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INSTALLATION AND OPERATING INSTRUCTIONS

PACKAGED PRESSURE BOOSTER SYSTEMS

DESIGN ENVELOPE – 6800 IVS BOOSTER SYSTEMS

Armstrong Packaged Pressure Booster Systems are completely factory-assembled, tested, adjusted, and shipped to the job site as integral units ready to receive suction and discharge piping and incoming power supply. These instructions describe the procedures to be followed during installation, commissioning and operation to ensure optimum performance and reliability. When contacting the factory for assistance, please provide the unit Serial Number and other pertinent data, such as motor amperage, voltage and suction and discharge pressures.

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STORAGE - Make sure that all components are kept as clean as possible. Do not remove the crating or plastic wrapping until the unit is ready for installation.

UNCRATING - After removal of the unit from the crate, check to see that the equipment is in good order and that all components are received as called for on the packing slip. Any shortages or damage should be reported immediately.

LOCATION - Locate the unit where it is easily accessible for inspection and servicing. Provide adequate room for pump withdrawal and also for access to the interior of the control panel.

FOUNDATION - The foundation should be sufficiently substantial to absorb any vibration and to form a permanent rigid support for the base plate. A good concrete foundation should be approximately 2-1/2 times the weight of the packaged unit.

FOUNDATION BOLTS - Foundation bolts of the proper size should be arranged as shown in the sketch, with a pipe sleeve embedded in the concrete to permit adjustment of the bolts after the concrete has been poured. Use sleeves with a diameter 2-1/2 times the diameter of bolts.
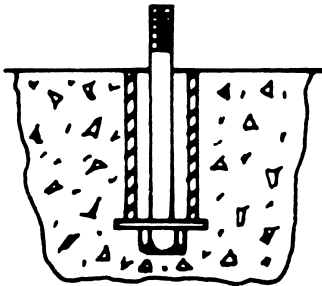
LEVELING - When the unit has been placed on its foundation, insert metal wedges approximately 1" thick on either side of the foundation bolts under the base plate. Adjust the wedges until the suction and discharge headers are truly horizontal. Check this by means of a spirit level on the suction and discharge flanges. When leveling is complete, the foundation bolts should be tightened evenly and firmly. Do not over tighten the bolts at this stage.

PIPING - Both the suction and discharge pipes should be independently supported so that no strain is imposed on the packaged unit when the pipes are connected. All connecting pipe work should be accurately located-do not attempt to force the suction and discharge pipes into position.

INCOMING SUPPLY - The incoming power supply should be brought in through the top of the panel adjacent to the main terminals. Note that this is the only electrical connection required at the panel.

INITIAL RUN - Open the main supply valve and also the isolating valves on the suction and discharge sides of the packaged unit. Turn all the pump selector switches to the "Off" position and close the main disconnect switch. Switch pump No. 1 to the "On" or "Hand" position for a brief period and check the rotation of the motor. This should correspond to the directional arrow i.e. clockwise when looking down on top of the motor.

If the motor is running the wrong way, interchange two of the connections at the main supply terminals in the control panel. This will ensure proper rotation of the other pumps since all motors are phased for the same rotation on test before the unit is shipped.

After correct rotation has been established, switch pump No. 1 to the "On" or "hand" position and run the pump for a few minutes to check for noise, vibration, etc., and any leaks in the pipework. Repeat this procedure for the other pump(s) in the package.

ADJUSTMENTS – The LCD Interface provides access for the adjustable set points, alarms and timers. No other devices require adjustments.

The operation and adjustment procedures for the set points, alarms and timers are described on pages 5 through 28.

Note carefully, however, that all devices are pre-set at the factory and will normally require no further adjustment.

AUTOMATIC OPERATION – To set the unit for automatic operation, turn all the isolating valves to the fully open position, close the main disconnect and switch all pumps to the "Auto" position.

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INTELLIGENT VARIABLE SPEED BOOSTER SYSTEMS: BASIC OPERATING FUNCTIONS

Every Armstrong Intelligent Variable Speed (IVS) Packaged System – regardless of size or horse power rating – incorporates the twelve (12) basic operating functions as follows:

1. For Continous Run and Intermittent Systems - Sequential starting and stopping of the pumps is achieved by a combination of pump speed, power and set point pressure. A set point pressure control will bring on a lag pump if the lead pump(s) are operating at full speed and not maintaining set point pressure. When the lead pump reaches 100% speed or maximum motor nameplate power and the system pressure is not being satisfied, the second pump (lag pump) is automatically started. When a lag pump is started up, a timeclock in the pump controller keeps it operating for a minimum of a 1 minute period to prevent the pump from cycling on and off. On a three, four or five pump system, the third, fourth and fifth pumps are brought on in the same way when the combined pumps reach 100% speed or maximum motor nameplate power and the system pressure is not being satisfied. A similar sequence of events takes place in reverse on decreasing demand.

2. Pump RPM is controlled by a Variable Frequency Drive (VFD) connected directy to each individual pump motor. An analog signal from the discharge pressure transmitter is compared to a desired set point entered in to the operator panel. The pump logic controller then instructs the VFD to either speed up or slow down in order to meet or maintain the system set point pressure.

3. A low suction pressure or level shutdown alarm is included with every system to protect the pumps from a loss of suction pressure or water supply. If the water supply pressure, as measured by the suction pressure transmitter falls to 5 psi or the tank level switch (supplied by other) sends a signal to the panel, the pump controller will prevent the pumps from running. This condition is indicated by a "low suction pressure" or "low suction level" alarm description on the control panel alarm page.

4. Variable speed plumbing booster systems come with the following standard alarm functions in addition to the Low Suction Pressure/Level Protection;

    - High Suction Pressure Shutdown
    - Low Suction Pressure Shutdown
    - High System Pressure Shutdown
    - Low System Pressure Shutdown

5. Should a motor or drive overload and fail to operate, the next pump in sequence starts up automatically.

6. Lead Pump status is alternated after every 24 hrs of operation, as a default. The first pump placed in the auto position is considered the lead pump. HOA switches are located in the individual pump control screens. Alternation includes all duty and optional standby pumps.

7. No-flow shut down is achieved through drive parameter control and pressure monitoring. Once a no-demand condition is achieved for a period of 5 minute, the controller will increase the pump speed and charge the drawdown tank or system an additional 5 psi before shutting down.

8. A 15 second delay is incorporated in every system restart. Once started, the pumps ramp up to meet the required set point pressure.

9. The Soft Fill Mode is enabled when the booster system is first powered and after any power disruption. Once started, the pumps ramp up slowly to meet the Soft Fill set point pressure or after a 5 minute operational period and return to normal operation.

10. The Pressure Setback Mode is enabled as standard. The system pressure set point is reduced linearly, as a percentage, as flow decreases.

11. When the Emergency Power Mode is enabled and upon receiving an Emergency Power digital signal, power and control will be restricted to the lead pump only, the Low System Pressure Shutdown will be disabled and the Emergency Power Low System Pressure alarm will be enabled. The one pump will operate for the duration of the Emergency Power Mode and the system will switch to Normal Mode when a signal is not present and the minimum run timer has expired.

12. Variable Speed Controllers are supplied with up to 7 Normally Open (NO) dry contacts for remote monitoring. The contacts are located on the upper left hand portion of the pump controller and indicate the following conditions:

    1, 2 – Discharge Pressure Sensor
    3, 4 – Suction Pressure Sensor
    5, 6 – Remote Start
    7, 8 – Level Switch 1 (Signal by Other)
    9, 10 – Emergency Power (Signal by Other)
    11, 12 – System Alarm
    13, 14 – Pump Running

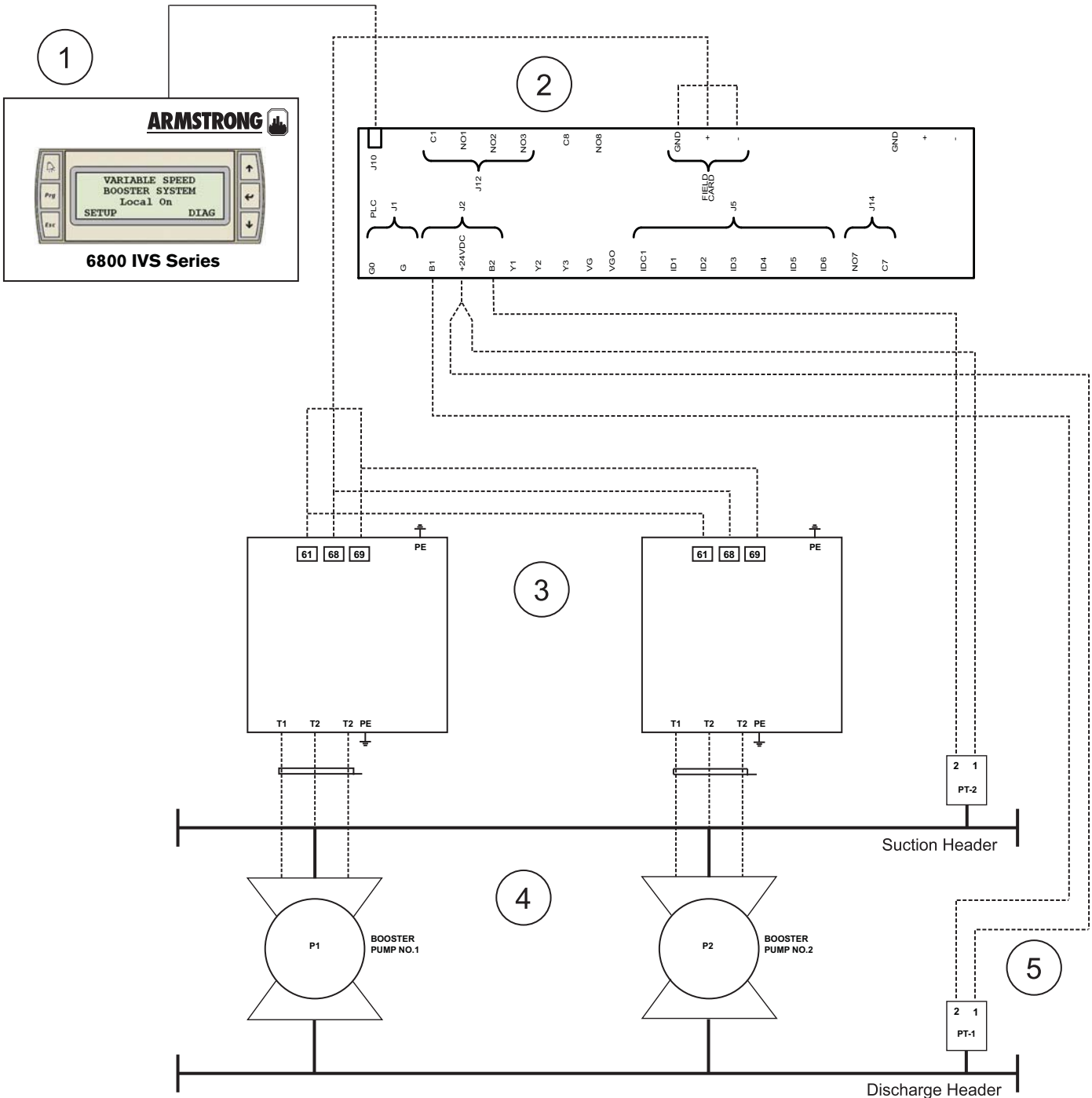| 1+	3+	5+	7+	9+	11+	13+
2-	4-	6-	8-	10-	12-	14-

Communication Option
(Serial connection except for BACnet (IP/ENET))

    15, 16 – BAS Communication
    17, 18 – BAS/VFD Ground
    19, 20 – VFD Communication

15+	17+	19+
16-	18-	20-

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VARIABLE SPEED BOOSTER SYSTEMS: GENERAL ARRANGEMENT SCHEMATIC DIAGRAM

1. Operator Interface
2. Programmable Logic Controller (PLC)
3. Variable Frequency Drives (VFD)
4. Booster Pumps
5. Pressure Transmitters

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OPERATOR FUNCTIONS

Armstrong IVS booster controllers have operator accessible and password protected functions. Password protected functions can be accessed using the procedure on page 15 of this manual. The information below is divided into four sections: Operator Interface HMI, Operation Displays, Alarm Management and System Setup. The Operation Displays are used by the operators to view and control the Booster Pumps. The Alarm Management screens are used to display the current alarms. The System Setup Screens are used to set, view, save, and restore the system specific settings (i.e. number of pumps, discharge pressure, etc.).

Operator Interface HMI:

- Description of Button Functions (page 7)

Operation Displays:

- Main Menu (page 8)
- System Overview (page 8)
- PLC Diagnostic (page 9)
- Pressure Overview (page 9)
- Pump Overview (page 9)
- Pump Control (page 10)
- Pump Status (page 10)
- No Flow Shutdown (page 11)
- Low Tank Level Shutdown (page 11)
- Soft Fill Mode (page 12)
- End of Curve Protection (page 12)

Alarm Management:

- Alarm Display (page 12)
- Alarms (page 13)
1. Low Water Level Shutdown Alarms (page 13)
     - Tank 1 Low Level Shutdown Alarm
     - Tank 2 Low Level Shutdown Alarm
2. Pressure Sensor Failure Alarms (page 13)
     - Discharge Pressure Sensor Failure Alarm
     - Suction Pressure Sensor Failure Alarm
3. Pressure Alarms (page 13)
     - Low Suction Pressure Shutdown Alarm
     - High Suction Pressure Shutdown Alarm
     - Low Discharge Pressure Shutdown Alarm
     - High Discharge Pressure Shutdown Alarm
4. Alarms (page 13)
     - Pump 1 to 5 Run Feedback Alarm
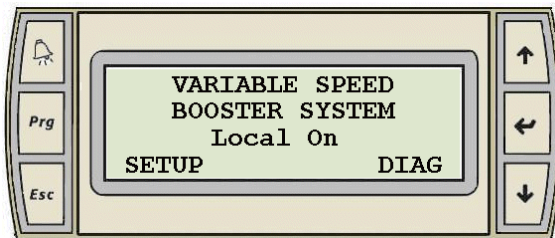   - Drive Fault Alarm
5. Factory High System Shutdown Alarm(page 14)

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System Setup:

The Setup Displays are divided in three levels with each level having the same number of displays with a different level of access. Level 0 setup displays are for viewing only and no adjustment can be made. Level 1 setup displays can be used for changing the system setup and restoring the system factory defaults. Level 2 setup displays can be used for changing the system setup, and saving and restoring the system factory defaults. To access Level 1 and 2 an operator is required to enter the proper password, which can be obtained by contacting Armstrong After Sales Service.

The list of Setup Displays for all levels is as follow:

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OPERATOR INTERFACE HMI PANEL – DESCRIPTION OF BUTTONS FUNCTIONS

```
VARIABLE SPEED
BOOSTER SYSTEM
   Local On
SETUP         DIAG
```

- The display panel has six button:

- **The Alarm Button**

  - The Alarm Button will stay solid White when there are no active alarms.
  - The Alarm Button will flash RED when an alarm is activated.
  - Pressing the Alarm Button will call up the Alarm Display.
  - The Alarm Button will go solid White when all alarms are reset (acknowledged).
  - The Alarm Button will go solid Red when the alarms are reset and there are still some active alarms.

- **The Prg Button**

  - Pressing the Prg Button at any time will call up the Main Menu display.

- **The Esc Button**

  - Pressing the Esc Button will bring you back to the previous display level.
  - For example pressing the Esc button from the Pump Status display will call up the Pump Overview display.

- **The Up and Down Arrow Button**

  - When the cursor is at the top left corner of the screen pressing the "Up" or "Down" Arrow buttons will let you navigate between displays.
  - When the cursor is over a digital value pressing the "Up" or "Down" Arrow button will toggle the value.
  - When the cursor is over an analog value pressing the "Up" or "Down" Arrow button will increase or decrease its value respectively.
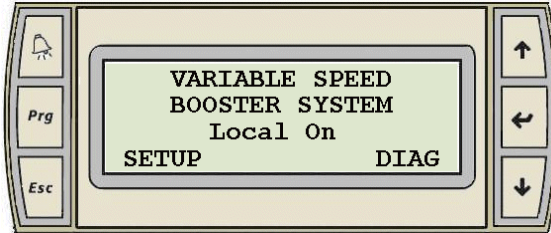
- **The Enter Button**

  - Pressing the Enter button will move the cursor to the control values within a display from top to bottom, left to right.
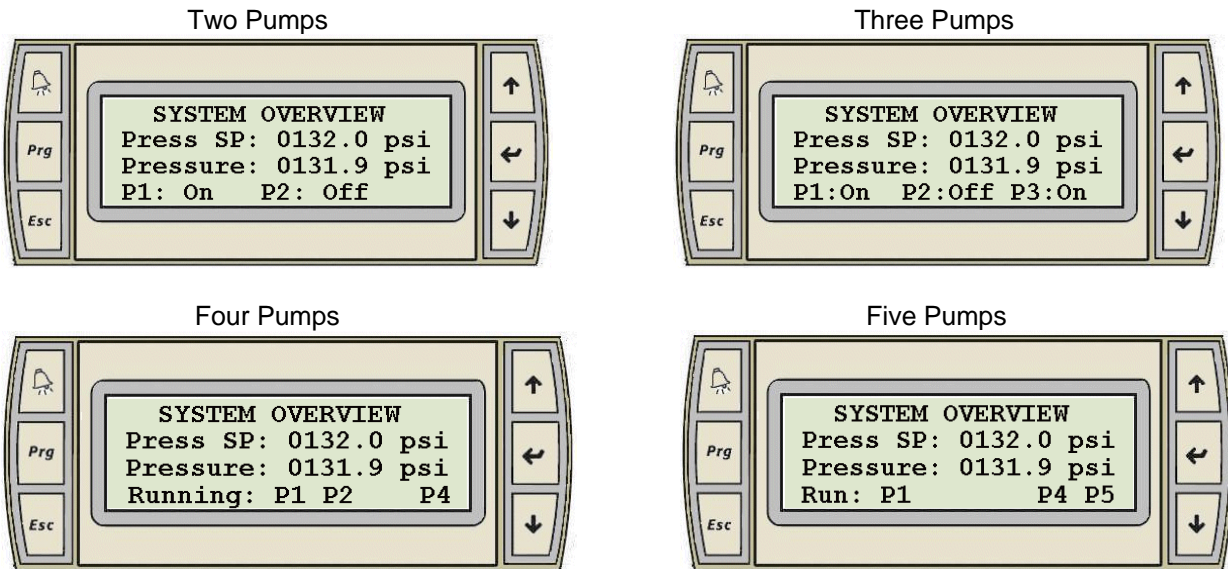
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OPERATION DISPLAYS

Main Menu

```
        VARIABLE  SPEED
       BOOSTER  SYSTEM
           Local On
    SETUP              DIAG
```

- This is the display for the Main Menu of the Variable Speed Booster
- Pressing the "Prg" Button at any time will call up the Main Menu display
- When the cursor is at the top left corner of the screen, pressing the "Up" or "Down" arrow will navigate between the active Operation displays: Main Menu, System Overview, Pressure Overview, Pump Overview, and Pump Control
- Pressing the "Enter" key will move the cursor over the "L" of "Local" or the "R" of "Remote", the "S" of "Setup", and the "D" of "Diag"
- When the cursor is over "Remote" or "Local" pressing the "Up" or "Down" arrow will toggle between "Remote" and "Local" control. The text will toggle between "Remote" and "Local"
- When the cursor is over "Setup" pressing the "Up" or "Down" arrow will call up the Main Setup Screen (Level 0)
- When the cursor is over "Diag" pressing the "Up" or "Down" arrow will call up the PLC Diagnostic screen

System Overview

Two Pumps
```
      SYSTEM OVERVIEW
    Press SP: 0132.0 psi
    Pressure: 0131.9 psi
    P1: On    P2: Off
```

Three Pumps
```
      SYSTEM OVERVIEW
    Press SP: 0132.0 psi
    Pressure: 0131.9 psi
    P1:On  P2:Off P3:On
```

Four Pumps
```
      SYSTEM OVERVIEW
    Press SP: 0132.0 psi
    Pressure: 0131.9 psi
    Running: P1 P2    P4
```

Five Pumps
```
      SYSTEM OVERVIEW
    Press SP: 0132.0 psi
    Pressure: 0131.9 psi
    Run: P1        P4 P5
```

- The System Overview screen for the selected amount of pumps will be the only one to be active and displayed
- This display is for viewing only
- When the cursor is at the top left corner of the screen, pressing the "Up" or "Down" arrow will navigate between the active Operation displays
- The first line displays the System Pressure Set Point
- The second line displays the actual system pressure value
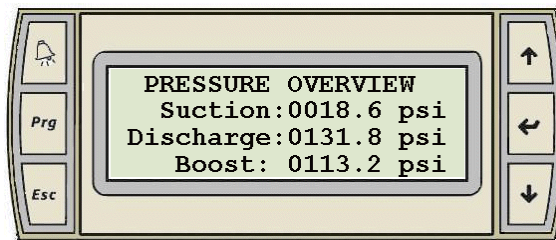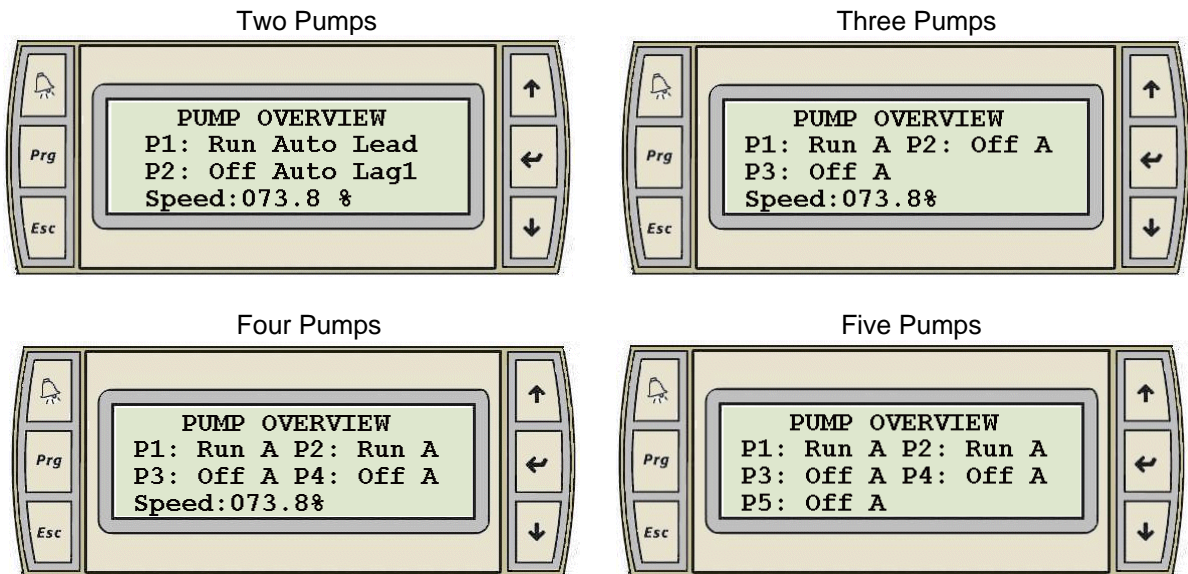- The third line shows which pump is On or Off

PLC Diagnostic

```
       PLC DIAGNOSTIC
PLC: Ok   Mem:   Ok
Net: Ok   Comm: Ok
Software Rev: 9.012
```
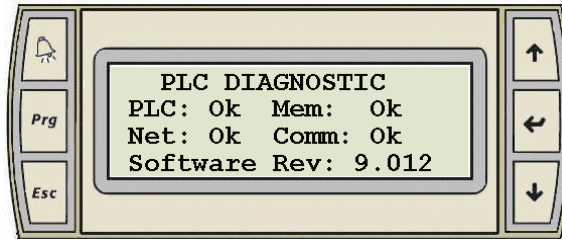
- Line 2 and 3 indicates the PLC, Memory, Network, and Communication status
- Pressing the "Esc" key will call up the main menu

Pressure Overview

```
      PRESSURE OVERVIEW
     Suction:0018.6 psi
  Discharge:0131.8 psi
     Boost: 0113.2 psi
```
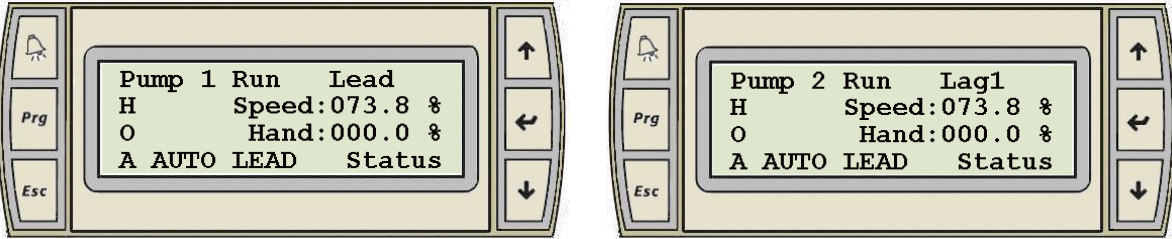
- This screen will only be active and displayed when the suction pressure sensor is enabled
- This display is for viewing only
- When the cursor is at the top left corner of the screen, pressing the "Up" or "Down" arrow will between the active Operation displays
- This screen displays the actual value of the suction and discharge pressure. It also calculates the system boost

Pump Overview

Two Pumps

```
     PUMP OVERVIEW
P1: Run Auto Lead
P2: Off Auto Lag1
Speed:073.8 %
```

Three Pumps

```
     PUMP OVERVIEW
P1: Run A P2: Off A
P3: Off A
Speed:073.8%
```

Four Pumps

```
     PUMP OVERVIEW
P1: Run A P2: Run A
P3: Off A P4: Off A
Speed:073.8%
```

Five Pumps

```
     PUMP OVERVIEW
P1: Run A P2: Run A
P3: Off A P4: Off A
P5: Off A
```
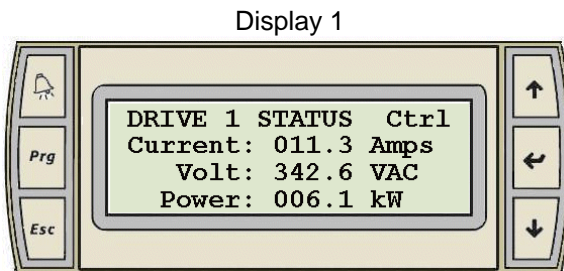
- The Pump Overview screen for the selected amount of pumps will be the only one to be active and displayed
- This display is for viewing only
- When the cursor is at the top left corner of the screen, pressing the "Up" or "Down" arrow will navigate between the active Operation displays
- This screen will display for each pump: the run feedback "Off" or "Run", and the Hand-Off-Auto mode "H", "O" or "A"
- This screen will also display the speed of the pumps and which pump is the Lead pump

Pump Control

```
┌─────────────────────────────┐        ┌─────────────────────────────┐
│  Pump 1 Run    Lead         │        │  Pump 2 Run    Lag1         │
│  H        Speed:073.8 %     │        │  H        Speed:073.8 %     │
│  O        Hand:000.0 %      │        │  O        Hand:000.0 %      │
│  A AUTO LEAD    Status      │        │  A AUTO LEAD    Status      │
└─────────────────────────────┘        └─────────────────────────────┘
```

- Similarly displayed for Pump 3 to 5
- Only the displays corresponding to the number of pumps selected will be active and displayed. For example if the number of pumps is set to two on the pump setup display, only the control display for pump 1 and 2 will be active
- When the cursor is at the top left corner of the screen pressing the "Up" or "Down" arrow will navigate between all active operation displays
- The following information is displayed for the corresponding pump:
  - The top line indicates the Pump number, the pump running status (Run, Stop), and the pump parallel status (Lead, Lag 1, Lag 2, Lag 3, or Lag 4)
  - Line 2, 3, and 4 at the left of the screen is used to select the Pump Mode: Hand (H), Off (O), or Auto (A).
  - The Pump Mode is indicated on line 2, 3, and 4 beside the H-O-A selector. The picture above indicates pump 1 is in Auto mode
  - Line 2 at the right of the screen indicates the pump speed
  - Line 3 at the right of the screen is used to set the pump speed in Hand mode
- Pressing the "Enter" key will move the cursor as follow: H, O, A, Lead, Status, and back to the top left corner
- When the cursor is over "H", "O", or "A" pressing the "Up" or "Down" key will change the pump mode to Hand, Off, Auto correspondingly
- When the cursor is over Hand, pressing the "Up" or "Down" arrow will increase or decrease the pump speed when the pump is in Hand mode. When the value for the Hand speed is set to the desired value you must press the "Enter" key for the controller to use the new Hand Speed value
- When the cursor is over Lead, pressing the "Up" or "Down" arrow will set the pump as lead pump. A pump can only be set as Lead pump if it is in Auto mode and it is not in alarm
- When the cursor is over Status pressing the "Up" or "Down" arrow will call up the Pump Status Display

Pump Status

Display 1   Display 2

```
┌─────────────────────────────┐        ┌─────────────────────────────┐
│   P1 STATUS AUTO Run        │        │    PUMP 1 STATUS            │
│  Speed Ref: 097.3%          │        │  Run Hrs:000158 Reset      │
│  Speed:097.2% 1438rpm       │        │  Fault: No  Num:00000      │
│  P1 Lead      Control       │        │             Control        │
└─────────────────────────────┘        └─────────────────────────────┘
```

Display 1

```
┌─────────────────────────────┐
│  DRIVE 1 STATUS   Ctrl      │
│  Current: 011.3 Amps        │
│    Volt: 342.6 VAC          │
│    Power: 006.1 kW          │
└─────────────────────────────┘
```
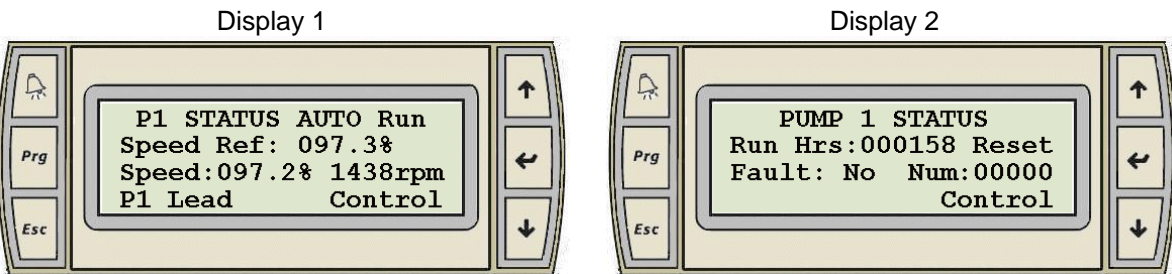
- Similarly displayed for Pump 2 to 5
- Only the displays corresponding to the number of pumps selected will be active and displayed
- When the cursor is at the top left corner of the screen pressing the "Up" or "Down" arrow will navigate between all active pump status displays
- Display 1 Line 1 indicates the pump mode "Hand", "Off" or "Auto", and the run feedback "Off" or "Run"
- Display 1 Line 2 indicates the speed reference
- Display 1 Line 3 indicates the drive actual speed in percent and RPM
- Display 1 Line 4 indicates the pump parallel status "Lead, Lag1, Lag2, Lag3, or Lag4"
- Display 2 Line 2 indicates the total number of running hours since the last reset
- Display 2 Line 3 indicates if the drive is faulted and the fault number
- Display 3 Line 1 to 3 indicates the drive current, voltage, and power
- Pressing the "Enter" key on display 1 and 3 will move the cursor as follow: Control, and back to the top left corner
- Pressing the "Enter" key on display 2 will move the cursor as follow: Reset, Control, and back to the top left corner
- When the cursor is over Reset pressing the "Up" or "Down" arrow will reset the number of run hours to zero
- When the cursor is over Control pressing the "Up" or "Down" arrow will call up the Pump Control Display
- Pressing the "Esc" button at anytime will call up the Pump Overview display

No Flow Shutdown
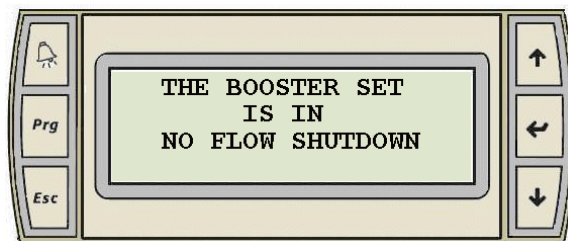
- When the booster set stops because of No Flow Shutdown this display appears
- When the booster set starts up again the system overview display appears
- When the cursor is at the top left corner of the screen pressing the "Up" or "Down" arrow will navigate between all actives operation displays

Low Tank Level Shutdown
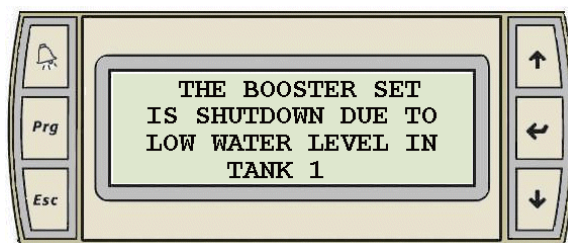
- When the booster set stops due to low water level in tank 1, this corresponding display appears
- When the booster set start up again the system overview display appears
- When the cursor is at the top left corner of the screen pressing the "Up" or "Down" arrow will navigate between all actives operation displays

![ARMSTRONG logo]

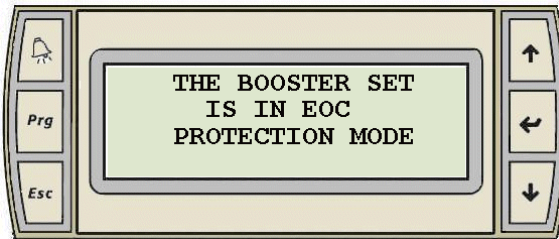**Soft Fill Mode**

```
        THE BOOSTER SET
      IS IN SOFT FILL MODE
```
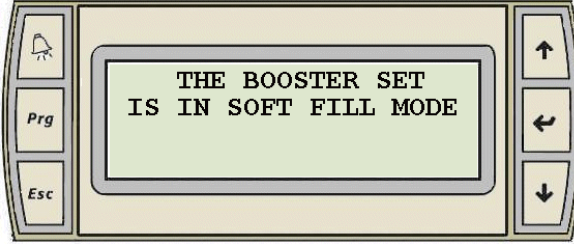
- When the booster set is first started, or after a power cycle and if the Soft Fill Mode is enabled, the following display will appear

End of Curve Protection

- When the booster set is in EOC protection mode, the lag 1 pump will be staged On and this display will be shown.

```
        THE BOOSTER SET
           IS IN EOC
        PROTECTION MODE
```

ALARM MANAGEMENT

Alarm Display

- Pressing the "Alarm" button at any time will call up the alarm display
- If there is no active alarm the following "No More Alarms" display will appear:

```
         No More Alarms
```

- This display will also appear when navigating through a number of Active Alarm displays to indicate when you reach the end of the list of active alarm
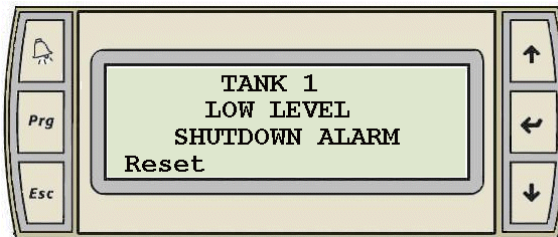- If there is one or more active alarms, an alarm display similar to the one below will appear:
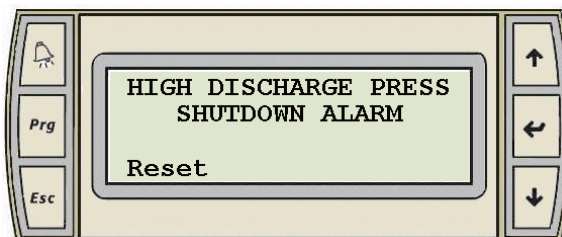
```
      HIGH DISCHARGE PRESS
         SHUTDOWN ALARM

      Reset
```

![ARMSTRONG logo]

- When the cursor is at the top left corner of the screen pressing the "Up" or "Down" arrow will navigate between the active alarm displays
- When you reach the end of the alarm list the "No More Alarms" display will appear
- All alarm displays are setup as the one above
- The top three lines give a brief alarm description
- When the cursor is above "Reset", pressing the "Up" or "Down" arrow will reset all non active alarms. It will also silence the alarm horn and stop the "Alarm" button from flashing red. If there are no more active alarms the "Alarm" button will turn white
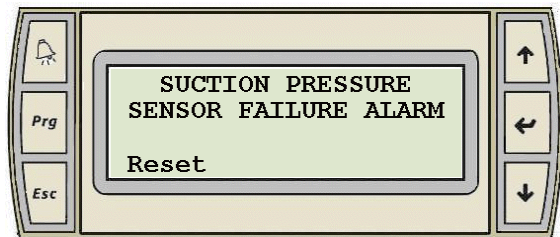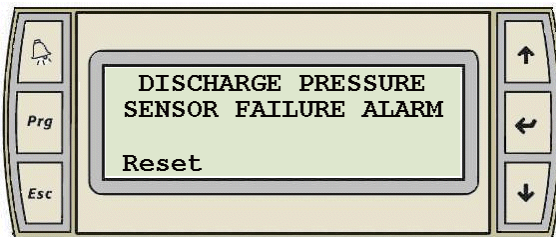
Alarms

- These are all the different Alarm Display in the order they will appear when navigating through the active alarms. Only the displays associated with an active alarm will appear.

1. **Low Water Level Shutdown**

```
            TANK 1
          LOW LEVEL
       SHUTDOWN ALARM
Reset
```

2. **Pressure Sensors Failure**

```
  DISCHARGE PRESSURE
SENSOR FAILURE ALARM

Reset
```

```
   SUCTION PRESSURE
SENSOR FAILURE ALARM

Reset
```

3. **Pressure**

```
LOW SUCTION PRESSURE
   SHUTDOWN ALARM

Reset
```

```
HIGH SUCTION PRESS
   SHUTDOWN ALARM

Reset
```

```
LOW DISCHARGE PRESS
   SHUTDOWN ALARM

Reset
```

```
HIGH DISCHARGE PRESS
   SHUTDOWN ALARM

Reset
```
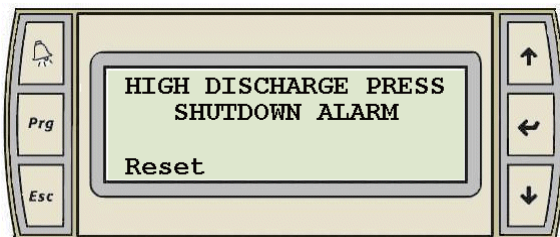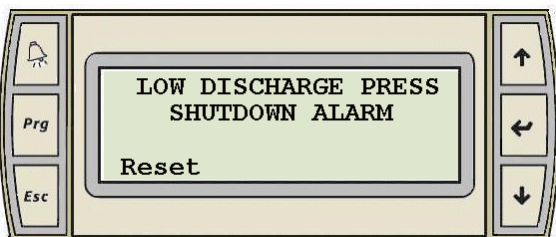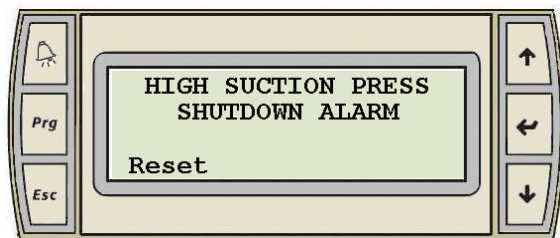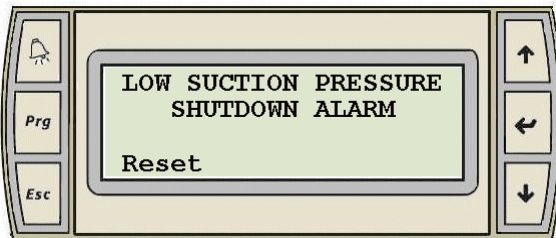
4. **Pump Alarms (Similar for pumps 2 to 5)**

```
        PUMP 1
   RUN FEEDBACK ALARM
 CHECK DRIVE SETTINGS
 Reset
```

```
        PUMP 1
   DRIVE FAULT ALARM
  CHECK FAULT NUMBER
 Reset       IN MANUAL
```

5. **Factory High System Shutdown Alarm**

```
 FACTORY HIGH SYSTEM
    SHUTDOWN ALARM
  16:23:47  17/05/09
 Reset
```
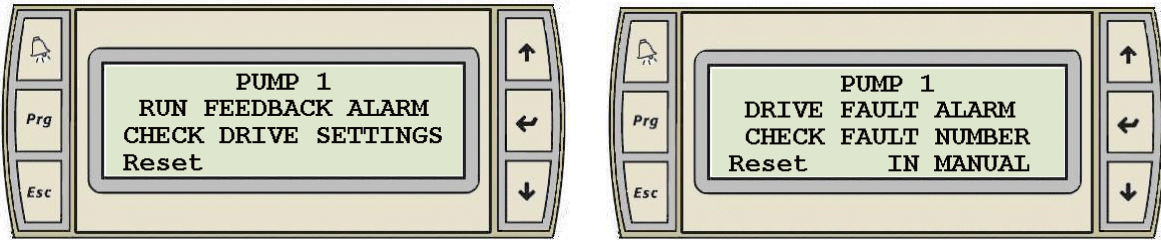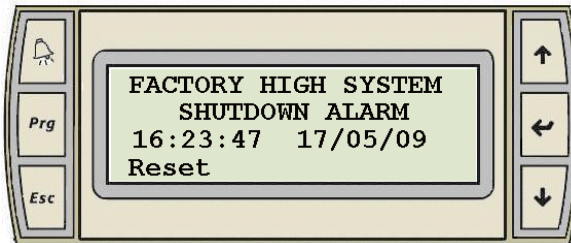
SYSTEM SETUP

To go to the "Main Setup Screen" first go to the "Main Menu" by pressing the "Prg" button.

```
    VARIABLE SPEED
    BOOSTER SYSTEM
      Local On
 SETUP          DIAG
```
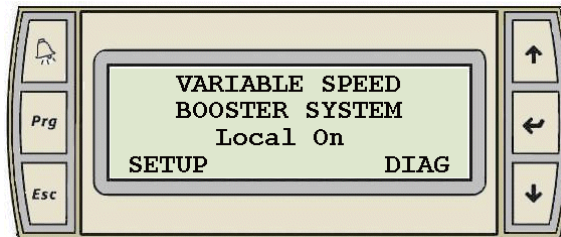
- Press the "Enter" key to move the cursor over "Setup"
- When the cursor is over "Setup" pressing the "Up" or "Down" arrow will call up the Main Setup Screen

Main Setup Screen

```
    BOOSTER SETUP
       Level 0
   For Viewing Only
   Log In   Log Out
```
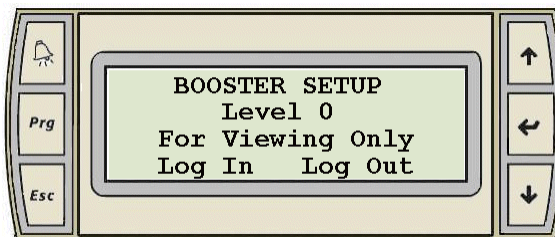
- Level 0 display is for viewing only.
- The Setup Displays are divided in three levels with each level having the same number of displays with a different level of access. Level 0 setup displays are for viewing only and no adjustment can be made. Level 1

setup displays can be used for changing the system setup and restoring the system factory defaults. Level 2 setup displays can be used for changing the system setup, and saving and restoring the system defaults

- To access Level 1 and 2 an operator is required to enter the proper password, which can be obtained by contacting Armstrong After Sales Service
- Pressing the "Enter" key will move the cursor over "Log In" and "Log Out"
- When the cursor is over "Log In" pressing the "Up" or "Down" arrow will call up the "Log In" display
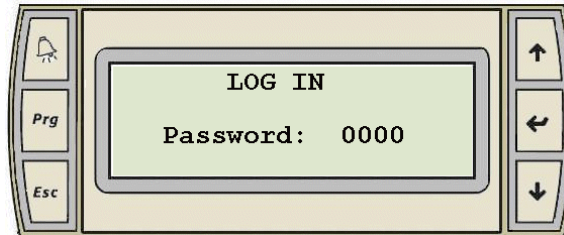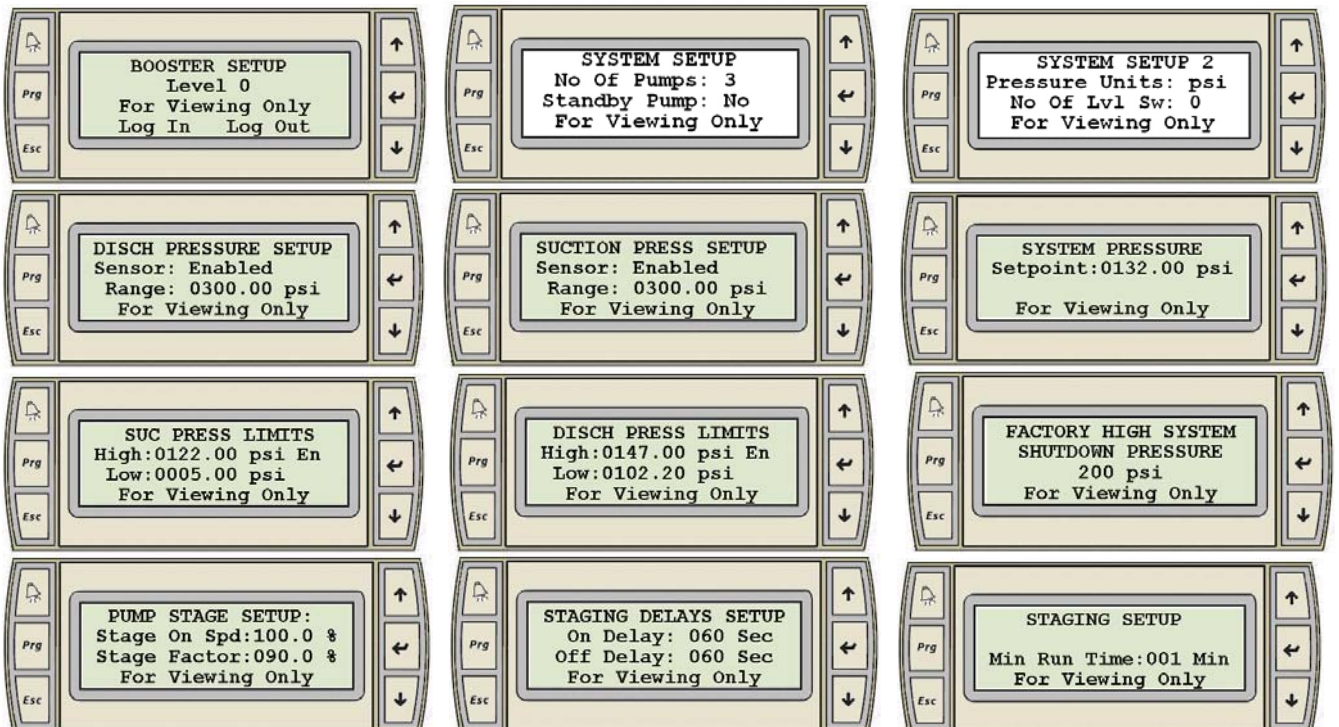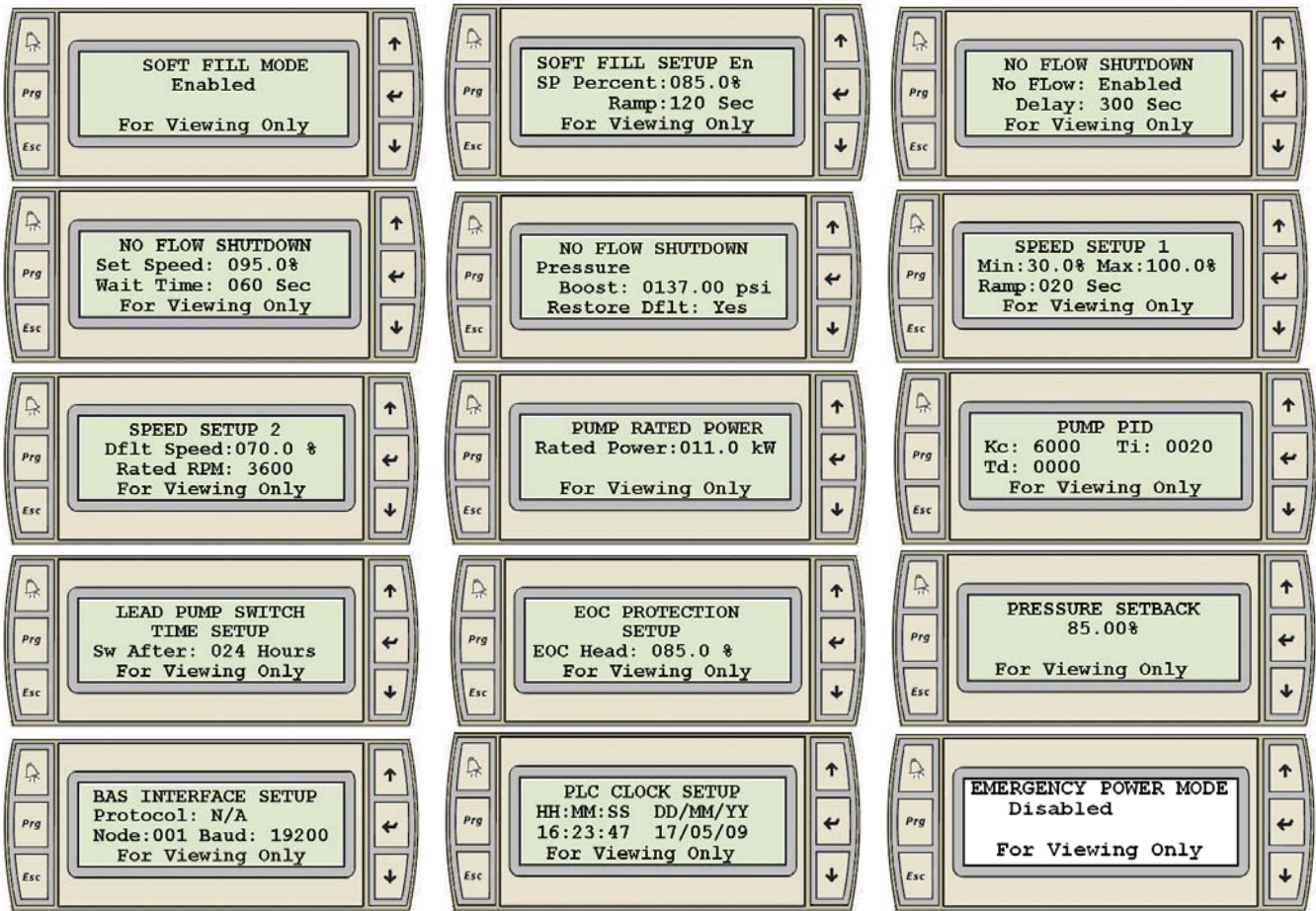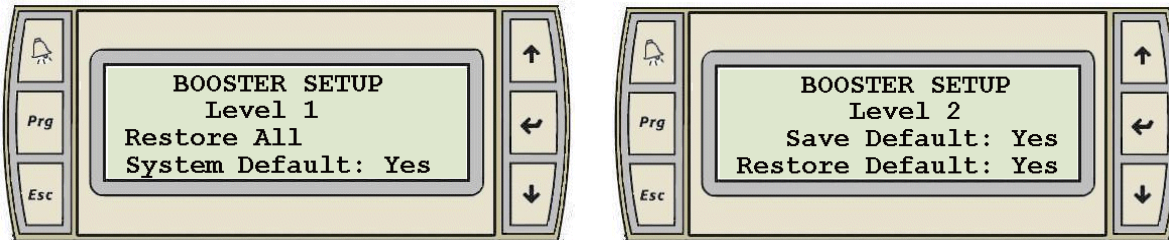
```
              LOG IN

    Password:   0000
```

- Pressing the "Enter" key will move the cursor above the number area
- When the cursor is over the number area, pressing the "Up" or "Down" arrow will increase or decrease the password number
- When you reach the value you want for level 1, or level 2, press the "Enter" key. This will call up the Main Setup Display for the password you selected
- If you enter a wrong password value nothing will happen
- After a password is entered, it will log out automatically after 5 minutes
- When the cursor is over "Log Out" pressing the "Up" or "Down" arrow will clear the password and take away the access to Level 1 and 2 setup screen
- When the cursor is at the top left corner of the screen pressing the "Up" or "Down" arrow will navigate between the Level 0 Setup Displays
- These displays provide a quick look at all the system setup screens
- The following are all the level 0 setup displays:

```
BOOSTER SETUP
    Level 0
For Viewing Only
Log In    Log Out
```
```
   SYSTEM SETUP
No Of Pumps: 3
Standby Pump: No
For Viewing Only
```
```
  SYSTEM SETUP 2
Pressure Units: psi
No Of Lvl Sw: 0
For Viewing Only
```

```
DISCH PRESSURE SETUP
Sensor: Enabled
 Range: 0300.00 psi
  For Viewing Only
```
```
SUCTION PRESS SETUP
Sensor: Enabled
 Range: 0300.00 psi
  For Viewing Only
```
```
  SYSTEM PRESSURE
Setpoint:0132.00 psi

  For Viewing Only
```

```
  SUC PRESS LIMITS
High:0122.00 psi En
Low:0005.00 psi
  For Viewing Only
```
```
  DISCH PRESS LIMITS
High:0147.00 psi En
Low:0102.20 psi
  For Viewing Only
```
```
FACTORY HIGH SYSTEM
SHUTDOWN PRESSURE
     200 psi
 For Viewing Only
```

```
PUMP STAGE SETUP:
Stage On Spd:100.0 %
Stage Factor:090.0 %
 For Viewing Only
```
```
STAGING DELAYS SETUP
 On Delay: 060 Sec
 Off Delay: 060 Sec
  For Viewing Only
```
```
  STAGING SETUP

Min Run Time:001 Min
 For Viewing Only
```

```
SOFT FILL MODE
    Enabled

  For Viewing Only
```

```
SOFT FILL SETUP En
SP Percent:085.0%
        Ramp:120 Sec
   For Viewing Only
```

```
NO FLOW SHUTDOWN
No FLow: Enabled
    Delay: 300 Sec
   For Viewing Only
```

```
NO FLOW SHUTDOWN
Set Speed: 095.0%
Wait Time: 060 Sec
   For Viewing Only
```

```
NO FLOW SHUTDOWN
Pressure
    Boost: 0137.00 psi
   Restore Dflt: Yes
```

```
SPEED SETUP 1
Min:30.0% Max:100.0%
Ramp:020 Sec
   For Viewing Only
```

```
SPEED SETUP 2
Dflt Speed:070.0 %
   Rated RPM: 3600
   For Viewing Only
```

```
PUMP RATED POWER
Rated Power:011.0 kW

  For Viewing Only
```

```
PUMP PID
Kc: 6000   Ti: 0020
Td: 0000
   For Viewing Only
```

```
LEAD PUMP SWITCH
   TIME SETUP
Sw After: 024 Hours
  For Viewing Only
```

```
EOC PROTECTION
     SETUP
EOC Head: 085.0 %
  For Viewing Only
```

```
PRESSURE SETBACK
     85.00%

  For Viewing Only
```

```
BAS INTERFACE SETUP
Protocol: N/A
Node:001 Baud: 19200
   For Viewing Only
```

```
PLC CLOCK SETUP
HH:MM:SS  DD/MM/YY
16:23:47  17/05/09
  For Viewing Only
```

```
EMERGENCY POWER MODE
   Disabled

  For Viewing Only
```

- Only the displays relevant to the system setup will be active and visible

```
BOOSTER SETUP
    Level 1
Restore All
System Default: Yes
```

```
BOOSTER SETUP
    Level 2
  Save Default: Yes
Restore Default: Yes
```

- These are the first displays to appear when entering the Log In password for Level 1 and 2 respectively
- When the cursor is at the top left corner of the screen, pressing the "Up" or "Down" arrow will navigate between the active setup screens of the respective Level
- On the Level 1 display pressing the "Enter" key will move the cursor over "Yes"
- When the cursor is over "Yes" pressing the "Up" or "Down" arrow will Restore the default settings for all the values in all the setup displays. This is indicated by the text changing from "Yes" to "Done" for a few seconds
- On the Level 2 display pressing the "Enter" key will move the cursor over "Yes" beside "Save Default", and "Restore Default"
- When the cursor is over "Yes" beside "Save Default" pressing the "Up" or "Down" arrow will Save the Setup Values in all Setup Displays as Default Values. The text will change between "Yes" to "Ok" for a few seconds
- When the cursor is over "Yes" beside "Restore Default" pressing the "Up" or "Down" arrow will Restore the Default Settings for all the Values in all the Setup Displays. The text will change between "Yes" to "Ok" for a few seconds
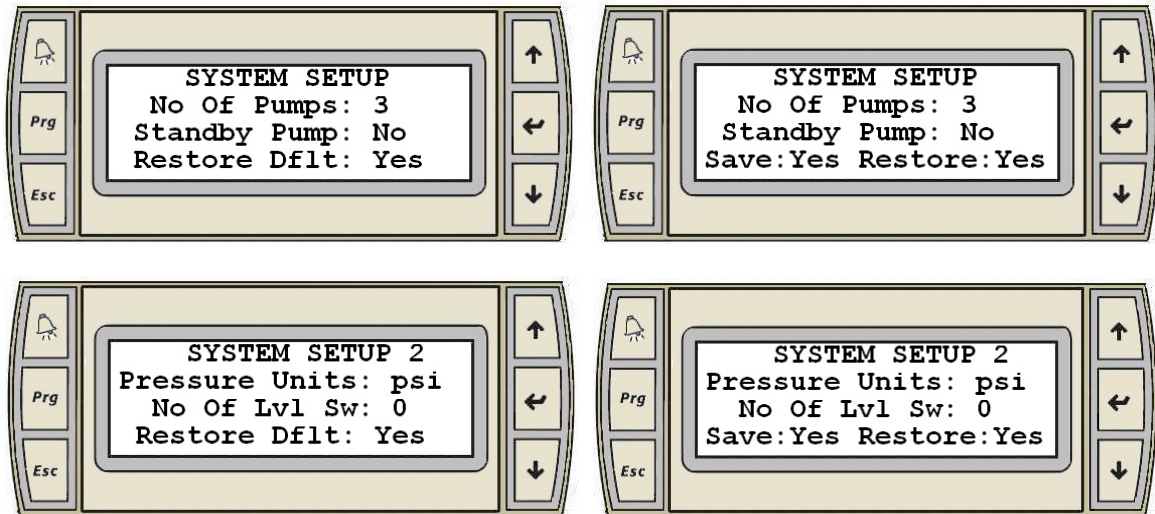
Booster Type

```
        BOOSTER TYPE SETUP
        Booster: Constant
          Drive: No Drive
        Save:Yes Restore:Yes
```
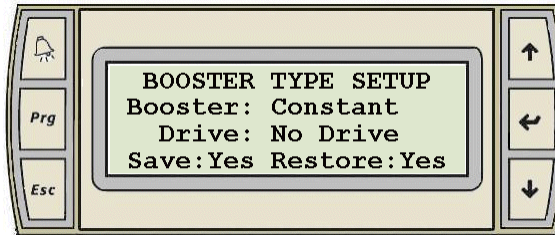
- This is the only display available only in Level 2. This display is not available in Level 0 and 1
- When the cursor is at the top left corner of the screen, pressing the "Up" or "Down" arrow will navigate between the active setup screens of the respective Level
- Pressing the "Enter" key will move the cursor over the field beside Booster, the field beside Drive and over "Yes" beside Save and Restore and back at the top left corner
- When the cursor is over the field beside Booster pressing the "Up" or "Down" arrow will select between "Constant" and "Variable". This how you tell the program you are controlling a constant or variable speed booster
- When the cursor is over the field beside Drive pressing the "Up" or "Down" arrow will select between "No Drive", "ABB ACH 550", and "FC102". No Drive is selected for a constant speed booster. You need to tell the program which type of drive you are using.
- When the cursor is over "Yes" beside "Save Default" pressing the "Up" or "Down" arrow will Save the Booster and Drive Setup as Default Values. The text will change between "Yes" to "Ok" for a few seconds
- When the cursor is over "Yes" beside "Restore Default" pressing the "Up" or "Down" arrow will Restore the Default Settings for the Booster and Drive Setup. The text will change between "Yes" to "Ok" for a few seconds
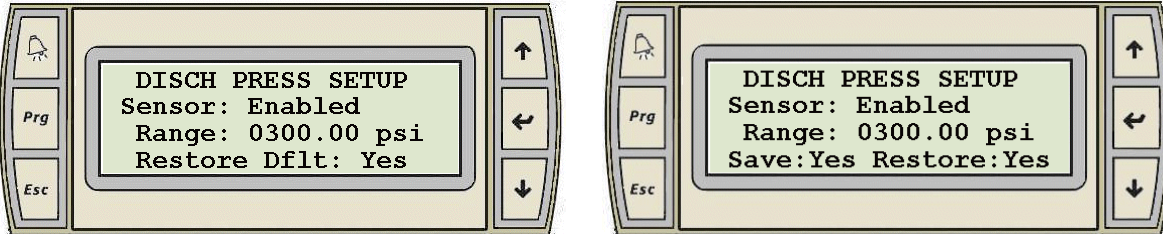
System Setup

```
          SYSTEM SETUP
        No Of Pumps: 3
        Standby Pump: No
        Restore Dflt: Yes
```

```
          SYSTEM SETUP
        No Of Pumps: 3
        Standby Pump: No
        Save:Yes Restore:Yes
```

```
          SYSTEM SETUP 2
        Pressure Units: psi
          No Of Lvl Sw: 0
        Restore Dflt: Yes
```

```
          SYSTEM SETUP 2
        Pressure Units: psi
          No Of Lvl Sw: 0
        Save:Yes Restore:Yes
```

- When the cursor is at the top left corner of the screen, pressing the "Up" or "Down" arrow will navigate between the active setup screens of the respective Level
- Pressing the "Enter" key will move the cursor over both values, over "Yes" beside Save and Restore and back at the top left corner
- When the cursor is over the value beside "No of Pumps", press the "Up" or "Down" key to select the number of pumps
- When the cursor is over the value beside "No of Lvl Sw", press the "Up" or "Down" key to select the number of level switch connected to the booster set
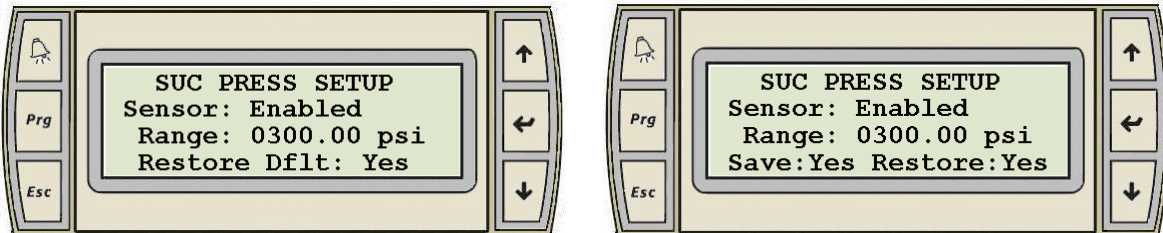
- When the cursor is over "Yes" beside "Save" pressing the "Up" or "Down" arrow will Save the settings on this screen as Default Values. The text will change between "Yes" to "Ok" for a few seconds
- When the cursor is over "Yes" beside "Restore Dflt" or "Restore" pressing the "Up" or "Down" arrow will Restore the Default Settings for the settings on this screen. The text will change between "Yes" to "Ok" for a few seconds
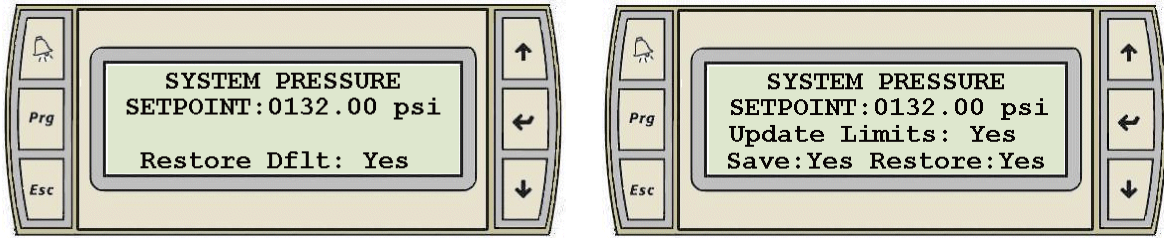
Discharge Pressure Sensor

- When the cursor is at the top left corner of the screen, pressing the "Up" or "Down" arrow will navigate between the active setup screens of the respective Level
- Pressing the "Enter" key will move the cursor over the text beside "Sensor", the value beside "Range", over the engineering unit, over "Yes" beside Save and Restore, and back at the top left corner
- When the cursor is over the text beside "Sensor" pressing the "Up" or "Down" key will select between disabling (Disabled), and enabling (Enabled) the discharge pressure sensor
- When the cursor is over the value beside "Range", pressing the "Up" or "Down" key will set the range for the discharge pressure sensor to the desired value
- When the cursor is over the Engineering Unit, pressing the "Up" or "Down" key will select between: psi, ft, Kpa, m, and bar
- When the cursor is over "Yes" beside "Save" pressing the "Up" or "Down" arrow will Save the settings on this screen as Default Values. The text will change between "Yes" to "Ok" for a few seconds
- When the cursor is over "Yes" beside "Restore Dflt" or "Restore" pressing the "Up" or "Down" arrow will Restore the Default Settings for the settings on this screen. The text will change between "Yes" to "Ok" for a few seconds
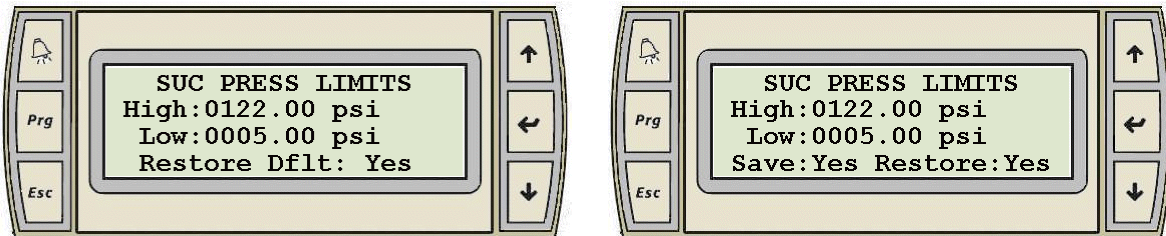
Suction Pressure Sensor

- When the cursor is at the top left corner of the screen, pressing the "Up" or "Down" arrow will navigate between the active setup screens of the respective Level
- Pressing the "Enter" key will move the cursor over the text beside "Sensor", the value beside "Range", over "Yes" beside Save and Restore, and back at the top left corner
- When the cursor is over the text beside "Sensor" pressing the "Up" or "Down" key will select between disabling (Disabled), and enabling (Enabled) the suction pressure sensor
- When the cursor is over the value beside "Range", pressing the "Up" or "Down" key will set the range for the suction pressure sensor to the desired value
- When the cursor is over "Yes" beside "Save" pressing the "Up" or "Down" arrow will Save the settings on this screen as Default Values. The text will change between "Yes" to "Ok" for a few seconds
- When the cursor is over "Yes" beside "Restore Dflt" or "Restore" pressing the "Up" or "Down" arrow will Restore the Default Settings for the settings on this screen. The text will change between "Yes" to "Ok" for a few seconds

![Armstrong logo]

System Pressure Setpoint

```
    SYSTEM PRESSURE
SETPOINT:0132.00 psi


  Restore Dflt: Yes
```

```
    SYSTEM PRESSURE
SETPOINT:0132.00 psi
Update Limits: Yes
Save:Yes Restore:Yes
```
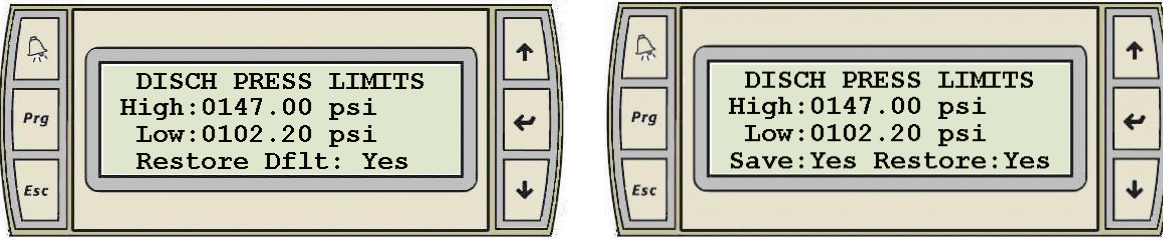
- When the cursor is at the top left corner of the screen, pressing the "Up" or "Down" arrow will navigate between the active setup screens of the respective Level
- Pressing the "Enter" key will move the cursor over the value beside "Setpoint", over "Yes" beside Save and Restore, and back at the top left corner
- When the cursor is over the value beside "Setpoint", pressing the "Up" or "Down" key will set the System pressure Setpoint to the desired value
- When the cursor is over "Yes" beside "Save" pressing the "Up" or "Down" arrow will Save the settings on this screen as Default Values. The text will change between "Yes" to "Ok" for a few seconds
- When the cursor is over "Yes" beside "Restore Dflt" or "Restore" pressing the "Up" or "Down" arrow will Restore the Default Settings for the settings on this screen. The text will change between "Yes" to "Ok" for a few seconds

Suction Pressure Alarm Setpoints

```
  SUC PRESS LIMITS
High:0122.00 psi
 Low:0005.00 psi
 Restore Dflt: Yes
```

```
  SUC PRESS LIMITS
High:0122.00 psi
 Low:0005.00 psi
Save:Yes Restore:Yes
```

- When the cursor is at the top left corner of the screen, pressing the "Up" or "Down" arrow will navigate between the active setup screens of the respective Level
- This display is only active when the suction pressure sensor is enabled
- Pressing the "Enter" key will move the cursor over the value beside "High", the value beside "Low", over "Yes" beside Save and Restore, and back at the top left corner
- When the cursor is over the value beside "High", pressing the "Up" or "Down" key will set the High Suction Pressure Shutdown Setpoint to the desired value
- When the cursor is over the value beside "Low", pressing the "Up" or "Down" key will set the Low Suction Pressure Shutdown Setpoint to the desired value
- It is possible to Enable or Disable the High Limit alarm
- When the cursor is over "Yes" beside "Save" pressing the "Up" or "Down" arrow will Save the settings on this screen as Default Values. The text will change between "Yes" to "Ok" for a few seconds
- When the cursor is over "Yes" beside "Restore Dflt" or "Restore" pressing the "Up" or "Down" arrow will Restore the Default Settings for the settings on this screen. The text will change between "Yes" to "Ok" for a few seconds
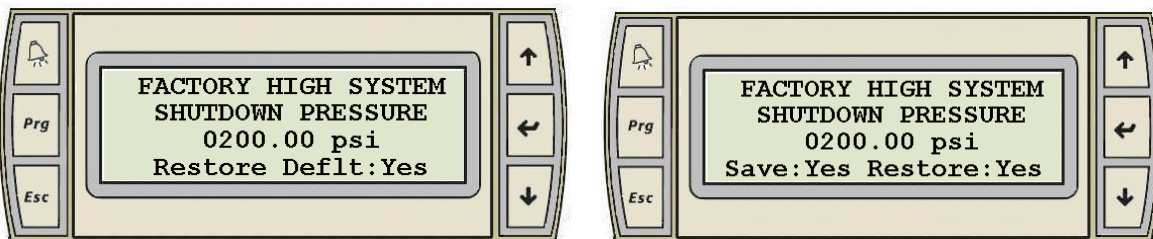
Discharge Pressure Alarm Setpoints

```
DISCH PRESS LIMITS
High:0147.00 psi
 Low:0102.20 psi
 Restore Dflt: Yes
```

```
DISCH PRESS LIMITS
High:0147.00 psi
 Low:0102.20 psi
Save:Yes Restore:Yes
```

- When the cursor is at the top left corner of the screen, pressing the "Up" or "Down" arrow will navigate between the active setup screens of the respective Level
- Pressing the "Enter" key will move the cursor over the value beside "High", the value beside "Low", over "Yes" beside Save and Restore, and back at the top left corner
- When the cursor is over the value beside "High", pressing the "Up" or "Down" key will set the High Discharge Pressure Shutdown Setpoint to the desired value
- When the cursor is over the value beside "Low", pressing the "Up" or "Down" key will set the Low Discharge Pressure Shutdown Setpoint to the desired value
- It is possible to Enable or Disable the High Limit alarm
- When the cursor is over "Yes" beside "Save" pressing the "Up" or "Down" arrow will Save the settings on this screen as Default Values. The text will change between "Yes" to "Ok" for a few seconds
- When the cursor is over "Yes" beside "Restore Dflt" or "Restore" pressing the "Up" or "Down" arrow will Restore the Default Settings for the settings on this screen. The text will change between "Yes" to "Ok" for a few seconds
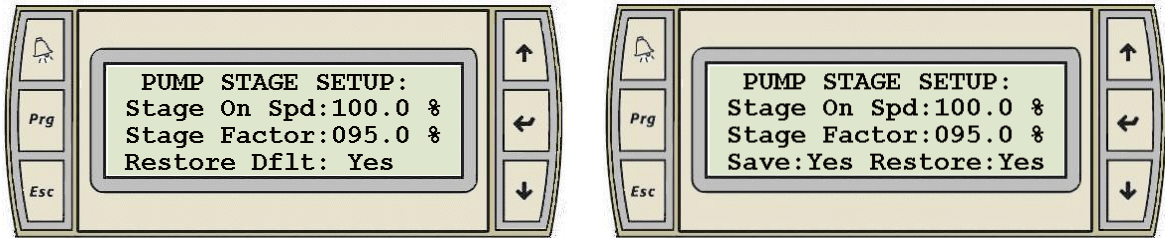
Factory High System Shutdown Pressure

- When the cursor is at the top left corner of the screen, pressing the "Up" or "Down" arrow will navigate between the active setup screens of the respective Level.
- Pressing the "Enter" key will move the cursor to select the Factory High System Shutdown Pressure. If the pressure units are psi, the choices are: 200, 232, 370 and 400. The equivalents are available for different pressure units.
- When the cursor is over "Yes" beside "Save" pressing the "Up" or "Down" arrow will **Save the settings on this screen as Default Values**. The text will change between "Yes" to "Ok" for a few seconds.
- When the cursor is over "Yes" beside "Restore Dflt" or "Restore" pressing the "Up" or "Down" arrow will **Restore the Default Settings for the settings on this screen**. The text will change between "Yes" to "Ok" for a few seconds.
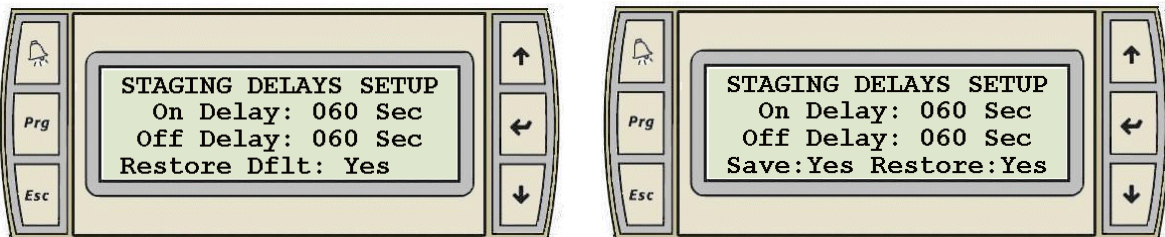
```
FACTORY HIGH SYSTEM
SHUTDOWN PRESSURE
   0200.00 psi
 Restore Deflt:Yes
```

```
FACTORY HIGH SYSTEM
SHUTDOWN PRESSURE
   0200.00 psi
Save:Yes Restore:Yes
```

Speed Staging Setpoint

```
   PUMP STAGE SETUP:
Stage On Spd:100.0 %
Stage Factor:095.0 %
Restore Dflt: Yes
```

```
   PUMP STAGE SETUP:
Stage On Spd:100.0 %
Stage Factor:095.0 %
Save:Yes Restore:Yes
```
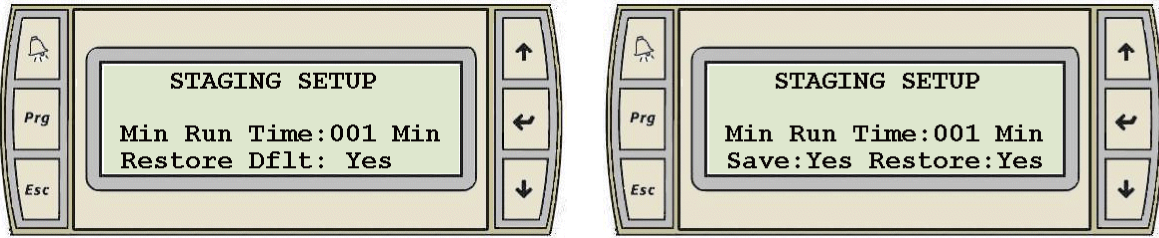
- There are similar displays for Lag1 to Lag 4 pump staging setup
- Line 1 indicates the actual speed the pumps are running
- When the cursor is at the top left corner of the screen, pressing the "Up" or "Down" arrow will navigate between the active setup screens of the respective Level
- Pressing the "Enter" key will move the cursor over the value beside "Lag 1 On", the value beside "Lag 1 Off", over "Yes" beside Save and Restore, and back at the top left corner
- When the cursor is over the value beside "Lag 1 On", pressing the "Up" or "Down" key will set the Speed Setpoint, to stage on the Lag 1 pump, to the desired value
- When the cursor is over the value beside "Lag 1 Off", pressing the "Up" or "Down" key will set the Speed Setpoint, to stage off the Lag 1 pump, to the desired value
- When the cursor is over "Yes" beside "Save" pressing the "Up" or "Down" arrow will Save the settings on this screen as Default Values. The text will change between "Yes" to "Ok" for a few seconds
- When the cursor is over "Yes" beside "Restore Dflt" or "Restore" pressing the "Up" or "Down" arrow will Restore the Default Settings for the settings on this screen. The text will change between "Yes" to "Ok" for a few seconds

Staging Delay Setpoint

```
STAGING DELAYS SETUP
 On Delay: 060 Sec
 Off Delay: 060 Sec
Restore Dflt: Yes
```

```
STAGING DELAYS SETUP
 On Delay: 060 Sec
 Off Delay: 060 Sec
Save:Yes Restore:Yes
```
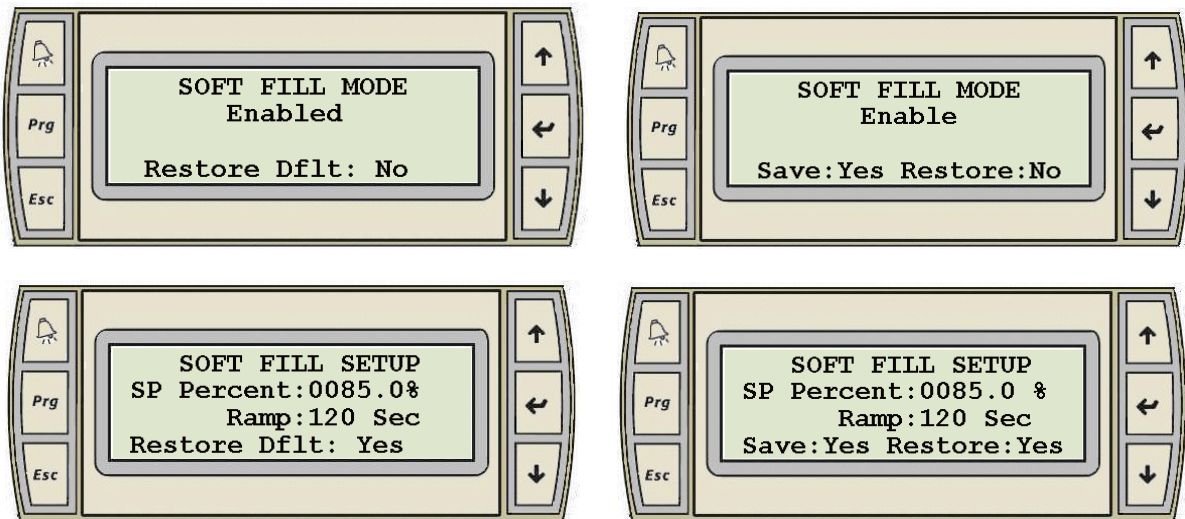
- When the cursor is at the top left corner of the screen, pressing the "Up" or "Down" arrow will navigate between the active setup screens of the respective Level
- Pressing the "Enter" key will move the cursor over the value beside "On Delay", the value beside "Off Delay", over "Yes" beside Save and Restore, and back at the top left corner
- When the cursor is over the value beside "On Delay", pressing the "Up" or "Down" key will set the Stage On Delay Setpoint to the desired value
- When the cursor is over the value beside "Off Delay", pressing the "Up" or "Down" key will set the Stage Off Delay Setpoint to the desired value
- When the cursor is over "Yes" beside "Save" pressing the "Up" or "Down" arrow will Save the settings on this screen as Default Values. The text will change between "Yes" to "Ok" for a few seconds
- When the cursor is over "Yes" beside "Restore Dflt" or "Restore" pressing the "Up" or "Down" arrow will Restore the Default Settings for the settings on this screen. The text will change between "Yes" to "Ok" for a few seconds

Minimum Run Time

```
        STAGING SETUP

   Min Run Time:001 Min
   Restore Dflt: Yes
```

```
        STAGING SETUP

   Min Run Time:001 Min
   Save:Yes Restore:Yes
```
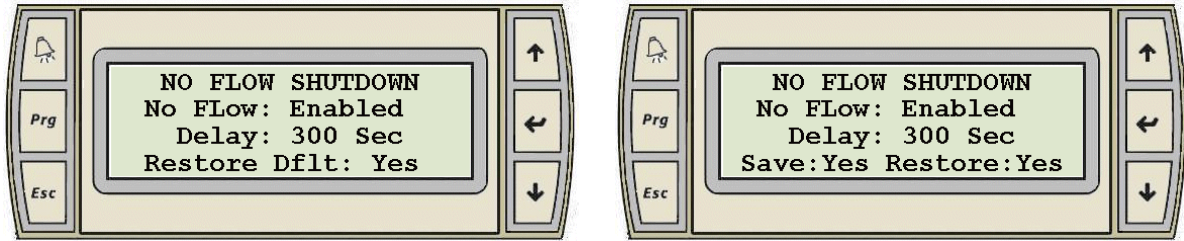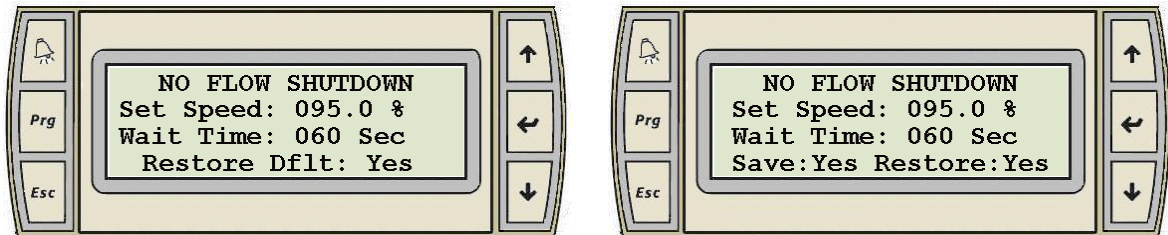
- When the cursor is at the top left corner of the screen, pressing the "Up" or "Down" arrow will navigate between the active setup screens of the respective Level
- Pressing the "Enter" key will move the cursor over the value beside "Min Run Time", over "Yes" beside Save and Restore, and back at the top left corner
- When the cursor is over the value beside "Min Run Time", pressing the "Up" or "Down" key will set the Pump Minimum Run Time Setpoint to the desired value. This is the minimum run time the lag pump will run before shutting down.
- When the cursor is over "Yes" beside "Save" pressing the "Up" or "Down" arrow will Save the settings on this screen as Default Values. The text will change between "Yes" to "Ok" for a few seconds
- When the cursor is over "Yes" beside "Restore Dflt" or "Restore" pressing the "Up" or "Down" arrow will Restore the Default Settings for the settings on this screen. The text will change between "Yes" to "Ok" for a few seconds

Soft Fill Mode

```
      SOFT FILL MODE
         Enabled

     Restore Dflt: No
```

```
      SOFT FILL MODE
         Enable

     Save:Yes Restore:No
```

```
      SOFT FILL SETUP
   SP Percent:0085.0%
          Ramp:120 Sec
   Restore Dflt: Yes
```

```
      SOFT FILL SETUP
   SP Percent:0085.0 %
          Ramp:120 Sec
   Save:Yes Restore:Yes
```
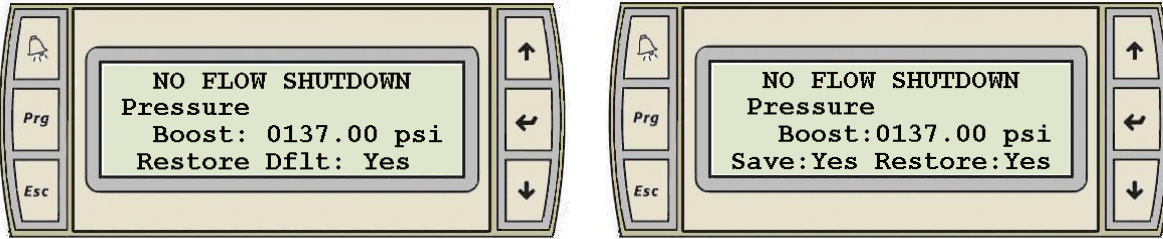
- When the cursor is at the top left corner of the screen, pressing the "Up" or "Down" arrow will navigate between the active setup screens of the respective Level.
- Pressing the "Enter" key will move the cursor over the value beside "SP Percent", the value beside "Ramp", over "Yes" beside "Save" and "Restore", and back at the top left corner.
- When the cursor is over the value beside "SP Percent", pressing the "Up" or "Down" key will set the Soft Fill Setpoint percent to the desired value. This is a percentage of the System Pressure Setpoint.
- When the cursor is over the value beside "Ramp", pressing the "Up" or "Down" key will set the Ramp time to the desired value. This is the pump speed ramp time during Soft Fill Mode.
- When the cursor is over "Yes" beside "Save" pressing the "Up" or "Down" arrow will **Save the settings on this screen as Default Values**. The text will change between "Yes" to "Ok" for a few seconds.
- When the cursor is over "Yes" beside "Restore Dflt" or "Restore" pressing the "Up" or "Down" arrow will **Restore the Default Settings for the settings on this screen**. The text will change between "Yes" to "Ok" for a few seconds.

No Flow Shutdown Delay

```
         NO FLOW SHUTDOWN
        No FLow: Enabled
          Delay: 300 Sec
        Restore Dflt: Yes
```

```
         NO FLOW SHUTDOWN
        No FLow: Enabled
          Delay: 300 Sec
        Save:Yes Restore:Yes
```

- When the cursor is at the top left corner of the screen, pressing the "Up" or "Down" arrow will navigate between the active setup screens of the respective Level
- Pressing the "Enter" key will move the cursor over the text beside "No Flow", the value beside "Delay", over "Yes" beside Save and Restore, and back at the top left corner
- When the cursor is over the text beside "No Flow", pressing the "Up" or "Down" key will toggle the text between "Disabled", and "Enabled"
- When the cursor is over the value beside "Delay", pressing the "Up" or "Down" key will set the No Flow Shutdown Delay Setpoint to the desired value
- When the cursor is over "Yes" beside "Save" pressing the "Up" or "Down" arrow will Save the settings on this screen as Default Values. The text will change between "Yes" to "Ok" for a few seconds
- When the cursor is over "Yes" beside "Restore Dflt" or "Restore" pressing the "Up" or "Down" arrow will Restore the Default Settings for the settings on this screen. The text will change between "Yes" to "Ok" for a few seconds

No Flow Shutdown Speed

```
         NO FLOW SHUTDOWN
        Set Speed: 095.0 %
        Wait Time: 060 Sec
         Restore Dflt: Yes
```

```
         NO FLOW SHUTDOWN
        Set Speed: 095.0 %
        Wait Time: 060 Sec
        Save:Yes Restore:Yes
```

- This display is only active when the booster type is set to variable speed and No Flow Shutdown is enabled
- When the cursor is at the top left corner of the screen, pressing the "Up" or "Down" arrow will navigate between the active setup screens of the respective Level
- Pressing the "Enter" key will move the cursor over the value beside "Set Speed", over the value beside "Reset", over "Yes" beside Save and Restore, and back at the top left corner
- When the cursor is over the value beside "Set Speed", pressing the "Up" or "Down" key will set the No Flow Shutdown Speed Setpoint to the desired value. The booster will be in no flow shutdown when the speed goes below this setpoint for the set period of time
- When the cursor is over the value beside "Reset", pressing the "Up" or "Down" key will set the Reset Pressure Setpoint to the desired value. The lead pump will start when the pressure drops below the pressure setpoint minus the reset pressure value
- When the cursor is over "Yes" beside "Save" pressing the "Up" or "Down" arrow will Save the settings on this screen as Default Values. The text will change between "Yes" to "Ok" for a few seconds
- When the cursor is over "Yes" beside "Restore Dflt" or "Restore" pressing the "Up" or "Down" arrow will Restore the Default Settings for the settings on this screen. The text will change between "Yes" to "Ok" for a few seconds

No Flow Shutdown Pressure

- This display is only active when No Flow Shutdown is enabled
- When the cursor is at the top left corner of the screen, pressing the "Up" or "Down" arrow will navigate between the active setup screens of the respective Level
- Pressing the "Enter" key will move the cursor over the value beside "Boost", over "Yes" beside Save and Restore, and back at the top left corner
- When the cursor is over the value beside "Boost", pressing the "Up" or "Down" key will set the No Flow Shutdown Pressure Boost Setpoint to the desired value. When in no flow shutdown, the booster will increase the system pressure to the system pressure setpoint plus the pressure boost setpoint before shutting down the lead pump
- When the cursor is over "Yes" beside "Save" pressing the "Up" or "Down" arrow will Save the settings on this screen as Default Values. The text will change between "Yes" to "Ok" for a few seconds
- When the cursor is over "Yes" beside "Restore Dflt" or "Restore" pressing the "Up" or "Down" arrow will Restore the Default Settings for the settings on this screen. The text will change between "Yes" to "Ok" for a few seconds
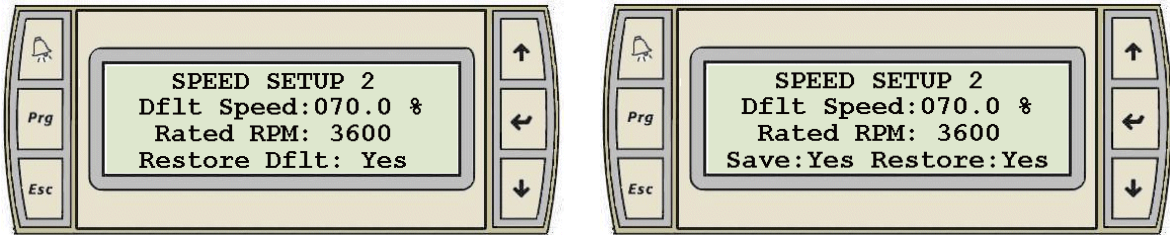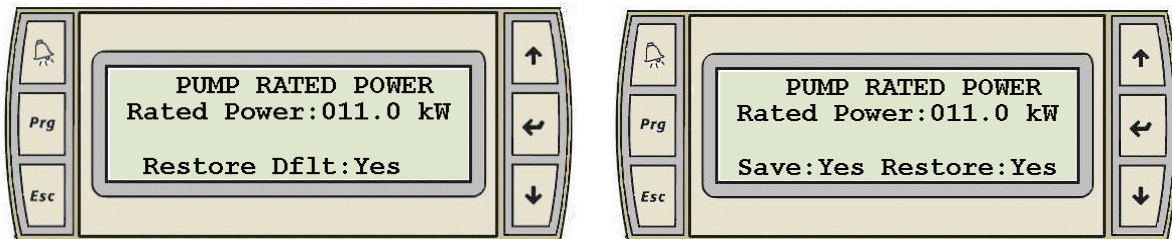
Speed Setpoints Display 1
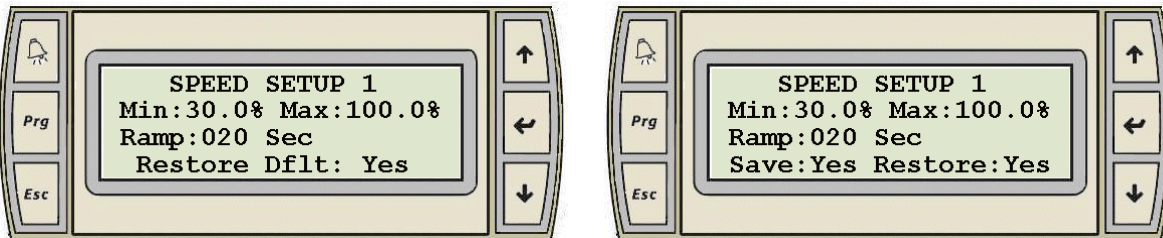
- When the cursor is at the top left corner of the screen, pressing the "Up" or "Down" arrow will navigate between the active setup screens of the respective Level
- Pressing the "Enter" key will move the cursor over the value beside "Min", over the value beside "Max", over the value beside "Ramp", over "Yes" beside Save and Restore, and back at the top left corner
- When the cursor is over the value beside "Min", pressing the "Up" or "Down" key will set the Minimum Pump Speed setpoint to the desired value. This value helps the pump reach the required speed quickly
- When the cursor is over the value beside "Max", pressing the "Up" or "Down" key will set the Maximum Pump Speed setpoint to the desired value
- When the cursor is over the value beside "Ramp", pressing the "Up" or "Down" key will set the Pump Ramping Speed setpoint to the desired value. This is the minimum time the pump will take to go from 0% to 100% speed.
- When the cursor is over "Yes" beside "Save" pressing the "Up" or "Down" arrow will Save the settings on this screen as Default Values. The text will change between "Yes" to "Ok" for a few seconds
- When the cursor is over "Yes" beside "Restore Dflt" or "Restore" pressing the "Up" or "Down" arrow will Restore the Default Settings for the settings on this screen. The text will change between "Yes" to "Ok" for a few seconds

![Armstrong logo]

Speed Setpoints Display 2

```
      SPEED SETUP 2
Dflt Speed:070.0 %
 Rated RPM: 3600
Restore Dflt: Yes
```

```
      SPEED SETUP 2
Dflt Speed:070.0 %
 Rated RPM: 3600
Save:Yes Restore:Yes
```
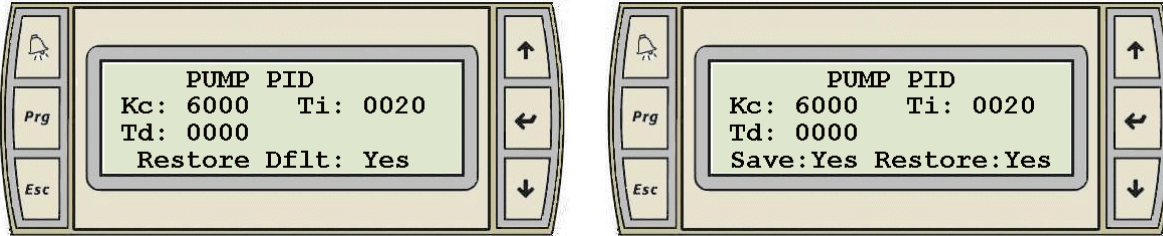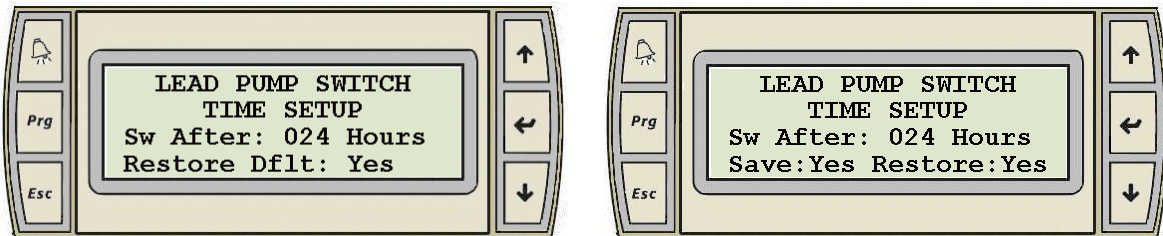
- When the cursor is at the top left corner of the screen, pressing the "Up" or "Down" arrow will navigate between the active setup screens of the respective Level
- Pressing the "Enter" key will move the cursor over the value beside "Dflt Speed", over the value beside "Rated RPM", over "Yes" beside Save and Restore, and back at the top left corner
- When the cursor is over the value beside "Dflt Speed", pressing the "Up" or "Down" key will set the Default Pump Speed setpoint to the desired value. This is the speed the pumps will default to when the discharge pressure sensor fails
- When the cursor is over the value beside "Rated RPM", pressing the "Up" or "Down" key will set the Drive Rated RPM to the desired value. This is to display the pump speed in RPM
- When the cursor is over "Yes" beside "Save" pressing the "Up" or "Down" arrow will Save the settings on this screen as Default Values. The text will change between "Yes" to "Ok" for a few seconds
- When the cursor is over "Yes" beside "Restore Dflt" or "Restore" pressing the "Up" or "Down" arrow will Restore the Default Settings for the settings on this screen. The text will change between "Yes" to "Ok" for a few seconds

Pump Rated Power

```
    PUMP RATED POWER
Rated Power:011.0 kW

  Restore Dflt:Yes
```

```
    PUMP RATED POWER
Rated Power:011.0 kW

  Save:Yes Restore:Yes
```
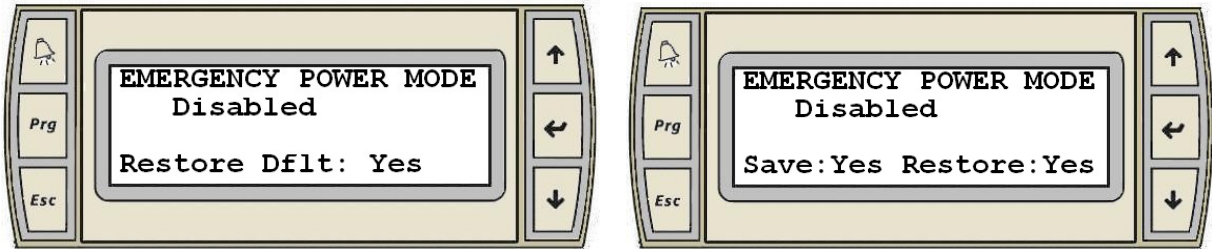
- When the cursor is at the top left corner of the screen, pressing the "Up" or "Down" arrow will navigate between the active setup screens of the respective Level.
- Pressing the "Enter" key will move the cursor over the value beside "Rated Power", over "Yes" beside Save and Restore, and back at the top left corner.
- When the cursor is over the value beside "Rated Power", pressing the "Up" or "Down" key will set the Pump Rated Power (in kW) to the desired value.
- When the cursor is over "Yes" beside "Save" pressing the "Up" or "Down" arrow will **Save the settings on this screen as Default Values**. The text will change between "Yes" to "Ok" for a few seconds.
- When the cursor is over "Yes" beside "Restore Dflt" or "Restore" pressing the "Up" or "Down" arrow will **Restore the Default Settings for the settings on this screen**. The text will change between "Yes" to "Ok" for a few seconds.

PID

- When the cursor is at the top left corner of the screen, pressing the "Up" or "Down" arrow will navigate between the active setup screens of the respective Level
- Pressing the "Enter" key will move the cursor over the value beside "Kc", over the value beside "Ti", over the value beside "Td", over "Yes" beside Save and Restore, and back at the top left corner
- When the cursor is over the value beside "Kc", pressing the "Up" or "Down" key will set the PID Proportional Constant Kc to the desired value
- When the cursor is over the value beside "Ti", pressing the "Up" or "Down" key will set the PID Integral Time Constant Ti to the desired value
- When the cursor is over the value beside "Td", pressing the "Up" or "Down" key will set the PID Derivative Time Constant Td to the desired value
- The actual system pressure is displayed on the screen to help when adjusting the PID constant
- When the cursor is over "Yes" beside "Save" pressing the "Up" or "Down" arrow will Save the settings on this screen as Default Values. The text will change between "Yes" to "Ok" for a few seconds
- When the cursor is over "Yes" beside "Restore Dflt" or "Restore" pressing the "Up" or "Down" arrow will Restore the Default Settings for the settings on this screen. The text will change between "Yes" to "Ok" for a few seconds
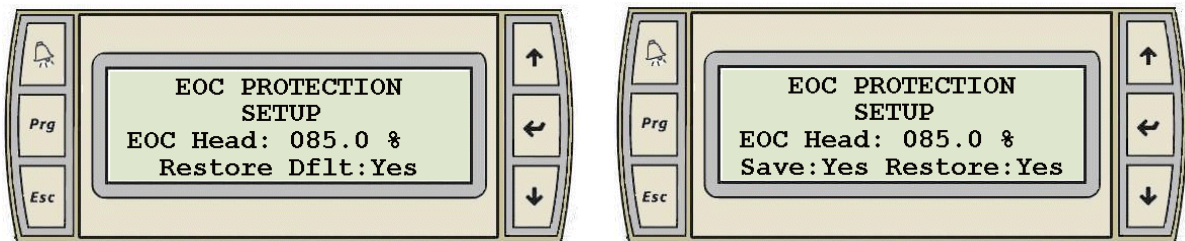
Lead Pump Switch Time

- When the cursor is at the top left corner of the screen, pressing the "Up" or "Down" arrow will navigate between the active setup screens of the respective Level
- Pressing the "Enter" key will move the cursor over the value beside "Sw After", over "Yes" beside Save and Restore, and back at the top left corner
- When the cursor is over the value beside "Sw After", pressing the "Up" or "Down" key will set the Lead Pump Run Hours Setpoint to the desired value. The Lag 1 pump will become the Lead pump after the Lead pump runs for the set amount of time
- When the cursor is over "Yes" beside "Save" pressing the "Up" or "Down" arrow will Save the settings on this screen as Default Values. The text will change between "Yes" to "Ok" for a few seconds
- When the cursor is over "Yes" beside "Restore Dflt" or "Restore" pressing the "Up" or "Down" arrow will Restore the Default Settings for the settings on this screen. The text will change between "Yes" to "Ok" for a few seconds

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Emergency Power Mode

```
EMERGENCY POWER MODE
      Disabled

Restore Dflt: Yes
```

```
EMERGENCY POWER MODE
      Disabled

Save:Yes Restore:Yes
```
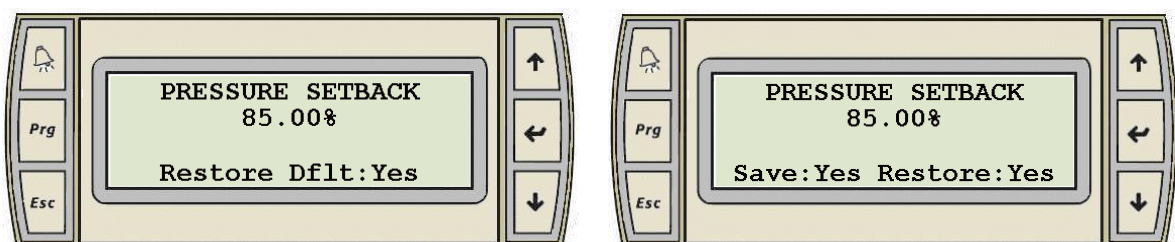
- When the cursor is at the top left corner of the screen, pressing the "Up" or "Down" arrow will navigate between the active setup screens of the respective Level.
- Pressing the "Enter" key will move the cursor over the "Disabled" text, over "Yes" beside Save and Restore, and back at the top left corner.
- When the cursor is over "Disabled" pressing the "Up" or "Down" arrow will toggle the text between "Disabled", and "Enabled"
- When the cursor is over "Yes" beside "Save" pressing the "Up" or "Down" arrow will Save the settings on this screen as Default Values. The text will change between "Yes" to "Ok" for a few seconds.
- When the cursor is over "Yes" beside "Restore Dflt" or "Restore" pressing the "Up" or "Down" arrow will Restore the Default Settings for the settings on this screen. The text will change between "Yes" to "Ok" for a few seconds.

End of Curve (EOC) Protection

```
    EOC PROTECTION
        SETUP
EOC Head: 085.0 %
    Restore Dflt:Yes
```

```
    EOC PROTECTION
        SETUP
EOC Head: 085.0 %
Save:Yes Restore:Yes
```
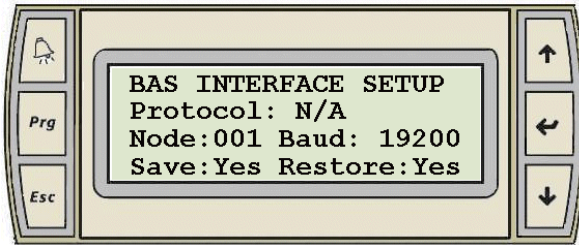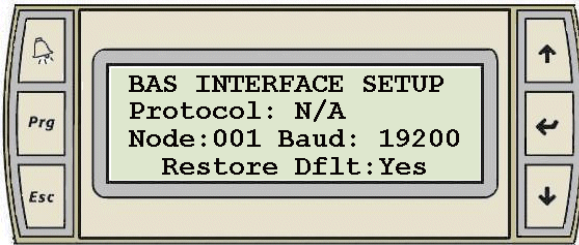
- When the cursor is at the top left corner of the screen, pressing the "Up" or "Down" arrow will navigate between the active setup screens of the respective Level.
- Pressing the "Enter" key will move the cursor over the value beside "EOC Head", over "Yes" beside Save and Restore, and back at the top left corner.
- When the cursor is over the value beside "EOC Head", pressing the "Up" or "Down" key will set the Setpoint to the desired value. This is the Full Speed EOC Head in percent of design head.
- When the cursor is over "Yes" beside "Save" pressing the "Up" or "Down" arrow will **Save the settings on this screen as Default Values**. The text will change between "Yes" to "Ok" for a few seconds.
- When the cursor is over "Yes" beside "Restore Dflt" or "Restore" pressing the "Up" or "Down" arrow will **Restore the Default Settings for the settings on this screen**. The text will change between "Yes" to "Ok" for a few seconds.
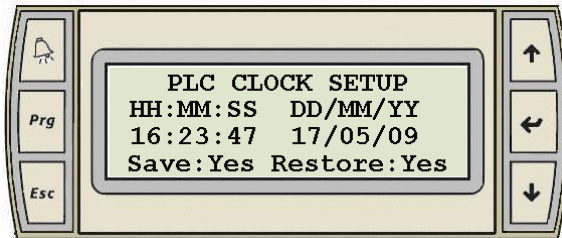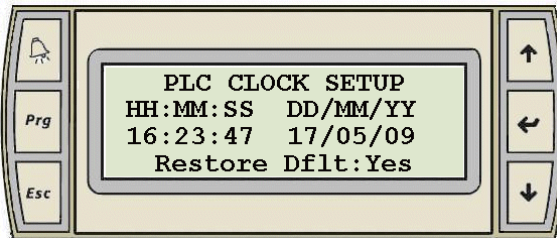
Pressure Setback

```
   PRESSURE SETBACK
       85.00%

   Restore Dflt:Yes
```

```
   PRESSURE SETBACK
       85.00%

  Save:Yes Restore:Yes
```

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Building Automation System (BAS) Interface

```
BAS INTERFACE SETUP
Protocol: N/A
Node:001 Baud: 19200
  Restore Dflt:Yes
```

```
BAS INTERFACE SETUP
Protocol: N/A
Node:001 Baud: 19200
Save:Yes Restore:Yes
```

PLC Clock

```
  PLC CLOCK SETUP
HH:MM:SS  DD/MM/YY
16:23:47  17/05/09
   Restore Dflt:Yes
```

```
  PLC CLOCK SETUP
HH:MM:SS  DD/MM/YY
16:23:47  17/05/09
Save:Yes Restore:Yes
```

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