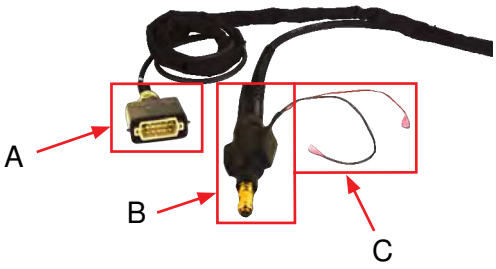


Fig. 4.1

Fig. 4.2

Fig. 4.3

Fig. 4.6



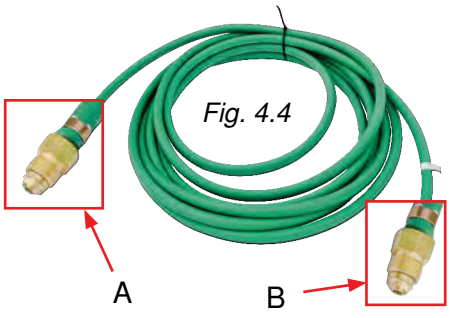


Fig. 4.4

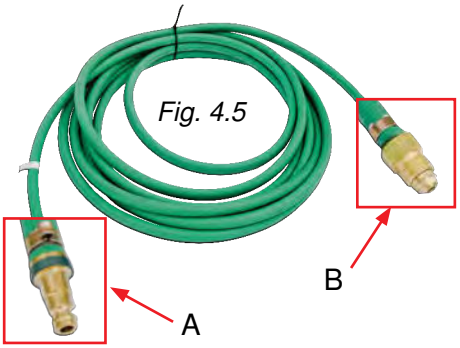


Fig. 4.5

5) Connections to Welding Power Source

- **Ethernet-** Connect “black plastic end” of ethernet cable (Fig. 4.2, Item B) to back of Lincoln Electric® 350 Power Source (Fig 5.1, Item A)
- **Work Sense Lead-** Connect work sense lead (Fig. 5.3, Item A) to front of Lincoln Electric® 350 Power Source (Fig. 5.1, Item E). Attach “alligator clip” of current sensor cable (Fig 5.3, Item B) to work piece [Consult factory if sensing lead on tractor is to be used]
- **Input Power-** Connect input power cable (Fig. 5.1, Item D) to proper voltage power connection

*System With STT

- **Wire Feeder Control Cable-**
  Connect large black threaded connector (Fig. 5.1, Item G) to female connection (Fig. 5.1, Item B)
  Connect small black threaded connector (Fig. 5.1, Item H) to female connection (Fig. 5.1, Item C)
  Connect male threaded connector (Fig. 5.2, Item A) to female connection (Fig. 5.1, Item F)
- **Welding Leads-** Connect positive lead (Fig. 5.4, Item A) to positive receptacle (Fig 5.1, Item J), connect negative lead (Fig. 5.4, Item B) to negative receptacle (Fig. 5.1, Item K), connect positive lead (Fig. 5.1, Item I) to positive receptacle (Fig. 5.1, Item L)

*System Without STT

- **Wire Feeder Control Cable-** Connect Brass Threaded connector (Fig. 5.2, Item A) to Female Connection (Fig. 5.1, Item B)
- **Welding Leads-** Connect positive lead (Fig. 5.5, Item A) to positive receptacle (Fig 5.1, Item L). Connect negative lead (Fig. 5.5, Item B) to negative receptacle (Fig. 5.1, Item K)

Fig. 5.1

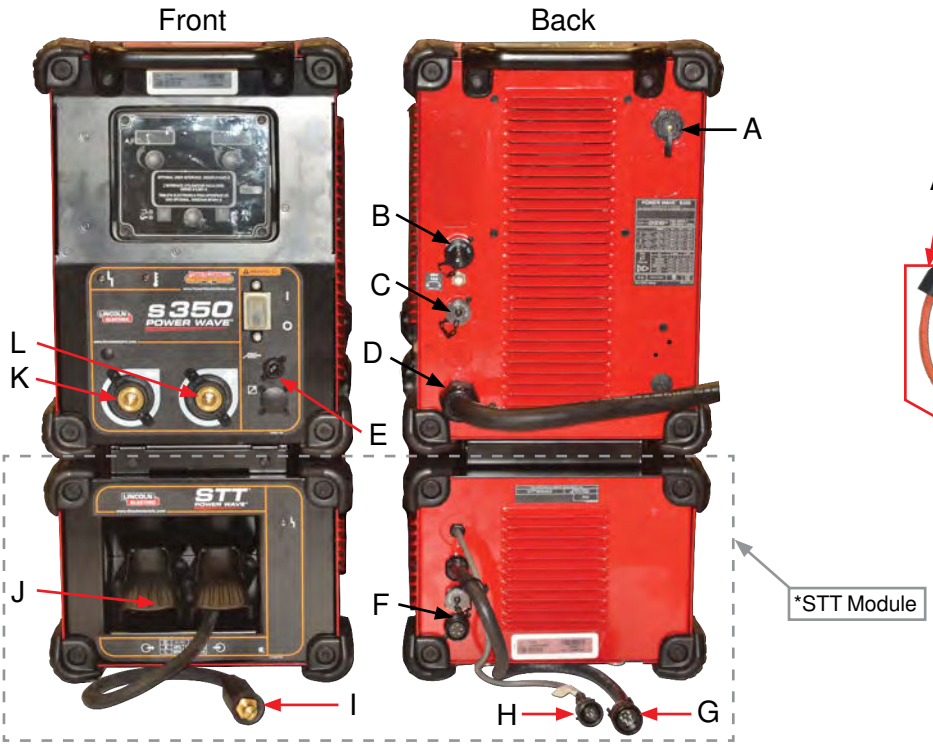


Fig. 5.4

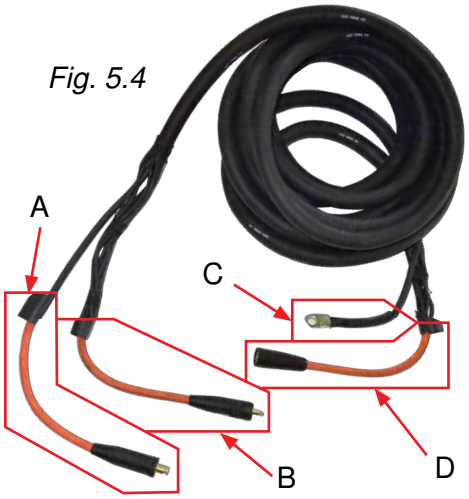
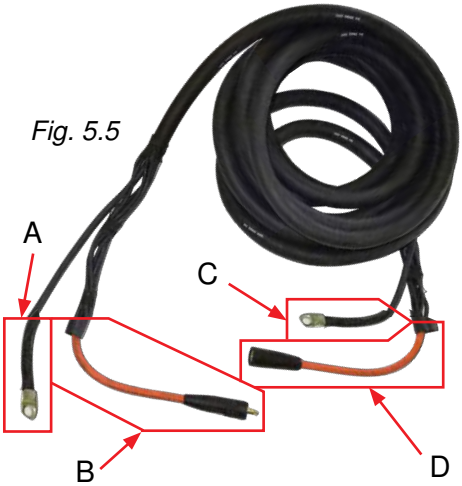


Fig. 5.5



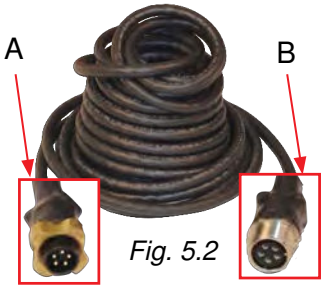


Fig. 5.2

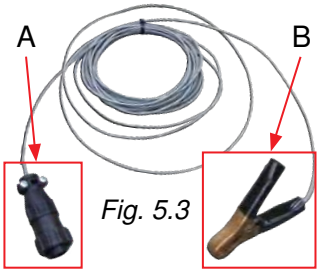
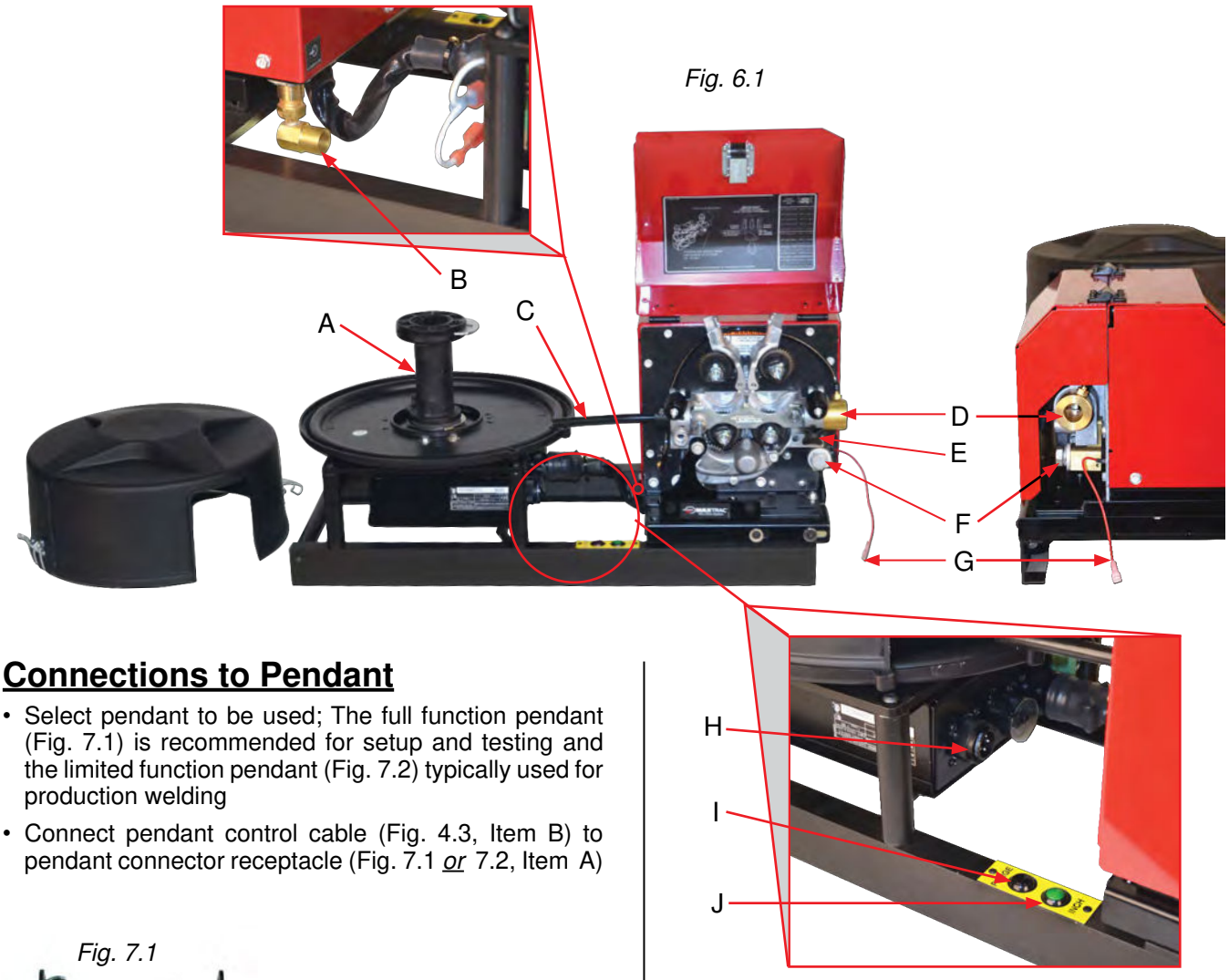


Fig. 5.3

6) Connections to Wire Feeder

- Connect female cable end (Fig. 5.2, Item B) to receptacle on Lincoln Electric® Auto Drive 19 (Fig. 6.1, Item H)
- Connect lug on welding power cable (Fig. 5.5 or 5.4, Item C) to bolt connection (Fig. 6.1, Item F)
- Connect gas hose fitting (Fig. 4.5, Item B) to wire feeder gas fitting (Fig. 6.1, Item B)
- Insert male end of welding gun cable (Fig. 4.6, Item B) in to female socket in Lincoln Electric® 4R220 Auto Drive Wire Feeder (Fig. 6.1, Item D) tighten retaining bolt (Fig. 6.1, Item E)
- Connect red wire on welding gun cable (Fig. 4.6, Item C) to red wire on Lincoln Electric® 4R220 Auto Drive Wire Feeder (Fig. 6.1, Item G)

Fig. 6.1



7) Connections to Pendant

- Select pendant to be used; The full function pendant (Fig. 7.1) is recommended for setup and testing and the limited function pendant (Fig. 7.2) typically used for production welding
- Connect pendant control cable (Fig. 4.3, Item B) to pendant connector receptacle (Fig. 7.1 *or* 7.2, Item A)

Fig. 7.1

Fig. 7.2

H. Arclink connection not used in standard configuration.

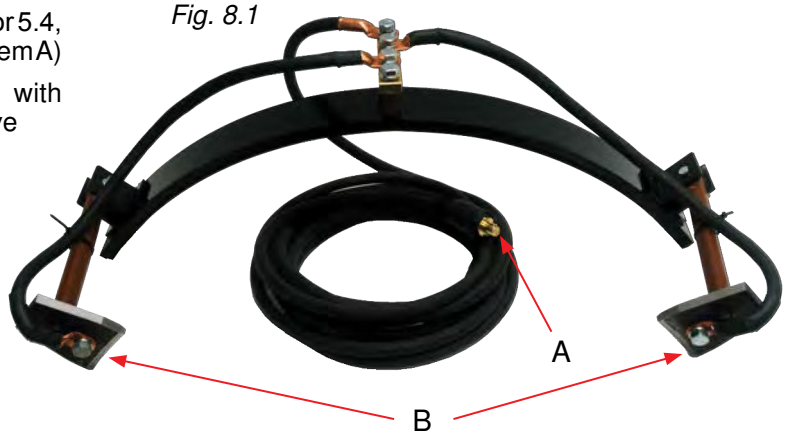
I. Purge Button – Allows purging of the shielding gas from the wire feeder to aid in setting of the shielding gas flow rate.

J. Inch Button – Wire Feed jog button to allow feeding of the welding wire during wire spool loading or changing.

8) Connections to Welding Ground

- Connect DINZ style female connector (Fig. 5.5 or 5.4, Item D) to DINZ style male connector (Fig. 8.1, Item A)
- Locate grounding assy. (Fig. 8.1) on pipe with grounding foot (Fig. 8.1, Item B) in weld groove

Fig. 8.1



9) Install Welding Wire Spool

- Remove cover and the mount wire spool to the spindle (Fig. 6.1, Item A) and lock in place with locking collar.
- Feed end of wire, by hand, into tube (Fig. 6.1, Item C) and into Lincoln Electric® 4R220 Auto Drive Wire Feeder up to first set of wire feed rolls. ***Note: Make certain correct wire feed rolls are installed into Lincoln Electric® 4R220 Auto Drive Wire Feeder.***

10) Control Box Front Panel (Fig. 10.1)

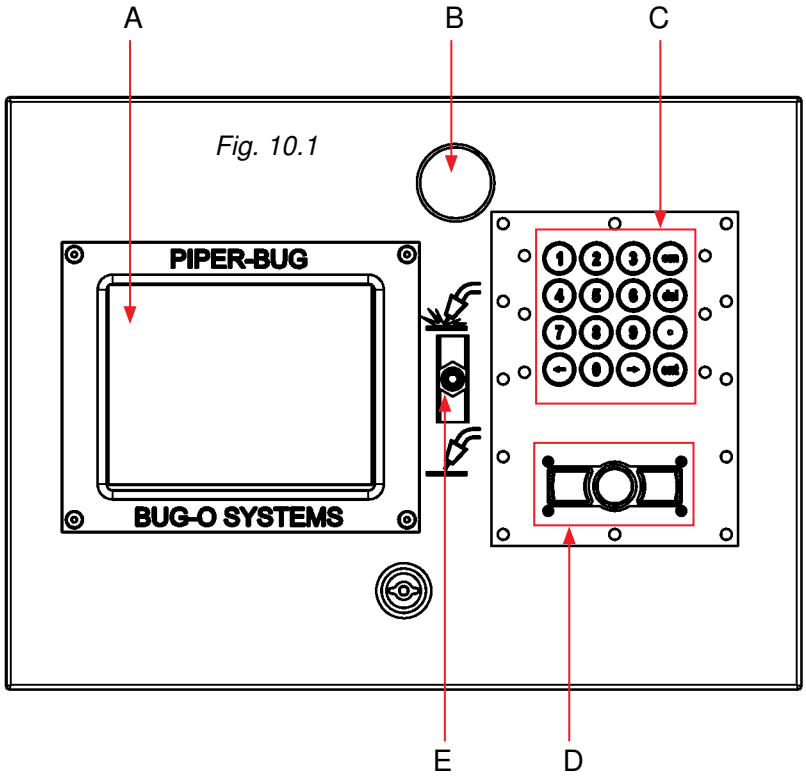
A. Display Screen –
This screen provides all operation, program, and feedback data to the operator.

B. Emergency Stop Button –
This button, when pressed, provides immediate shutdown of the system. All input power to the system is turned off and all motion and welding functions will cease immediately.

C. Numerical Keypad –
This keypad is used for all input of numerical data along with movement from input box to input box within any given screen. Cancel, Delete and Enter functions are also provided along the right side of the pad.

D. Mouse and Mouse Buttons –
This "Joystick" style mouse allows the operator to move the cursor around the display screen. The buttons to the left and right allow selection of particular input boxes.

Fig. 10.1



E. Hot/Cold Switch –
This switch determines if the welding function is active or inactive. If the switch is positioned to the top, welding is active. If the switch is positioned to the bottom, welding is inactive. When welding is inactive, all other functions will operate; except welding contactor will not close. If this switch is changed during welding, an emergency stop will occur.

11) Display Screen

The Display Screen (Fig. 11.1) is displayed immediately upon turning on the Piper Plus.

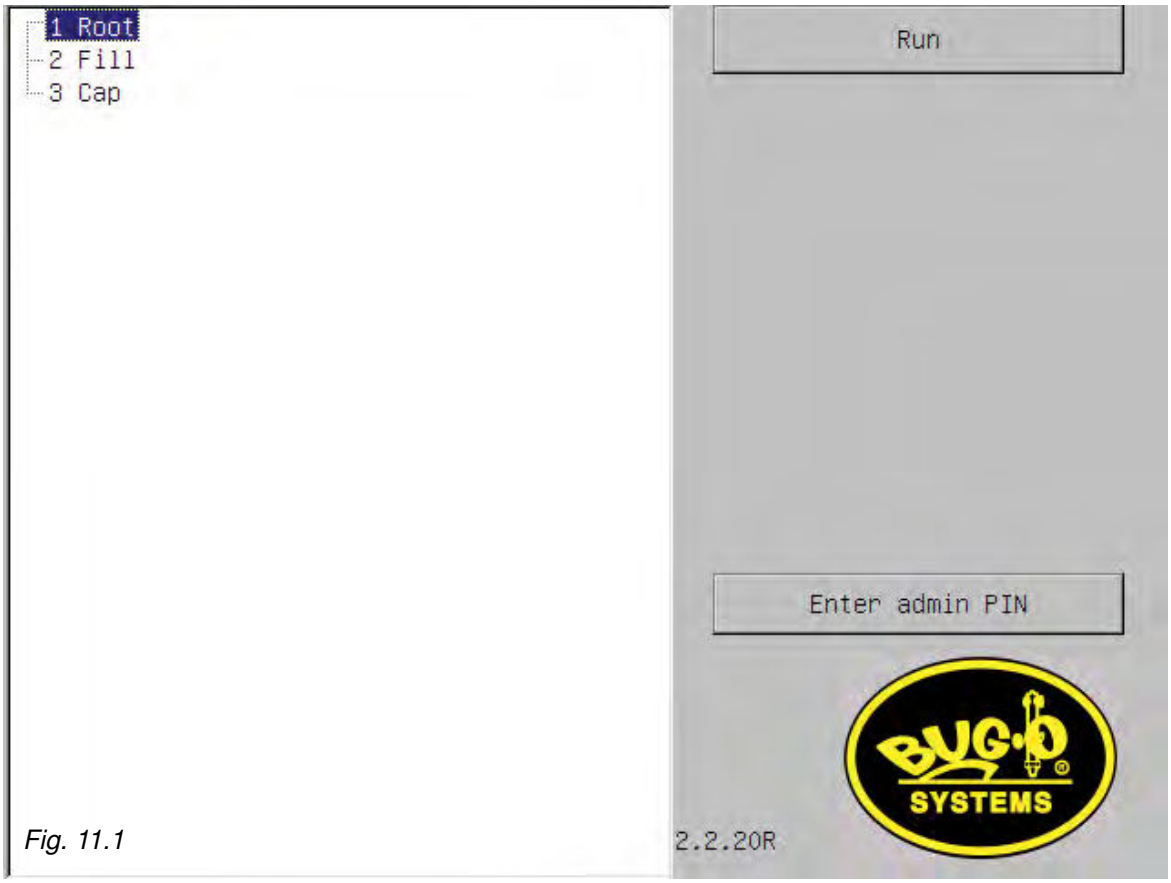


Fig. 11.1

- **DISPLAY** –
  This area displays a list of all folders available within the machine. Use the MOUSE (Fig. 10.1, Item D) to move the cursor over the required folder. Highlight selection by clicking the Left Mouse button.

- **Run** –
  Pressing this button will put the machine in RUN MODE. It will load the folder highlighted in the DISPLAY (Fig. 11.1). When the machine is idle, it is possible to select a new pass. The first pass for a station will be loaded when the run screen is opened. To select a new pass, use the pointer and click on the desired pass, or press the pass change button on the pendant. Any adjustments that were made will be lost and the default values will be loaded. The screen will change to the RUN screen (Fig. 11.2) as shown. If any other screen appears please consult your Piper Plus manual.

  PLEASE NOTE: *The system is not capable of any motion unless it is in RUN MODE. This applies to both the jog and automatic modes.*

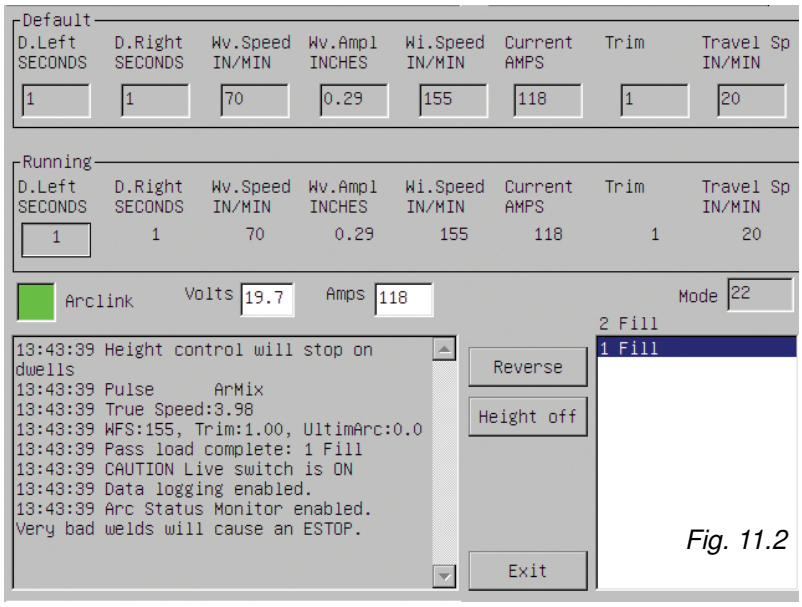
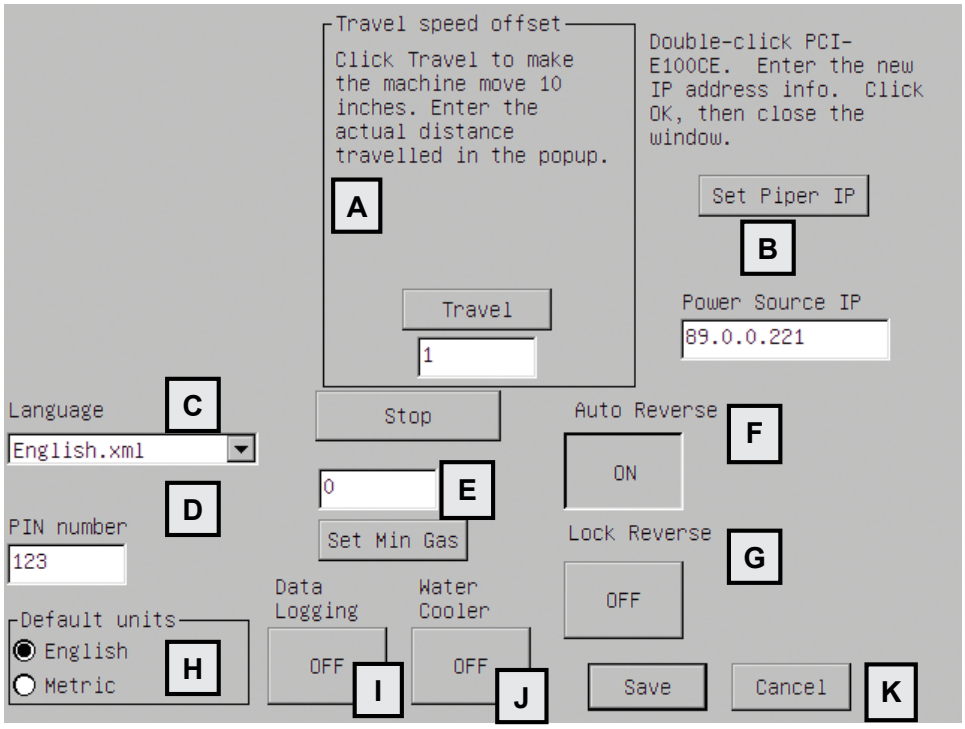


Fig. 11.2

12) Global Configuration Screen

This display area contains settings for the calibration of the travel speed and options that affect the entire system. It allows you to set the language, administrator PIN number, default units, minimum gas flow, IP addresses, auto reverse, data logging and water cooler.



A. **Travel Speed Offset –** The travel speed offset should be set up before welding with the machine. This involves the drive moving a set distance. Follow the onscreen guides to calculate the offsets. Mark the initial position of the tractor on the pipe. Click Travel. Wait for the machine to stop moving. Enter the distance traveled (in inches) into the popup prompt. The stop button below this box will stop the drive if necessary. The calibration is always performed in inches.

B. **Set Piper IP –** See SECTION 8.0 in the Instructions and parts manual for details.

C. **Language –** See SECTION 7.0 in the Instructions and parts manual for details.

D. **PIN Number –** See SECTION 7.0 in the Instructions and parts manual for details.

E. **Set Min Gas –** By setting the minimum acceptable gas flow, the machine can initiate a stop if the gas flow drops below this set value, thus preventing a weld that would be unsatisfactory due to insufficient gas flow. This value is not in any specific units. It is simply an analog voltage from the gas flow sensor. To set this value, adjust your gas flow regulator to the desired minimum acceptable value, and then click Set Min Gas. The gas will purge for 10 seconds, giving you time to adjust the regulator. It will then sample values for five seconds. It will average the values and display the minimum value. Set your regulator back to its proper value. If the gas flow drops below this minimum level, the machine will display an error three times and then stop. This function can be disabled by setting this value to 0.

F. **Auto Reverse** – This function allows the system to run in reverse every time the operator enters the Run screen. If the machine is always going to be run in reverse, you can enable Auto Reverse so you don't have to rely on the operator to click Reverse on the running screen. See SECTION 4.8 **in the Instructions and Parts Manual** for details on the Reverse function.

G. **Lock Reverse** – This function locks the Reverse button on the Run screen. With this function active, the operator cannot change the operating direction.

H. **Default Units –** This function sets the units that are used when parameter data is stored in the system. This can also be selected for each individual pass during creation of the pass.

I. **Data Logging –** Data logging can be turned on and off. Data logging is included with the Piper-Plus.

J. **Water Cooler –** See SECTION 7.0 in the Instructions and parts manual for details.

K. **Save/Cancel –** Any changes made within the Global Configuration Screen will only be applied to the system if the Save button is pressed. If Cancel is selected, the screen will revert to the Main Screen but no data will be saved.

