MAGUIRE PRODUCTS INC.

Weigh Scale Blender® 4088 TSC

MAGUIRE

WEIGH SCALE BLENDER®

4088 Touch Screen Controller

FLEXBUS Lite®

Receiver Control System

INSTALLATION • OPERATION • MAINTENANCE

Original Instructions Manual
Revision Date: September 24, 2020

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Use this space to record information about your Maguire Weigh Scale Blenders:

Serial Number	Date of Purchase	Model Number	ID	IP Address

Notes:

Maguire Weigh Scale Blender

This document is the Original Instructions manual of the Maguire Weigh Scale Blender models WSB-MB, WSB-100 Series, WSB-200 Series, WSB-400 Series, WSB-900 Series, WSB-1800 Series, WSB-2400 Series and WSB-3000 Series equipped with the 4088 Touchscreen controller.

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To every person concerned with use and maintenance of the Maguire WSB it is recommended to read thoroughly these operating instructions. Maguire Products Inc. accepts no responsibility or liability for damage or malfunction of the equipment arising from non-observance of these operating instructions. Any modifications or amendments to the equipment, without prior consent of the manufacturer, may invalidate CE compliance of the equipment.

To avoid errors and to ensure trouble-free operation, it is essential that these operating instructions are read and understood by all personnel who are to use the equipment.

Should you have problems or difficulties with the equipment, please contact Maguire Products Inc. or your local Maguire distributor.

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Manufacturer's Contact Information

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Introduction

EC Declaration of Conformity 6
Getting Started – Read this page! 7
Safety Notifications and Safety Hazards 8
Blender Parts Key 10
Controller Parts Key 19
Touchscreen Overview 20

Flexbus Lite Integrated Loading System

Flexbus Lite Table of Contents and Overview 122
Flexbus Lite Setup and Configuration 123

Blender Setup and Installation

Assembly and Installation Instruction 12
Wiring Considerations 16
Selecting the Correct Model 17
Touchscreen Controller Parts Key 19
Setting the Modes of Operation 24
Enabling Hopper Types 25
Example of Making Settings 26
Entering Component Settings 28
Setup Menu – Brief Explanation 51
Check Out Procedure and Diagnostics 29
Dispense Station 45
Operator Access 46
Change Passwords 47
Communications 48
Automated Control 50

Blender Operation

Load Cell Calibration 32
Material Flow Rate Calibration 33
Micro Pulse Instructions 34
Regrind Control 35
Instructions for Normal Operation 39
Specialized Operations 41
Menu Map – Full Explanation 53
Parameters Introduction 54

Navigating Parameters 54
Parameters – General – Explanation 56
Parameters – Component – Explanation 60
Parameter Default Settings 62
Saving Parameters 64
Monitoring System Accuracy 73
Cycle Printout Information 73
Interpreting the Cycle Printout 74
Troubleshooting with the Printout 75
Parameter Settings Printout 79
Load Cell Calibration 32
Load Cell Recalibration – ZERO / FULL Calibration 68
Material Usage Printout 81

Blender Troubleshooting and Maintenance

Troubleshooting - What To Do 82
Alarms - Cause and Solution 82
Typical Problems 86
Mix Problems 88
Increasing Throughput 90
Normal Operating Sequence 91
Verifying Load Cell Function 93
Load Cell Raw Signal Readout 94
Backup, Restore, Factory Reset 95
Updating Controller Firmware 96
Hardware Maintenance 97
Blender Preventative Maintenance 97
17 pin Amphenol Connector Pin Assignments 99
Technical Drawings, Electrical Diagrams, Pneumatic Diagrams 100
Dimensions and Weight by Model 121
Decommissioning and Disposal 142
Disclaimers 142
Accuracy of this Manual 142
Warranty 143
Technical Support and Contact Information 144

DECLARATION OF CONFORMITY

2006/42/EC Machinery Directive

2014/30/EU EMC Directive

Name of manufacturer or supplier

Maguire Products Inc.

Full postal address including country of origin

11 Crozerville Road, Aston, Pennsylvania 19014, USA

Description of product

Name, type or model, batch or serial number

Model: Serial Number:

Standards used, including number, title, issue date and other relative documents

EN4414 (2010); EN11201 (2010); EN12100 (2010); EN13849-1 (2015;) EN13850 (2015); EN13857 (2008) EN14119 (2013); EN14120 (2015); EN60204-1 (AC:2010) and EN61310 (2008)

Name of Responsible Person within the EU - Mr Paul Edmondson Director

Full postal address if different from manufcturers

Maguire Europe Sales Limited, Unit F, Vanguard, Tame Park, Tamworth, Staffs, B77 5DY, UK

Declaration

I declare that as the manufacturer, the above information in relation to the supply / manufacture of this product, is in conformity with the stated standards and other related documents following the provisions of the above Directives and their amendments.

Responsible Person: **Mr Steve Maguire**

Signature .....

Position President

CE

ORIGINAL

Date

www.maguire.com

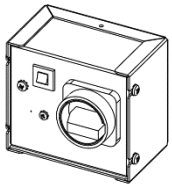
Getting Started – Important!

Safety Notifications and Safety Hazards	Page: 8	HAZARDS exist on this unit. Read Safety Notifications and Safety Hazards.
Blender Part Identification	Page: 10	Identifying key parts and what they do.
Assembly and Installation Instructions	Page: 12	Assembly and installation instructions.
Wiring Considerations	Page: 16	How to minimize electrical interference.
Model Selection	Page: 17	How to verify and change your model selection. All new blender controllers are pre-configured with the model from factory. New, spare or swapped controllers may require a model change.
Touchscreen Key Parts	Page: 19	Identifying the key parts of the blender controller.
Touchscreen Overview	Page: 20	Understanding the Touchscreen home screen.
Mode of Operation	Page: 24	This section selects the general Operating Mode of the machine (Blender, Dispenser, Totalizer) and sets the Blend Mode as: Additive are dispensed as a % of Natural or Materials are a % of Total Batch.
Enable / Disable Material Type Outputs	Page: 25	To "Enable" a component, the TYPE must be selected as: REGRIND, NATURAL, or ADDITIVE. Each TYPE is controlled differently by the MATH routines. The controller must know the material TYPE to know how to dispense the setting. This is IMPORTANT. Be SURE you UNDERSTAND this section and Mode of Operation before operating the blender.
Check Out Procedure	Page: 29	Step by step procedure to verify correct assembly.
Load Cell Calibration	Page: 32	Load Cells of new blenders are calibrated at the factory. However shipping or rough handling can create load cell problems. If weight readings are not correct, you MUST recalibrate the load cells.
Material Flow Rate Calibration	Page: 33	A flow rate calibration is not necessary because the blender will learn the flow rate over time however if you change equipment or material you may want to re-calibrate the material flow rate.
Normal Operation & Saving the Configuration	Page: 39	How to start the blender and save / restore the configuration.

Safety Notifications

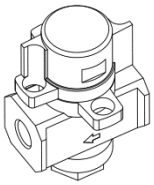
Electrical Lockout/Tagout Points

Disconnect electric before opening or servicing. If the weigh scale blender is equipped with an electrical LOTO box, use the lockout tagout switch to perform the power lockout/tagout.



Pneumatic Lockout/Tagout Points

Disconnect compressed air supply before opening or servicing. If the weigh scale blender is equipped with a manually operated pneumatic valve actuator, use this lockout/tagout valve to perform a pneumatic lockout/tagout.



Eye Protection

Always wear safety glasses when using this equipment.

Maximum continuous noise level

The highest continuous Noise levels recorded for this equipment was measured at 71.4 db.

Safety Interlock Switch

The weigh bin / mix chamber access door equipped with a Safety Interlock Switch that prevents the mix motor from running and the slide valves from opening. DO NOT disable or bypass this Safety Interlock Switch.

Hopper Finger Guards

Finger Guards are fitted into each Material Hopper compartment.
DO NOT reach through these Guards.
DO NOT use fingers to clear an obstruction below these guards.
DO NOT remove these Guards.

HAZARD - AUTOMATIC STARTUP

WARNING - Blender may start automatically without warning.

Safety Hazards

See Blender Parts Key for Safety Hazard Locations

HAZARD - ROTATING MIX BLADE

Mix Blades are driven with substantial torque. Never place your hand in the Mix Chamber while the blades are rotating. SERIOUS INJURY WILL RESULT. Always disconnect blender power using proper lockout/tagout procedures before servicing. Never defeat the Mix Chamber safety interlock switch.

HAZARD - SHARP MIX BLADES

Over time, Mix Blades may become RAZOR SHARP.
ALWAYS be careful when TOUCHING or CLEANING these blades.
Check for Sharp Edges frequently.
Replace Blades if a Hazard exists.

HAZARD - SLIDE VALVES

Slide valves in hoppers SLAM CLOSED without warning.
ALWAYS keep fingers clear of slide gate openings.
NEVER use your fingers to clear an obstruction.
NEVER use your fingers to move a sticking slide gate.

HAZARD - ELECTRICAL

Only qualified electrical technicians should make electrical connections. Disconnect and lockout power supply before servicing Blender.

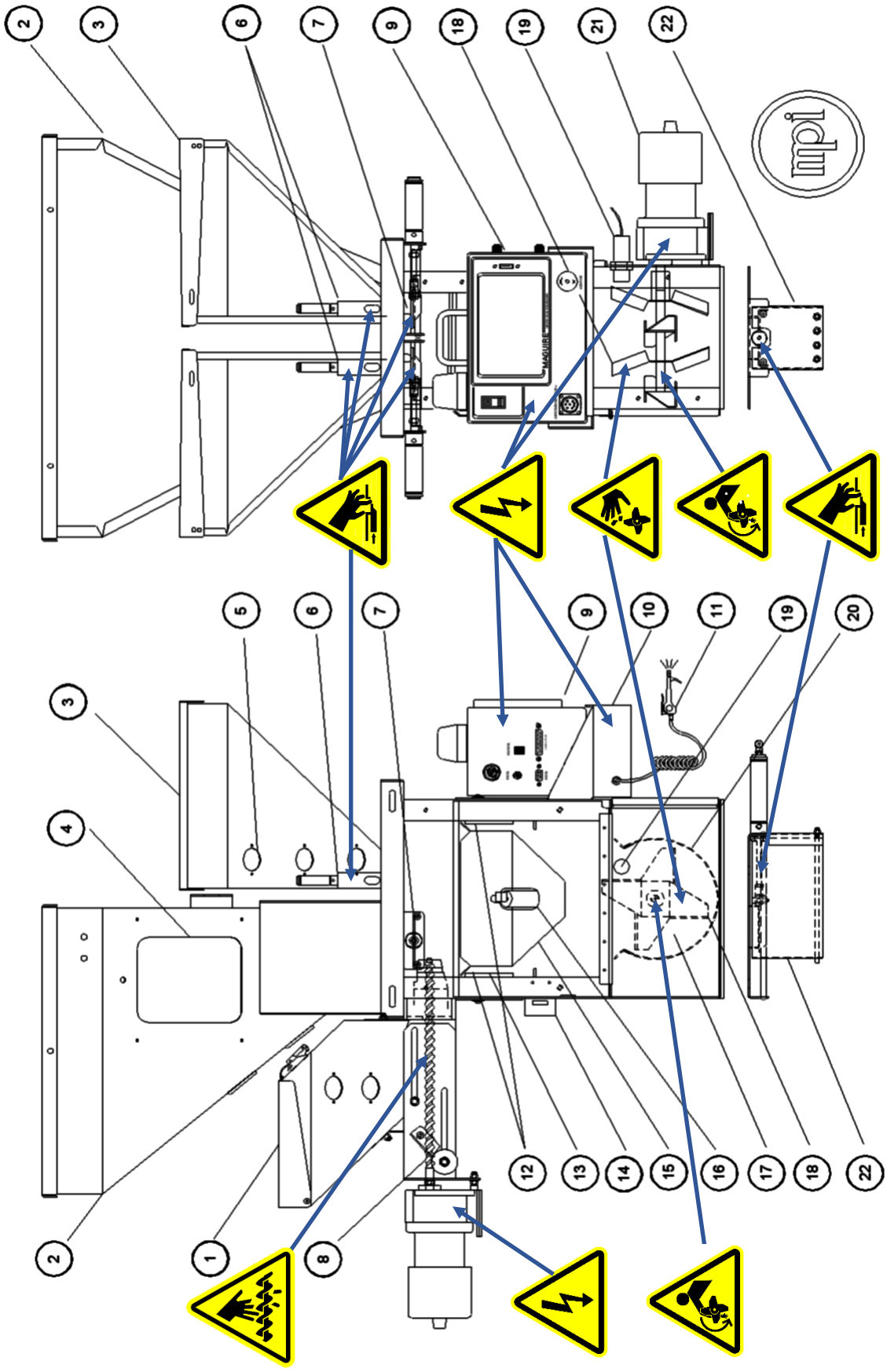
HAZARD - ROTATING SHAFT

Auger Feeders contain a rotating shaft.
ALWAYS keep fingers clear of rotating shaft and auger.
NEVER use your fingers to clear an obstruction.
NEVER touch a rotating shaft or auger.

HAZARD - FALLING OBJECTS

Do Not open hopper access door if material level is above hopper cleanout door.

Blender Parts Key



1. **Auger Feeder Hopper** – Screw Feeder for feeding in small percentage materials such as Colors & Additives

2. **Fixed Material Hopper** – Material Hopper for main materials to be dosed by the slide gates

3. **Removable Hopper** – Removable Material hopper for small percentage materials such as Colors & Additives

4. **Hopper Access Door** – Door to access inside of hopper for quick cleaning and materials changes

5. **Sight Glass** – Means to view current material level inside the hopper

6. **Vertical Valve** – Dispense Device mounted inside removable hopper for small percentages up to 10%

7. **Slide Gate** – Dispense Device mounted below fixed hoppers to dispense large percentages

8. **Auger Screw** – Dispense Device mounted inside removable hopper for small percentages up to 10%

9. **Controller** – Central Controller for all settings on the blender

10. **Air Assembly & Solenoids** – Pneumatic assembly for activating pneumatic parts automatically and manually
    Power and circuitry box (WSB Models MB, 100, 200, 400) – Central box for power and support circuitry. Models 900, 1800, 2400, 3000 (3-phase models) have a standalone power and relay box.

11. **Cleaning Airline** – Airline for quick and easy cleaning of blender during materials changes

12. **Load Cells** – Load Cells monitor continuously the weight in the Weigh Bin

13. **Load Cell Bracket** – Load Cell Bracket for mounting Weigh Bin onto the Load Cells

14. **Safety Interlock** – Pneumatic and Electrical Safety interlock – stops blender operating if door is opened

15. **Weigh Bin** – Weigh Bin holds materials as materials are dispensed during a batch and weighed

16. **Dump Valve** – Pneumatic Valve and Flap to release materials from Weigh Bin when a cycle is complete

17. **Mix Chamber** – Area where materials are blended together after being weighed

18. **Mix Blades** – Removable Mix Blades to fold the materials together to achieve an effective blend

19. **Level Sensor** – Sensor to monitor material level in the Mix Chamber, pauses blender when covered and mix chamber is full, once uncovered signals Controller to begin a new batch of material.

20. **Mix Chamber Insert** – Stainless Steel removable insert to assist in quick materials cleaning and changes

21. **Mix Motor – Electric Motor to drive Mix Blades** – Note on WSB MB and WSB 100 Series blenders this motor is a pneumatic Mix Motor**.**

22. **Flow Control Valve** – (Optional) – Additional pneumatic slide gate with finger guards to be used when blender is not mounted directly on the throat of a machine but instead a stand or surge hopper. The Flow Control Valve ensures material remains inside the Mix Chamber long enough to be mixed efficiently. Automatically controlled by the blender Controller.

Setup and Installation

Operating Conditions
Operating Temperature Range: 5°C - 90°C (41°F - 194°F)
Maximum Allowable Humidity: 80% @ 50°C (122°F)
Maximum Altitude: 2500m (8200 ft.)

Blender Assembly and Installation Instructions

Lifting Requirements

CAUTION: LOAD CELLS ARE EASILY DAMAGED. Always handle the blender with care. To avoid shock damage to load cells avoid hard impact with floor or equipment. Warranty coverage does not cover damaged load cells due to mishandling.

CAUTION: Weigh Scale Blenders can be top-heavy. Always lift using attach points mounted to the top of the frame of the blender. Do not lift from the hoppers or hopper extensions. Never use the air cylinders as lifting points or handles as damage to air cylinders may occur. Eyebolts can be temporarily installed on the top of the blender frame as a lifting point. Model 3000 blenders must be lifted from eyebolts installed on the top of the feeder frame. Install at least two eyebolts on opposite sides of the blender frame. When installing eyebolts, if an unused bolt hole is not available, a hopper bolt can be temporarily removed and replaced with a ½" eyebolt for lifting purposes. Optional Lifting Lugs are available from Maguire Products to allow lifting the blender with a strap or chain. Weight and dimensions of each model is listed on page: 121.

Mounting the Blender

The machine and all supporting equipment must be securely anchored in position prior to operational use.

1A. Machine Mounted:

For WSB MB, 100, 200, and 400 series models:
Two ways to do this are suggested ON THE NEXT PAGE:

The LEFT diagram shows the FRAME and SLIDE GATE both drilled with the proper bolt pattern for your machine and THROUGH BOLTED to your press.

The RIGHT diagram shows only the 10 x 10 steel slide-gate plate drilled for your bolt pattern and bolted to your press. The FRAME is then bolted to it using the existing 8 x 8 inch bolt pattern holes and bolts provided. With this method, bolt head clearance holes are required in the poly-pro slide gate plate. This mounting works well on smaller machines.

For WSB 900 and 1800 series models:
An additional machine mount adaptor plate may be required. If you have ANY DOUBT about the STABILITY of the unit when bolted directly to your machine throat, please call us for advice.

NOTE: When choosing proper orientation, be sure to retain access to the controller and weigh chamber, clearance for hinged doors, and access to removable feeder hoppers.

Two Mounting Techniques

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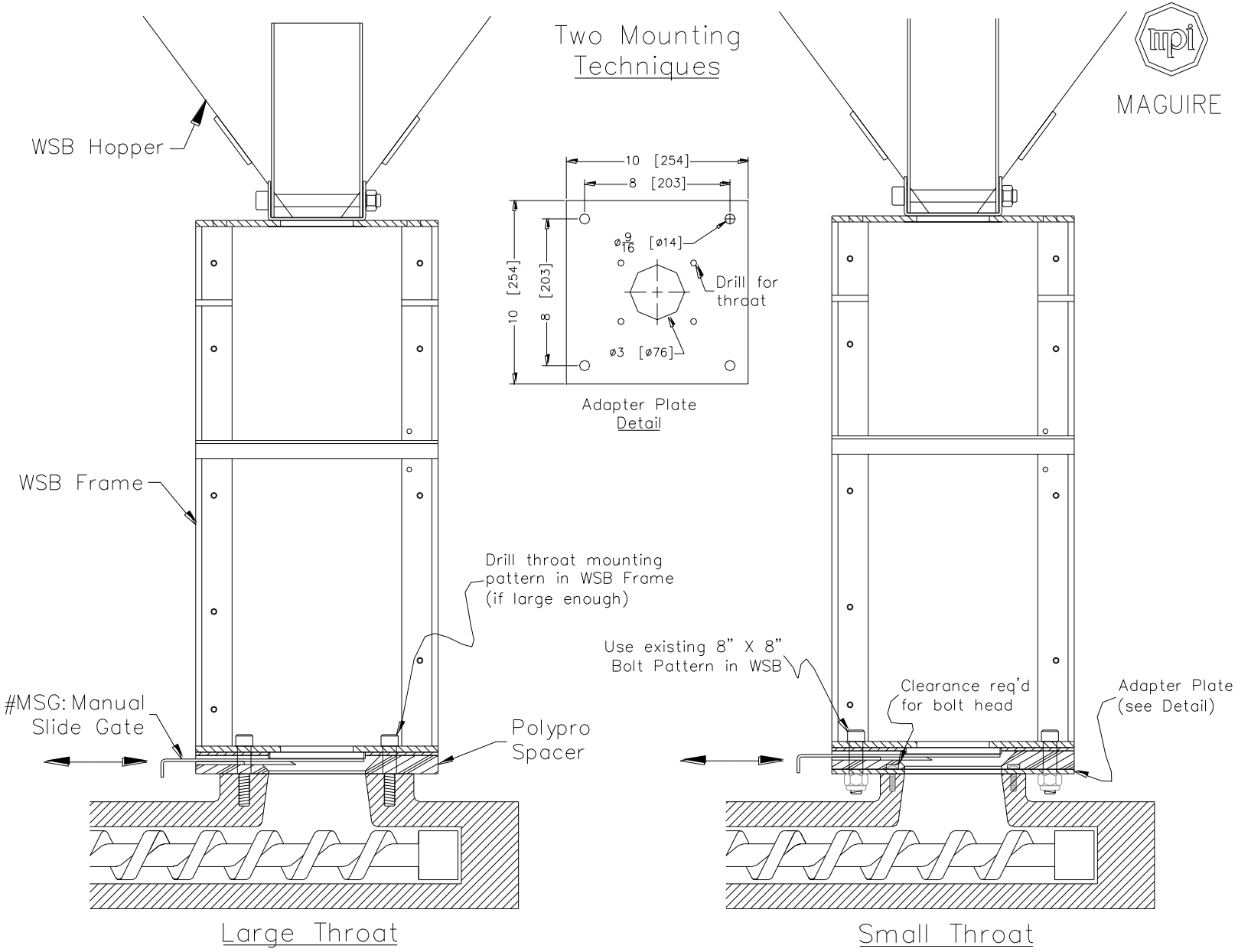


1B. Stand Mounted:

A stand is provided and your unit will bolt directly to it. See assembly diagram on the following page.

An air operated FLOW CONTROL ASSEMBLY is provided for dispensing into a container. The purpose of this unit is to allow time for mixing to occur after each dispense. This flow valve keeps the mix chamber full to just below the sensor. This assembly bolts directly to the bottom of the Weigh Scale Blender frame.

2. Slide the WEIGH BIN into position. It rests behind the clear-hinged access window. On models 100, 200, and 400 install weigh bin with the air cylinder to the left. On models 900, 1800, 2400 and 3000 install weigh bin with the air cylinder towards you. On Micro Blenders, install the weigh bin with the load cell hanger to the left. If bin is already in place, remove any shipping materials, packing tape or string.

3. Hang the Color and Additive Feeders: (Optional)

a. Lift side latches and fully extend slide assembly. Remove the hopper. Leave slide extended.
b. Tilting the entire slide assembly, motor end up, insert one corner of hanger cross bar behind frame corner post.
c. Rotate assembly into place so both ends of cross bar are behind corner posts.
d. Lower into place, bottom edge resting on frame and cross bar properly positioned behind corner posts.
e. Re-install hopper. Slide motor forward until latches engage.

4. Place the controller on the support tray and plug in all cords:

a. Air solenoid 17 pin plug into the matching receptacle.
b. Auger feeder drive motors into duplex receptacle.
c. Mixer motor into right side of controller.
d. Sensor cord plug into front side of controller.
e. Load Cell plug into port on left side of controller.

5. Plug the CONTROLLER into the receptacle located under the controller tray.

IMPORTANT: Do NOT plug the controller into a separate power source. The controller ground path MUST be the same as the blender frame ground path. If your system has the controller located in a remote location, MAKE CERTAIN that the power to the controller comes from the receptacle mounted on the Blender frame.

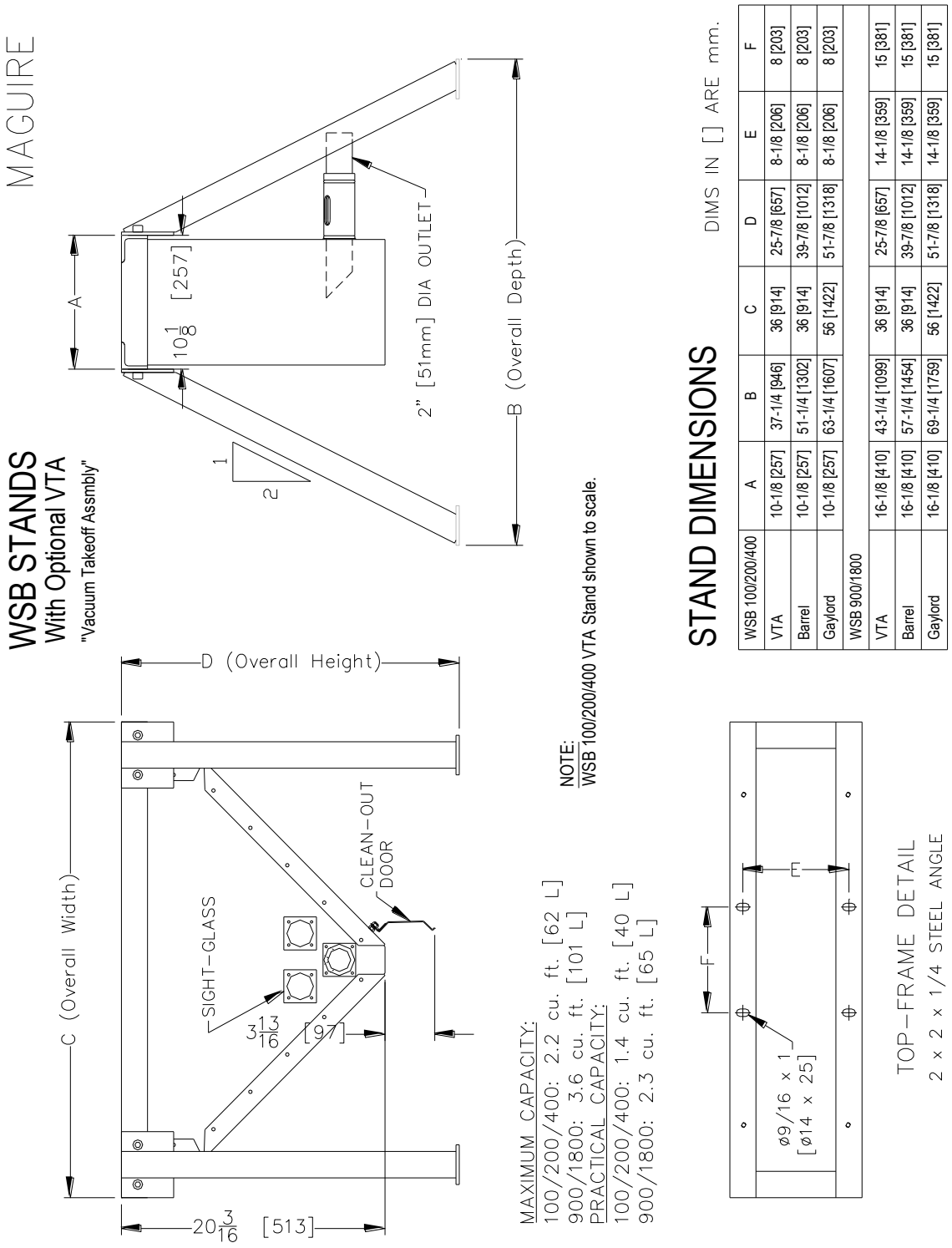
6. Connect main power to a properly fused disconnect. Main power comes from the power box and plugs into a 110-volt or 220 volt power source. This power cable MUST provide the ONLY power source for the entire system, including the controller. See: WIRING CONSIDERATIONS, next page. **1800, 2400, 3000 Series Blenders require a 240-volt power source for the mix motors. Secure voltage supply cable per the requirements of EN 60204-1, Clause 13.4.2.**

7. Connect Compressed Air to the unit. About 5.5 bar (80 psi) is recommended for most models. 4.1 bar (60 psi) is recommended for: Micro Blender, 140R, 240R and 440R). Do not supply with lubricated air. Air provided to the blender should be clean

and dry. The coalescing filter is a final attempt to dry the air to protect the valves from moisture contamination.

NOTE: Micro Blenders should be set to 4.1 bar (60 psi). The Vertical Valves used in removable hoppers on Micro Blenders are more accurate at the lower 4.1 bar (60 psi) pressure setting.

8. Upon completion of setup, an on-site safety inspection should be conducted to assess for any additional safety hazards, before allowing the equipment to be handing off to the machine operators.



STAND DIMENSIONS

DIMS IN [ ] ARE mm.

	A	B	C	D	E	F
WSB 100/200/400						
VTA	10-1/8 [257]	37-1/4 [946]	36 [914]	25-7/8 [657]	8-1/8 [206]	8 [203]
Barrel	10-1/8 [257]	51-1/4 [1302]	36 [914]	39-7/8 [1012]	8-1/8 [206]	8 [203]
Gaylord	10-1/8 [257]	63-1/4 [1607]	56 [1422]	51-7/8 [1318]	8-1/8 [206]	8 [203]
WSB 900/1800						
VTA	16-1/8 [410]	43-1/4 [1099]	36 [914]	25-7/8 [657]	14-1/8 [359]	15 [381]
Barrel	16-1/8 [410]	57-1/4 [1454]	36 [914]	39-7/8 [1012]	14-1/8 [359]	15 [381]
Gaylord	16-1/8 [410]	69-1/4 [1759]	56 [1422]	51-7/8 [1318]	14-1/8 [359]	15 [381]

Wiring Considerations

The wiring of your blender is very important to its proper operation. Electronics are very susceptible to voltage spikes, static discharges and electromagnetic fields, all of which are very common in plastics factories. To MINIMIZE these things, consider the following.

- The power supply should be a reliable, steady supply, not limited by a "just adequate" control transformer. A source of voltage that comes from a large transformer that supplies a large portion of the plant is better than a small power supply transformer that is intended to supply only this device. Power supplies, even though they may be "isolation" transformers, will still pass all voltage spikes right through. Their small size limits their ability to dampen RF (Radio Frequency) noise that is often induced into the system from outside sources. This proves worse than connection to larger central transformers.

- Avoid running the power supply line next to any high voltage power lines. An unshielded power supply in a raceway next to other heavy power lines will pick up induced RF noise and transfer it into the WSB steel enclosure potentially causing interference.

- Long extension cords should be avoided. They also reduce the ability to provide a dampening effect on spikes and static. The further the equipment is from a substantial power source, the more susceptible it is to spikes.

- The CONTROLLER and the WSB frame MUST share the same GROUND PATH. This is why you MUST plug the controller into the OUTLET that is provided ON THE FRAME.

- REMOTE SYSTEMS. If you have your controller mounted in a remote location, you will have a number of power and signal cords running between the frame and the controller. Remote touchscreens will have a single cable running back to the blender. BE SURE that the LOW VOLTAGE lines are NOT BUNDLED to the HIGH VOLTAGE lines and keep them away from other nearby electrical lines.

  LOW VOLTAGE lines are: Load Cell cable, Level Sensor cord,
  Air Solenoid cable, and Printer and communication cables.
  HIGH VOLTAGE lines are: Mixer motor cable, Feeder motors,
  and MAIN POWER line.
  Keep these sets of cables SEPARATED.

- VACUUM LOADER CONVEYING LINES. Keep them away from all electrical lines, particularly the Load Cell lines. Conveying plastic produces extreme static sources. A power supply line, even in conduit, that runs next to a vacuum line, can introduce extreme static pulses into the processor. Keep conveying lines SEPARATED from electrical supply lines.

- We use many internal tooth "STAR" washers in assembling the WSB to ensure good ground between painted parts. Do not remove them.

Model Selection

Controllers are programmed to control all sizes of Weigh Scale Blenders. The MODEL number that your unit is set for will be displayed across the status bar of the controller's Home Screen.

All Weigh Scale Blender controllers come from factory pre-configured for the model blender they are attached to. If a new blender controller is installed on a blender of a different model, the controller model may be changed to match the blender. There are 8 main model categories, each with at least one sub model. The model of the blender can be found on the red serial tag attached to the blender frame. The possible models are:

Blender Model	Batch Weight (Grams)	Weigh Bin Dimensions (DxWxH)		Load Cell Rating
		mm	Inches	
MB / MB1 / MB2	**400**	**127x127x127**	**5” x 5” x 5”**	**1 @ 3Kg**
140 / 140R / 140MP	**1000**	**254x153x153**	**6” x 10” x 6”**	**1 @ 3Kg**
220 / 240 / 240R / 260	**2000**	**254x254x178**	**10” x 10” x 7”**	**2 @ 3 Kg**
420 / 440 / 440R / 460	**4000**	**254x254x254**	**10” x 10” x 10”**	**2 @ 10 Kg**
940 / 950 / 960	**9000**	**407x407x305**	**16” x 16” x 12”**	**2 @ 10 Kg**
1840 / 1860	**18000**	**407x407x432**	**16” x 16” x 17”**	**2 @ 20 Kg**
2400	**24000**	**560x508x458**	**22” x 20” x 18”**	**2 @ 20 Kg**
3000	**30000**	**407x407x432**	**20” x 22” x 30”**	**2 @ 20 Kg**
“R” Models have 2 removable hoppers				

Change the model of the blender controller:

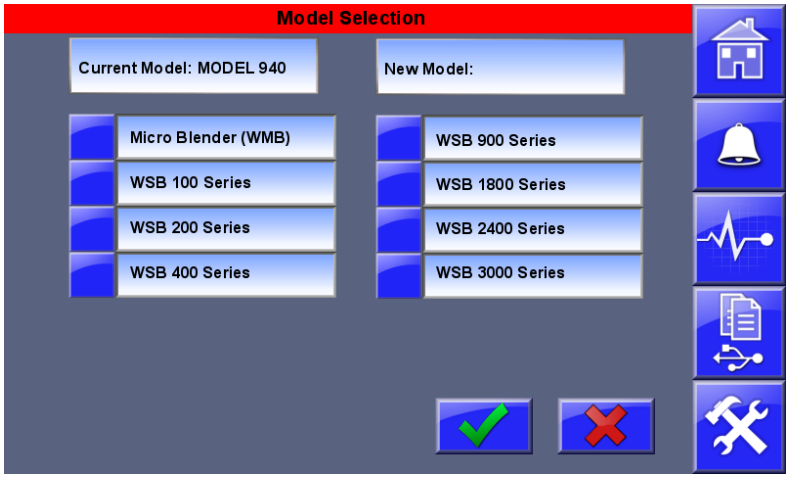
WARNING: Changing Model will set all parameters and settings to factory defaults.
Changing the model will reset the controller's blender configuration settings and parameters to the defaults for the selected model. System configuration and preferences will be retained through a model change.

Press Display will show the password keypad screen.

Press **9, 7, 5, 3, 1**

then, press

Display will show the Model Selection Screen displaying the Current Model and the model selection list.



Select **The model series of your blender.** Models are divided into 8 categories.
Read the red serial tag attached to the blender frame.

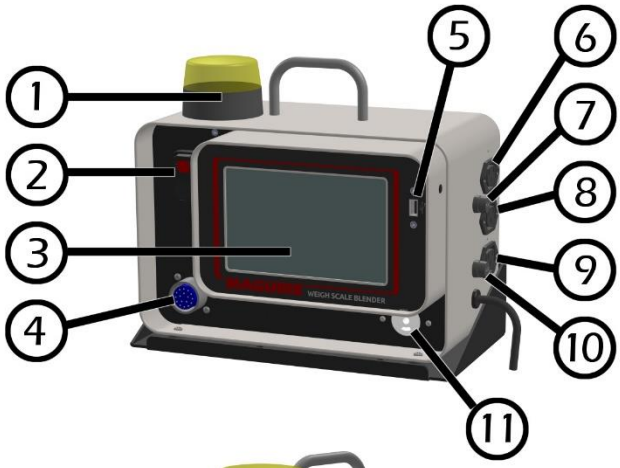
Select **The series sub-model of your blender.** The Current Model will display in the upper left.
The New Model will display in the upper right.

Press To set the new model selection.

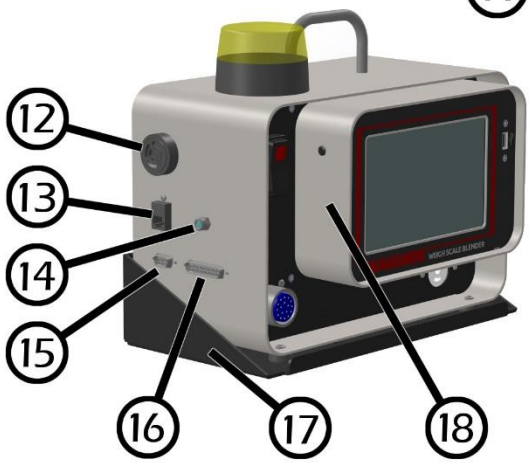
The controller will reboot loading factory default configurations for the new model selection.

Touchscreen Controller Parts Key

1. **Alarm Strobe Light**
2. **Main Power Switch**
3. **Touchscreen**
4. **Amphenol Connector**
5. **USB Port**
6. **Feeder Output**
7. **Fuse (3 amp)**
8. **Feeder Output**
9. **Mix Motor**
10. **Fuse (3 amp)**
11. **Level Sensor Connector**



12. **Audio Beeper**
13. **Ethernet Communication Port**
14. **Flex-Lite**
15. **Serial Communication Port**
16. **Load Cell Connector**
17. **Controller Tray (Affixed to WSB)**
18. **Detachable Remote Touchscreen**

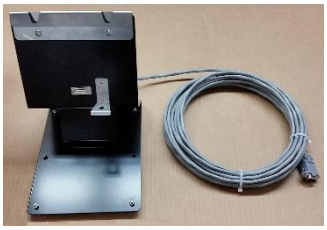


Maguire Touchscreen Retrofit Controllers

The Maguire Touchscreen Controller is designed to retrofit onto older Maguire Weigh Scale Blenders. The Maguire Touchscreen Controller has all of the features of the earlier 6811 (red display) and 12-12 (blue display) controllers and easily installs on all existing Weigh Scale Blenders. Retrofitting an earlier Maguire Weigh Scale controller requires setting the model to match the blender hardware and setting the components to match the hopper configuration.

Touchscreen Remote Mount Option

The Weigh Scale Blender Touchscreen can be remote mounted using Remote Mount Base Kit equipped with a length of cable, part#: AEK-T4088-xx (xx is the cable length: 01=10ft, 02=20ft, 03=30ft, etc up to 10=100ft). Remote mount instructions:



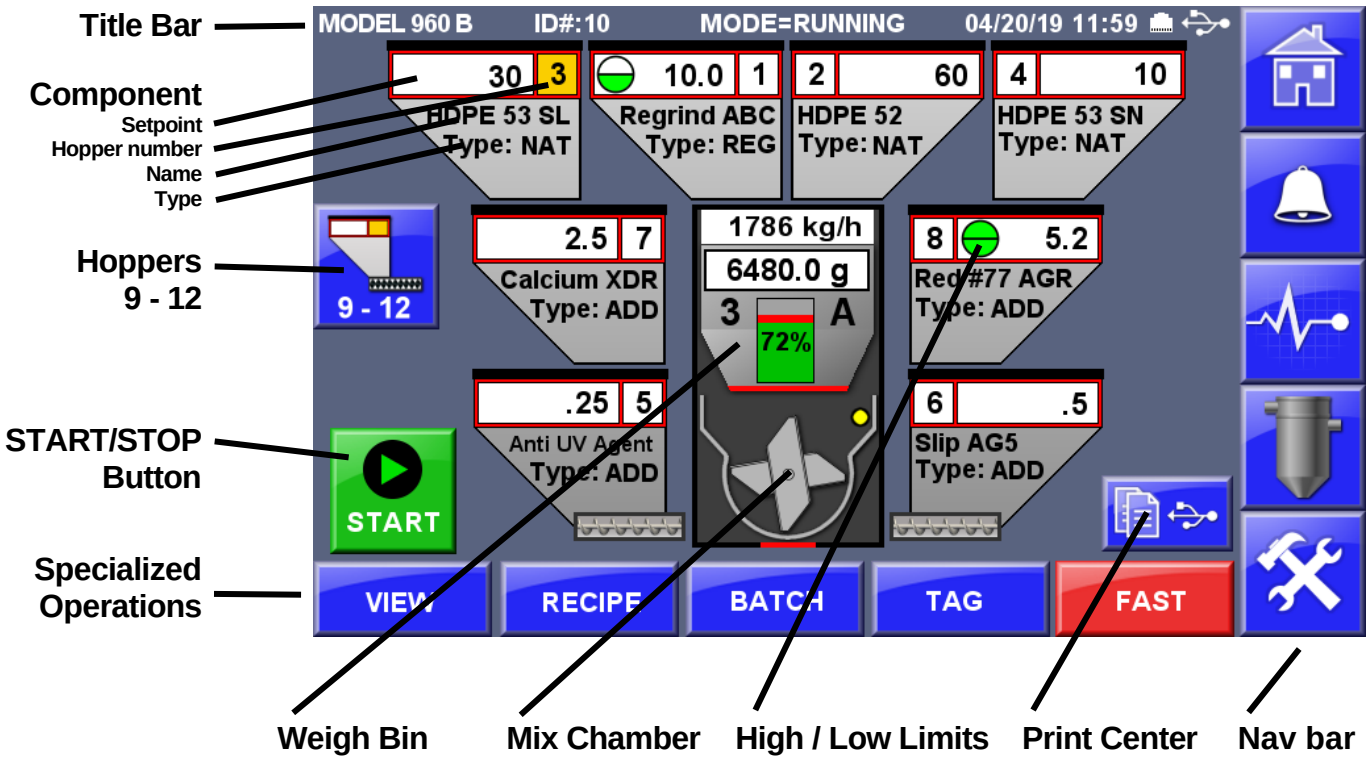
Remote Mount Base Kit Part#: AEK-T4088-xx

Remove Allen bolt from base of controller.

Hang controller on Remote Mount Base and secure Allen bolt to controller.

Secure Remote Mount Base cable to Blender Controller.

Home Screen



Title Bar - The title bar displays: Model, current Operating Mode (blender, dispenser or Totalizer), date and time, Ethernet and USB status. Operating Modes are: WAITING, blender is idle (stopped or mix chamber sensor covered).

Navigation Menu – (Nav bar) Located along the right side of the screen, these buttons allow quick navigation to frequently used and top-level screens. The middle three buttons are soft buttons that can be changed or removed.

Component - This area displays the current configuration of each component (hoppers and feeders), component setpoint, material name, component type, visible alarms, dispensing indicators (dispensing component hopper number turns yellow when dispensing). Touch any anywhere on a hopper to access more detail on the individual component. **High / Low Limits**, when enabled by the SE or SL component parameters, allow setting a high or low limit on the component.

Hoppers 9 - 12 - The main Home Screen displays hoppers 1 through 8. Hoppers 9 through 12 are displayed on a second screen accessible by pressing this button. To return to viewing hoppers 1- 8, press this button again. During operation, the display will automatically toggle to show hoppers that are currently operating.

Weigh Bin – Displays current throughput per hour, current weight in weigh bin, the current dispensing component (hopper number and type displayed when that component is dispensing), percentage completed of the cycle (green area) and the portion that is currently dispensing displayed in red. The weigh bin dump flap status (red when closed, green when open).

Mix Chamber – The mix chamber displays the mix chamber level sensor (yellow when cover, gray when uncovered) and mix motor status (idle or rotating). Below the mix chamber the Flow Control Valve (FCV) status is displayed (red when closed, green when open).

Start / Stop Button - Main Start and Stop Control Button of the Blender. Also see Automated Control.

Specialized Operations Buttons - When enabled and made visible Specialized Operations Buttons allow access to specific functions of the blender including View of current totals, Internal Recipe Database, Batch Mode, Tag Information and FAST mode.

Nav Bar

Home Screen

Pressing the Home Screen button from any other screen will return the operator to the main Home Screen.

Alarm and Event

Alarm and Event Log displays a history of alarms and other events with a date and time stamps and description.

Live Diagnostics

Live Diagnostics displays a cycle summary of detailed diagnostics information scrollable back through a history of cycles printable to USB.

Print Center

A menu screen of print related options including Totals, Parameters, Alarm History, Events, Cycle History, Diagnostics and Weigh Certification.

Flexbus Lite

Enables the Flexbus Lite vertical loading system for control of loaders attached to this blender. When enabled, a Flexbus Lite loader button appears in the menu. See the Flexbus Lite on page: 122.

Setup Login

Password protected access to Blender and System configuration.

Turning on Material Type Outputs

This controller can control up to TWELVE (12) components; 1 through 12. Labeled: **Component 1** through **Component 12**. Each Component is either a hopper or a feeder.

All models are preset with their model specific component outputs turned ON. Components can be turned on or off. Components that are TURNED OFF are not part of ANY routines. A component becomes TURNED ON when it is set to a MATERIAL TYPE.

Material Type Definitions

Material TYPES are: % of Batch R (also referred to as REGRIND), NATURAL, ADDITIVE

The Weigh Scale Blender handles each TYPE differently. Settings have different meanings for each TYPE. To enter component settings correctly, you must understand how different materials are handled based on their TYPE. So PLEASE read this page CAREFULLY.

PERCENT OF BATCH (also referred to as REGRIND)

Components designated % of Batch (REGRIND, REG on Home Screen) will be added as a PERCENT of the ENTIRE MIX of material. For example, If component 1 is designated as % of Batch (REGRIND) and is set for 20.0 percent, then for every 100 pounds of blend, 20 pounds will be this component. REGRIND is generally only added when available, and then as a limited percentage of the entire mix.

ALL Components set to % of Batch (R) or Mode set to % of Total Batch

If all components are set as **% of Batch (R)** or the Mode of Operation is set to % of Total Batch, the percentages are entered as the exact percent for each. When ALL components are **% of Batch (R)**, ALL settings must add up to 99.9 or 100 percent. If they do not, an error message will appear (Sum of components is less/greater than 100%).

NATURAL (RATIO TO EACH OTHER)

Components designated NATURAL will be added in the portion that you specify them to each other. Their actual percentage of the mix will depend on how much Regrind (% of Batch) is specified and how much Additive is specified. For example, if components 2 and 3 are both designated NATURAL and are set for 10 and 40 respectively, then the RATIO of component 2 to component 3 will always be 10 to 40 or 1 to 4.

If no **% of Batch (R)** or **Additives** are specified, the mix will be:

> Component 2, **Natural**, SET= 10, 20.0 percent of mix,
> Component 3, **Natural**, SET= 40, 80.0 percent of mix.
> The RATIO of 1 to 4 is maintained.

If component 1 is specified as **% of Batch (R)** at 20 percent, the mix is then

> Component 1, **% of Batch**, SET= 20, 20 percent of mix,
> Component 2, **Natural**, SET= 10, 16.0 percent of mix,
> Component 3, **Natural**, SET= 40, 64.0 percent of mix.
> Components 2 and 3 are still held at a 1 to 4 ratio.

ADDITIVE (PERCENT OF ALL NATURALS)

Components designated ADDITIVE will be added as a percentage of all the NATURALS added together. For example: If component 4 is an ADDITIVE at 5 percent, then the above example now looks like this:

Component 1, REGRIND, SET= 20, 20 percent,
Component 2, NATURAL, SET= 10, 15.2 percent,
Component 3, NATURAL, SET= 40, 61.0 percent,
Component 4, ADDITIVE, SET= 05.0, 3.8 percent.

The REGRIND is still 20 percent of the MIX.

The NATURALS are still at a RATIO of 1 to 4, although they have been reduced to make room for the Additive.

The ADDITIVE is 5 percent of the NATURALS added together (5% of 76.2).

REGRIND is generally only added when available, and then as a limited percentage of the entire mix.

NATURALS are generally blended at a RATIO to one another. ADDITIVES are most often only intended to be added to the entire NATURAL portion of the mix, because regrind generally already contains these additives.

If you prefer to think of your mix as a RATIO OF WEIGHTS, for example, components 1, 2, 3, 4, and 5 are to be mixed at 100, 50, 5, 20 and 7 pounds respectively, then you may wish to specify ALL components as NATURALS. In this way these weights may be entered just as listed here. Components will be dispensed to maintain each at the proper specified RATIO to the other components.

If you wish to think of all components as PERCENTAGES of THE MIX, percentages that always add up to 100, then specify ALL components as % of Batch (R) or set the Mode of Operation to % of total Batch and enter the exact percent for each. In these modes, ALL settings must add up to 99.9 or 100 percent. If they do not, an error message will display: Sum of components is less/greater than 100%.

REGRIND Use this for all materials that DO NOT require the addition of the ADDITIVES. For example, your Regrind scrap.

NATURAL Use this for all materials that are the bulk of the mix.

These will be RATIOED to each other and will automatically constitute the ENTIRE mix except for the space needed for Regrind and Additives. A blend of ABS Homo-polymer and Co-polymer or a blend of Styrene Hi Impact and Crystal are examples of NATURALS ratioed together.

ADDITIVES Use this for all materials that are added to the NATURALS only.
For example; color, stabilizer, slip agent, etc.

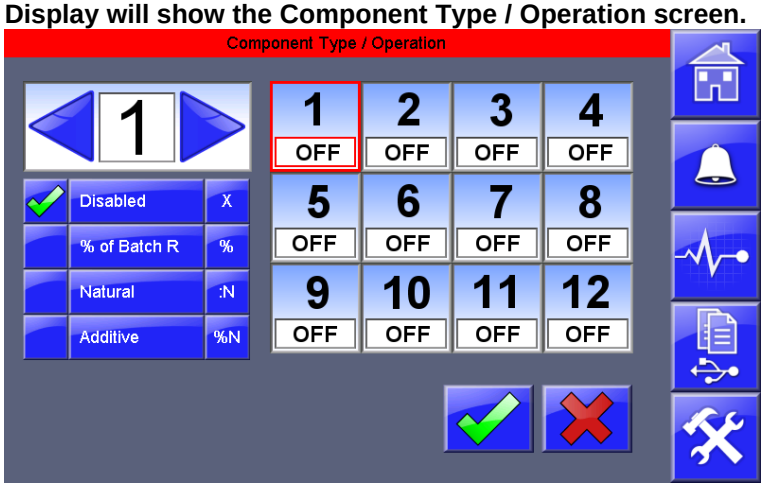
Modes of Operation

Mode of Operation - Allows selection of the General Mode that the Blender will run in including: Blender (WSB, up to 12 components), Dispenser (WSD), or Totalizer with on-screen accumulated totals (WST).

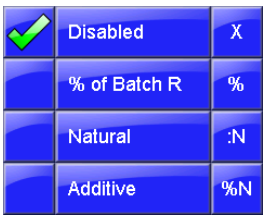
Additive as % of Natural or All Materials are % of Total Batch - This screen also allows selection of the blending Mode of Operation as: % of Natural or % of Total Batch. Mode of Operation also allows selection of the setting resolution as 3-digit (xx.x) or 4-digit (xx.xx).

Press		**Display will prompt for a password.** (default: 22222) **Then press:**
Press	**System Configuration**	**Display will show the System Configuration categories.**
Press	**Modes of Operation**	**Display will show the Modes of Operation screen.**
Select	**General Mode of Operation** **General Modes of Operation are:** **Blender** - Weigh Scale Blender (WSB) component blending up to 12 components) **Dispenser** - Dispense Station (WSD) See page 45. **Totalizer** – Weigh Scale Totalizing with on-screen accumulated totals (WST)	
Select	**Blend Mode of Operation** **Blend Modes of Operation are:** **% of Natural -** Additives are dispensed as % of total Natural **% of Total Batch** - Materials percentages are a percent of the total batch and all components percentages must add up to 100%.	
Select	**Digit Mode** **Setting Resolution:** **3-Digit -** Settings are in 10ths, XX.X **4-Digit -** Settings are in 100ths, XX.XX	
Press		**To save changes. The screen will exit back to System Configuration.**
Press		**the Home Button to return to the Home Screen.**

Enable and Set Hopper Type / Operation:

Press	**Display will prompt for a password.** (default: 22222)	**Then press:**
Press	**Blender Configuration**	**Display will show the Device Configuration categories.**
Press	**Component Types**	**Display will show the Component Type / Operation screen.** 

Change Component Types:

Press	**Component Navigation**	**to navigate through the 12 components.** **The selected component highlights in red indicating the component type that will be changed if a different type designation is selected.**
Press	**Component Type** 	**to select the component type designation.** **Component Type selections are:** **Disabled - Turns off a component** **% of Batch R - Regrind, Percent of Batch** **Natural - Ratios to other Naturals** **Additive - Percent of Naturals**
As each component is changed, the Component Type field displays the new type in green showing that the type is different previous.		
When all components types are changed to the desired type:		
Press	**To set the Type designations. The screen will exit back to Device Configuration.**	
Press	**Home Button returns to the Home Screen then continue with entering component settings.**	

Examples of Making Settings

Below are listed 4 different examples for possible settings users can make with the Maguire blender.

Each example uses this formula:

Regrind = Rs * Full weight
Natural = (Full weight - Ra) / (100 + As)
Additive = Natural * As

Rs = Regrind setting
Ra = Regrind actual
As = Additive setting

Example 1:

Blender: WSB 100 Series with 1000g Batch

Materials:

30%	Regrind
70%	Natural
3%	Color

Application: Regrind is recycled and therefore already colored.
Color only needs to be added to the Natural Material

Settings:

Regrind	R	30
Natural	N	100
Color	A	3

Calculation:

- Total = 1000 grams
- **Regrind: 30% * 1000.0 = 300.0** (Rs * Full weight)
- **Natural: (1000.0 - 300.0) / (100% + 3%) = 700.0 / 1.03 = 679.6** (Full weight - Ra) / (100 + As)
- **Additive: 679.6 * 3% = 20.3** (Natural * As)
- The blender is doing this calculation automatically for you

Result:

1 Regrind	300.0g	30.0 parts
2 Natural	679.6g	67.9 parts
3 Color	20.3g	2.0 parts
Batch Total	1000g	100 parts

Example 2:

Blender: WSB 100 Series with 1000g Batch

Materials:

30%	Natural
70%	Natural
3%	Color

Application: 2nd Natural (or un-colored regrind) is used without any Color and therefore both naturals require color.

Settings:

Natural	N	30 (Naturals are a ratio to each other, in this case a 30 parts to 70 parts ratio)
Natural	N	70
Color	A	3

Calculation:

- Total = 1000 grams
- Hopper 1 Natural at 30% (Ratio to hopper 2 natural 30% 70%, 291.3 grams)
- Hopper 2 Natural at 70% (Ratio to hopper 1 natural 30% 70%, 679.6 grams)
- **Naturals: (1000.0 - 0) / (100% + 3%) = 1000.0 / 1.03 = 970.8** (Full weight - Ra) / (100 + As)
- **Additive: 970.8 * 3% = 29.1** (Naturals * As)
- The blender is doing this calculation automatically for you

Result:

1 Natural	291.3g	29.1 parts
2 Natural	679.6g	68.0 parts
3 Color	29.1g	2.9 parts
Batch Total	1000g	100 parts

Example 3:

Blender: WSB 100 Series with 1000g Batch

Materials:

25%	% of Batch
65%	% of Batch
4%	% of Batch
6%	% of Batch

Application: All components as set as proportions of 100% of the batch. The total should always add up to 100%. When using settings that are % of total, always use all Regrind material types.

Settings:

% of Batch	25
% of Batch	65
% of Batch	4
% of Batch	6

Calculation: The blender is calculating only the set values in grams according the setting referring to the Batch weight.

Result:

1 (% of Batch)	250.0g	25.0 parts
2 (% of Batch)	650.0g	65.0 parts
3 (% of Batch)	60g	6.0 parts
4 (% of Batch)	40g	4.0 parts
Batch Total	1000g	100 parts

Example 4:

Blender: WSB 100 Series with 1000g Batch

Materials:

20%	Regrind
50%	Natural
30%	Natural
4%	Color
6%	Additive

Application: Regrind is recycled next to the machine and therefore already has Color and Additive. Color and Additive only needs to be added to the 2 Natural materials.

Settings:

Regrind	R	20
Natural	N	50 (Ratio to hopper 3 natural 50% 30%, 444.5 grams)
Natural	N	30 (Ratio to hopper 2 natural 50% 30%, 266.6 grams)
Color	A	4
Color	A	6

Calculation:

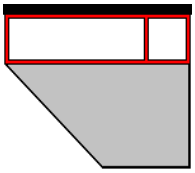
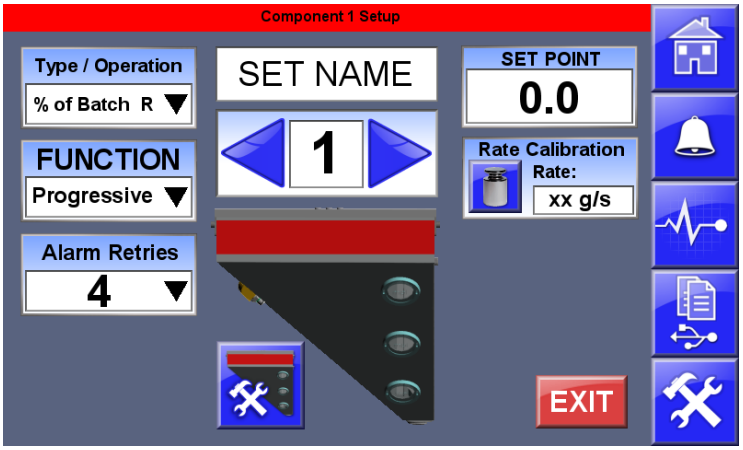
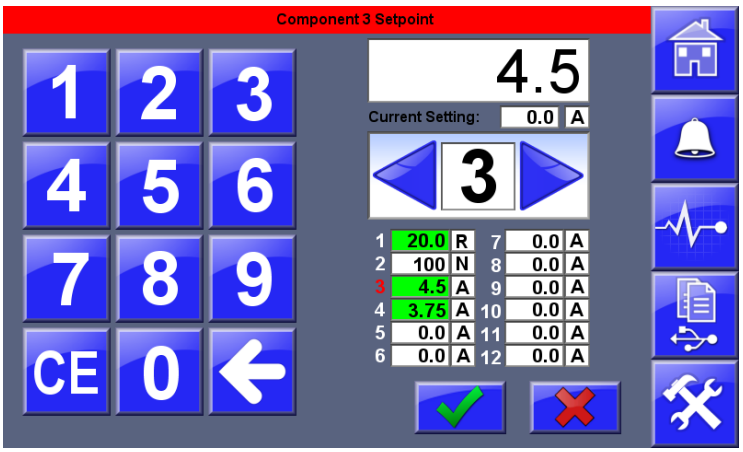
- Total = 1000 grams
- **Regrind: 20% * 1000.0 = 200.0** (Rs * Full weight)
- **Naturals: (1000.0 - 200.0) / (100%+10%) = 800 / 1.1 = 727.2** (Full weight - Ra) / (100 + As)
- **Additive: 727.2 * 4% = 29.0** (Natural * As)
- **Additive: 727.2 * 6% = 43.6** (Natural * As)
- The blender is doing this calculation automatically for you

Result:

1 Regrind	200.0g	20.0 parts
2 Natural	454.5g	45.4 parts
3 Natural	272.7g	27.2 parts
4 Color	29.0g	2.9 parts
5 Additive	43.6g	4.3 parts
Batch Total	1000g	100 parts

Entering Component Settings

Settings are entered from the Home Screen by pressing any of the enabled component hoppers shown on the home screen.

Press	**One of the hoppers** 	**Display will show the Component Setup screen.** 
Press		**Display will show the Component Setpoint screen.** 
Press		**To navigate through all enabled components. The numbers correspond to the numbered physical hopper or feeder on the blender. If you are not sure what component number operates what hopper or feeder, see Manual Operators to confirm components.**
Press	**The Keypad**	**To enter the desired setting for the selected Component.**
As each setting is entered the recipe overview table will highlight each changed setting in green. Navigating through the recipe will also display the Original Setting below the Setting field at the top.		
Press	**OR**	**to save the settings and load the recipe and return to the Home Screen.**
Press		**to cancel the new settings and revert back to the original settings. Display returns to the Home Screen.**

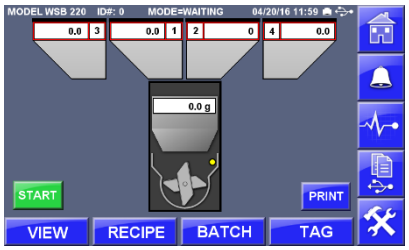
Check Out Procedure

As you go through this procedure, if WHAT SHOULD HAPPEN, doesn't happen, see next section, DIAGNOSTICS, for what to check.

MB/100/200 series models (3K load cells), display all weights in 1/10 grams (xxxx.x).

400/900/1800 series models (10K load cells) display weights in FULL grams, NO decimal point (xxxxx). On this page we show all weights with NO decimal point.

Start with NO MATERIAL in any hoppers.
Be sure an AIR SUPPLY is connected.
Turn POWER SWITCH OFF (front of controller).

PROCEDURE:	WHAT SHOULD HAPPEN:
1. POWER UP CONTROLLER / Blender	
PLUG IN CONTROLLER	Nothing should happen. Air pressure should be holding ALL valves CLOSED. This means all air cylinders are extended. If any slide gate or flap is open, air lines are reversed. If a FLOW CONTROL VALVE is installed, check it. The flow control valve should be closed when power is off.
TURN POWER ON	The display should briefly show a power-on splash screen followed by the main home screen. Across the top of the home screen will display: Model, ID number, Mode, Date and Time.  The Home Screen displays the Main Touchscreen view, which includes a summary view of the blender including all enabled components, settings, material types, actual weight of material in the weigh bin. This number should be zero, plus or minus several grams (20) to (-20).
AT THIS POINT	Be sure the model number that displays matches your blender model number. If this is not the case see two sections ahead, SELECTING CORRECT MODEL.
TOUCH WEIGH BIN VERY LIGHTLY	Display should update the weight reflecting the light pressure that you are exerting on the bin.
2. OPERATE DISPENSE DEVICES	
PRESS	Display will show the Setup login screen.
PRESS 2 2 2 2 2	then, press This enters the PROGRAM mode. Display will show a menu of options.
PRESS **Blender Configuration**	
PRESS **Manual Operations**	Display will show all devices that can be manually operated. Each button is a press to activate, press to deactivate.

PRESS	**Component 1**	Device number 1 will operate. Press "1" repeatedly to observe operation.
PRESS	**Component 2**	Device number 2 will operate. Press "2" repeatedly to observe operation.
REPEAT THIS SEQUENCE		For each dispense valve on your WEIGH SCALE BLENDER. Up to 12 outputs are possible numbered **Component 1** through to **Component 12**. Only those connected to devices will operate.

3. NOTE HOPPER NUMBERS

AT THIS POINT	NOTE which component NUMBER is assigned to each hopper. You will want to know each hopper's correct component number.
FOR WSB 940 & WSB 1840 SERIES:	On 9000 and 18000 gram, FOUR hopper compartment systems, facing the Controller side of the blender: Device 1 is the NEAR hopper, 2 the FAR hopper, 3 the LEFT CENTER, and 4 the RIGHT CENTER hopper.
FOR WSB 100, 200 & 400 SERIES:	On 1000, 2000, and 4000 gram, FOUR hopper systems facing the Controller side of the blender: Devices 1, 2, 3, and 4 are counter-clockwise starting with far left corner hopper.
FOR WSB 200, 400, 900 & 1800 SERIES:	On 2000, 4000, 9000 and 18000 gram SIX hopper systems facing the Controller side of the blender: Devices 1, 2, 3, 4, 7, and 8 are counter-clockwise starting with far left corner hopper.
FOR WSB 100, 200, 400, 900 & 1800 SERIES:	On the blender Controller: Device 5 is the LEFT Panel-front OUTLET. Device 6 is the RIGHT Panel-front OUTLET.

4. OPERATE OTHER DEVICES

PRESS	**Weigh Bin**	The weigh bin air solenoid will operate. The weigh bin dump valve will open. Press, "DUMP" repeatedly to observe operation.
PRESS	**Mixer**	This key controls the mix motor outlet on the side of the controller. The mixer motor will run. Mix blade turns clockwise facing the motor shaft or 270º on Pneumatic Mix Motors. Mixer switch must be down; timed position.
PRESS	**Alarm**	The Strobe light and Beeper will operate. Display will show **ALARM: ON**
PRESS	**Hold**	The Flow Control Valve will operate. (Under the mix chamber - this device is optional)
PRESS		To return to the Home Screen.

Check Out Procedure Diagnostics

If display fails to come on at all:

Check power to blender controller.

Check your model numbers on the Red Metal Tag:

If model number is not correct for you unit:
see the next page, **SELECTING CORRECT MODEL.**

If display field located center screen shows randomly drifting numbers:

check to see load cells are plugged in.

If display shows about (- 1250.0 g) or (-4500 g):

check that the weigh bin is in place properly.

If display is steady but not near zero:

An over stressed load cell will display a permanently high or low reading. Recalibrate load cells; next section.

If there is no response from the display when the bin is touched:

check for damaged wires to load cells.
check that load cell plug screws are secure.

If response is not sensitive or does not return to its start point:

check for interference around weigh bin.

If display says INVALID after entering the password number:

you pressed the wrong keys or the password number has been changed and it is no longer 22222. Call us for help.

If an air solenoid does not operate:

check the 10 amp fuse.
check solenoid cable connected properly and fully seated.
check mix chamber door closed, safety interlock engaged.

If a slide or dump valve does not open:

check the air supply and regulator adjustment:
80 psi (5.5 bar) recommended.
check for proper air line connection to cylinder.

If an auger feeder motor does not run:

check the 3 amp fuse.
check that the motor is plugged into the proper outlet.
check for faulty motor by plugging it into a known source of 110 volt A.C. power (240 volt outside U.S.).

Load Cell Zero Calibration

If your load cells already display a weight close to zero, plus or minus 10 grams, you may skip this section. Weight readings tare at the beginning of each cycle. The acceptable plus/minus weight reading range is model specific and is set in the TH (Tare High) and TL (Tare Low). Above TH or below TL will display a Tare High/Low error and the blender will not run. If your blender's weight reading is too far from zero (near TH or TL) you should recalibrate.

Before Recalibrating:

- Verify the weigh bin is EMPTY.
- Verify the load cell plug is plugged into the side of the controller.
- Verify the weigh bin is resting on the load cells freely.
- Verify the air line to the dump valve is connected as it would be during normal operation. A disconnected air line adds weight.
- Verify the load cells and bin are not jammed in any way. To test for this see that a light touch on Verify the bin causes the display to change. When the pressure is removed the display must return to exactly where it was, plus or minus 1 gram. If this does not happen, something is touching something and the bin is not entirely free to move. Check EVERYTHING around the bin.

How to Zero Calibrate the Load Cells

Press		**Display will prompt for a password.** (default: 22222)	Then press:	

Press	**Blender Configuration**	Display will show menu options
Press	**Calibration Routines**	Display will show menu options
Press	**Calibrate Load Cells**	
Press	**ZERO**	Display will say: Confirm weigh bin is empty then press: **YES** (weigh bin can be dumped using DUMP BIN button). Followed by a gram weight of **0**
Press		The Title Bar will display: **MODE=WAITING**

The ZERO point of the load cells is now set properly. FULL weight calibration may also be done at this time; however, it probably is NOT NECESSARY. When load cell readings shift due to rough handling, the entire range of readings from ZERO to FULL shift together. The ZERO weight calibration routine resets the full range of the cells and, therefore, corrects FULL weight readings as well. **For information on FULL weight calibration, see Recalibrating of Load Cells on page 68.**

Material Flow Rate Calibration

If material is changed or hardware is changed (example: 1/2" auger changed to a 1" auger) and material meters at a much lower or higher rate than expected, the software may take 10 to 20 cycles to fully adjust. During this time cycles will take longer. The software will SELF ADJUST the flow rate or a Material Flow Rate Calibration can be done to set the flow rate immediately.

Material Flow Rate Calibration

Press	**Display will prompt for a password.** (default: 22222)	Then press:
If you are calibrating an auger feeder, operate it briefly to ensure it is fully primed. To do so:		
Press	**Blender Configuration**	
Press	**Manual Operations**	Display will show Component 1, Component 2,… Component 12 and Weigh Bin, Mixer, Alarm, and Hold.
Press	**Component 5 or Component 6**	Run until Auger Feeder is dispensing. Press again to stop the feeder.
Press	**Weigh Bin**	This will empty the Weigh Bin
Now you can CALIBRATE the material. To do so:		
Press		to return to the previous screen
Press	**Calibration Routines**	
Press	**Flow Rate Calibration**	Display will show the currently select component and the Current Flow Rate in grams per second.
Press		To select the Component to calibration.
Press	**START**	Display will show: **Calibrating…. Please Wait.** Component #5 will calibrate itself. When complete the display will show the New Flow Rate.
Press	**ACCEPT or REJECT**	to accept and use the new flow rate or reject to keep the current flow rate.
Repeat the calibration routine for EACH material that you wish to calibrate. Only components that have a TYPE selected (not "OFF") will operate. Each time a dispense will occur, followed by weighing, followed by a dump to empty the weigh bin.		
Press		To return to the Main Screen.

Micro Pulse Instructions

This section contains Micro Pulse information for a few selected models.

MICRO PULSE
Micro Pulse valves are available on models:

WSB MB	with optional VERTICAL VALVE MICRO PULSE valves.
WSB 122 / WSB 140m2	with optional SLIDE GATE MICRO PULSE valves.
WSB 131 / WSB 140m1	with optional SLIDE GATE MICRO PULSE valves.
WSB 140Rm1 / WSB 140Rm2	with optional VERTICAL VALVE MICRO PULSE valves.
WSB 240Rm1 / WSB 240Rm2	with optional VERTICAL VALVE MICRO PULSE valves.
WSB 440Rm1 / WSB 440Rm2	with optional VERTICAL VALVE MICRO PULSE valves.

These models may use our "MICRO PULSE" metering system for Color and Additive components.

PULSED OUTPUT parameters control the on/off timing, or pulsing, of the valves. The controlling parameters are the "PO Pulsed output / timing" component settings.

When set to 00000, normal slide gate operation occurs. When set to a value, such as 00101, power will pulse ON then OFF, at 1/10 second time intervals each way. This ON/OFF cycling will repeat for the entire dispense time.

When using a MICRO PULSE valve, you must set the related PO parameter to 00101.

If overall blender throughput is too low, you may increase the metering rate of each Micro Pulse device by adjusting the cylinder airflow control valves for higher flow rate. This causes more rapid movement of the cylinder, ejecting more pellets per pulse. The drawback is noisy operation.

We recommend air flow be adjusted for quiet operation, but assuring full valve movement per on/off cycle. We have already done this. No further adjustment should be necessary.

The approximate correct airflow adjustments are:

At nose of cylinder, 1.5 full turns out from full closed.
At rear of cylinder, 2.5 full turns out from full closed.
MICRO BLENDER slant valves, adjust by sound.

On fixed hoppers with horizontal micro pulse valves, CLEAN OUT of the hopper can be accomplished by opening the "clean out" port provided under the valve. Turn to one side to allow material to drain.

MICRO PULSE - ACCURACY
All MICRO PULSE valves are more accurate if the associated PT parameter is set to 00090. Read PT parameter in the PARAMETER section. Use Options / Special Functions / Operating Options / Progressive Metering, for improved accuracy so long as the additional time necessary for Progressive Metering exists. Read about more about Progressive Metering in the Controller Functions section.

Regrind Control

Regrind Control is a set of parameters that enhance control of regrind.

PRN 00000 - Percent of Regrind to be Treated as Natural

First digit: 0 = adds, 1 = subtracts ... additive to or from the regrind.

Second digit: Regrind component.

Third digit: 0 = all additives. Entering a number specifies that additive component only.

Last 2 digits: Percent of Regrind. 99 = 100.

Example: 01030 - 0=add, 1=Regrind in 1, 0=all additives, 30% of regrind as natural. 3rd digit should use 1-9, A, B, C for component numbers.

RAC 000000 - Regrind Auto Control (six-digit parameter)

First digit is the regrind component

Second and 3rd digits are the cycle count

Last 3 digits are the % to increase current setting by.

Example: 110100 - Regrind #1, 10 cycles increase setting by 100%. Current setting 25%, increases to 50%.

RLC 00000 - Regrind Level Control – works with RHL

First digit is the regrind component (1-9 only)

Last digit the % to increase current setting when the sensor is covered and uncovered.

Example: 10005 - Regrind #1 increase 5% each cycle based on RHL setting.

RHL 00000 - High Low Level Control - Requires level sensors

First 3 digits is the high percentage when upper sensor is covered

Last 2 digits are the low percentage when both sensors are uncovered.

Example 07020. Regrind setting at 50. If both sensors are covered increase setting to 70%. If both sensors are uncovered decrease setting to 20%.

Full Explanation of Regrind Control Parameters

PRN — Percent of Regrind to be Treated as Natural

Allows for adding some ADDITIVE to one of the REGRIND portions. PRN can also be used to subtract a portion of ADDITIVE to reduce the overall total of ADDITIVE (typically used to compensate for over-colored regrind).

PRN indicates the PERCENT of one REGRIND that will be treated as NATURAL when additive dispenses are calculated. If you feel it is necessary to add (or subtract) color or additive to a regrind, this parameter will automatically see that this is accomplished.

1st digit: 0 = adds, 1 = subtracts ... additive to or from the regrind.
2nd digit: Regrind component. The second digit is the REGRIND component number you will be making this adjustment for. The last 3 digits indicate the percent of this Regrind component to add to, or subtract from, the Naturals when computing Additive dispenses.

EXAMPLE: PRN set to 01020.
The first 0 means add. The 1 is component 1.
The 20 means take 20 % of component 1 (a Regrind) and ADJUST the total of all NATURAL dispenses upward by this amount. Whatever amount of component 1 regrind is added to the weigh bin, 20 percent of this amount will be added before a color calculation is made. Regrind dispense = 600 grams, Natural portions = 1400 grams.
At 4 percent, if PRN=0xxxx, Color would be 56 grams.
If PRN=01020; increase Natural by 20 % of 600, (120 grams).
Color is now 4 % of 1520 grams (1400+120), or 61 grams.

In some cases, the addition of pre-colored regrind tends to produce overall better coloring because of an initial more uniform dispersion of pigment. In this case you may want to add LESS color to the Natural portions when Regrind is present. Placing a 1 in the first digit of the PRN parameter (PRN 1xxxx), will cause a portion of this Regrind component to be SUBTRACTED from the Natural portions, instead of added.

EXAMPLE: PRN set to (PRN 11020).
The first 1 means subtract. The second 1 selects component 1.
This means take 20 % of component 1, a Regrind, and reduce the NATURAL portions by this amount. Whatever amount of component 1 is added, 20 percent of this amount will be subtracted from the Natural amounts before a color calculation is made.

Component 1 dispense = 600 grams, Natural portions = 1400 grams.
At 4 percent, if PRN=00000, Color would be 56 grams.
If PRN=11020; reduce Naturals by 20 % of 600, (120 grams).
Color is now 4 % of 1280 grams (1400-120), or 51 grams.

RLC

RLC and RHL parameters work together. Their combined purpose is to allow the adjustment of one Regrind component up or down based on input from one or two lever sensors.

LEVEL SENSORS are required for this parameter to work.
Both RLC and RHL must be set for these parameters to have any effect.

The first digit of the RLC parameter indicates which component is controlled by the adjustment routine. Only components 1 through 9 may be controlled.

The last digit determines the adjustment rate. Zero in the last position means make the full adjustment immediately. Any value from 1 to 9 indicates the percentage adjustment that will be made each cycle when the level sensor condition changes. See RHL below for examples.

RHL

LEVEL SENSORS are required for this parameter to work
Use only if you have regrind level sensors fitted

RHL instructs the controller to change the regrind setting of one selected regrind component if optional level sensors in the regrind hopper indicate high or low conditions. The component to be changed is determined by the first digit of the RLC parameter above.

If set to all zeros (RHL 00000), then this parameter is ignored.
RLC alters the way RHL is interpreted.
If the last digit of RLC = 0, (RLC x0000), then RHL numbers indicate NEW settings that are to be run when regrind level is high or low.

If the last digit of RLC = 1 to 9 (ROV x0001) to (RLC x0009), then RHL indicates upper and lower regrind usage limits only, and regrind usage will be adjusted slowly, to these limits, based on the RLC number.
IF RLC equals zero (RLC 10000):

In this (and all) examples, RLC is selecting component 1 as the controlled component. (RLC 10000)

If RHL is set to any value, the first 3 digits of the parameter indicate a new Regrind setting to use when the material level is ABOVE the HIGH-level sensor; (sensor is covered). The last 2 digits indicate a new setting to use if material level is BELOW the LOW sensor; (both High and Low sensors are uncovered).

In other words, RHL allows the selection of a percentage that is HIGHER than normal, and a percentage that is LOWER than normal. NORMAL is what you put on the bottom thumbwheel switch.

Sensors are assumed to be covered when NO signal is returned. If a sensor is unplugged from the controller, it is read as "covered".

If you only have ONE SENSOR, it must be used as a HIGH-level sensor. The absence of a sensor is read as a covered sensor; so, the absence of the high sensor would signal the system to run at the high setting all the time. This would not be acceptable. The absence of the LOW sensor simple prevents the system from ever thinking it is very low. This is acceptable.

With a high-level sensor only, the system switches between the NORMAL thumbwheel setting and the HIGH setting indicated by the first 3 digits of the parameter. The last 2 digits have no effect, since a LOW condition is never detected.

Sensors that we supply are wired correctly for this logic. If a "Bindicator" or similar device is used, with a micro-switch dry contact closure signal, then wire to the normally CLOSED contact so that the signal OPENS when regrind covers the bindicator paddle.

The circuit board "pin outs" for each sensor are positive, ground, and signal. If you are wiring using a dry contact closure, only the positive and signal lines are used. When the contact is open, the signal is pulled to ground internally through a resistor.

Example: RHL is set to 90 and 10 percent (RHL 09010).

RLC last digit is set to zero, (RLC 10000).
The "Regrind" thumbwheel switch is set to 25 percent (025).

The Software logic is as follows:

If material level is high, above the high sensor,
the HIGH sensor is COVERED, (returns NO signal);
Regrind runs at the HIGH setting; 90 percent.

If material level is in the middle, between sensors,
the High sensor is NOT covered, (returns a signal),
the LOW sensor IS covered, (returns NO signal),
Regrind runs at the SETTING; 25 percent.

If material level is low, below the low sensor,
BOTH sensors are NOT covered, (both return a signal),
Regrind runs at the LOW setting; 10 percent.

IF RLC equals 1 to 9 (RLC 10001 to RLC 10009):

All the same rules given above apply, except that the regrind setting does not jump in one step to a new setting, but, instead, moves slowly to the new setting which acts as a limit. The usage adjustment is made each cycle by the amount specified by the RLC parameter.

Example: RHL is set to 10 and 90 percent (RHL 09010).
RLC last digit is set to 3 (RLC 10003).
The regrind setting is set to 25 percent (025).

The Software logic is as follows:

If material level rises, goes above the high sensor, the HIGH sensor is COVERED, Regrind usage will increase 3 percent each cycle up to a high limit of 90 percent.

If material level is in the middle, between sensors, the HIGH sensor is NOT covered, the LOW sensor IS covered, Regrind usage will change 3 percent each cycle, moving back toward the regrind SETTING of 25 percent.

If material level drops below the low sensor, BOTH sensors are NOT covered, Regrind usage will decrease 3 percent each cycle down to a low limit of 10 percent.

Instructions for Normal Operation

Operation:

1. **Fill HOPPERS**.
2. Turn **POWER ON**. Verify correct Settings, Types and Mode of Operation.
3. Press **START** Button.

   Blender will operate automatically, dispensing material until level sensor is covered.

   Use the STOP Button to stop the blender. Turn POWER off only on final shutdown.

After several days of proper operation:

Save the current configuration including all parameters to the User Backup Settings for future retrieval just in case software problems develop later. This routine is also useful prior to a minor firmware update since a firmware update will reset most configuration information back to factory defaults.

Note: During a firmware update, it may be better to reset all settings back to factory. This is because an update to the latest firmware from a much older version of firmware may have fundamental changes in the software.

To SAVE the configuration to the User Backup Settings:

Press		**Display will prompt for a password.** (default: 22222) **Then press:**	
Press	**System Configuration**	**Display will show the System Configuration categories.**	
Press	**Resets**	**Display will show the categories of System resets:** **User Settings, Factory Access, Restore Factory Defaults, Firmware Update.**	
Press	**User Settings**	**Display will show Restore User Settings / Save User Settings.**	
Press	**Save User Settings**	**Display will prompt for confirmation to save user settings.**	
Press		**To save the user settings including parameters or press the red X to cancel and exit.**	

Restoring Parameters from Backup

If software related problems develop later or a firmware update is applied to the controller, this routine will restore the last saved configuration of the blender stored within User Backup Settings.

Press		**Display will prompt for a password.** (default: 22222) **Then press:**	
Press	**System Configuration**	**Display will show the System Configuration categories.**	
Press	**Resets**	**Display will show the categories of System resets:** **User Settings, Factory Access, Restore Factory Defaults, Firmware Update.**	
Press	**User Settings**	**Display will show Restore User Settings / Save User Settings.**	
Press	**Restore User Settings**	**Display will prompt for confirmation to Restore user settings.**	
Press		**To restore the user settings including parameters or press the red X to cancel and exit.**	

Specialized Operations

Specialized Operations are features accessible directly on the home screen. These features include: a quick access clear totals button on the VIEW totals screen, internal recipes, batch mode operation, setting tags for operator, recipe and work order and FAST mode used for increasing throughput speed.

Clear View Totals	Enables the **CLEAR** totals button in the View Totals screen.
Fast Mode	Used to increase throughput by dispensing components by the last known flow rate for a series of 3 cycles. On the 4th cycle, material is weighed.
Batch Mode	Blend a preset **BATCH** amount of material and then stop and alarm.
Recipes	Create, store, edit and load up to 99 detailed **RECIPES** within the blender's onboard recipe database.
Tag Information	**TAG** information links all material usage data with an Operator Number, Recipe Number or Work Order number for better tracking of material usage.

To display the VIEW, RECIPE, **BATCH**, **TAG**, and **FAST** buttons these features must be enabled.

Enabling Specialized Operations

Press		**Display will prompt for a password.** (default: 22222) **Then press:**	
Press	**Blender Configuration**	**Display will show the Blender Configuration categories.**	
Press	**Specialized Operations**	**Display will show the Specialized Operations:** **Clear View Totals, Fast mode, Batch Mode, Recipes, Tag Information**	
Press	**ON or OFF**	**To toggle the operation on or off. The enabled operation will appear on the bottom of the home screen as a label button.**	
Press		**To save the changes or press the red X to cancel and exit.**	

Specialized Operations - Full Explanation

Clear View Totals

Enable this feature to enable the CLEAR totals button on the View Totals screen. Pressing this button will: reset all component totals on-screen, reset all component totals in communication registers, and reset the cycle count back to zero. A clear bit in the Get Totals command will be set to 1. (MLAN Protocol, Get Totals Command - Clear bit is the 14th bit in bytes 9-10 of the Get Totals MLAN command. See the MLAN Protocol for more information.)

FAST Mode (FAST CYCLES)

When enabled a button labeled FAST will display on the controller main screen. By default, Fast Mode is OFF as indicated by the Fast button displayed in red. Pressing the red Fast button toggles Fast Mode to ON, as indicated by the button displaying in green. FAST will allow you to exceed the normal blending rate of your unit. Once your system has learned correct flow rates of each material, the timing of each component dispense should be very consistent cycle to cycle. The FAST key allows up to 3 FAST REPEAT cycles to follow a normal weighed cycle. In a FAST cycle all components are dispensed simultaneously, without any weights being taken. Errors in dispense amounts will not be detected. These are volumetric dispenses not gravimetric requiring much less time to dispense. The series of 3 dispenses is terminated as soon as the sensor is covered, which indicates the blender has "caught up". The next cycle will then be a weighed cycle, followed by the required series of fast cycles to catch up again.

BATCH Mode

When enabled a button labeled BATCH will display on the controller main screen. This option allows you to enter a Batch Target Weight of material, dispense that weight and then STOP running and sound the alarm.

Batch Target Weight - Target Batch Weight (pounds or kilograms). This target weight is entered using the keypad.

Current Portion - The accumulated amount of the current batch. This value can be cleared by touching the field and pressing CLEAR. Clearing this value during a batch cycle will restart the batch.

Accumulated Total - The accumulated total amount (pounds or kilograms) of all batches since last cleared. This value can be cleared by touching the field and pressing CLEAR. Clearing this value reset the accumulated total of all batches back to zero.

Batch Count - The accumulated count of all batches since last cleared. This value can be cleared by touching the field and pressing CLEAR. Clearing this value reset the batch count total back to zero.

Resetting Batch Target Weight, Current Portion, Accumulated Total or Batch Count will also reset data registers in the Get Batch Info MLAN command and related Modbus registers back to zero. See the MLAN Protocol for more information.

Batch Alarm – Located under Setup / Specialized Alarms / batch Complete Alarm (ON or OFF) will cause the alarm to sound or not sound at the completion of a batch.

Recipes Database

When enabled a button labeled RECIPE will display on the controller main screen. This option allows operators to create, store, edit and load up to 99 detailed recipes within the blender's onboard recipe database. The recipe database can be exported edited and imported into any WSB 4088 controller. Press the Recipe button to enter the Recipes screen. The Recipe screen displays: A 99-recipe capacity database (1 through 99) with recipe names. Use the up/down arrows to navigate the 99-recipe database. Also displayed is the currently selected recipe from the database with component number, type and settings and the original recipe loaded from the database (if one was loaded).

Create Recipe – Pressing an empty space in the recipe database table enables the Create Recipe button. Pressing the Create Recipe button prompts to save the current settings and types loaded in the blender as a new recipe. Once saved, this recipe can be examined and edited.

Examine Recipe – Pressing an existing recipe in the recipe database table enables the Examine Recipe button. Pressing the Examine Recipe button displays a table containing recipe details that can be edited including: Recipe number (non-editable), recipe name, and up to 12 components with material type (R=regrind, N=natural, A=additive), material setting and material name. Touch any enabled field to edit. Disabled components are not accessible directly but can be enabled by editing the type of an enabled component. Material and Recipe names are limited to 8 characters.

Delete Recipe – Pressing an existing recipe in the recipe database table enables the Delete Recipe button. Press the Delete Recipe button to delete the selected recipe.

Load Recipe – Pressing an existing recipe in the recipe database table enables the Load Recipe button. Press the Load Recipe button to load the selected recipe into the blender.

Clear Loaded Recipe – When a recipe from the recipe database has been loaded into the blender, the recipe name and material names will display on the Home Screen. To remove the material names from the Home Screen components, press the Clear Loaded Recipe button.

Recipe Database Import/Export – The Recipe Database button is used to export the existing recipe database out of the blender or import a new recipe database into the blender. Import and export requires a USB flash drive be connected to the USB port. The database is an editable text file. The format of each recipe in the database is below. Each recipe begins with [R1] through [R99] and ends with E (end of recipe). Each value in a line is separated with a comma and names of recipes and materials must be in quotes. To better understand the format, create a few recipes on the controller and export the database to USB. The file name is RECIPES.TXT. When creating recipes, the option to run as "% of Natural" or "% of Total" is set separately and is not stored with the recipe.

[R1]	Recipes 1 to 99 formatted as [R1] to [R99]
N,"Recipe"	Recipe Name. 8-character name. Quotes are required.
C1,1,2000,000,11004,"Regrind",	Component, Type, Setting, XT, AL, "Name"
	C1-CC: Component number – C1 through C9 and CA=10, CB-11, CC=12. Each component is on a new line and each line ends with a comma.
	Type – 1=Regrind, 2=Natural, 3=Additive.
	Setting – 3-digit or 4-digit. Decimal depends on XT setting.
	XT – Location of decimal. 00000=no decimal, 00001=tenths, 00010=hundredths.
	AL – AL Alarm parameter. See AL parameter for more info.
	Name – 8-character name. Quotes are required.
"PTA",00000	PTA parameter. See PTA parameter for more info.
E	End of recipe

TAG Information

TAG information links all information (material usage data, settings, parameters) in communication with an Operator Number, Recipe Number or Work Order number for better tracking of material usage and setpoints. Tag information can be set using the TAG screen, Modbus TCP or the MLAN protocol. The Recipe screen will also set the Recipe TAG on screen and in communication.

Operator – 3-digit number (0-999) designated to track who is operating the equipment.

Recipe – The 5-digit recipe number can be used to track material usage by recipe number or load a recipe. Recipes can be loaded locally from the internal database or remotely using the G2 software. When recipe number 1-99 is loaded from the TAG screen or communications, the controller will search the internal recipe database for a matching recipe number and load load it. When recipe number 100 - 65535 is loaded from the TAG screen or communications, the controller will only set the recipe number. The Maguire G2 Software can be used to trigger an auto-download of a recipe to the blender from the G2 recipe database when the recipe number is set to 100-65535.

Work Order – 6-digit number (1 through 999999) allows you to tag all information with an internal accounting number such as a job or purchase order number. To set a work order, enter a number ranging from 1 to 999999, then press SAVE.

Work Order and Operator numbers are for your TRACKING of information ONLY. They have NO EFFECT on the operation of the Weigh Scale Blender.

Component Setpoint Control – High / Low Limit

A component's maximum and/or minimum setting can be limited by an upper and/or lower limit using the component parameters SE (upper) and SL (lower). When a limit is set, the setpoint will be capped at the lower or upper limit. When an upper or lower limit is set for a component, a Setpoint Limit Indicator will be visible on the components setpoint field and will indicate if the setting is above, below or within the upper and/or lower setpoint limits. The Setpoint Limit Indicator displays as a circle with an upper and lower half using the colors white, green or red. The upper half is the upper limit (_SE parameter) and the lower half is the lower limit (_SL parameter). White=no limit, green=within the limit set, red=outside of the limit set. See page 61 for the SE and SL parameters.

Setpoint Limit Indicator Examples:

SE and SL within allowable limits.
SE within allowable limit, SL below allowable limit.
SE above allowable limit, SL within allowable limit.
SE disabled, SL within the allowable limit
SE disabled, SL below the allowable limit.
SE within allowable limit, SL disabled.
 SE above allowable limit, SL disabled.

Dispense Station

In Dispense Station Mode, material is dispensed up to a target weight and then the Dispense Station stops and alarms. Dispense Station is enabled under System Configuration, Mode of Operation.

When in Dispense Station mode, a button labeled "Dispense Station" will be at the bottom center of the Home Screen.

Dispense Station Screen Description:

- Dispenser Target Weight - Target Dispense Weight (pounds or kilograms). This target weight is entered using the keypad.

- Current Portion - The accumulated amount of the current dispense. This value can be cleared by touching the field and pressing CLEAR. Clearing this value during a dispense cycle will restart the dispense.

- Accumulated Total - The accumulated total amount (pounds or kilograms) of all dispenses since last cleared. This value can be cleared by touching the field and pressing CLEAR. Clearing this value reset the accumulated total of all dispenses back to zero.

- Dispense Count - The accumulated count of all dispenses since last cleared. This value can be cleared by touching the field and pressing CLEAR. Clearing this value reset the Dispense Count total back to zero.

Dispense Station Operation:

1. Press the Dispense Station button to access the Dispense Station Screen.
2. Set a Dispense Target Weight using the keypad (pounds or kilograms depending on Setup preferences).
3. Press the Alarm button to toggle between End of Dispense Alarm ON or OFF.
4. Press Start on the Dispense Station screen or the Home Screen to start the Dispense. The screen will switch to the Home Screen as the Dispense Station weighs and dispenses material. You can return to the Dispense Station screen to observe the progress.
5. When the dispense target as achieved the Dispense will stop. The Alarm will sound if the End of Dispense Alarm is ON.
6. To restart the next dispense press the Start button located on either Dispense Station screen or the Home Screen.

Automation of the Dispense Start

Level sensor input can be used to automate a start or restart of a dispense. This can be done by supplying a contact closure between the small outer pin and the center pin of the level sensor connector.

Since the Mix Motor is not used for a Dispense Station, the output is used to signal the end of a dispense by supplying 110v output on the Mix Motor connector at the completion of a Dispense. When the next Dispense is started Mix Motor voltage returns to zero.

Operator Access

When enabled, Operator Access will limit access to functions of the blender by prompting for the operator password. All other functions of the blender will be restricted. Default Operator Access password is: 11111. Also see Changing Passwords below.

Press		**Display will prompt for a password.** (admin default: 22222)	**Then press:**
Press	**System Configuration**	**Display will show the System Configuration categories.**	
Press	**Preferences**	**Display will show System Preferences categories.**	
Press	**Operator Access**	**Display will show the Operator Access screen.** **Options: Component settings, Weigh Bin options, Mix Motor options, Batch Mode, FAST operation, Viewing Totals, All options on the right sidebar, Manual Operation, Calibration, Timed Operation and Recipe options including creating, deleting, editing and downloading recipes.**	
Press		**To save the changes or press the red X to cancel and exit.**	

Changing Passwords

Access to the controller is limited by one or two passwords. Access to Setup information is restricted by an Admin Password (default password is: 22222). If Operator Access is enabled (see above), access to commonly used functions are further restricted with the Operator Password. If security is important and restricted access is desired, it is important to change the passwords.

Press		**Display will prompt for a password.** (admin default: 22222)	**Then press:**
Press	**System Configuration**	**Display will show the System Configuration categories.**	
Press	**Preferences**	**Display will show System Preferences categories.**	
Press	**Change Passwords**	**Display will show three options, Change Admin Password, Change Operator Password and Enable Password Mask. Select the password you wish to change.** **Check Enable Password Mask to hide the password and show the asterisk instead of the password numbers when entering a password.**	
Enter	**the new password**	**then enter the password again to confirm.**	
Press		**To save the changes or press the red X to cancel and exit.**	

Communications

The WSB 4088 Touchscreen controller communicates two protocols, Modbus TCP and MLAN TCP.

Modbus TCP – Modbus TCP is the primary communication protocol for PLC communication to the Maguire Blenders. Modbus TCP must be enabled at the controller and uses the IP Address to communicate over port 502. For more information on Modbus TCP, see the Maguire Modbus register mapping document.

MLAN Protocol (Maguire Local Area Network) – MLAN is a protocol consisting of commands that allows two-way communications to the Maguire Weigh Scale Blenders. All Maguire Weigh Scale Blenders dated back to 1992 contain the essential MLAN commands for basic control and data collection while newer Maguire controllers contain additional commands for enhanced control and data collection. The MLAN Protocol was initially intended to provide information for individuals who are writing software for PLCs and needed to communicate with the Maguire Weigh Scale Blender. This legacy protocol is the method used by our G2 Software as well as the OPC (Kepware, Dimension Software and Software Toolbox). The Protocol is available for free and is explained in detail in our MLAN Protocol Manual. MLAN communications use the ID number and IP address to communicate over port 9999. Configuration of the ID number and IP address must be setup in the controller. See the MLAN Protocol Manual for more information.

MLAN communications over Ethernet (includes G2, OPC and direct MLAN) use port 9999 to communicate.

Modbus communications, when enabled (see below), use port 502.

Setting the MLAN ID Number

Press		**Display will prompt for a password.** (default: 22222)	Then press:
Press		Display will show the System Configuration categories.	
Press	**Communications**	Display will show the System Communications categories.	
Press	**Blender I.D. Number**	Display will show the Blender I.D. Number screen. On this screen, enter the new ID number using the keypad. Valid I.D. numbers are 1 though 254.	
Press		To save the Changes.	

Setting the IP Address, Subnet Mask, Gateway

Press		**Display will prompt for a password.** (default: 22222)	Then press:
Press		Display will show the System Configuration categories.	
Press	**Communications**	Display will show the System Communications categories.	
Press	**TCP/IP Configuration** Static IP or DHCP	Display will show the TCP/IP Configuration screen. On this screen, enter the IP Address, Subnet Mask and Default Gateway using the keypad to enter the number into the field highlighted in green. To advance to the next field, touch the field you want to edit and type the desired value. Or click Enable DHCP to use DHCP for IP assignment. MAC address is shown for machine identification.	
Press		To save the Changes.	

Enabling Modbus

Press		**Display will prompt for a password.** (default: 22222)	Then press:
Press		Display will show the System Configuration categories.	
Press	**Communications**	Display will show the System Communications categories.	
Press	**Modbus Server**	Display will show the Modbus Server screen. On this screen, press the checkbox Enable to enable Modbus.	
Press		To save the Changes.	

Automated Control

Automated Control is enabled using Modbus register 40151 or from the Setup menu under: Setup, System Configuration, Communications, Automated Control. Enabled or Disabled. When enabled, Automated Control gives enhanced start and stop control of the blender over Modbus TCP and status feedback of the blenders current state. Automated Control uses writes to Modbus holding register 40137 to start or stop the blending process. Reads to Modbus register 40137 return the following states:

1. **Soft Stop** - Blender Stopped by Communication
2. **Run Mode, Sensor uncovered** (blender is dispensing)
3. **Run Mode, Sensor Covered** (stopped by the mix chamber level sensor).
4. **Maintenance Mode** - Automated Control Lockout enabled at controller via Setup.
5. **Power loss hard stop** – Power lost, blender stopped. Action required at blender controller to restart.
6. **Button stopped, sensor uncovered** - STOP button pressed, password entered, material demand.
7. **Button stopped, sensor covered** - STOP button pressed, password entered, no material demand.

When Automated Control is enabled, the Start and Stop buttons display a lock symbol indicating that Automated Control is enabled and has priority over starting and stopping the blender. If the operator presses the Stop button, they will be prompted
with the administrator password. When the password is entered, the blender will complete the STOP action and over-ride automated control by communication. Reads to register 40137 will indicate the STOP button has been pressed, the password was entered and will also report the state of the level sensor (uncovered or covered, demand or no demand for material respectively). When the operator has stopped the blender, the STOP button becomes the START button and displays a lock symbol with a red X, indicating the operator has over-rode Automated Control. When the START button is pressed, the operator is again prompted with the administrator password. When the password is entered, the blender enters the run mode again and gives Start/Stop control back to Automated Control and starting and stopping of the blender can once again be controlled by Modbus register 40137.

Maintenance Mode - Automated Control Lockout

Automated Control can be locked out for maintenance purposes at the blender controller. The blender must first be in the STOP state before Automated Control Lockout (Maintenance Mode) can be enabled or disabled.

Automated Control Lockout is enabled or disabled under Setup, System Configuration, Diagnostics, Automated Control Lockout. When enabled the operator can troubleshoot and start or stop the blender without interference from Modbus start or stop writes to register 40137.

While Automated Control Lockout is enabled, the Start/Stop button displays a lock symbol with a red X indicating that the blender is in maintenance mode and Automated Control is locked out.

While Automated Control is locked out, reading Modbus register 40137 will return state 4, Maintenance Mode.

When Maintenance Mode is disabled, the blender enters the run mode again and gives Start/Stop control back to Automated Control and starting and stopping of the blender can once again be controlled by Modbus register 40137.

Setup Menu Map – Brief Explanation

This section contains a brief explanation of the Setup menu. For detailed information see Setup Menu Full Explanation starting on page 53.

►				**Setup** (password protected) – Settings and Options Menus
	►			**Blender Configuration** – Blender specific settings
		►		**Parameters –** Controller Operation Parameters
			►	**Control Times** • **SBO** – Sensor Blow Off Control • **STL** – Settle Time Before Weigh Reading • **DTI** – Weigh Bin Max Empty • **DLY** – Delay Cycle Start
			►	**Weight Limits** • **TL** – Tare Weight Lower Limit • **TH** – Tare Weight Upper Limit • **MAX** – Weigh Bin Capacity Limit • **FUL** – Full Batch Weight
			►	**Regrind Control** • **RHL** – High Low Level Control • **ROV** – Regrind Level Control • **ROC** – Regrind percent to run as natural
			►	**Additive Control** • **PTA –** Additive as Percent of Total • **PAR –** Percent Additive as Regrind
			►	**Vibration Control** • **BER** – Bailout Weight Limit • **WDF** – Operation Weight Reading Difference • **KDF** – Calibration Weight Reading Difference
			►	**Components –** Parameters per component 1-12 • **RD** – Retry Limit – Allow Weight Short • **RP** – Retry Limit – Allow Percent Short • **AL** – Standard Alarm – Retries Before Alarm • **LA** – Lag Time – Lag Time milliseconds per component • **TI** – Dispense Rate – Time • **WT** – Dispense Rate – Weight • **PO** – Pulsed Output / Timing • **MI Limit Adjust** – Minimum Rate • **NC Limit Adjust** – Limit Adjustment
			►	**Mixer Control** • **FCV** – Flow Control Delay Opening • **MPO** – Air Drive Mixer Timing • **JOG** – Jog Time • **MIX** – Mix Time
		►		**Component Types –** Sets the type of each component.
		►		**Operating Options**
			►	**Precision Ratio** – Precision Ratio of Natural and Additive
			►	**Progressive Metering** – Progressive metering per component
			►	**Weigh Bin Dump Options** – Weigh Bin operate once or twice
			►	**Dispense Order –** Order of dispensing of components
			►	**End Empty/Full** – Weigh Bin End Empty or End Full at end of cycle.
			►	**Volumetric Operation** – Timed dispense operation (not by weight).
			►	**Alternate Liquid Color** – Automatic switch over from component 10 to 11.

		►	**Specialized Operations**		Enabled options on home screen • Clear View Totals • Fast Mode • Batch Mode • Recipes • Tag Information
		►	**Specialized Alarms**		Device Specialized Alarms • Maximum Weight Exceeded Alarm • Batch Complete Alarm • Mix Motor Failure Alarm • Cycle Timeout Alarm • Totals Alarm • Weigh Bin Loosing Weight Alarm
		►	**Manual Operations**		Manual operations of devices
		►	**Timed Operations**		Timed Dispense per component
		►	**Calibration Routines**		• Flow Rate Calibration • Calibrate Load Cells
	►	**System Configuration**			System specific settings
		►	**Mode of Operation**		Machine Type, Blend Type, Setting resolution.
		►	**Controller Preferences**		
			►	**Date and Time**	
			►	**Language -** Language selection	
			►	**Menu Bar Options -** menu button preferences	
			►	**Flex-Lite Integrated Loading -** enable/disable	
			►	**Weight Units -** pounds, ounces, grams kilograms	
			►	**Change Passwords** - Change Admin and Operator passwords	
			►	**Screen Options -** Screen saver, brightness, calibration, options	
		►	**Communications**		
			►	**Blender I.D. Number -** Set Blender identification number	
			►	**Modbus Server -** enable/disable Modbus TCP	
			►	**TCP/IP Configuration -** Sets IP address, Subnet mask, gateway	
			►	**MLAN Serial Baud Rate -** Set baud rate of MLAN over serial	
		►	**Print Options**		
			►	**Print Totals** - Prints totals to USB Flash Drive	
			►	**Print Alarm History** - Prints alarm history to USB Flash Drive	
			►	**Print Cycle History** - Prints cycle report to USB Flash Drive	
			►	**Print Parameters** - Prints parameter report to USB Flash Drive	
			►	**Print Alarms and Events** - Prints alarms and events log to USB	
			►	**Print Cycle Options** - Prints Cycle report to USB Flash Drive	
			►	**Print All** - Prints all above reports to USB Flash Drive	
		►	**Diagnostics**		
			►	**System Information -** Firmware, bootloader, I/O versions	
			►	**Load-Cell Diagnostics** - Loadcell raw counts	
			►	**Alarm and Event Log -** Alarms and Events displayed and printable	
			►	**Live Diagnostics -** Live Cycle diagnostic report, printable history	
			►	**Communication Diagnostics -** Information for communications	
		►	**Resets**		
			►	**User Settings** - Save / Restore User entered Settings	
			►	**Restore Factory Defaults -** Restores factory loaded settings	
			►	**Factory Access** - Factory Access Only	
			►	**Firmware Updates** - Reads USB drive for updates, selects and updates firmware. Contact Maguire Products Inc. for updates.	

Setup Menu – Full Explanation

Setup is a password protected area for accessing Blender or System specific configuration settings. Setup is accessible from the main screen by pressing:

Press **Display will prompt for a password.** (default: 22222) **Then press:**

Parameters – All WEIGH SCALE BLENDER controllers operate according to certain internal PARAMETERS. Because customer requirements vary widely, we have made a wide range of parameters accessible for change through the touchscreen. Parameters are grouped into the following categories: Control Times, Vibration Control, Weight Limits, Components, Regrind Control, Mixer Control. Parameters are covered on page 54.

Setup is divided into two categories: Blender Configuration and System Configuration.

Blender Configuration

Includes device specific settings such as: parameters, component type setup, operating options, specialized operations, specialized alarms, manual operations, timed operations and calibration routines.

System Configuration

Includes system wide general settings such as: Modes of operation, system preferences, communications settings, print options, diagnostics and system resets.

The following section describes the features within the Setup Menu.

Blender Configuration

Parameters

Setup > Blender Configuration > Parameters

Parameters Introduction

Parameters – All WEIGH SCALE BLENDER controllers operate according to certain internal PARAMETERS. Because customer requirements vary widely, we have made a wide range of parameters accessible for change through the touchscreen. Parameters are grouped into the following categories: Control Times, Vibration Control, Weight Limits, Components, Regrind Control, Mixer Control.

BRIEF explanations are given first.
FULL explanation is at the end of this manual (English manual version only).

Parameters values shown here are initial ROM values of a model 940. Initial values for other models are listed at the end of this section.

Parameters are five digits, with leading zeros added.

TIMES	TIMES are expressed as seconds, minutes, or interrupts. (244 interrupts = 1 second).
WEIGHTS	are always expressed as GRAMS. 100 and 200 models use tenths of grams: (xxxx.x). (00010 = 1 gram) 400/900/1800/3000 models; full grams: (xxxxx). (00010 = 10 grams)
PERCENTS	are expressed in tenths for settings (0xxx.x), and full percent for other percentage references (00xxx).

Navigating Parameters

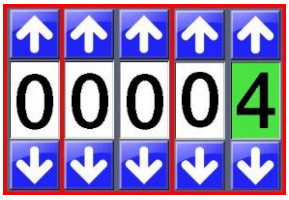
Parameters are accessible from Setup. Parameters are grouped into the following categories:

Control Times	DLY	Delay Cycle Start (milliseconds)
	DTI	Weigh Bin Max Empty (seconds)
	STL	Settle Time Before Weight Reading (milliseconds)
	SBO	Sensor Blow Off (pulse count, pulse delay)
Vibration Control	KDF	Calibration Weight Reading Difference (1/10th gram)
	WDF	Operation Weight Reading Difference (1/10th gram)
	BER	Bailout Weight Limit (1/10th gram)
Weight Limits	FUL	Full Batch Weight (grams)
	MAX	Maximum Bin Capacity Limit (grams)
	TH	Tare Weight Upper Limit (1/10th gram)
	TL	Tare Weight Lower Limit (1/10th gram)
Components **MATERIALS 1 thru 12:**	RP	Retry Limits – Allowed Percent Short
	RD	Retry Limits – Allowed Weight Short (1/10th gram)
	AL	Retries Before Alarm
	LA	Lag Time (milliseconds)
	WT	Dispense Rate – Weight in 1/10th of grams
	TI	Dispense Rate – Time in milliseconds
	PO	Pulsed Output / Timing (seconds)
	SE	Upper Limit
	XT	Format of decimal location 10ths or 100ths of grams
	NC	Limit Adjustment
	MI	Minimum Rate (g)

Regrind Control	ROC	Regrind % to treat as Natural
	ROV	Regrind Level Control
	RHL	High / Low Level Control
Additive Control	PTA	Additive as a Percent of Total
	PAR	Percent of Additive to Regrind
Mixer Control	MIX	Mix Time
	JOG	Jog Time
	MPO	Air Drive Mixer Timing
	FCV	Flow Control Delay Open
Load Cell Limits	LCL	Load Cell Low
	LCH	Load Cell High
	LCF	Load Cell Frequency
	LCZ	Load Cell Zero

While in one COMPONENT list, press the Next and Previous arrow buttons (Component 1, Component 2, etc) to jump to the same relative position in the next list. This allows rapid scanning of like parameters in all component groups.

To change a displayed parameter, use the up/down arrow keys to set a new number. Cancel will cancel a number entry.

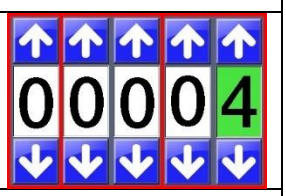


Press the green check mark to save the change.

Red X will exit the sequence at any time.

The purpose of each parameter is explained in detail in the following section.

Navigating and Making Changes to Parameters:

Press		**Display will prompt for a password.** (default: 22222)	**Then press:**
Press	**Blender Configuration**	**Display will show the Device Configuration categories.**	
Press	**Parameters**	**Display will show the categories of Parameters. Parameters are divided into 6 categories. Control Times, Vibration Control, Weight Limits, Components, Regrind Control, and Mixer Control.**	
Press	**The category that would contain the parameter you want to adjust.**	**Categories will have several parameters indicated by a 3-letter acronym on the left of the screen.** **The Components category will have 12 materials, each with several controlling parameters or groups of parameters.**	
Press	**The parameter that you want to adjust.**	**Display will show 5 digits.** **Press the up or down arrows to adjust.**	
Press		**To save the parameter adjustment or press the red X to cancel and exit.**	

Parameters – General –Explanation

200 series settings shown as example settings

DLY 02000 CYCLE START DELAY - Delay before cycle start. (milliseconds)
Time in milliseconds that the sensor must be uncovered before cycle start. Minimum of 02000 (ms) is recommended. With low throughput, increasing DLY may allow better mixing if needed.

DTI 00006 WEIGH BIN DUMP TIME at end of cycle. (Seconds)
Maximum TIME allowed to determine an empty weigh reading.

STL 00500 DISPENSE SETTLE TIME. (milliseconds)
Time for dispensed material to SETTLE before weighing.

SBO 00000 SENSOR BLOW OFF
If SBO is set to a value, the Weigh Scale Blender will pulse the FCV valve by a specified pulse length and specified delay in between pulses for the purpose of clearing dust and particles from the face of the sensor. The pulse length is set by the value in the 1st digit of the SBO parameter. The 1st digit for pulse width is in .1 seconds ($1/10^{th}$ second intervals). After the pulse, there will be a delay to the next pulse based on the value set in the last 2 digits of the SBO parameter. The last 2 digits for the pulse delay are in seconds. If the SBO parameter has been activated by entering values, the pulses will operate for a maximum of 20 times as long as the sensor remains covered. Recommended SBO parameter setting is 10030, which would pulse a $1/10^{th}$ second pulse every 30 seconds.

FUL 20000 FULL BATCH TARGET WEIGHT in Grams
Change only for extremely light or heavy material. Default values are based on average material volume. Light weight material may exceed weigh bin volume and may require lowering FUL value. Lowering FUL decreases throughput.

MAX 30000 Maximum BIN WEIGHT - weight the software will target (grams).
FUL is the target weight that is blended each cycle. Change only for extremely fluffy or very heavy material. MAX prevents overflowing of the weigh bin. It is reset automatically if the FUL parameter is changed.

TH 01000 Tare Weight High Limit
TL 00500 Tare Weight Low Limit
TH and TL are upper and lower limits for tare weight.
If tare weight is below the value of TL, the ALARM sounds.
If tare weight is above the value of TH, the ALARM sounds and the weight bin opens, attempting to empty. Increase TH if material tends to stick to the weigh bin.
Default value is model dependent. Variations in tare weigh does not affect accuracy.

PRN 00000 Percent of Regrind to be Treated as Natural
1st digit: 0 = adds, 1 = subtracts ... additive to or from the regrind.
2nd digit: Regrind component.
3rd digit: 0 = all additives. Entering a number specifies that additive component only.
Last 2 digits: Percent of Regrind. 99 = 100.
Example: 01030 - 0=add, 1=Regrind in 1, 0=all additives, 30% of regrind as natural.
3rd digit should use 1-9, A, B, C for component numbers.

RAC 000000 Regrind Auto Control

This is a Six-digit parameter.
1st digit is the regrind component
2nd and 3rd digits are the cycle count
Last 3 digits are the % to increase current setting by.
Example: 110100 - Regrind #1, 10 cycles increase setting by 100%. Current setting 25%, increases to 50%.

RLC 00000 Regrind Level Control – works with RHL

1st digit is the regrind component
Last digit the % to increase current setting when sensor covered and uncovered.
Example: 10005 - Regrind #1 increase 5% each cycle based on RHL setting.

RHL 00000 High Low Level Control - Requires level sensors

First 3 digits is the high percentage when upper sensor is covered
Last 2 digits are the low percentage when both sensors are uncovered.
Example 07020. Regrind setting at 50. If both sensors are covered increase setting to 70%. If both sensors are uncovered decrease setting to 20%.

PTA – Additive as a Percent of Total

Enables up to 5 additives to run as percent of total.
Each digit represents a component.
Components are: 1-9, 10=A, 11=B, 12=C, 0=none
This parameter only works under Mode of Operation: % of Natural.

PAR 00000 Percent of Additive to Regrind

1st digit is the Regrind component.
2nd digit is the Additive component.
Last 3 digits are percent in tenths (##.#).
Example 15050: Regrind 1, Additive 5, 5%

KDF – Acceptable variation between readings for a valid weight (grams)

KDF is used only during load cell calibration.
See WDF for normal operation.
Variation in grams or 10ths of grams depending on blender model.
Micro Blender, 100, 200 Series = 10ths of grams
400, 900, 1800, 2400, 3000 Series = grams
Excessive vibration may require increase.

WDF – Acceptable variation between readings for a valid weight (grams)

WDF is used only during normal operation.
Variation in grams or 10ths of grams depending on blender model.
Micro Blender, 100, 200 Series = 10ths of grams
400, 900, 1800, 2400, 3000 Series = grams
Excessive vibration may require increase.
First digit = duration of reading in half second (1= 1/2 second … 5=2.5 seconds).

BER - Grams over weight to abort a component dispense.

This parameter prevents over filling the weigh bin.
A component dispense aborts when weight exceeds target by BER value.
Remaining components dispense normally.
1 in the last position (00201), causes USB printout of cycle data when abort occurs.
Typically, no change is required.
If vibration causes false abort, then set a higher value.
Default is 00200 (20 grams or 200 grams model dependent).
Micro Blender (MB), 100, 200 Series - 10ths of grams
400, 900, 1800, 2400, 3000 Series – grams

ROC 00000 REGRIND OVERCOLOR - ROC, ROV, and RHL help control regrind usage.

ROC indicates the PERCENT of REGRIND that will be treated as natural when COLOR and ADDITIVE dispenses are calculated. This adds some color or additive to your regrind.

ROV 00000 REGRIND OVERRIDE - ROV is for closed loop fully automatic reprocessing of regrind scrap. This parameter will detect when more regrind is being produced than consumed, and override the current setting to use a higher amount. This helps prevent material backing up in your grinder.

RHL 00000 REGRIND LEVELS – HI/LOW - RHL has effect only if level sensors are added to your unit to detect material level in the regrind hopper. These level sensors can alter regrind percent usage.

MIX 00015 Mix Time (Seconds)

TIME mixer motor runs after weigh bin dumps.

JOG 03030 Mixer operation after MIX time (count/seconds)

After MIX time, JOG will operate mixer 1 turn, every xx seconds for a total count of xxx times. First 3 digits **000**00 is the total count. Last two digits 000**00** is the interval in seconds.

MPO 00000 Micro Blender Mix Time

For Micro Blender air driven reciprocating mixer
MPO sets the timing, in tenths of seconds the clockwise and counterclockwise timing of the mix blade. MPO 00010 is 1 second for each direction.

FCV 00006 Flow Control Valve - Delays opening and closing of the flow control valve

Digit 1 = When Power Off: 0 = CLOSED (default), 1 = OPEN
(must reverse air lines).
Digits 2 and 3 = time delay in seconds before closing.
Digits 4 and 5 = time delay in seconds before opening.

MCT – Monitor Cycle Time Alarm

For Throat Mount Applications Only
Alarms if cycle exceeds normal cycle time by multiplier or by time in seconds.
00000 = Inactive
First two digits (02xxx) is multiplier of previous cycle time.
Last three digits (xx060) is time in seconds over previous cycle time.
Silence Alarm button or next cycle resets the alarm.
Generates: Monitor Cycle Time Alarm - Code 23

PRT 00000 REPORT INTERVAL - MINUTE interval between automatic print of TOTALS.

This parameter will cause your system to PRINT MATERIAL TOTALS automatically. A USB Flash Drive must be connected. This parameter is located under Options / Special Functions / Print Options / Print Diagnostics.

LCL, LCH, LCF, LCZ – Load Cell Limits - DO NOT CHANGE THESE

Load Cell Limits. Automatically set by model number.

Component Parameters Explanation

There are 12 Groups of parameters, one group per component. In parameter printouts the first digit in the parameter name is the component number.

RP 00010 Retry by Percent - Shortage
RD 00300 Retry by Gram - Shortage

RP is the shortage expressed as a PERCENT of the target dispense weight and RD is the shortage expressed in GRAMS. These parameters are used together, either one will force a "retry". No change required. A "retry" is an additional dispense that is calculated to add the amount of material that is short of target.

Retries will occur until the difference between the required amount and the metered amount is equal to or less than the _RP (percent) and the _RD (weight gram value). Both RP and RD requirements must be met before the process will continue, with one exception: If the ALARM parameter (AL) is set to 00000, indicating that you do not want the process to stop and alarm on a shortage, the first dispense will always be accepted and no retries will be made. RD is set with rate calibration routine, also adjusts over time

AL 00000 Last digit = number of retries before ALARM.

00001 to 00009 = sound alarm, hold process.
00011 to 00019 = sound alarm, continue process.

These parameters set ALARM functions. When material runs out, or does not dispense fully, these flags instruct the controller what to do. Default settings shown are for Natural, Color, and Additive to alarm, but not Regrind.

Sets the alarm action per component, when material runs out.
The last digit is number of retries before the action.
00000 = NO ALARM, NO RETRIES
00001 to 09 = ALARM, Continue retries.
00011 to 19 = ALARM, Stop retries, Continue process.
00021 to 29 = ALARM, Stop retries, Stop process. Press Silence Alarm button to restart retries.
00031 to 39 = NO ALARM, Stop retries, Continue process.
First 3 digits (000xx) used to STOP and ALARM on an over dispense. Specified by grams or percent. Grams: 001 – 499.
Percent: 501 – 599 (1% to 99%).

1LA 00020 Mechanical response delay before dispense ACTUALLY starts (milliseconds)

LA is the lag time between when a device is signaled and when it actually begins to operate. If metering device is changed LA may need to be changed.

WT Weight **Dispense Rate (grams/second)**
TI Time **Set AUTOMATICALLY by the Flow Rate Calibration routine**

WT and TI set the flow rate or dispense rate of each material. These can be set manually, set by the **Flow Rate Calibration** routine, and adjust automatically after each cycle.

After a change in auger size, or substantial change in material flow rate, WT / TI can be adjusted using the **Flow Rate Calibration** to set a new flow rate automatically.

PO 00000 **PO - Pulsed Output - For Micro Pulse Valves**

PO sets the ON and OFF time, in 10ths of a second, of the specified component for a "pulsed" output. First three digits (001xx) sets ON time. Last two digits (xxx01) sets OFF time. Recommended setting: 00101. 00000 disables pulsing.

SE 01000 **SE – SETTING UPPER LIMIT - Set an upper limit on the setting, limit access**

1st digit – When a 1 is entered as the first digit of this parameter, (1xxxx), setting entries will be prompted for the Admin password.
Last 4 digits are the upper setting limit. Uses the component's decimal place for the decimal location. 01000 disables upper limit.

SL 01000 **SL – SETTING LOWER LIMIT – Set a lower limit on the setting**

When enabled, the setting will be held to the lower limit in the component's SL parameter. Enabled is a value ranging from 00001 - 00999 or 00001 - 09999 in 4-digit mode. Uses the component's decimal place for the decimal location. 00000 disables lower limit.

SE and SL On-Screen Indicator – See Component Setpoint Control on page 44.

XT 00000 **Sets decimal place in a component setting**

00000 = XX.X (Default)
00010 = X.XX
00100 = .XXX

NC 00010 **Allowable GRAM error with NO correction (grams or 10ths of grams)**

This is the acceptable error range for each component to prevent hunting. Adjusted automatically over an extended time period (20 cycles) to match the flow characteristics of each material. 29999 disables.

MI **Set AUTOMATICALLY by Flow Rate Calibration and 10 cycles after power up**

MI value is set to 80 percent of the amount of material, in grams, that can feed in one second based on normal dispense rates. Power-up always resets MI to 00001. After 10 cycles have occurred without retries.

Parameter Default Settings

Here is a complete list of the "default" entries for all parameters as they are provided in the original program, and as they will appear after a CLEAR ALL or a model change. The Model 220 list is the ORIGINAL BASE list.

Default General Parameters:

	Micro	140	140R	220	240	240R	420	440	440R	940	1840	3000
FLG	0	0	0	0	0	0	0	0	0	0	0	0
MIX	15	15	15	15	15	15	15	15	15	30	99	99
JOG	3030	3030	3030	3030	3030	3030	3030	3030	3030	3030	3030	3030
FCV	5	5	6	5	5	5	5	5	5	5	5	5
DTI	6	6	6	6	6	6	10	10	10	6	8	8
KDF	10	10	10	10	10	10	2	2	2	2	4	4
WDF	10010	10010	10010	10010	10010	10010	10002	10002	10002	10002	10004	10020
BER	1000	1000	1000	1000	1000	1000	200	200	200	200	200	200
ROC	0	0	0	0	0	0	0	0	0	0	0	0
ROV	0	0	0	0	0	0	0	0	0	0	0	0
RHL	0	0	0	0	0	0	0	0	0	0	0	0
FUL	4000	10000	10000	20000	20000	20000	4000	4000	4000	9000	18000	30000
MAX	6000	15000	15000	30000	30000	30000	6000	6000	6000	13500	27000	45000
TH	1000	1000	1000	1000	1000	1000	200	200	200	1000	1000	1000
TL	500	500	500	500	500	500	100	100	100	500	500	500
PRT	0	0	0	0	0	0	0	0	0	0	0	0
DLY	1000	1000	1000	2000	2000	2000	2000	2000	2000	2000	2000	2000
PRC	10	10	10	10	10	10	10	10	10	10	10	10
STL	500	500	500	500	500	500	500	500	500	500	500	500
LCL	27	27	27	27	27	27	80	80	80	80	40	10
LCH	39	39	39	39	39	39	120	120	120	120	60	30
LCF	79	79	79	79	79	79	79	79	79	79	79	79
LCZ	583	583	583	583	583	583	583	583	583	583	583	583
DS1	0	0	0	0	0	0	0	0	0	0	0	0
DS2	0	0	0	0	0	0	0	0	0	0	0	0
XCV	0	0	0	0	0	0	0	0	0	0	0	0
XRC	40	40	40	40	40	40	40	40	40	40	40	40
TCV	0	0	0	0	0	0	0	0	0	0	0	0
TRC	40	40	40	40	40	40	40	40	40	40	40	40
XTP	5020	5050	5020	5050	5050	5050	5050	5050	5050	5050	5050	5050
MPO	10	10	10	0	0	0	0	0	0	0	0	0
SCR	0	0	0	0	0	0	0	0	0	0	0	0
XAL	5	5	5	5	5	5	5	5	5	5	5	5
XUL	200	200	200	200	200	200	200	200	200	200	200	200
BCR	0	0	0	0	0	0	0	0	0	0	0	0
CPL	0	0	0	0	0	0	0	0	0	0	0	0
PTD	60	60	60	60	60	60	60	60	60	60	60	60
MCT	0	0	0	0	0	0	0	0	0	0	0	0
DS3	0	0	0	0	0	0	0	0	0	0	0	0
LIQ	11011	11011	11011	11011	11011	11011	11011	11011	11011	11011	11011	11011
G2F	0	0	0	0	0	0	0	0	0	0	0	0
XMO	0	0	0	0	0	0	0	0	0	0	0	0
LTP	5	10	5	10	10	10	10	10	10	10	10	5
LLF	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000
HLF	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000
RLO	50	50	50	50	50	50	50	50	50	50	50	50
LT1	0	0	0	0	0	0	0	0	0	0	0	0
LT2	0	0	0	0	0	0	0	0	0	0	0	0
SBO	0	0	0	0	0	0	0	0	0	0	0	0

Default Component Parameters:

Component 1 is the base list for all components.
Other component lists show only the changes from list 1.

Component Parameters:	**Blender Model:**					
	3Kg Base Load Cells			10Kg Base Load Cells		
	220/240	140	MB	940	1840	420 / 440
	(1 & 2)		(VV)	(2”x3” or 3” x 6” Slide Gates)		
1TY	OFF			OFF		
1CS	00			00		
1AL	04			04		
1XT	00			00		
1SE	1000			1000		
1WT	26000	18000	22400	24000	24000	20800
1TI	1000	1000	1000	2000	1000	1000
1MI	01			01		
1NC	10			01		
1PT	00			00		
1RP	10			10		
1RD	500			300		100
1LA	40	16	16	40		
1PO	00			00		
	(3,4,7,8)		(VV)	(3” Rnd, 2”x3” or 3” x 6” Slide Gates)		
3TY	OFF			OFF		
3CS	00			00		
3AL	04			04		
3XT	00			00		
3SE	1000	128	22400	1000		
3WT	26000	31232	15616	20800		
3TI	1000	1000	1000	7808		
3MI	01			01		
3NC	10			01		
3PT	00			00		
3RP	10			10		
3RD	500		50	300		100
3LA	40		04	40		
3PO	00			00		
	5,6,9,A,B & C Always Feeders			5,6,9,A,B & C Always Feeders		
5TY	OFF			OFF		
5CS	00			00		
5AL	04			04		
5XT	00			00		
5SE	1000			1000		
5WT	20480			20480		
5TI	31232			31232		
5MI	01			01		
5NC	10			01		
5PT	00			00		
5RP	10			10		
5RD	50			300		100
5LA	15			40		
5PO	00			00		

Saving Parameters

If the changes you have made are PERMANENT, SAVE them in the “User Backup Settings”.

A "Restore User Settings" will clear all data from memory and replace it with information stored in the “User Backup Settings”. So it is a good idea to have an exact copy of User Settings stored in the “User Backup Settings” for just such an emergency. To copy and SAVE all system parameter information into the “User Backup Settings”, the sequence of keystrokes is as follows:

Press		**Display will prompt for a password.** (default: 22222) **Then press:**	
Press	**System Configuration**	**Display will show the System Configuration categories.**	
Press	**Resets**	**Display will show the categories of System resets:** **User Settings, Factory Access, Restore Factory Defaults, Firmware Update.**	
Press	**User Settings**	**Categories will have several parameters indicated by a 3-letter acronym on the left of the screen.** **The Components category will have 12 materials, each with several controlling parameters or groups of parameters.**	
Press	**Save User Settings**	**Display will prompt for confirmation to save user settings.**	
Press		**To save the user settings including parameters or press the red X to cancel and exit.**	

With this done, all correct Parameters may be restored from EEPROM to RAM at any time by doing a CLEAR.

Restoring Parameters from Backup

If software related problems should develop later, RETRIEVE this correct copy of the parameters from the backup. This clears corrupted data from RAM and corrects most software problems. To Retrieve:

Press		**Display will prompt for a password.** (default: 22222) **Then press:**	
Press	**System Configuration**	**Display will show the System Configuration categories.**	
Press	**Resets**	**Display will show the categories of System resets:** **User Settings, Factory Access, Restore Factory Defaults, Firmware Update.**	
Press	**User Settings**	**Categories will have several parameters indicated by a 3-letter acronym on the left of the screen.** **The Components category will have 12 materials, each with several controlling parameters or groups of parameters.**	
Press	**Restore User Settings**	**Display will prompt for confirmation to Restore user settings.**	
Press		**To restore the user settings including parameters or press the red X to cancel and exit.**	

Blender Configuration - *Continued*

Specialized Alarms

Setup > Blender Configuration > Specialized Alarms

Weigh Bin Loosing Weight Alarm – When enabled, if the weigh bin weight drops more than 20 grams during a cycle this alarm will sound. This serves to detect and report a weigh bin problem, such as material leaking from the bottom of the bin.

Maximum Weight Exceeded Alarm – When enabled, if the MAX (parameter) weight is exceeded, the system will stop and the Alarm will sound. This might occur if a valve sticks open or slightly open. Normally the system recovers automatically from such events with only the one batch blended incorrectly. Set the flag only if you want the system to stop and alarm.

Batch Complete Alarm (Batch Mode) – When enabled, the alarm will sound when the batch weight is complete. See page 41 for details on Batch Mode.

Mix Motor Failure Alarm – When enabled and used with the Mix Motor Failure Kit (KIT-075T), this alarm will sound when the mix motor fails to move during intended operation.

Cycle Timeout Alarm – When enabled, this alarm will sound when the MCT parameter is activated. When MCT is used, it monitors sequential cycle times, and alarms (when alarm is enabled) if a cycle time exceeds the previous cycle time by an amount that is not consistent with proper operation. This provides a means to detect mechanical failures such as a sticking valve or weigh bin gate. For more information, see MCT the parameter on page 56.

Component Types – See page 25

Setup > Blender Configuration > Component Types

Manual Operations – See page 29.

Setup > Blender Configuration > Manual Operations

Operating Options

Setup > Blender Configuration > Operating Options

Precision Ratio, Progressive Metering, Weigh Bin Dump Options, Dispense Order, End Empty / Full, Volumetric Operation

Precision Ratio – Precision Ratioing for Additives
Select this option to produce a precision ratioing of a selected Additive. Press the displayed Component (MAT 3, MAT 4, etc) to toggle between PRECISION RATIOING OFF, PRECISION RATIO Material 1 ON, PRECISION RATIO Material 2 ON, etc. Only those components already designated as an ADDITIVE will be displayed. If precision rationing is selected, the specified additive will dispense BEFORE the Naturals, instead of after. Natural dispenses occur after the selected additive dispense and are calculated to assure the most exact percentage ratio for the selected component. Because the Natural dispenses are larger, this method allows for more exact ratioing of the one selected critical component.

Dispense Order - For recipes containing all regrind type components. Specify the dispense order of active regrind components. Select the components by selecting them in the order that they should be dispensed. Dispense order will display above. Clear will remove dispense order. New recipes will inherit dispense order. Internally saved recipes will save the dispense order.

Progressive Metering – Progressive Metering allows for more accurate dispenses of selected components. However, cycle time will be extended by a few additional seconds.

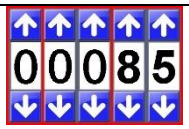
In normal operation blenders target a dispense of the full requested amount in one try. This almost always works, and generally will fall within acceptable upper and lower error limits. Making the dispense in one try allows for high throughput rates while still achieving a level of accuracy acceptable for most processors. When the accuracy of one particular component is critical, or the process depends on maintaining a tighter tolerance of this component, customers may lengthen the blend cycle time slightly to achieve this higher level of accuracy.

The Progressive Metering function is used to turn on this function for a selected component. This sets parameters which will cause the dispense to occur in several progressively smaller dispenses. This results in a more accurate dispense.

The first dispense targets only 85 percent (the default percentage) of the full required amount. After careful weighing, each successive dispense targets 50 percent of the remaining shortage. This continues until the amount reaches, or is within 1 percent of, the target. In this manner the software "sneaks up" on the target, providing the maximum achievable accuracy possible.

When Progressive Metering is Enabled, then a component is selected and Enabled, the corresponding PT and RP parameters are set to PT 00085 and RP 00001.

How to use Progressive Metering:

Press		**Display will prompt for a password.** (default: 22222) **Then press:**
Press	**Blender Configuration**	**Display will show the Blender Configuration categories.**
Press	**Operating Options**	**Display will show the Operating Options categories**
Press	**Progressive Metering**	**Display will show the Progressive Metering screen with 12** components labeled 1 – 12. Display will also show an Enabled and Disabled checkbox per component to enable) or disable Progressive Metering.
Press		**To select the component that you want to enable Progressive metering.**
Press	**Enabled**	**To enable Progressive Metering on the selected component. The Display change to the PT parameter for that component showing the percentage of the first try % adjustable with the arrow buttons.**
Press		**To adjust the first Try percentage. You may change the 85 by entering a different number using the arrow keys. Too low a setting will just add time. Too high will cause occasional overshooting.**
Press		**To Save and exit or press the red X to cancel and exit.**

End Empty or Full - END the Cycle with: BIN EMPTY (standard), or BIN FULL
This flag for SPECIAL APPLICATIONS ONLY. Select Standard: end with bin empty or select

Option: end with bin full to tell the controller to end a cycle when the weigh bin is EMPTY or end with the bin FULL. The BIN FULL option is only for special installations where the sensor has been relocated BELOW the mix chamber and the instructions to do otherwise.

Weight Bin Dump Options – Weigh Bin Double Dump
Select Optional: Operate Twice option to cause the weigh bin dump valve to operate two times. We call this a "double dump". If you have problems with material hanging up in the weigh pan, this may help shake it loose. Select Optional to operate Dump the dump valve twice. Select Standard to operate the Dump valve once. Press EXIT when done.

Volumetric Operation – Used to put the controller in Volumetric Mode. Enabled or Disabled. Press the green check when done. When power is turned off this flag is always reset to Disabled (OFF). With this flag Enabled (VOLUMETRIC operation ON), the load cells are completely ignored. Error correction and rate recalibration does not take place. The unit functions like a volumetric feeder without checking or correcting for errors. Since load cell readings are ignored, this flag allows operation even if the load cells become damaged. Dispense times will be based entirely on the WT and TI parameters.

Alternate Liquid Color – Alternate Liquid Color allows automatic switch over from Liquid Color component 10 to liquid color component 11 when component 10 runs out. When component 11 runs out, component 11 automatically switches back to component 10 and so on. Starting and alternate components are stored in the LIQ parameter (01011). 2nd and 3rd digits are the starting component (default: 10), 3rd and 4th digits are the alternate component (default: 11).

Timed Operations – Dispenses a component for a set time.

Setup > Blender Configuration > Timed Operations
Enter the component number (hopper number 1 through 12). Enter a time in milliseconds. Press ENTER to dispense the component for the time requested. After the dispense is weighed, the dump valve automatically operates to empty the weigh bin. The output information will be printed to the screen. Insert a USB flash drive and press the USB button to print the screen to a text file on the drive. EXIT will exit the screen.

Specialized Operations – See page 41.

Setup > Blender Configuration > Specialized Operations

Calibration Routines - Flow Rate Calibration, Calibrate Load Cell

Setup > Blender Configuration > Calibration Routines

Flow Rate Calibration – See page 33.

Setup > Blender Configuration > Calibration Routines > Flow Rate Calibration

Load Cell Recalibration

This unit was properly calibrated at the factory to match the load cells that were supplied with it. If you are going to recalibrate, note the following. The proper sequence is given below.

BE SURE	the load cell plug is plugged into the side of the controller.
BE SURE	the weigh bin is hanging from the load cells freely.
BE SURE	the air line to the dump valve is connected as it would be during normal operation. (A disconnected air line adds weight.) Air pressure to the line is not necessary.
BE SURE	there is nothing touching the weigh bin or air line.
BE SURE	the bin is EMPTY when ZEROING the load cells.

- ZERO weight calibration must be done before FULL weigh calibration. Since changes in ZERO weigh will also shift the FULL weigh by the same amount, it may not be necessary to do FULL.
- When entering the FULL WEIGHT, BE SURE you know the exact weight (in GRAMS) that you are adding to the bin. Place weight in the bin, press FULL and then enter the weight in grams.
- Enter the EXACT weight in GRAMS that you have placed in the bin. The weight should be close to the designed full bin weight; (400, 1000, 2000, 4000, 9000, or 18000).

Press	**Display will prompt for a password.** (default: 22222)	**Then press:**
Press	**Blender Configuration**	**Display will show the Blender Configuration categories.**
Press	**Calibration Routines**	**Display will show the Calibration Routines.**
Press	**Calibrate Load Cells**	**Display will show the Zero Weight Calibration / Full Weight Calibration screen. This screen contains a DUMP button, ZERO button, FULL button, a dialog box and a display showing the current Weight.**
Press	**DUMP**	**To empty the Weigh Bin. Weigh bin must be empty.**
Press	**ZERO**	**Wait while calibrating load cells. Do not touch weigh bin during calibration. After zero calibration, has completed successfully continue below.**
Press	**FULL**	**Display will show a keypad and the message: Enter the known weight and then press ENTER. Enter your known weight in GRAMS and then press ENTER.**
Place the known weight in the weigh bin and then properly re-install the weigh bin into the blender. Press CONTINUE to proceed. Wait while calibrating load cells. Do not touch weigh bin during calibration. After Full calibration has proceeded successfully, you will be prompted.		
Press	EXIT	**To exit Zero / Full Weight Calibration screen.**

After FULL weight calibration, if the display says BAD LOAD CELL, then the weight you are using does not match the weight you entered, the weigh bin is not free to move, OR the load cells are bad.

System Configuration

Modes of Operation

Setup > System Configuration > Modes of Operation

Modes of Operation - Blender Modes:

- **Blender** – Blending up to 12 components
- **Dispenser** – Operates Blender as a Weigh Scale Dispenser (WSD).
- **Totalizer** – Operates Blender as a Weigh Scale Totalizer (WST).
- **Extrusion** (RATE ONLY)

Modes of Operation - Blending Mode Setpoint Configuration.

- **Percent of Natural (default)** – In this mode regrind is a percent of the batch, additives are a percent of the natural (all naturals combined) and naturals are a ratio to each other.

- **Percent of Total Batch** – In this mode each component is a percentage of the total batch. All components must add up to 100%.

  See Example of Making Settings on page 26 for information on setting percentages.

Digit Mode - Setpoint resolution.

- **3 Digit (default)** – In this mode regrind and additive settings are in 10ths of a percent (xx.x). Natural uses 3 digits with no decimal (xxx).

- **4 Digit -** In this mode regrind and additive settings are in 100ths of a percent (xx.xx). Natural uses 4 digits with no decimal (xxxx).

Print Center – Options to print specific reports to USB including Totals, Parameters, Alarm History, Alarms and Events, Cycle History, Print All reports. **Setup > System Configuration > Print Center**

Print Cycle Options

Setup > System Configuration > Print Cycle Options

Print Cycle Diagnostics – When ON this sends a Cycle-by-Cycle printout after each full dispense cycle to a USB drive inserted into the controller. When ON and with a USB Flash Drive in the USB port, four lines of information about the dispense cycle that just occurred will be sent to a file named PRINTER.TXT. The information in this file includes dispense weight and percentage of each component, the internal rate numbers used by the computer to determine dispense time, and the actual dispense time of each component. This is excellent information to track the accuracy of each dispense cycle and the accuracy of the entire system over an extended period of time. Can be printed as fixed width plain text file or as a CSV file with or without the column headers (titles).

Print Cycle History – Prints diagnostic data of the last 250 cycles to USB. Can be printed as fixed width plain text file or as a CSV file with or without the column headers (titles).

Print Totals Interval - Enables automatic print of totals to USB at a specified interval (see PRT parameter).

Preferences

Setup > System Configuration > Preferences

Date and Time – Used to set date, time, and date format.

Weight Units – Set weight units on the display; pounds, ounces, grams, kilograms.

Language – Set the language of the touchscreen controller.

Change Passwords – Used to set access passwords for Admin (Program Mode) and Operator (limited access) Mode. Default passwords are: 22222 for Admin Mode and 11111 for Operator Mode.

Menu Bar Options – Allows changes to the right-side menu buttons.

Screen Options – Screen Saver options, Screen Brightness, Screen Calibration and On-Screen Options. On-Screen Options is information shown across the top of the home screen including: Date/Time, Model Number, MLAN ID, USB Connectivity, Ethernet Connectivity. Note: Screen Calibration can be accessed by press and holding the screen during startup.

Flexbus Lite – Enable / Disable Flexbus Lite integrated loading. See Flexbus Lite on page 122 for more information.

Diagnostics

Setup > System Configuration > Diagnostics

System Information – System Information displays specific system related information about the controller and blender.

Live Diagnostics – Displays cycle diagnostics information.

Load-Cell Diagnostics – Displays loadcell diagnostics information.

Communication Diagnostics – Displays communication diagnostics information.

Alarm and Event Log – Also accessible from the home screen alarm button. Displays the Alarm and Event Log screen. This screen shows the stored history of alarms, critical events, power on events, and other events. Press the upper or lower half of the event display windows to page up or page down. Alarms can be silenced from this screen. Other options in this screen include: Print to USB, Clear the Alarm Log and filter to show only critical events.

Communications

Setup > System Configuration > Communications

Blender I.D. Number – Sets the Blender ID number. Enter an identification number for this particular weigh scale blender. This I.D. number will appear on all printed reports. If you have more than one unit, this helps to identify reports. If you are using the MLAN Protocol to automatically gather data, then each controller must have a unique address. Valid numbers are 000 to 255.

TCP/IP Configuration – Enable DHCP or set a static IP address, subnet mask and default gateway.

Modbus Server – Enable or disable Modbus TCP.

MLAN Serial Baud Rate – Set the baud rate for serial communication (RS-232 or RS-485).

For more information on how to set communication settings see page 48.

Resets

Setup > System Configuration > Resets

User Settings – Save/Restore Settings – Used for saving or restoring previously saved parameters. For more information on Saving and Restoring Settings, see “Saving Parameters in the User Backup Settings” on page 64.

Factory Access – For factory access only.

Restore Factory Defaults – Restores controller back to Factory Defaults.

Firmware Update – For updating controller firmware from a firmware file loaded onto a USB drive. See “Updating Controller Firmware” on page 96.

Monitoring System Accuracy

Cycle Printout Information

The best way to monitor system accuracy is to connect a USB Flash Drive to the USB port and turn the Print Cycle Diagnostics ON. The controller will then automatically print full output information after every cycle to a file on the USB Flash Drive in a plain text file format or CSV spreadsheet format.

Notes about printing to a USB drive
When saving printout information to a USB drive, the controller will create a file labeled CBC_DIAG.TXT (or CSV) or use the pre-existing file. New data is appended to the end of the file CBC_DIAG and does not overwrite existing data within the file.

When Print Cycle Diagnostics is ON (selected), the controller will output a single heading line at the top of each cycle information section and information lines at the end of each cycle.

Turning on Print Cycle Diagnostics:

Press	**Display will prompt for a password.** (default: 22222)	**Then press:**
Press	**System Configuration**	**Display will show the System Configuration categories.**
Press	**Print Center**	**Display will show System Print Options**
Press	**Print Cycle Options**	**Display will show Cycle Print Options:** **Print Cycle Diagnostics - ON/OFF** • **Print as CSV File - Comma Separated Values (spreadsheet format)** • **Include Header - Title above columns.** **Print Cycle By Cycle History - PRINT** • **Print as CSV File - Comma Separated Values (spreadsheet format)** • **Include Header - Title above columns.**
Toggle	**Print Cycle Diagnostics** **ON**	**With Print Cycle Diagnostics turned ON, you have the option to print as a CSV file, formatted as comma separated value file that can be opened in a spreadsheet program such as Excel. A title header to the columns can also be included in the CSV file.**
Also available in this screen is an option to print a 250 cycle history to USB. With this printout you have the option to print as a CSV file, formatted as comma separated file that can be opened in a spreadsheet program such as Excel. A title header to the columns can also be included in the CSV file.		
Press	**To save and exit or press the red X to cancel and exit.**	

Interpreting the Cycle Printout

10 or 20 cycles of data can tell a lot about blender performance. The following explains how to interpret the data.

A single cycle printout looks like this:

* 11/03/18 *	*16:17:53*	**ID# 051**	WO 000000	RECIPE 00000	OP 000

	1 R 20.0		**2 N 100**		**3 A 04.0**		**4 A 00.0**		TOTAL
FINAL: DISP,%	400.0	20.00	1538.4	100.0	61.5	3.99	0.0	0.00	1999.9
RATE: GR/TIME	2600	4000	1999	2000	1600	32000	1600	32000	2.4
1ST DISP,TIME	400.0	0.61	1538.4	2.36	61.5	0.09	0.0	0.00	1

DEFINITION OF EACH LINE

TOP-OF-CYCLE Heading:

* 11/03/18 *	*16:17:53*	**ID# 051**	WO 000000	RECIPE 00000	OP 000

DATE and TIME this blend cycle was completed. ID, Work Order, Recipe, and Operator numbers have no effect on blender operation but aid in identifying this particular blender, and what job was running.

Component Number, Component Type, Setting, Total Batch Weight:

	1R 20.0	**2 N 100**	**3 A 04.0**	**4 A 00.0**	TOTAL

Heading over columns of material. Additional lines/columns will print for all enabled components. Component Number, Component Type, Component Setting is shown for each. R=Regrind, N=Natural, A=Additive

In this example, component 1 is a REGRIND; component 2, a NATURAL; 3 and 4 are set up as ADDITIVES.

DATA LINE 1:

FINAL: DISP,%	400.0	20.00	1538.4	100.0	61.5	3.99	0.0	0.00	1999.9

For each material, each column shows the final dispensed weight of that material and its percentage of the blend.

In this example Regrind dispensed 400 grams, 20% of the cycle full weight. Natural dispensed 1538.4 grams. Additive in component 3 dispensed 61.5 grams, 3.99 percent of the natural dispense.

The last number in this row, 1999.9 is the total weight in grams of the blend. It equals the sum of the components dispensed.

DATA LINE 2:

RATE: GR/TIME	2600	4000	1999	2000	1600	32000	1600	32000	2.4

These numbers show the RATE of dispense for each material. These are the numbers that the software used to calculate how long to open the slide gate or run an auger, in order to dispense the required amount. This is GRAMS per millisecond (in example: 2600 grams dispensed in 4000 milliseconds).

The final number, 2.4 grams, is the TARE WEIGHT of the weigh bin displayed just before the cycle began.

DATA LINE 3:

1ST DISP,TIME	400.0	0.61	1538.4	2.36	61.5	0.09	0.0	0.00	1

This shows the first dispense in grams for each material and the timing of that dispense (in milliseconds).

If the first dispense weight, (data line 3), matches the final dispense, (data line 1), then no "retries" occurred. In other words, the software accepted the first try. If they do not match, then the first try was short and one or more retries occurred. The second number is the dispense time that the software calculated to be a correct first try for the dispense.

The last number (1) is the CYCLE count, which increments by one with each completed cycle (resets to 0 at 65,536).

Troubleshooting with the Print Diagnostics

TOTAL BATCH WEIGHT:

Check the TOTAL batch weight to confirm the blender model. 2000 grams indicates 200 series model. 400, 1000, and 2000 gram totals indicate models that use 3 K load cells, which means output information is in 1/10's of grams. 4000, 9000, and 18000 gram totals indicate larger blenders that report information in full grams. Since some numbers in printouts, parameters and communications do not include the decimal point, you will want to know if you are reading full grams or tenths of grams.

TARE WEIGHT:

In DATA Line 2, tare weights should be consistently within a few grams of each other from cycle to cycle. Large variations in the tare weight numbers may indicate excessive vibration, some mechanical interference with the weigh bin, or another fault. Tare weights above or below zero are not a problem as long as they are consistently similar from cycle to cycle. When problems are present, tare numbers may vary by up to 50 grams. Variations of 2 or 3 grams are not a problem.

RETRY/BAILOUT - A 4th data line (not shown in the example) will print if any single dispense requires retries (RETRY) or is expected to go past the target weight due to a higher than expected flow rate (BAILOUT).

RETRIES: Shown in the 4th data line under the Component Number/Type column, Retry is a count of the number of retries to achieve the targeted dispense percentage. When FIRST timed dispense does not equal FINAL dispense, one or more retries will have occurred. Retries are evidence of a problem that will also cause percentage errors. Retries may indicate possible problems; perhaps the hopper ran out of material, or the flow rate is so erratic that the first dispense was short for no good reason. Parameters _RT and _RP determine what shortage error is necessary to force a retry.

BAILOUT - Shown in the 4th data line under the Component Setting column, the BAILOUT value is the time the dispense was cut short due to a higher than expected material flow rate. Bailouts are designed to prevent or minimize overflows of material when initial parameter settings, at start up, are entirely inappropriate for the metering device. A larger then normal error correction will occur after a bailout. Bailout errors at any time other then startup, usually indicate either very poor flowing material, or excessive vibration. When a bailout occurs the dispense stops immediately for a weight reading. Using this information, the cycle then continues normally. Bailout is set by the BER parameter (value is model specific).

FLOW RATE NUMBERS: (DATA line 2)

Check the RATE numbers, (DATA line 2), to determine each dispense device.

In the example above:

RATE: GR/TIME	2600	4000	1999	2000	1600	32000	1600	32000	2.4

In the components 1 column, 2600 and 4000 translates to 2600 grams in 4 seconds (4000 ms). This is 650.0 grams per second, typical for a regrind flowing through 3" round or 2"x3" dispense valves.

In the component 2 column, 1999 and 2000 indicate 1999 grams in 2 seconds, or 999.5 grams per second flow rate. This is a heavy natural material, not polyethylene. Perhaps Lexan or a glass filled material.

In the component 3 column, 1600 and 32000 indicate 1600 grams per 32 seconds (32000 ms) for a flow rate of 50 grams per second.

In the component 4 column, 1600 and 32000 indicate a flow rate of 50 grams per second. DATA line 3 dispense weight of 0.0 for component 4 and the component 4 is set to 00.0 percent confirming that component 4 is not dispensing material.

The following information will help you determine what devices are in place on a blender.

Material Dispense Device:	**Approx. Grams per Second:**
½" Auger Feeders, Micro Pulse Valves	0.5 - 02
1" Auger Feeders	06 - 10
Vertical Valves	20 - 40
WSB 100 - Slide Gates	250 - 450
WSB 220, 420 - 3" Round Slide Gates	500 - 900
WSB 240, 260, 440, 460, 940, 960, 1840, 1860 - 2" x 3" Slide Gates	500 - 900
WSB 240, 260, 440, 460, 940, 960, 1840, 1860 - 3" x 6" Slide Gates	3000 - 5000

Regrinds are always lower then naturals. Bulk density will also cause wide variations in flow rates.

ERROR CORRECTIONS: RATE NUMBERS: (DATA line 2)

The RATE numbers are used by the software, each cycle, to calculate material dispense times. They are adjusted every cycle until flow rates stabilize. When a significant error is detected, the software adjusts the RATE numbers.

The GRAM number is adjusted first. The TIME number (milliseconds) is changed only if the GRAM number goes below 16,000 or above 32,000 (approximately). In this event both GRAM and TIME numbers are doubled or halved to bring the GRAM number back to between 16,000 and 32,000.

This serves to keep all numbers as large as possible allowing for the most accurate math, but not so large as to overflow the registers.

Only the GRAM number changes from cycle to cycle, except under the conditions noted above.

Check the GRAM number for a series of consecutive cycles. If it remains unchanged, then the dispenses are accurate enough to not trigger error corrections.

The PRC parameter limits adjustments to 10 percent. Do not expect any single GRAM number change larger than 10 percent.

A gradual decrease in the GRAM number indicates a slowing rate, a hopper that is becoming empty for example. A jump in rate (increased GRAM number) occurs when the hopper is refilled.

If errors are occurring, but the GRAM number is NOT adjusting, check the NC parameter and the MI parameter. These parameters control whether or not error corrections occur. Both are set and adjusted automatically by the software. MI is set after each start up, after 10 cycles have run without retries. MI will be set to indicate 50 percent of normal dispense rate expressed as grams per second.

NC adjusts slowly over extended periods of running. NC indicates, in grams, the upper limit of the error in 60 percent of the dispenses. A high number usually indicates poor flowing material. Vibration or drifting load cells are other possibilities.

DISPENSE TIMING: (DATA line 3)

The second number is the number of milliseconds calculated to dispense the material. If these times are consistent but the weight of the first dispense varies, then the material does not flow well, or consistently. Another possibility is excessive vibration or interference with the weigh bin.

Excess vibration, particularly on small dispenses, may cause incorrect weight readings even though the weight dispensed was, in fact, correct.

If the timing number is very small, 40, 50, 60 milliseconds, perhaps this is asking too much from a slide valve. Very short times mean you want small amounts, but are using a high rate dispense valve to do the job. An auger, a vertical valve, a horizontal valve with a flow restrictor, or a smaller valve would help to improve accuracy and control.

If the timing number is below 20, you are operating in a range where it is difficult for the blender to perform well.

The LAG time parameter adds time to every dispense. This is to compensate for the time at the beginning of a dispense when the solenoid valve shifts and air pressure builds, before the valve starts to move. LAG times are always set slightly longer then the necessary minimum. If a calculated dispense time is very short, the Lag time that is added, while small, may interfere with accuracy, and cause an over dispense.

PERCENTAGE ERRORS: (DATA line 1)

When looking at errors of percentage of color or additive dispensed, look for the following.

1. First, look for indications of "retries". Retries are evidence of a problem that will also cause percentage errors.

   When FIRST time dispense, (DATA line 3), does not equal FINAL dispense, (DATA line 1), one or more retries have occurred. This means the hopper ran out of material, or the flow rate is so erratic that the first dispense was short for no good reason. Parameters _RT and _RP determine what shortage error is necessary to force a retry.

   Inconsistent loading resulting in large variations in hopper material level can cause retries.

   Excessive vibration can also cause bad weight readings, which can cause unwarranted retries. If the BAILOUT line is printing occasionally, then vibration is most likely causing this. Increasing the BAILOUT parameter should fix this.

   A LAG time set too high may cause retries to overshoot their mark resulting in over dispensing.

2. Second, look at ACTUAL weight dispensed (DATA line 1).

   Additive, for example, is a percentage of the natural. In the example above, Natural is 1538.4 grams, so additive, at 4 percent of Natural, is targeted to be 61.5 grams. In fact, if 62.8 were dispensed, the error would be 1.3 grams, well within the expected accuracy of a 1” auger feeder.

   The actual GRAM error of a dispense is more meaningful then the percentage error. Mechanical devices and material flow are not perfect. The most we can expect from them is to operate within a reasonable range of accuracy. This range is better defined by an error expressed in grams, rather them percentage.

3. Third, look at the dispense TIME (DATA line 3).

   Very short times (40, 50, 60 milliseconds) indicate dispense devices not well matched to the task.

Accuracy on a percentage basis, cycle to cycle, will suffer. This may very well be acceptable as long as overall usage percentages are still accurate.

BAILOUT: (line 4)

If bailouts occur, vibration is usually the cause and these bailouts may be causing other problems. Raise the value of the BAL parameter to 200 or 300 grams to reduce or eliminate unnecessary bailouts.

Vibration may also cause throughput rates to suffer due to the added time required to obtain acceptable weight readings. Increase the WDF parameter to 2 or 3 grams, (WDF 00003) or (WDF 00030), or more if necessary.

Parameter Settings Printout

To print a copy of all internal parameters:
A USB Flash Drive must be connected to the USB port on the controller. Up to 13 lists will print, a General list and 12 component lists. Only components that are turned "on" will print. Four columns will print, RAM; ROM; 200 and 900 series tables; and EEPROM. Identifying headings print above each column. Other print options can be sent to USB such as Print Totals, Print Alarm History, Print Cycle History, Print Parameters, Print Alarm and Events, and the option to Print All to USB.

Press		**Display will prompt for a password.** (default: 22222) **Then press:**	
Press	**System Configuration**	**Display will show the System Configuration categories.**	
Press	**Diagnostics**	**Display will show System Diagnostics Options**	
Press	**System Print Options**	**Display will show System Print Options:** **Print Totals, Print Alarm History, Print Cycle History, Print Parameters, Print Alarm and Events, Print All.**	
Press	**Print Parameters**	**System will print parameters to USB to a file labeled: PRINTER.TXT located in a folder named "maguire".**	
Press		**To save and exit or press the red X to cancel and exit.**	

Weigh Certification Printout

A Weigh Certificate Printout can be generated to a USB flash drive. This procedure requires a certified weigh be placed in the weigh bin at the time of generating the Weigh Certification file. The Weigh Certification file is written to a USB flash drive into a folder named. The file output format is plain text ASCII with a file name as W<ID>CERT.txt. (example: W001CERT.txt for ID number 1). Each unique ID number will have a new file create within the maguire folder.

For optimal accuracy, a zero and full weigh calibration is highly recommended prior to printout.

Weigh Certification file example:

```
Weight Certification
Date: 09/12/18
Time: 14:57:55
Machine Number: 1
WSB Model:        220
Serial Number: 123456
Empty Bin Tare Weight:  x.x grams
Weight On Display:      x.x grams

Signature: _____
```

How to create a Weigh Certification file:

Press	**Display will show Print Center options.**	
Press	**Weigh Certification**	**Display will show the WSB Weigh Certification screen.**
Press	**Go to Zero and Full Weight Calibration**	**to perform a Zero and Full Weigh Calibration prior to printing the Weigh Certification document. (Recommended). Follow on-screen prompts. Also see Load Cell Recalibration – ZERO / FULL Calibration on page 68. After calibration, continue below.**
Or Press	**Skip Zero and Full Weight Calibration**	**to proceed with Weigh Certification printout without performing a Zero and Full Weigh Calibration.**
Confirm Weigh Bin is EMPTY then:		
Press	**TARE**	**to TARE the scale.**
Press		

Material Usage Printout

Pressing the VIEW key on the Home screen followed by the Print to USB button will cause all material usage totals to be printed. These totals are since the last time printed, and since the last time cleared.

The printout looks like this:

```
              DATE        TIME
CURRENT       11/10/01    16:20:23
LAST          11/10/01    16:10:23
PRINTED
LAST          09/10/01    09:00:04
CLEARED
              TOTALS:     GRAND        PCT          CURRENT      PCT
CYCLES                           11                        7
COMP 1        R 05.0              2.4         4.8          1.5         5.0
COMP 2        N  100             47.4       100.0         28.6       100.0
COMP 5        N 00.5               .4         .99           .2         .99
COMP 6        N 00.5               .4         .94           .2         .91
TOTAL                            50.8                      30.7
WEIGH SCALE ID# 120
TOTALS ARE IN POUNDS
POUNDS PER HOUR 365.3
```

The Totals may be in POUNDS or KILOS depending on your selection of weight unit.

A line is printed for each active component. Each line shows component number, type, setting, grand and current totals.

The GRAND totals will continue to grow until they are intentionally cleared.

The CURRENT totals are since the last time totals were printed. The date and times are given for LAST CLEARED and for LAST PRINTED.

The percentages given for "R" types (REGRIND) are percentages of the total mix. Percentages given for "A" types (ADDITIVES) are percentages of all the "N" types added together. Percentages given for "N" types (NATURALS) are each component's percentage of all the "N" types added together.

The POUNDS PER HOUR is calculated using the total material dispensed from the CURRENT column, and the time difference between the CURRENT time and the LAST PRINTED time.

TROUBLESHOOTING - What To Do

1. If you are reading this section, you are having problems. To locate and correct the problem we suggest that you take the following steps:

2. Start by reading the WIRING CONSIDERATIONS section. Even if the system worked well for a time, dry weather or increased plant electrical noise can cause new problems.

3. Then follow the CHECKOUT procedure in the front of this manual. If anything does not work right, read the diagnostics section that follows it.

4. Read the section on NORMAL OPERATING SEQUENCE to be sure you understand what it is supposed to be doing. If you are still unsure as to how the software logic works, call us.

5. Read the list of TYPICAL PROBLEMS that follows on the next page.

6. Read the section on VERIFYING LOAD CELL function to be sure that the load cells are operating correctly.

7. For difficult problems we can provide the most help if we have a printout of the PARAMETER table and a digital printout the Cycle History (Print Cycle History under Print Center).

8. Try a Factory Reset. Turn power off.

Print the PARAMETER Table:

Press		**Display will prompt for a password.** (default: 22222) **Then press:**	
Press	**System Configuration**	**Display will show the System Configuration categories.**	
Press	**Diagnostics**	**Display will show System Diagnostics Options**	
Press	**System Print Options**	**Display will show System Print Options:** **Print Totals, Print Alarm History, Print Cycle History, Print Parameters, Print Alarm and Events, Print All.**	
Press	**Print Parameters**	**System will print parameters to USB to a file labeled: PRINTER.TXT located in a folder named "maguire".**	
Press		**To save and exit or press the red X to cancel and exit.**	

Alarms - Cause and Solution

Typically, problems are indicated by an alarm condition on the Blender controller's display with an audible alarm and a flashing strobe light. The following alarm troubleshooting chart will describe the alarm condition and possible causes and solutions.

Alarm Display:	**Troubleshooting:**
COMPONENT ALARM **ALARM CODE:01-12** **(alarm code denotes hopper / component number)**	**Problem: Hopper / component out of material.** This alarm is triggered by the AL parameter. **Solution:** Determine reason for material shortage.
BATCH COMPLETE **ALARM CODE:13**	**Alert Alarm: Batch is complete (Batch Mode).** The Batch Mode Alarm is enabled under Setup/Blender Configuration/Specialized Alarms/Batch Complete Alarm (ON/OFF) Also see: Batch Mode on page 41.
MAXIMUM WEIGHT ALARM **(former: BAILOUT ALARM)** **ALARM CODE:14**	**Problem: Maximum Weight Exceeded - Cycle Aborted** As the cycle dispensed material into the weigh bin, the calculated weight was projected to exceed the maximum allowable weight in the weigh bin (MAX parameter) and cycle was aborted. The Maximum Weight Alarm is enabled under Setup/Blender. Configuration/Specialized Alarms/Maximum Weight Exceeded Alarm (ON/OFF). Also See: MAX parameter. **Solution:** This alarm is typically caused by an unexpected increase in material flow, such as valve getting stuck open or a sudden flow increase due to a material blockage opening up. Typically a random Maximum Weight Exceeded Alarm will be corrected by automatic flow rate adjustments however if they are repeating often, this may indicate a problem with a dispense valve.
COMPONENT BAILOUT **No alarm, no alarm code**	**Problem: Component Bailout - Aborted Dispense** As the cycle dispensed a specific material into the weigh bin, the weight of that component exceed the target by the amount specified in the BER parameter and the material dispense was abruptly stopped. See: BER parameter. **Solution:** Bailouts occur because the target weight exceeds the Bailout Weight Limit (BER) parameter. Component bailouts are typically caused by vibration. Increasing the value of the BER parameter (from 200 to 300 grams) may reduce or eliminate unnecessary bailouts.

ZERO TARE ALARM (former: DUMP ALARM) **ALARM CODE:15**	**Problem: Load Cells outside of acceptable Calibration.** Weigh bin empty weigh above tare high upper limit (TH parameter) or below tare lower limit (TL parameter). If above TH (upper limit) weigh bin dump valve opens and closes repeatedly. Possible causes: There is material in the weigh bin that will not dump out. The dump flap may be stuck. The load cells are hung up or obstructed. The load cells are out of calibration. **Solution:** Clear material jam, check dump valve for free movement, Check that weigh bin and load cells are free from contact with door and back of enclosure, verify weigh bin is installed correctly. If weigh bin is empty and weight reading on-screen is above TH parameter or below TL parameter then recalibration load cells. See page 32 (zero only) and 68 (zero and full calibration).
OVER WEIGHT ALARM **ALARM CODE:20**	**Problem: Over Dispense triggered by Alarm Parameter** First three digits of the component specific AL parameter (**000**00) are used to STOP and ALARM the blender if an over dispense occurs by a specified number of grams or percent. **Grams:** enter 001 to 499 in the first three digits. **Percent:** enter the number "5" in the first digit. When percent is enabled, the 2nd and 3rd digits are the percent (01 – 99). In the first digit of the _AL parameter, 6 – 9 are invalid digits. **Solution:** Determine cause of over dispense.
WAIT FOR RECIPE ALARM **ALARM CODE:21**	**Problem: Recipe Request option did not receive a recipe within the 2 minute timeout period.** When enabled the Recipe Request option uses the Recipe Number Tag to request a recipe over communications. If the recipe number is changed to a value between 100 - 65535, the 2-minute Recipe Request timer starts and monitors for a change in the recipe. If a recipe is not received within the timeout period, this alarm sounds. **Solution:** Check Recipe number, check status of communications.
WEIGHT DROP ALARM **ALARM CODE:22**	**Problem: Weigh Bin loosing weight during a cycle.** This alarm is triggered by a loss of more than 20 grams during a dispense cycle. This serves to detect and report a weigh bin problem, such as material leaking from the bottom of the bin. **Solution:** Examine weigh bin for issues with material retention such as weigh bin flap closure problems, material jam, angel hair causing leak, low air pressure, damage to weigh bin or obstruction to weigh bin closing.
MCT PARAMETER ALARM **ALARM CODE:23**	**Problem: Cycle time exceeds previous cycle time by value set in MCT parameter.** The MCT parameter when used, monitors sequential cycle times and alarms if a cycle time exceeds the previous cycle time by an amount that is not consistent with proper operation. See: MCT parameter. **Solution:** Check material source. MCT parameter alarm may indicate a problem with material loading, blending issues or delays in completing a cycle such as vibration.

ALTERNATE COLOR ALARM **ALARM CODE:24**	**Alert Alarm: Alternate Liquid Color, Component Switch.** The Alternate Liquid Color option allows automatic switch over from Liquid Color component 10 to liquid color component 11 when component 10 runs out (switch over continues from 11 to 10 and so on). This alarm is triggered by a switch over of the component configured to switch over liquid color. For more details see Alternate Liquid Color under Operating Options and also the LIQ parameter. **Solution: Replace Liquid Color component that has run out.**
MIX MOTOR FAILURE ALARM **ALARM CODE:25**	**Problem: Mix Motor Failure Detected.** When enabled under Specialized Alarms and used with the Mix Motor Failure Kit (KIT-075T), this alarm will sound when the mix motor fails to move during intended operation. **Solution:** Check operation of Mix Motor. Check for material jam in mix chamber, check for mix blade obstructions. Clear mix chamber and Mix Motor operation using Manual Operations. Check thermal overload fuse on larger blender (model 900 and higher) or Mix Motor Fuse on Controller.
G2F PARAMETER ALARM **ALARM CODE:26**	**Problem: Totals have not been collected by communications for previous cycle .** The G2F parameter is used in conjunction with the Get Totals command. The Get Totals MLAN command can be sent with either a command code of 16 or 17. If Get Totals used command code 16, an internal flag in the controller is set indicating the totals have been collected for this cycle. If the G2F Parameter is on, the blender will stop running cycles and alarm because the flag had not been set, indicating the totals had not been collected for the previous cycle. At that time the "Get Status" MLAN protocol command will return an alarm status of 26. **Solution:** Check communication status to this blender.
REMOTE RECIPE LOAD FAILURE ALARM **ALARM CODE:35**	**Problem: The recipe TAG in Modbus was set to a recipe number from 1 to 99 but the recipe does not exist in the internal recipe database.** When a recipe number in the range from 1 to 99 is sent to Modbus register 40107, the controller checks for the existence of a recipe with that number in the internal recipe database. If the recipe number exists and the controller is idle, the new recipe is loaded and register 40107 returns the new recipe number. If the recipe number does not exist, an alarm is generated on-screen and Modbus register 40012 returns alarm code 35 = Remote Recipe Load Failure. **Solution:** Check the internal database and verify that the recipe number exists in the database.

Typical Problems

These problems are based on phone calls that we have received from Weigh Scale Blender users.

1. **The display does not read close to zero when power is turned on, bin empty (plus or minus 10 grams).**

   - The load cells are not plugged in.
   - The weigh bin is not resting properly and freely in its platform or the platform is not resting properly on the bolts that protrude from the load cell enclosures.
   - The controller was never calibrated for these load cells. In this case it will most likely be off by several hundred grams. See Calibrate Load Cells.
   - The load cells are damaged. See Verifying Load Cell Function on page 93.

2. **The VERY FIRST DISPENSE does NOT take place. After a few seconds the ALARM begins to flash.**

   - The air supply is not connected or the pressure is set too low.
   - The Natural solenoid is not connected properly.
   - The 3 amp panel front fuse is blown.

3. **The NATURAL dispense valve continues to dump repeatedly even though the weigh bin has filled to overflowing. The weight reading is still below target full weight.**

   - The weigh bin is not free to move.
   - The load cells are jammed.
   - The load cells are damaged. See Verifying Load Cell Function on page 93.

4. **The system operates but always needs MANY RETRIES to complete a dispense and never seems to "learn" the proper dispense rate.**

   - Vibration is causing frequent "bailouts" causing large swings in rate adjustment. Increase the BER parameter.

5. **Occasionally, the system gets STUCK doing retries of a component but the retry time is so short that nothing gets dispensed.**

   - The LAG TIME parameter is set for too short a time. See LA parameter.
   - A valve is sticking closed. Remove air pressure and check for free operation.

6. **The weight display shows random, very high or low values.**

   - The Load Cells are not plugged in and the readout is drifting.
   - Damaged load cells.

7. **Dispenses from a slide gate are not as consistent as they should be.**

- The slide gate is sticking slightly. With the hopper empty and air disconnected, move the slide manually to see that it moves freely. If material does not flow easily a bridge breaker may be required.

8. **Load Cell weight readings are not holding steady. They vary as much as 100 grams from second to second.**

   - Static induced poor grounding of load cells. See Wiring Considerations.
   - If TARE weights are not steady, something may be physically interfering with free movement of the weigh bin and load cells.

9. **At the end of each cycle the MIX MOTOR runs for a fraction of a second only.**

   - The MIX MOTOR pulls a heavy amp load on start up. If the power supply is not adequate (like when using an extension cord), the voltage will drop so low that the computer will reset and the mix motor signal will shut off. The display will show this by restarting as if power was just turned on. Provide a better supply of power; remove extension cord or use larger gage wire.

Mix Problems

Customers with mix problems have several options available.

Decrease the batch size by lowering the FUL parameter value. This does two things. First, it causes the components to be dispensed in smaller, more frequent batches, which places more and smaller layers of material into the mix chamber. Second, it lowers the level of material in the mix chamber immediately after a dispense. It is critical to proper mixing that the mix blades reach up through the top of the material in the mix chamber during mix time. Dispensing a large batch may bury these blades, particularly when the process is not running at full blender capacity. A smaller batch size, while reducing throughput rate, will help prevent the mix blades being covered during mix time.

Be sure level sensor is mounted in its lowest position, and increase sensitivity as much as possible. Both serve to keep a batch from being dispensed so early as to cover the mix blades.

On units without flow control valves (FCA), increase the DLY parameter to as number as high as 50 percent of the time between cycles. DLY is the time delay (in milliseconds) from the sensor being uncovered until we begin the batch. Increasing DLY allows the mix chamber to empty somewhat before the next batch drops.

You may increase the mix time at the end of each batch by changing the last two digits of the MIX parameter. If throughput is very high it may be better to run the mixer continuously. However, added mix time sometimes causes separation after an initial mixing. Different bulk densities and static electricity both aggravate this potential for separation from excessive mixing.

If a blender is mounted on a stand over a surge hopper, there should be a FCA, automatic flow control valve, fitted to the bottom of the blender. This valve must be plumbed so that it is closed when the level sensor is uncovered. When the sensor is covered the valve opens to release material. The purpose of this valve is to ensure mixing. The FCV parameter delays the opening of this valve for 6 seconds. You can increase this delay time if you feel additional mixing is required before release.

On model WSB-940, be sure the weigh bin has two baffles installed. These ensure horizontal layering (as opposed to side by side layering) of materials prior to dropping into the mix chamber.

Bulk density and pellet shape differences, specifically smooth virgin pellets mixed with square higher density color pellets, can separate when dropped onto a sloping pile, as exists in a hopper, Gaylord, or surge bin. The light round pellets flow like water to the edges, while the heavier square color pellets stay put. This is difficult to correct. It is best not to drop these kinds of blends into large containers.

Vacuum conveying can also separate materials of different bulk densities. Maintain high air velocity to minimize this.

Models WSB-MB series units use an air drive for the mix blade, instead of an electric motor.

If you are having mix problems with air drives, be sure the blades moves a full 270 degrees (3/4 turn) with each sweep. If they do not, try the following:

Increase the air pressure. If the gauge pressure drops more then 5 pounds during operation of the blades, the air supply line is too small.

Lower the pile in the mix chamber to reduce torque requirements on the mix blade. This is explained above.

Increase the MPO parameter from 122 (1/2 second) to 183 (3/4 second) or 244 (1 full second). This allows more time for a full mix blade sweep to occur. You may also want to increase mix time from 10 seconds to 15 or 20 seconds so that, in spite of slower mix blade speed, the same amount of mixing occurs.

Increasing Throughput

A correctly sized blender should have throughput that always exceeds your process requirements. If, for some reason, your blender is not keeping up, here are a few ways to increase throughput.

1. If your blender is equipped with a flow control slide gate, under the blender, this will reduce throughput up to 25 percent. To counter this, set the "END FULL" flag on using the *44 function explained earlier. In the END FULL mode, blending begins even while the sensor is still covered due to flow control valve operation.

2. If your process consumes a large batch of material all at once (such as during injection and screw return time), and material reserve is not adequate, you may "run out" of material for a few seconds while the Weigh Scale blender is making a new batch. The "END FULL" function will also correct this. Here, when the sensor is uncovered, a completed batch is immediately available to help refill the mix chamber, providing a larger reserve to the process.

3. Increase the FUL parameter. This sets the batch size. Larger batches increase throughput. Depending on the bulk density of your material, you may be able to increase batch size by 20 to 40 percent.

4. Turn "FAST" on. This causes rapid volumetric "timed" dispenses to occur up to 4 times after each normal gravimetric dispense.

5. Do not confuse "reserve" with "throughput". If your blender has a temporary problem which results in your process running out of material before you have time to remedy the problem, your "reserve" is inadequate. Add a surge hopper, or material level alarms on individual hoppers to prevent these types of problems.

Normal Operating Sequence

This section tells you how the system is supposed to work. If your system is not operating correctly, this description may help you spot exactly where the system is failing, providing a clue to the problem.

Turn POWER ON:

A boot up splash screen displays showing MAGUIRE WSB with the current firmware version displayed in the lower right corner. A status bar and Synchronizing with WSB displays at the bottom. The controller should then display the home screen. The weigh bin weight reading will display at the center of the home screen on the image of the weigh bin. It should show 0 or +/- a few grams.

BEGIN operation:

The unit will begin to operate if the START button is pressed on the Home Screen and the SENSOR in the mix chamber is UNCOVERED. The sensor must be plugged into the right side of the controller. If it is not, this has the same effect as the sensor being covered; the unit will not run.

If the WEIGH BIN DUMP Flap opens and closes repeatedly:

If initial empty bin TARE weight is 100 grams or more, the weigh bin dump valve will operate in an attempt to empty the bin and bring the starting weight closer to zero. If the bin is empty but the weight reading is greater than 100 grams then something is wrong. See Verifying Load Cell Function on page 93.

If the ALARM flashes:

If the initial TARE weight is below -50 grams the Alarm will active with the Alarm Log message Tare Low and the unit will not operate. Go to Verifying Load Cell Function on page 93.

The DISPENSE sequence begins:

If initial tare weight is within limits, between (-50, +100), the blender will begin to operate.

Home Screen during dispenses:

During all dispenses, the component number being dispensed will highlight in yellow and a dispense status meter will display in the center of the screen. Before the dispense begins, the weigh display will show the tare weight of the bin. After the dispense of the first material, the weigh display will show the total of the first material along with the batch progress on the Dispense Status Meter. After the dispense of each material, the new weight total weight is displayed and the Dispense Status Meter updates.

REGRINDS first:

If REGRIND is part of the blend, REGRIND dispenses will occur first in order of size, from the largest to the smallest. After these dispenses an exact weight is taken to determine the space remaining in the weigh bin for the remaining dispenses.

NATURALS second:

The NATURAL dispenses occur next in the sequence. They will be dispensed in order of size, largest to smallest. The exact weight of all NATURALS dispensed is weighed for calculating the ADDITIVE dispenses.

ADDITIVES third:

The ADDITIVE dispenses occur last in the sequence. Each dispense must meet requirements set by internal parameters.

MATERIAL RUNS OUT:

If any material runs out or is not enough to meet criteria set by parameters then the process will NOT CONTINUE past this component. RETRIES of this dispense will occur indefinitely until the full dispense occurs or the STOP button is pressed followed by the ABORT button. The ALARM will sound after 4 retries (set by AL parameter). See Component Parameters, AL parameter for the ALARM parameters.

If ALARM Occurs:

More than four retries of any single component will cause the Component Alarm and activate the strobe light, audible alarm, and multiple on-screen alarm alerts. Every alarm also logs to the Alarm Log. The component that is causing the alarm will continue to retry the dispense. To continue with the dispense sequence, the requirements of the dispense must be satisfied or the dispense aborted with the Abort button.

WEIGH BIN dump:

After all dispenses the weigh bin is emptied by the final dump of the weigh bin into the mixing chamber. The dump valve remains open for four seconds. (DTI parameter)

SENSOR covered:

While the sensor is covered, the dump valve remains open to ensure the weigh bin empties completely. Dispensing stops. The dump valve will remain open for as long as the sensor is covered. This will be until the next cycle begins.

FLOW CONTROL Valve: (optional)

The Flow Control Valve under the mix chamber will stay closed for 6 seconds (FCV parameter) immediately following a dispense into the mix chamber. The rest of the time it opens when the sensor is covered, and closes when the sensor has been uncovered for at least two full seconds (based on DLY parameter).

VERIFYING LOAD CELL FUNCTION

Most Problems are related to LOAD CELL function.

There are several ways to VERIFY that the load cells are functioning properly. The slightest touch on the weigh bin should result in a change in the readout. If this is not the case, something is wrong. When the light touch is removed, the display should return to its starting point. If this does not happen, something is interfering with free movement of the cell or the bin. Make a careful inspection of EVERYTHING around the load cells, the hanger bolts, the weigh bin tray and the weigh bin. NOTHING should interfere with free movement.

It is normal for load cell readout to drift several grams over time and with different temperatures. Since all the component dispenses are weighed by a single set of load cells, this drift will affect all components equally and, therefore, the ratio of the components will remain accurate. Empty weight is always TARED so each dispense is accurately measured.

The following observations will verify proper load cell operation:

When the bin is empty, between cycles, the display should read near zero. An error of several grams is not important since this empty weight reading is "tared" at the start of a cycle. The "empty weight" readings should be consistently within 1 or 2 grams of each other.

The addition of several pellets to the weigh bin should result in a change in the readout. 1 gram is about 40 pellets.

Most load cell problems are caused by interference to the movement of the load cell. The load cell must be free to respond to the weight of a single pellet as well as free to move far enough to record a full 20,000 gram weight deflection. (10,000 grams per cell - 10K cells)

If weight readout is very erratic check for damage to the load cell wires. Check for a pinched wire in the connector.

An over stressed load cell will read high. The top limit is 3100.0 for a 200 series or 31000 for a 400 or 900 series. A load cell that was forced or pried upward too far will read 0.0.

We supply and replace load cells in matched sets and we always include the mounting enclosures. You may remove the back plate from the enclosure for visual inspection. It is not safe to remove the load cell itself from the enclosure. To do so may stress the cell itself.

To OPERATE with DAMAGED load cells in a VOLUMETRIC mode, see Volumetric Operation on page 68.

To RECALIBRATE the LOAD CELLS, see the Load Cell Recalibration on page 68.

If you suspect load cell damage or failure, see: LOAD CELL RAW SIGNAL READOUT.

Load Cell Raw Signal Readout

Press Setup, System Configuration, Diagnostics, Load-Cell Diagnostics to check this RAW number for several seconds.

Load cells put out a very small voltage that varies slightly as the load cell is deflected. This voltage is converted to a pulse train and these pulses are counted for 1 full second to determine a weight load with a range of counts from 0 to approximately 249,850.

A properly operating set of 3 K cells will range from about 55,000 to 120,000; a span of about 65,000 from empty weight (weigh bin in place), to a full bin weight of 2000 grams. (10 K load cells range about 90,000 from empty to a full 9000 grams). The system will work correctly as long as the empty bin weight readout is between 1 and 149,248. 149,248 is the highest number that the software will accept for zero weight calibration (see parameters, LCZ). If the number is over this when you press the ZERO weight key, the display will say ZERO LOW.

This RAW COUNT number is converted to the proper gram readout based on load cell calibration information.

The RAW COUNT numbers are more useful in diagnosing load cell problems because they bypass the calibration math and, therefore, bypass any calibration errors that might have occurred.

A floating, drifting number usually indicates the load cells are not plugged in.

A readout of 0 indicates an open circuit, a damaged wire or cell.

A full-scale readout of 249,850 indicates a damaged wire or cell.

A set of 3 K load cells will put out about 33 more counts for every gram of weight that is added. A test of sensitivity is to add a small weight to the bin. The RAW WEIGHT count should increase by about 33 counts for each gram added. (10 counts per gram for 10K load cells.)

If you call us for help in solving a load cell problem, it is helpful if you can tell us what the RAW COUNT number is with the bin empty, and with a known weight in it. To display the RAW COUNT number for the current weight, go to Setup, System Configuration, Diagnostics, Load Cell Diagnostics.

To OPERATE with DAMAGED load cells in a VOLUMETRIC mode, see Volumetric Operation on page 68.

Backup, Restore, Factory Reset

Locations of stored Blender settings and their purpose

There are 3 memory areas where Blender settings are stored. These options are accessible by pressing Setup, System Configuration, Resets, User Settings.

1. **Restore User Settings** - The current settings in use. When you make parameter changes and/or enable features, the changes (if any) are recorded into the user-settings when you exit OPTIONS mode. When changes are made to User Settings, the changes are stored in EEPROM memory so that they are not lost when the Blender is powered off.

2. **Save User Settings** – The area in memory where User Settings are backed up into when the “Save User Settings” function is used. If User Setting were never backed up using “Save User Settings” function then Factory default settings reside in this memory location. If they were previously backed up, User Settings can be restored into “User Settings” using the Restore User Settings function.

3. **Load Factory Settings** - The area in memory that holds the Blender's factory default settings. The Factory Default Settings are hard-coded default settings for each model. Factory Default Setting can be restored using the “Load Factory Settings” function. Restore Factory Defaults is located under Setup, System Configuration, Resets.

Updating Controller Firmware

When the WSB Touchscreen Controller is turned on, the first screen displayed will show the current firmware version. If necessary, the firmware in the WSB can be updated using a firmware update supplied by Maguire Products. Firmware updates use the USB port located to the right of the control screen. The following instructions detail how to do a firmware update.

Do not turn off controller or remove the flash drive while firmware is updating! Doing so may corrupt the controller's firmware.

Copy	**the firmware update onto a USB flash drive in a folder named "maguire".**		
Insert	**the USB Flash drive into the USB port on the WSB.**		
Press		**Display will prompt for password.** (default: 22222) **Then press:**	
Press	**System Configuration**	**Display will show the System Configuration categories.**	
Press	**Resets**	**Display will show System reset options.**	
Press	**Firmware Update**	**The controller will search the maguire folder on the USB drive for a firmware update file with the XUF extension.**	
Select	**the file from the white display area on the left. If more than one firmware version is stored on the flash drive, multiple version will be displayed in the white display area. If the white display area is blank, verify the XUF firmware update file exists on the USB flash drive in a folder named maguire. Exit this screen and enter again to refresh the display window.**		
Highlight	the version in the white panel on the left and press **PROGRAM**.		
Press		**To proceed with the firmware update or press the red X to cancel and exit.**	
The display will show progress transferring the update from USB to the internal flash, then it will show progress in verifying the update file. Then the controller will automatically reboot. When the controller restarts the display will show progress updating to the new firmware. When complete, the controller will automatically reboot with the latest firmware. The firmware update is complete.			

Additional Firmware Update Information

If the WSB Touchscreen ever becomes unresponsive and cannot load new firmware through the menu, rename the firmware file to UPDATE.XUF and copy the file onto a flash drive into the root directory of the flash drive. With the controller powered OFF insert the flash drive into the USB port of the WSB controller and then turn the controller power ON. When the WSB controller is turned on, this UPDATE.XUF file will automatically load into the WSB restoring the firmware and load factory defaults.

Software updates can be supplied electronically, via email or by download. Software updates are named according to their date of release. For instance, WTR0228C.XUF can be interpreted as WT=Weigh Scale Touchscreen, S=2019 (T=2020), 02=February, 28=February 28th, C=the third revision for that day.

HARDWARE MAINTENANCE

AIR PRESSURE

Set AIR PRESSURE to about 80 PSI for best accuracy. However, lower pressures will work. If you plant air fluctuates, set the regulator to the low end so that the dispense valves always see a consistent pressure. Lubricated air is NOT recommended. Micro Blenders should be set to 40 PSI (2.7 bar). Vertical Valves used in removable hoppers on Micro Blenders, and 100 and 200 series blenders, are more accurate at 60 PSI pressure setting.

LEVEL SENSOR

Sensor position; 200 and 400 series models only:
The sensor should protrude into the mix chamber about 1/4 inch past the inside surface of the stainless mounting plate. If it does not protrude far enough, it will sense the mounting plate itself. If it protrudes too far, it will sense the mix blade.

Adjusting sensor sensitivity:

1. The adjustment screw is located at the rear of the sensor. It may be protected by a small plastic screw like cover. You will need a very small screwdriver to adjust it.
2. Fill the mix chamber until the sensor is about 3/4 covered.
3. Turn screw counter-clockwise until the LED goes OFF.
4. Then turn clockwise until the LED just goes ON.
5. Empty the chamber and check to be sure the sensor LED does not go on when the mix blade passes near it.

WEIGH BIN DUMP VALVE

The WEIGH BIN DUMP VALVE should be adjusted to close softly. A needle valve is installed next to the quick disconnect so that air flow to the flap air cylinder may be restricted. Adjust as required for a soft close.

SLIDE VALVES

Slide valves must move very freely. If they seem to jam slightly as they reach the full extended position (closed), this may be due to the air cylinder mount being slightly bent. If someone has pulled down or pushed up on the air cylinder, they may have bent the cylinder mount. You can correct this by pressing up or down on the cylinder as required to correct the problem.

If you process very hard pellets (polycarbonate and glass filled resins), your slide gate dispense valves may stick closed occasionally. We provide spacers that limit the full stoke of the air cylinder. This stops the slide from going any further then the just closed position and prevents jamming. Call us for information.

INTERNAL MIX MOTOR and AUGER FEEDER FUSES

The MIX MOTOR timed power source and the AUGER FEEDER OUTLETS are driven by internal solid state plug-in relays. A small 5 amp glass fuse is located to the right of each relay. A spare fuse is also located on the board if replacement is necessary.

BLENDER PREVENTIVE MAINTENANCE

There are no components of your blender that require periodic maintenance. However, over the years, blenders may be subjected to abuse or difficult conditions, and accuracy can suffer. To maintain control over the cost of expensive color and additives, you must maintain accuracy. We recommend that blenders be examined once a year, and all necessary repairs be made to insure continued accuracy.

DISPENSE GATES

To be accurate, gates must open and close freely, quickly, and completely. Check for wear on the slide gate guide rods. Check cylinder clevis adjustment for correct closing of the gate. A gate should close just enough to block the hole, but no further. It is best if they do not pass over the far edge of the opening as this might catch and jam on a pellet. Check that the clevis pin connecting the air cylinder is intact, not broken or worn through. Check for correct air pressure, tight fittings, and no damaged or crimped air lines.

WEIGH BINS

Check for smooth correct operation of the dump flap. Hinge points should not be worn. Gate should overlap the forward edge enough to prevent dribble when closed, even when closed against pellets. Space at the rear of the flap should allow for static build up of pellets on the rear edge of the dump flap without interfering with the closing of the flap. Again, if you see evidence of these problems, newer design parts are available to solve these problems. Check that the flap closes fully, and closes softly. The soft close is adjustable.

CLEARANCES - FREE MOVEMENT OF WEIGH BIN

Carefully examine all the parts of the weigh bin and the bin hanging bracket to be sure that nothing touches any fixed parts. A quarter (1/4) inch of space should exist on all sides of the weigh bin. Over the years, windows and guards have been added, and this has required that the weigh bin size be reduced to maintain 1/4 inch clearance per side. Be sure you do not have an older larger bin installed where windows have been added. A light touch of the bin should show a change in the weight readout. Remove the touch and the display should return to exactly the same number, plus or minus 1 or 1/10 gram depending on model. Only the last digit should drift, or vary, and by no more than one count. If ANY interference is detected, it MUST be fixed.

MIX CHAMBER

No bent blades. No SHARP blades. Bent blades might break off and severally damage your process screw. Sharp blades are a safety hazard. Replace if mix blades are not perfect.

The blade assembly should slip on and off the motor shaft easily. The need to use excessive force to remove the mixer assembly may bend the blades and they may eventually break off. Correct this if it is a problem.

17 pin Amphenol connector Pin assignments

This table describes the pin assignment to device of the 17 pin Amphenol connector with factory wire color assignment.

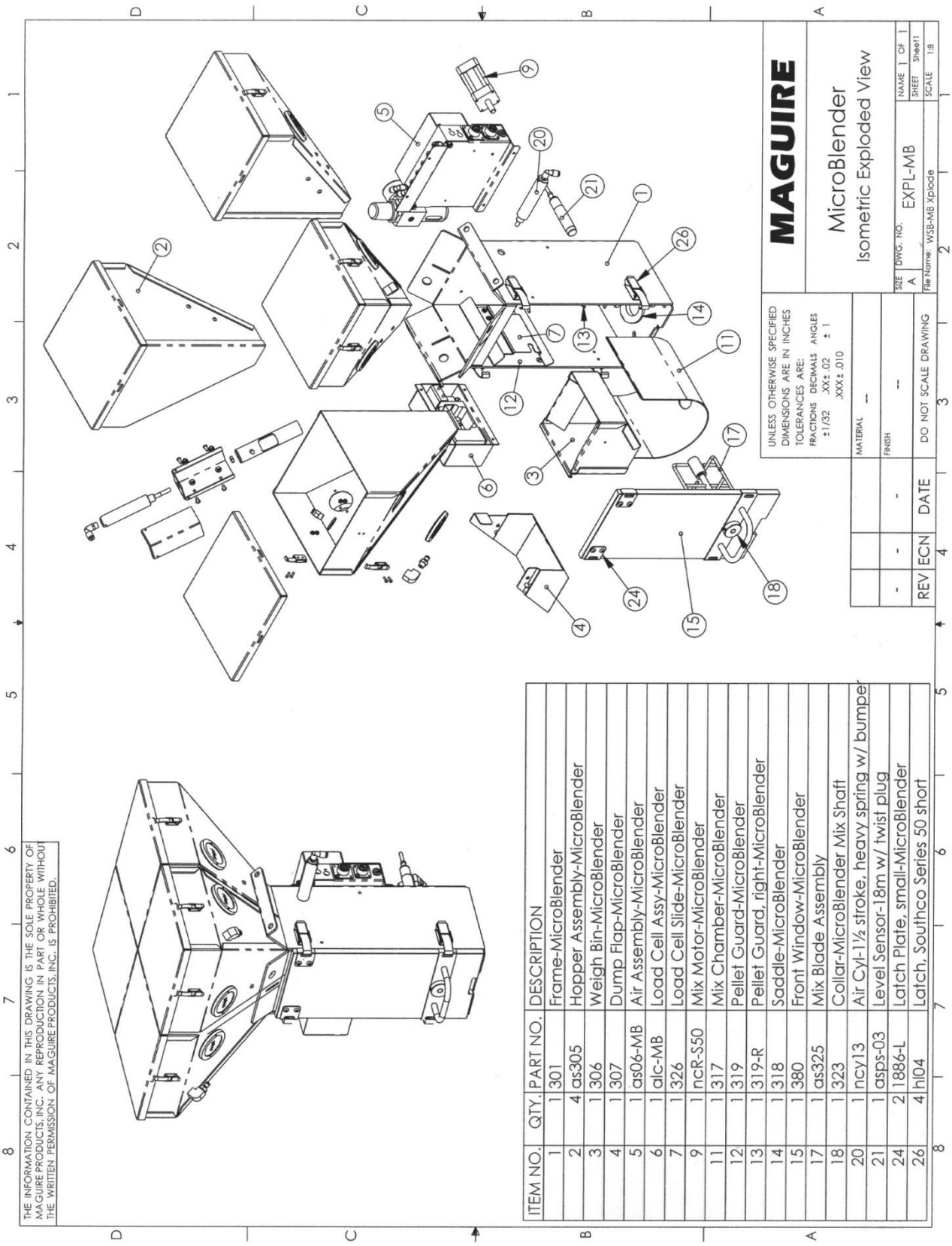
17 pin Amphenol connector

This pin goes to the outside world through this connector: 17 pin Amphenol connector	**to drive this external device:**	**wire color**
pin A	weigh bin dump air solenoid	brown
pin B	component 1 air solenoid	orange
pin C	component 2 air solenoid	blue
pin D	component 3 air solenoid	gray
pin E	component 4 air solenoid	purple
pin M	flow control air solenoid	yellow
pin F	component 7 air solenoid	red
comp. 5		
comp. 6		
strobe and beeper + opt. alarm relay output		
mix motor outlet, panel side		
pin G	comp. 8 - external SS relay	wt./red
pin H	comp. 9 - external SS relay	wt./yellow
pin J	comp. 10 - external SS relay	wt./green
pin K	comp. 11 - external SS relay	wt./blue
pin L	alarm	
pin N	common line, all outputs	white
pin P	comp. 12 - ext. relay (also air drive mixer)	
pin R	neutral to 10 volt signals (S,T)	
pin S	0-10 volt extruder control signal	
pin T	0-10 volt line speed control signal	

External SS relays are optional.

External SS relays and air solenoids may be exchanged.

Technical Drawings



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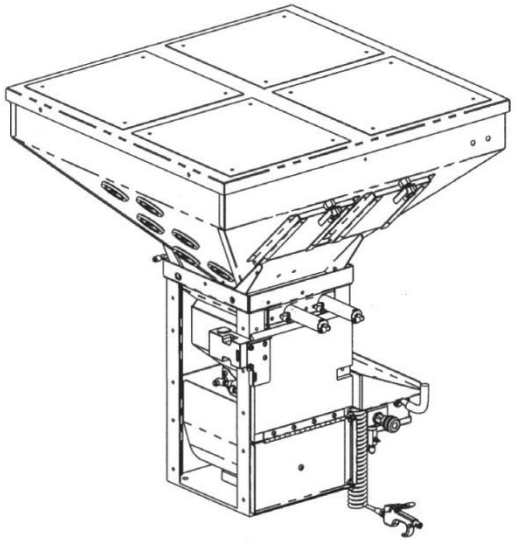
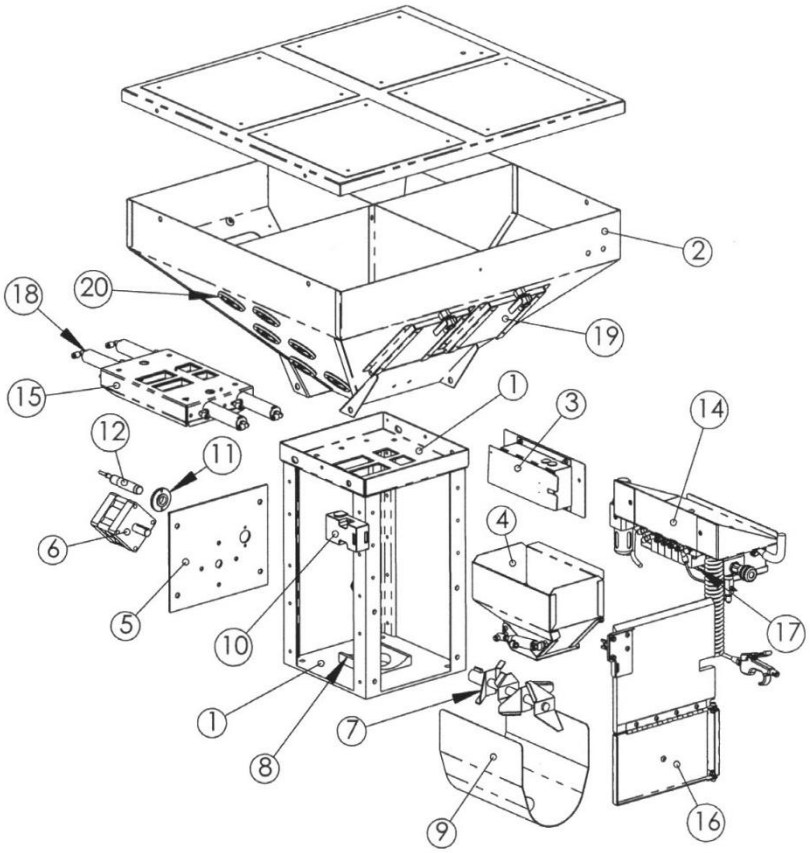




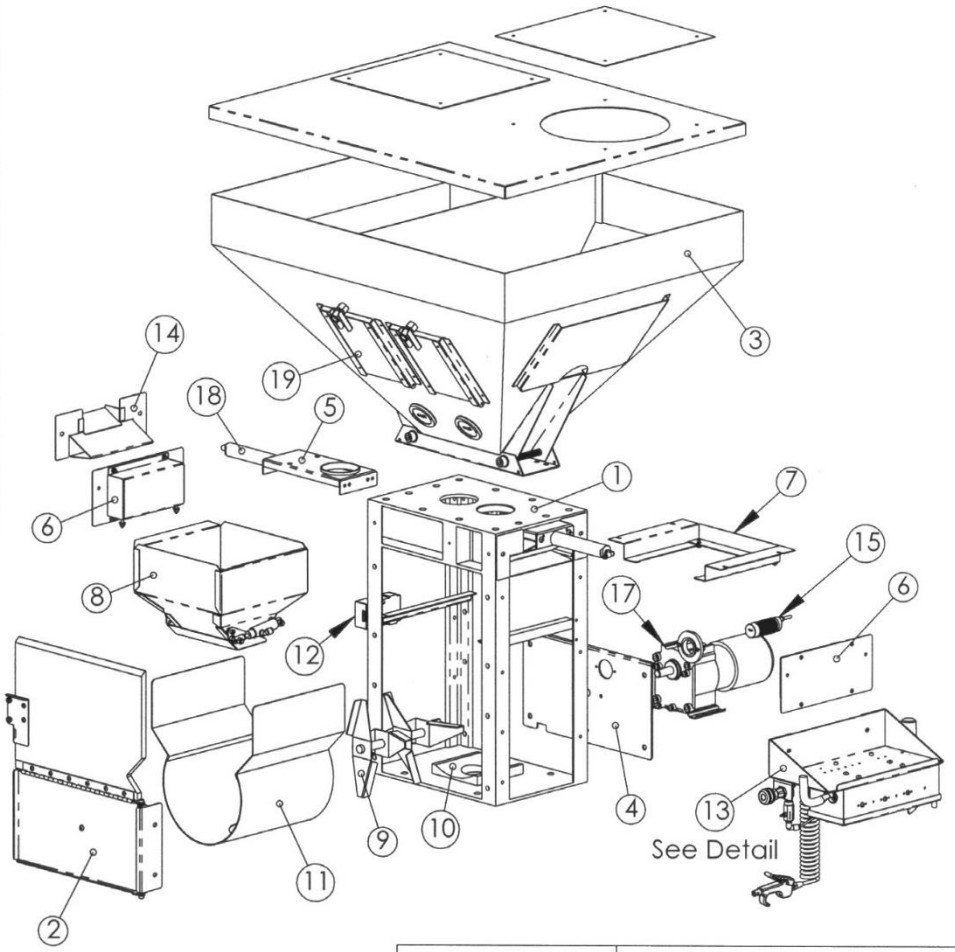
ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	501-1	Frame Assembly-140
2	1	as505-1	Hopper Assembly-140
3	1	alc-1	Load Cell Assembly-140
4	1	as05-1	Weigh Bin Assembly-140
5	1	514-1A	Mix Motor Plate-140
6	1	ncR-S87	Mix Motor Plate-140
7	1	525-1w	Mix Blade Weldment-140
8	1	428	Mix Chamber Saddle-140
9	1	517-1	Mix Chamber-140
10	1	esle	Safety Interlock Switch
11	1	329	Mount-18mm Proximity Sensor
12	1	asps-02	Proximity Sensor
14	1	as06-7	Air Solenoid Set-7 valve
15	1	as539-1	Valve Assembly-140
16	1	as583-1	Front Door Assembly-140
17	1	nv24-7	Air Solenoid Set, 24V, 7 Valves
18	4	ncy1.5	Air Cylinder, 1½ Stroke, 1.06 Bore
19	4	as505-1W	WSB Hopper Window Assy-small
20	8	psa13	MPI Sight Glass

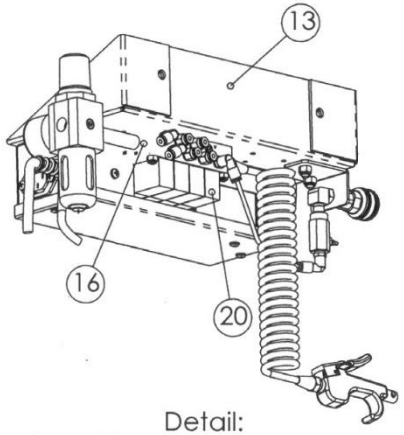
MAGUIRE

WSB 140
Exploded View

SIZE	DWG. NO.	SHEET
A	EXPL-140	1 OF 1
CAD FILE: 140 Exploded View		NAME Sheet1
		SCALE 1:2

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	501	WSB 220 Frame
2	1	as583-2	Front Door Assy-200
3	1	as504	Hopper Assy-220/420
4	1	as08	Mix Motor Assy-200
5	2	as52	Valve Assy-3" round
6	1	alc-2	Load Cell Assy-3 kg
7	1	as05-h	Weigh Bin Holder Assy-200/400
8	1	as05-2	Weigh Bin-200
9	1	525-2w	Mix Blade-200
10	1	518-2	Mix Chamber Saddle-200
11	1	517	Mix Chamber-200
12	1	esle	Safety Interlock
13	1	as06-4	Air Assy-4 valve
14	2	5g22s	Side Enclosure-220/420
15	1	asps-01	Level Sensor-30mm
16	1	nv24-4	Air Solenoid Set-4 valve
17	1	m6z820	Motor-60 rpm 1/6 hp PSC
18	2	ncy15	Air Cylinder-3" stroke, 1.06 bore
19	2	as505-1w	WSB Hopper Window-small
20	4	nv24-sol	24V Solenoid Valve, 1 segment





Detail:
Rear View of Controller Tray

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TOLERANCES ARE:
FRACTIONS ±1/32 | DECIMALS .XX ± .02 .XXX ± .010 | ANGLES ±1°

MATERIAL --
FINISH --
DO NOT SCALE DRAWING

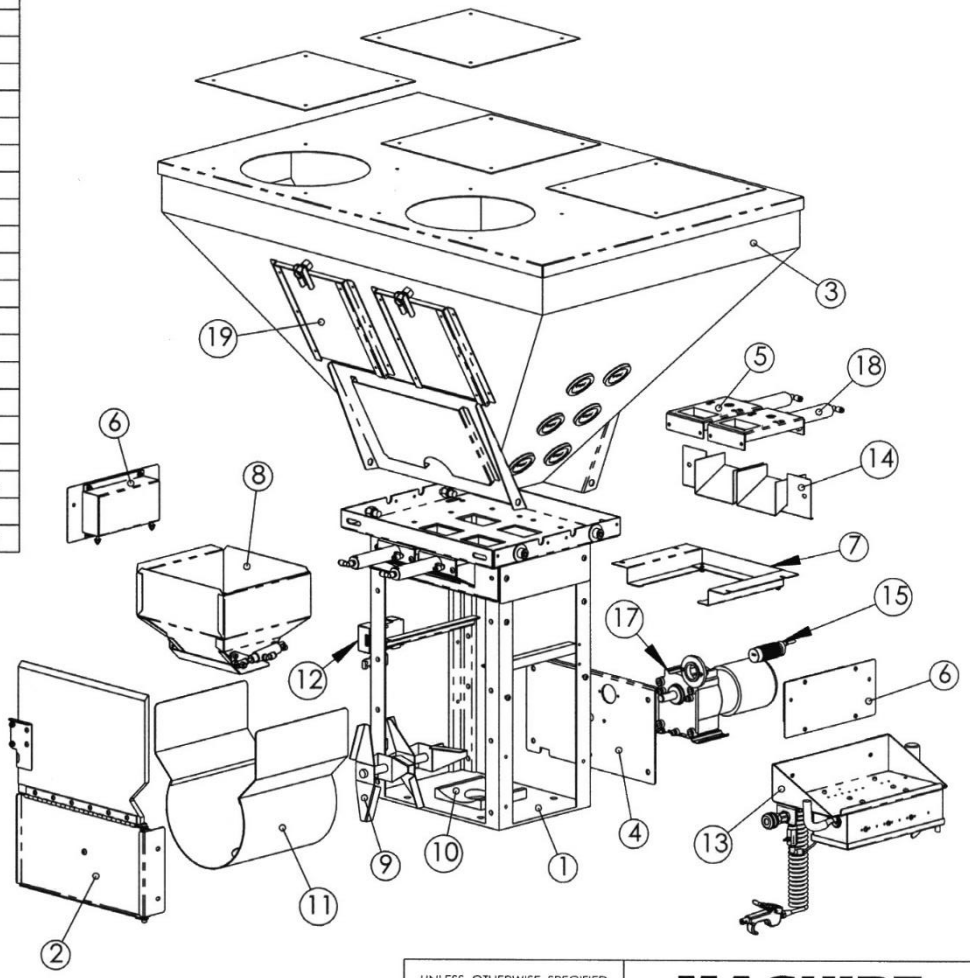
REV	ECN	DATE
-	-	-

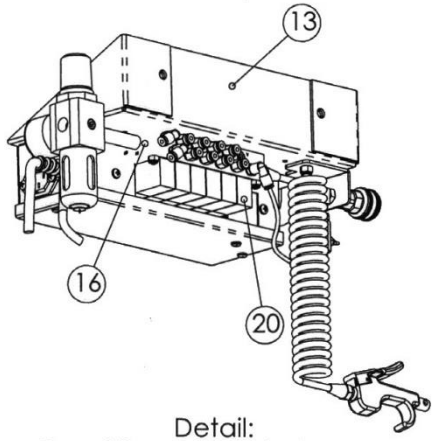
MAGUIRE

WSB 220
Exploded View

SIZE A | DWG. NO. EXPL-220 | SHEET 1 OF 1
CAD FILE: WSB-220 Exploded | SCALE 1:12 | NAME Sheet1

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	501-24	Frame-240
2	1	as583-2	Front Door Assy-200
3	1	as504-4	Hopper Assy-240/440
4	1	as08	Mix Motor Assy-200
5	4	as2X3	Valve Assy-2" X 3"
6	2	alc-2	Load Cell Assy-3 kg
7	1	as05-h	Weigh Bin Holder Assy-200/400
8	1	as05-2	Weigh Bin-200
9	1	525-2w	Mix Blade-200
10	1	518-2	Mix Chamber Saddle-200
11	1	517	Mix Chamber-200
12	1	esle	Safety Interlock
13	1	as06-6	Air Assembly-6 Valve
14	2	5G24F	Front/Back Cover-240/440
15	1	asps-01	Level Sensor-30mm
16	1	nv24-6	Air Solenoid Set-6 valve
17	1	m6z820	Motor-60 rpm 1/6 hp PSC
18	4	ncy2	Air Cylinder-2" stroke, 1.06 bore
19	4	as5560-W	WSB Hopper Window-large
20	6	nv24-sol	24V Solenoid Valve, 1 segment





Detail:
Rear View of Controller Tray

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:

FRACTIONS	DECIMALS	ANGLES
±1/32	.XX ± .02 .XXX ± .010	±1°

MATERIAL --

FINISH --

REV	ECN	DATE
-	-	-

DO NOT SCALE DRAWING

MAGUIRE

WSB 240
Exploded View

SIZE	DWG. NO.	SHEET
A	EXPL-240	1 OF 1
CAD FILE: WSB-240 Exploded		NAME Sheet1
		SCALE 1:2

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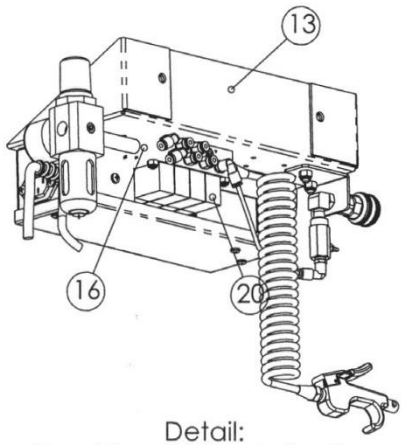
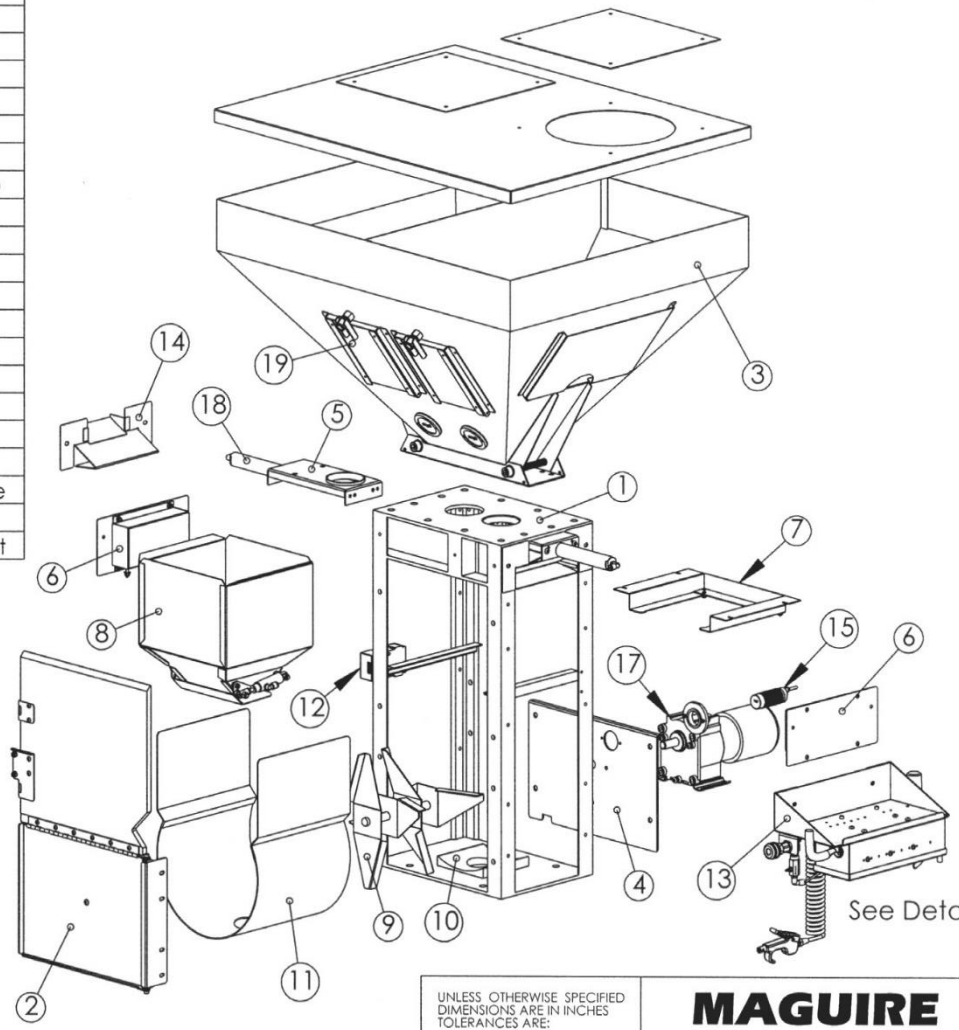
ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	501-420	WSB 420 Frame
2	1	as583-4	Front Door Assy-400
3	1	as504	Hopper Assy-220/420
4	1	as08-4	Mix Motor Assy-400
5	2	as52	Valve Assy-3" round
6	2	alc-4	Load Cell Assy-3 kg
7	1	as05-h	Weigh Bin Holder Assy-200/400
8	1	as05-4	Weigh Bin-400
9	1	525-4w	Mix Blade-400
10	1	518-4	Mix Chamber Saddle-400
11	1	517-4	Mix Chamber-400
12	1	esle	Safety Interlock
13	1	as06-4	WSB Tray & Air Assy-4 valve
14	2	5g22s	Side Enclosure-220/420
15	1	asps-01	Level Sensor-30mm
16	1	nv24-4	Air Solenoid Set-4 valve
17	1	m6z818	Motor-30 rpm 1/6 hp PSC
18	2	ncy15	Air Cylinder-3" stroke, 1.06 bore
19	2	as505-1w	WSB Hopper Window-small
20	4	nv24-sol	24V Solenoid Valve, 1 segment



Detail:
Rear View of Controller Tray



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
FRACTIONS ±1/32 DECIMALS .XX ± .02 .XXX ± .010 ANGLES ±1°

MAGUIRE

WSB 420
Exploded View

REV	ECN	DATE
-	-	-

MATERIAL --
FINISH --
DO NOT SCALE DRAWING

SIZE A | DWG. NO. EXPL-420 | SHEET 1 OF 1
NAME Sheet1
CAD FILE: WSB-420 Exploded | SCALE 1:12

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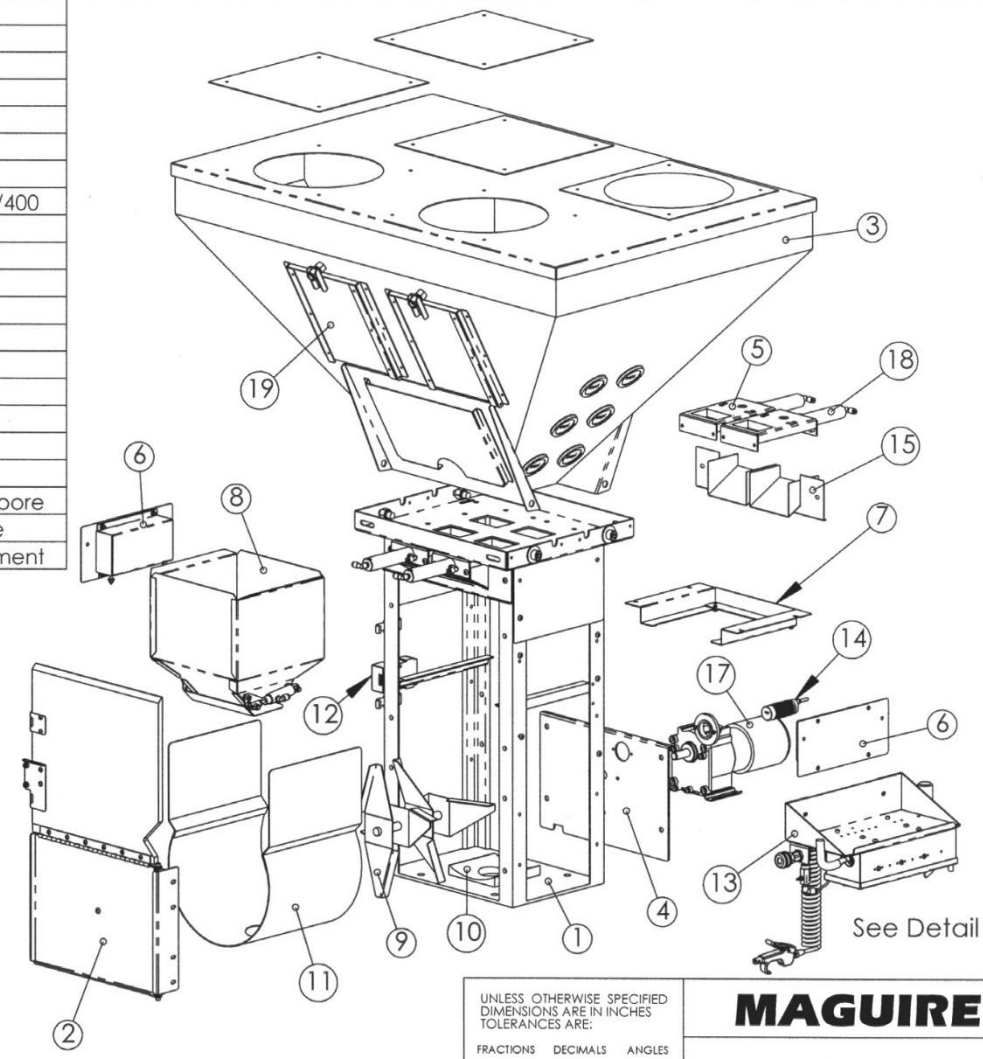
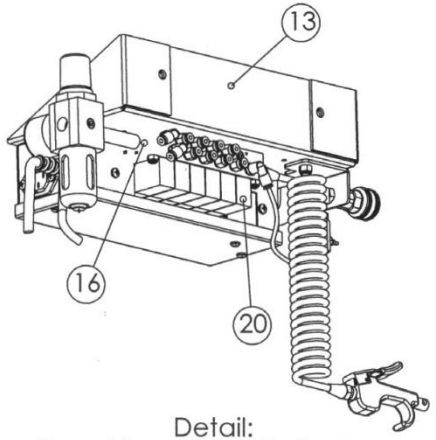
ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	501-44	Frame-440
2	1	as583-1	Front Door Assy-400
3	1	as504-4	Hopper Assy-240/440
4	1	as08-4	Mix Motor Assy-400
5	4	as2X3	Valve Assy-2" X 3"
6	1	alc-4	Load Cell Assy-10 kg
7	1	as05-h	Weigh Bin Holder Assy-200/400
8	1	as05-4	Weigh Bin Assy-400
9	1	525-4w	Mix Blade-400
10	1	518-4	Mix Chamber Saddle-400
11	1	517-4	Mix Chamber-400
12	1	esle	Safety Interlock
13	1	as06-6	Air Assembly-6 Valve
14	1	asps-01	Level Sensor-30mm
15	2	5G24F	Front/Back Cover-240/440
16	1	nv24-6	Air Solenoid Set-6 Valve
17	1	m6z818	Motor-30 rpm 1/6 hp PSC
18	4	ncy2	Air Cylinder-2" stroke, 1.06 bore
19	4	as5560-W	WSB Hopper Window-large
20	6	nv24-sol	24V Solenoid Valve, 1 segment





Detail:
Rear View of Controller Tray

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:

FRACTIONS	DECIMALS	ANGLES
±1/32	.XX ± .02 .XXX ± .010	±1°

MAGUIRE

WSB 440
Exploded View

REV	ECN	DATE
-	-	-

MATERIAL --

FINISH --

DO NOT SCALE DRAWING

SIZE A | DWG. NO. EXPL-440 | SHEET 1 OF 1

CAD FILE: WSB-440 Exploded | NAME Sheet1 | SCALE 1:2

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ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	5500	Frame-WSB 9
2	1	as5560	Hopper Assy-WSB 9
3	1	as5517	Mix Chamber AssyWSB 9
4	1	as508 & as5590-M	Mixer Assy-WSB 9
5	2	as3X6	Slide Valve Assy-3 X 6
6	2	as2X3	Slide Valve Assy-2 X 3
7	1	as5581	Front Window Assy-WSB 9
8	1	as5580	Side Window Assy-WSB 9
9	2	5G94S	Enclosure-WSB 9 Side
10	1	as05-9	Weigh Bin Assy-WSB 9
11	1	5G94B	Enclosure-WSB 9 Back
12	1	5G94F	Enclosure-WSB 9 Front
13	1	518-9	Mix Chamber Saddle-WSB 9/18
14	1	asps-01	Level Sensor Assy
15	1	595-9SB	Enclosure-WSB 9 Lower Side
16	2	alc-9	Load Cell Assy-10 kg
17	1	as5506-h	Weigh Bin Holder Assy-WSB 9/18
18	1	m6z403 [mC020P]	Mix Motor-9 1/2 hp [European 50 Hz]
19	2	ncy15	Air Cylinder-3" stroke, 1.06 bore
20	2	ncy2	Air Cylinder-2" stroke, 1.06 bore
21	1	525-9w	Mix Blade weldment
22	1	as5565 /66 /68	Motor Starter Assy-9, 110V / 230V / 400V
23	1	as06-6	Air Assembly-6 Valve
24	1	nv24-6	Air Solenoid Set-6 Valve
25	6	nv24-sol	24V Solenoid Valve segment
26	1	es1h392 /393 /403	Manual Motor Starter-110/ 230/ 400V
27	1	ehr7456 / 05	Solid State Relay-110 / 230
28	1	es4b862 & 6B145	Motor Starter & Overload Relay-400V

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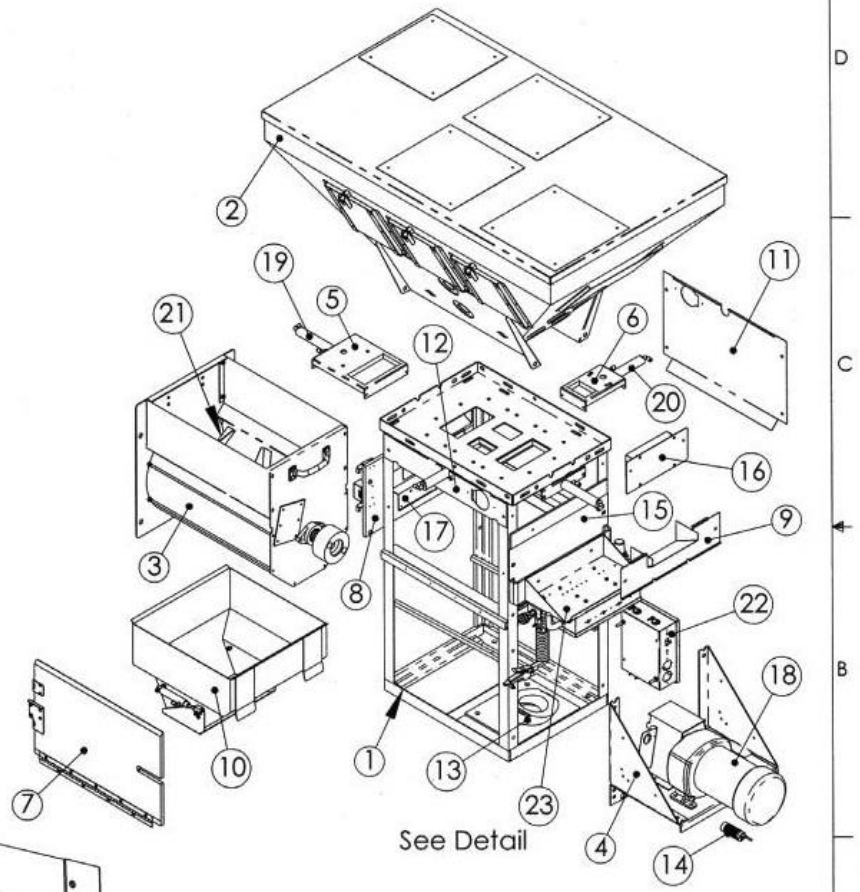
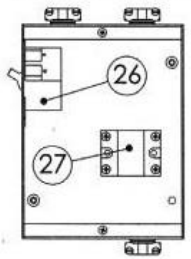
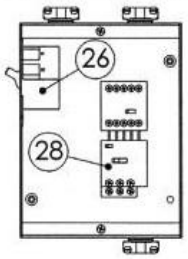
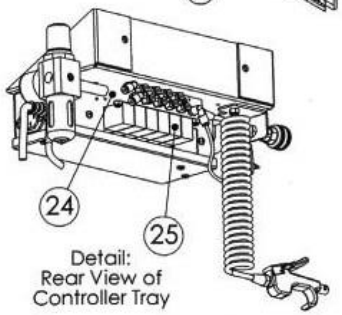




as5565 / 5566
WSB 9 Motor Starter Assy
110V / 230V



as5568
WSB 9 Motor Starter Assy
400V



Detail:
Rear View of
Controller Tray

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:

FRACTIONS	DECIMALS	ANGLES
±1/32	.XX ± .02 .XXX ± .010	±1°

MATERIAL —

FINISH —

DO NOT SCALE DRAWING

MAGUIRE

WSB 940
Exploded View

SIZE	DWG. NO.	SHEET
A	EXPL-940	1 OF 1

NAME Sheet1
CAD FILE: WSB-940 Exploded
SCALE 1:2

ITEM #	QTY	PART #	DESCRIPTION
1	1	5500-18	Frame-WSB 18
2	1	as5561	Hopper Assy-WSB 18
3	1	as5518 / 19	Mix Chamber Assy-WSB 18 Lower/Upper
4	2	as508-18	Mixer Assy-WSB 18
5	2	as3X6	Slide Valve Assy-3 X 6
6	2	as2X3	Slide Valve Assy-2 X 3
7	1	as5584	Front Window Assy-WSB 18
8	1	as5581	Side Window Assy-WSB 18
9	2	5G184S	Enclosure-WSB 18 Side
10	1	as05-18	Weigh Bin Assy-WSB 18
11	1	5G184B	Enclosure-WSB 18 Back
12	1	5G184F	Enclosure- WSB 18 Front
13	1	518-9	Mix Chamber Saddle-WSB 9/18
14	1	asps-01	Level Sensor Assy
15	1	595-9SB	Enclosure-WSB 9/18 Lower Side
16	2	alc-18	Load Cell Assy-20 kg
17	1	as5506-h	Weigh Bin Holder Assy-WSB 9/18
18a	1	m6z405	Mix Motor- 3-Phase 220/440
18b	1	m8y979	Mix Motor- 230V Single Phase
18c	1	mC020P	Mix Motor- Euro 50 Hz 230/402
19	2	ncy15	Air Cylinder-3" stroke, 1.06 bore
20	2	ncy2	Air Cylinder-2" stroke, 1.06 bore
21	1	525-9w	Mix Blade weldment
22	1	as5565 /66 /68	Motor Starter Assy-9, 110V/230V/400V
23	1	as06-6	Air Assembly-6 Valve
24	1	nv24-6	Air Solenoid Set-6 Valve
25	6	nv24-sol	24V Solenoid Valve segment
26	1	es1h392 /393 /403	Manual Motor Starter-110/230/400V
27	1	ehr7456 / 05	Solid State Relay-110/230
28	1	es4b862 & 6B145	Motor Starter & Overload Relay-400V

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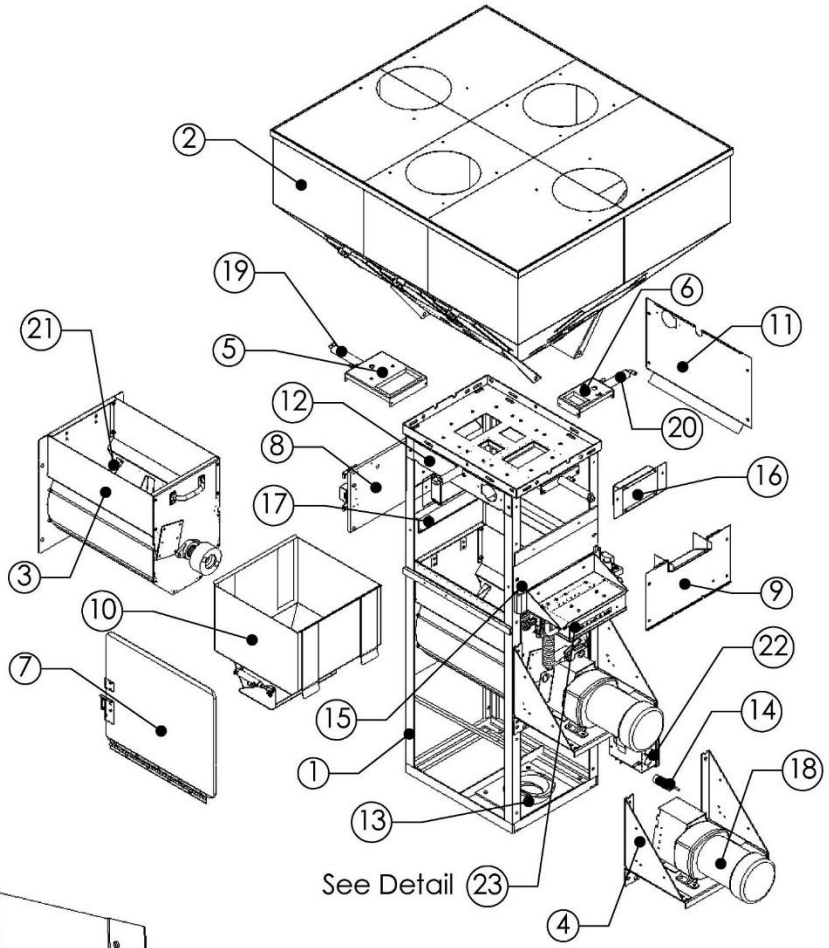
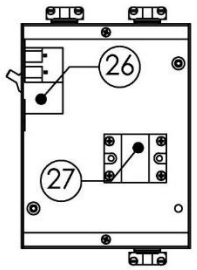
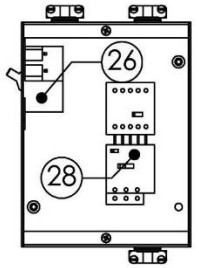
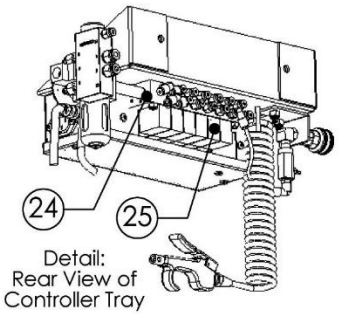




as5565 / 5566
WSB 9 Motor Starter Assy
110V / 230V



as5568
WSB 9 Motor Starter Assy
400V



Detail:
Rear View of
Controller Tray

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:

FRACTIONS	DECIMALS	ANGLES
±1/32	.XX ± .02 .XXX ± .010	±1°

MATERIAL --

FINISH --

DO NOT SCALE DRAWING

MAGUIRE

WSB 1840
Exploded View

SIZE	DWG. NO.	SHEET
A	EXPL-1840	1 OF 1
		NAME Sheet1
CAD FILE: WSB-1840 Exploded-US		SCALE 1:2

ITEM #	QTY.	PART #	DESCRIPTION
1	1	5500-18	Frame-WSB 18
2	1	as5561	Hopper Assy-WSB 18
3	1	as5518 / 19	Mix Chamber Assy-WSB 18 Lower/Upper
4	2	as508-18	Mixer Assy-WSB 18
5	2	as3X6	Slide Valve Assy-3 X 6
6	2	as2X3	Slide Valve Assy-2 X 3
7	1	as5584	Front Window Assy-WSB 18
8	1	as5581	Side Window Assy-WSB 18
9	2	5G184S	Enclosure-WSB 18 Side
10	1	as05-18	Weigh Bin Assy-WSB 18
11	1	5G184B	Enclosure-WSB 18 Back
12	1	5G184F	Enclosure- WSB 18 Front
13	1	518-9	Mix Chamber Saddle-WSB 9/18
14	1	asps-01	Level Sensor Assy
15	1	595-9SB	Enclosure-WSB 9/18 Lower Side
16	2	alc-18	Load Cell Assy-20 kg
17	1	as5506-h	Weigh Bin Holder Assy-WSB 9/18
18	1	m6z403 [mC020P]	Mix Motor-9 1/2 hp [European 50 Hz]
19	2	ncy15	Air Cylinder-3" stroke, 1.06 bore
20	2	ncy2	Air Cylinder-2" stroke, 1.06 bore
21	1	525-9w	Mix Blade weldment
22	1	as5565 /66 /68	Motor Starter Assy-9, 110V/230V/400V
23	1	as06-6	Air Assembly-6 Valve
24	1	nv24-6	Air Solenoid Set-6 Valve
25	6	nv24-sol	24V Solenoid Valve segment
26	1	es1h392 /393 /403	Manual Motor Starter-110/230/400V
27	1	ehr7456 / 05	Solid State Relay-110/230
28	1	es4b862 & 6B145	Motor Starter & Overload Relay-400V

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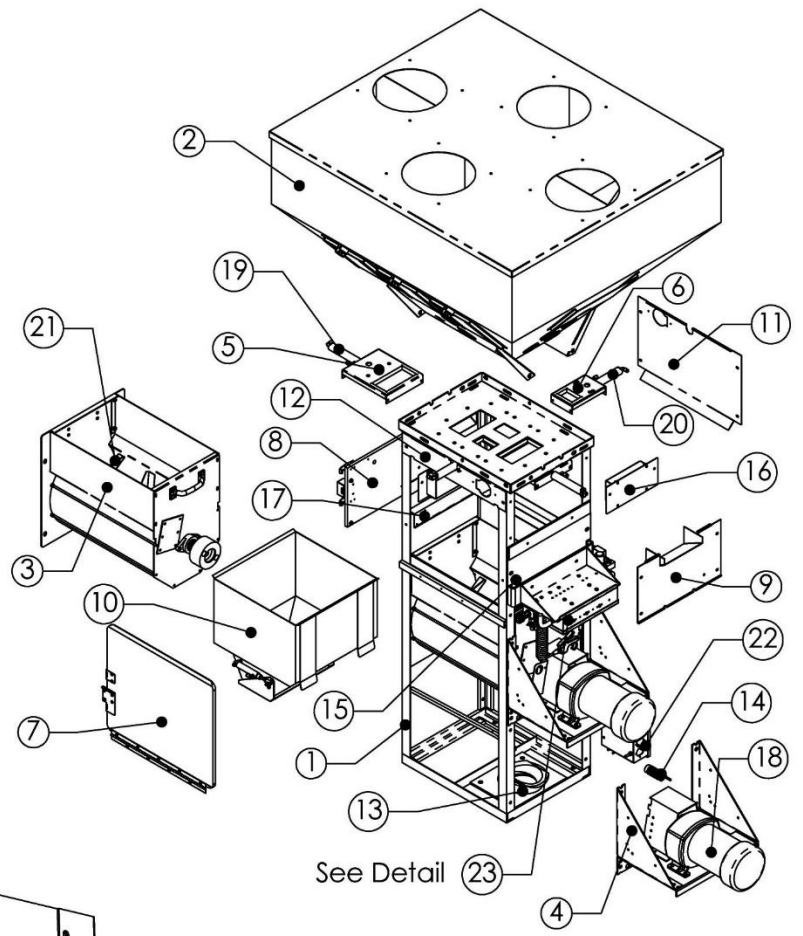
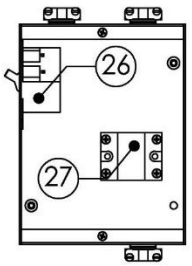
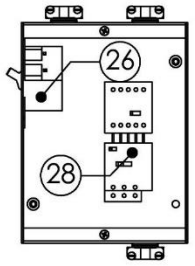
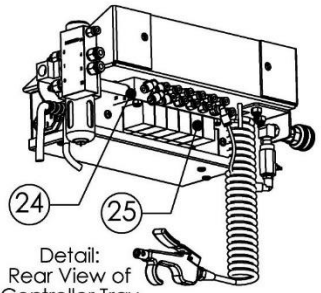




as5565 / 5566
WSB 9 Motor Starter Assy
110V / 230V



as5568
WSB 9 Motor Starter Assy
400V



Detail:
Rear View of
Controller Tray

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:

FRACTIONS	DECIMALS	ANGLES
±1/32	.XX ± .02 .XXX ± .010	±1°

MATERIAL --

FINISH --

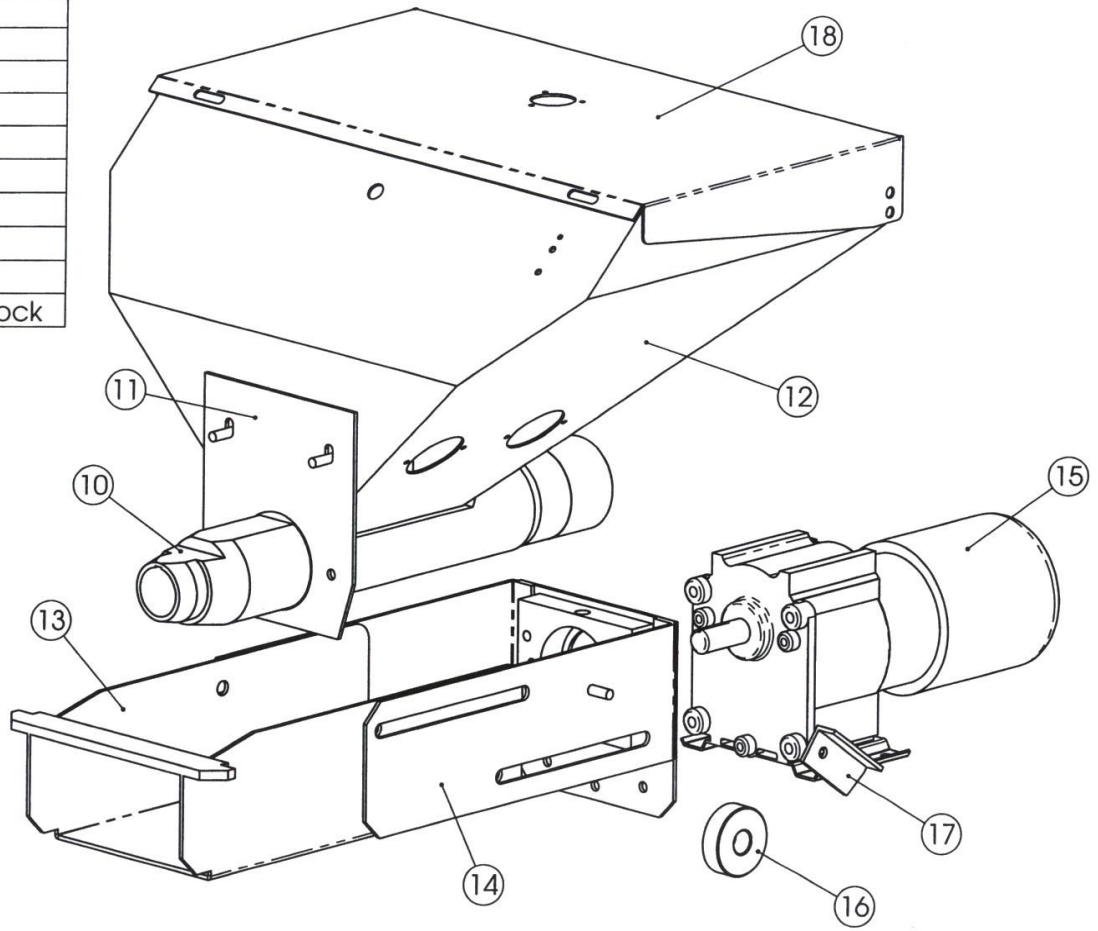
DO NOT SCALE DRAWING

MAGUIRE

WSB 1840 Exploded View

SIZE	DWG. NO.	SHEET
A	EXPL-1840	1 OF 1
		NAME Sheet1
CAD FILE: WSB-1840 Exploded-Euro		SCALE 1:2

ITEM NO.	QTY.	PART NO. / DESCRIPTION
10	1	1808-8 Auger Tube
11	1	1805 Front Plate
12	1	1803 Hopper
13	1	1801 Support Channel
14	1	1802 Motor Support
15	1	Mix Motor-2
16	2	1814 Stop Wheel
17	2	1813 Flip Latch
18	1	1818-2 Lid
19	1	1812 Auger Alignment Block



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:

FRACTIONS	DECIMALS	ANGLES
±1/32	.XX ± .02 .XXX ± .010	±1°

MATERIAL: XXX

PAINT / FINISH: XXX

DO NOT SCALE DRAWING

REV	ECN	DATE
-	-	-

MAGUIRE

awf

WSB Additive Feeder

SIZE A | DWG. NO. 000612 | SHEET 1 OF 1

NAME Sheet1

CAD FILE: awf | SCALE 1:12

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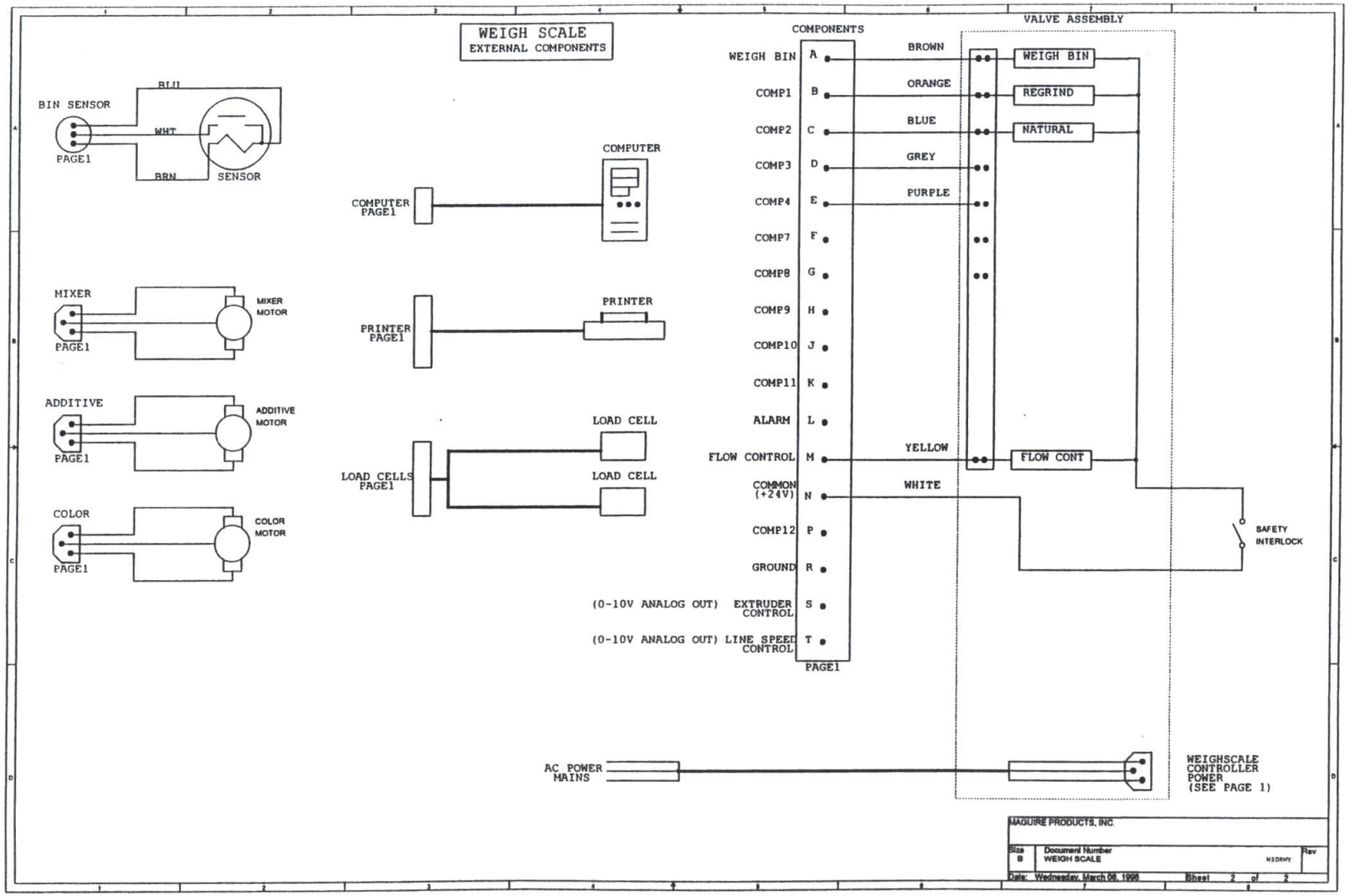
WEIGH SCALE
EXTERNAL COMPONENTS
BIN SENSOR
BLU
WHT
BRN
SENSOR
PAGE1
COMPUTER
COMPUTER PAGE1
MIXER
MIXER MOTOR
PAGE1
PRINTER
PRINTER PAGE1
ADDITIVE
ADDITIVE MOTOR
PAGE1
LOAD CELL
LOAD CELLS PAGE1
LOAD CELL
COLOR
COLOR MOTOR
PAGE1
COMPONENTS
WEIGH BIN A
COMP1 B
COMP2 C
COMP3 D
COMP4 E
COMP7 F
COMP8 G
COMP9 H
COMP10 J
COMP11 K
ALARM L
FLOW CONTROL M
COMMON (+24V) N
COMP12 P
GROUND R
(0-10V ANALOG OUT) EXTRUDER CONTROL S
(0-10V ANALOG OUT) LINE SPEED CONTROL T
PAGE1
VALVE ASSEMBLY
BROWN
ORANGE
BLUE
GREY
PURPLE
YELLOW
WHITE
WEIGH BIN
REGRIND
NATURAL
FLOW CONT
SAFETY INTERLOCK
AC POWER MAINS
WEIGHSCALE CONTROLLER POWER (SEE PAGE 1)
MAGUIRE PRODUCTS, INC.
Size B
Document Number WEIGH SCALE
Rev
Date: Wednesday, March 06, 1996
Sheet 2 of 2

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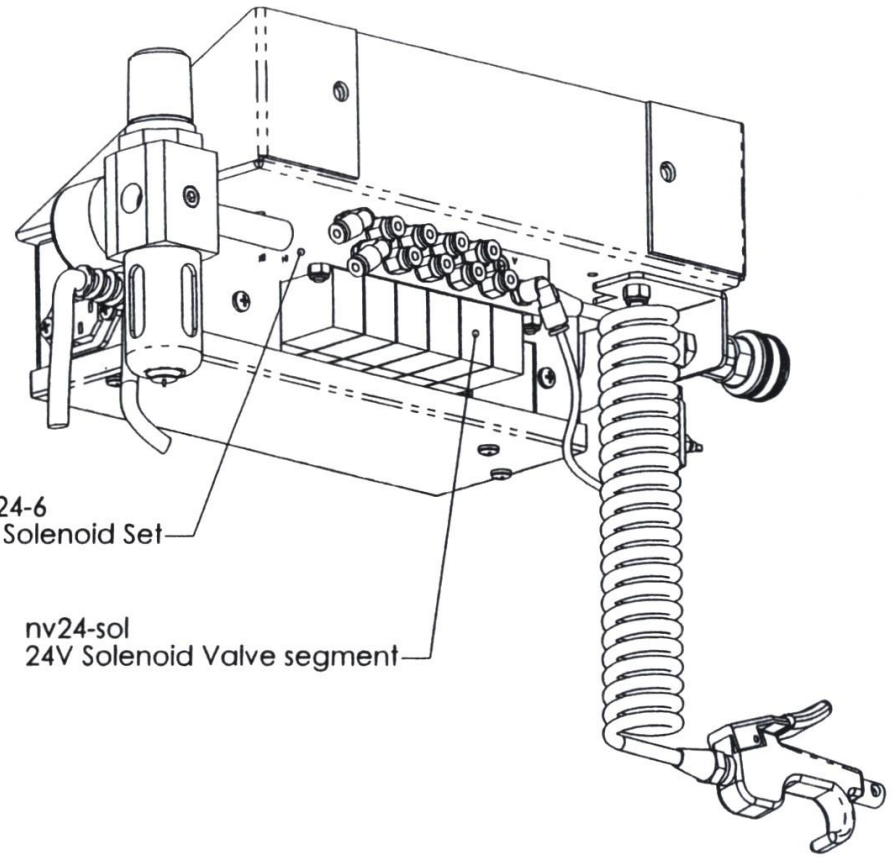


UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:

FRACTIONS	DECIMALS	ANGLES
±1/32	.XX ± .02 .XXX ± .010	±1°

MATERIAL --

FINISH --

DO NOT SCALE DRAWING

REV	ECN	DATE
-	-	-

MAGUIRE

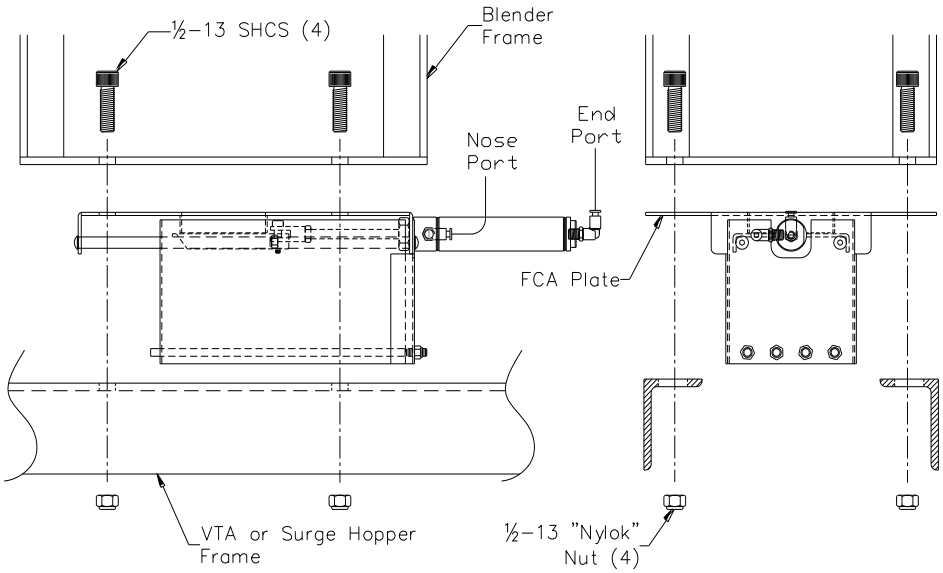
WSB Tray & Air Assy
6 Valve shown

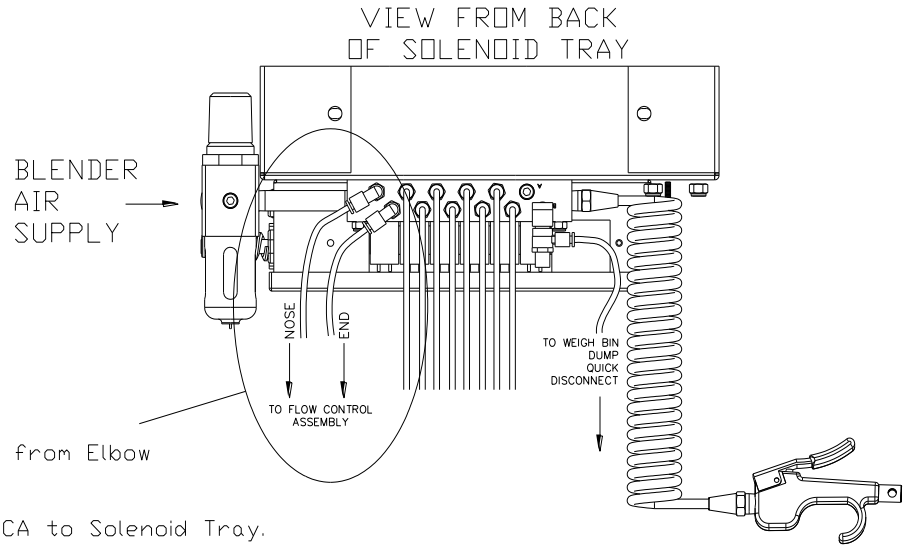
SIZE A | DWG. NO. as06-6 | SHEET 1 OF 1

NAME Sheet1

CAD FILE: Draw1 | SCALE 1:2

FCA INSTALLATION DIAGRAM





Remove Orange Plugs from Elbow Fittings.

Plumb Airlines from FCA to Solenoid Tray.

To Check that FCA is Plumbed correctly: With air supply connected, turn blender on and then off. When power is off, Valve should close. Normal power-off position for the FCA Valve is closed.

Controller is already set up to run FCA and does not need to be modified.

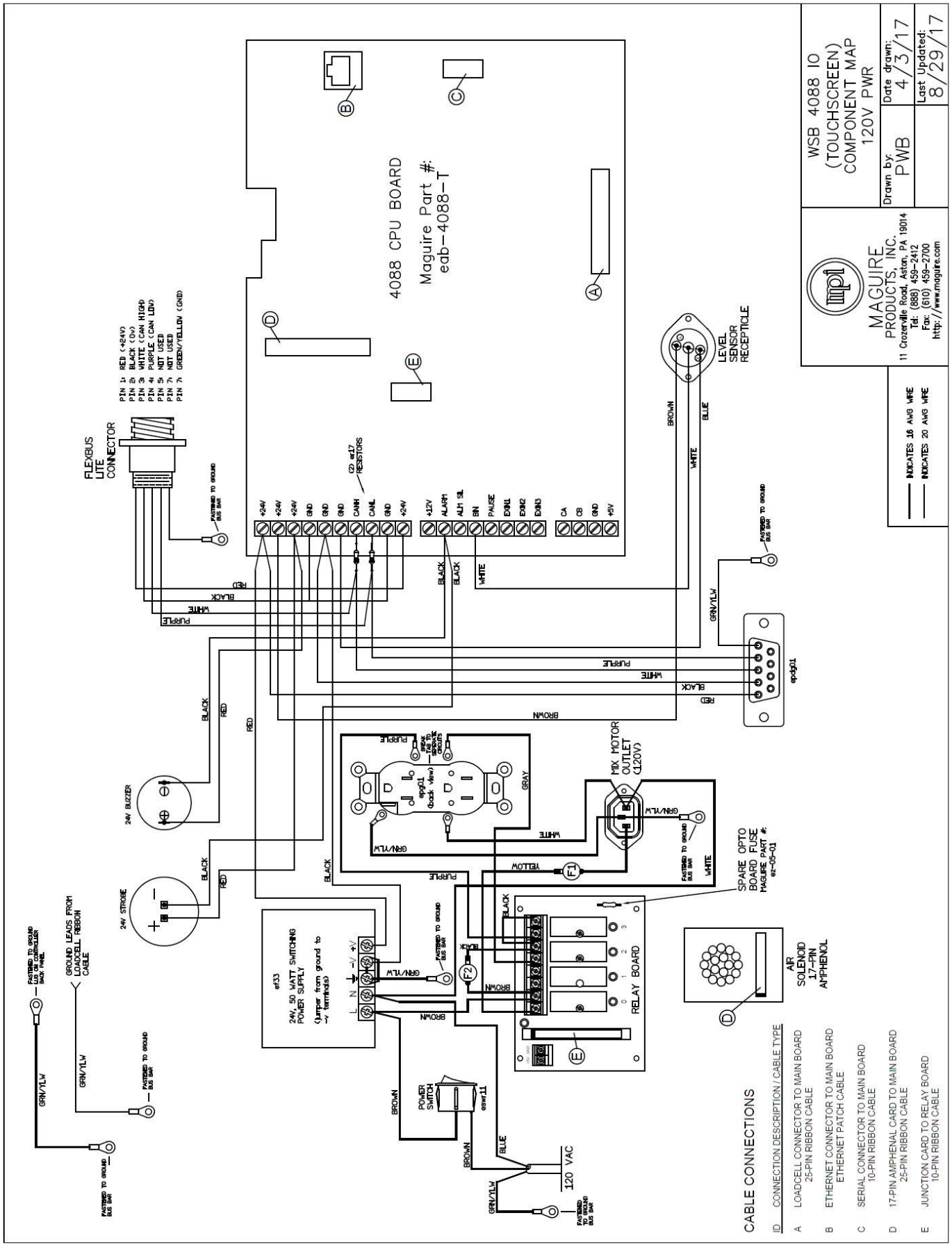
Maguire Products Inc.
Aston, PA 19014 USA
(610) 459-4300
FAX (610) 459-2700

FCA INSTALLATION DIAGRAM

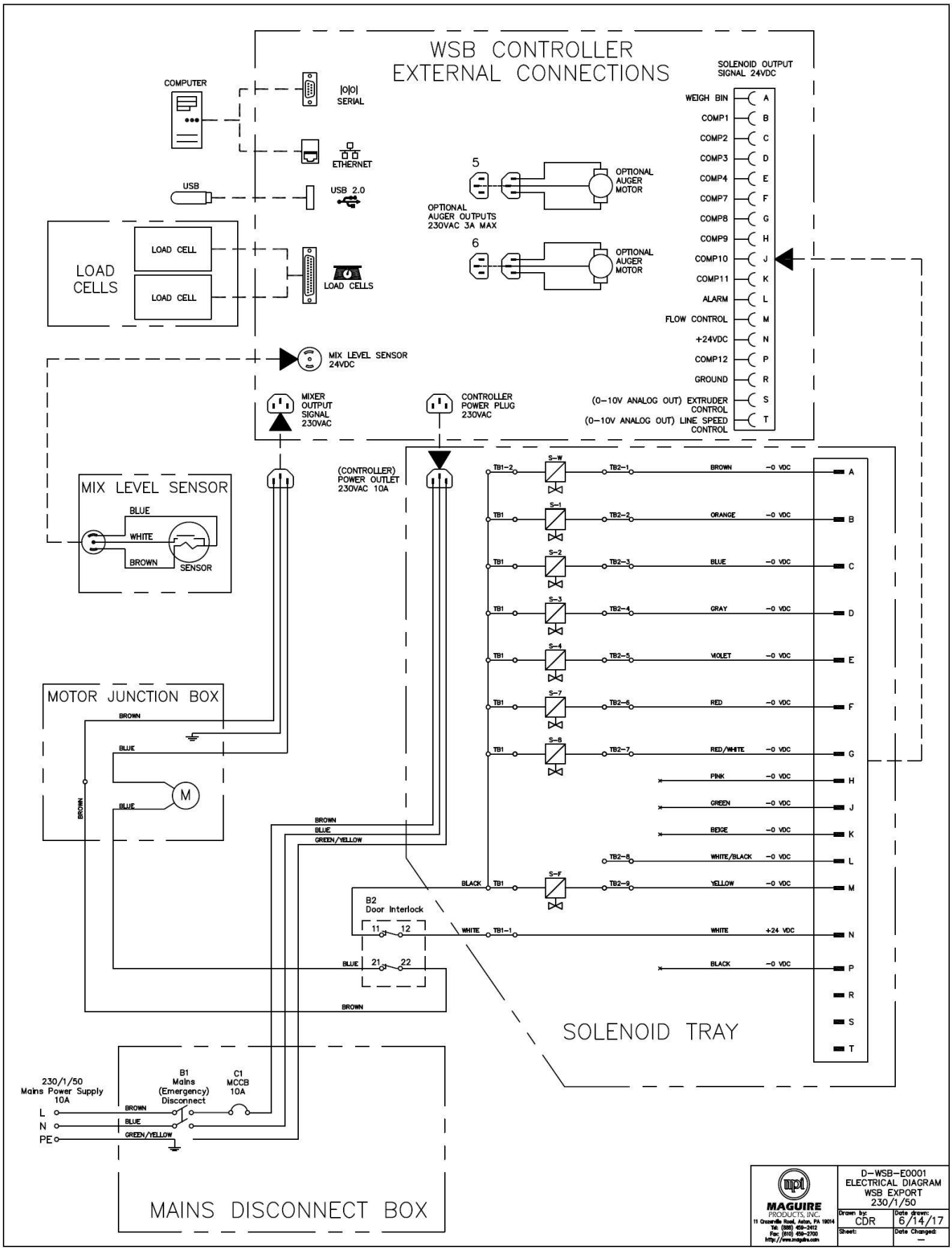
DRAWN BY:

DATE DRAWN: 4/23/04

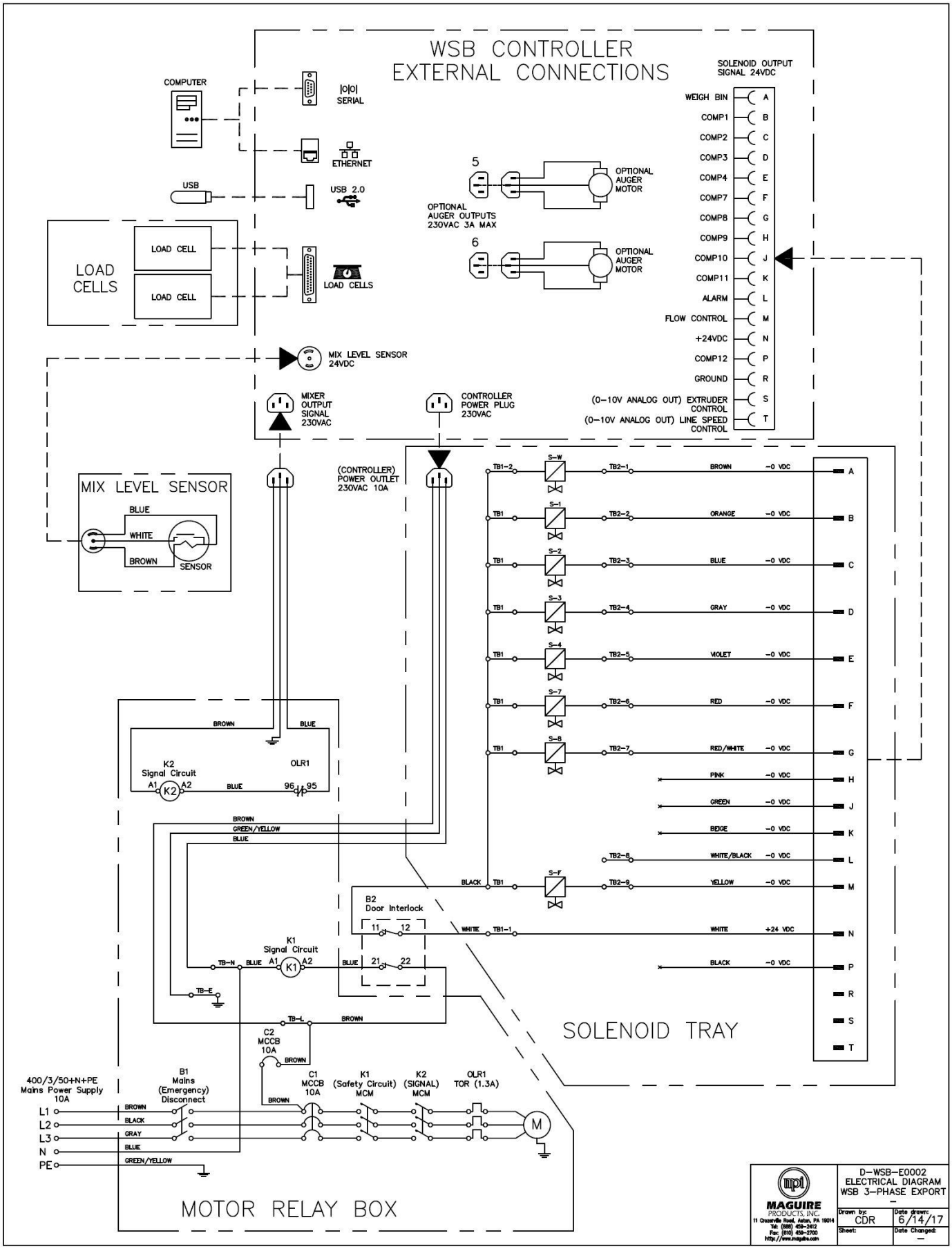
WSB 4088 IO wiring diagram 120V



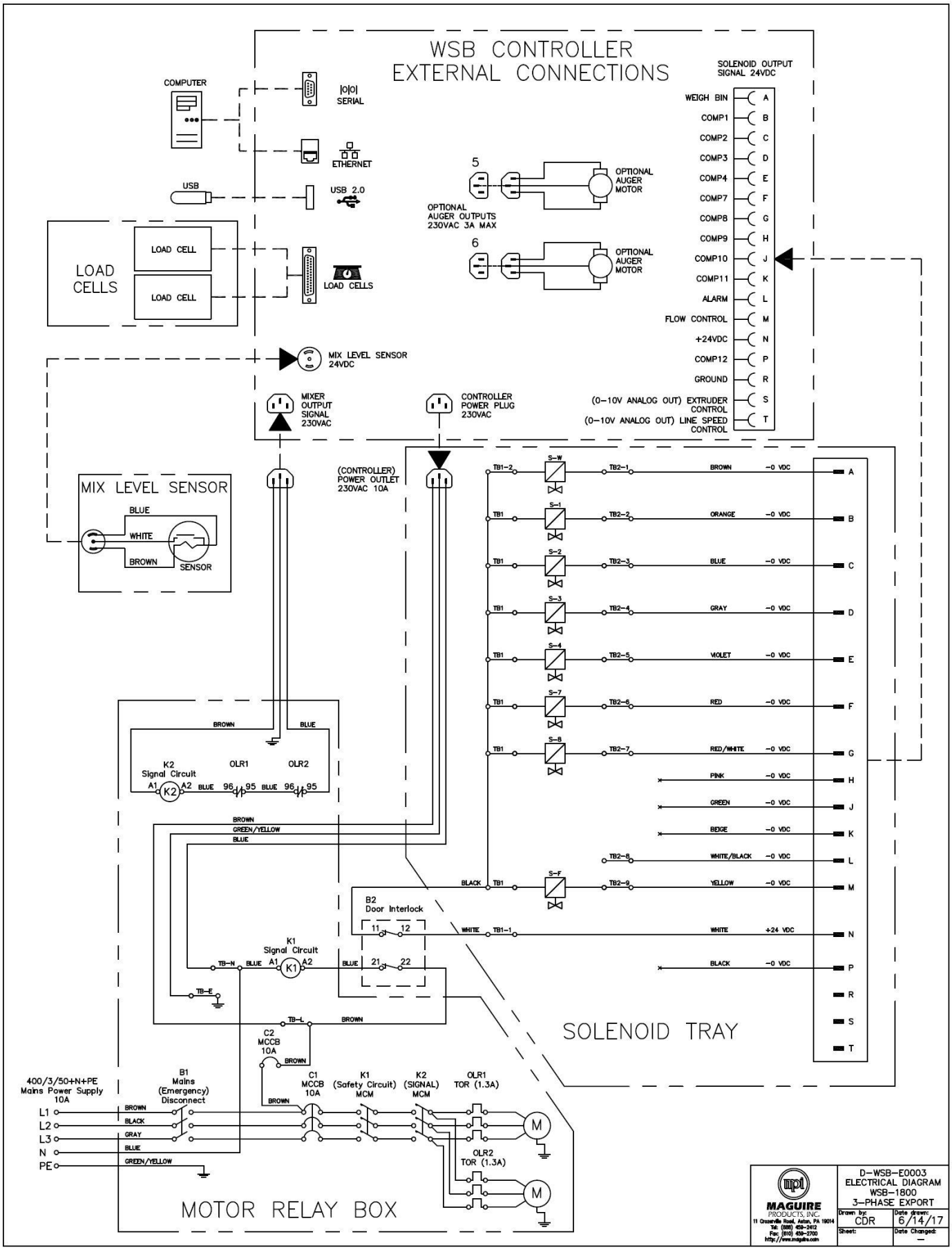
D-WSB-E0001 - Electrical Diagram, WSB Export, Single Phase



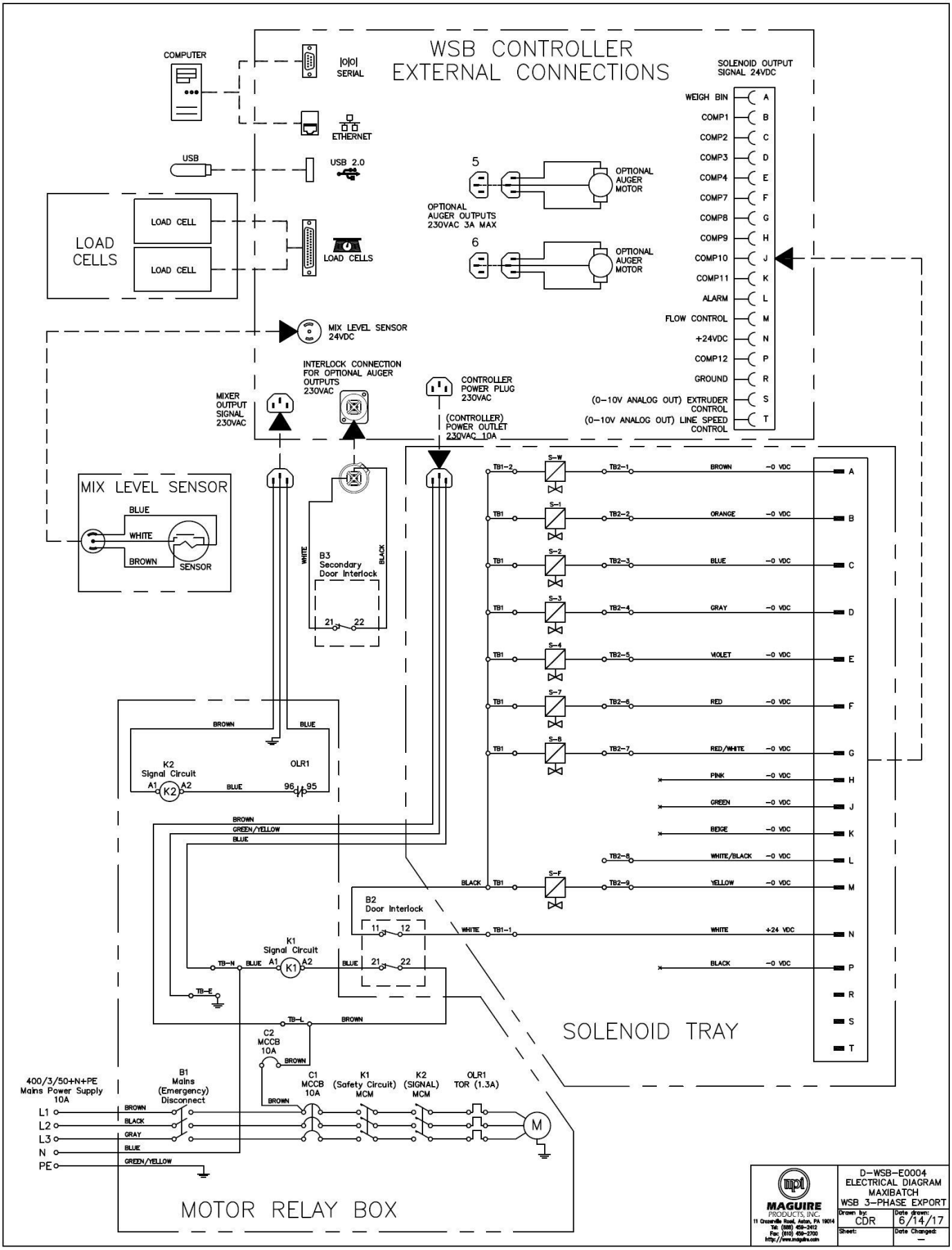
D-WSB-E0002 - Electrical Diagram, WSB Export, 3-Phase



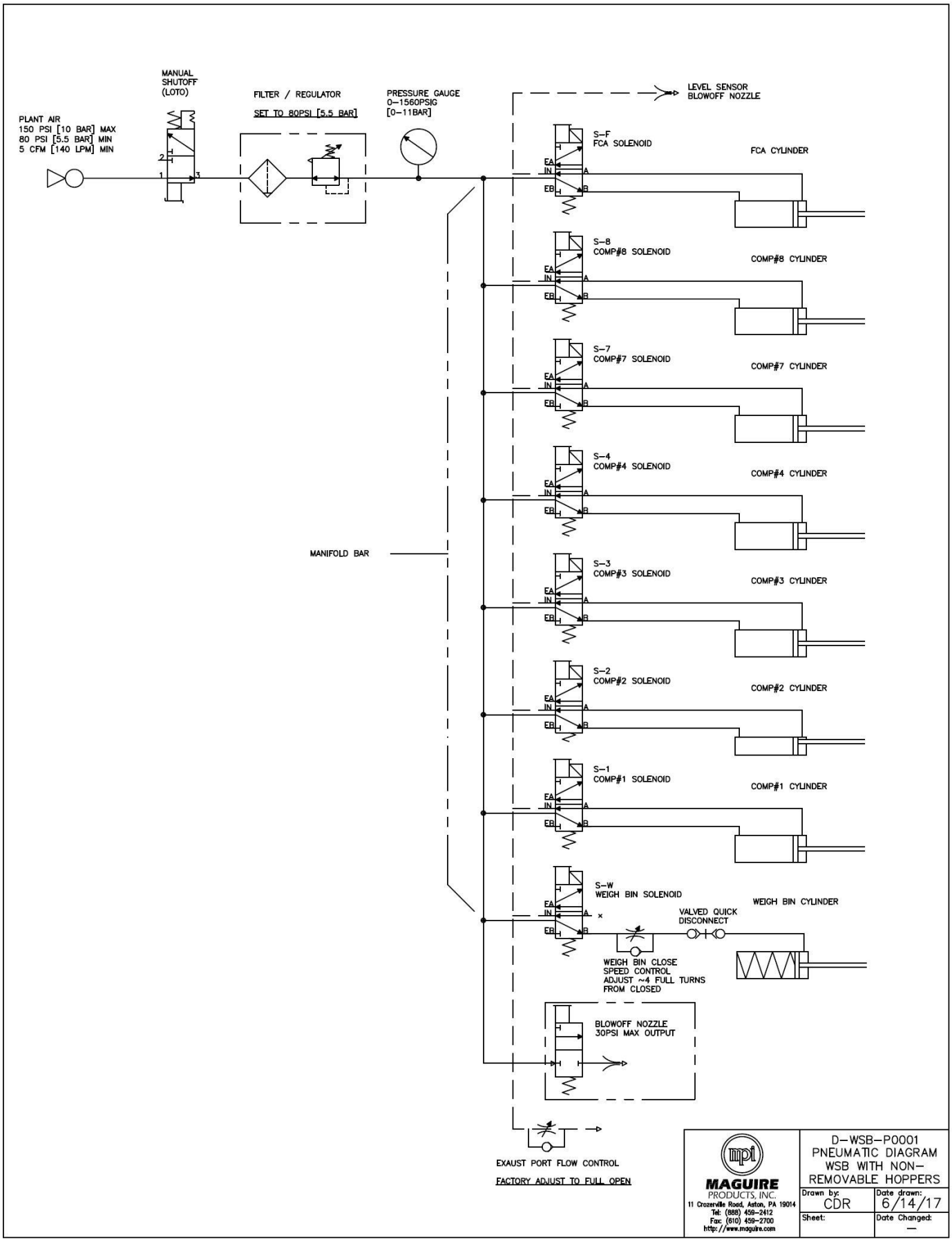
D-WSB-E0003 - Electrical Diagram, WSB Export, 1800 3-Phase



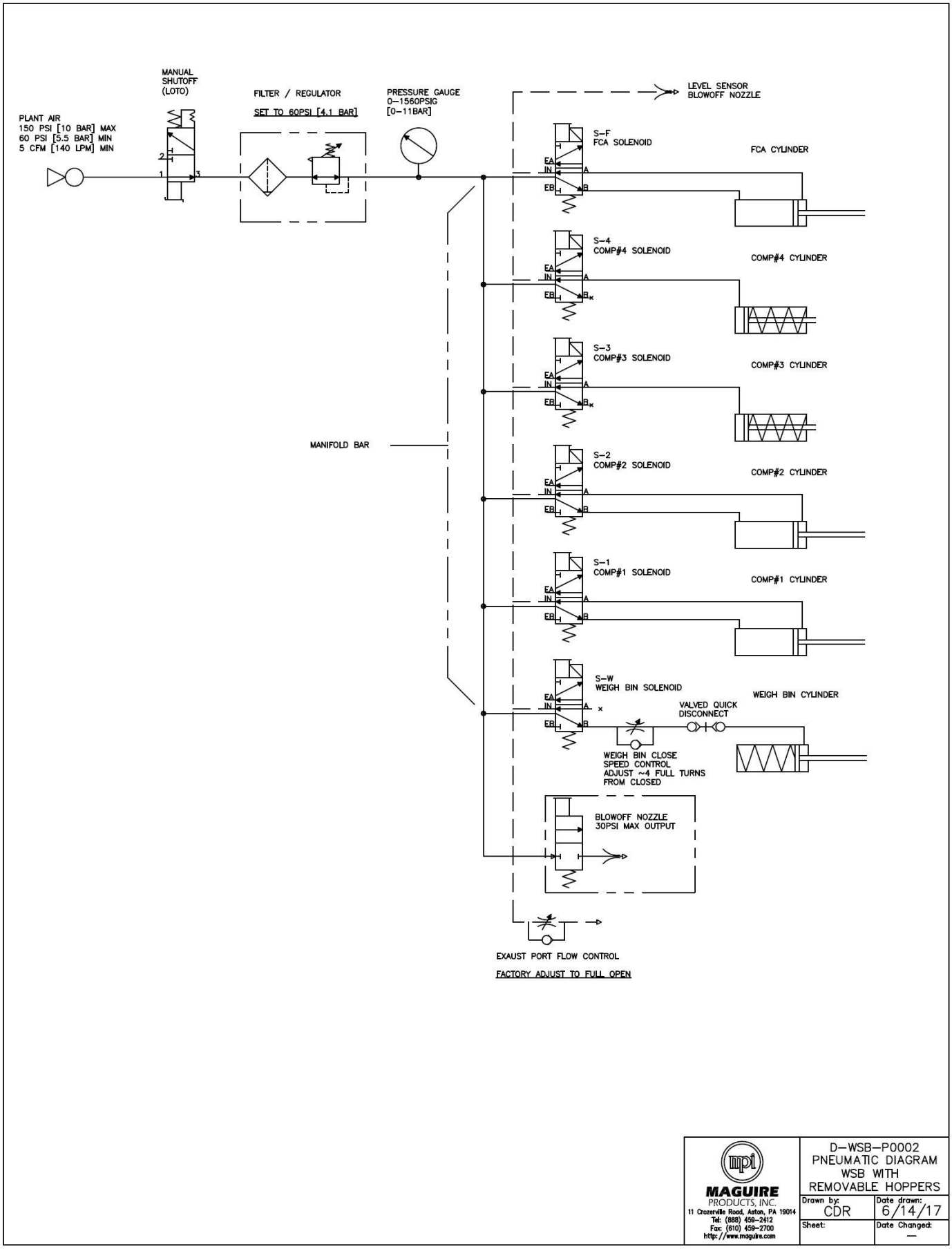
D-WSB-E0004 - Electrical Diagram, WSB Export, Maxibatch



D-WSB-P0001 - Pneumatic Diagram, WSB, with Non-Removable Hoppers

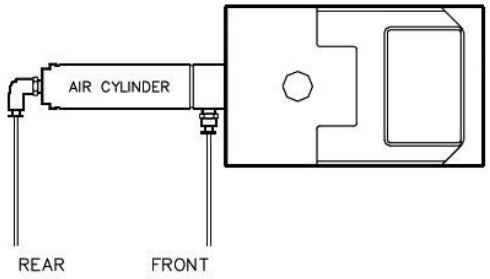


D-WSB-P0002 - Pneumatic Diagram, WSB, with Removable Hoppers

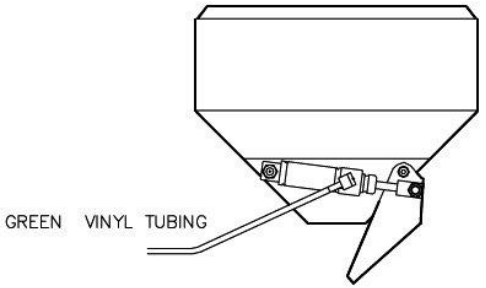


PNEUMATIC ARRANGEMENT
WSB Models with Electric Mixer

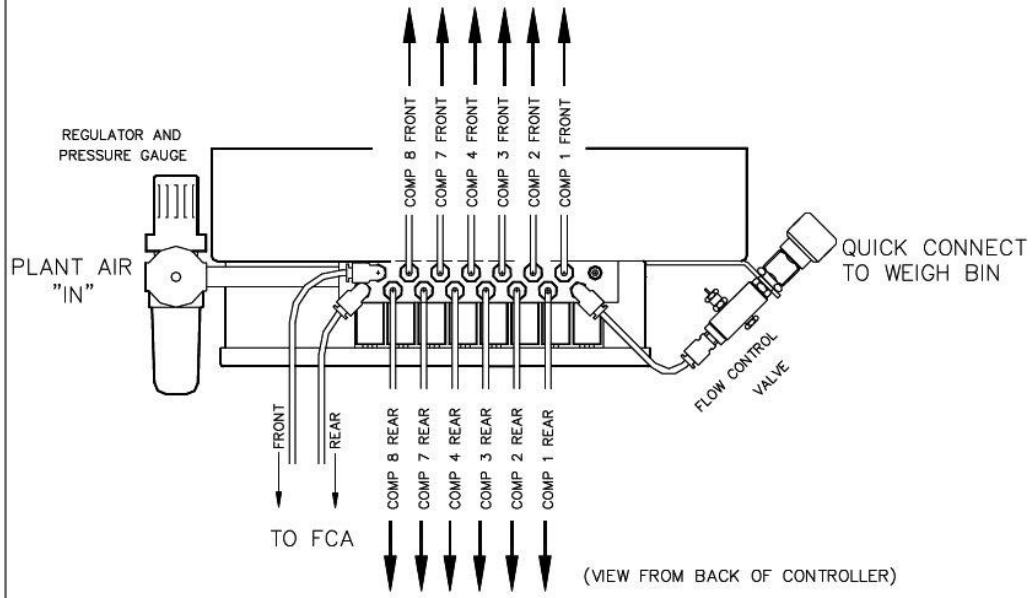
MAGUIRE PRODUCTS INC.
11 Crozerville Road
Aston, PA 19014 USA
610-459-4300
Fax 610-459-2700

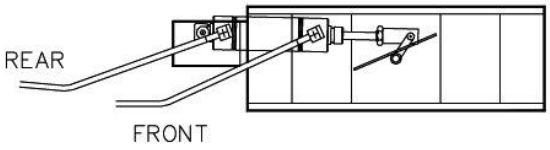


MATERIAL SLIDE VALVE ASSY
(TYPICAL)



WEIGH BIN ASSY
(TYPICAL)





FLOW CONTROL ASSY
(F C A)

WSB Model Dimensions and Weight

Model	Overall Dimensions	Overall Weight
WSB-MB	16x16x23.5 (in), 410x410x600 (mm)	50 lb/23 kg
WSB-100	28.5x26.5x32(in), 730x670x820 (mm)	150 lb/68 kg
WSB-140	28.5x26.5x32(in), 730x670x820 (mm)	150 lb/68 kg
WSB-220	32.5x26.5x42 (in), 826x673x1067 (mm)	220lb/100/kg
WSB-221	32.5x26.5x42 (in), 826x673x1067 (mm)	260lb/118kg
WSB-222	32.5x26.5x42 (in), 826x673x1067 (mm)	300lb/136kg
WSB-240	32.5x26.5x42 (in), 826x673x1067 (mm)	230lb/105kg
WSB-241	32.5x26.5x42 (in), 826x673x1067 (mm)	270lb/123kg
WSB-242	41.5x28x46 (in), 1054.1x711.2x1168.4 (mm)	310lb/141kg
WSB-240R	41.5x28x46 (in), 1054.1x711.2x1168.4 (mm)	255lb/116kg
WSB-260	41.5x28x46 (in), 1054.1x711.2x1168.4 (mm)	260lb/120kg
WSB-420	32.5x26.5x48 (in), 826x673x1220 (mm)	275lb/125kg
WSB-421	32.5x26.5x48 (in), 826x673x1220 (mm)	315lb/143kg
WSB-422	32.5x26.5x48 (in), 826x673x1220 (mm)	355lb/161kg
WSB-440	32.5x26.5x48 (in), 826x673x1220 (mm)	310lb/141kg
WSB-441	32.5x26.5x48 (in), 826x673x1220 (mm)	350lb/159kg
WSB-442	41.5x28x51.5 (in),1054x711x1308 (mm)	390lb/177kg
WSB-444	41.5x28x51.5 (in),1054x711x1308 (mm)	470lb/214kg
WSB-440R	41.5x28x51.5 (in),1054x711x1308 (mm)	345lb/157kg
WSB-460	41.5x28x51.5 (in),1054x711x1308 (mm)	355lb/161kg
WSB-940	46.5x28.5x60 (in), 1181x724x1524 (mm)	420lb/191kg
WSB-941	46.5x28.5x60 (in), 1181x724x1524 (mm)	460lb/209kg
WSB-942	46.5x28.5x60 (in), 1181x724x1524 (mm)	500lb/227kg
WSB-944	46.5x28.5x60 (in), 1181x724x1524 (mm)	580lb/264kg
WSB-960	46.5x28.5x60 (in), 1181x724x1524 (mm)	430lb/195kg
WSB-1840	46.5x40.5x87 (in), 1181x1029x2210 (mm)	615lb/280kg
WSB-1841	46.5x40.5x87 (in), 1181x1029x2210 (mm)	655lb/298kg
WSB-1842	46.5x40.5x87 (in), 1181x1029x2210 (mm)	695lb/316kg
WSB-1860	46.5x40.5x87 (in), 1181x1029x2210 (mm)	625lb/284kg
WSB-1866	46.5x40.5x87 (in), 1181x1029x2210 (mm)	865lb/393kg
WSB-2420	42 x 42 x 87 (in), 1100 x 1100 x 2210 (mm)	825 lb/375 kg
WSB-2440	42 x 42 x 87 (in), 1100 x 1100 x 2210 (mm)	825 lb/375 kg
WSB-2443	60 x 80 x 87 (in), 1500 x 2100 x 2210 (mm)	1225 lb/560 kg
WSB-2445	80 x 85 x 87 (in), 2000 x 2150 x 2210 (mm)	1425 lb/650 kg
WSB-3020	50 x 50 x 90 (in), 1300 x 1300 x 2300 (mm)	900 lb/400 kg
WSB-3040	50 x 50 x 90 (in), 1300 x 1300 x 2300 (mm)	900 lb/400 kg
WSB-3043	60 x 80 x 90 (in), 1500 x 2100 x 2300 (mm)	1300 lb/600 kg
WSB-3045	80 x 85 x 90 (in), 2000 x 2150 x 2300 (mm)	1500 lb, 680 kg

Flexbus Lite Integrated Loading System

The Flexbus Lite Loading System is integrated into the Maguire 4088 Weigh Scale Touchscreen Controller enabling local control of a single pump and up to 9 receivers. This chapter describes the Flexbus Lite Loading System.

Table of Contents

Flexbus Lite Overview ____ 122

Flexbus Home Screen ____ 123

Flexbus Setup and Configuration ____ 123

Flexbus Pump Assignment ____ 126

Receiver Assignment ____ 128

Receiver Configuration ____ 129

Pump Configuration ____ 131

Removing Receivers or Pumps ____ 134

Flexbus System Setup Options ____ 135

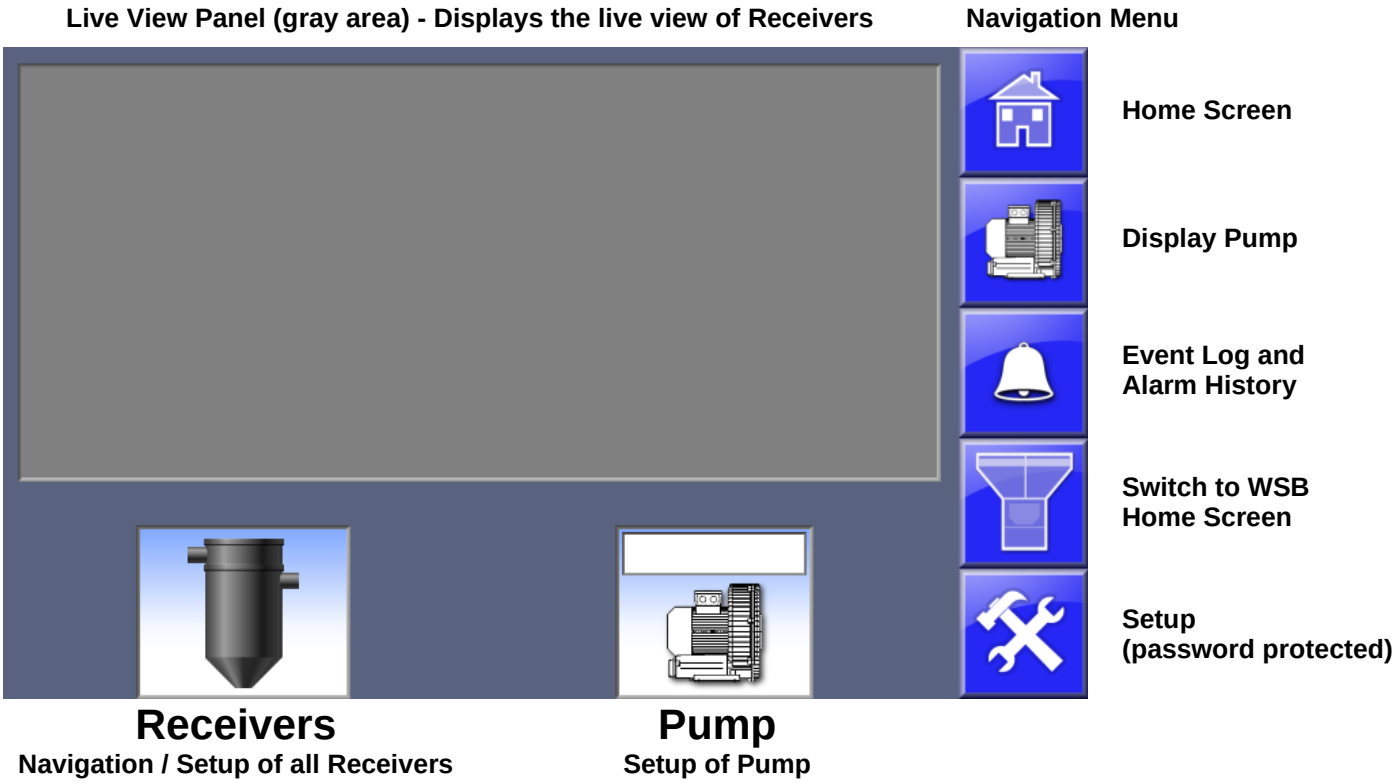
Receiver: Configuration Save, Restore, Defaults ____ 135

Flexbus Main Screen Details ____ 136

Flexbus Wiring Diagram ____ 138

Flexbus Lite Component Map ____ 141

Flexbus Lite Home Screen Overview



Flexbus Lite Setup and Configuration

Flexbus Lite uses a MAC address to individually identify each Flexbus pump and receiver. Identification and numeric assignment of each Flexbus pump and receiver is setup within the Flexbus Lite through the order that the receiver is turned on and discovered during the Pump Assignment routine and the Receiver Assignment routine setup processes.

Once the initial setup has been completed, Flexbus Lite will retain the setup and identification of the pump and each receiver indefinitely. After the initial identification order and numeric assignment has been saved, the operator can later make adjustments to the receiver numeric assignment order and assign a 4-character alphanumeric identification name to each receiver.

Enabling Flexbus Lite in the Weigh Scale Blender Touchscreen Controller

Flexbus Lite is an option that can be enabled within the Weigh Scale 4088 Touchscreen controller allowing local control of a single pump and up to 9 receivers. Additional components are required for blender loading including receivers equipped with Flexbus, a T-drop, a position hub, pump module, and necessary cabling. Please see the Flexbus Lite component map on page 141 for setup details.

How to enabled Flexbus Lite in the Maguire Weigh Scale Blender

Press		**Display will prompt for a password.** (default: 22222) **Then press:**	
Press	**System Configuration**	**Display will show the System Configuration categories.**	
Press	**Preferences**	**Display will show preferences categories.**	
Press	**Flexbus Lite**	**Display will show the Flexbus Lite Options screen.**	
Press	**Enabled**	**Flexbus will be enabled displaying Flexbus menu button.**	
Press		**To save and exit or press the red X to cancel and exit.**	
Press		**To access Flexbus Lite.**	
Press		**To toggle the display back to the Weigh Scale Blender controller screen. When the Blender controller is displaying the Weigh Scale Blender, Flexbus continues to operate. Press the Flexbus button at any time to return to Flexbus.**	

Flexbus Lite System Setup Screen

Pump assignment is set through the SETUP screen. The setup screen is accessed by pressing the Setup button on the right side of the screen.

On the HOME screen, PRESS:		Pressing the SETUP button prompts for a password.
PRESS:	**22222**	Enter the password (default password is 22222) Press to confirm password.
This enters the Setup screen. This screen contains several setup specific options.		

Pump and Receivers Setup Buttons

Pressing PUMP or RECEIVERS enters Setup for those devices

Flexbus Lite System Setup Options

Navigation Menu

Returns to Home screen

Display Pump

Event Log and Alarm History

Switch to WSB Home Screen

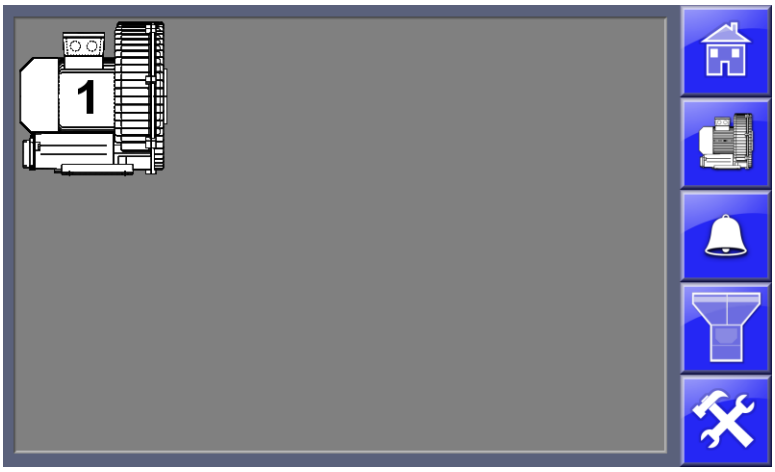
Setup (password protected)

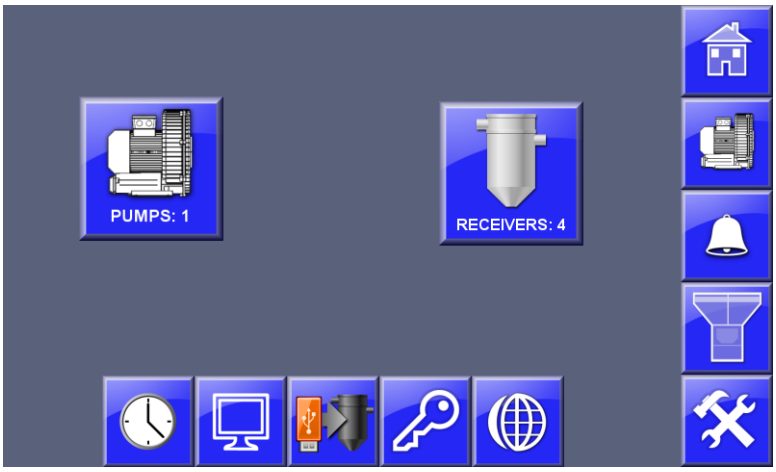
Note: Pump must be assigned before Receivers.
Note: Flexbus Lite uses a single pump and up to 9 receivers.

Pump Assignment - Pumps must be assigned before Receivers.

Flexbus Lite (part of the Maguire 4088 TS Weigh Scale Blender) controls a single pump. The Flexbus System can control of to 5 pumps. If you have two or more pumps (Flexbus only), turn OFF all pumps prior to running Setup in the Flexbus controller, otherwise: To assign Pumps, follow these instructions:

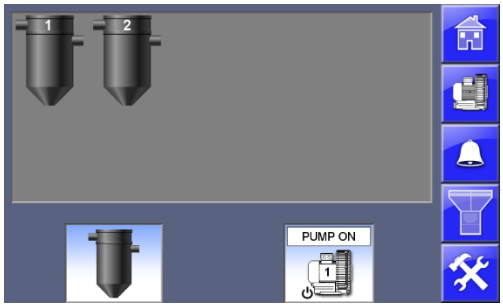
<table>
<tr><td>On the HOME screen, PRESS:</td><td> </td><td>Pressing the SETUP button prompts for a password.</td></tr>
<tr><td>PRESS:</td><td>22222</td><td>Enter the password (default password is 22222)
Press to confirm password.</td></tr>
<tr><td colspan="3">This enters the Setup screen. This screen contains several setup specific options.</td></tr>
<tr><td>To setup Pumps:

PRESS:</td><td>
</td><td>Press the large Pumps button on the far left of the screen.</td></tr>
<tr><td colspan="3">This enters the PUMP assignment screen. This gray screen contains any previously assigned pumps. For first time setup, this screen is probably blank and no pumps have been assigned. At this time, turn on your Flexbus Lite Pump to assign.</td></tr>
<tr><td colspan="2">With a single pump, that pump will appear on the screen and be labeled with the number 1.</td><td> 
</td></tr>
<tr><td>PRESS:</td><td> </td><td>To return to the Setup screen. When you return to the Setup screen, the Pump button will show the Setup symbol on the Pump button indicating that you are still in the Pump Assignment mode.</td></tr>
<tr><td>PRESS:</td><td>
</td><td>To Exit the Pump Assignment Mode. Setup icon overlaying the button will disappear indicating you are out of Pump assignment mode.</td></tr>
</table>

While in the Setup screen you can go straight to setting up Receivers without re-entering the password.		
PRESS:		**To enter the Receivers assignment screen.** See **Next Page** for Receivers Assignment instructions. Otherwise, to exit SETUP...
PRESS:		**To exit the Setup screen.**

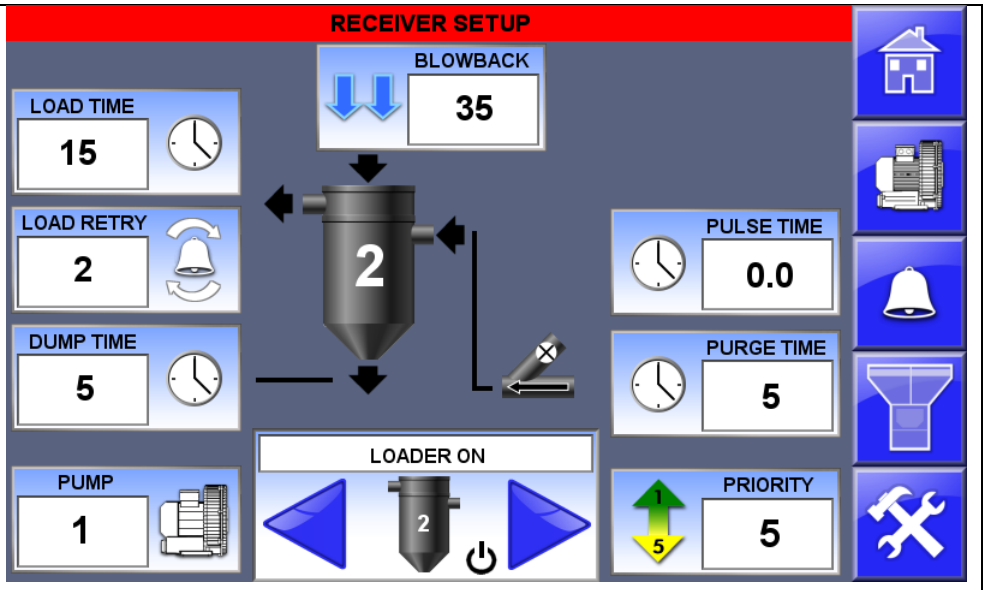
Receiver Assignment

NOTE: If you are already entered into SETUP, skip the password step and go to the ➡ below.

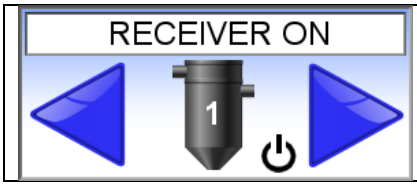
On the HOME screen PRESS:		Pressing the SETUP button prompts for a password.
PRESS:	**22222**	Enter the password (default password is 22222) Press ✔ to confirm password.
➡ This enters the Setup screen. This screen contains several setup specific options.		
PRESS:		Press the large Receivers button to enter the Receiver assignment screen.
The gray screen contains any previously assigned Receivers. For first time setup, this screen is probably blank and no Receivers have been assigned. **Turn on your Flexbus Receivers in the order that you want then to be assigned.**		
Your receivers will appear on the screen and be numbered in the order that they were turned on. If necessary, pressing each receiver icon will allow you to re-assign the ID number to a different unassigned number. Pump ⏻ symbol in the pump panel to toggle the Pump online or offline.		
PRESS:		**To return to the Setup screen.** When you return to the Setup screen, the Receivers button will show the Setup symbol on the pumps button indicating that you are still in the Receiver Assignment mode.
PRESS:		**To Exit the Receiver Assignment Mode**. Setup icon 🛠 will disappear indicating you are out of Receiver assignment mode.
PRESS:		**To exit the Setup screen.**

Receiver Configuration

The Receiver configuration screen is accessible from the Home screen. Pressing a receiver on the Home Screen, takes you to the Receiver's Configuration screen. The receiver that you are configuring is identified by the Receiver's ID number on the receiver images on this screen. You can select another Receiver by using the Receiver navigation arrows at the bottom center of this screen.

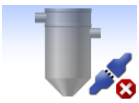


Receiver Navigation



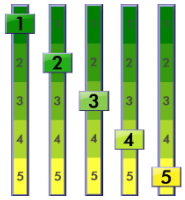
Receiver Navigation and Status Panel - This multi-function panel displays messages and receiver status, allows for navigation to each Receiver's configuration screen using the arrow buttons, and allows the receiver to be turned OFF or ON.

The receiver symbol can display the following states:

	Pressing the Receiver symbol toggles receiver OFF or ON. This symbol indicates that the receiver is turned off and will not run.
	This symbol indicates that the controller has lost communication with the receiver. The receiver will not run in this state.

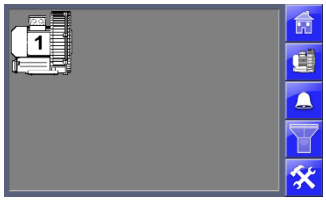
Receiver Configuration Fields

	Blowback - Blowback is a pulse of air to clear the filter. Blowback has two configuration fields. Skip cycle defines the number of cycles the receiver will skip between blowback pulses. Default for Skip Cycle is 3. Setting Skip Cycle to 0 (zero) will pulse every time. Time Interval is a multiplication factor of 400ms to pressurize the charge canister. Default Time Interval is 1 (1=400ms).
	Load Time - The time in seconds that the receiver will load.

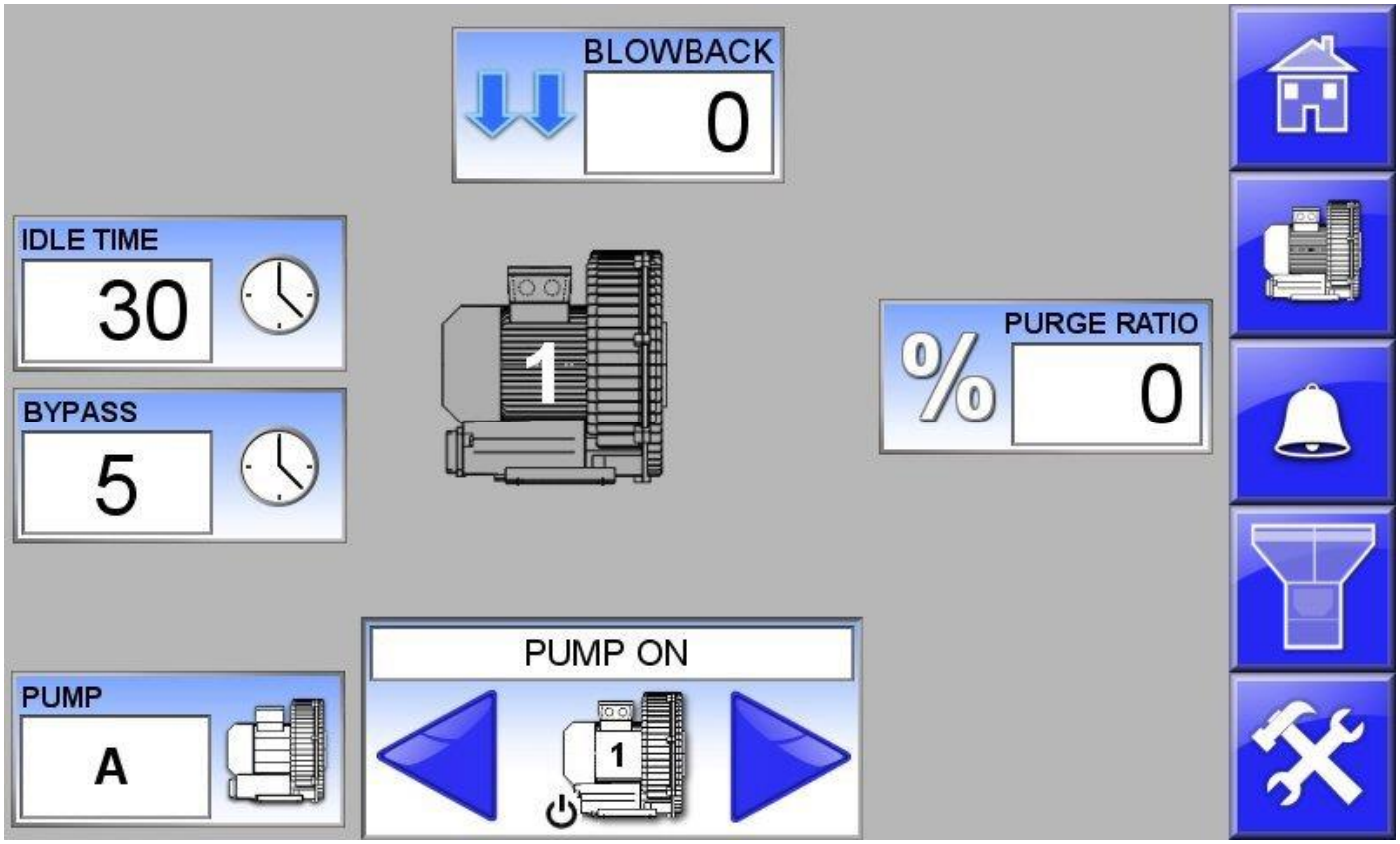
	Load Retry - The number of times the receiver will try to successfully load material and satisfy the sensor. Exceeding this retry count will cause the receiver to alarm.
	Dump Time - The time in seconds that the receiver will remain open during the dump cycle.
	Pump Assignment - The ID number of the pump that this receiver is assigned to.
	Pulse Time – For use with a bag filter or bridge breaker. Pulsed on-time in tenths of a second that the Bridge Breaker output (output 6) will pulse on/off during Dump Time. (see Flexbus Receiver Card Wiring Diagram, Output 6). Increasing the Dump Time will increase the number of pulses.
	Purge Time - The time in seconds that the purge valve will open to purge the convey line. (Purge time follows Load time).
LEVEL SENSOR	**Level Sensor –** Enables the use of an upper level sensor connected in series with the demand signal. See Receiver Wiring Diagram
	Priority - Sets the order of importance of the receivers. Setting a receiver to level 1 sets to the highest priority, while setting to level 5 sets to the lowest priority. Higher priority receivers receive material first while lower priority receivers receive material later. 
	Purge - This symbol represents the purge valve. When purging, the symbol will show a blue arrow.
	The Receiver's label and defaults can be reset by touching the large receiver image in the center of the screen.

Pump Configuration

Pressing the pump button in the right navigation takes you to the Pump overview screen and then pressing a pump in this overview screen will open the Pump's Configuration screen. The pump that you are configuring is identified by the pump's ID label on the pump's image on this screen. You can select another pump by using the pump navigation arrows at the bottom center of this screen.

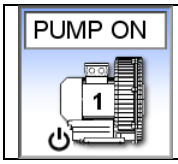


Pump Overview Screen



Pump Configuration Screen

Pump Control

	**Pump Status Panel** - This panel displays messages and pump status and allows the pump to be turned OFF or ON.

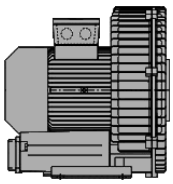
The pump symbol can display the following states:

	Pressing the pump symbol toggles the pump OFF or ON. Message will display PUMP OFF.
	This symbol indicates that the pump has lost communication. The pump will not run in this state. Message will display PUMP LOST COM.

Pump Configuration Fields

	Blowback - Blowback is a pulse of air to clear the filter. Blowback has two configuration fields. Skip cycle defines the number of Bypass cycles skipped between each blowback pulse. Default for Skip Cycle is 10. Setting Skip Cycle to 0 (zero) will pulse every time. Time Interval is a multiplication factor of 400ms to pressurize the charge canister. Default Time Interval is 5 (1=400ms).
	IDLE TIME - The time in minutes that the pump runs after the last convey request before shutting off.
	BYPASS - The time delay in 10ths of seconds (0-50, zero seconds to 5 seconds) before the Bypass valve opens after all receivers are satisfied.
	PURGE RATIO - The % of time split between two purge valves. Used to clear material that overshoots the receiver.
	PUMP - Selects between pump A or pump B outputs.

Pump Labeling

	Pressing the Pump's image in the center of the screen displays information about the pump and allows the Pump's label and defaults can be reset.

Removing Receivers from the configuration

If a receiver needs to be removed from the configuration, it can be removed using this procedure.

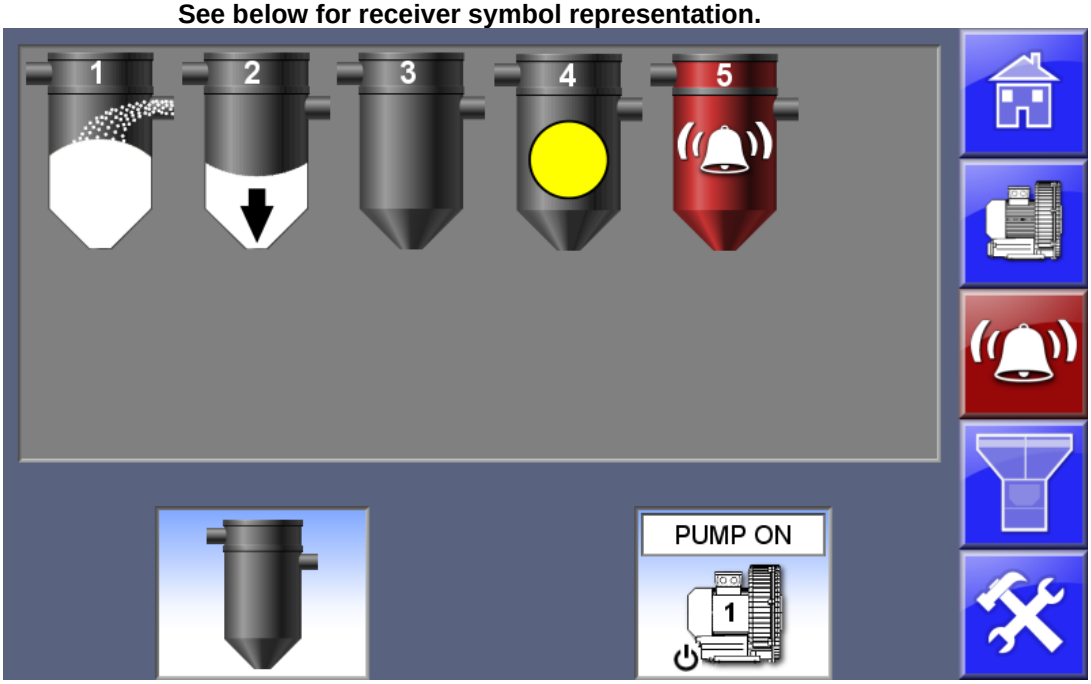
On the HOME screen PRESS:		Pressing the SETUP button prompts for a password.
PRESS:	**22222**	Enter the password (default password is 22222) Press to confirm password.
This enters the Setup screen. This screen contains several setup specific options.		
PRESS:		Press the large Receiver button.
The screen will contain any previously assigned devices (Pumps or Receivers). **A device must be turned off or communication must be disconnected to remove the device.** When a device is turned off or communication to the device is disconnected, the loader or pump icon will show a red X over it. The red X enables the option for the device to be removed by pressing the device.		
PRESS:		To remove the receiver.
A prompt to remove the receiver will be shown.		
PRESS:		To return to the Setup screen. When you return to the Setup screen, the Receivers button will show the Setup symbol indicating that you are still in the Receiver Assignment mode.
PRESS:		To Exit the Assignment Mode. Setup icon will disappear indicating you are out of the assignment mode.
PRESS:		To exit the Setup screen.

Flexbus Lite System Setup Options

The Setup screen also allows for setting: Date and time, screensaver timeout, screen brightness, screen calibration, updating Flexbus controller and receiver/pump firmware, changing the password, language selection and date format. To enter Setup press the Setup button on the home screen. Default password is 22222.

	Set Date and Time
	Set Screen Brightness
	Update Receiver and Pump Firmware Requires a firmware update provided by Maguire Products Inc. Copy firmware (.XUF file) to USB and insert USB into the controllers USB port. Press this Update button. Press the green check to start the update. The firmware update will be copied from the flash drive to the Pumps and Receivers that require the update (up-to-date firmware will not be changed). When the copy has completed, you will be prompted to toggle power (off/on). Updates to devices are logged in the Alarm/Event log.
	Change Passwords Set the Operator password and the Administrator password. **Operator Password** - When enabled, all Pump and Receiver parameter fields are password protected. **Administrator Password** - Changes the Administrator password. Type the new password, then type the password again in the 2nd field to confirm. Valid passwords are numbers 0-9, 1 to 6 characters long. Press the green check when complete.
	Set Language

Flexbus Lite Main Screen



Returns to Home screen from any screen.

Display Pump
Changes the Live view panel to the Pump

Alarm History
Displays red when there is an alarm notification.

Switch the WSB Home Screen

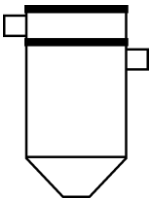
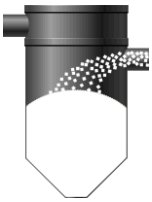
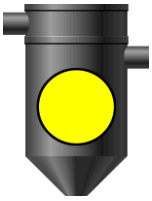
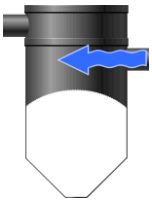
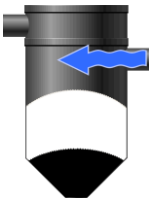
Setup
Enters password protected setup screens.

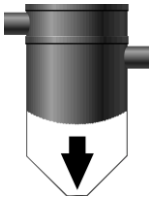
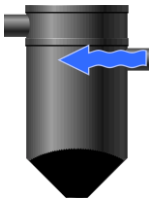
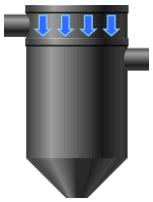
Live Status Panel

In the Live Status Panel, the receivers will display their current status. See the next page for a description of each live receiver status symbol.

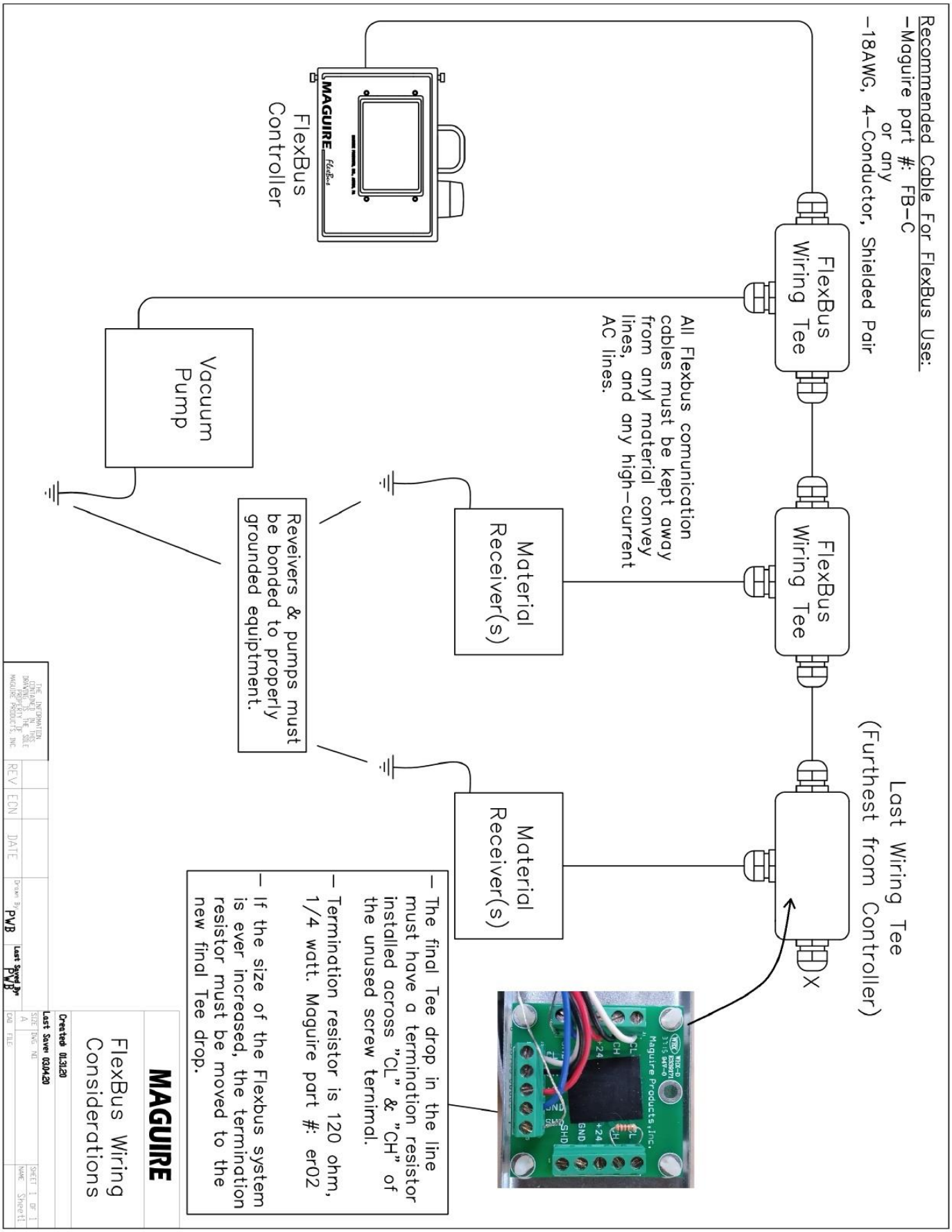
Pressing any of the receiver symbols in the Live Status Panel will display the Receiver Configuration screen for that specific receiver. See Receiver Configuration for more information on configuring receivers.

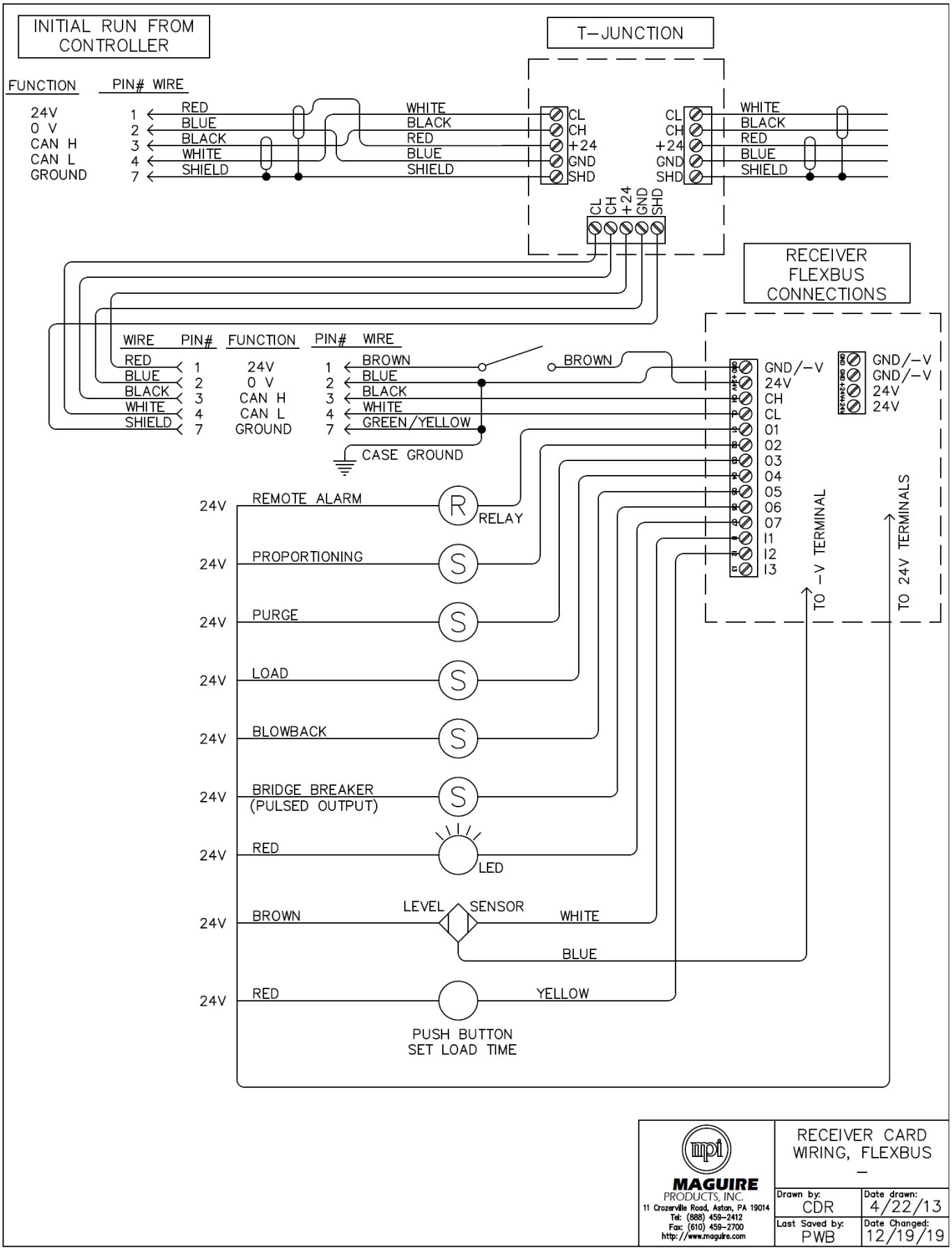
What the Receiver Symbols Represent:

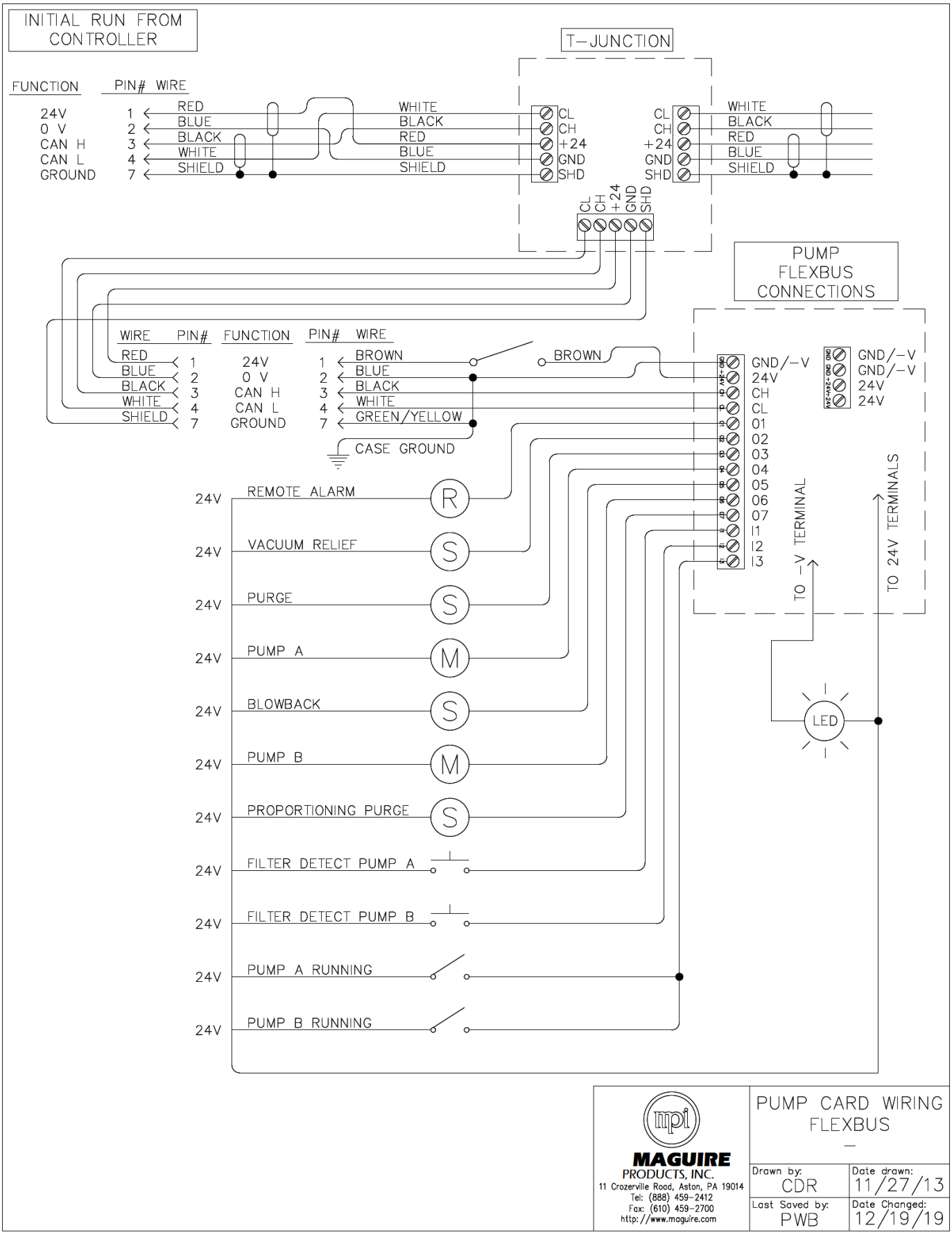
	Receiver is online and idle.
	Receiver is inactive.
	Virgin material filling receiver.
	Demand for material.
	Virgin material only purging.
	Proportioned material purging.

	Lost communication with receiver. Cause may be receiver's power is off or a disconnected communication wire.
	Receiver is alarming.
	Regrind material filling receiver.
	Material discharging
	Regrind material only purging.
	Blowback active. Cleaning receiver's air filter.

Flexbus Lite Wiring Diagrams




INITIAL RUN FROM CONTROLLER
T–JUNCTION
FUNCTION
PIN# WIRE
24V
0 V
CAN H
CAN L
GROUND
1 RED
2 BLUE
3 BLACK
4 WHITE
7 SHIELD
WHITE
BLACK
RED
BLUE
SHIELD
CL
CH
+24
GND
SHD
RECEIVER FLEXBUS CONNECTIONS
WIRE PIN# FUNCTION PIN# WIRE
RED 1 24V 1 BROWN
BLUE 2 0 V 2 BLUE
BLACK 3 CAN H 3 BLACK
WHITE 4 CAN L 4 WHITE
SHIELD 7 GROUND 7 GREEN/YELLOW
BROWN
CASE GROUND
GND/–V
24V
CH
CL
01
02
03
04
05
06
07
I1
I2
I3
TO –V TERMINAL
TO 24V TERMINALS
24V REMOTE ALARM
R
RELAY
24V PROPORTIONING
S
24V PURGE
24V LOAD
24V BLOWBACK
24V BRIDGE BREAKER (PULSED OUTPUT)
24V RED
LED
24V BROWN
LEVEL SENSOR
WHITE
BLUE
24V RED
YELLOW
PUSH BUTTON SET LOAD TIME
MAGUIRE PRODUCTS, INC.
11 Crozerville Road, Aston, PA 19014
Tel: (888) 459–2412
Fax: (610) 459–2700
http://www.maguire.com
RECEIVER CARD WIRING, FLEXBUS
–
Drawn by: CDR
Date drawn: 4/22/13
Last Saved by: PWB
Date Changed: 12/19/19

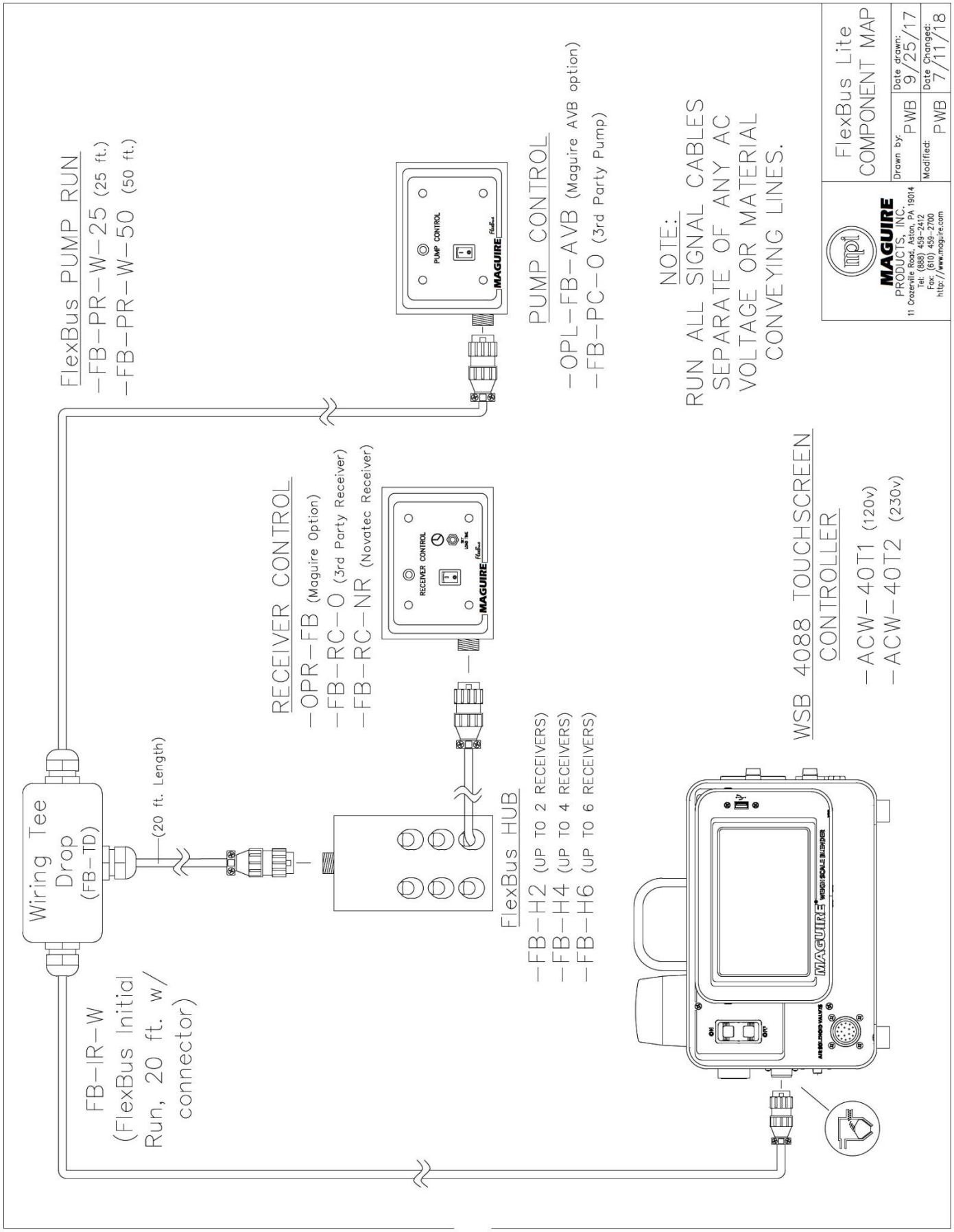


MAGUIRE PRODUCTS, INC.
11 Crozerville Road, Aston, PA 19014
Tel: (888) 459-2412
Fax: (610) 459-2700
http://www.maguire.com

PUMP CARD WIRING FLEXBUS

Drawn by:	Date drawn:
CDR	11/27/13
Last Saved by:	Date Changed:
PWB	12/19/19

Flexbus Lite Component Map



Decommissioning and Disposal

Decommissioning the unit: Disconnect the unit from the power supply. Disconnect the compressed air supply. Cut all Electrical cables & Pneumatic Hoses to decommission the equipment. Disposal: Remove air hoses and inspection glasses and dispose of with plastic refuse. Remove electric motor dispose of with metal. Remainder of unit dispose of with metal. Controller: Remove battery and dispose of battery with hazardous waste. Remainder of controller dispose of with electronic waste. Re-cycle any hazardous materials/substances in accordance with the Local & National regulations of the End User e.g. Lithium batteries etc, specific attention should be paid to the European RoHS & WEEE Directives; remove any 'sharps' and dispose of in accordance with Local & National regulations.

Disclaimers

Intended Use - The intended use of the Maguire Weigh Scale Blenders is specifically for blending of raw and recycled plastics materials and plastics additives. The Maguire blenders should not be used for applications outside of the intended use.

Production of Faulty Product - Processing conditions and materials vary widely from customer to customer and from product to product. It is IMPOSSIBLE for us to anticipate ALL processing conditions and requirements, or to be certain that our equipment will perform properly in all instances. You, the customer, must observe and verify the performance level of our equipment in your plant as part of your overall manufacturing process.

You must verify to your own satisfaction that this level of performance meets your requirements. We CAN NOT be responsible for losses due to product that is blended incorrectly, even when due to equipment malfunction or design incorrect for your requirements; and/or for any consequential losses due to our equipment not blending to your requirements.

We will only be responsible to correct, repair, replace, or accept return for full refund if our equipment fails to perform as designed, or we have inadvertently misrepresented our equipment for your application.

Accuracy of this Manual

We make every effort to keep this manual as correct and current as possible. However, technology and product changes may occur more rapidly than the reprinting of this manual. Generally, modifications made to the dryer design or to the operation of the software are may not reflected in the manual for several months. The date at the footer of this manual will indicate approximately how current this manual is. Likewise, your Dryer may have been produced at an earlier time and the information in this manual may not accurately describe your Dryer since this manual is written for the current line of Dryers in production (as of the date in the footer). We always reserve the right to make these changes without notice, and we do not guarantee the manual to be entirely accurate. If you question any information in this manual, or find errors, please let us know so that we may make the required corrections or provide you with accurate information. Additionally, we will gladly provide you with an updated copy of any manuals you need at any time. We welcome comments and suggestions on ways we can improve this manual. For additional information, or to download the latest copy of this manual or any other Maguire manual, please visit our website or contact us directly.

Warranty – Exclusive 5-Year

MAGUIRE PRODUCTS offer THE MOST COMPREHENSIVE WARRANTY in the plastics equipment industry. We warrant each Weigh Scale Blender manufactured by us to be free from defects in material and workmanship under normal use and service; excluding only those items listed below as 'excluded items'; our obligation under this warranty being limited to making good at our factory any Weigh Scale Blender which shall within FIVE (5) YEARS after delivery to the original purchaser be RETURNED intact to us, transportation charges PREPAID, and which our examination shall disclose to our satisfaction to have been thus defective; this warranty being expressly in lieu of all other warranties expressed or implied
and of all other obligations or liabilities on our part, and MAGUIRE PRODUCTS neither assumes nor authorizes any other persons to assume for it any other liability in connection with the sale of its Weigh Scale Blenders.

This warranty shall not apply to any Weigh Scale Blender, which shall have been repaired or altered outside MAGUIRE PRODUCTS factory, unless such repair or alteration was, in our judgment, not responsible for the failure; nor which has been subject to misuse, negligence or accident, incorrect wiring by others, or installation or use not in accord with instructions furnished by Maguire Products.

Our liability under this warranty will extend ONLY to equipment that is returned to our factory in Aston, Pennsylvania, PREPAID.

Please note that we always strive to satisfy our customers in whatever manner is deemed most expedient to overcome any problems they may have in connection with our equipment.

EXCLUDED ITEMS:
LOAD CELLS on our WEIGH SCALE BLENDER are covered as long as they have not been damaged from improper handling. MB, 100, and 200 series units use load cells rated for 6.6 pounds (3KG) maximum load. Larger units use load cells rated for 22 pounds (10KG). DO NOT press on them manually. DO NOT disassemble them from their mounting enclosures. Do not DROP then. Do not drop the frame to which they are mounted. If the frame is dropped from a height of two feet, the load cells will most likely be damaged.

DISCLAIMER:
Processing conditions and materials vary widely from customer to customer and from product to product. Please be aware that it is IMPOSSIBLE for us to anticipate ALL processing conditions and requirements, or to be certain that our equipment will perform properly in all instances. You, the customer, must observe and verify the performance level of our equipment in your plant as part of your overall manufacturing process. You must verify to your own satisfaction that this level of performance meets your requirements. We CAN NOT be responsible for losses due to product that is blended incorrectly, even when due to equipment malfunction or design incorrect for your requirements; and/or for any consequential losses due to our equipment not blending to your requirements.

We will only be responsible to correct, repair, replace, or accept return for full refund if we have inadvertently misrepresented our equipment for your application.

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