KMT Waterjet Systems

BALANCING SYSTEM

PURPOSE

- Ensure consistent operating pressure when machines are connected to a header system
- Ensure the load (stroke rate) is evenly distributed among the machines
- Maintain pressure at an accuracy of +2,000 psi (+138 bar) to -500 psi (-34 bar)

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SYSTEM FLEXIBILITY

- **Compatible with the complete SL-IV *Plus* Series when equipped with proportional pressure control**

- **Configured with one to five machines in any combination of 30, 50, 60, 75 and 100 horsepower single, redundant or dual models**

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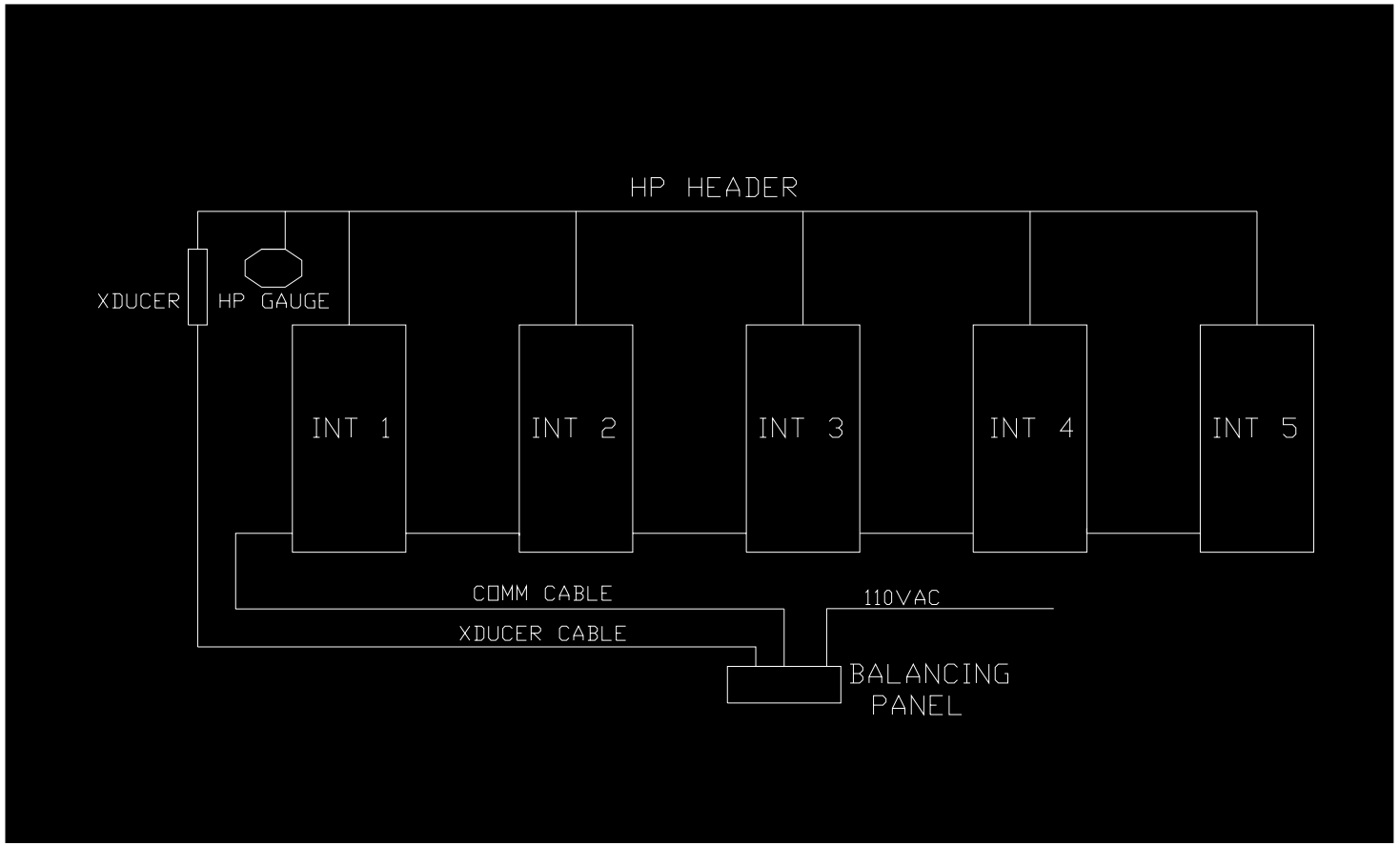
NETWORK CONFIGURATION



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OPERATION

Control Panel

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LOCAL START-UP

- Set proportional pressure control to zero
- Set stroke rate allowed to maximum setting
- Set pressure switch to high pressure
- Make any other local settings as usual

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NETWORK START-UP

When the machines are placed in network control, the Balancing System controls the proportional pressure valve and the strokerate.

All other settings, alarms, warnings and automatic shutdown conditions remain local and active.

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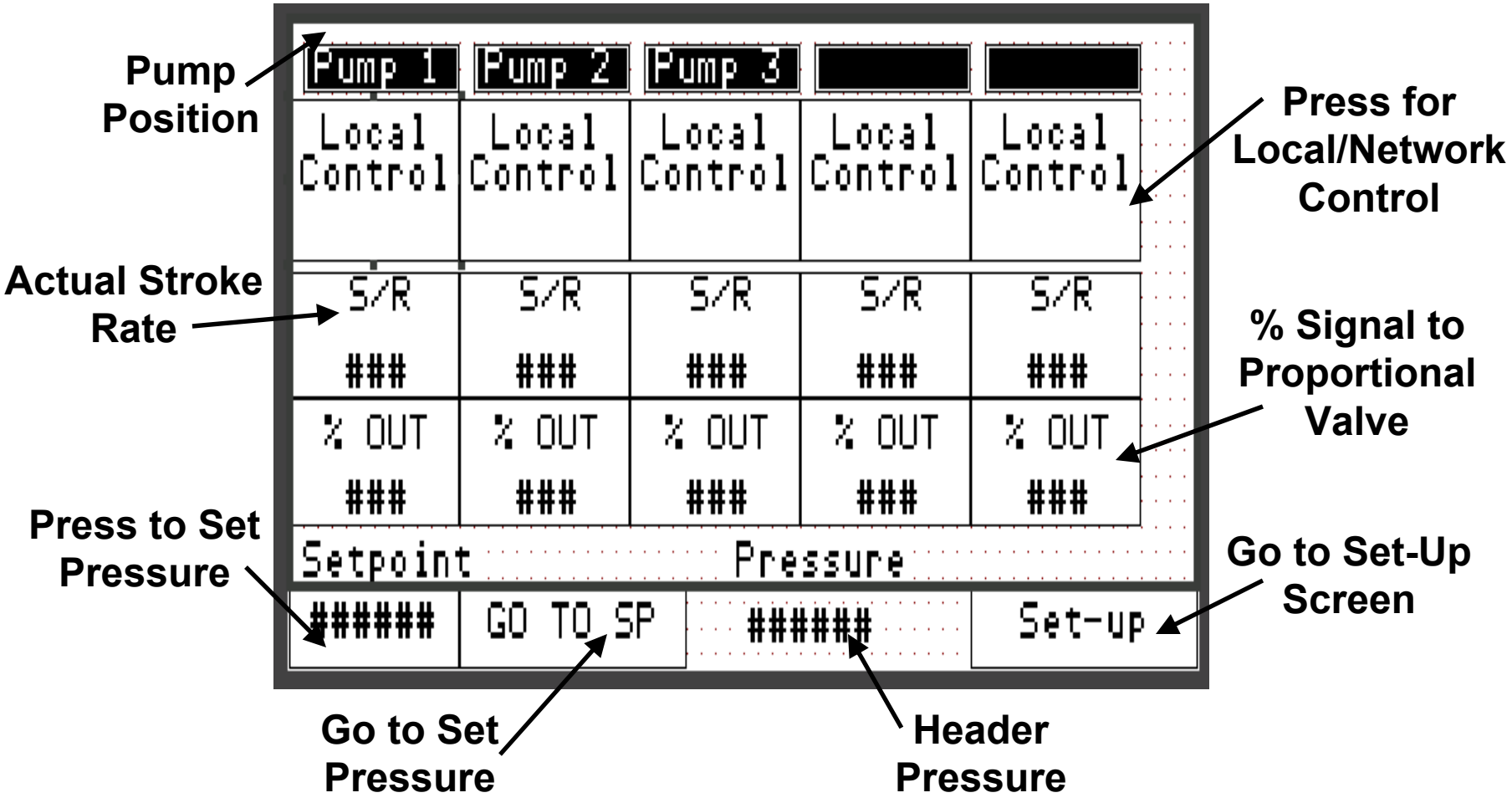
MAIN MENU



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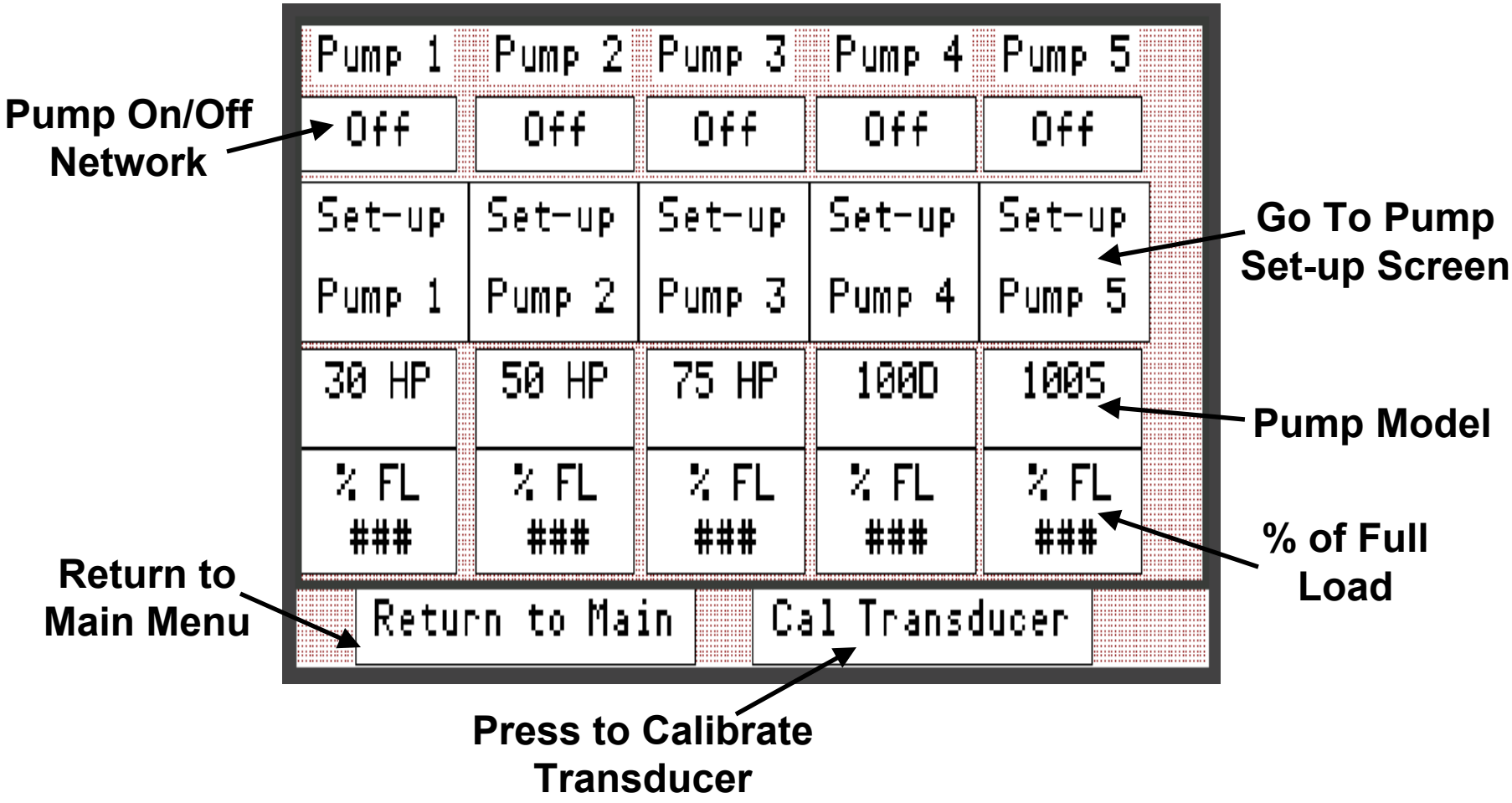
SET-UP COMMUNICATIONS SCREEN



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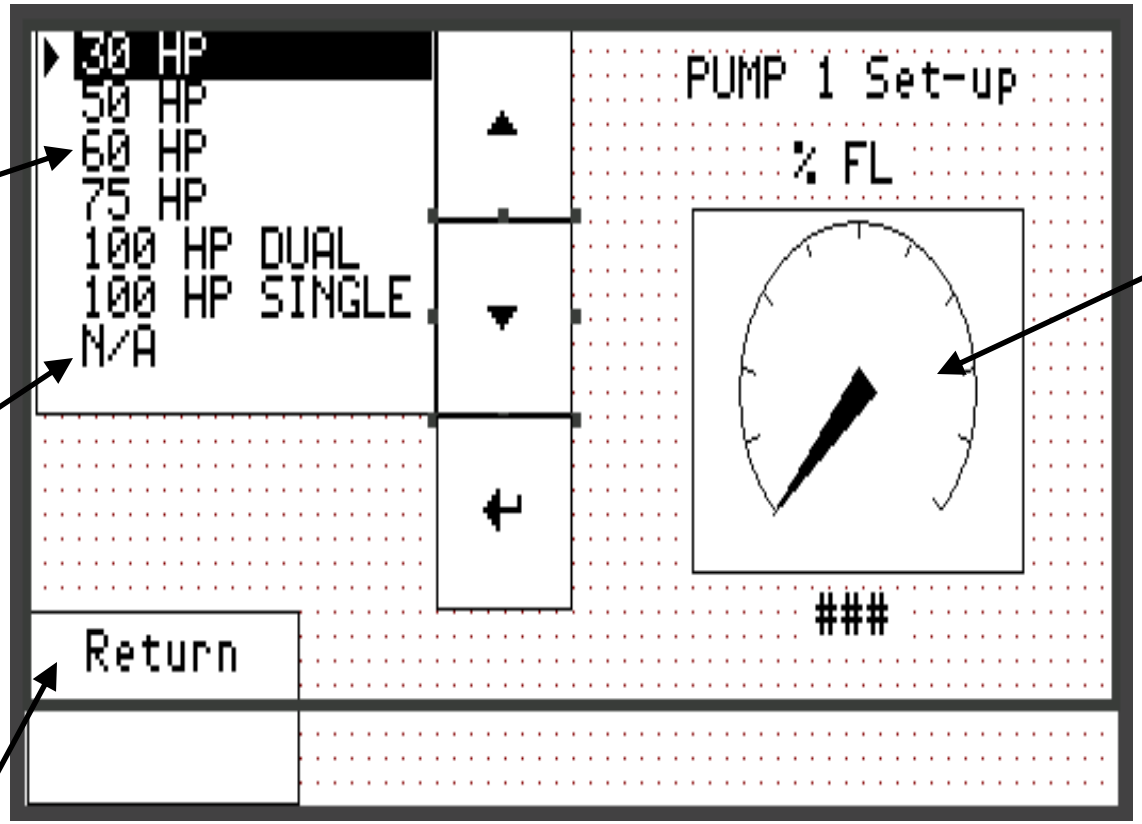
PUMP SET-UP SCREEN



Select Pump Model

Select N/A for Open Positions

Displays % of Full Load

Return to Set-Up Communications Screen

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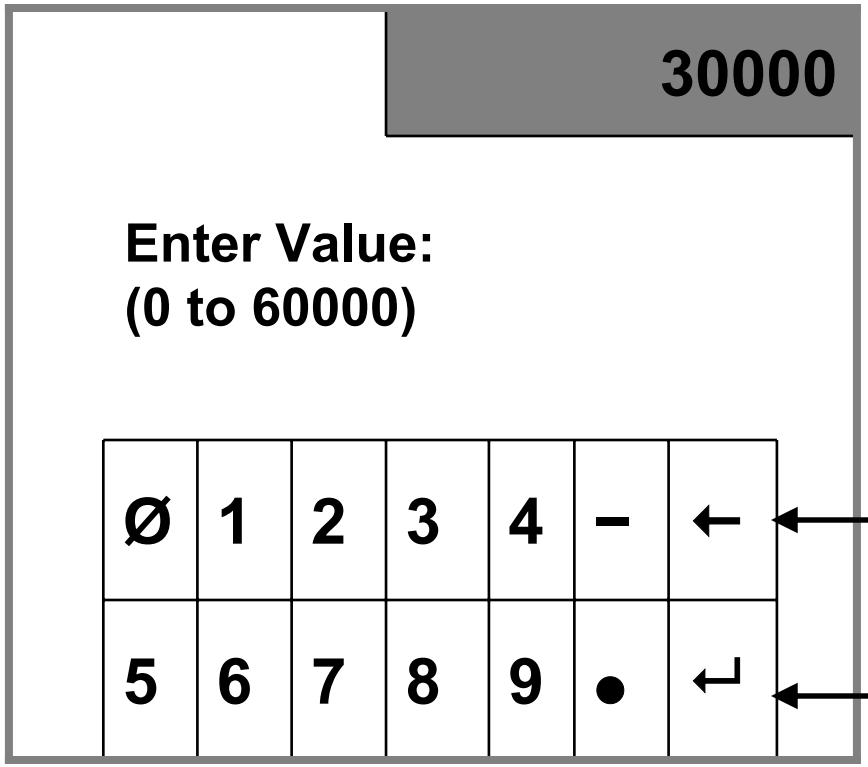
KEYPAD



Use the Keypad to Enter the Operating Pressure

Back space to delete entry

Return to Main Menu

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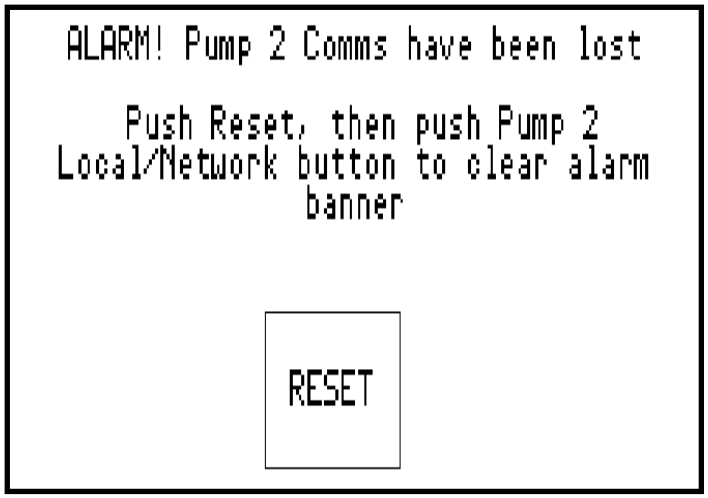
ALARM BANNERS

Communications Lost



The system has lost communication with Pump 2.

Operating pressure on Pump 2 will drop to zero or minimal pressure.

- **Pump 2 has been shut down locally**
- **Local warning or alarm condition has activated automatic shutdown**
- **Communication cable has come loose or has been cut**

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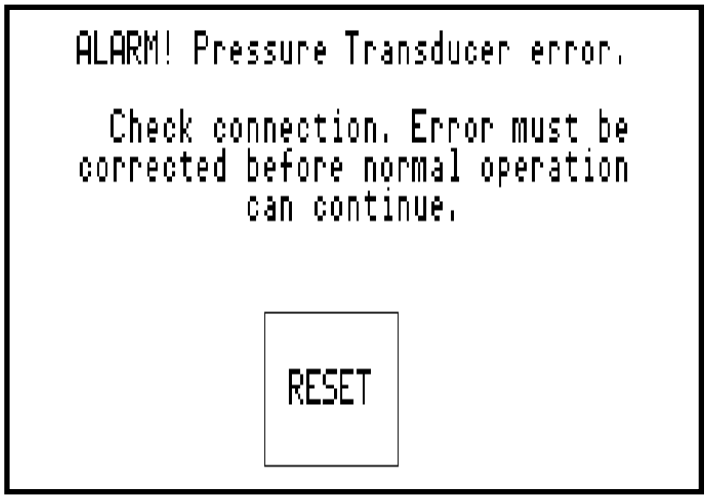
ALARM BANNERS

Transducer Error



The signal to the transducer has been lost.

Fault must be corrected before operation can continue.

- **Connection to transducer may be bad**
- **Connection from transducer to analog module may be bad**
- **Transducer has failed**
- **Analog module has failed**

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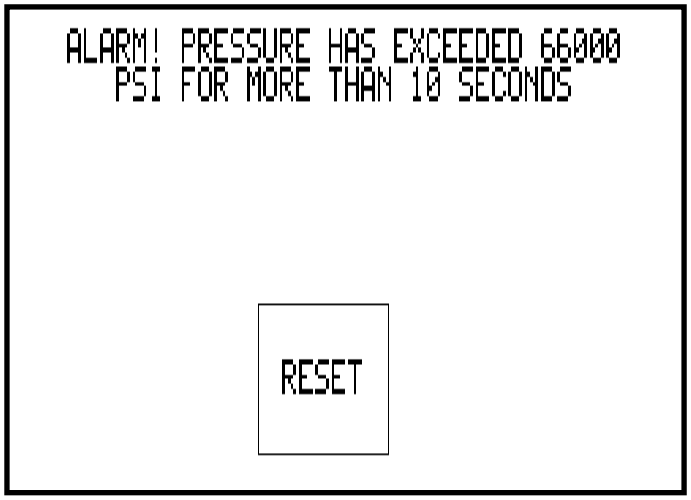
ALARM BANNERS

High Pressure Alarm



Pressure at the header has continuously exceeded 66,000 psi (4,550 bar) for more than 10 seconds.

- One or more pumps are not in network control
- Proportional pressure not set to zero on one or more pumps
- Proportional valve on individual pump has failed or the signal is bad

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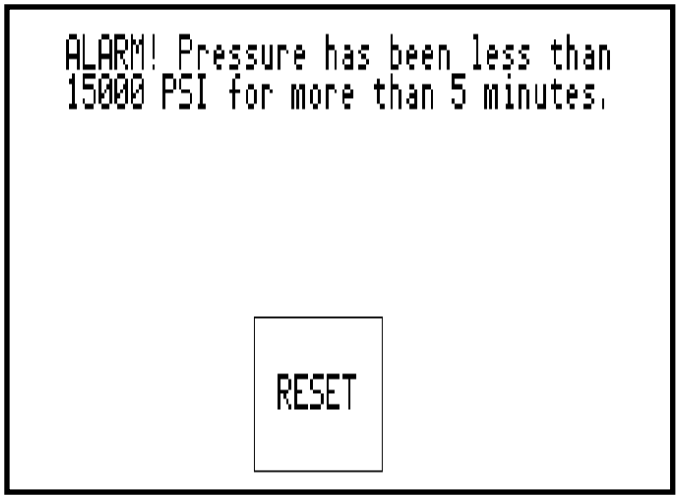
ALARM BANNERS

Low Pressure Alarm



Pressure at the header has dropped below 15,000 psi (1,034 bar) for more than 5 minutes.

- **Pressure switch has not been set to high on one or more pumps**

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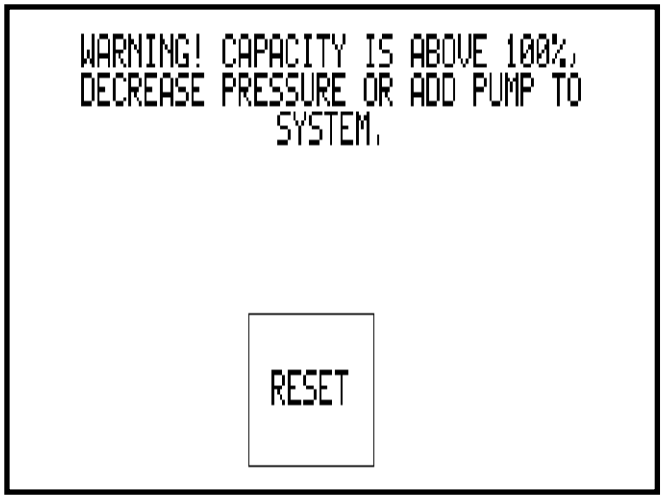
WARNING BANNERS

High Capacity Warning



Stroke rate has exceeded 100% for 60 seconds.

Percent of full load for all pumps will be 100% or greater.

- **Overstroke condition has occurred**
- **Decrease the operating pressure**
- **Add an additional pump to the system**

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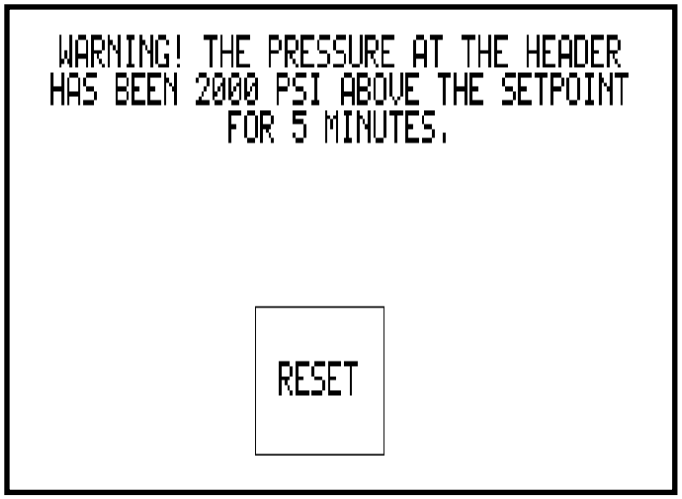
WARNING BANNERS

High Setpoint Warning



Pressure at the header has been 2,000 psi (138 bar) above the setpoint for 5 minutes.

- **Over capacity condition has occurred, too many pumps are running**
- **Header is in a deadhead condition**

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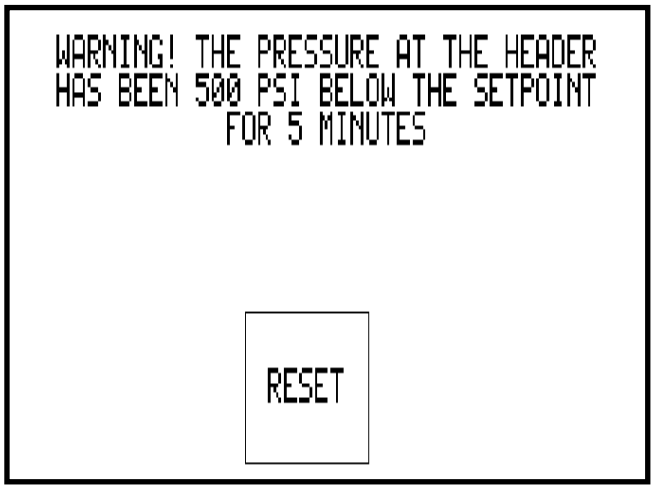
WARNING BANNERS

Low Setpoint Warning



Pressure at the header has been 500 psi (34 bar) below the setpoint for 5 minutes.

- **Under capacity, add an addition pump to the system**
- **Over sized orifices**

KMT Waterjet Systems

INSTALLATION REQUIREMENTS

Customer Responsibilities:

- Provide a location for, and install the balancing panel
- Provide and install a 110 VAC power supply to the panel
- Provide and install high pressure water lines from each machine to a header system
- Provide and install a discharge check valve on the outlet of each high pressure line

KMT Waterjet Systems

INSTALLATION REQUIREMENTS

Customer Responsibilities:

- Install the KMT provided communication cable from the balancing panel to each machine
- Install the KMT provided 0-75K pressure transducer and the 0-100 psi pressure gauge
- Install the KMT provided 10-foot communication cable from the transducer to the balancing panel

KMT Waterjet Systems

INSTALLATION REQUIREMENTS

KMT Waterjet Responsibilities:

- Terminate and verify communication cable connections from the panel to each machine
- Program the PLCs in each machine to set up the communication interface
- Start up and test and the system

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