



# Balanced Flow Installation Guide

BFSETUP Revised 12/09

## The Balanced Flow ® Controller is very versatile, it can be set-up for:

- Constant Pressure using matched Water Ends and Motors - 60 Hertz Setting
- Constant Pressure using mis-matched Water Ends and Motors - 80 Hertz
- Float control using a float switch to fill a pond or tank.

There are a few variations available within these three systems, please read the complete IOM for more detailed information.

**Installer Connections and Adjustments-** are all made on the User Interface Board (UIB) and the Wire Terminals at the bottom of the controller.

### Wiring:

- Connect the incoming power and ground to L1, L2 and GND on the bottom left side.
- Connect the color coded motor leads to R, Y, B and GND on the bottom right.

### Transducer:

- Install the transducer in a vertical or horizontal position near the tank.
- Connect the transducer cable to the transducer
- Connect the supplied ground clamp to the hex on the transducer and connect the ground wire to the clamp.

### UIB Settings:

- 60 or 80 - select based on pump/motor used -
  - 60 is for matched units, e. 2 HP Pump & 2 HP Motor
  - 80 is for mis-matched units, ex. 1 HP Pump & 2 HP motor

### Dry Well Sensitivity:

Selections are High or Low. This function protects the system from running dry. The selection depends on several conditions and pump size, as a general rule:

- High - Default Setting - use for standard flow operating range
- Low - use for lower flow applications where the pump is typically operating at less than 70% of BEP (best efficiency GPM).

To test sensitivity run pump at minimum flow, if a dry Well Fault is triggered switch to Low setting. Restart times in minutes are: 1,10, 20, 30, 60... repeats every 60 min. thereafter. Ex. 1<sup>st</sup> fault shuts down for 1 min, next fault resets after 10 min, then 20, etc.

### Broken Pipe Protection:

- ON Position - Used for constant pressure systems. The drive will turn off if the system pressure drops 20 PSI below the system set point pressure for a minimum of 30 seconds. *This fault must be manually reset, it will not clear automatically..*
- OFF Position - Use for open discharge systems, such as filling a pond or tank, or whenever the system pressure will be 20 psi or more below the system set point pressure

### Pressure Drop Setting - 5 PSI or 20 PSI:

The pressure drop before the drive restarts can be adjusted from the standard 5 PSI pressure drop to an alternative 20 PSI drop.

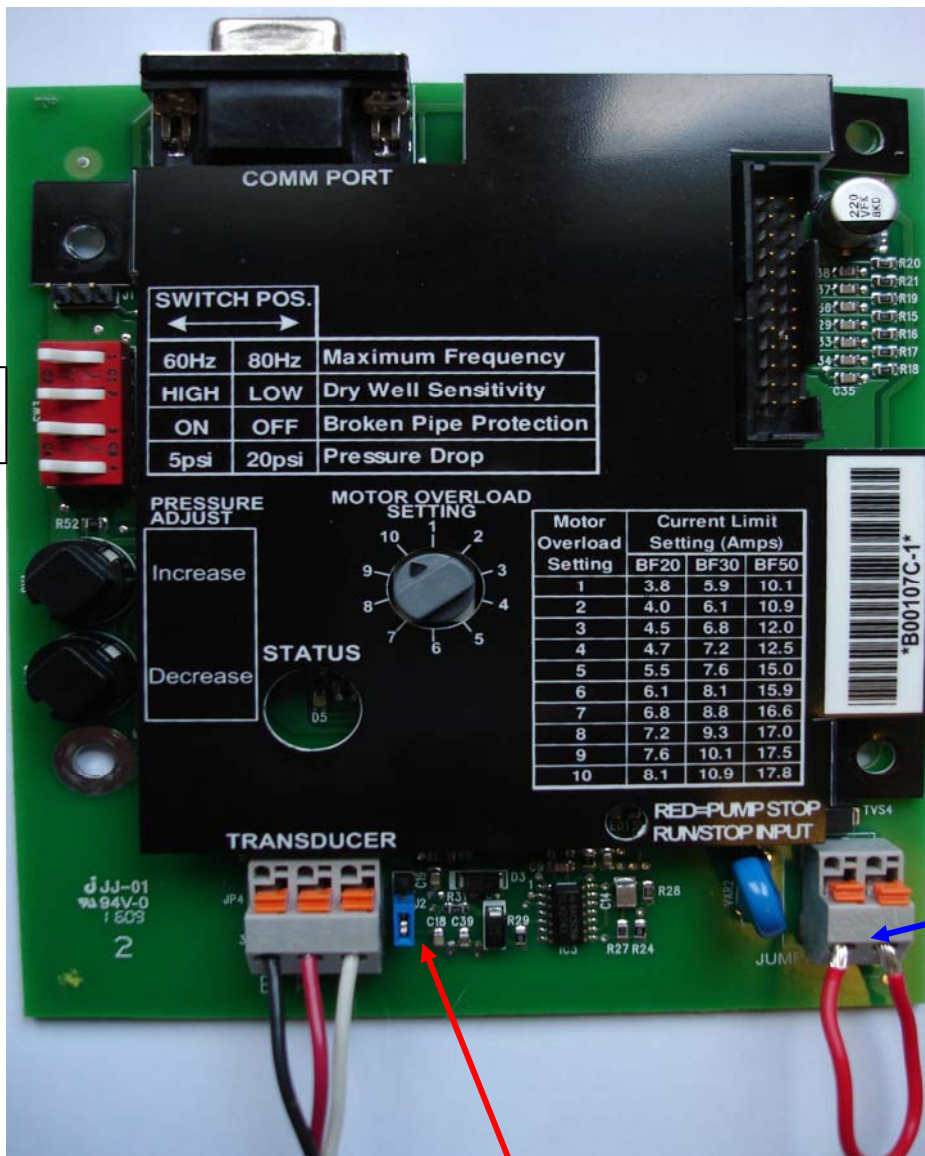
- 5 PSI - use for typical constant pressure systems.
- 20 PSI - use for irrigation systems with leaks, irrigation systems that drain on shut down and systems using large pressure tanks.

## Tank Pressure:

It is sometimes necessary to make minor pressure adjustments to the tank pre-charge air pressure:

- If the tank bottoms out (pressure drops rapidly) before the pump starts, check tank air pressure, it should be 20 psi below the system set point when empty of all water, if the 5 PSI Pressure Drop is selected.
- Set it 30 pounds below the set point pressure if the 20 PSI Pressure Drop is selected.
- If the system takes too long to turn off after water flow ceases or if pressure oscillates too much verify that tank pressure is correct.

## UIB - USER INTERFACE BOARD

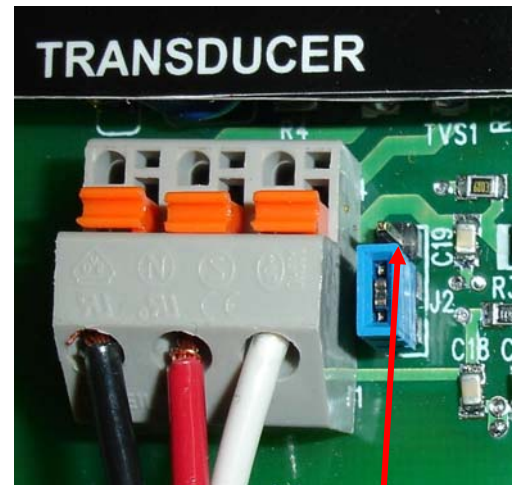


Transducer Jumper (Blue Piece) in Standard Bottom Position

## Constant Pressure -

Operated w/ Transducer - with or without - Optional Over-Pressure Switch

- Connect Transducer
- Remove Jumper Wire From Switch Input Connection
- Connect Pressure Switch to Switch Input Connection
- Status indicator Light (visible through cover)
  - Solid Green - Pump Off- System in Standby
  - Blinking Green - Pump Running
- Switch Indicator Light (inside) - Off - System OK
- Leave Transducer Jumper in Bottom Position
- UIB Settings:
  - 60 or 80 Hertz (depends on pump/motor)
  - Dry Well - High
  - Broken Pipe - On
  - Pressure Drop - 5 PSI
  - Transducer - Connected
  - Transducer Jumper - Bottom Position (Factory Setting)
  - Pressure Switch Connected to Switch Input



Top Pin Visible

## Float Switch Operation -

Filling a Pond or Tank (Non-Constant Pressure System):

Connect two wires from a float (level) switch to the Switch Input Terminals. The pump will run when the level switch contacts close. The maximum switch wire length tested is 200'. Longer lengths may work. The pump will run at maximum speed when the float switch is closed.

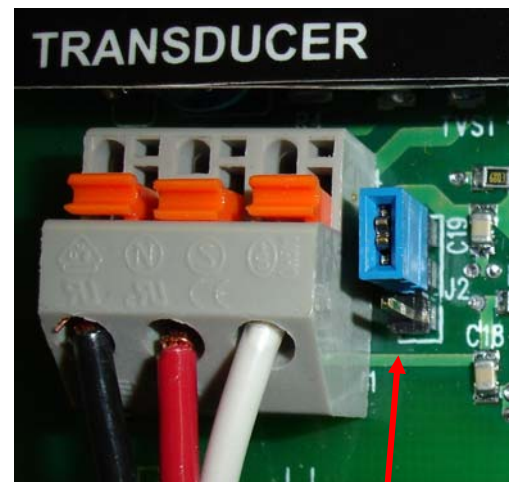
### UIB Settings:

- 60 or 80 Hertz (depends on pump/motor)
- Dry Well - High
- Broken Pipe - Off
- Pressure Drop - 5 or 20 PSI
- Transducer - Not Connected
- Transducer Jumper - Top Position (Move To Cover Center & Top Pins)
- Remove Jumper Wire from Switch Input Terminals
- Connect a Signal Float Switch<sup>①</sup> to Switch Input Terminals

① Use only float switches rated as Signal or Control Floats to insure proper contact. They are designed for low current applications, not high amperage.

- **Float switches are either N.O. (Normally Open) or N.C. (Normally Closed)**

- N.O. switch contacts are open in the hanging (down) position. Use to protect a pump from breaking suction or to pump down or empty a tank. Installing a N.O. float in an empty tank will open the Switch Input contacts and not allow the controller to operate.
- N.C. switch contacts are closed in the hanging (down) position. Use to 'pump-up' or fill a tank.



Bottom Pin Visible

### Transducer Jumper:

The transducer jumper should be in the bottom position, covering the center and bottom pins, for standard pressure system operation. It should only be moved to the top position to operate a system without a transducer such as for filling a pond using a float switch.

### Switch Input: (located on bottom right of UIB):

This has a factory installed jumper wire across the two terminals, the system will not operate if these terminals are not connected. This is where a float switch or pressure switch may be connected. See IOM for more details.

## PRESSURE RANGES FOR ALL AVAILABLE TRANSDUCERS

Transducer	BF20		BF30		BF50	
	Min PSI	Max PSI	Min PSI	Max PSI	Min PSI	Max PSI
100 PSI ①	20	85 ③	20	85 ③	5	50
200 PSI ②	40	170 ③	40	170 ③	10	100
300 PSI	60	255 ③	60	255 ③	15	150

① Standard on BF20 and BF30

② Standard on BF50

③ Increased from 70 psi std. 8-09

**! Warning** *Exploding tank can injure or kill, some combinations of Transducer and Controller allow system pressure adjustment to exceed the maximum working pressure of the tank. Ensure system pressure is set below the maximum working pressure of the tank.*

*Protect tank and piping against overpressure, install a properly sized pressure relief valve (PRV) able to pass full pump flow at the maximum working pressure of the tank. In finished basements or where PRV blow-off can cause property damage, pipe the PRV to a suitable drain*

Use this table data to set determine Motor Overload settings if the motor is installed.

Service Factor Amps 3 Phase Motors				
	230 Volt, 3Ø		200V, 3Ø	
HP	CentriPro SFA	Franklin SFA	CentriPro SFA	Franklin SFA
3/4	4.0	3.8	4.5	4.4
1	4.7	4.7	5.5	5.4
1.5	6.1	5.9	7.2	6.8
2	7.6	8.1	8.8	9.3
3	10.1	10.9	12.0	12.5
5	17.5	17.8	20.2	20.5

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