60 BROWN AVE.
SPRINGFIELD, NJ 07081
USA
(973) 376-7770

MANUAL

GRID MELTER TANK

Rev. F

May 2024

W/ HMI Screen & 3/8 LL Probes

TRICO POLY SYSTEMS, LLC.
60 BROWN AVE., SPRINGFIELD, NEW JERSEY 07081, USA

Table of Contents

SAFETY

WARNING – HAZARD OF ELECTRIC SHOCK

Any installation involving electrical components such as electric heaters, motors, etc., must be grounded in accordance with the NEC (National Electrical Code) to eliminate shock hazard. All electrical wiring to electrical equipment must be installed in accordance with the NEC, or local electrical codes by a qualified person. For maximum equipment protection, the NEC recommends ground fault protection be provided for the branch circuit supplying electrical equipment.

NOTE: It is required that the end user must provide and a fused disconnect in close proximity to each piece of electrical equipment provided by TPS (TRICO POLY SYSTEMS, LLC).

WARNING – MECHANICAL / CHEMICAL HAZARD

Equipment involving heaters, motors, gears, pumps, hoses, and or fluids, in or on equipment, provided by TRICO POLY SYSTEMS, LLC must be operated or serviced by authorized personal only. Proper personal safety equipment, energy lock-outs, and proper tools must be used at all times.

If toxic chemicals are used in the manufacture of products from TPS equipment, proper handling, ventilation, and breathing apparatus may be required.

Caution: Any person operating this equipment should be aware of the potential hazards that exist with the total chemical system your company has selected and the mechanical environment that your company has selected to operate the equipment in. Check with your Chemical Supplier and Safety Department prior to operating this equipment. Under no condition should this equipment be used at elevated temperatures approaching or exceeding the auto ignition temperature of the material stored or contained in or being processed in the area selected by your company.

MATERIAL SAFETY DATA SHEETS ARE TO BE MONITORED AT ALL TIMES.

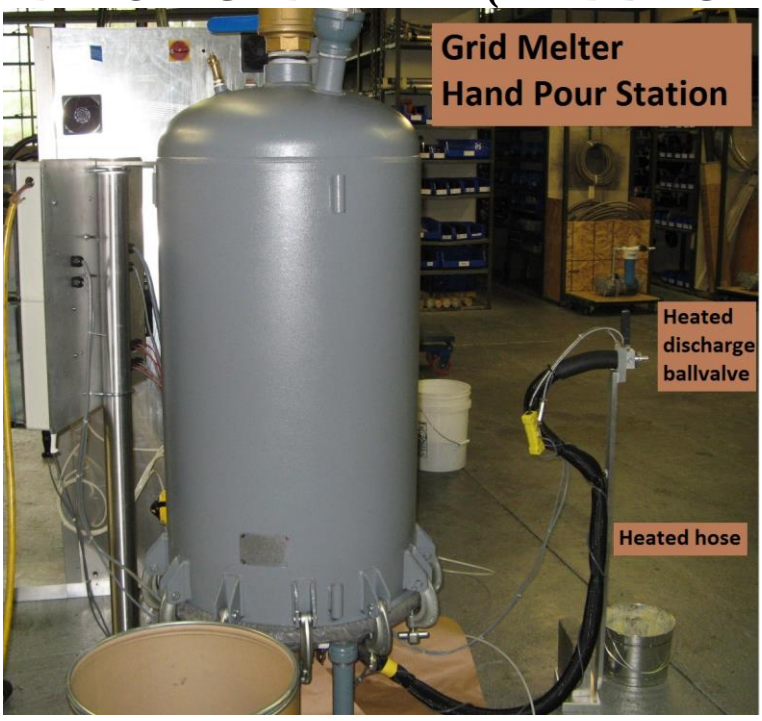
In this manual, the Melter tank will be referred to as either the MOCA Melter or simply Melter. Note that this tank can also process HQEE and MCDEA.

WARNING – BURN RISK / PRESSURE BUILD-UP

If the Melter is being shipped as a stand-alone tank with the 3' stand (discharge hose and discharge ball valve), there are several very important steps for shutting down the melter. A pressure build-up and burn risk at the discharge ball valve is present if the proper procedures are not followed. Please refer to Typical Start up on page 16.

STANDARD GRID MELTER

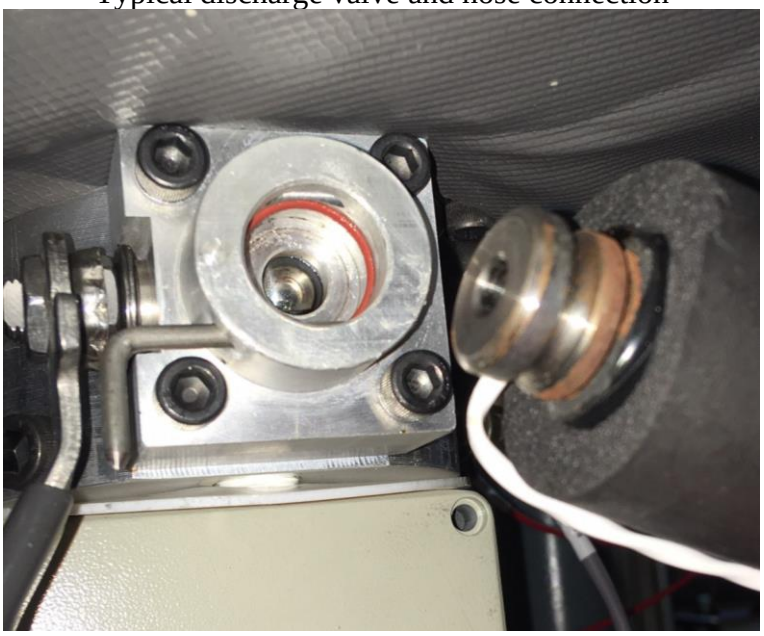
STAND-ALONE GRID MELTER (HAND BATCHING)

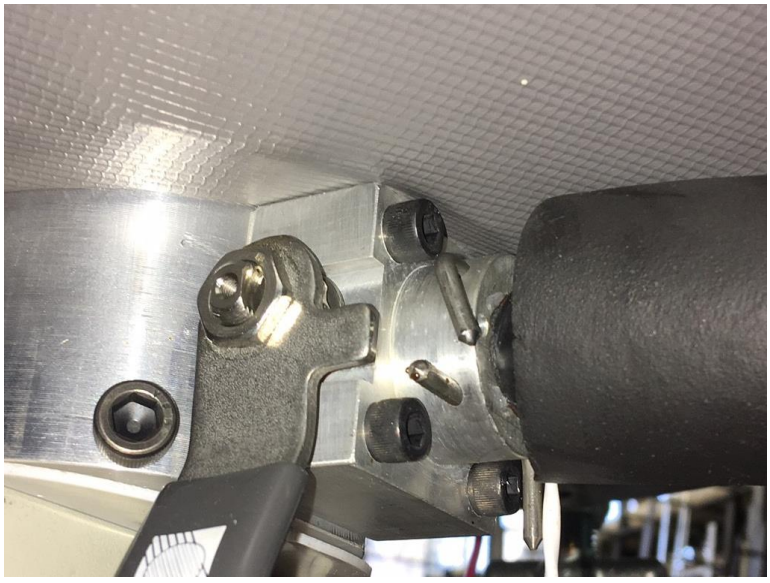


INSTALLATION

Move the Melter to the intended permanent location. Carefully remove it from the crate. Locate the Melter as close as possible to the processing machine. Check the length of the heated hose to insure proper location of the equipment. The discharge valve is located on the bottom of the tank. Use grease or a light oil to lubricate the ball valve o-ring and hose QD (quick disconnect) fitting. Once hose is inserted into valve, insert lock pins to secure the hose, see pictures below. Because of heat loss, the hose should NOT touch the floor.

Typical discharge valve and hose connection





Note: on some applications, the discharge hose is heated from the tank's control panel. There is a cable at the end of the hose with a two pin connector. This is the temperature sensor connector and it must be connected to the mating connector from the panel. The hose's heater connectors

are single pole connectors and should be connected to the mating connectors mounted on the bottom of the tank's control panel.

For proper operation of the liquid level probes, the Melter must be level and securely bolted to the floor. Once the Melter is secured, verify that all cables are securely connected. The red cables for the liquid level probes use push-in connectors and may have come loose during shipment. Verify they are in place by pushing up on the connector. A loose connection will cause an intermittent connection and give a false level indication. See picture below. There are two threaded connectors for the Base Plug and Reservoir temperature sensors. Verify they are tight.

Melter bottom

Connect the nitrogen or dry air supply line from the metering machine or independent source to the top assembly (Venting Valve Assembly). Do not pressurize yet. See Venting Valve Assembly – page 8.

POWER REQUIREMENTS

Electrical power for the control panel is brought in through the opening on the upper right side of the enclosure. Voltage supply for standard TPS equipment is 3 Phase 208 or 240 VAC, however, please refer to the TPS nameplate on each respective MOCA Melter for voltage and amperage requirements. Voltage supply may be Delta or Wye (although no neutral is required); again, refer to the TPS nameplate. Electrical connections should be performed by a licensed electrician.

INITIAL MELTER SETUP (HMI SCREEN)

There is one crucial setting that is required for initial Melter setup. This setting is the unit of temperature measurement for the Melter. The Melter's HMI (Human Machine Interface) screen needs to know what temperature unit the Reservoir temperature controller is set to. **CAUTION: THIS MUST BE SET TO MATCH THE TEMPERATURE UNIT OF THE RESERVOIR CONTROLLER. IF THIS SETTING DIFFERS FROM THE RESERVOIR CONTROLLER, THE PLC PROGRAM WILL NOT INTERPRET THE RESERVOIR'S TEMPERATURE CORRECTLY AND A FLOOD CONDITION OR GRID HEATER DAMAGE MAY RESULT.** See page 13 for HMI password entry and page 14 for instructions on setting this temperature unit.

GENERAL OPERATION

The MOCA Grid Melter is designed to provide three main functions:

1. Melt MOCA on demand.
2. Maintain a small Reservoir of liquid MOCA.
3. Maintain an optimum safe processing temperature.

As an option, some Melters ship with a heated hose and discharge ball valve on a 3' stand. This is referred to as a "stand-alone" Melter. There are a few differences for the start-up and shutdown procedures; see the respective section.

> **Caution: MOCA violently decomposes when exposed to excessive temperatures. In no case should MOCA ever be allowed to heat above 285°F (140°C).**

The MOCA Melter is an "intelligent" tank, designed to provide liquid MOCA on demand. It is composed of two sections separated by a spiral heating element known as the Grid. The lower section of the tank contains a Reservoir of liquid MOCA. The Grid heater assembly is mounted on the "Base Plug" above the Reservoir and holds MOCA pellets in the second section (upper part of the tank). The Base Plug is what the discharge valve is mounted to. It is centrally located in the Reservoir and supports the weight of the Grid. The liquid MOCA travels from the Reservoir through the Base Plug and out of the discharge valve.

In normal operation, the tank is under pressure. As liquid MOCA is dispensed from the discharge valve, a liquid level sensor triggers on "control" level; which then causes the Grid to heat up and melt the pellets. As the Reservoir level rises, the probe triggers off; which then causes the Grid heater to turn off and the melting process stops.

The Melter's control panel contains an HMI (Human Machine Interface) screen, temperature controllers and the Grid controller. A status light located at the upper left switches to various colors and states (maintained or blinking) to indicate the status of the Melter.

LOADING

If Grid Melter is shipped with the vacuum transfer system, see page 33. MOCA is loaded by gravity through the 3-inch opening on the top of the tank. The tank holds up to 400 lbs. of MOCA pellets. Minimally, there should be 8 inches of MOCA covering the Grid. Loading of MOCA requires the Melter to be vented and the removal of the Venting Valve Assembly, see following section. This assembly has two lock levers on either side that should be securely fastened prior to pressurization. If the optional vacuum transfer (pellet transfer) system is installed, the venting valve assembly is not removed (refer to the vacuum transfer section of this manual).

VENTING VALVE ASSEMBLY

Once the desired amount of MOCA has been loaded, insert the Venting Valve assembly and pressurize the tank. Typical operational pressure is between 30-40 PSI (5 PSI for standalone Melter). The venting valve assembly in installed at the top of the melter's tank. It contains a pressure relief valve and a filter.

NOTE: The MOCA Melter should only be pressurized with Nitrogen or dry air. Any degree of moisture present in the MOCA Melter will have a darkening effect on the liquid MOCA.

Pressurizing

Figure 1 on the page 9 shows the assembly of the venting valve. Locate the fitting marked "12" on the drawing. The melter is pressurized via this fitting.

Venting

The melter is vented via the fitting marked "19". To vent, locate the valve marked "14" and press its button.

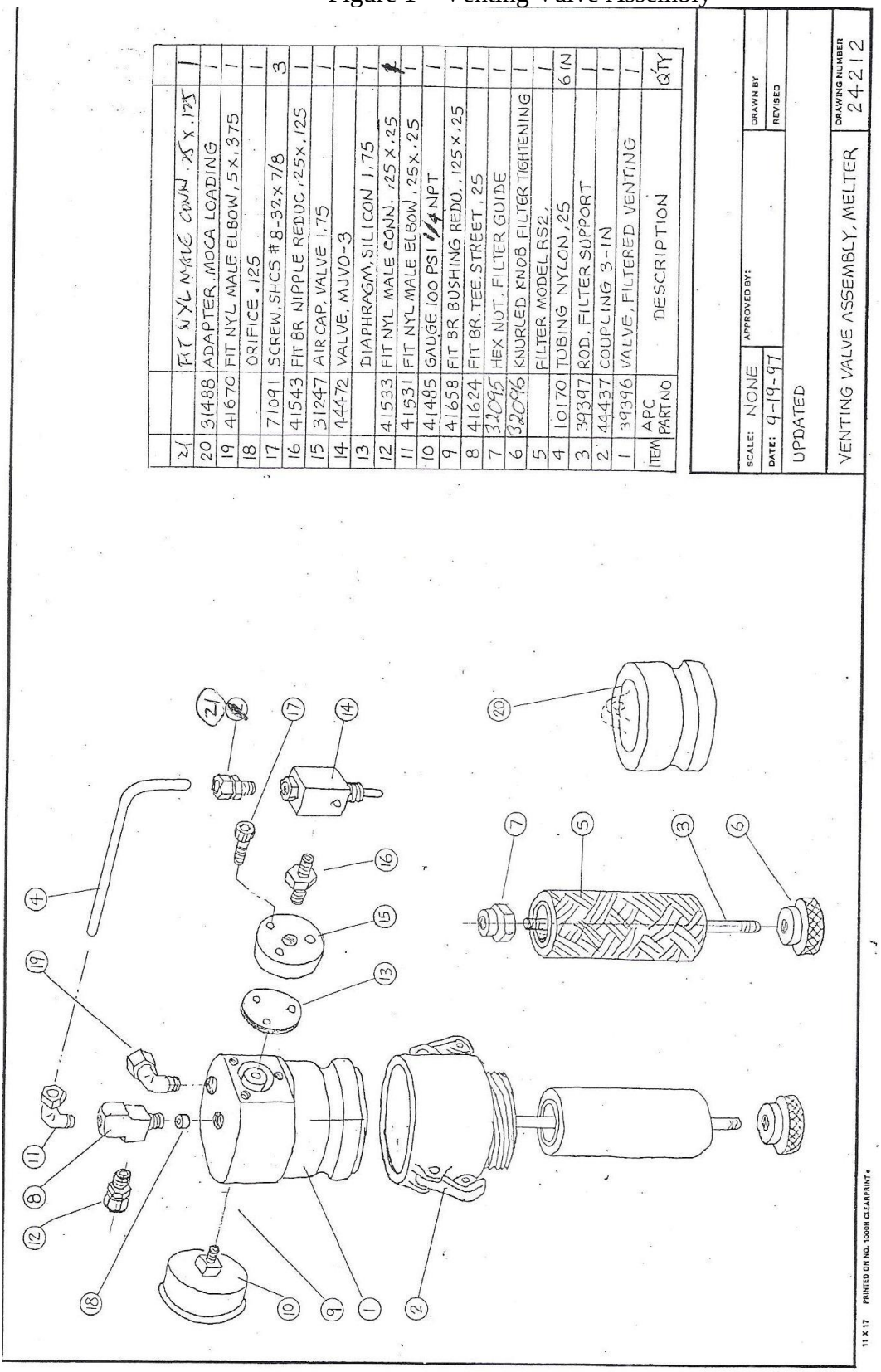
Safety

Aside from the standard pressure relief valve installed on the top portion of the melter's tank, there is a relief valve assembly composed of the following items (refer to drawing): 4, 8, 11, 13-18, and 21.

In normal operation, both sides of the diaphragm (13) have the same pressure (from the pressure source). In the event that the melter builds up pressure that exceeds the source's pressure, the pressure in the melter will cause the diaphragm to flex. This creates a path for the excess pressure to be relieved (via the exhaust fitting – 19).

> **Caution: MOCA violently decomposes when exposed to excessive temperatures. In no case should MOCA ever be allowed to heat above 285°F (140°C).**
>
> **DO NOT OPERATE THE MELTER ABOVE 130°C.**

Figure 1 – Venting Valve Assembly



DETAILED OPERATION

HEATERS / TEMPERATURE CONTROL

There are two temperature controllers on the standard Melter: one for the Reservoir, the other for the Base Plug. The factory setting for the temperature unit is degrees Celsius (°C). The pushbuttons directly below each controller turn power on/off and also reset any temperature alarm.

The Reservoir temperature controller maintains temperature on the lower portion of the Melter's tank: the Reservoir. This area holds the liquid MOCA. The Base (for Base Plug) controller maintains temperature on the Melter's Base Plug. Each controller has a dedicated temperature sensor. Once the setpoint is programmed in the controller, no further adjustment is required. The nominal operating temperature should be from 120 to 125°C (248-257°F). The Reservoir controller communicates with the HMI/PLC. The PLC will not allow the heating Grid to energize until the Reservoir controller reaches setpoint. The Reservoir temperature should not be set below 120°C (248°F); doing so could cause the liquid level probes to "freeze". This condition is present when hardened MOCA builds-up on the probes; causing them to trigger to the ON or satisfied state. For example, if the control probe has hardened MOCA, it will trigger a satisfied state. This will signal the PLC that the liquid level is satisfied, and the Grid will not be commanded ON and thus no additional MOCA will be melted.

The standalone Melter contains two additional temperature controllers. One is for the hose (labelled Line), the other for the heated discharge ball valve (labelled Valve) located at the top of the stand. **Note: the temperature settings for the hose controller are different from the other temperature controllers.**

Once the Reservoir reaches its setpoint temperature, there is a timer that is enabled. This is to ensure that the Reservoir is completely melted out before allowing the Grid heater to be enabled. This time can only be changed in the password protected screen (page 13). Once the status light (at the upper left of the door) switches to green, the Melter is ready. For Melter's with serial number 200221 and beyond, there is an additional text message that is displayed on the screen (during the timer heating phase). The flashing text is "Waiting for grid heat timer to expire". See page 12.

LIQUID LEVEL PROBES

The Melter contains three liquid level probes. They are mounted from the outside into the Reservoir. The probe mounted closest to the bottom of the Reservoir is the "Low" level probe. The probe mounted midway up the Reservoir is for the liquid level "Control" point and the third probe (mounted still higher up) is for the "Flood" condition. The liquid level "Control" point works in conjunction with the Grid activation. The Grid will activate to always satisfy the liquid level "Control" point.

Each probe sends its signal via a coax cable to its respective electronics box. Use caution when mating the cable's coax connector to the probe. The electronics then signals the PLC. Indicators on the HMI screen give the state of each probe. Electronics are calibrated during Melter testing.

The low-level probe is used to notify the operator that the Reservoir is nearly empty. The "Low" indicator in the HMI screen will turn yellow when the liquid level is below this point. An audible alarm will also sound once low level is triggered. The status light at the upper left of the control box will switch to a maintained red light. The alarm reset button can be pressed to turn off the audible alarm. Once the switch is pressed, the audible alarm will turn off and the visual alarm will switch from maintained red to blinking red. The low level on the Reservoir corresponds to approximately 3/8 of a gallon. **NOTE: 1 GALLON OF MOCA EQUALS APPROX. 11 lbs.** If the level is above the Low probe's trigger point (low level satisfied), the "Low" indicator on the main HMI screen will be off (black).

The level at the control point corresponds to approximately 7/8 of a gallon. When the level is at or above this point, the control indicator on the screen will be black (level satisfied). Once the control probe senses that the level has fallen below its trigger point, the indicator switches to yellow and if no alarms are active, the Grid heater is commanded on.

The flood probe is a redundant probe. Should the control probe fail to alert the PLC that the control level has been satisfied; the flood probe will alert the PLC which then activates the alarm and switches off the Grid. The flood indicator on the screen will switch from an off (black) condition to an on (blinking red), signaling a flood condition. A flood condition disables the Grid and Reservoir heaters. The Base heater is independent and remains active.

A summary of the main HMI screen indicators is below:

Probe	HMI Indicator	HMI Indicator
Low	Yellow (Low level not satisfied)	Black (Low level satisfied)
Control	Yellow (Control level not satisfied)	Black (Control level satisfied)
Flood	Blinking red (Flood condition exists)	Black (No flood condition)

Thus, in a normal state where the liquid MOCA is at its normal level, all indicators are off (black).

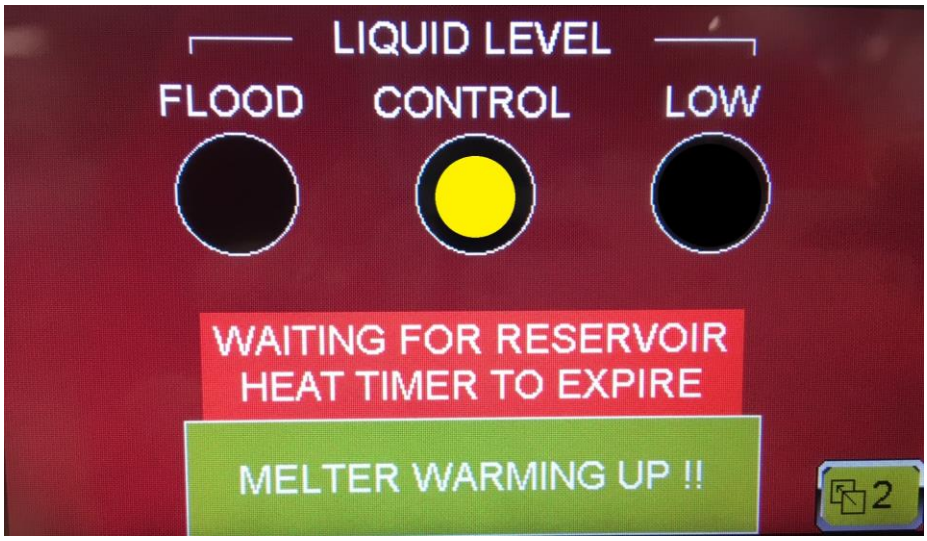
Notes:

1. To remove any MOCA build up, probes should be removed and cleaned approximately every 6 months in acetone or similar solution. Only the portion of the probe exposed to MOCA should be cleaned, submerging a probe may permanently damage it.
2. Because the flood probe is located only slightly higher up on the Reservoir than the control probe, it is important that the Melter be level. If it is not and it favors the flood probe, then it is possible to get a false flood alarm.
3. Warning: Disconnecting the control probe's coax cable causes its electronics to trigger a not satisfied condition. If the status light is green and the Grid controller is powered on, the Grid will activate and melt MOCA!
4. Warning: Disconnecting the flood probe's coax cable causes its electronics to trigger a no flood condition. Therefore, if it is left disconnected and a real flood condition exists, the PLC will not know, and the alarm will not turn on!

HMI SCREEN / PLC OPERATION

The HMI screen is actually both a display device for the operator and a PLC (programmable logic controller). It has several screens that display Melter status (via indicators and text messages). It controls the Reservoir and Grid heaters and communicates with the Reservoir temperature controller.

Main Screen



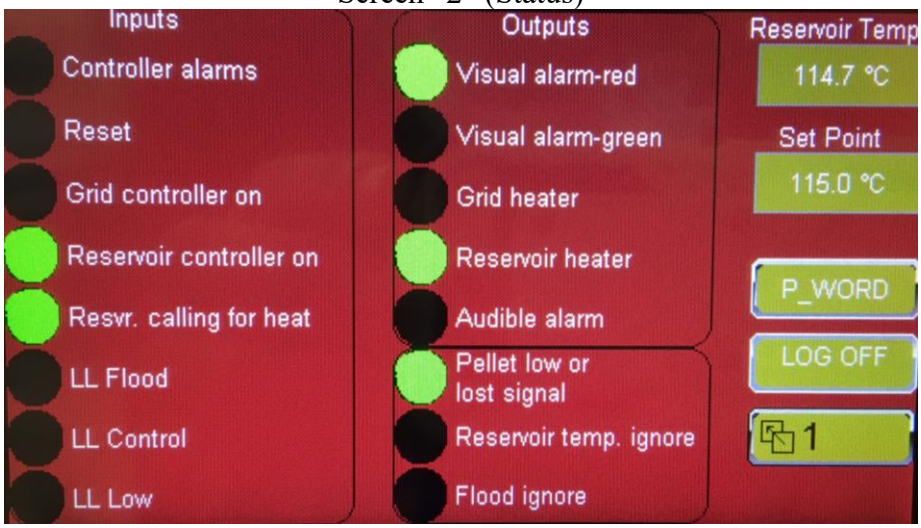
The Main screen (screen 1) displays the status of liquid level probes. There is also a text display at the bottom of the screen. This displays various messages during operation. The button at the lower right labelled "2" is used to navigate to the second screen. On Melter tanks with a pellet level probe, the pellet level is displayed near the top of the screen.

Possible liquid level status lights:

1. Melter satisfied:
    a. Flood off (black): liquid level below flood probe
    b. Control satisfied (black): level at control probe
    c. Low satisfied (black): level above low probe
2. Melter not satisfied:
    a. Flood off (black): level below flood probe
    b. Control not satisfied (yellow): level below control probe {Grid heater enabled}
    c. Low satisfied (black): level above low probe
    d. Or low not satisfied (yellow): level below low probe {Reservoir nearly empty}
3. Melter flooding:
    a. Flood on (flashing red): level at flood probe. Control probe malfunction, investigate immediately.

Note: For Melter's with serial number 200221 and beyond, there is an additional text message that is displayed on the screen (during the timer heating phase). The flashing text is "Waiting for reservoir heat timer to expire". Once the text disappears the Grid heater is allowed to run.

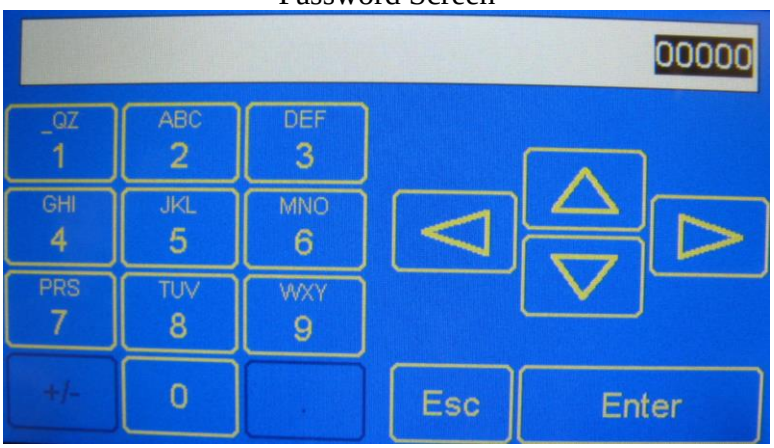
Screen "2" (Status)



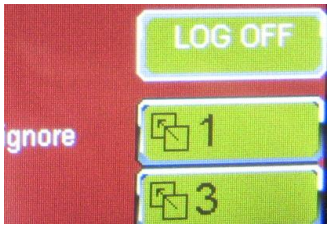
This screen is used primarily to troubleshoot Melter operation. Inputs and outputs are listed. The black color indicates the off state, green indicates the on state. The Reservoir current temperature and setpoint is displayed on the upper left. The button at the lower right labelled "1" is used to navigate to the main screen.

There is a third screen that is only accessible via a numeric password. This screen is used to set the Melter's temperature unit (°C or °F) and a few other special settings. To enter the password, press the "P_WORD" button and the password screen will display:

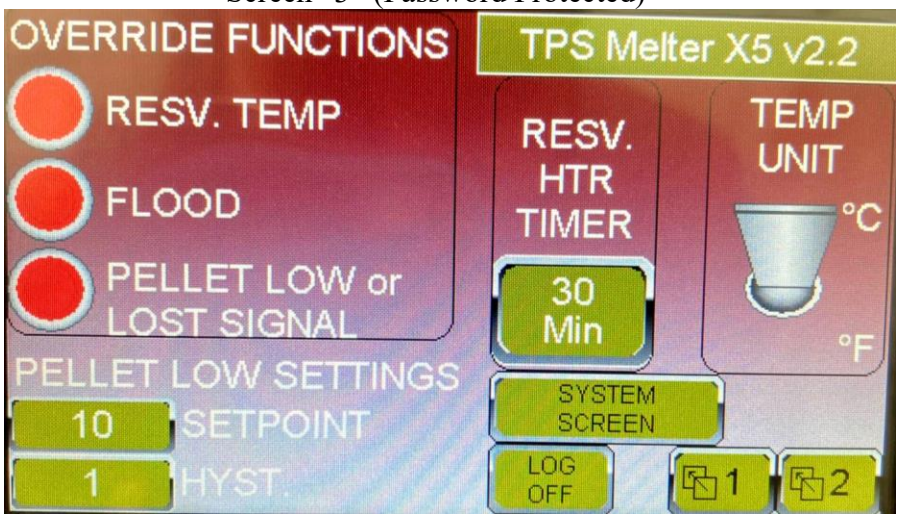
Password Screen



If the password is entered correctly, a button labelled "3" will be visible at the lower right.



Screen "3" (Password Protected)



This password protected screen contains several settings and configurations. The text at the top of the screen displays the Melter's software version. This is for TPS use only.

Temperature Unit

On the right side of the screen there is a toggle switch for setting the Melter's temperature unit: Celsius or Fahrenheit. The PLC needs to know what temperature unit the Reservoir temperature controller is set to. **CAUTION: THIS MUST MATCH THE TEMPERATURE UNIT OF THE RESERVOIR CONTROLLER. IF THIS SETTING DIFFERS FROM THE RESERVOIR CONTROLLER, THE PLC WILL NOT INTERPRET THE RESERVOIR'S TEMPERATURE CORRECTLY AND A FLOOD CONDITION OR GRID HEATER DAMAGE MAY RESULT**. This setting is stored in battery backed RAM and need only be done once.

Override Buttons

These buttons are used to override certain conditions. Normally these settings should not be changed, but certain conditions may arise to temporarily change the Melter's run mode.

1. Reservoir Temp: This button is normally off (red). Upon switching the Melter's main power switch to the ON position, the PLC will not allow the Grid heater to energize until the Reservoir has reached its setpoint and the Reservoir heat timer has expired. If this button is switched to ON (green), the PLC will ignore the Reservoir's temperature and timer, and allow the Grid to turn on (if the control probe is not satisfied). If main power it switched OFF, this button resets to the off state. Caution: this setting should only be changed for special circumstances. Allowing the Grid to heat and melt MOCA into an un-melted Reservoir could cause a flood condition where the liquid MOCA fills the entire Reservoir and reaches the upper portion of the Grid.
2. Flood : This button is normally off (red). If switched to ON (green), the PLC will ignore the flood probe and continue running normally even if a flood condition exists. Use caution when setting this button since there is no flood indication if the control probe malfunctions!
3. Pellet Level Low or Lost signal: If set to on (green), pellet level is ignored. Refer to page 20 for additional information.

Reservoir Heater Timer
This is a numeric entry button. A time between 1 and 60 minutes can be entered. This timer is enabled once the Reservoir reaches setpoint. When the timer has expired, the Melter is fully heated and ready to melt MOCA; the status/alarm light will switch to green. If this setting is changed, a power cycle to the Melter is required, otherwise the old timer value will be used.

System Screen Button
This button is used to change internal PLC settings. **DO NOT CHANGE THESE SETTINGS WITHOUT GUIDANCE FROM TPS**.

Log Off Button
This button is used to "log off" from the password protected screen. Once pressed only the main and status screens will be accessible.

Pellet Low Settings – optional, see page 20.

GRID CONTROLLER

The Grid controller displays the amperage/voltage relationship of the Grid. It **DOES NOT** display temperature. This controller (although it is the same model as the other controllers) displays a milli-volt signal.

When the Grid is powered, the amperage and voltage at the Grid are measured. This circuit produces a millivolt signal that is sent to the Grid Controller. Because each customer's facility will have a different supply voltage, and the resistance of the Grid's heating element can vary from 6.9 to 7.5Ω, the number displayed on the controller while the Grid is powered will range from approximately 25 to 39.

As the temperature of the Grid increases, so does its resistance. This condition occurs when the Grid is not completely covered with MOCA pellets. As resistance increases, the amperage draw decreases. The Grid's measurement circuit compares the amperage and voltage signals. It subtracts the voltage signal from the amperage signal and the controller displays this difference. If the amperage decreases then the overall signal increases because the voltage at the Grid is constant. If the signal level rises beyond the setpoint, the controller alarms and the PLC switches off the Grid's power relays.

GRID CONTROLLER CALIBRATION

When the Grid is unpowered, the display will read approximately zero (no power flow). As the liquid level of MOCA is depleted, the PLC will "activate" the Grid. This activation consists of enabling the Grid's power SSRs (solid state relays) thus melting the MOCA pellets on the Grid. The melting pellets flow through open spaces between the spiral wrap of the Grid and fall into the Reservoir. Assuming there is a minimum of 6-8 inches of MOCA pellets on the Grid, the controller display will rise from zero to a number between 25 and 39. This number will increase slowly until the Grid temperature becomes stable and the melt rate of MOCA is constant. Follow the steps for proper calibration:

1. To calibrate this controller, it must have the correct settings (see Grid controller settings on page 24).
2. All pressure must be vented from the tank.
3. The discharge hose must be disconnected from the discharge ball valve.
4. Place a one-gallon container under the ball valve.
5. Once the Melter has at least 6-8 inches of MOCA pellets covering the Grid and the Reservoir and Base are at operating temperature, the ball valve can be opened.
6. MOCA will begin to flow out and the Grid should activate. Once the number displayed on the Grid controller stabilizes, the setpoint can then be set. The setpoint entered should be the stabilized number with an addition of 0.5. This effectively, is the over temperature setpoint. If for any reason the Grid becomes exposed anywhere, the resistance of the Grid element will rise, and the display will rise and trip the setpoint. Should this occur, shut down the Melter and investigate.

Note: Once calibration is complete, the Grid controller's alarm setpoint should never be changed. The only time this alarm setpoint should be changed is if there is a change in input power to the melter (from 208 to 240VAC for example) or if the Grid is replaced. If the Grid alarm goes on, this means that some area of the Grid is exposed. You should stop and investigate. See the troubleshooting section.

Note: As long as the Grid is completely covered with pellets and activated, the actual temperature of the Grid will remain between 104 to 107°C.

CONTROL SWITCHES

Alarm Reset Switch

The Alarm Reset switch is used to reset an alarm condition. When the alarm sounds, depress the reset switch momentarily to silence the audible alarm. This action simply disables the audible alarm; the operator must investigate the cause for the alarm.

Temperature Controller Switches

Each controller has its own power switch, located directly under each controller. The switch also functions as an "Alarm Reset" when there is an under/over temperature alarm condition.

TYPICAL START UP: STANDARD MELTER

A standard Melter is assumed to have a transfer hose from its discharge valve to the downstream equipment.

1. Turn on main power to the Melter by turning the main power disconnect switch to on. It is located in the upper right corner of the control panel. Verify all controllers are powered on.
2. Pressurize the Melter with dry air or nitrogen at 30-35 PSI.
3. The Melter requires approximately 60 minutes to melt the entire Reservoir from a cold start. During this time, both the Reservoir and Base Plug heaters are on. Assuming no active alarms, the status indicator (alarm light) at the upper left will be off. The

Reservoir temperature controller communicates with HMI/PLC. When the PLC acknowledges that the Reservoir temperature has reached the setpoint, a timer is enabled. This timer ensures that the reservoir is completely melted. When the timer expires, the status indicator will turn green and from this time onward the Grid heater may now activate. Note: if the tank is equipped with a pellet level probe, the level must be above the pellet low alarm setpoint, otherwise the Grid heater will not be enabled. See page 20 for additional information on the pellet level probe.

4. If the Melter was emptied the day before, the low-level alarm will turn on. This is normal. Reset the audible alarm and wait. Once the status light turns green, the Grid will energize and the MOCA level will be satisfied.
5. Verify downstream equipment is ready for liquid MOCA.
6. Open the discharge ball valve, use caution as ball valve area is very hot. Pressurized MOCA will flow to downstream equipment. The dispensing machine start up procedure may require the Melter's discharge valve to be opened before the heated hose from Melter to machine has reached setpoint. The intention is to provide a path for the melting MOCA in the hose to "relieve" its pressure (while melting out). The pressure is relieved by MOCA flow into the Melter's discharge valve, Base Plug and Reservoir. This is normal. The metering pump inlet port at the other end of the hose should already be at setpoint and thus provides another path for pressure relief during the melt-out process.

Whenever the control probe is not satisfied, the Grid will activate and melt more MOCA. The Grid will turn on/off automatically as required. Recall that the Grid's controller displays the Grid's current/voltage relationship. The Melter can be run indefinitely, so long as there are pellets in the upper tank. The Grid is capable of a melt rate of 4 lbs./min at 240 VAC. The Reservoir holds approximately 10 lbs. of liquid MOCA. When the time comes for re-loading the Melter, follow the loading procedure.

TYPICAL START UP: STAND-ALONE MELTER

A standalone Melter is assumed to have a transfer hose from its discharge valve (bottom of tank) to the 3' stand's discharge valve.

1. Before turning on main power, verify:
    a. There is a container under the stand's discharge valve.
    b. The Melter's discharge valve must be in the closed position. If it is not, turn on main power to the Melter and switch off all temperature controllers except the "Base" controller. Wait for the Base Plug to reach setpoint and set the valve to the closed position.
    c. The stand's discharge valve must be in the open position. If it is not, turn on main power to the Melter and switch off all temperature controllers except the "Valve" controller. Wait for the valve to reach setpoint and set it to the open position.
2. Turn on main power to the Melter. Verify all controllers are powered on.
3. Pressurize the Melter with dry air or nitrogen at 5 PSI.
4. The Melter requires approximately 45-60 minutes to melt the entire Reservoir from a cold start. During this time, both the Reservoir and Base Plug heaters are on. Assuming no active alarms, the status indicator at the upper left will be off. The Reservoir

temperature controller communicates with HMI/PLC. When the PLC acknowledges that the Reservoir temperature has reached the setpoint, a timer is enabled. This timer ensures that the reservoir is completely melted. When the timer is active, a message is displayed on the screen. When the timer expires, the message is removed and the status indicator will turn green and from this time onward the Grid heater may now activate.

5. If the Melter was emptied the day before, the low-level alarm will turn on. This is normal. Reset the audible alarm and wait. Once the status light turns green, the Grid will energize and the MOCA level will be satisfied.
6. During this time, the hose and stand's discharge valve have reached setpoint. Some MOCA will drip from the valve.
7. Close the stand's discharge valve and then open the Melter's discharge valve. **Do this in the order written, otherwise MOCA will dispense from the stand's discharge valve.** Use caution as both ball valves are very hot.
8. The standalone Melter is now ready to dispense liquid MOCA.

Whenever the control probe is not satisfied, the Grid will activate and melt more MOCA. The Grid will turn on/off automatically as required. Recall that the Grid's controller displays the Grid's current/voltage relationship. The Melter can be run indefinitely, so long as there are pellets in the upper tank. When the time comes for re-loading the Melter, follow the shutdown procedure.

SHUT DOWN: STANDARD MELTER

Any liquid MOCA left in the Reservoir will solidify.

1. Close the discharge ball valve. Use caution as this area is very hot.
2. If desired, vent the tank.
3. Use the main power switch to turn off power to the Melter.

SHUT DOWN: STAND-ALONE MELTER

Any liquid MOCA left in the Reservoir will solidify. It is assumed that the stand's discharge valve is closed, and a container is below this valve.

WARNING – BURN RISK / PRESSURE BUILD-UP

For a standalone Melter, there are several very important steps for shutting down the Melter. A pressure build-up and burn risk at the discharge ball valve is present if the following steps are not taken. The scenario assumes the end of production for the day with the Melter pressurized and at processing temperature:

1. Close the Melter's discharge valve. Use caution as this area is very hot.
2. If desired, vent the tank.
3. Open the stand's discharge valve. Use caution as some residual MOCA will be present and under pressure. Moca will drop into the container.
4. Leave the stand's valve open for cool down and next start-up/melt-out.
5. Use the main power switch to turn off power to the Melter.

Note: If the discharge hose is left full of MOCA, under pressure and allowed to cool; upon remelting, extreme pressures can occur causing hose failure and or personal injury.

EMPTYING THE RESERVOIR

If it is desired to empty the Reservoir without replenishing it, simply power off the Grid controller and run normally. With the Grid controller off, the Grid will not be activated when the control probe calls for heating the Grid. The liquid level Low LED will turn on and the alarm will sound. Silence alarm. Once the Reservoir empties, it will fill with either dry air or nitrogen and eventually this air will be forced out of the material transfer line. This is the indication that the Reservoir is empty. Follow the shut down procedure to shut down the Melter.

ALARM CONDITIONS

The alarm will sound on the following alarm conditions:

1. Base temperature. Base Plug temperature is outside the band for the setpoint.
2. Reservoir temperature. Similar to above.
3. Grid. The Grid controller signal level has passed the setpoint.
4. Liquid level low. The LOW indicator on the HMI will turn yellow.
5. Liquid level flood. Liquid level flood probe triggered (liquid MOCA at flood probe). The FLOOD indicator on the HMI will blink red.
6. Pellet Level Low – Optional. Note that if the pellet level is below the low setpoint, the Grid will not be allowed to turn on (see pellet level section below).

When any alarm conditions exist, the audible alarm will also sound, and the status light will turn red. The alarm reset button can be pressed to turn off the audible alarm. Once the switch is pressed, the audible alarm will turn off and the status light will switch from maintained red to blinking red (indicating that the alarm condition is still present).

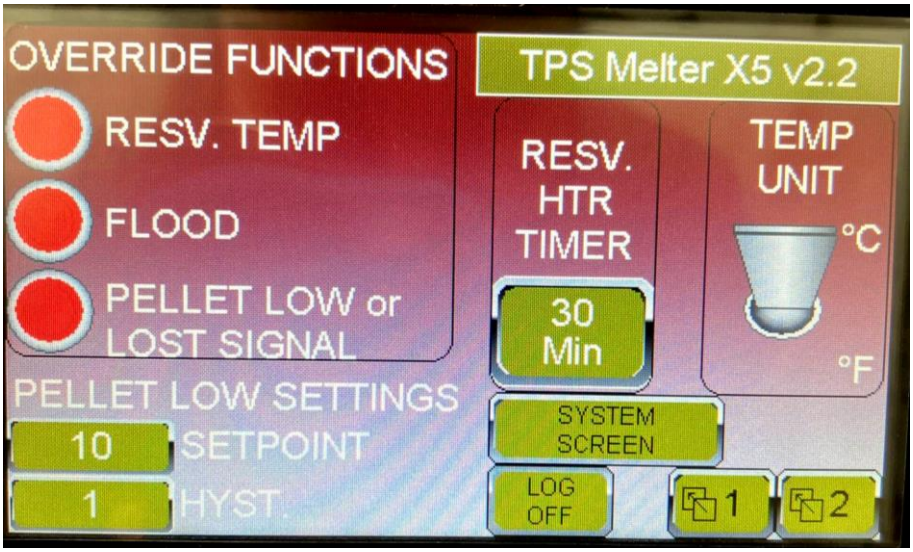
Depending on the type of alarm, Melter operation may have to stop and an alarm investigation begun.

PELLET LEVEL – Optional

A pellet level probe is used to display the amount of pellets in the tank. The pellet level is displayed on the HMI as a percentage (0-100%). The probe is approximately 40 inches in length and mounts on the top. It uses radar technology to measure the level. Once the level is below the setpoint, the alarm will sound and the Grid heater will not be allowed to power up. The probe is set at the factory and requires no adjustment.

The Pellet Low setpoint (screen 3) is used to set the alarm for low pellet level. Once low is reached, the alarm will activate and disable the Grid heater. A typical setpoint is 10%.

The pellet level may be temporarily ignored by pressing the “Pellet Low of Lost Signal” override button in screen 3.



INPUTS / OUTPUTS

The HMI/PLC has four inputs and four outputs. An I/O module is used for the remaining inputs and outputs. HMI screen 2 displays the I/Os. The respective indicator is green when the I/O is active. The indicator is black when the I/O is off.

HMI Inputs

No.	Input	Description (LED Green)
1 (I1)	Controller alarms	Alarm daisy chained from each controller
2 (I2)	Reset	Alarm reset switch to silence audible alarm
3 (I3)	Grid controller on	Grid controller powered on
4 (I4)	Reservoir controller on	Reservoir controller powered on

I/O Module Inputs

No.	Input	Description (LED Green)
1 (I17)	Resvr. calling for heat	Reservoir controller telling PLC to energize the Reservoir power relays
2 (I18)	LL Flood	Liquid level flood condition
3 (I19)	LL Control	Liquid level control not satisfied
4 (I20)	LL Low	Liquid level low condition
5		
6		
7		

HMI Outputs

No.	Input	Description
1 (Q1)	Visual alarm-red	Output to control status light – red state
2 (Q2)	Visual alarm-green	Output to control status light – green state
3 (Q3)	Grid heater	Grid power relays commanded on – melting MOCA
4 (Q4)	Reservoir heater	Reservoir power relays commanded on (Resv. heating)
*	Optional: Pellet Level/Lost Signal ignore	Pellet low level or lost signal ignored. If a pellet level probe is installed and the override button is enabled in screen 3, the signal is ignored and the Grid can activate even if the pellet level is low or disconnected.
*	Reservoir temp. ignore	Reservoir temperature ignored (PLC can activate Grid at any time and will not wait for Reservoir to reach setpoint)
*	Flood ignore	Flood condition ignored (PLC can continue to run normally even if flood probe triggered on)

The * denotes that the output is internal and not a physical output.

I/O Module Outputs

No.	Input	Description
1 (Q17)	Audible alarm	Audible alarm commanded on
2		
3		
4		

TEMP. CONTROL SETTINGS (ONLY FOR: RESERVOIR, BASE & BALL VALVE AT 3' STAND)

Note: The temperature sensors for the Reservoir, Base and Discharge ball valve at 3' stand (if stand-alone Melter) are different from the temperature sensor used on the discharge hose. The controller settings for the discharge hose are on the following page.

CAL 3300 Program

LEVEL 1		LEVEL 2		LEVEL 3	
Tune	OFF	**SP1.P**	--	**SP1.d**	SSd
bAnd	10 (18)	**bAnd**	OFF	**SP2.d**	rLY
int.t	5	**PL.1**	100	**Burn**	uP.SC
dEr.t	25	**PL.2**	100	**rEU.d**	1r.2r
dAC	1.5	**SP2.A**	bAnd	**rEU.L**	1n.2n
CYC.t	20	**SP2.b**	Lt.ho	**SPAn**	-56 (-101)
oFSt	0	**diSP**	1	**Zero**	15 (27)
SP.Lk	OFF	**hi.SC**	150 (302)	**ChEK**	Off
SPrr	0	**Lo.SC**	0 (32)	**rEAD**	--
SPrn	OFF	**inPt**	RTD	**dATA**	CTA
SoAk	--	**Unit**	°C (°F)	**Ver**	(factory set)
Set.2	8 (14)			**rESET**	(see below)
Bnd.2	0.1 (0.2)				
CYC.2	ON.OFF				

LEVEL 4 - DO NOT ALTER: USE DEFAULT SETTINGS ONLY

GENERAL INFO:

1. These settings configure both controller outputs (SSD and RLY) and set the unit for the RTD sensor. There should be no need to make any additional adjustments.

2. Set.2 in level 1 represents the upper/lower band for alarm purposes. This input can be adjusted by the operator for individual applications. The factory hysteresis is 8°C.

3. The controller is capable of autotune, contact TPS for programming instructions.

4. For the rESET setting, "all" should only be used to completely reset the controller in the event that a total reprogram is needed.

5. Default settings are for a temperature reading in degrees Celsius. The settings listed above in ( ) are for a reading in degrees Fahrenheit.

6. To silence Alarm and reset, depress white button below Controller. Depress once to turn Controller OFF and depress again to turn Controller ON.

ENTERING ADJUSTMENTS

1. To enter a new setpoint, depress the * button. The unit of measure will appear first, then

the present setpoint. While depressing the * button, depress the up or down scroll button to desired setpoint temperature.

2. To enter the program settings (Level 1, Level 2, Level 3), depress both scroll buttons simultaneously for three seconds. The word " tune " will appear on the display. This is the first entry on Level 1. To scroll to each input, depress either the up or down scroll button. To change an input, depress the * button and scroll up/down with the scroll buttons.

TEMP. CONTROL SETTINGS (DISCHARGE HOSE ONLY)

CAL 3300 Program

LEVEL 1		LEVEL 2		LEVEL 3	
Tune	OFF	**SP1.P**	--	**SP1.d**	SSd
bAnd	10 (18)	**bAnd**	OFF	**SP2.d**	rLY
int.t	5	**PL.1**	100	**Burn**	uP.SC
dEr.t	25	**PL.2**	100	**rEU.d**	1r.2r
dAC	1.5	**SP2.A**	bAnd	**rEU.L**	1n.2n
CYC.t	20	**SP2.b**	Lt.ho	**SPAn**	0
oFSt	0	**diSP**	1	**Zero**	0
SP.Lk	OFF	**hi.SC**	150 (302)	**ChEK**	Off
SPrr	0	**Lo.SC**	0 (32)	**rEAD**	--
SPrn	OFF	**inPt**	RTD	**dATA**	CTA
SoAk	--	**Unit**	°C (°F)	**Ver**	(factory set)
Set.2	8 (14)			**rESET**	(see below)
Bnd.2	0.1 (0.2)				
CYC.2	ON.OFF				

Note: The heated hose uses a different RTD then the Reservoir and Base. There are two settings in level 3 that are different.

GRID CONTROL SETTINGS

Note: This controller <u>does not</u> display temperature. It displays the heating grid's voltage/current signal.

CAL 3300 Program

LEVEL 1		LEVEL 2		LEVEL 3	
Tune	OFF	**SP1.P**	--	**SP1.d**	SSd
bAnd	0.1	**bAnd**	OFF	**SP2.d**	rLY
int.t	OFF	**PL.1**	100	**Burn**	uP.SC
dEr.t	25	**PL.2**	100	**rEU.d**	1d.2r
dAC	1.5	**SP2.A**	du.hi	**rEU.L**	1n.2n
CYC.t	ON.OFF	**SP2.b**	Ltch	**SPAn**	20
oFSt	0	**diSP**	0.1	**Zero**	0.1
SP.Lk	OFF	**hi.SC**	50	**ChEK**	Off
SPrr	0	**Lo.SC**	0.0	**rEAD**	--
SPrn	OFF	**inPt**	Lin 1	**dATA**	CTA
SoAk	--	**Unit**	Set	**Ver**	(factory set)
Set.2	0			**rESET**	(see below)
Bnd.2	2.0				
CYC.2	ON.OFF				

Note: The Grid controller settings are not for temperature

LEVEL 4 - DO NOT ALTER: USE DEFAULT SETTINGS ONLY

Settings are entered the same way as on the temperature controllers.

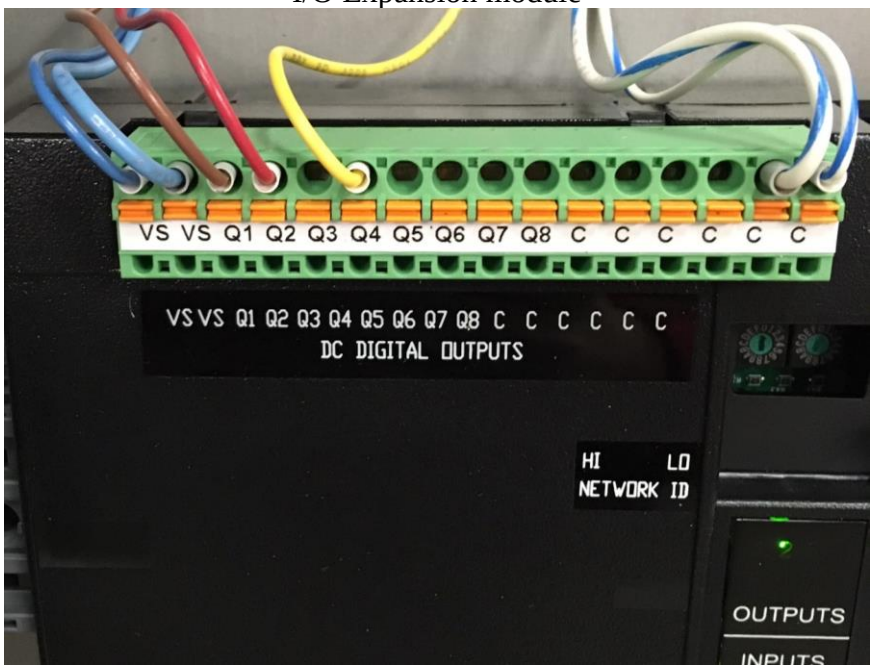
LL PROBE CALIBRATION

The Grid Melter is fully tested prior to shipment and thus the liquid level probes are calibrated. Should it be necessary to recalibrate, follow the instructions below. The procedure consists of manually enabling the Grid heater for a specific time and adjusting the probe's electronics. **Read the procedure fully before attempting to calibrate as there are some very crucial notes.**

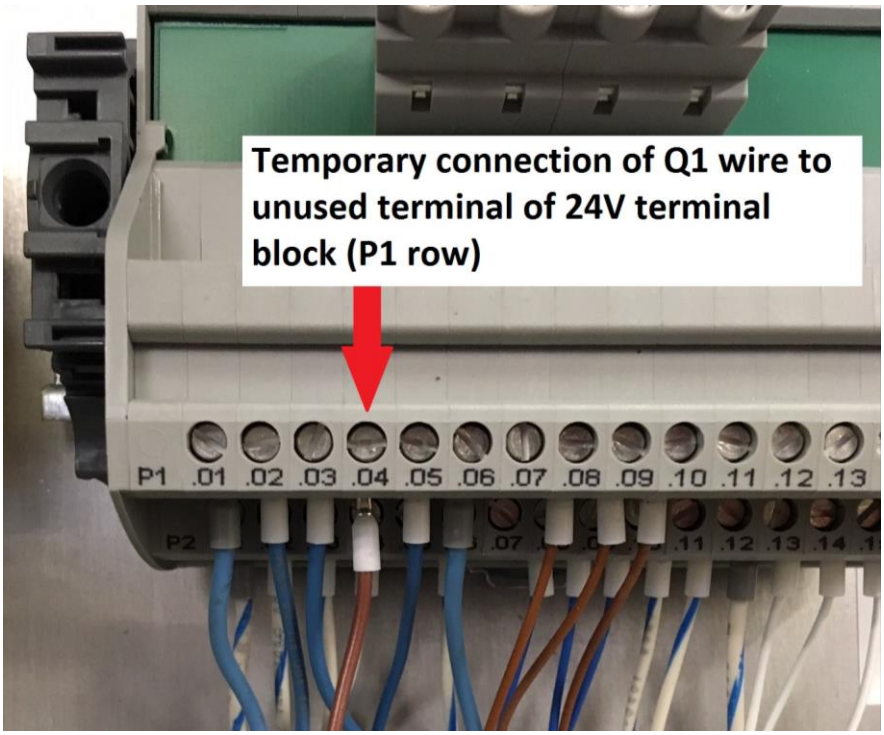
Calibration procedure:

1. With power off, open the control panel. At the top, locate the Grid heater's circuit breaker (35 Amp, second from left) and switch it off. All other breakers should be on.
2. Leave control panel door open and turn main power on. All controllers (Grid, Base, Reservoir) must be powered on. Wait until the Melter has reached processing temperature.
3. The reservoir must be empty to calibrate the probes. Place a metal 1 gallon pail under the discharge valve. Slowly open the valve and drain the reservoir (valve does not have to be in the fully open position). Once empty, close the valve.
4. On HMI screen 3, enable flood ignore (refer to pages 13 & 14).
5. In the control panel, locate the I/O expansion module. It is located on the left side approximately 1/3 distance from the bottom. "Q1" is the output that enables the Grid heater's power relays. Typical wire color is brown. Using a small slotted screwdriver, remove the wire from the output by pressing in the orange tab just below the wire. Connect the wire to one of the unused 24V P1 terminals at the 24V terminal block located above the I/O module. See the following two pictures. This will connect the wire to 24VDC. Once the connection is made, the power relays will be enabled. They are located on the right side almost directly across from the expansion module. Verify the green LED on both relays are on. See third picture.

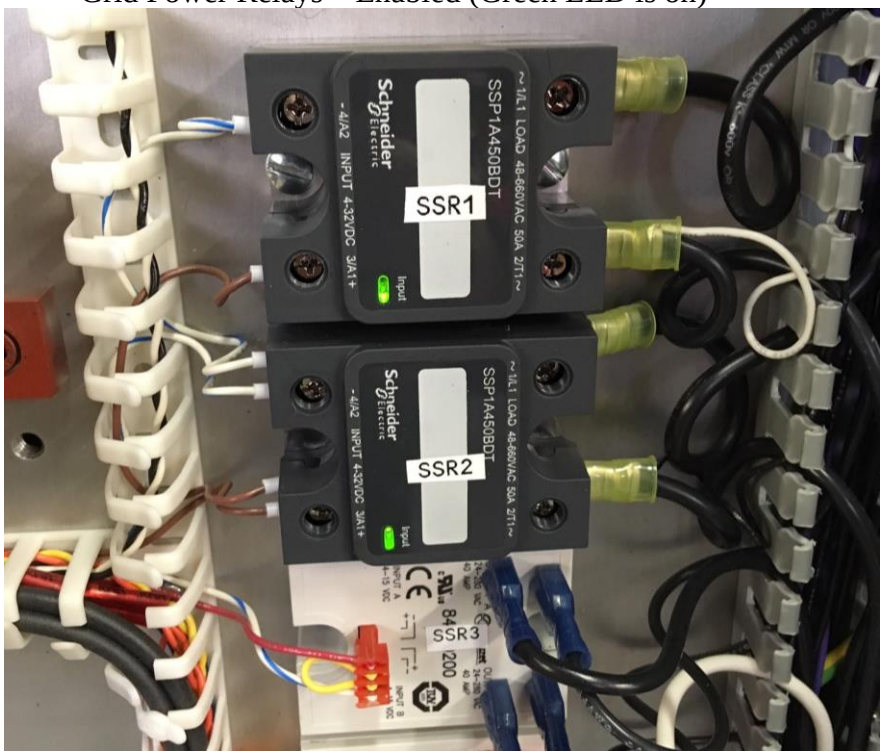
I/O Expansion module



24V Terminal Block



Grid Power Relays – Enabled (Green LED is on)

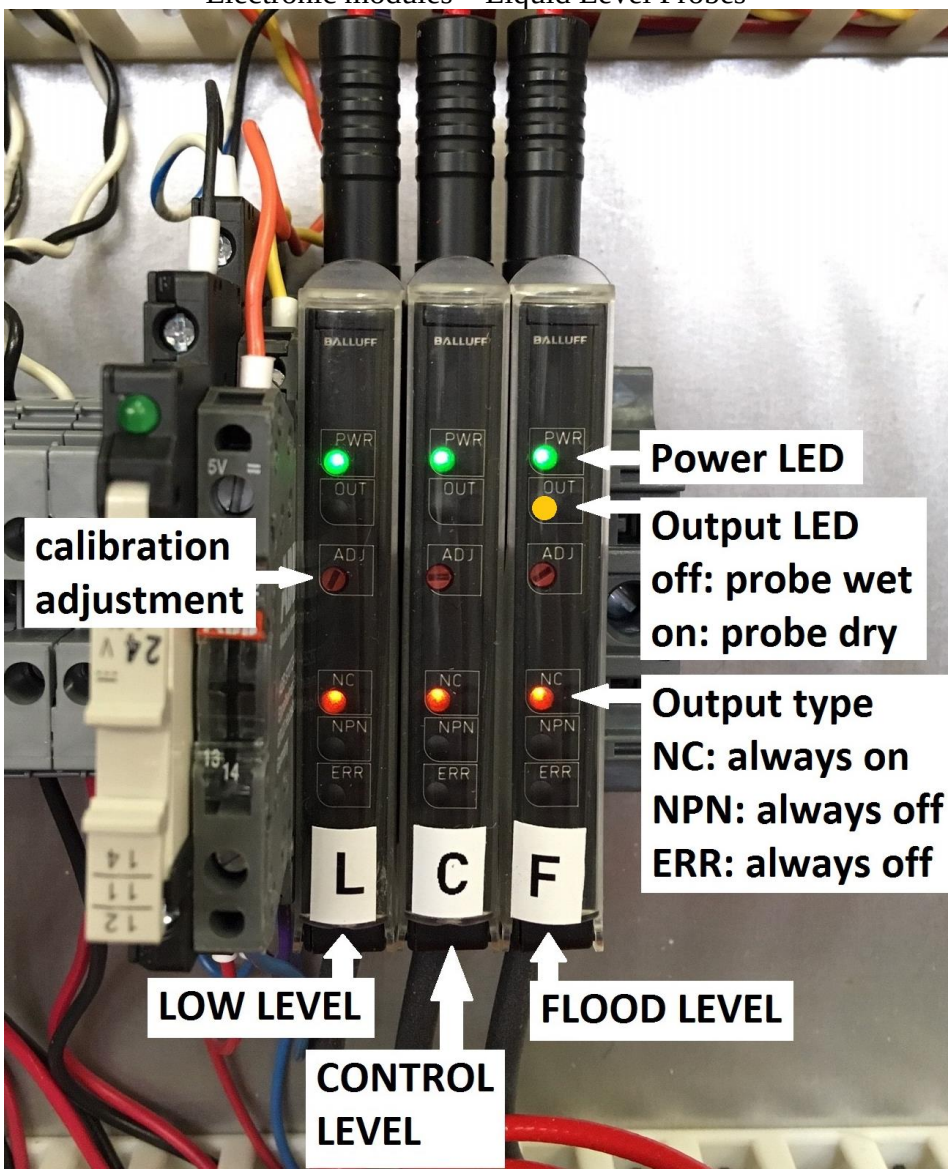


6. Using a timer or stopwatch, switch on the Grid circuit breaker (35 Amp) for approximately 1 1/2 minutes, then switch off. **Note, it is crucial to switch off the circuit breaker at the appropriate time, otherwise the Grid will melt more material,**

possibly resulting in a flood condition.

7. Wait at least 2 minutes for the melting process to completely stop. Locate the low level electronics. See picture below. Using a small slotted screwdriver, turn the adjustment screw one way until the "OUT" LED is ON, then slowly rotate the opposite way until the LED is OFF, then back to ON and finally rotate the opposite way until the LED is OFF again. This sequence adjusts the electronics to the liquid level on the probe. If the "OUT" LED was initially ON, rotate the screw until it turns OFF and slowly rotate back to ON and then back to OFF. The OFF state signifies a low level condition is not present and thus the level is normal (between low and control). It may take a number of turns for the LED to initially switch states. During the adjustment, the audible alarm will turn on, use the Alarm Reset button to switch off.

Electronic modules – Liquid Level Probes



8. To calibrate the control probe, use the timer and switch on the Grid circuit breaker for 2

minutes, then switch off.

9. Wait at least 2 minutes for the melting process to completely stop. Locate the control electronics and adjust the same way as the low probe.
10. To calibrate the flood probe, switch the Grid circuit breaker for 1 ½ minutes, then switch off.
11. Wait at least 2 minutes for the melting process to completely stop. Locate the flood electronics and adjust the screw until the "OUT" LED is ON, then back off slightly until the LED is OFF, then back to ON. The process is the same as for the other probes except that the final state of the "OUT" LED should be ON, meaning no flood condition. In reality, the liquid level will be just slightly under the point at which the flood probe triggers.
12. At this point, both the low and control "OUT" LEDs should be OFF and the flood "OUT" LED should be ON. The liquid level in the reservoir is nearly at the flood condition. The Grid Melter can be run as is, or if desired, open the discharge valve and drain some material.
13. At the expansion I/O module, replace the Q1 wire (press the orange tab with a slotted screwdriver to secure the wire). **Note: This step is very important. If the Q1 wire is left connected to the 24V terminal block, the Grid relays will always be enabled and thus the Grid will be continuously melting. This will not only cause a flood condition, but the level of liquid may rise above the Grid. This will cause the pellets on the Grid to melt and eventually when the Melter is switched off and cooled down, there will be a large solid chunk of material on the Grid. The next time the Melter is powered on and the Grid is enabled, there will not be enough heat transfer to melt out the large chunk of material. Only removal of the upper portion of the tank will remedy this condition.**
14. On the HMI screen, remove the flood ignore condition.
15. Switch on the Grid circuit breaker.
16. Switch off main power and close control door panel. This completes the calibration process for the liquid level probes.

MAINTENANCE

Liquid Level Probes
Approximately every 6 months remove the probes. Be sure to empty the Reservoir and vent the Melter. Clean and inspect the probe (use an acetone or similar solution) being careful to not get any liquid on the connector side.

Visually inspect both the probe connector and the coax cable connector and use caution when mating the connectors (**do not force them together**).

Grid
If the Melter is used daily, the Grid should be inspected once a year. A proper inspection requires the removal of the upper section of the Melter's tank. It is advisable to do this only when the MOCA pellet level is getting low. To do this, turn main power off. Vent the Melter and loosen all holding clamps. Place a tarp around the Reservoir to catch any MOCA pellets that may fall out while the upper section is raised. Raise the upper section straight up several feet and move to the side. Use proper protective equipment and remove any remaining MOCA pellets and visually inspect the Grid. Any blackening of the Grid or any build-up of MOCA should be removed and cleaned with an acetone or similar solution. Do not pour the solution onto the Grid as it will leak through the Grid element and fall into the Reservoir. Instead dip a cloth into the solution and clean the Grid in sections. If it is necessary to remove the Grid, follow this procedure:

1. If the Grid has phenolic supports on the perimeter, remove the outside gasket.
2. Remove center cap.
3. Remove the insulation on the two connections. These are split bolt connectors. Remove the split bolts.
4. Loosen and remove the three Allen bolts securing the Grid assembly to the Base Plug assembly (central aluminum support).
5. Lift off Grid assembly. This completes the procedure.

DRAWING LIST

- Standard Melter: Control panel assembly drawing: 21486. Electrical schematic H-2038
- Hand Batch Melter w/ 3' stand: Control panel assy: 21486-1. Schematic H-2038-1
- Auto Transfer Melter: control panel assy: 21486-2. Schematic H-2038-2.
- Melter w/ discharge hose (no heated valve): Control panel assy: 21486-3. Schematic H-2038-3
- Refer to the notes section of each control panel drawing for probe and temperature sensor part numbers.

TROUBLESHOOTING

Temperature

Most temperature issues are caused by poor electrical connections. Therefore, before replacing a temperature controller or sensor, verify that the wiring is good from the controller's sensor inputs to the sensor itself. This includes the connector as well. Review the electrical schematic and use an ohm-meter to verify continuity of the wiring. The resistance of wiring from the controller's inputs to the sensor connector should be less than 1 Ω. If a reading greater than 1 Ω or if an "O.L." for over limit is measured, then a poor connection exists in the wiring.

The table below describes some error codes displayed on the temperature controller.

Error Code	Possible Cause	Solution
Input fail or incorrect temperature displayed	Sensor not connected	Check connection
	Poor wire connection	Same as above
	Controller defective	Replace
	Controller not programmed	Enter settings
	Faulty sensor	Replace
No display	No power	Push-button switch faulty
		Replace controller
		Power Supply faulty (check if LED is on)

One common temperature issue that causes the alarm to switch on is when the controller senses that the temperature has fallen outside the setpoint band (after reaching the setpoint). The default setting for the band is 8°C. Therefore, if the temperature decreases below the setpoint by 8°C, the alarm will sound. Re-cycling power to the base temperature controller will reset the alarm. The operator must investigate why the alarm has been turned on

The same scenario is applied to a temperature that exceeds the setpoint. If the setpoint has been reached and the temperature rises beyond the band (+8°C); the alarm will sound.

No Material Discharge

The two most common problems associated with discharging liquid MOCA from the Melter are cold spots and material build up in the control level probe.

1. Cold Spots: A cold spot is any area where the temperature is not hot enough to keep MOCA in the liquid state. Most cold spots occur at transition points; an example is the transition from the discharge ball valve to the material transfer line. As small as the area maybe, any cold spot will cause a "blockage" and there will be limited or no flow. It is important to keep the foam insulators at each end of the transfer lines in good condition and situated over each end of the line (at the fitting).
2. Material build-up: MOCA build-up on the control probe will cause a false signal to the PLC. This causes the PLC to think the liquid level is always satisfied and therefore the PLC never activates the Grid. This condition empties the Reservoir. Pressurized air

coming from the line with no liquid MOCA is the effect you see. It is important to inspect the probes every 6 months. Any build-up should be removed. **DO NOT OVER OR UNDER TIGHTEN THE PROBE; PERMANENT DAMAGE WILL OCCUR.**

3. The Reservoir and Base Plug temperature setpoints should not be set below 120°C (248°F). This could cause the MOCA touching the probes to solidify and thus cause the same issue as described above in note 2.

Flood Condition

A flood condition will result from several issues:

1. Material build up; this is described above.
2. Melter not being level
3. Control probe fault
4. Not waiting for the appropriate warm up time.

Since the flood probe is only slightly positioned further out on the Reservoir with respect to the control probe; any tendency for the Melter to favor the flood probe side could cause a false flood condition. It is important to mount the Melter so that it is level.

A faulty control probe may cause the Grid to continue melting above the control level and subsequently cause a flood condition (via flood probe). To test, see procedure below.

Probe Test

A test of any probe can be performed by removing the probe from the Reservoir. Before attempting this, verify that the Melter has been vented and the Reservoir is empty.
Note: Turn power off when disconnecting/connecting the probe's connector.

With the probe out of the Reservoir and connected to its coax cable; dip the tip into a cup of water. The probe will switch and should change the state of the PLC input and LED indicator as you submerge the probe tip into the water. Removing it from the water causes the state to change back. Refer to HMI screen 2 (page 13) and table below:

PLC Input	**Probe in water**	**Probe out of water**
Low	Level satisfied – LED off	Level not satisfied – LED on (green)
Control	Level satisfied – LED off	Level not satisfied – LED on (green)
Flood	Flood condition – LED on (green)	No flood condition – LED off

If the probe does not seem to work, keep in mind that there could be a problem with the cable. If this is suspected, test the probe with the other cable keeping in mind that the function will now reverse as the control and flood inputs operate in opposite states.

Grid Controller Alarm

The Grid controller will alarm when the reading reaches the alarm setpoint. This indicates that the Grid's resistance is increasing. There are two typical reasons for this to occur: one is that the melter tank is empty of MOCA pellets, the second is that a MOCA bridge exists.

A MOCA bridge is an area of MOCA pellets that clumps together and prevents the pellets from resting on the Grid. This resembles a bridge and thus exposes an area of the Grid. An exposed area causes the Grid's resistance to rise (while powered on). If the resistance rises, the current

drawn by the Grid will decrease and since the Grid controller measures the Grid's current/voltage signal (and since the voltage remains the same); the Grid controller reading will increase and eventually reaches the alarm setpoint. This then causes the PLC to command off the relays that route power to the Grid. A totally or partially exposed Grid (if allowed to be powered on) will eventually overheat and damage itself.

If a MOCA bridge is suspect, turn off main power and vent the melter. Remove the venting valve assembly and use a "soft" rod (a wooden broom handle for example) to gently feel your way to the Grid. Move the rod slowly back and forth. A bridge will cause the rod to want to move up. A bridge can be broken up by a gentle hammering motion. The Grid element is robust, but it will be damaged by a rough pounding (use caution). The only way to be absolutely sure that no bridges exist, is to remove the melter's upper tank and visually inspect the Grid.

Grid Controller Reading

As described in the Grid Control section, the controller's reading will be 25 to 39 (Grid on).

As an example, if the controller displays 30 while melting MOCA, the setpoint alarm will be set to 30.5. A reading higher than 30.5 indicates that there is an exposed area on the Grid (MOCA bridge) or simply that the melter has run out of pellets. A controller reading of any number other than 0 (Grid off) or approximately 30 (Grid on) indicates a problem. If the Grid is commanded on and a reading of 18 is displayed, this indicates a problem with either the voltage supply (incoming voltage less than 208-240VAC) or higher than normal Grid resistance (possibly a wiring issue or bad contact). A controller reading of a negative number (-60 for example) indicates a problem with the Grid's voltage/current measurement circuit or the SSRs. If this is left unchecked and the Grid is run until the pellet level is down to zero, there is no way for the alarm to activate and permanent damage may be done to the Grid. In either case, it is important to periodically check the Grid controller display and verify its reading is approximately 30.

(OPTIONAL) Vacuum Transfer OPERATION INSTRUCTIONS

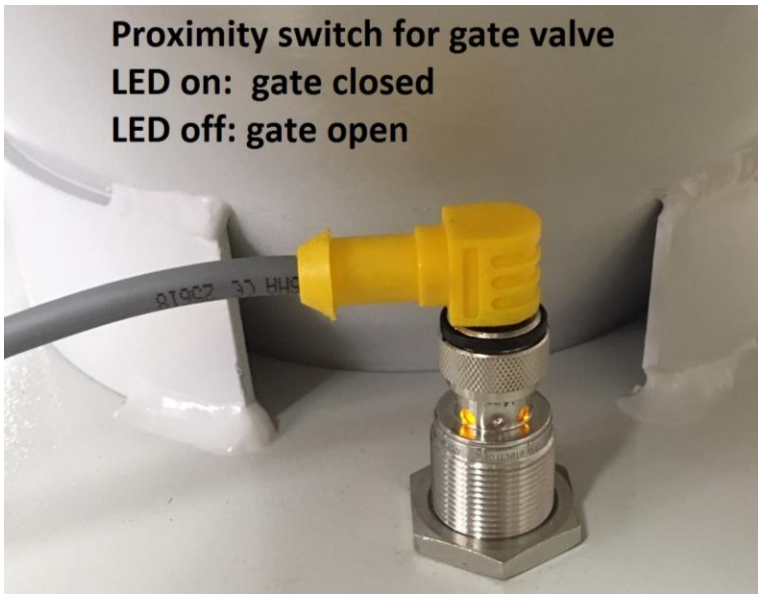
Note: The vacuum transfer system causes the Moca Melter to become extremely top heavy. The Melter's three legs MUST be bolted to the floor.

The vacuum transfer system is a safe and convenient piece of equipment to transfer MOCA into the Melter. A vacuum is created to transfer the pellets from the MOCA container into the Melter. Internal filters eliminate MOCA dust from exhausting into the work area.

Loading Pellets

1. Close the Melter's discharge valve.
2. Relieve all pressure from the Melter by pushing the vent button (item 14) on the Vent Valve assembly. The 3/8" fitting should be exhausted outside in accordance with your local and company policies. Pull open the brass 75psi relief valve located on the top of the tank to ensure no pressure is left and double check the pressure gauge is at zero.
3. If Melter is powered on, the Reservoir and Base Plug may be kept at setpoint.
4. If Melter is powered on, turn off Grid controller (to prevent Grid activation).
5. Check the pellet level by removing the Vent/Pressure valve assembly held in place by the two cam lock levers.
6. Open the 3" ball valve located under the funnel.
7. On the transfer system's control box, set the time control knob to approximately 1/3 to ½ of the dial. This corresponds to approximately 15-25 seconds.

8. Switch on the rocker switch. The vacuum system will power on for the time set and begin pulling pellets from the supply container into the vacuum system's lower section (just above the funnel). A gate in this section creates a chamber where the pellets are temporarily held (under vacuum).
9. After the time expires, the motor turns off and via gravity, the pellets push open the gate and fall into the funnel, through the ball valve and into the Melter. Once the chamber area is empty, the gate returns to the closed position. A proximity switch signals the chamber is ready and the motor turns back on and repeats the sequence. The "Load" and "Dump" status LED indicators on the control box will turn on during the respective operation. The proximity switch (see pic below), has an LED indicator. ON signifies the gate is closed and motor can run (creating vacuum). OFF signifies the gate is open and motor will not run. The transfer process can continue until the desired amount of pellets have been transferred. This can be verified by looking in the vent/pressure valve port. The transfer rate is approximately 25-30 lbs./min.
10. DO NOT OVERFILL PELLETS OR THE BALL VALVE MAY STICK OPEN AND REQUIRE DISASSEMBLY.
11. BE SURE NOT TO SUCK IN THE BAG LINER OF THE SUPPLY DRUM IF APPLICABLE.
12. Should the transfer rate slow over time, refer to the section on replacing the unit's filters.



Re-pressurization

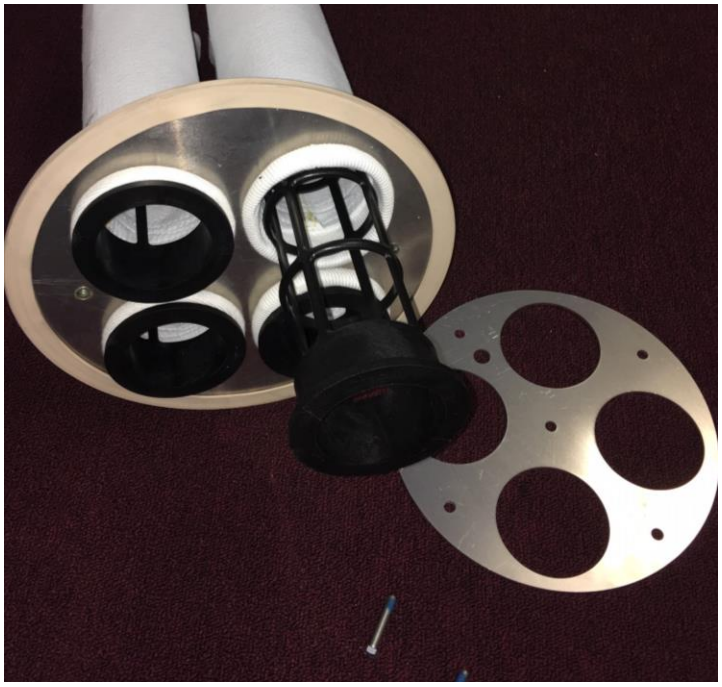
1. Close the 3" fill valve and reinstall the vent/pressure assembly.
2. If the Melter is not up to operating temperature, do so prior to pressurization.
3. Verify all controllers are powered on.
4. Apply appropriate pressure to the Melter.
5. Once a stable pressure is established reopen the Melter's discharge valve.
6. Molten Moca will now be ready to dispense.

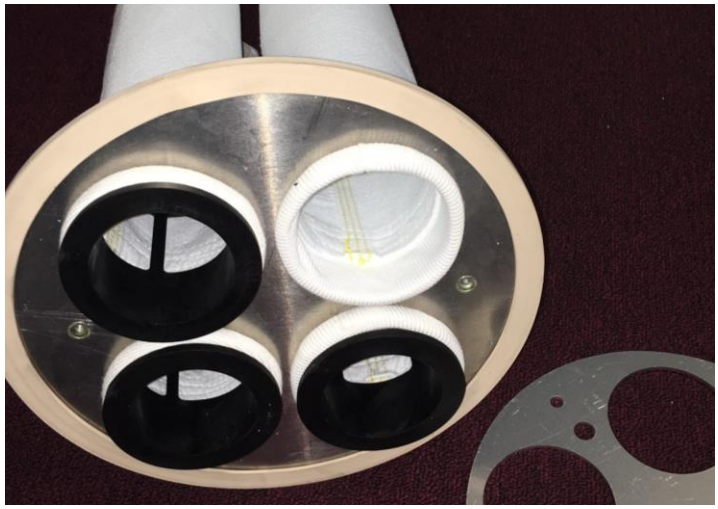
Filter removal/replacement

Eventually, the suction ability of the transfer system will start to decline. This is an indication that the internal air filters are becoming clogged. Replacing the filters is straightforward, follow along: (use caution when disassembling transfer system as there will be MOCA dust in the filter area; use of a respirator is recommended)

1. Loosen and remove the top clamp, then disconnect motor connector and remove the top section (motor).

2. The filter assembly may come off when removing the motor section or it may stay in the middle section, either way is correct and depends on the gasket. Remove two bolts securing the filter cover plate. Remove plate. Filters are attached to a secondary plate (tube plate). Use caution as this area is filled with MOCA dust. See subsequent pictures.





3. Pull the filter bag cage from the filter. Remove the filter by placing your thumb on the outside edge of the bag's snap ring and press in firmly popping the bag out of the tube plate. Filters can be cleaned or replaced. Replacement filter part numbers: 45595 (standard filter: 10-20 micron), 45595-1 (high filtration: 0.5 micron). Qty 4 is required.
4. To install new bags, fold the filter's snap ring in half and position it in the tube plate. Form the snap ring into position by running your hand around the inside of the bag until it is firmly seated in the plate.
5. Place the filter bag cages inside each bag.
6. Fasten the cover plate back into position tightening the bolts until you fell a slight resistance from the filter bags.
7. Ensure that the gasket on the edge of tube sheet is not worn or damaged.
8. Place the filter bag assembly in the unit's middle housing.
9. Reassemble the unit securing the motor section with the v-band clamp.