



UNPACKING

Please open and inspect your package upon receipt. Your package was packed with great care and all the necessary packing materials to arrive to you undamaged. If you do find an item that is broken or damaged, you must contact the delivering carrier to report the claim.

Ratio Feeder[®]

Series J+ Advanced Pumper Controller

GETTING TECHNICAL ASSISTANCE

The H.E. Anderson Company is dedicated to assisting our customers with installation and use of our products. Our technical staff are available each weekday from 8:30am to 4:30pm central time. You may call us toll free at **1-800-331-9620** from anywhere in the U.S.A.. and Canada. If no one is available, we will promptly return your call.

Before you call, we suggest that you review this manual. You may find the answer to your question here. But even if you do not, reviewing the manual will help us to help you.

There is some information you should have available when you call. You should know the software version and serial number of your control unit. Also, you should note the number of pumpers of each type, and their model numbers. We may not need all this information, but having it available at the start can some times save a lot of time and trouble for you. You may record the information on the information page below for convenient reference.

If you need an additional owners manual for any H.E. Anderson Company product, please visit our website at <http://heanderson.com/manuals.php>



J+ Advanced Information Summary

Summary of installation steps:

1. Decide where to place all system components. Consult component specific HEA manuals for individual components (J Controller, Water Meter, Manifold, Pump Heads Blend Tank).
2. Install and leak check all plumbing including the manifold supply, water meter, injection point fittings and blend tank.
3. Install the manifold and pump heads.
4. Mount controller and make connections between the controller, water meter and manifold(s).
5. Power on and configure J controller.

This manual covers steps 4 and 5 and assumes steps 1-3 are complete. Consult the J Series Installation Guidelines (<http://www.heanderson.com/Install-Guidelines.pdf>) and individual component manuals for prior steps.

Do all wiring before connecting power. Use a surge suppressor on the incoming AC power line. Plug in the power cord and watch the LCD display. If it does not come on, unplug the power and check the wiring.

This unit was ordered with the following capacities or settings:

MODEL NO. _____ **SERIAL NO.** _____

Customer Requested _____ Default _____

Software Version _____

K Factor [Pulses per Gallon] _____

Maximum Flow _____

Pumper Models:

PUMPER #1 _____ PUMPER #5 _____

PUMPER #2 _____ PUMPER #6 _____

PUMPER #3 _____ PUMPER #7 _____

PUMPER #4 _____ PUMPER #8 _____

GPS=Gallons Per Stroke

GPS #1 _____ GPS #5 _____

GPS #2 _____ GPS #6 _____

GPS #3 _____ GPS #7 _____

GPS #4 _____ GPS #8 _____

Once settings have been properly entered into the controller, the ratios for each output can be viewed on the controller's display. To manually calculate the injection ratio for each pumper use the formulas below. With the above settings, pumps will have the following chemical to water feed ratio capacities (At dial setting 10).

BASE #1 = (GPS #1 x N) ÷ 80 = _____

N=3785(gal.)

H8 1: _____ (BASE #1)

H4, P4 1: _____ (BASE #1 x 2)

H2, P2 1: _____ (BASE #1 x 4)

H1, P1, A10 1: _____ (BASE #1 x 8)

A3 1: _____ (BASE #1 x 26.7)

BASE #2 = (GPS #2 x N) ÷ 80 = _____

H8 1: _____ (BASE #1)

H4, P4 1: _____ (BASE #1 x 2)

H2, P2 1: _____ (BASE #1 x 4)

H1, P1, A10 1: _____ (BASE #1 x 8)

A3 1: _____ (BASE #1 x 26.7)

BASE #3 = (GPS #3 x N) ÷ 80 = _____

H8 1: _____ (BASE #1)

H4, P4 1: _____ (BASE #1 x 2)

H2, P2 1: _____ (BASE #1 x 4)

H1, P1, A10 1: _____ (BASE #1 x 8)

A3 1: _____ (BASE #1 x 26.7)

BASE #4 = (GPS #4 x N) ÷ 80 = _____

H8 1: _____ (BASE #1)

H4, P4 1: _____ (BASE #1 x 2)

H2, P2 1: _____ (BASE #1 x 4)

H1, P1, A10 1: _____ (BASE #1 x 8)

A3 1: _____ (BASE #1 x 26.7)

If more than one pumper is used to pump the same chemical, divide the ratio (BASE) by the number of pumps used for that chemical. The J+ Advanced can operate up to 8 manifolds. Repeat the above formulas for BASE #5,6,7 and 8 if in use.

Mounting

Ensure the installation location has all the following:

- Allow easy access to front panel
- Must have access to 120 VAC power outlet.
- Close proximity to other injector components.
- Protect from direct spray

Mount the controller using the 4 metal tabs on the back of the controller enclosure.

Electrical Connections

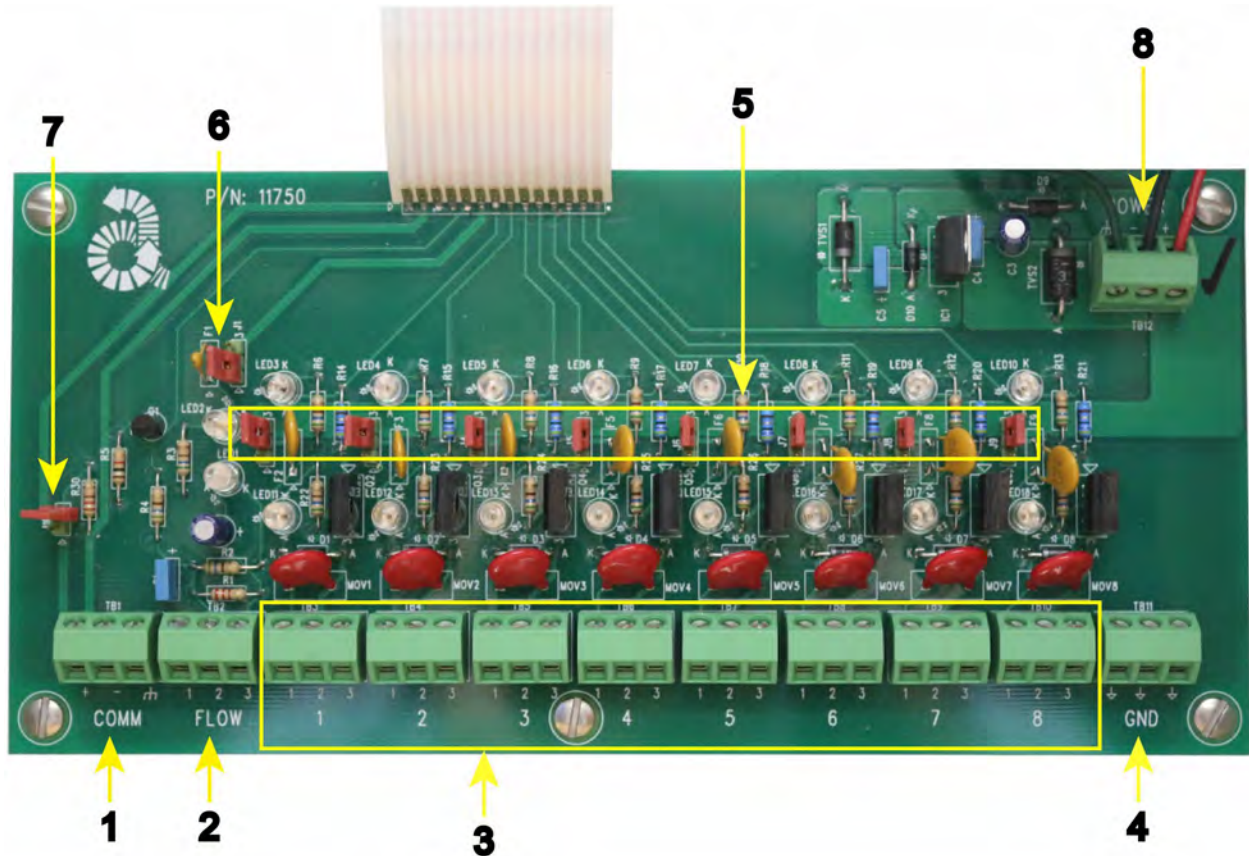


Illustration 1: Output Board

Legend:

1. External communication connector (see modbus manual)
2. Water meter connector
3. Output connector (1 through 8)
4. Ground connectors
5. Output Type Selector (Jumper 2-9) **CAN DAMAGE EQUIPMENT IF SET INCORRECTLY**
6. Flowmeter Voltage (Jumper 1) **DO NOT ADJUST WITHOUT CONSULTING FACTORY**
7. Modbus Terminator (Jumper 10) (see modbus manual)
8. Power connector

Complete the following steps to connect the control box to the required components:

1. Ensure the J+ Advanced controller is NOT connected to electricity.
2. Open the enclosure by releasing the two latched on the right side of the controller.



WARNING! Connecting the flow sensor incorrectly can damage the flow sensor electronics.

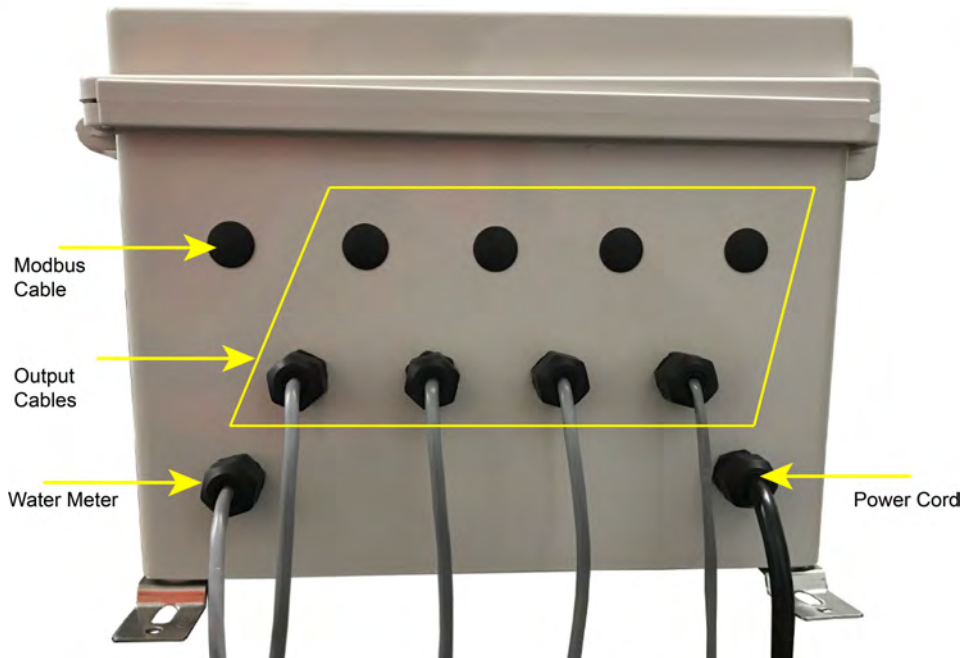


Illustration 2: Entrance Connectors

3. Connect the water meter by running the water meter cable through the proper strain relief connector. The terminals on the flow sensor terminal block are labeled 1, 2, & 3, both on the terminal board and on the sensor cable. Match the '1', '2' and '3' on the cable to the corresponding numbers on the terminal marked 'FLOW' inside the box. Use a small screw driver to tighten the connections on the terminal block. If you need a longer cable, use the color coding to be sure that these connections are correct.
4. The valve output cables should already be connected to the output terminals. If they are not or more output cables are being added, feed the cables through the appropriate strain relief bushing on the bottom of the box, then connect the wires up to the proper output terminal number.
 - For Anderson Pilot Valve Manifolds, match the '1', '2' and '3' on the output cable to the corresponding numbers on the connector.
 - For Solenoid Pumps, match the '2' on the solenoid pump cable to the '2' on the output terminal block and connect the wire labeled 'GND' to one of the 3 positions on the 'GND' terminal block. Refer to *Illustration 3* for more information.
 - For existing Anderson pilot valve output cables with only 2 conductors, connect one wire to position 1 of an output connector and connect the other wire to position 2 of the same output connector. The order does not matter.

Note: The J+ Advanced controller is only compatible with 12VDC coils on pilot valves and manifolds. If the J+ Advanced is being used with an existing pilot valve or manifold, ensure the coil is 12VDC or purchase a 12VDC coil (Part #18332) to convert the pilot valve.

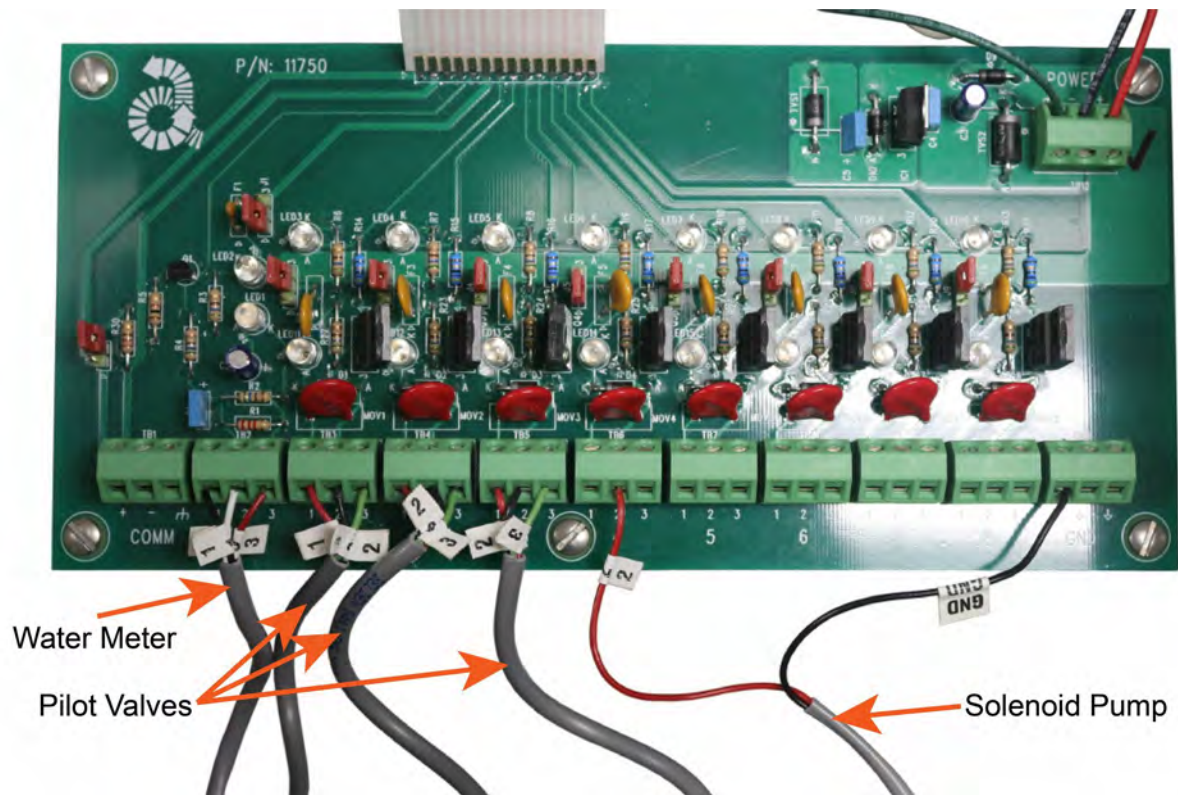
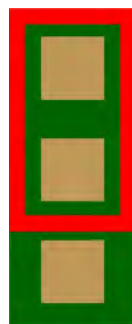


Illustration 3: Wire Connections

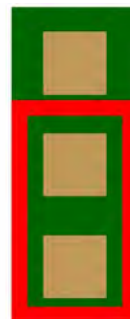


WARNING! Incorrect jumper settings can damage the damage the connected pump or valve.

5. Each output can be set using the jumpers to control either a traditional Anderson manifold pilot valve or a solenoid pump.



Pilot Valve



Solenoid Pump

Illustration 4: Jumper Positions

- Upper position for Anderson Pilot Valve Manifolds
- Lower position for Solenoid Pumps

Ensure the jumper positions are set properly. Check each output jumper to make sure the position matches the type of device connected to the output.

Powering Up The Unit

Plug the controller. A surge suppressor/uninterrupted power supply should be used to power the controller. When power is applied to the unit, the display will flash and then it will display:

“Anderson Injectors
J+ Advanced
Version Number
Date”

for a short time as it initializes and will then start displaying the flow (or **OFF** if there is no flow, or meter connected to it), maximum theoretical flow limit for the current settings, and the gallons totalizer value. If the above message is not displayed then unplug the box immediately and consult the factory for further instructions.

Setting Up the Controller



The controller must be configured in order to work properly. Controllers ordered with a meter from the factory should be properly configured on delivery. However, settings should be double checked for correct configuration.

Make sure the following parameters have been programmed correctly into the controller:

- k Factor
- Active manifolds (outputs)
- Gallons per Stroke for each outputs
- Output mode for each output
- Feed is enabled for each output

Refer to the included quick start guide below to confirm and change controller settings.

J+ Advanced Start-Up Guide (Version J8A 3.4, 04/01/19 and later)

This guide will lead you through the menus used to display and set system parameters.

If you have ordered your J+ Advanced controller as part of a system which includes a water meter, one or more manifolds, or solenoid pumps, some of the parameters may already be properly set.

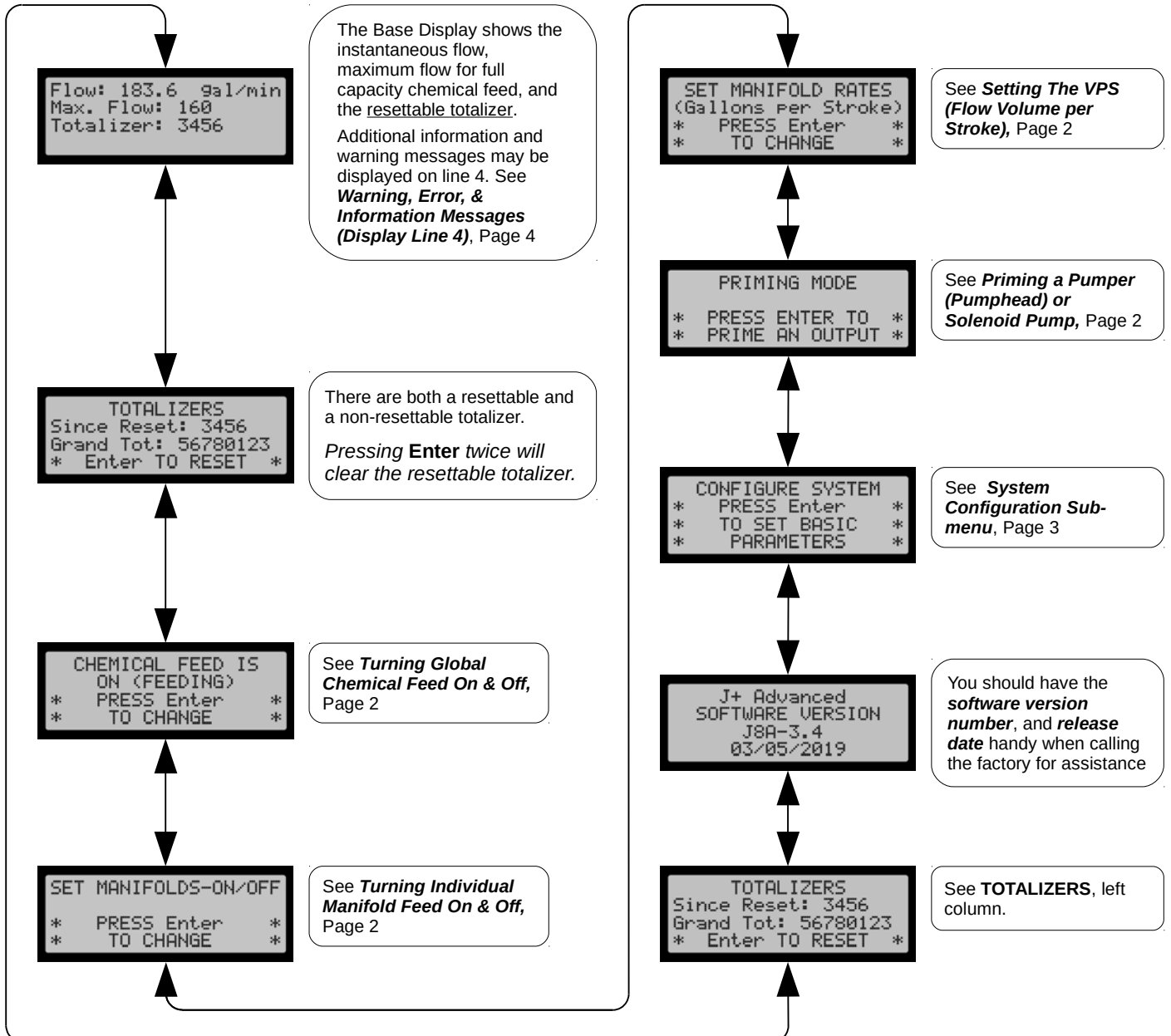
You can use the **▼** and **▲** keys to navigate the top level menus in normal or reverse order. After a 10 second period with no key press the display will return to the base display. During this period you can move forward or reverse through the menu sequence. Pressing the **Cancel/Exit** key will return to the base display immediately.

Any top level menu item with **'*'** characters at the margins allows operator to press **Enter** to enter or change a value or perform the currently displayed function. Pressing **Cancel/Exit** will exit the screen will return to the base display.

All numeric entries are right justified as they are entered. Decimal places are fixed, and when entering values with decimal positions, trailing zeros must be entered.

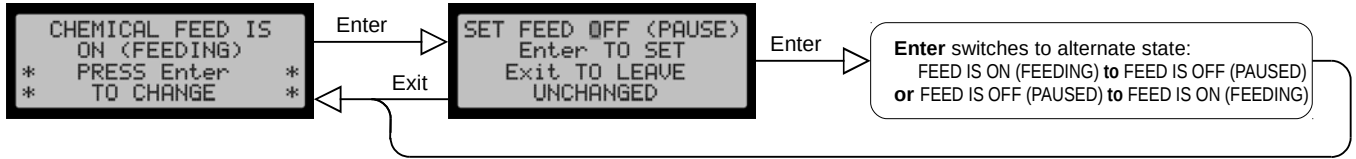
Numeric values are for illustrative purposes only

Base (default) display and top level menu rotation

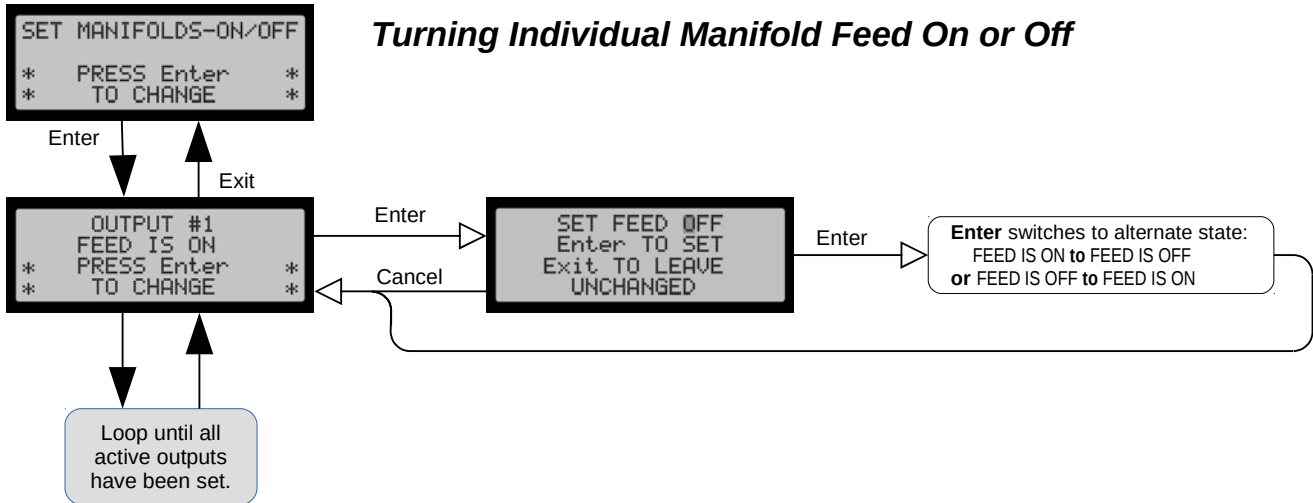


J Plus Advanced Start-Up Guide

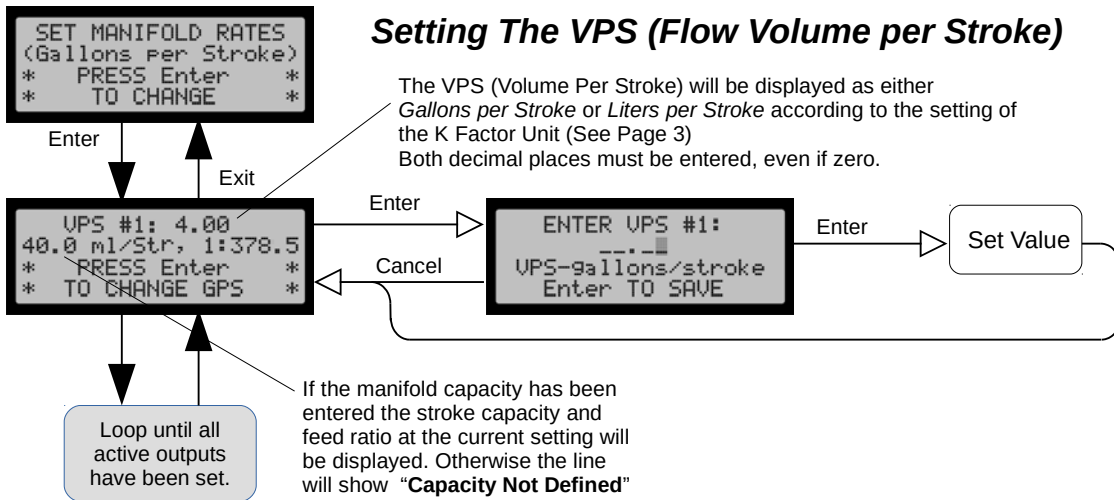
Turning Global Chemical Feed On or Off



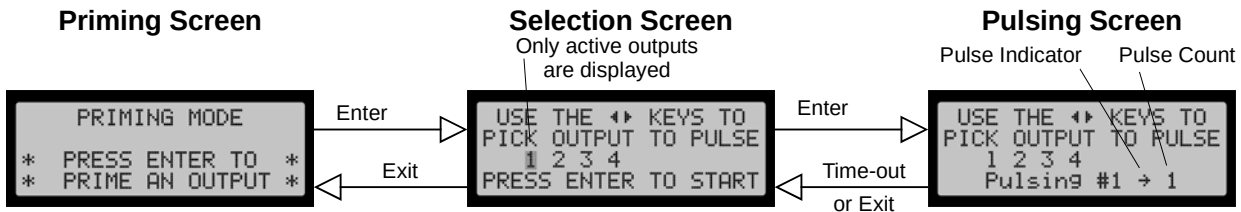
Turning Individual Manifold Feed On or Off



Setting The VPS (Flow Volume per Stroke)



Priming a Pumper (Pumphead) or Solenoid Pump



Priming sends a sequence of six (6) pulses to the selected manifold. If you have more than one pumper on a manifold and you do not want to prime them all, you will need to turn off some pumpers with the shut-off valves located on the manifold. **Cancel/Exit** will abort the priming sequence after the current stroke. There is a thirty second period before the controller returns to the base display. During that period you may press **Enter** to repeat the sequence or you can press **Cancel/Exit** to return to the selection screen and select another output.

J Plus Advanced Start-Up Guide

Configuration Sub-menu

```

CONFIGURE SYSTEM
* PRESS Enter *
* TO SET BASIC *
* PARAMETERS *
    
```

Enter

Top Level Menu, Page 1

Configuration Sub-menu

```

ACTIVE MANIFOLDS
4
* PRESS Enter *
* TO CHANGE *
    
```

Exit

```

ENTER NUMBER OF
ACTIVE MANIFOLDS
  (1-8)
    
```

Enter

Set Value

If you are using fewer than eight outputs setting this value to the maximum number used will speed navigation through the MANIFOLDS ON/OFF and MANIFOLD RATES screens.

```

CONFIGURE PUMP
TYPES & CAPACITIES
* PRESS Enter *
* TO CHANGE *
    
```

See *Setting the Pump Type and Stroke Capacity for Each Output*, Page 4

```

K FACTOR UNIT
Pulses per Gallon
* PRESS Enter *
* TO CHANGE *
    
```

The K Factor Unit determines what volume unit (gallons or liters) is used for flow rate display, totalization, and the **Volume per Stroke** setting. **Changing the unit will clear both the resettable and grand totals and cannot be undone.**

```

CHANGING UNIT WILL
CLEAR ALL TOTALIZERS
Enter TO CONTINUE
Exit FOR NO CHANGE
    
```

```

Pulses per Gallon
USE ^ v KEYS TO
SCROLL UNITS
Enter TO SAVE
    
```

The K Factor value is critical to accurate operation of the system. The K Factor is usually shown somewhere on the water meter. Enter the K Factor (Pulses Per Gallon/Liter) value.

```

K FACTOR
25.00
* PRESS Enter *
* TO CHANGE *
    
```

```

ENTER NEW K FACTOR
Pulses per Gallon
Enter TO SAVE
    
```

Enter

Set Value

```

MODBUS ADDRESS
10
* PRESS Enter *
* TO CHANGE *
    
```

```

ENTER MODBUS ADDRESS
  (1-255)
    
```

Enter

Set Value

This setting is used only when remotely communicating with the controller over a Modbus link (RTU mode). Otherwise it can be ignored. The device operates as a slave. Communications are via RS-485 serial connection operating at 9600 baud. See the **Modbus Addendum** for the register description.

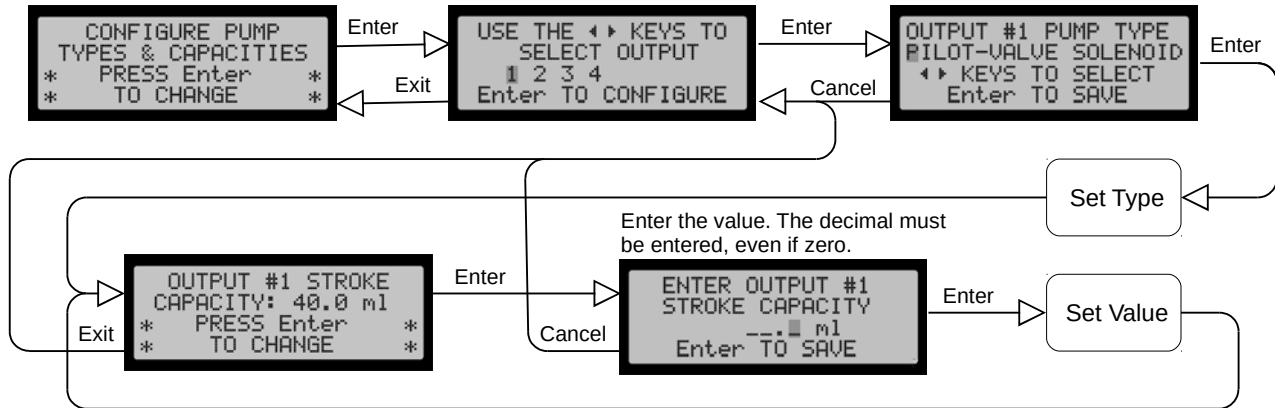
```

ENTER/CHANGE
SECURITY CODE
* PRESS Enter *
* TO CHANGE *
    
```

You may enter an optional 4-digit numeric security code to prevent unauthorized access. If you enter a code, Access beyond the TOTALIZERS display is denied without entering the security code. Once the screen reverts to the base (default) display the code will have to be reentered. To set, change, or clear the security code, press **Enter** and follow the prompts. Entering '0000' for the code will clear the code and turn off security.

J Plus Advanced Start-Up Guide

Setting the Pump Type and Stroke Capacity for Each Output



To configure a manifold is a two step process. You must first set the pump type and then enter the chemical capacity per stroke. Each output must be selected and configured separately.

- 1) Press **Enter** to choose the output number to configure.
- 2) Follow the screen instructions to set the pump type and Press **Enter** to set and display the Capacity per Stroke.
- 3) Press **Enter** again to set the stroke capacity using the numeric keypad. You must enter the decimal place, even if zero. This capacity should be the total combined capacity of all pumpers attached to that output which are pumping a single chemical and for which you want to display the combined feed ratio when setting the VPS.
- 4) After setting the values you will be returned to the Output selection screen where you can configure another output.

Warning & Information Messages (Display Line 4)

```
Flow: 183.6 gal/min
Max. Flow: 160
Totalizer: 3456
HIGH FLOWS: 1 34
```

The totalizer displayed here is the resettable total.

HIGH FLOWS: 1 34

The "**HIGH FLOWS**" line is shown only when the flow exceeds the Max. Flow shown in line 2. The "**Max. Flow**" is the computed flow at which the fastest (lowest VPS value) stroking manifold or Solenoid pump reaches its maximum stroking rate. Each output has its own maximum flow, determined by its VPS setting. The lowest of these values is displayed on line 2. The output number of each output which exceeds its computed maximum is displayed on line 4. In the display above outputs 1, 3, & 4 are affected. These outputs are being limited to their maximum stroking rate and therefore are pumping less than their expected (set) feed rate.

MANIFOLDS UNDEFINED!

The message "**MANIFOLDS UNDEFINED!**" is displayed when no manifolds are activated to pump. This occurs if no outputs are turned or if the outputs which are turned on have a VPS setting of zero. Check the VPS settings (See **Setting The VPS (Flow Volume per Stroke)**, Page 2) of all attached manifolds and make sure all the manifolds you want to pump are turned on. This message is not affected by flow.

Repair



Before opening the enclosure and doing anything inside you should remove ac power from the unit.

The fuse is located on the DIN rail next to the power supply, inside the plastic fuse holder. Replace with the same size and type.

Fuse Replacement

Other repairs are made by replacing complete circuit board assemblies. This should be done only by an authorized repair person or under the direction of our technical staff.

Factory Service

Should you require service for your Ratio:Feeder® J+ Advanced controller or injector, the H.E. Anderson Co. offers several flexible factory service options. Call our number listed in the front of this manual for complete information. If you need to return any parts for service or replacement, our shipping address is:

**H.E. Anderson Company
2100 Anderson Drive
Muskogee, Oklahoma 74403
USA**

Please enclose a note detailing the problems and the type of service you need. Include the name of a contact person, phone number, and the billing name and address. Any return for warranty, or credit, must have an RMA number. Contact H.E. Anderson for this number before returning.

Specifications

Power Requirements

120 VAC Standard

Enclosure

Gasket sealed plastic enclosure with sealed front panel.

Display

20 character x 4 line LCD

Flow Totalizer

0 – 99,999,999 gallons

Flow Meters

Multi-Jet, Paddlewheel, Turbine, or Custom type supplied by customer.

Outputs

8

Output Voltage

12 VDC for Anderson Pilot Valve Manifolds

5 VDC for solenoid pumps

Operating Temperature Range

33 – 105°F