Date	Revision
December 4, 2012	1.1
Product	
Slipsmart DAS	
Title	
Calibration & Operation Cheat Sheet	

Introduction

This document outlines how to set-up and calibrate the Slipsmart Data Acquisition System. For the purpose of this document it is assumed that the slip box and base station are installed, powered on, and that the base station is receiving all wireless sensors.

Theory of Operation

The Slipsmart system is designed to act as a safety system to ensure that the operator is not allowed to open a set of slips that would put them into an unsafe situation. In other words, a set of slips cannot be opened until the other set of slips holding the pipe is closed and loaded. To detect the position of the slips, a high precision bi-directional flow meter measures the hydraulic fluid flow to and from the slips. To detect if the slips are loaded or unloaded, a custom transducer designed by Snubco is used. This custom transducer connects to a high precision pressure transducer in order to resolve the load being placed on the slips. Four mini-hubs are used for valve control. These are connected to the slip controls on the snubbing unit to allow for lock-out. Each mini-hub has two outputs (one for each side of the slip it's monitoring) and two inputs to allow for supervision of the valve control (ie. to determine if the valve is actually closed).

When talking about slips….
TH = Travelling Heavy
TS = Travelling Snubbing
SH = Stationary Heavy
SS = Stationary Snubbing

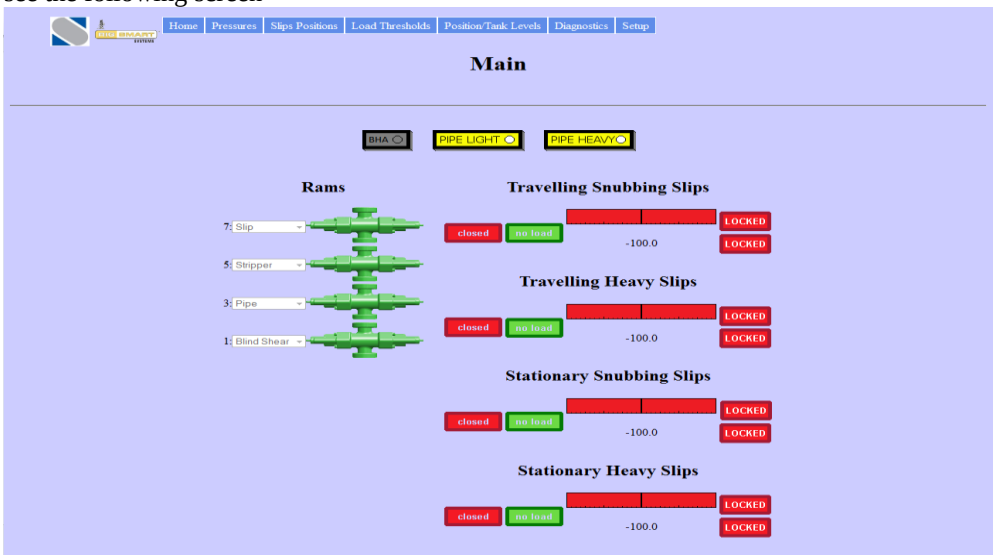
Connecting to Slipsmart System

The following steps are required to view the Slipsmart User Interface:

1) Connect to the **SlipsmartRSxxxxx** (where xxxxx is the system number) wireless network and enter **slipsmart** as the network password.
2) Open a web browser and enter the following address **192.168.0.15**

Note – The Slipsmart system can be accessed from any device that will pick up a wireless network. (including but not limited to – computer, tablet, cell phone, etc)

You should see the following screen



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Calibration

The slips positions and loading thresholds must be calibrated prior to operation. If the unit has been powered down, the calibration will be invalid and must be redone. Before any calibration is performed, press the BHA button on the main screen 

to bypass the system.

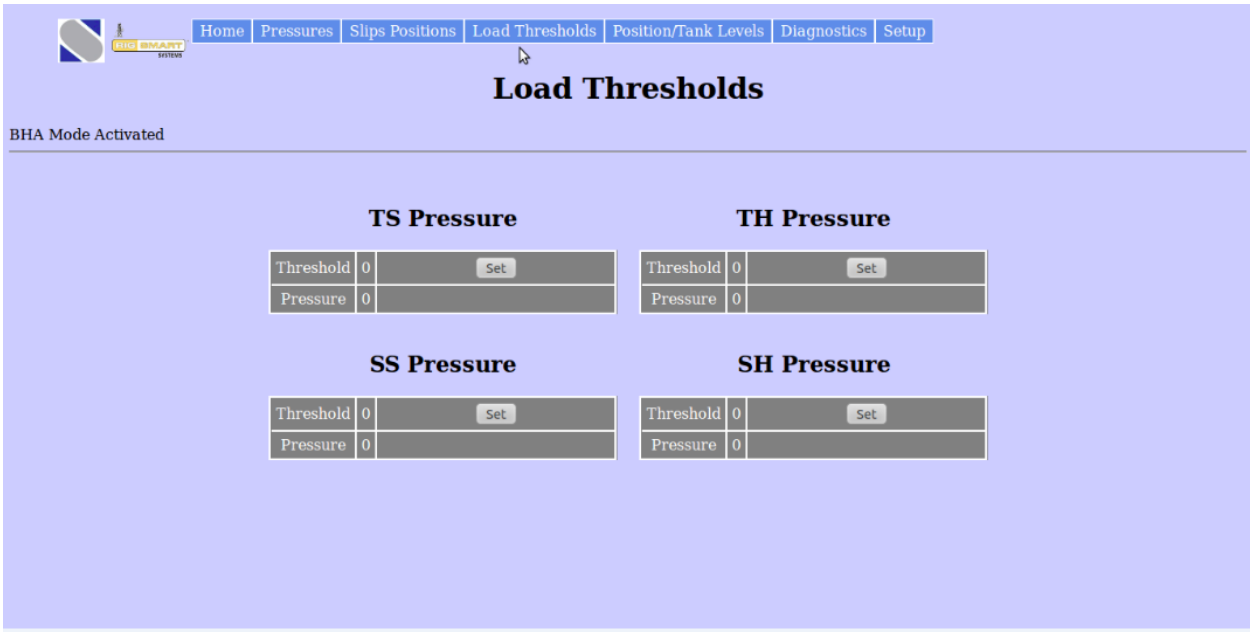
Load Calibration

1.) Press the link on the top of the screen titled **Load Thresholds**
   - In the Load Thresholds screen there are two values for each slip, **Pressure** and **Threshold**. The pressure value represents the current pressure on each slip. The threshold value represents the minimum pressure that will change the slip from unloaded to loaded.

2.) The threshold must be set to a value that is greater than the **Pressure** value at no load. Generally the **threshold** is set to 2 psi above the **Pressure** value at no load.

3.) Press the **SET** button to set your **Threshold**.

4.) Repeat for all four slips.



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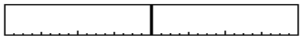
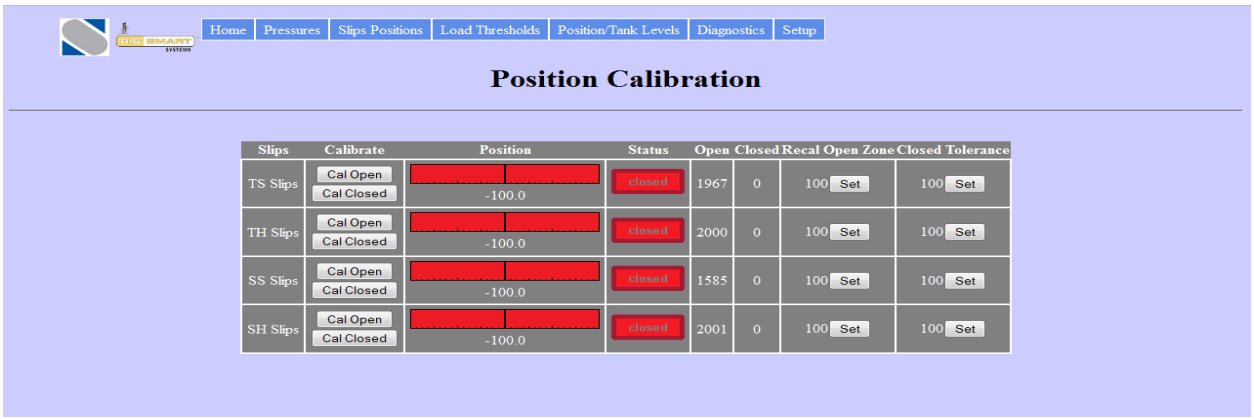
Flow Calibration

1.) Press the link on the top of the screen titled **Slips Position**
2.) Open the slips and Press Cal Open
3.) Close the slips and Press Cal Closed
4.) Repeat for all four slips

- The Slips Position page is made up of the following information
  - Cal Open – The button that calibrates the slips open
  - Cal Closed – The button that calibrates the slips closed
  -  100.00% – The percentage bar that states the percentage of the slip open and closed
  - **Flow Count** – The current value for flow through the slip cylinder coming from the wireless sensor
  - **Flow Open** – The value that was set by pressing the Cal Open button
  - **Flow Closed** – The value that was set by pressing the Cal Closed button
  -  - The closed position status of the slip
  -  - The open position status of the slip
  - Recal Open Zone (1 = .1%) – The Slipsmart system has a built in auto-recalibration feature that will adjust the calibrated open and closed positions when within a specified range for more than 1 second.
  - Closed Tolerance (1=.1%) - A tolerance factor is implemented for determining the closed position of the slips.



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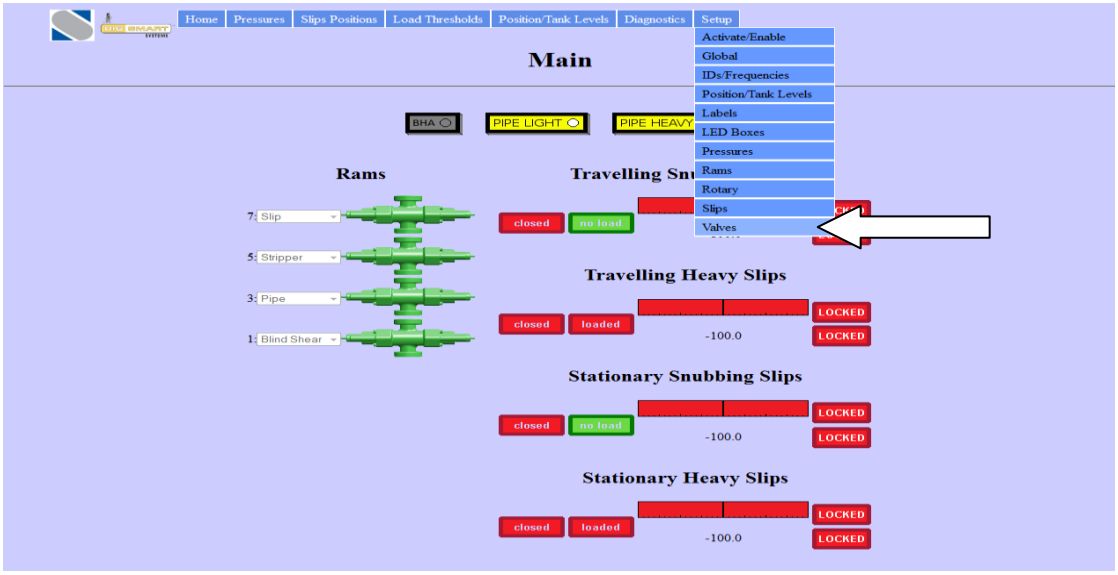
Valve Calibration

1.) Press the link on the top of the page titled **Setup** and click on the link that says **Valves**



2.) Check the box that says Manual Valve Mode.

IMPORTANT: MANUAL VALVE MODE WILL OVERRIDE THE SLIPSMART SYSTEM. WHEN THIS BOX IS CLICKED THE USER HAS FULL CONTROL OVER THE VALVES. ONLY USE THIS WHEN CALIBRATING VALVES. AFTER CALIBRATION IS COMPLETE MAKE SURE THE MANUAL VALVE MODE BOX IS NOT CLICKED.

3.) Each slip has two valves (valve 1 & valve 2) which needs to be calibrated. To calibrate a valve open, ensure that the corresponding check box is unchecked and click CAL OPEN. To calibrate a valve closed, ensure that the corresponding check box is checked and click CAL CLOSED.

4.) Set the tolerance value to 100.

5.) Ensure that Manual Valve Mode is unchecked.

After the valves are calibrated you will see one of the following on the main screen.

- Valve is closed

- Valve is open

- Valve is not calibrated properly

- Valve is not communicating with base station

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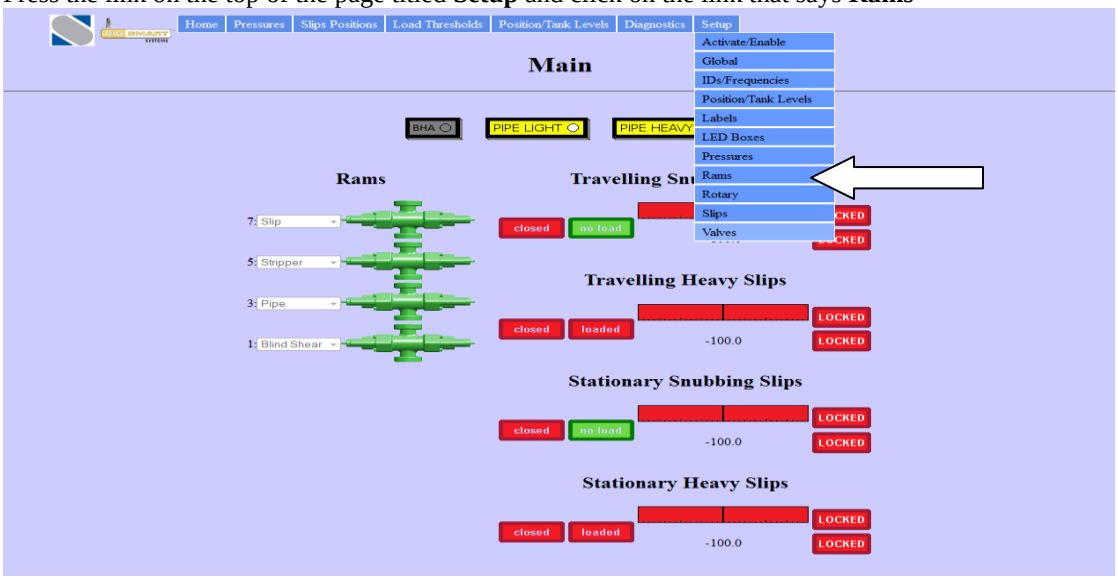
Ram Calibration

1.) Press the link on the top of the page titled **Setup** and click on the link that says **Rams**



2.) Open ram and press CAL OPEN
3.) Close ram and press CAL CLOSED