
Maintenance

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Foreword

You can avoid most problems by following the recommended installation, operation and maintenance procedures outlined in this User Guide. If you do have a problem, this section will help you determine what caused it and how to fix it.

Blender Cleaning.

When you change materials:

To prevent contamination of subsequent batches, you should clean all bins and chambers thoroughly. Drain the material bins, weigh hopper and mix chamber. Remove any residual material. The mixing auger can also be easily removed.

If you are using feeders to add material or colorant, you need to clean these feeders before filling them with different materials. Drain the feeder bin, remove the auger and using compressed air, clean out any residual material.

Weekly or as required:

Inspect:

- A. Air regulator filters for condensation or other signs of water. Purge and clean the filter bowl if necessary.
- B. Inspect the mix auger. Verify that the mix auger turns easily within the chamber. If the auger makes noise when rotating or does not turn easily, you may need to lubricate the ends of the auger with a commercial lubricant.
- c. If the mix auger flights become sharp or damaged through wear, replace it.

Monthly:

- A. Inspect power cables, wires and electrical connections.
- B. Check for loose or exposed wires, burned contacts, and signs of damaged wires.
- C. Check exterior power cords to the main power source.
- D. Inspect air connections, hoses, lines for wear or damage.
- E. Tighten connections or replace damaged parts

The load cell calibration should be checked at least 3-4 times per year. Failure to do this could result in production errors or losses. Please refer to the quick start section of this manual for how to calibrate the load cell.



WARNING: Pinch and auger hazards.



This equipment is equipped with pneumatic slide gates beneath the material bins and may have a pneumatic slide gate beneath the rotating augers in the side feeders and mixing chamber. Always disconnect and lock out the incoming power source before cleaning the blender or feeder. Always disconnect the compressed air source before working near the slide gates. Failure to do so could result in serious injury.

Blender Cleaning

All TSM blenders include an access door safety interlock which removes the Electrical power and discharges compressed air from the slide gates.



CAUTION: Flying objects. This blender is equipped with a compressed-air gun that can be used for cleaning the bins and mix chamber. To avoid potential injury, you must observe all safety regulations that apply to the use of compressed air for cleaning equipment.

Adjust air pressure to no more than **7.5 Bar (100 PSI)** for auger mixing systems. Wear protective goggles and clothing to prevent injury from flying particles and objects.

When you change materials, you should clean all interior surfaces of the blender thoroughly using a clean cloth, vacuum or compressed air.



Stop the blender, then disconnect the mains power lock out the main power source.

- Drain the material bins using Optional easy drain valves.
- Open the bin access doors and remove all material using compressed air or vacuum.
- Open the mixing chamber door and disconnect the weight hopper and remove same. Clean the weigh hopper.
- **For Optimix series blenders:**
Remove the front plate of the mixing chamber and stainless steel mixing chamber liner.
- Empty residual material and clean the mixing chamber. You have the option of removing the mixing auger if necessary.





- Slide the weigh hopper back into the mix chamber, making sure that no obstructions prevent the hopper from resting evenly on the load cell bracket.
- Close the mixing chamber and material bin doors.





Troubleshooting


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Forward.

Before you begin troubleshooting:

-  Refer to the wiring diagrams and other schematics that were shipped with your equipment. The diagrams should note any custom features, such as special wiring or control options, not covered in this User Guide.

-  Verify that you have all instructional materials related to the TSM SigmaBatch blender, its control systems and its components. Additional details about troubleshooting and repairing specific components are in these manuals

-  Verify that you have manuals for equipment located upstream and downstream from the blender. Solving problems related to material conveyed to the blender or to extrusion quality may require troubleshooting equipment in the extrusion line.

Word of Caution

WARNING: This machine should be adjusted and serviced only by qualified technical personnel who are familiar with the construction and operation of this type of equipment.



DANGER: Voltage hazard. Always disconnect and lock out the main power supply before opening the blender electrical enclosure.




Troubleshooting procedures that require access to the electrical enclosure while power is on should be performed only by qualified electrical technicians who know how to use electrical testing equipment and understand the hazards involved.

Determining the Cause of a Problem Blender alarms


Most problems will trigger one of the blender alarms. The blender includes alarm checks for:

- A. Individual components
- B. Blender system alarms.

If an alarm occurs on the blender.  Will appear on the blender bin and the red beacon mounted on the blender frame will provide a visual warning

If it is a component fill alarm, the blender will continue to operate in automatic mode.

If the alarm applies to more than one component the blender automatically enters manual mode.

- To find the cause of an alarm, go to the production summary screen and touch . The cause of the alarm and the time that it occurred will be displayed on the Alarm Summary screen.



- Touch  to cancel an alarm.


For information on what each alarm icon means, refer to the diagnostic tables on the following pages.

NOTE:
If you are using the blender with extrusion control please see the extrusion control section of the manual for all related alarms.

When a problem affecting one of the material components occurs:

Component Alarms



- ◆ “ALARM” flashes beside the component number on the Production Summary screen.
- ◆ The blender continues to operate in automatic mode.
- ◆ The Alarm Summary screen displays an alarm message.

Alarm message	Possible cause	Solution
 <p>“Fill Problem on Blend x”</p>	<p>Is there material in the hopper above the slide gate?</p>	<p>Verify that there is material in the bin or feed hopper and that the loading system supplies sufficient material. (The material may have arrived after the alarm occurred.)</p>
<p>The blender was unable to fill the weigh hopper to the target weight from the component number displayed in the message</p>	<p>Does the recipe call for more material than the component valve or feeder can deliver? Refer to the percentage chart page 20 in the introduction section</p>	<p>Verify that the side feeder or material slide valve opening is the correct size for this application. Trying to put too much material through a feed valve that has a flow reducer insert can cause this alarm</p>
	<p>Has material “bridged” over the bin discharge, blocking material flow?</p>	<p>Verify that material is free to flow into the weigh hopper by opening the door of the blender, remove the weight hopper and manually open the slide gate.</p>
	<p>Did the air-actuated slide valve for this component fail to open?</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Verify that the RUN/STOP switch is in the RUN position. <input type="checkbox"/> Verify that the valve is connected to compressed air supplying at least 6.0 bar (87 PSI). <input type="checkbox"/> Verify that the solenoid and relay is working correctly. See “Checking Fill Valves” (page 12).
	<p>Did the side feeder fail to operate?</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Ensure that feeder cable connections in the blender wiring cabinet are secure. <input type="checkbox"/> Verify that the feeder solenoid light turns on.

System Alarms



When a problem affecting the blender control or more than one component occurs:

- ◆ The blender automatically enters manual control mode after a period of time if the alarm is not resolved.

Alarm message	Possible cause	Solution
 <p>“Level Sensor Uncovered” The level sensor in the mixing chamber failed to see material during a fill cycle</p>	<p>Was there a component fill alarm?</p>	<p>A component may not have filled correctly, causing the weigh hopper to delay dumping the next batch into the mix chamber. Verify that component bins and feeders have material, are operating correctly and that the loading system can maintain all components. This is an important alarm because it is possible that the extruder was starved of material.</p>
	<p>Is the level sensor faulty?</p>	<p>Check the level of material in the mixing chamber. If material is covering the level sensor even though it failed to detect material:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Verify that the level sensor wire is securely connected to the correct terminal in the blender wiring cabinet. <input type="checkbox"/> Verify that the level sensor sensitivity setting is correct. There is an adjustment pot on the sensor.
		 <p>Using this icon on the Reports/blender information screen you can check if the blender is reading the sensor correctly.</p>



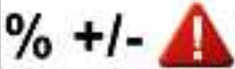
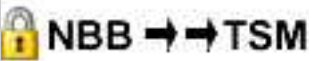

System Alarms

Continued...

Alarm message	Possible cause	Solution
 <p>“Calibration Data Alarm” The calibration data stored in the blender has become corrupted</p>	<p>Has a new version of the control software been installed recently?</p>	<p>Verify and re-enter calibration information as needed or the calibration data can be reloaded from the SD card. If the problem persists, contact TSM service technicians.</p>
 <p>Mixing Screw</p>	<p>Something has stopped the mixing screw causing the current trip to trip.</p>	<p>The current trip needs to be reset after checking that there is nothing stopping the mixing screw from turning. It may be necessary to remove the screw.</p>
<p>% ≠ 100</p> <p>Component Percentages are not adding up to 100%</p>	<p>The recipe has been entered wrong</p>	<p>Recheck the recipe This alarm should not occur if you are using the auto recipe entry setting.</p>

Continued...

System Alarms

Alarm message	Possible cause	Solution
 <p>“Tare alarm”. During the cycle, the system could not empty the hopper within 20 seconds.</p>	<p>There is a problem on the load cell or the weight has not being tared to zero.</p>	<p>The calibration of the load cell should be checked. See <i>“Calibrating the Weigh Hopper”</i> in the quick start guide (page 1). Check that the dump flap below the weigh hopper is opening correctly and that is not touching the material in the mixing chamber.</p>
 <p>“Low Level alarm” (optional). This alarm is only activated if low level sensors are fitted to the reservoir bin and connected into the system through the Input card</p>	<p>A component in the reservoir bin has fallen below the pre-set level.</p>	<p>Add more material to the reservoir bin as required.</p>
 <p>Deviation alarm The actual percentage of “x” component is not correct.</p>	<p>Non free flowing material can cause this or dosing the material through a valve that is not suitable.</p>	<p>Check the introduction section for the min and max percentages for each size of valve and verify that the set percentage is within spec. Check that there is no material blockage above the slide valve. It may be necessary to add a vibrator or paddle.</p>
 <p>Software security alarm</p>	<p>The software cannot read the necessary information from the NBB</p>	<p>This cannot be resolved without returning the NBB to TSM</p>
 <p>Software License timeout.</p>	<p>There may have been a temporary software license installed.</p>	<p>Contact TSM for a new License code</p>

Load Cell Checks and Calibration

A malfunctioning load cell can lead to incorrect batch weights and persistent A/D Error alarms. The problem may be caused by material trapped around the load cell housing; a failure on the NBB control board, electrical noise; or a damaged load cell.

To check the load cell:

- **Power up the blender** using the mains power switch located on the side of the blender. **Open the front door of the blender as the load cell cannot be tared (zeroed) when the door is closed.**
- **Clean the weigh hopper and load cell area.** Open the mixing chamber door and slide the weigh hopper out. Using the supplied air gun, clean the hopper and any dust that may be around the load cell. Ensure that there are no granules trapped around the load cell and ensure that the weigh hopper is not being obstructed.
- **Check the mounting bolts for the load cell and bracket.** These bolts must be securely tightened. Two bolts mount the load cell to the block. Four bolts mount the block to the top plate of the blender chassis. Verify that the load cell cannot move from side to side on the mounting block. Also verify that the bolts securing the weigh hopper mounting bracket to the load cell are tight.
- If the slide valves have been fitted with guards check that there is adequate space between the guards and the load cell bracket.
- **Replace the weigh hopper** on the load cell.
- **Calibrate the Hopper.** See the quick start guide for information on how to do this.
- If the weight reading is not stable or you have to carry out the calibration more than once a month, contact TSM Support Services for further instructions.

Checking Fill Valves





DANGER: Electrical shock hazard. Always disconnect and lock out the main power supply before opening the blender electrical enclosure. The solenoid valves are connected to the main voltage supply.

Procedures that require access to the electrical enclosure while power is on should be performed only by qualified electrical technicians who know how to use electrical testing equipment and understand the hazards involved.

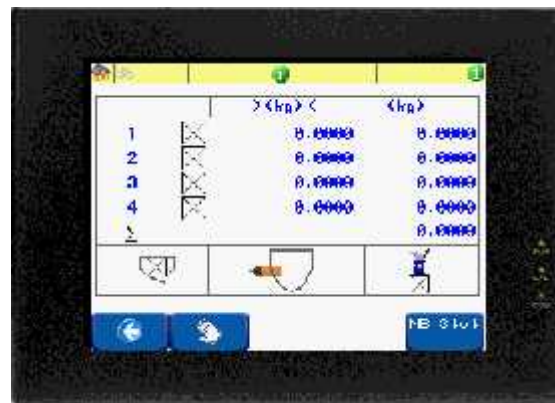
There is one air-operated slide valve or Micradose valve associated with each compartment of the material bin.

Solenoids located on the back of the blender control the slide valves. Solenoid source drivers, located on the control module control the solenoid for each valve. Diagnose the problem by following the steps below.

1. Ensure the blender is not in stop/pause mode. This mode will be displayed on the top right corner of the home screen.

1. Touching the  icon and then the  icon will take you to the blender information page. On this page it is possible to see if the software is trying to open the slide valve.

If the software is switching on the output but the slide valve is not opening then the next place to check is on the control module.



2. On the control module card there are LED's for each output. These are located directly above Conn 2 (valve connections) See page 25 for layout and led description

3. On the Festo valve block there are LED's for each valve. If the LED on the control module is activating and the led on the valve block is not then check the connections between the control module and the valve block.

4. There is a blue manual activation switch on the valve block pushing it up should activate the valve.(remember there may be material in the hopper so be careful opening activating the valve for long periods.)

5. Check there are no bends or kinks in air lines running between the valve block and the slide gate/Micradose valve.

6. Empty the material hopper. Open the front door of the blender and remove the hopper. Manually move the slide valve to ensure it can move freely.

Checking side Feeders

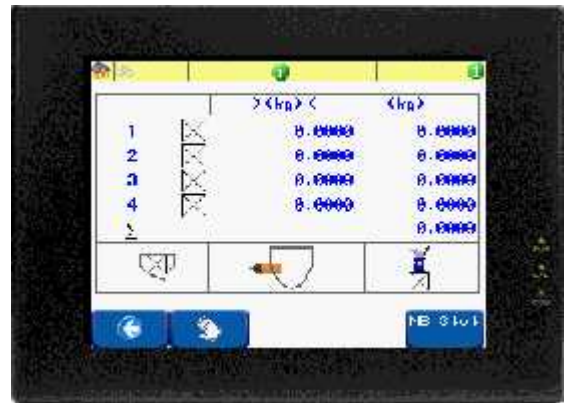


DANGER: Electrical shock hazard. Always disconnect and lock out the main power supply before opening the blender electrical enclosure. The solenoid valves are connected to the main voltage supply.

Procedures that require access to the electrical enclosure while power is on should be performed only by qualified electrical technicians who know how to use electrical testing equipment and understand the hazards involved.

To check the feeders:

- Ensure the blender is not in stop/pause mode. This mode will be displayed on the top right corner of the home screen.
- Ensure the outlet from the material hopper is not obstructed.
- For the Micradose feeders check that quick release air pipe is connected.
- Use the same procedure outlined on the previous page to check the side feeders.
- Check that the light on the solenoid turns on as each feeder is activated. If the valve does not turn, ensure that the connector is securely fitted. (See page 25 for the LED identification.) If the connection is good, check the 24v is being outputted from the control module.
- There is a manual activation button on the valve push this to check that the valve operates manually.
- If there is still a problem, contact TSM Support Services.



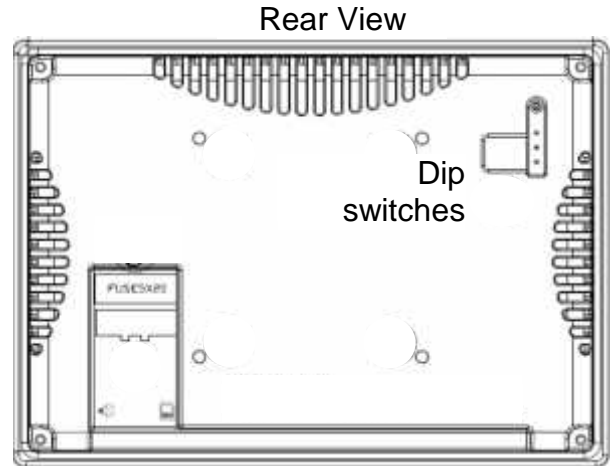
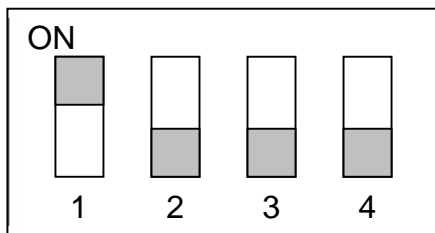


Calibrating the operator touch panel.

The touch panel should not need to be regularly calibrated but if there is a problem then it can be calibrated as follows:

To get the touch panel into Calibrate mode:
 Power off the touch panel and remove the back cover.
 Locate the dip switches and set them as shown below

Dip Switch Settings



SW 1	SW 2	SW 3	SW 4	Mode
On	OFF	OFF	OFF	Calibration mode

In this mode when you power on the Touch panel, the screen will display a “+” sign at the center of the screen.

Use a stylus or finger to push the center of the “+” until it moves. The “+” moves to upper-left, upper-right, lower-left, lower-right and center. When all five “+” are done the “+” will disappear. The Touch Screen parameter is automatically stored.

Power off the panel and put the dip switches back as shown below.







SW 1	SW 2	SW 3	SW 4	Mode
OFF	OFF	OFF	OFF	Normal mode



Wiring Considerations	
Blender is not powering up correctly.	*Please check quick start guide FAQ section. *
Communications errors. (Visible on diagnostics screen)	If communications to devices are showing more than 10% timeouts, (TSM diagnostic displays) check that the communication cables are not routed along side high voltage cables. Ensure that cable shields are terminated properly.
Do NOT run TSM cables with high voltage cables.	The wires connecting the various elements of a TSM system are normally communications/ data lines and are low voltage. As such, care should be taken to keep them well removed from high voltage lines. DO NOT RUN HIGH AND LOW VOLTAGE LINES TOGETHER WITHIN THE SAME CONDUIT. Shielded cable must be used for communications lines. Although it is not strictly necessary to run communications wires from TSM equipment in conduit, it is advisable from a safety and aesthetic point of view.
Why is it necessary to keep communications cables and material conveying lines separate?	Moving plastic granules can produce extreme static charges. If pipes carrying the granules are not properly earthed, then the electrical energy will be discharged down through the system electronics causing possible malfunction and damage. Generally, static symptoms include the resetting of the Remote Display or granules sticking to the sides of the hopper or the mixing chamber. Therefore do not attach communications cables to material conveying lines or other conduit containing cables with high voltages or high currents. If possible, run the communications lines in armoured trunking, which is properly earthed/ grounded at one end only. All conveying lines MUST BE made of flexible tubing and fitted with a ground wire.



Loadcell / Weighing Accuracy Issues	
How do I clear a Tare alarm/ tare the blender hopper?	<p>Tare the blender: (for more a more detailed explanation see the quick start section page 1,2)</p> <ul style="list-style-type: none"> ▪ Ensure that mixing chamber door is open ▪ Touch the  button and enter the password. ▪ Select  then the blender type ▪ Tare the hopper by touching  ▪ This now becomes the zero reference point for the loadcell readings.
How do I know if the blender load cell is calibrated correctly?	<ul style="list-style-type: none"> ▪ Place a known weight, e.g. 1kg/ (2 lbs) , in the weigh hopper ▪ The weight will be displayed on the hopper calibration page. (see above on how to get to this page.)
If weight calibration is incorrect - what do I do?	<p>Calibrate the load cell – (for more a more detailed explanation see the quick start section.)</p> <ul style="list-style-type: none"> ▪ Tare the hopper as above ▪ Place a known weight, e.g. 1kg, in the weigh hopper ▪ Enter the value of the known weight. The blender automatically recalibrates and the actual weight should now be displayed correctly. ▪ Touch  to exit to main page
If the Weight Measurement is not functioning properly, what should I do?	*Please check quick start guide FAQ section.*
I am having problems with the loadcell	*Please check quick start guide FAQ section.*



Other Accuracy issues

<p>When feeding through the SLIDE VALVES My blender does not seem to be achieving the required accuracy</p>	<ul style="list-style-type: none"> ▪ When the TSM blender leaves the factory it is set to a standard slide valve configuration - unless specified otherwise by the customer. ▪ The slide valve size determines the minimum and maximum percentages that can be metered for each individual component. See introduction section page 20 for standard slide valve size configurations. ▪ If a lower % is required for any component, the appropriate insert must be attached. ▪ See blender introduction section page 20 for standard slide valve size configurations.
<p>When using the MICRADOSE FEEDERS my blender does not seem to be achieving the required accuracy</p>	<ul style="list-style-type: none"> ▪ See the Micradose feeder % range specification tables in the SigmaBatch Quick-Start guide for the minimum and maximum % of batch weight, which can be fed for each component.

Operator Panel

<p>The Operator Panel is not working - what should I do?</p>	<ul style="list-style-type: none"> • Please Check Quick Start Guide FAQ Section* • Page 7
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Other hardware

<p>If the mixing motor is not rotating?</p>	<p>On the 3 phase models be sure that the current trip has not blown. It can be reset by pushing the reset button on the current trip located in the blender contactor box.</p> <p>*Please check quick start guide FAQ section.* PAGE 7</p>
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<p>The mixing motor does not seem to be rotating in the correct direction - what should I do? (3 phase models only)</p>	<ul style="list-style-type: none"> ▪ The mixing auger should rotate in a <u>clockwise direction</u>, when looking at the shaft of the motor from the motor end - conveying material to the center of the chamber. <p>If the direction of the mixing auger is incorrect:</p> <ul style="list-style-type: none"> ▪ Switch mains power switch to "off" and lock it out. ▪ Disconnect mains power supply externally to blender ▪ Swap any 2 phases (e.g. L1 & L2) going to the blender ▪ Reconnect mains power and turn mains power switch to "On". ▪ Check that the rotation of the Mixing is correct. I.E. in a <u>clockwise direction</u>, when looking at the shaft of the motor from the motor end - conveying material to the center of the chamber.
<p>If the Dump Flap/ Slide Gates are not operating?</p>	<ul style="list-style-type: none"> ▪ Check whether stop/pause icon is displayed on the top right of the home screen. ▪ Ensure that the door of the mixing chamber is properly closed. ▪ Check that the system is not in 'PAUSE' mode. ▪ Check status of the appropriate LED indicator on the NBB PCB. The LED should be on when valve is open. (page 25 for LED description) ▪ Ensure that the factory air supply is connected (TSM <u>recommend</u> air supply of 7.5 bar for optimum blender efficiency. An air supply pressure greater than 10-bar could damage the blender) The supply must be oil-free ▪ Check that air pressure on the pressure regulator gauge reads 7.5 Bar. This gauge is located at the side of blender control console.

Frequently Asked Questions




<p>If the Micradose Feeder is not operating:</p>	<ul style="list-style-type: none"> ▪ Ensure 24v cable is securely connected in the correct socket of the NBB module in the control cabinet. ▪ Ensure that the door of the mixing chamber is properly closed. ▪ Check that the system is not in 'PAUSE' mode. ▪ Check status of the appropriate LED indicator on the NBB. The LED should be on when motor is active.
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Fill Valves

<p>I have problems with the fill valves</p>	<p>*Please check quick start guide FAQ section.*</p>
<p>If the slide valves are not operating?</p>	<p>*Please check quick start guide FAQ section.*</p>

Other issues

<p>What version of software am I operating</p>	<ul style="list-style-type: none"> ▪ All of the blender information can be displayed by touching the  icon on the top right of the home screen. (see page 3 of the user manual for a more detailed description).
<p>Accuracy Problems</p>	<ul style="list-style-type: none"> ▪ Sometimes a faulty load cell may affect accuracy, refer to page 2 in the Quick Start Guide to check the weight measurement. ▪ Running the blender automatic test routine may identify the source of the blender inaccuracies. ▪ TSM blenders incorporate an advanced vibration filtering system, however if there is excessive vibration on the blender and it is affecting accuracy, the blender may need to be isolated from the extruder.



Extrusion Control problems

How can Extrusion Control improve my process?	<ul style="list-style-type: none">▪ Extrusion Control works by monitoring the throughput of material and adjusting either the extruder or haul off speed to keep it constant.▪ This means that either the throughput or the weight per length and thus the gauge of the extruded product can be kept constant.▪ This leads to improved quality, reduced start-up time, and reduced material usage - because it allows the process to run at minimum tolerances.
My extruder control is not working, what should I check?	*Please check extrusion control Extrusion control section. page 11
I am having a problem with line speed. What should I do?	*Please check extrusion control extrusion control section.* page 12

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Statement on TSM remote service capability of blender (NBB module).

Remote access:

Each TSM blender includes an integral Ethernet port which allows remote access by customer or other authorized personnel.

This service level allows the user to access all blender functions available via the operator panel, including supervisor and engineering fields. (Assuming that the user is an authorized password holder)

TSM can provide remote support including configuration and software updates using this Ethernet port across the internet without any firewall configuration changes required on the customer's network upon request by the customer.

Maintenance



Our service experts are available to help with any problem you might have installing and operating your equipment.

TSM Control Systems also offer a comprehensive on site installation, training and preventative maintenance programme. You can contact our Customer Service Department by any of the following methods.

Tel : + 353 42 93 35 560

Fax : + 353 42 93 34 422

Email: support@tsm-control.com

You can commission TSM Control Systems service personnel to provide on-site service by contacting the Customer Service Department.

Should you encounter a problem commissioning or operating the blender please complete the following checklist before contacting TSM Control Systems:

- Ensure you have all model numbers and serial numbers for your equipment.

Service personnel will need this information to assist you.

- Check that power is supplied to the equipment (see page 18 in the introduction section)
- Check that all connectors and wires between the control console and related components have been installed correctly as per the wiring diagram in this manual..
- Please refer to the troubleshooting guide of this manual (Section page15), which may assist in solving the problems.
- Examine the instruction manual(s) carefully for associated equipment, especially controls. Each manual has its own troubleshooting guide to help you.
- Check that the equipment has been operated as described in this manual.
- Check that all connections comply completely with accompanying schematic drawings and ensure that all precautions listed are satisfied.

Customer Service.

Here to Help

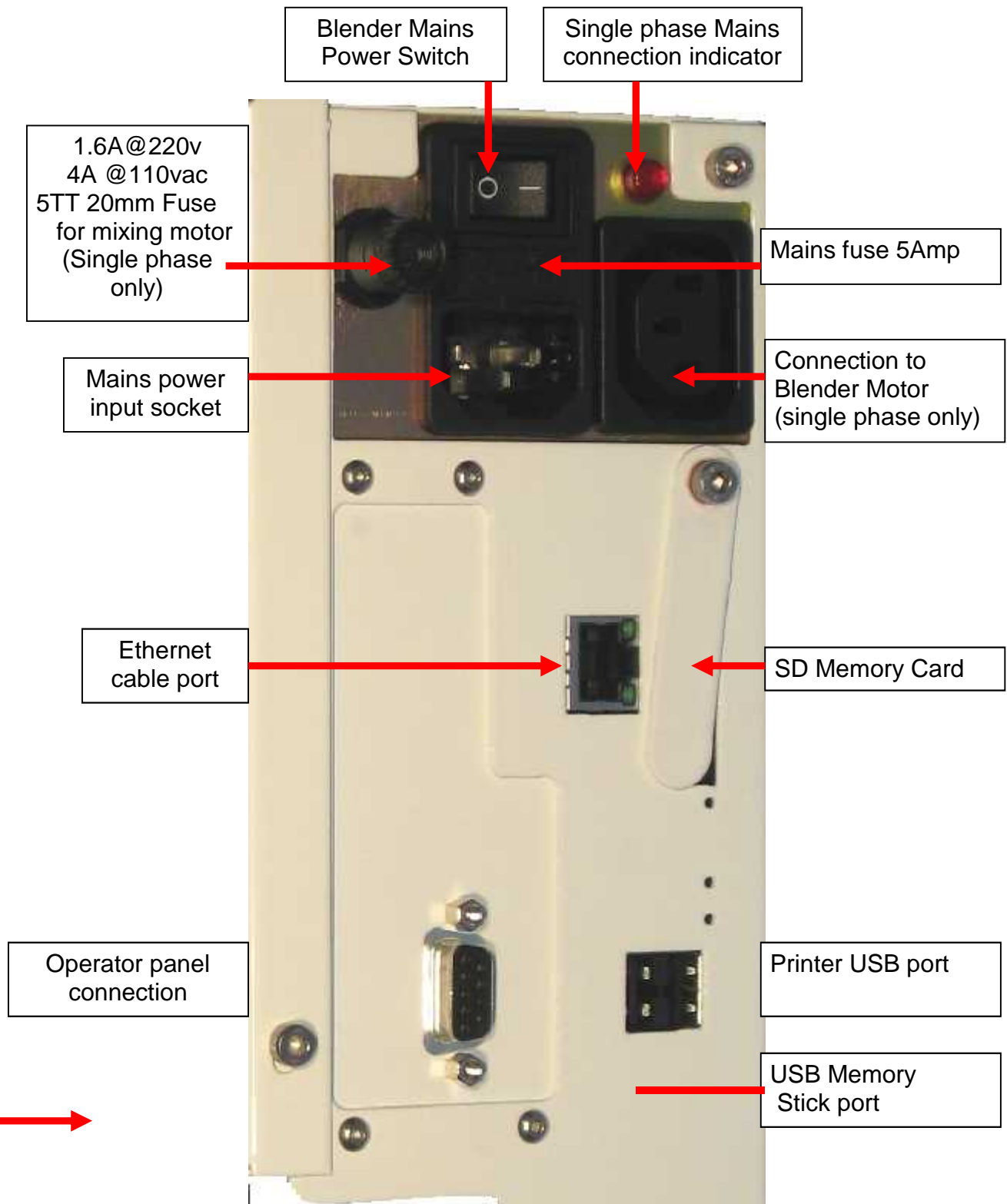
How to Contact Customer Service

Before You Contact Us...

Additional manuals and prints for your TSM equipment may be ordered through the Customer Service or Parts Departments for a nominal fee.



NBB Console External Connections.



Removing the Blender control console

The TSM blender has been designed in such a way that all of the electronics parts are modularized. This allows them to be easily exchanged if a problem occurs.

The 3 main electronic parts are

1. The electronics control console. (control board and power supply)
2. The operator panel.
3. The Electrical Contactor box (3 phase blenders only)

If the blender develops a problem and it is necessary to change the control console, it can be done in four easy steps

1. **Switch all power off the blender.**

2. Open the tray on the bottom of the NBB console and disconnect all of the cables.

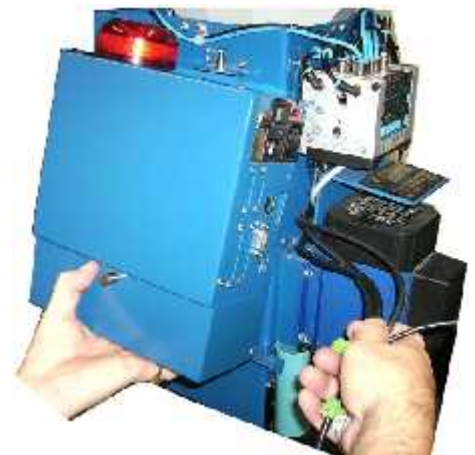


3. Open the thumb screw on top of the console



4. Lift off the console.

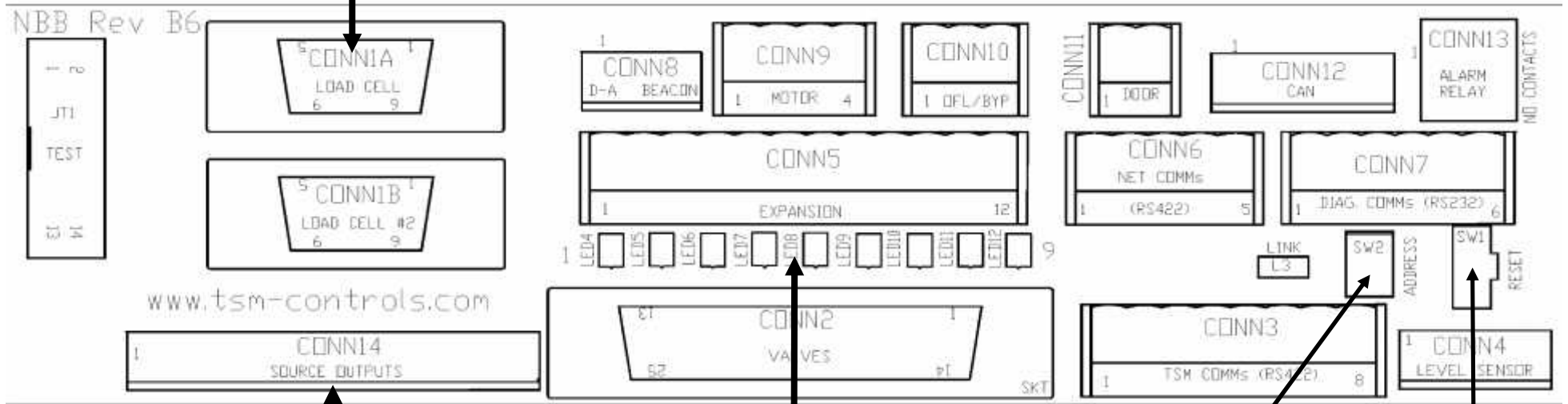
Then remove the SD card from the SD card slot (see previous page for location) and insert it into the new board.





Control console connections

Load cell connection A
(Load cell B is only used if a second load cell is needed)



See wiring table on next page

LED 4	Slide valve 1
LED 5	Slide valve 2
LED 6	Slide valve 3
LED 7	Slide valve 4
LED 8	Alarm
LED 9	Clean
LED 10	Weight hopper
LED 11	Mixing Motor
LED 12	USB

Modbus comms address

Reset Button



Connecting a Side feeder or Dispensing aid.

The valve outputs are sent to the valve block via Conn 12. These outputs are duplicated on Conn 14. Conn14 can be used to connect a side feeder to a blender or to connect a dispensing aid (Vibrator or agitator).

For example to connect a Micradose side feeder as component 5 on a standard TSM 350. You would connect it to pins 6 (GND) and 7 (24v output).

If an agitator is used on Component 1 then the agitator would be switched on using Conn 14 pins 1 and pin 6. This means that the agitator will only operate when the component is activated.

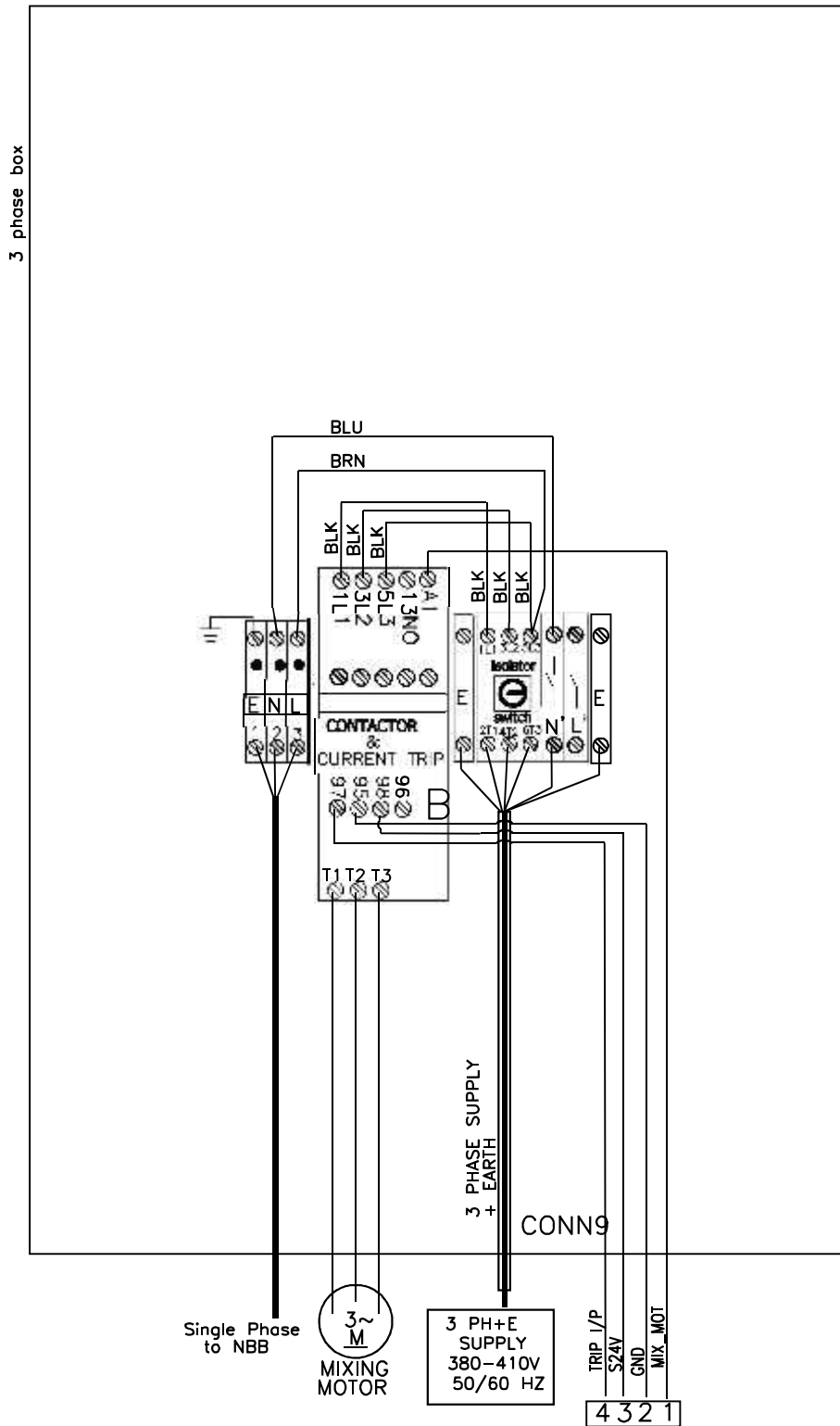
Conn14	Optimix 50 / 150 /250	Optimix 350/650	Optimix 350/650 clean	Optimix 1000/1500 / 3000
1	Comp 1	Comp 1	Comp 1	Comp 1
2	Comp 2	Comp 2	Comp 2	Comp 2
3	Comp 3	Comp 3	Comp 3	Comp 3
4	Comp 4	Comp 4	Comp 4	Comp 4
5	WH	WH	WH	WH
6	GND	GND	GND	GND
7	Comp 5	Comp 5	C	Comp 5
8	Comp 6	Comp 6	C	Comp 6
9	NA	NA	Comp 5	Comp 7
10	NA	NA	Comp 6	Comp 8
11	DMP	DMP	DMP	DMP
12	GND	GND	GND	GND



Micro dose feeder (optional)

WH = weight hopper
 C=Cleaning
 DMP = Air Dump

EUROPEAN 3 PHASE WIRING CONNECTIONS (excluding Optimix 50 / 150 250)



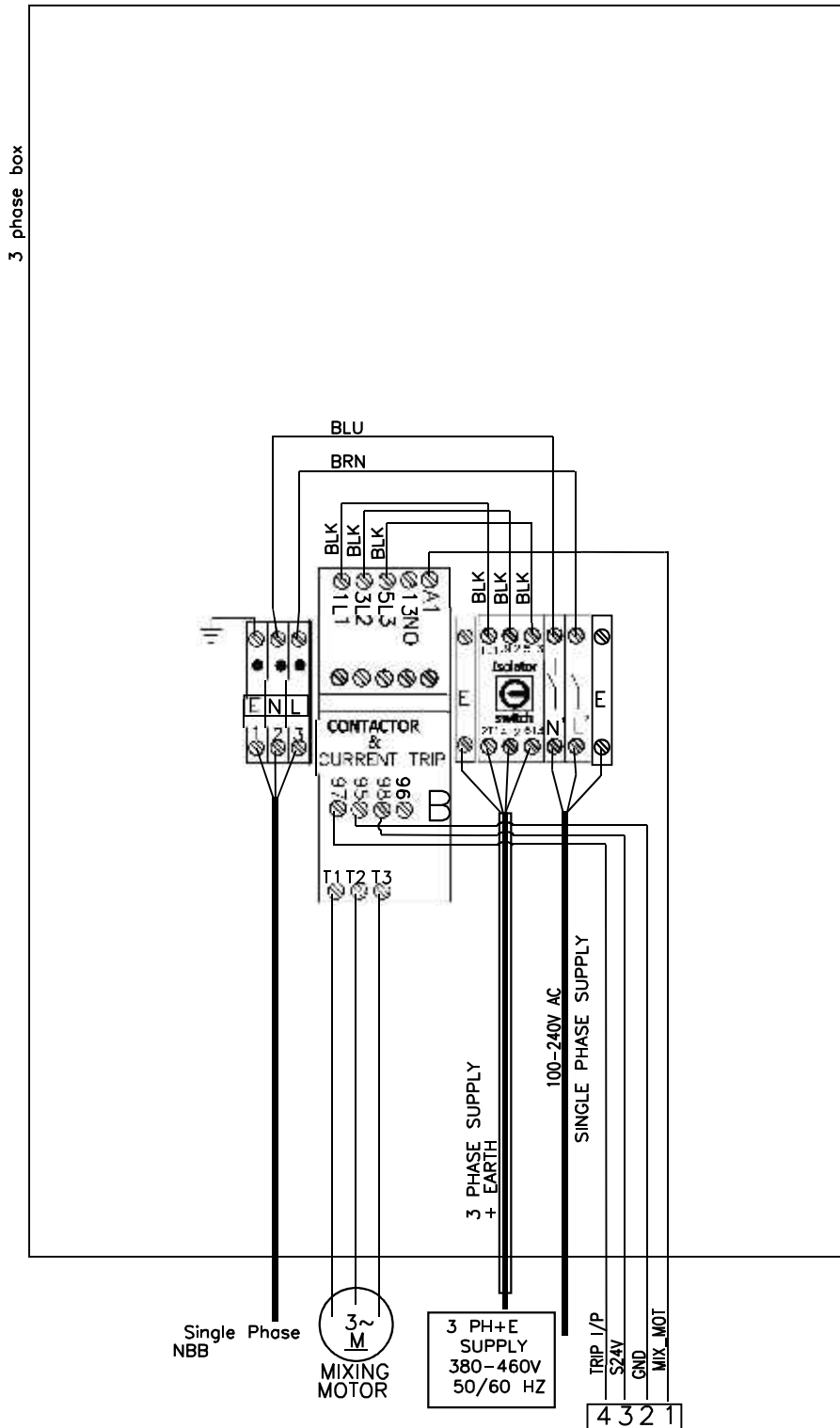
Note:

1. Neutral present in 3 phase supply
2. 3 phase voltage maximum = 410VAC

FILE = NBB - 3 Phase Box_ABB_A1.dwg (13/12/2012)



USA 3 PHASE WIRING CONNECTIONS (excluding Optimix 50 / 150 /250)

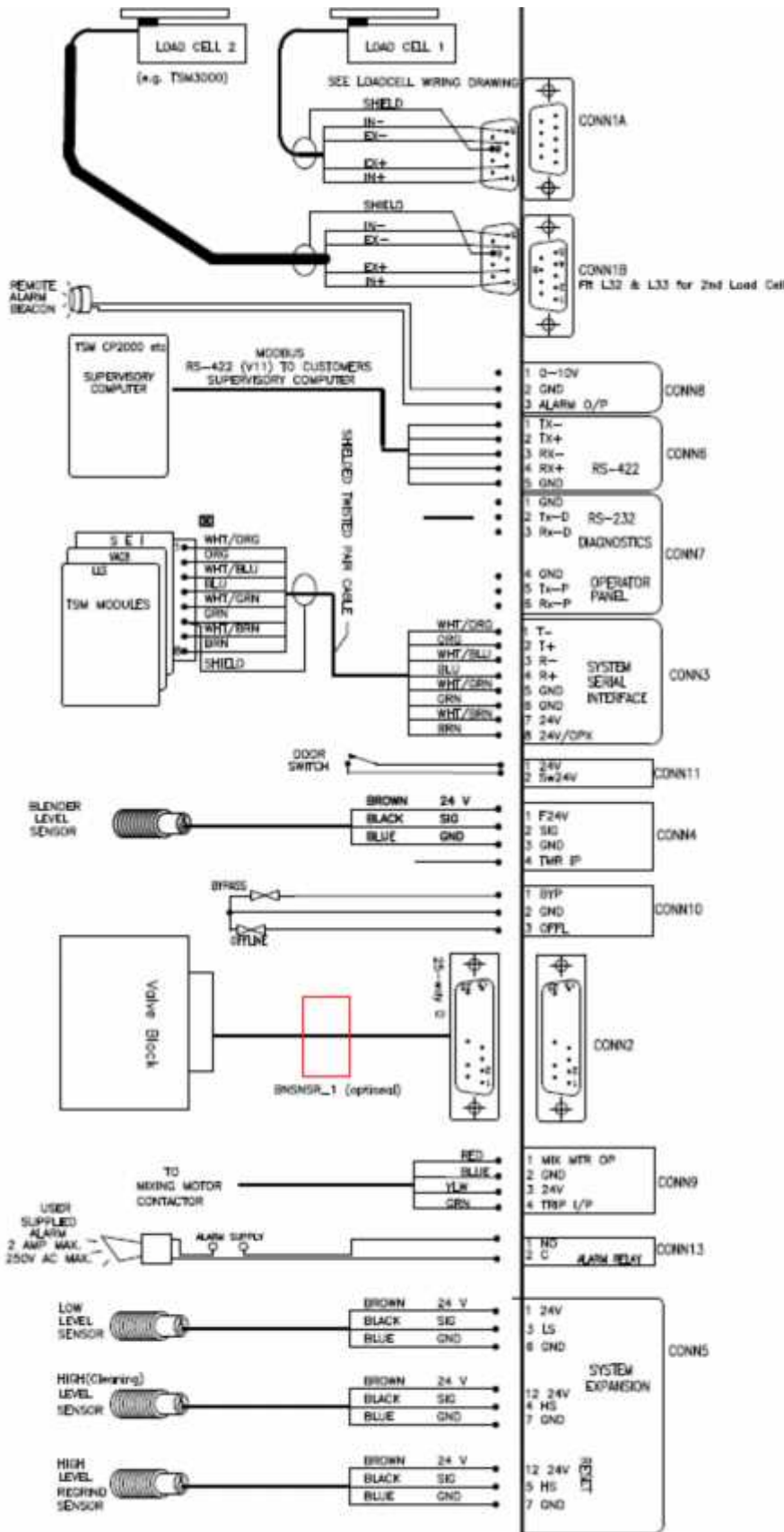


Note: Additional isolator switch contact X, Y required if:

1. No Neutral present in 3-phase supply - need extra single phase supply.
2. 3 phase voltage greater than 410VAC - need extra single phase supply.

NBB OVERVIEW

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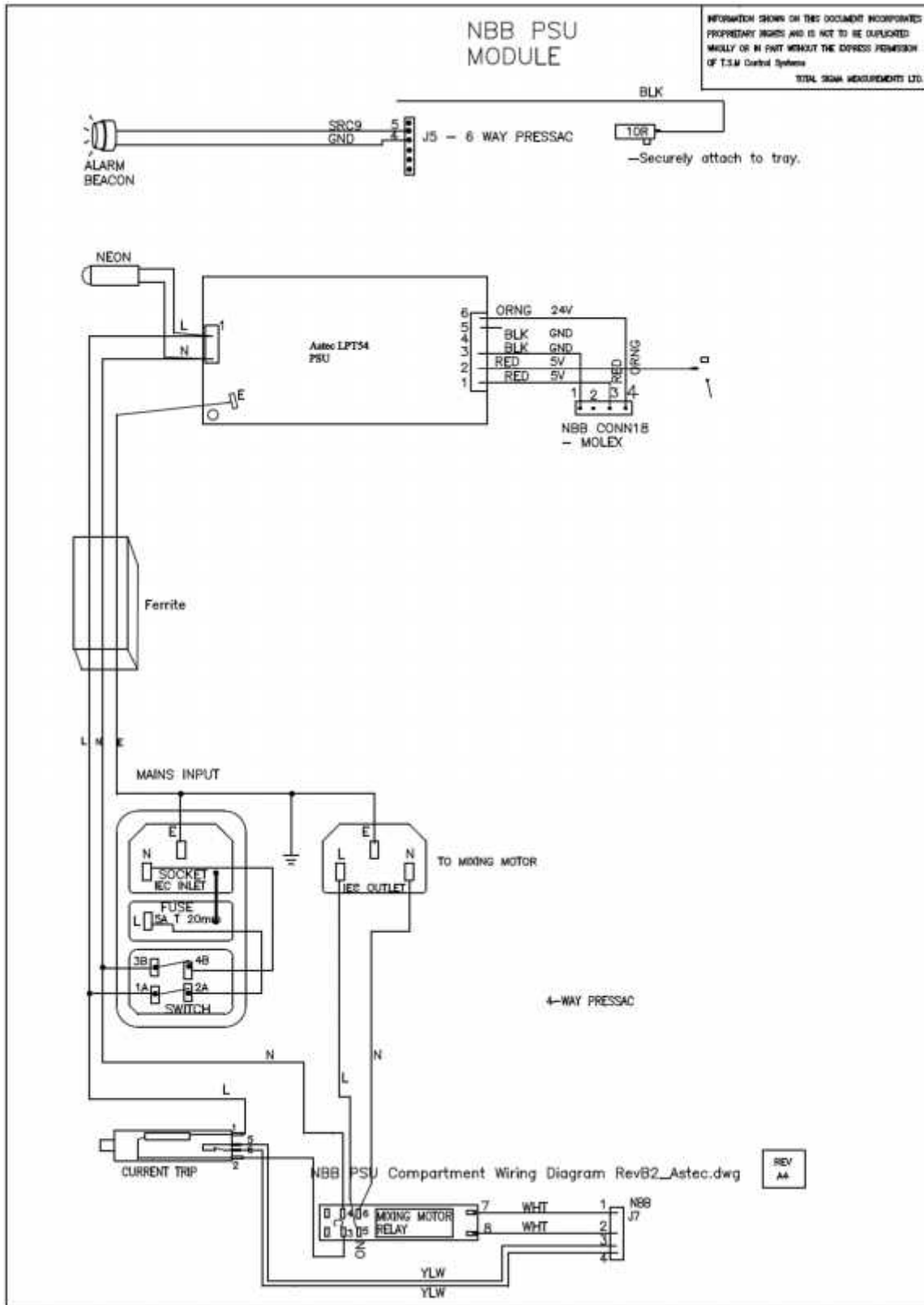


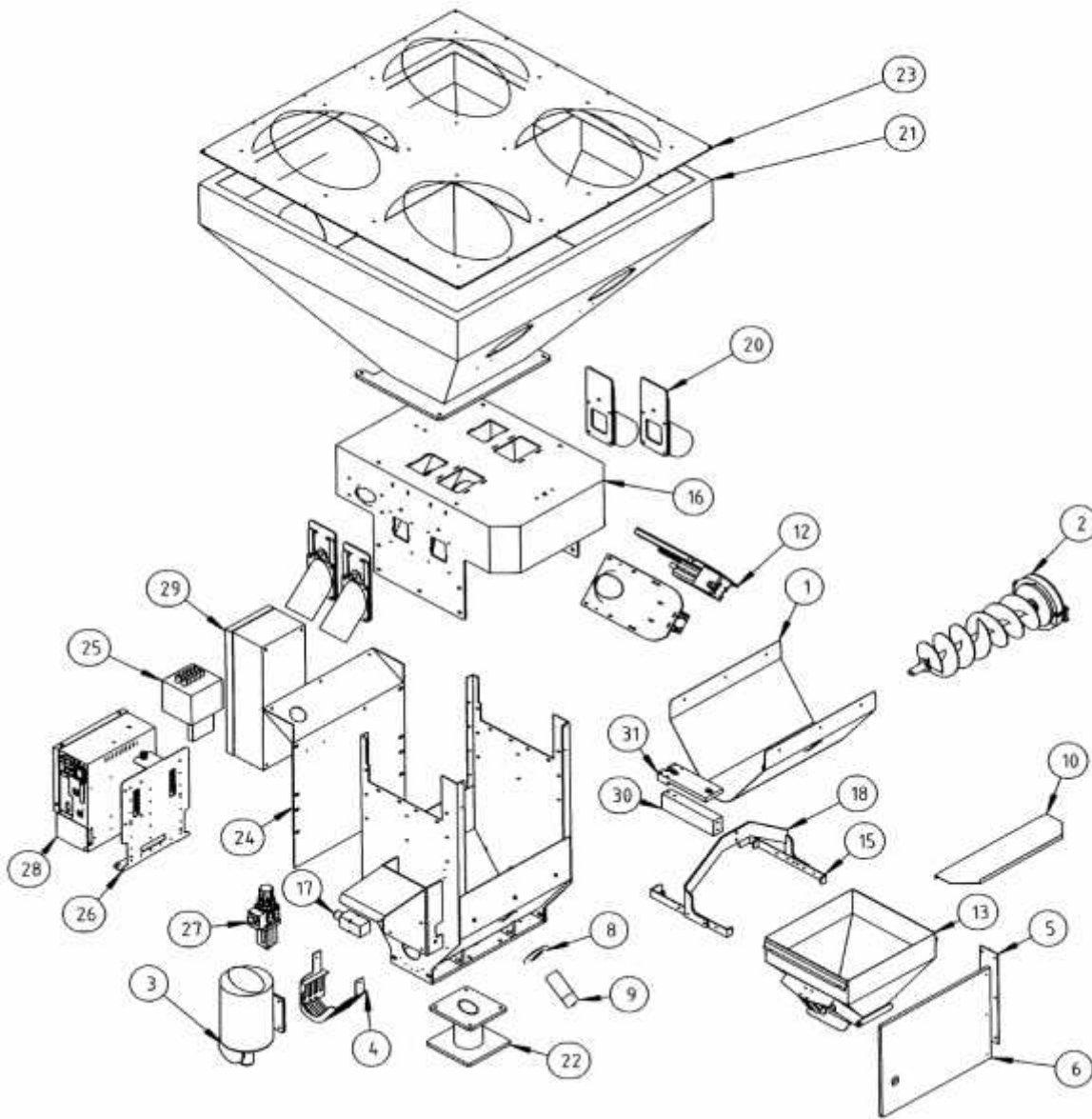
NBB REV Bx PCB

Control Systems
 Phone: +35342 9335560
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 Web: www.tsm-controls.com

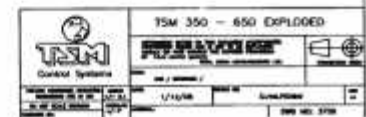
TWISTED PAIR CABLE	ALTERNATIVE CABLE
1 WHT/ORG	BLU
2 ORG	WHT
3 WHT/BLU	YEL
4 BLU	BLU
5 WHT/GRN	GRN
6 GRN+SHIELD	LT+SHIELD
7 WHT/BRN	BRN
8 BRN	RED

NBB PSU Module



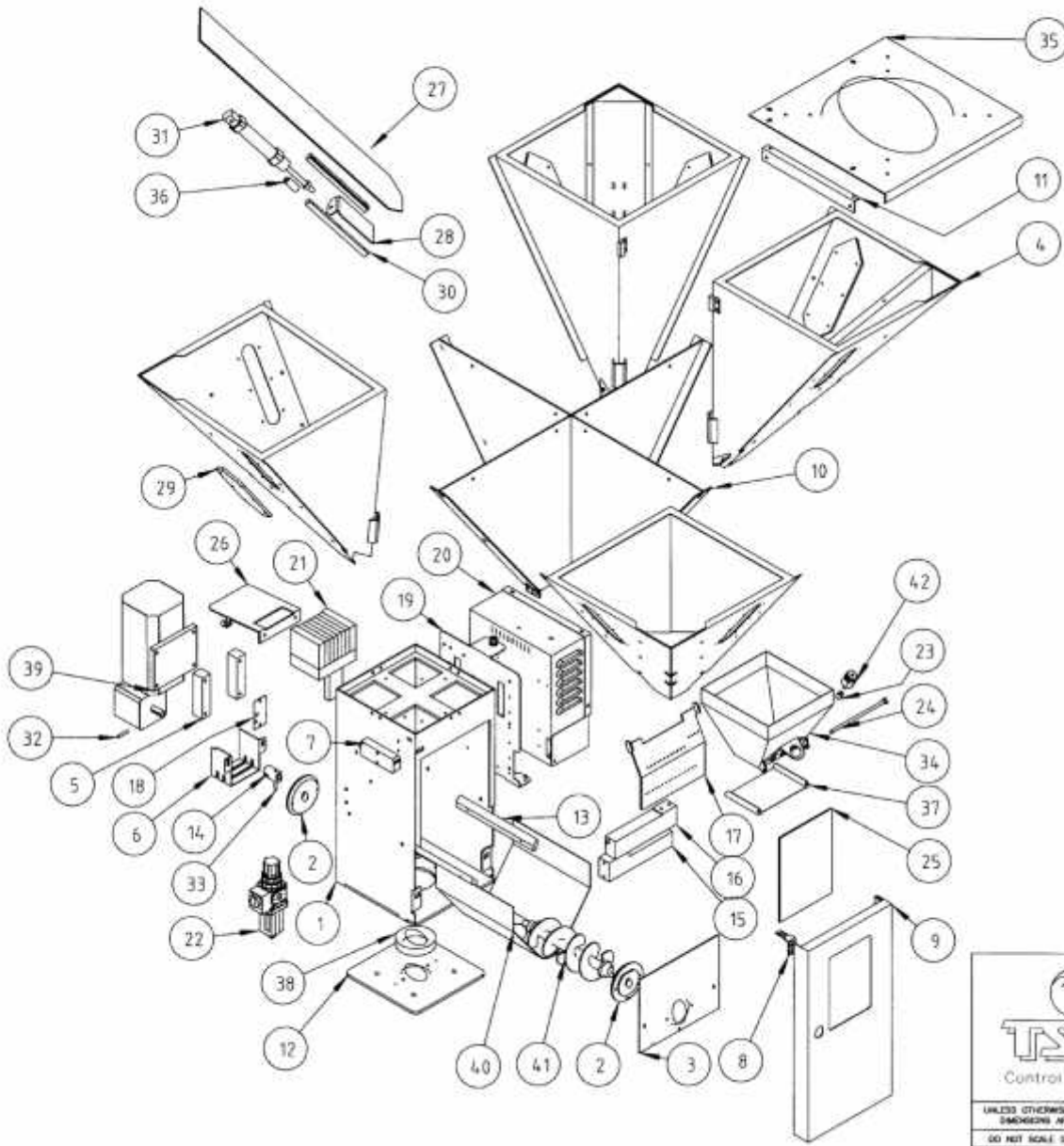


Name	Item	Qty
MIXING CHAMBER LINER	1	1
SCREW ASSEMBLY	2	1
MINI MOTOR	3	1
MOTOR COUPLING GUARD	4	1
HINGE DETAIL	5	1
PERSPEX DOOR	6	1
MIXING CHAMBER PIPE 2327	7	1
LEVEL SENSOR MOUNTING	8	1
M30 PROXIMITY SENSOR	9	1
TOP GUARD-185	10	1
BACK BEARING RETAINER	11	1
75mm SLIDE VALVE	12	2
SUB WEIGH HOPPER	13	1
HANGER 2 LHS-1365	14	1
HANGER 2 RHS-1366	15	1
EASY DRAIN TOP	16	1
DOOR INTERLOCK	17	1
LOAD CELL BRACKET 2	18	1
VENTURI SIDE FEEDER	19	1
DRAIN SLIDE ASSEMBLY	20	4
BIN ASSEMBLY U-3087	21	1
ASSEMBLY-2499	22	1
BIN TOP 1 3093	23	1
REAR MOUNTING PLATE	24	1
VALVE BLOCK	25	1
CONSOLE BRACKET 07	26	1
FILTER REGULATOR	27	1
07 CONSOLE ASSEMBLY	28	1
CONTACTOR BOX	29	1
LOAD CELL	30	1
LOAD CELL BLOCK 3305	31	1





FIRST ANGLE PROJECTION



Name	Ifem	Qty
FRAME BODY-B 2660	1	1
SCREW BEARING-2067	2	2
MIXING CHAMBER FRDNT	3	1
14 LITRE HOPPER ASSEMBLY	4	4
MOTOR SPACER	5	2
MOTOR GUARD-2142	6	1
DOOR SWITCH ST14 2963	7	1
DOOR SWITCH ST14 KEY 2963	8	1
DOOR ASSEMBLY	9	1
TOP BRACKET ASSEMBLY-2973	10	1
LOADER TOP BRACKET29756DWG	11	3
NECK ADAPTOR FLANGE -3141	12	1
MIXING CHAMBER RETAINER	13	2
SCREW COUPLING	14	1
LOADCELL BLOCK	15	1
LOAD CELL HBM SP4C3	16	1
LOAD CELL BRACKET 3161	17	1
LOADCELL GLAND PLATE 3166	18	1
CONSOLE BRACKET 07	19	1
07 CONSOLE ASSEMBLY	20	1
VALVE BLOCK	21	1
FILTER REGULATOR	22	1
ROD END	23	1
WEIGH HOPPER FLAP PIN-979	24	1
DOOR ACRYLIC	25	1
MOTOR COVER-3148	26	1
14 LITRE SLIDE BASE PLATE- HOPPER SLIDE-2650	27	1
HOPPER CLEAR ACRYLIC3098	29	1
HOPPER SLIDE GUIDE 2613	30	2
HOPPER CYLINDER	31	1
MOTOR SPRING PIN 3756	32	1
COUPLING SPRING PIN 3757	33	1
WEIGH HOPPER ASSEMBLY -3754	34	1
LOADER TOP (STANDARD)3506	35	1
PISTON RESTRICTOR 3516	36	1
WEIGH HOPPER FLAP EXP	37	1
MIXING CHAMBER PIPE	38	1
MIXING MOTOR	39	1
MIXING CHAMBER B 2792	40	1
2 WAY MIXING SCREW-2701	41	1
WEIGH HOPPER CYLINDER	42	1
SLIDE BODY	43	1

	OPTIMIX ISOMETRIC EXPLODED VIEW		
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<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MM</small> <small>DO NOT SCALE DRAWING</small> CHECKED BY:	<small>LINEAR +/- 0.1</small> <small>ANGULAR +/- 1</small>	DATE: 21/11/08 DRAWN BY: D.HALPENNY	PROJECTION USED
	MATERIAL:	DWG NO: 3753	



Material Low level sensor option.

