JagMax™

Truck Scale Controller
Technical Manual

Mettler Toledo is recognized around the world for manufacturing and marketing high quality scales and weighing systems. With roots tracing back to 1901, the company takes pride in its long established record of employing innovation, technology, and a close working relationship with its customers to meet the diverse needs of the global marketplace. Mettler Toledo's worldwide headquarters are in Greifensee, Switzerland. Corporate offices for the North American Marketing Organization are in Worthington, Ohio.

INTRODUCTION

This publication is provided solely as a guide for individuals who have received Technical Training in servicing the METTLER TOLEDO product.

Information regarding METTLER TOLEDO Technical Training may be obtained by writing to:

METTLER TOLEDO
1900 Polaris Parkway
Columbus, Ohio 43240
(614) 438-4511

FCC Notice

This device complies with Part 15 of the FCC Rules and the Radio Interference Requirements of the Canadian Department of Communications. Operation is subject to the following conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

SOFTWARE VERSION

This manual properly describes the operation and functionality of the METTLER TOLEDO JagMax controller. The software version and part number are displayed during the power-up sequence of the scale.

METTLER TOLEDO RESERVES THE RIGHT TO MAKE REFINEMENTS OR CHANGES WITHOUT NOTICE.

PRECAUTIONS

READ this manual BEFORE operating or servicing this equipment.
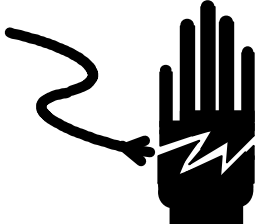
FOLLOW these instructions carefully.
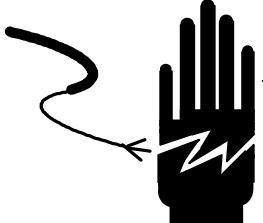
SAVE this manual for future reference.

DO NOT allow untrained personnel to operate, clean, inspect, maintain, service, or tamper with this equipment.

ALWAYS DISCONNECT this equipment from the power source before cleaning or performing maintenance.

CALL METTLER TOLEDO for parts, information, and service.

⚠ **WARNING**

ONLY PERMIT QUALIFIED PERSONNEL TO SERVICE THIS EQUIPMENT. EXERCISE CARE WHEN MAKING CHECKS, TESTS AND ADJUSTMENTS THAT MUST BE MADE WITH POWER ON. FAILING TO OBSERVE THESE PRECAUTIONS CAN RESULT IN BODILY HARM.

⚠ **WARNING**

FOR CONTINUED PROTECTION AGAINST SHOCK HAZARD CONNECT TO PROPERLY GROUNDED OUTLET ONLY.
DO NOT REMOVE THE GROUND PRONG.

⚠ **WARNING**

DISCONNECT ALL POWER TO THIS UNIT BEFORE INSTALLING, SERVICING, CLEANING, OR REMOVING THE FUSE. FAILURE TO DO SO COULD RESULT IN BODILY HARM AND/OR PROPERTY DAMAGE.

⚠ **CAUTION**

BEFORE CONNECTING/DISCONNECTING ANY INTERNAL ELECTRONIC COMPONENTS OR INTERCONNECTING WIRING BETWEEN ELECTRONIC EQUIPMENT ALWAYS REMOVE POWER AND WAIT AT LEAST THIRTY (30) SECONDS BEFORE ANY CONNECTIONS OR DISCONNECTIONS ARE MADE. FAILURE TO OBSERVE THESE PRECAUTIONS COULD RESULT IN DAMAGE TO OR DESTRUCTION OF THE EQUIPMENT OR BODILY HARM.

⚠ **CAUTION**

OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES.

CONTENTS

1   Introduction and Installation

This manual provides detailed information for installing, programming, and servicing the JagMax Truck Scale Controller, a powerful, easy-to-use, multi-scale controller designed for use in the truck stop industry. Information on operating the JagMax controller can be found in the **JagMax Multi-Scale Controller User's Guide**.

Review all instructions and safety precautions carefully. Installation, programming, and service procedures should be performed only by authorized personnel.

If you discover a problem with the information provided, please complete and return the **Publication Evaluation Form** found in the back of this manual. If you encounter problems not covered in this manual or need information regarding options or any technical matters, please contact your local authorized Mettler Toledo representative.

Inspection and Contents Checklist

If you are responsible for installing the JagMax controller, please follow the procedures listed here.

- If the JagMax controller's shipping container appears damaged upon delivery, check inside for damage. File a freight claim with the carrier if necessary.

- If the container was undamaged, unpack the container if you have not already done so. Keep the original packing materials for future use.

- The JagMax controller packages each contain the following:

  - JagMax Controller
  - Screwdriver
  - User's Guide
  - This Technical Manual
  - Set of capacity labels
  - Weights and Measures sealing screws
  - Mating connectors for the I/O ports
  - Keyboard Functions Legend Plate

  The harsh environment JagMax controller package should also include:

  - 2 stainless steel wall mount brackets
  - 4 stainless steel bolts for attaching the wall mount brackets

The JagMax controller is available in a general purpose enclosure, panel mount enclosure or harsh environment enclosure. Use the following Factory Number Reference charts to identify the JagMax controller with which you will be working. A detailed description of each designation is given to help you understand the specifications for that model. For information on additional accessories or options, contact your authorized Mettler Toledo representative.

Factory Number Reference Chart
JagMax Truck Scale Controller – General Purpose Model

J M G A X X X X X X X

Enclosure/Display
GA=General Purpose, Alpha-Numeric

Board Slot #1
3=DigiTOL POWERCELL
A=Dual Analog L/C
B=HAP Dual Analog L/C

Board Slot #2
0=None
1=Analog L/C
2-HAP Analog L/C
A=Dual Analog L/C
B-HAP Dual Analog L/C

Board Slot #3
0=None
7=Multifunction

Market
000 (United States)
019 (Canada-English)
020 (Canada-French)
054 (Mexico)

Software
0=JagMax Controller

Factory Number Reference Chart
JagMax Truck Scale Controller – Harsh Environment

J M H A X X X X X X X

Enclosure/Display
HA=Harsh Environment, Alpha-Numeric

Board Slot #1
3=DigiTOL POWERCELL
A=Dual Analog L/C
B=HAP Dual Analog L/C

Board Slot #2
0=None
1=Analog L/C
2-HAP Analog L/C
A=Dual Analog L/C
B-HAP Dual Analog L/C

Board Slot #3
0=None
7=Multifunction

Market
000 (United States)
019 (Canada-English)
020 (Canada-French)
054 (Mexico)

Software
0=JagMax Controller

Factory Number Reference Chart
JagMax Truck Scale Controller – Panel Mount Model

J M PA X X X X X X X

Enclosure/Display
PA=Panel Mount, Alpha-Numeric

Board Slot #1
3=DigiTOL POWERCELL
A=Dual Analog L/C
B=HAP Dual Analog L/C

Board Slot #2
0=None
1=Analog L/C
2-HAP Analog L/C
A=Dual Analog L/C
B-HAP Dual Analog L/C

Board Slot #3
0=None
7=Multifunction

Market
000 (United States)
019 (Canada-English)
020 (Canada-French)
054 (Mexico)

Software
0=JagMax Controller
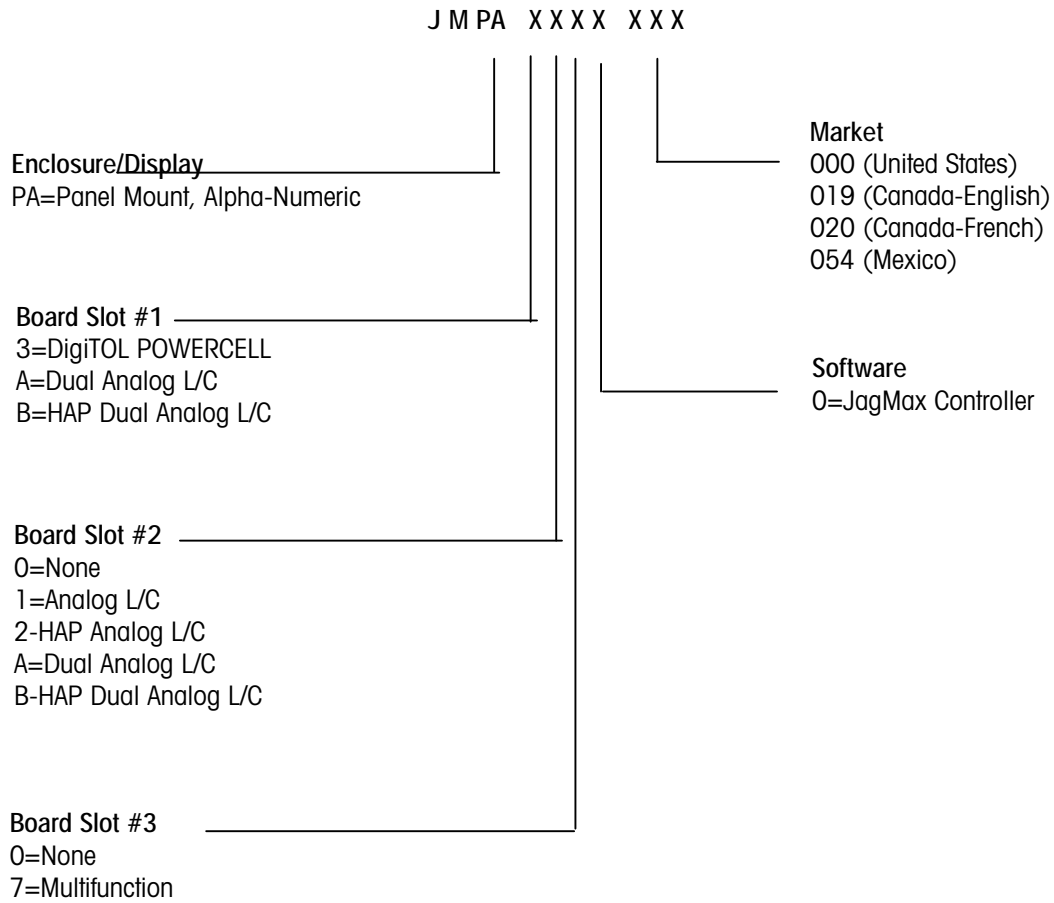
Physical Dimensions

The general purpose JagMax controller model measures:

12.45 in. (25 cm) wide × 7.86 in. (20 cm) high

10.6 in. (27 cm) deep

In the figure below, the top two views show the optional wall/column brackets (P/N 0917-0209)
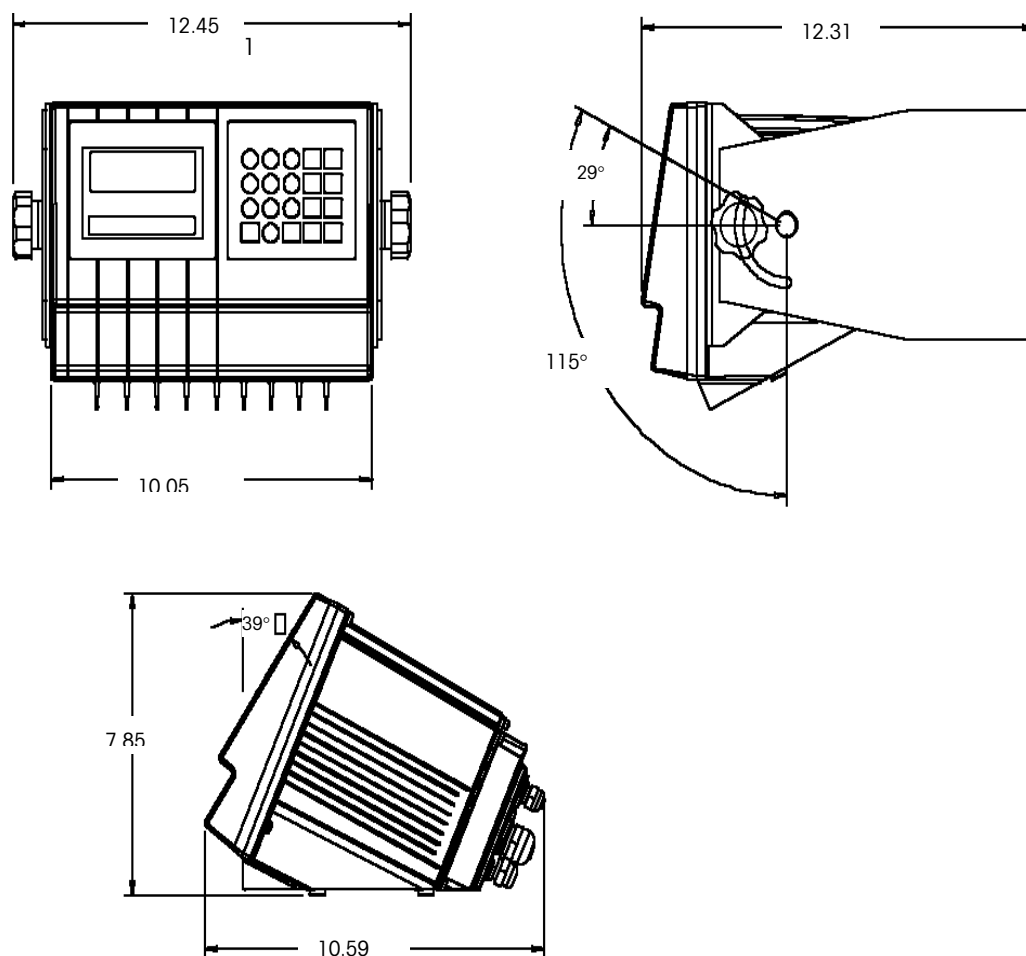
Figure 1-a

The JagMax controller harsh environment enclosure model measures:
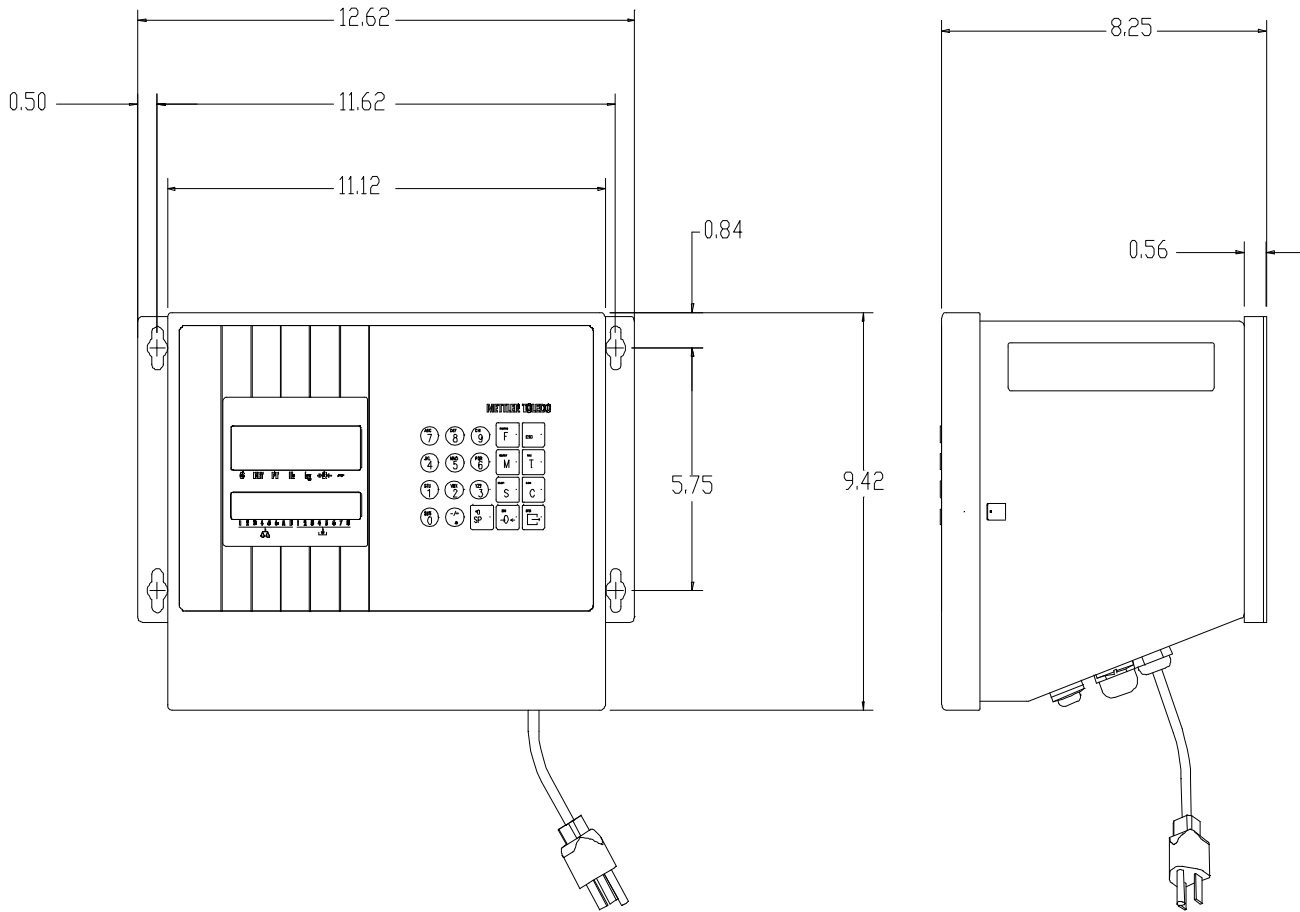
Figure 1-b

The panel mount JagMax controller model measures:

- 10.05 in. (25.5 cm) wide × 5.6 in. (14 cm) high at the front of the terminal

- 9.5 in. (24 cm) x 4.91 in. (12.5 cm) at the rear

- 8.03 in. (21 cm) deep
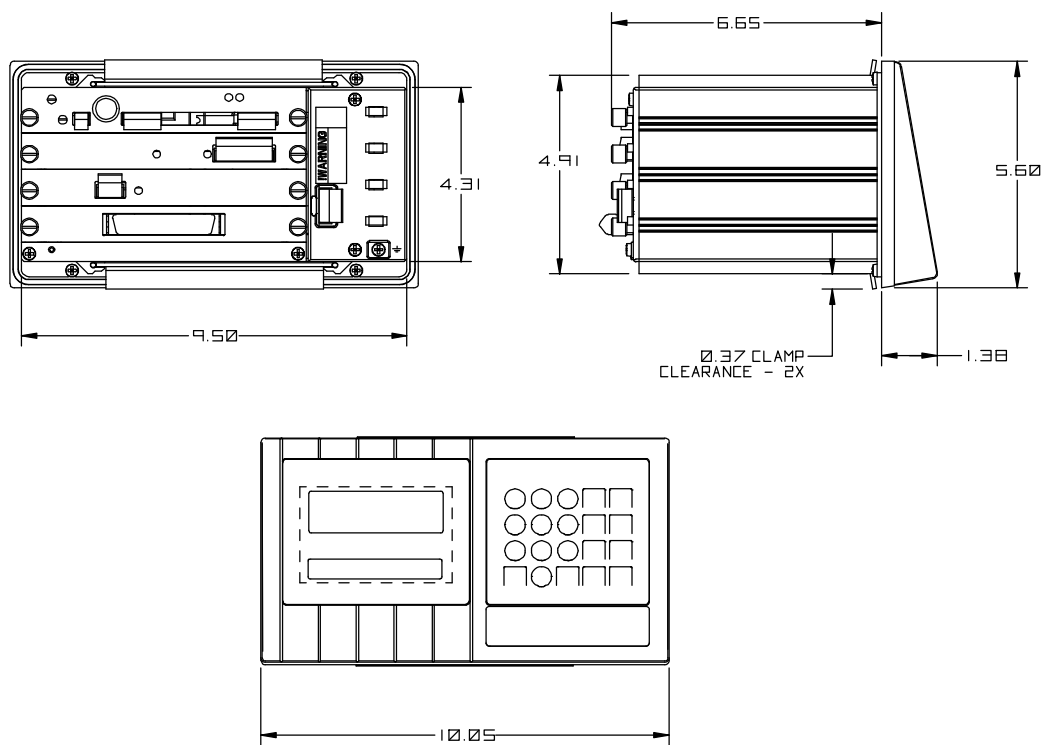
Figure 1-c

Installing and Opening the General Purpose Enclosure

	⚠ **WARNING**
	ONLY PERMIT QUALIFIED PERSONNEL TO SERVICE THIS EQUIPMENT. EXERCISE CARE WHEN MAKING CHECKS, TESTS AND ADJUSTMENTS THAT MUST BE MADE WITH POWER ON. FAILING TO OBSERVE THESE PRECAUTIONS CAN RESULT IN BODILY HARM.
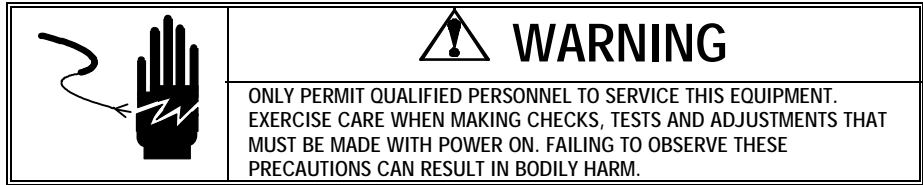
1. Disconnect the power.

2. Place the JagMax controller at the operating site.

3. Remove the four screws securing the rear access cover to the main housing using a Phillips head screwdriver.

4. Refer to Figure 1-d to make the recommended wiring connections.
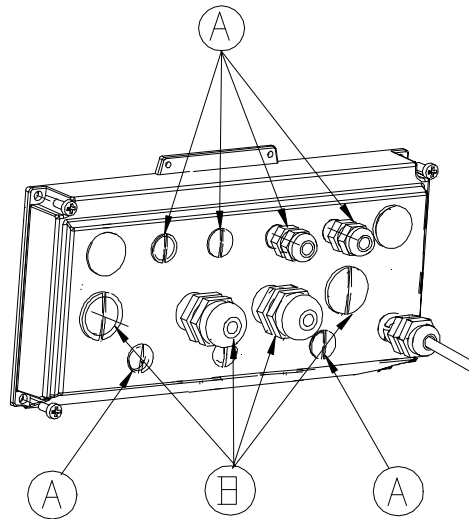
Figure 1-d: General Purpose Enclosure Wiring Connections

General Purpose Enclosure Cable Chart	
Reference Letter	Suggested Cable
A	Serial Communications Cables Discrete Input/Output Cabling
B	Analog Load Cell Cabling POWERCELL Load Cell Cabling

To connect the unit:

1. Select an opening close to the terminal block you are wiring.

2. Pass the cables that enter the enclosure through an appropriately sized cable grip <u>before</u> connecting the wires.

3. Tighten the cable grip to provide a water-tight seal around the cable after resecuring the back cover. This allows any internal cable slack to be received through the cable grip.

4. Connect the keyboard, then continue to the section entitled Electrical Connections to make the recommended wiring connections.

Installing and Opening the Harsh Environment Enclosure

	⚠ **WARNING**
	ONLY PERMIT QUALIFIED PERSONNEL TO SERVICE THIS EQUIPMENT. EXERCISE CARE WHEN MAKING CHECKS, TESTS AND ADJUSTMENTS THAT MUST BE MADE WITH POWER ON. FAILING TO OBSERVE THESE PRECAUTIONS CAN RESULT IN BODILY HARM.
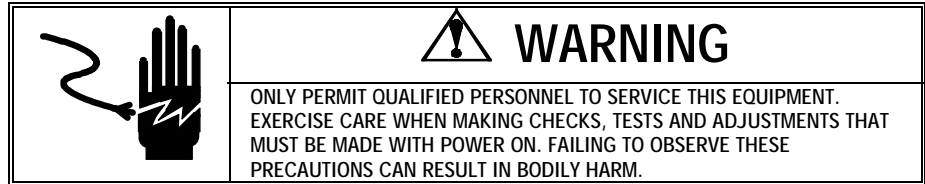
1. Locate the two mounting brackets that came with the JagMax controller.

2. Mount the brackets using the four stainless steel screws supplied with the unit. Refer to Figure 1-e. Note the correct positioning of the mounting brackets. The slotted holes must protrude beyond the enclosure and the bracket tabs must point toward the front as shown.
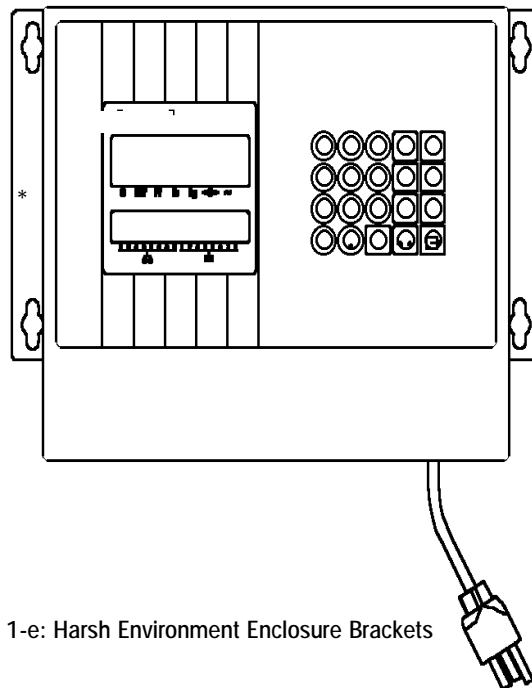
Figure 1-e: Harsh Environment Enclosure Brackets

3. Tighten the brackets to the back of the enclosure (torque 25 inch pounds).

4. Using the dimensions given in Figure 1-b, prepare the mounting surface to accept the enclosure. The mounting surface and brackets must be able to support a total of 45 lb (20 kg).

5. Place the enclosure on the mounting surface and secure with appropriate fasteners.

6. Make sure that the power is disconnected.

7. Locate the two slots on the bottom lip of the front of the enclosure.

8. Insert the blade of a slotted screwdriver into one of the slots and press inward (toward the enclosure). This releases a pressure tab that allows the access panel of the enclosure to open slightly.

9. Repeat steps 7 and 8 for the other slot.

10. Remove the access panel away from the enclosure. The access panel is connected to the Controller PCB by a cable and cannot be removed without disconnecting the cable. You should be able to access the unit with the front panel connected.

11. Connect the keyboard.

12. Refer to Figure 1-f to make the recommended wiring connections.
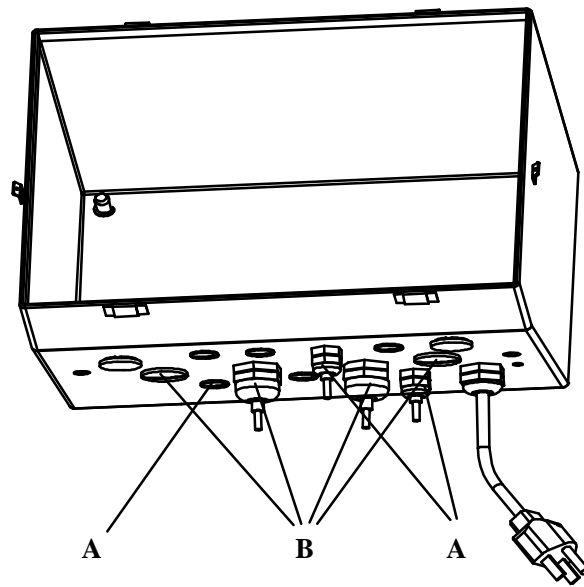
Figure 1-f

Harsh Environment Enclosure Cable Chart	
Reference Letter	Suggested Cable
A	Serial I/O Cables
	ARCnet Wiring
B	Analog Load Cell Cabling
	POWERCELL Load Cell Cabling

Installing the Panel Mount Enclosure

> ⚠ **WARNING**
>
> ONLY PERMIT QUALIFIED PERSONNEL TO SERVICE THIS EQUIPMENT. EXERCISE CARE WHEN MAKING CHECKS, TESTS AND ADJUSTMENTS THAT MUST BE MADE WITH POWER ON. FAILING TO OBSERVE THESE PRECAUTIONS CAN RESULT IN BODILY HARM.
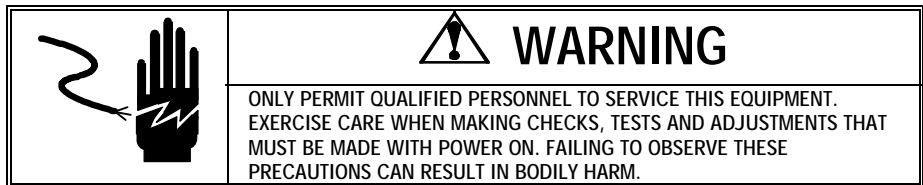
1. Cut an opening 9.58 in. (24.23 cm) x 5.12 in. (12.9 cm) to accommodate the terminal. The tolerance for the panel cutout is +/-0.06 in. (0.15 cm).

2. Using the Allen wrench included with the unit, remove the four retaining set screws (A) located at the rear of the enclosure in the top and bottom mounting plate grooves.

3. Remove both mounting plates (B).

4. Insert the terminal through the panel opening from the front until it is flush against the panel. Confirm that the terminal is installed right side up and that the gasket is in place in the groove.

5. Slide the top and bottom mounting plates back in the grooves and push them flush against the panel from the back. The flared end of the plate should contact the back of the panel.

6. Holding the unit in place, replace the four set screws and tighten until the unit is secured and the front panel gasket is compressed.

7. Inspect the front of the JagMax controller for a good seal to the front of the enclosure.
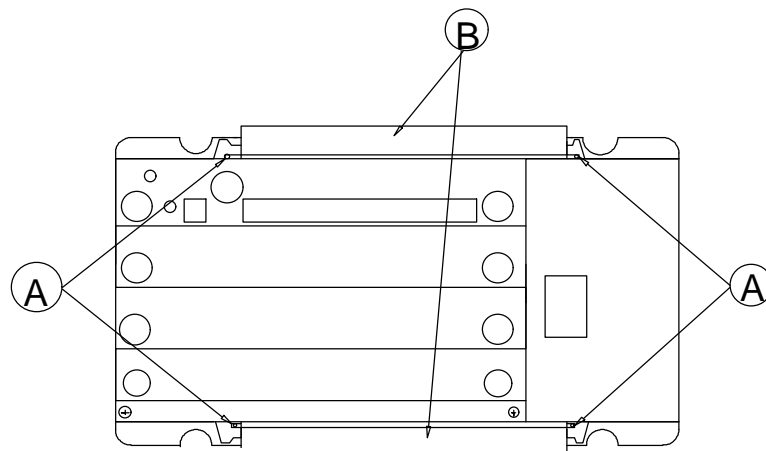
Figure 1-g

Power Requirements

The JagMax controller has a universal power supply which operates from 85 to 264 VAC. The supply operates with a line frequency of 49 to 63 Hz. Power consumption is 20 Watts maximum. Power is applied through a power cord supplied with the unit.

Note: The integrity of the power ground is important for the safe and dependable operation of the JagMax controller and its associated scale base(s). A poor ground can result in an unsafe condition if an electrical short develops in the equipment. A good ground connection is needed to minimize extraneous electrical noise pulses. The JagMax controller should not share power lines with noise-generating equipment. To confirm ground integrity, use a commercial branch circuit analyzer like an ICE model SureTest ST-1D. If adverse power conditions exist, a dedicated power circuit or power line conditioner may be required.

Connecting the Power Cord

A power cord is provided with the general purpose and harsh environment JagMax controllers. Connection to the panel mount Jagmax controller must be made at installation. The AC power connection must be wired as follows:
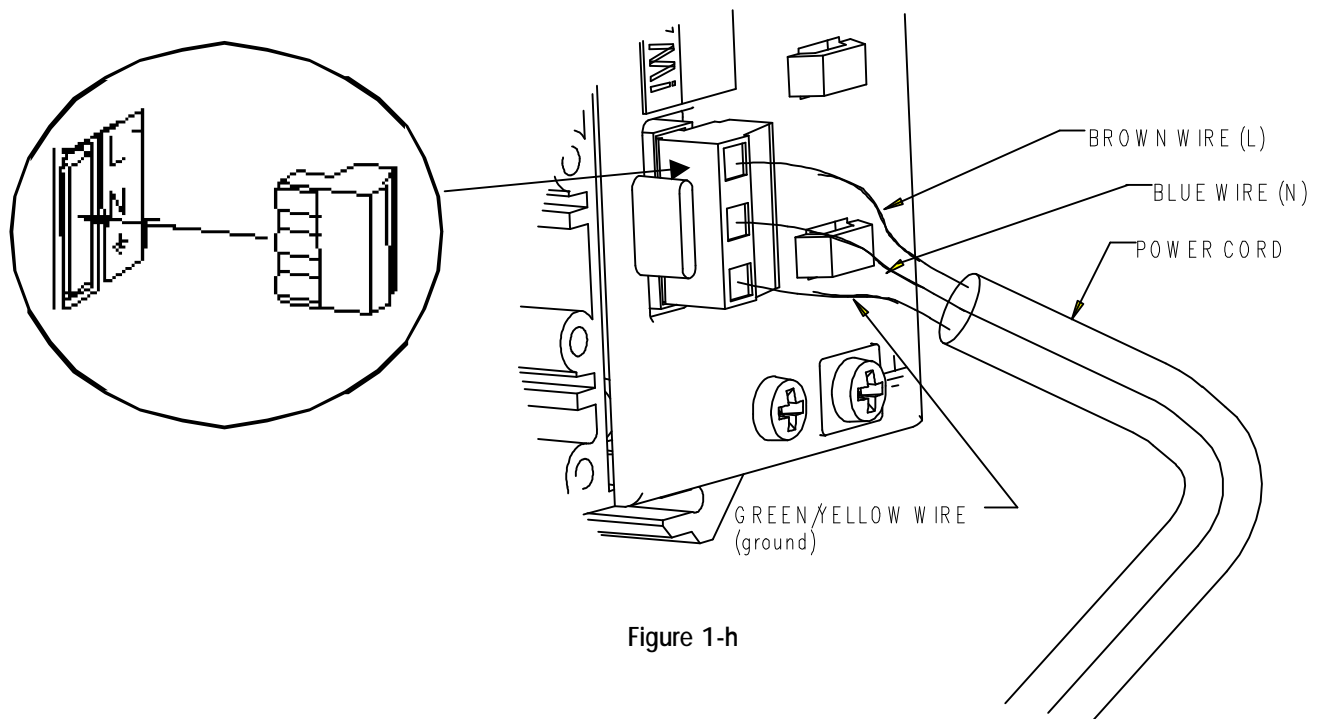
Figure 1-h
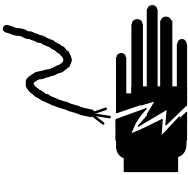
The terminal strip will accommodate wire sizes ranging from 16 to 12 AWG. The wire size used must meet all local and national electrical codes. On panel mount models (JMPA), you must secure the power wiring with a cable tie as a strain relief. Cable ties are supplied loose.

If the power terminal strip is removed from the terminal, reinsert the power terminal strip until it is completely seated in the jack at the rear of the enclosure. A clip holds the connector securely in place.
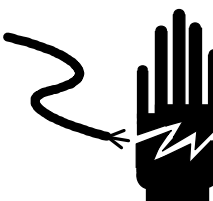
⚠ CAUTION
USE ONLY THE POWER CORD SUPPLIED OR AN EQUIVALENT TYPE. U.S. MODELS USE TYPE SJT CORD; EC MODELS USE HARMONIZED TYPE H05VV-F CORDS.

⚠ WARNING

IMPROPER INSTALLATION OF THE POWER CABLE WILL RESULT IN APPLYING 120 VAC TO GROUND. THE HOT WIRE MUST BE ON TOP. THE TERMINAL SCREWS SHOULD FACE AWAY FROM THE OPTION CIRCUIT BOARD SLOTS.

An auxiliary chassis ground screw is located at the lower right corner of the power supply cabinet. This ground connection is provided for surge voltage protection applications and for chassis ground. On panel mount models (JMPA) you must connect a safety ground to this screw.

⚠ CAUTION

FOR PANEL MOUNT INSTALLATIONS:

* INCLUDE A POWER DISCONNECT SWITCH IN AC POWER WIRING.
* SWITCH MUST BE WITHIN 10 FEET (3 METERS) AND BE EASILY ACCESSIBLE TO OPERATOR.
* SWITCH MUST BE CLEARLY IDENTIFIED AS DISCONNECT FOR TERMINAL POWER.
* SWITCH AND/OR CIRCUIT BREAKER MUST COMPLY WITH APPROPRIATE ELECTRICAL CODES (FOR EC—IEC947).

FOR DESK/WALL INSTALLATIONS:

* POWER CORD PLUG MUST BE CLEARLY IDENTIFIED AS DISCONNECT FOR TERMINAL POWER.
* POWER CORD MUST BE PLUGGED INTO OUTLET WITHIN 10 FEET (3 METERS) AND BE EASILY ACCESSIBLE TO OPERATOR.
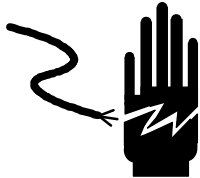
Electrical Connections
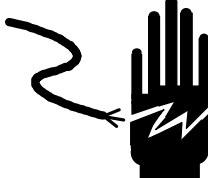
⚠ WARNING

ONLY PERMIT QUALIFIED PERSONNEL TO SERVICE THIS EQUIPMENT. EXERCISE CARE WHEN MAKING CHECKS, TESTS AND ADJUSTMENTS THAT MUST BE MADE WITH POWER ON. FAILING TO OBSERVE THESE PRECAUTIONS CAN RESULT IN BODILY HARM AND/OR PROPERTY DAMAGE.

Connect the Load Cell

Make the appropriate load cell connection to either the Analog A/D PCBs (for analog load cells) or to the POWERCELL I/O PCB (for CMOS POWERCELLs).

	⚠ **WARNING**
	IF THE SCALE IS LOCATED IN A HAZARDOUS EN-VIRONMENT, A SPECIAL ANALOG LOAD CELL BOARD MUST BE USED WITH A METTLER TOLEDO INTRINSIC SAFETY MODULE (BARRIER). LOAD CELLS MUST BE ON APPROVED LISTING 122502 AND INSTALLED IN ACCORDANCE WITH 118164 AND 103998.

	⚠ **WARNING**
	TO AVOID DAMAGE TO THE PCB OR LOAD CELL, REMOVE POWER FROM THE JAGMAX CONTROLLER AND WAIT AT LEAST 30 SECONDS BEFORE CONNECTING OR DISCONNECTING ANY HARNESS.

	⚠ **CAUTION**
	DO NOT ATTACH AN ANALOG LOAD CELL TO THE DIGITOL POWERCELL SCALE INPUT. DO NOT ATTACH A DIGITOL SCALE TO THE ANALOG LOAD CELL INPUT ON THE OPTIONAL ANALOG A/D PCB. DOING SO MAY RESULT IN DAMAGE TO THE LOAD CELL OR PCB.

Analog Load Cell Connections

The maximum cable length for analog load cell connections to the JagMax controller depends on the total scale resistance (TSR) of the scale base. To calculate TSR:

$$TSR = \frac{\text{Load Cell Input Resistance (Ohms)}}{\text{\#Load Cells}}$$

The chart below gives cable lengths based on TSR and cable gauge.

Recommended Maximum Cable Length			
TSR (Ohms)	24 Gauge (feet)	20 Gauge (feet)	16 Gauge (feet)
350	800′	2000′	4000′
87	200′	600′	1000′
58	100′	300′	500′
35	70′	190′	350′

The following diagrams describe analog load cell terminal strip wiring for standard 6-wire cable, Masstron 6-wire cable, and standard 4-wire cable.

TB3 Standard 6-wire Cable

Terminal	Wire Color
-EXC	Blue
-SEN	Red
-SIG	Black
Shield	Orange
+SIG	Green
+SEN	Yellow
+EXC	White

TB3 Masstron 6-wire Cable

Terminal	Wire Color
-EXC	Black
-SEN	Blue
-SIG	Red
Shield	Yellow
+SIG	White
+SEN	Brown
+EXC	Green

TB3 4-wire Cable

-EXC	⊘	Black
-SEN	⊘	
-SIG	⊘	Red*
Shield	⊘	Yellow or Orange
+SIG	⊘	White*
+SEN	⊘	
+EXC	⊘	Green
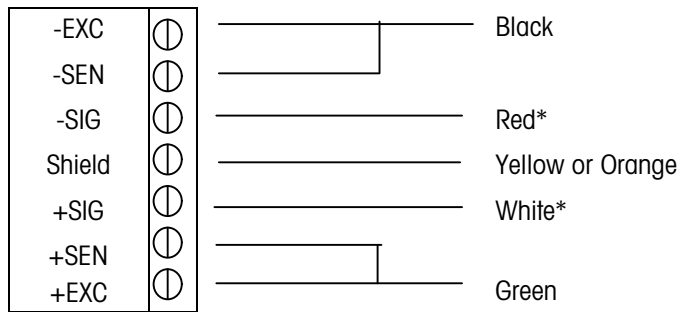
*If an increase in load results in a decrease in weight display, reverse the signal wires (+SIG and –SIG).

Figure 1-1

POWERCELL Connections (Non-Hazardous Area CMOS POWERCELL Applications)

CMOS
J-Box

JagMax
POWERCELL
I/O PCB

A	COM A
B	COM B
Gnd	Gnd
Gnd	Gnd
Gnd	Gnd
+VA	+20V
+VB	+20V
+VC	+20V
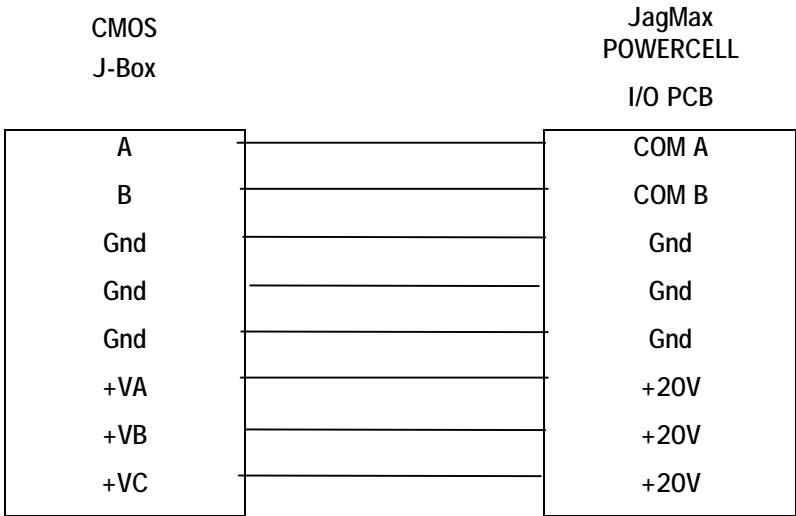
Figure 1-j

POWERCELL Connections to DigiTOL Scales with NMOS POWERCELLs and Pit Power Supplies

For applications where the POWERCELL PCB is connected to a DigiTOL scale with NMOS POWERCELLs, the JagMax controller must be wired with the auxiliary power supply (P/N 0917-0168).

Auxiliary Power Supply
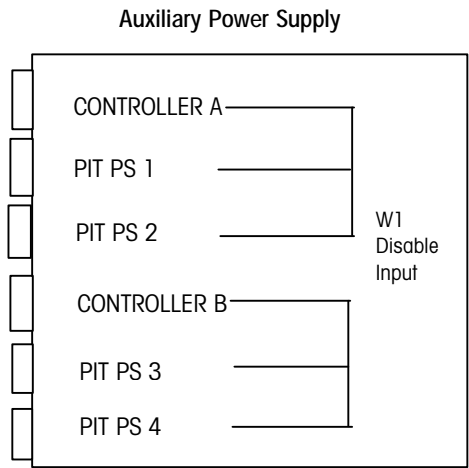
Figure 1-k

NOTE: The W9 jumper on the POWERCELL card should be set to the internal position when the 0917-0168 auxiliary power supply is used.

The purpose of the auxiliary power supply is to provide two identical circuits, each with a 24 VDC power supply output capable of driving up to two Pit Power Supplies. Each Pit Power Supply can drive a maximum of 12 NMOS load cells. As shown above, the CONTROLLER A and B inputs are connected to the PIT PS outputs. Notice that the two circuits are completely isolated. The only exception is the same 24 VDC power supply output is being used for PIT PS1 and 3, and the second 24 VDC supply is shared between PIT PS2 and 4.

If only one channel is needed, CONTROLLER A must be used and W1 must be inserted, shorting the pins.

Connect the JagMax controller to the Auxiliary Power Supply as follows:

Auxiliary Power Supply Controller A	JagMax POWERCELL PCB Scales 1 and 2
1	COM A
4	COM B
2	GND
5	+20 V
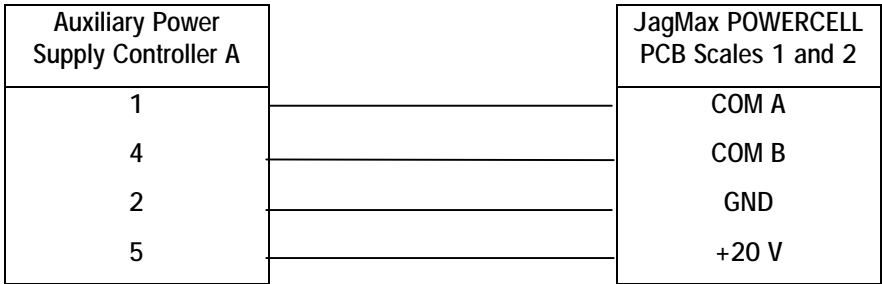
Figure 1-I

If a second JagMax controller exists, the interface cable between the second JagMax controller and the Auxiliary Power Supply would be wired the same. However, the interface cable would plug into the Auxiliary Power Supply at CONTROLLER B. The W1 jumper on the Auxiliary Power Supply must <u>not</u> be shorting the two pins together.

Replacing an Existing 8146 or 8530 on a DigiTOL POWERCELL Scale having an Auxiliary Power Supply and Pit Power Supply(s)

Wire the JagMax controller POWERCELL PCB to the Auxiliary Power Supply as shown previously. The home-run cables plugged into PIT PS 1, 2, 3, or 4 can be left as is.

Replacing an Existing 8530 on a DigiTOL POWERCELL Scale with a Pit Power Supply But No Auxiliary Power Supply

An Auxiliary Power Supply must be supplied. Wire the JagMax controller POWERCELL PCB to the Auxiliary Power Supply as shown previously. Plug the home-run cable from the 8530 into PIT PS 1.

Replacing an Existing 8146 or 8530 on a DigiTOL POWERCELL Scale if a Second Scale Is Present

The POWERCELL PCB should be programmed for two scales (Scale 1 + Scale 2 = 24 load cells maximum). The home-run cable(s) should be plugged into PIT PS 1 (and PIT PS 2 if a second home-run cable exists).

Replacing an Existing 8146 or 8530 on a DigiTOL POWERCELL Scale if a Third Scale Is Present

The first JagMax controller with a POWERCELL PCB should be wired as indicated previously. The second JagMax controller with a POWERCELL PCB should be wired into CONTROLLER B of the Auxiliary Power Supply and the home-run cable going to the third scale should be plugged into PIT PS 3 or 4.

Home-Run Cable Maximum Length

The maximum cable distance from the PIT Power Supply to the JagMax controller POWERCELL PCB depends on the number of POWERCELLs and the home-run cable gauge. Use the following table to determine the cable gauge and recommended cable distance:

	Home-Run Cable Distance	
Number of Cells	20 Gauge (feet)	16 Gauge (feet)
4	900'	900'
6	712'	900'
8	475'	900'
10	332'	878'
12	237'	644'

Figure 1-m

Serial Port Connections— Controller PCB

Refer to the following diagrams for proper cable connections to the JagMax controller's serial ports COM1 and COM2. COM1 and COM2 are located on the Controller board, which is positioned in the top slot.

The COM1 and COM2 terminal strips will accommodate wire sizes ranging from 23 to 16 AWG. The terminal strips may be removed to facilitate wiring. Removal of the terminal strips also permits easier viewing of the terminal strips designations printed on the board's back plate.
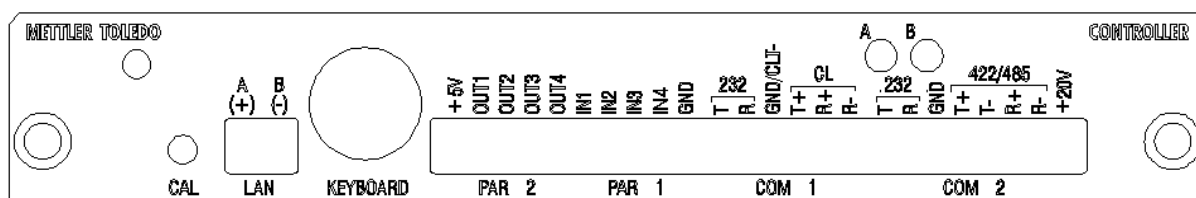
Figure 1-n

COM1 20 mA (Controller PCB Serial Port)

The following describes COM1 pin-to-pin cable connections using a 20 mA loop. The maximum recommended cable length for 20 mA interfacing is 1000 feet.

T (232)	
R (232)	
GNDCLT-	Signal Ground (Active Current Loop Transmit -)
T+ (CL)	Active Current Loop Transmit +
R+ (CL)	Current Loop Receive+
R- (CL)	Current Loop Receive-

Compatible Mettler Toledo Serial Devices								
JagMax COM1	8804* 8860*	8806**	8855	8842 8843 8844 8845 8856***	8622 8623	8614 8616 8619	8617 9323 9325	MP750
T (232)	---	---	---	---	---	---	---	---
R (232)	--	---	---	---	---	---	---	---
GNDCLT-	18	18	22	23	10	12	9	11
T+ (CL)	16	16	3	25	8	11	8	25
R+ (CL)	---	11	---	---	---	---	---	---
R- (CL)	---	22	---	---	---	---	---	---

* Pinout shown is for use with Plug In Adapter (8804 P/N 127358 00A;8860 P/N 128019 00A).
** This cable also requires jumper pins 12 to 23 at the 8806 end of the Interface cable.
*** The 8856 requires the optional 20 mA to RS-232 Adapter (P/N 900936 00A) for 20 mA loop applications.

Figure 1-o

COM1 RS-232 (Controller PCB Serial Port)

The following diagram and table describe COM1 pin-to-pin cable connections using an RS-232 cable. The maximum recommended cable length for RS-232 communications is 50 feet.

JagMax COM 1

⊘	T (232)	RS-232 Transmit
⊘	R (232)	RS-232 Receive
⊘	GNDCLT-	Signal Ground
⊘	T+ (CL)	
⊘	R+ (CL)	
⊘	R- (CL)	

PIN Connection for Mettler Toledo Devices Using COM 1 RS-232						
JagMax COM 1	8622 8806 8842 8844 8855*** 8860** 8804** 8840 8843 8845 8856 8865 MP750					8617-TB2 9323-TB2 9325-TB2
T (232)	3*					2
R (232)	---					---
GNDCLT-	7*					3
T+ (CL)	---					---
R+ (CL)	---					---
R- (CL)	---					---

*Each of these devices uses this connection.

**Pinout shown is for use <u>without</u> Plug In Adapter (8804 P/N 127358 00A, 8860 P/N 128019 00A).

***The 8855 using RS-232 must have the 129618 00A Interface PCB. The baud rate for the printing will not work properly at 300 Baud! If the interface PCB is part number 123654 00A or 137651 00A, the JagMax controller TXDA controller must be connected to Pin 2 of the 8855 Interface PCB. In this case, set the JagMax controller baud rate to 1200.

Figure 1-p

COM2/COM4 RS-232
(Controller PCB Serial Port)

The following diagram and table describe COM2 pin-to-pin cable connections using an RS-232 cable. The same diagram and table describe the connections to COM4 when an optional Multifunction I/O PCB is installed. The maximum recommended cable length for RS-232 is 50 feet. The maximum recommended total distance for RS-422 and RS-485 is 2000 feet.

JagMax COM 2

○	T (232)	RS-232 Transmit
○	R (232)	RS-232 Receive
○	GND	Signal Ground
○	T+ (422/485)	RS-422/485 Transmit +
○	T- (422/485)	RS-422/485 Transmit -
○	R+ (422/485)	RS-422/485 Receive +
○	R- (422/485)	RS-422/485 Receive -
○	+20 V	+20 VDC Supply

PIN Connection for Mettler Toledo Devices Using COM 2/4 RS-232		
JagMax COM 2/4	8622 8806 8842 8844 8855*** 8860** 8804** 8840 8843 8845 8856 8865 MP750	8617-TB2 9323-TB2 9325-TB2
T (232)	3*	2
R (232)	---	---
GND	7*	3
T+ (422/485)	---	---
T- (422/485)	---	---
R+ (422/485)	---	---
R- (422/485)	---	---
+20 V	---	---

*Each of these devices uses this connection.

Pinout shown is for use **without Plug In Adapter, (8804 P/N 127358 00A; 8860 P/N 128019 00A).

***The 8855 using RS-232 must have the 129618 00A Interface PCB. The baud rate for the printing will not work properly at 300 Baud!   If the interface PCB is part number 123654 00A or 137651 00A, the JagMax controller TXDA must be connected to Pin 2 of the 8855 Interface PCB. In this case the JagMax controller must be set to 1200 baud.

Figure 1-q

Discrete Wiring

The Controller PCB contains four discrete input and four discrete output connections.

PAR 1 Input Connections
The JagMax controller reserves inputs one and two for use with the optional traffic light controller. The JagMax controller reserves input three for an optional pushbutton to return the JagMax to local control. The maximum recommended cable length between the remote device and the JagMax controller is 10 feet.

IN 1	——————— Remote Weigh Mode Pushbutton*
IN 2	——————— Remote Re-Weigh Mode Pushbutton*
IN 3	——————— ESC from Remote Controller
	(for use with ARCNet Network only)
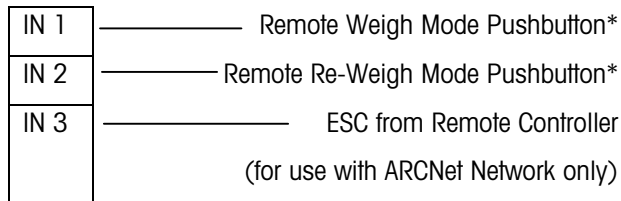
*See optional traffic light controller wiring diagram.

Figure 1-r: Input Wiring Example

For more information, see the section entitled "Outputs" in Appendix 2.

PAR 2 Output Connections
The JagMax controller reserves the first three outputs for use with the optional traffic light controller.

OUT 1	——————— Entrance Traffic Light*
OUT 2	——————— Exit Traffic Light*
OUT 3	——————— Truck On Alarm Output*

*See optional traffic light controller wiring diagram.

Figure 1-s

IN1	YEL	
IN2	GRN	
IN3	BLU	
IN4	VIO	Optional
OUT1	BLK	Traffic Light
OUT2	BRN	Controller
OUT3	RED	(90382800A)
OUT4	ORG	
GND	WHT/BLK	
	WHT/ORG	
	WHT/RED	
+5V	WHT/BRN	

1-t: Traffic Light Controller Wiring Diagram

Optional Multifunction I/O PCB Serial and Discrete Connections

The Optional Multifunction I/O PCB provides two additional serial ports (COM 3, COM 4), eight additional discrete inputs (PAR 3), and eight additional discrete outputs (PAR 4).
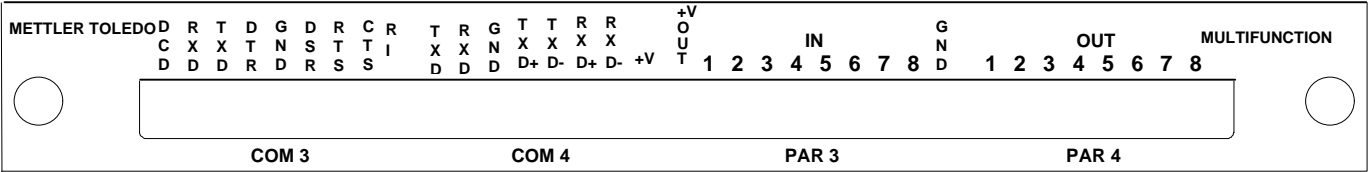
Figure 1-u

COM3 Interconnect Wiring

The COM3 port is only available with the optional Multifunction PCB. The following diagram describes COM 3 pin-to-pin cable connections using RS232.

COM 3 With Full Hand Shaking

	DCD	Not Used
	RxD	RS-232 Receive
	TxD	RS-232 Transmit
	DTR	Not Used
	GND	Signal Ground
	DSR	Not Used
	RTS	Not Used
	CTS	Not Used
	RI	Not Used

Figure 1-v

COM4 Interconnect Wiring

The wiring instructions for the COM2 serial port also apply to COM4 on the Multifunction PCB. Please refer to the section presented earlier in this chapter entitled COM2/COM4 RS-232 (Controller PCB Serial Port).

PAR 3 Discrete Input Port

The JagMax controller does not use these ports.

PAR 4 Discrete Output Port

The JagMax controller does not use these ports.

Network Connections

The JagMax controller ARCNet local area network (LAN) connections are made to the left-most two-position controller strip on the Controller board. Two JagMax controllers can be wired together in a cluster using a bus topology, or a personal computer can be interfaced using the Windows API and DDE. Use a two- conductor, unshielded, 20-gauge twisted pair cable. Mettler Toledo can supply a suitable cable (P/N 143152 00A) or recommends Belden 8442. A termination resistor is required on both JagMax controllers in the network. Jumper W1 on the Controller PCB is used to insert the termination resistor. Maximum cable length is 330 feet (100 m); minimum cable length is 6 feet (2 m).

Two JagMax Cluster Example

The following diagram illustrates a two JagMax cluster.
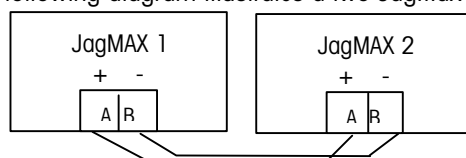
Figure 1-w: JagMax Cluster Diagram

In the example above, the controller A's are wired together (same wire color) and the controller B's are wired together. The termination resistor (W1) is installed on both units. The jumper descriptions for ARCnet are shown in the next section.

JagMax Controller Jumper and Switch Settings

Jumper and switch settings for the Controller PCB and Analog PCB are described in the following sections.

Controller

Jumpers and switches on the Controller PCB should be set as follows:
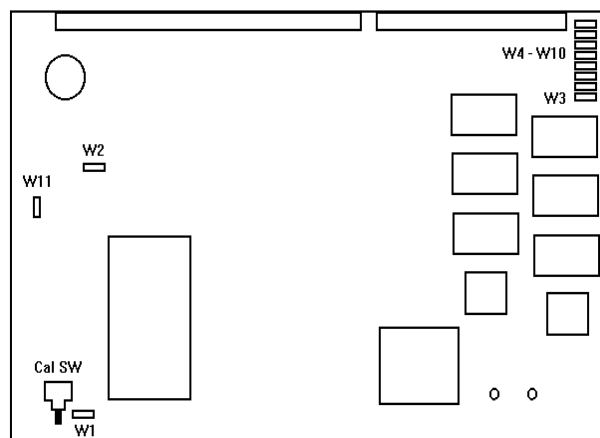
Figure 1-x Controller PCB

- **CAL SW Pushbutton** (located on the back of the unit) is used when new software is downloaded to the JagMax controller. For more information on downloading JagMax controller software, see Appendix 4 entitled **Loading JagMax Software**.
- **W1** (Net) should be ON if the controller is at the beginning (first controller) or end (last) of ARCnet network cabling. This jumper should be OFF otherwise.
- **W2** (WDI) should be ON during normal operation. This jumper must be OFF when you are downloading new software to the JagMax controller.
- **W3** (Setup Access) must be OFF to allow access to the program blocks in setup. When ON, the Enter Setup? prompt does not appear on the JagMax controller display when the FUNCTION key is pressed.
- **W4 through W10** are ARCnet addresses. These jumpers determine the JagMax controller address number and how the controller will identify itself using the lower display left-side annunciators.
- **W4** (ARCnet Cluster x 40) Always OFF.
- **W5** (ARCnet Cluster x 20) Always OFF.
- **W6** (ARCnet Cluster x 10) Always OFF.
- **W7** (ARCnet Address x 8) Always ON.
- **W8** (ARCnet Address x 4) Always ON.
- **W9** (ARCnet Address x 2) See chart below.
- **W10** (ARCnet Address x 1) See chart below.

Jumper Settings for the 2-JagMax Cluster Example			
	JUMPER	JAGMAX 1	JAGMAX 2
W1	Termination	ON	ON
W4	x40	OFF	OFF
W5	x20	OFF	OFF
W6	x10	OFF	OFF
W7	x8	ON	ON
W8	x4	ON	ON
W9	x2	ON	OFF
W10	x1	OFF	ON

- **W11** is for factory testing and should be OFF during normal operation. This jumper does not control any diagnostic tests that would aid on-site troubleshooting. W11 may also be used to force entry into setup mode on power-up and disable the JagMax application software. This jumper may be used to allow access to setup for calibration. If so used, you must remove W11 when finished in setup mode.

Analog (*)1409300A or (*)14485300A (HAP version)

Note: (*) May have revision letter preceding the part number.
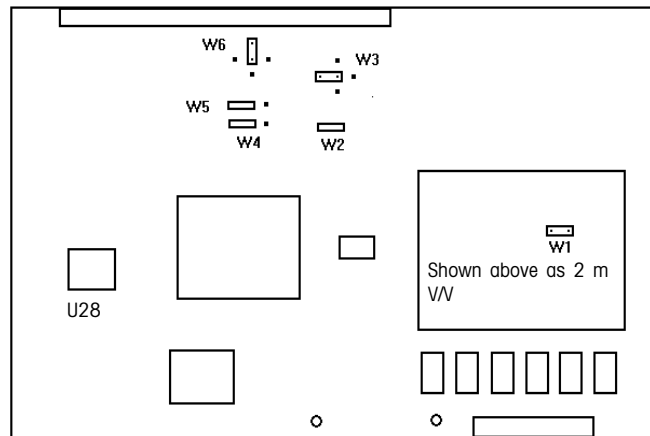
Figure 1-

Jumpers on the Analog PCB should be set as follows:

- **W1** should be OFF for 3 mV/V, ON for 2 mV/V load cells. W1 is ON when the jumper is inserted over the two male pins.

- **W2** must be ON.

- **W3** (address) should be positioned to address the specific Analog PCB you are working with. If a single analog scale is used, you must position W3 so you can read the letters B1 under the jumper. If two analog scales are present, address the second Analog PCB as B2. If a third analog scale is used, the W3 jumper should be in the B3 position.

- **W4 and W5** should be set to jumper over pins 2 and 3.

- **W6** (interrupt) should be positioned as shown so the designation I7 can be read directly above the jumper.

The Test 1through 10 jumpers must be left OPEN for normal operation.

Single Channel Analog (*)15345400A or (*)15360200A (HAP version)

Note: (*) May have revision letter preceding the part number.

EEPROM →

W3

U26

W1 jumper inside analog can with removable lid
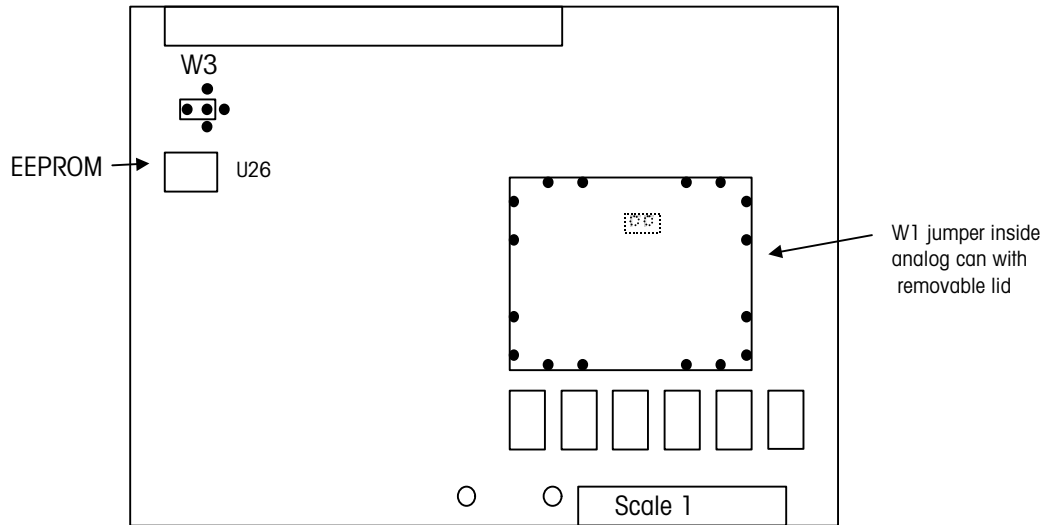
Scale 1

Figure 1-z: Single Channel Analog Scale PCB

Note: If a dual analog and a single analog card are used, the dual analog card must be Bd #1 and the single analog card must be Bd #3.)

W3

B2
B1 ●●● B3
B4
Bd Address #1

B2
B1 ●●● B3
B4
Bd Address #2

W1

Shown above as 2 mV/V
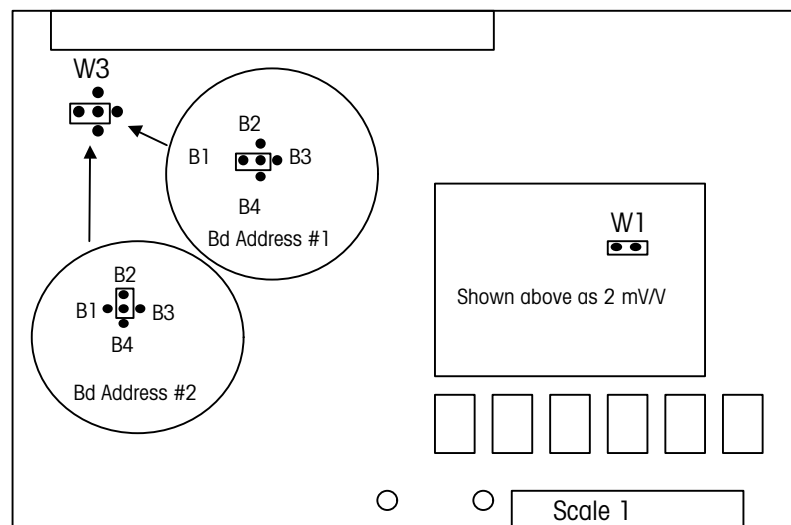
Scale 1

Figure 1-aa: Single Analog Scale PCB – W3 Expanded View

W1 should be off for 3mV/V, ON for 2mV/V load cells. W1 is on when the jumper is inserted over the two male pins.

W3 (board address) should be positioned to address the specific Analog PCB with which you are working. If a single analog scale is used, you must position W3 so you can read the letters B1 under the jumper. If two analog scales are present, address the second Analog PCB as B2 as shown in the diagram above. If a third analog scale is used, the W3 jumper should be in the B3 position.

Dual Channel Analog (*)15290700A or (*)15360100A (HAP version)

Note: (*) May have revision letter preceding the part number.

Jumpers on the Dual Channel Analog PCB must be set as follows.
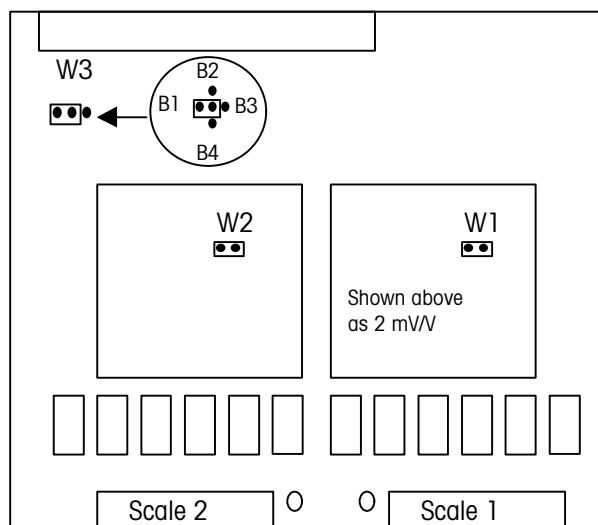
Figure 1-bb: Dual Channel Analog PCB – W3 Expanded View

W1 should be off for 3mV/V; on for 2mV/V load cells for Scale 1. W1 is on when the jumper is inserted over the two male pins.

W2 should be off for 3 mV/V; on for 2 mV/V load cells for Scale 2. W2 is on when the jumper is inserted over the two male pins.

W3 (board address) must be positioned so you can read the letters B1 under the jumper for the first dual analog card. If a second dual analog card is present, the W3 jumper should be set to B3 on the second card.

POWERCELL I/F PCB

Jumpers on the POWERCELL I/F PCB should be set as shown below:
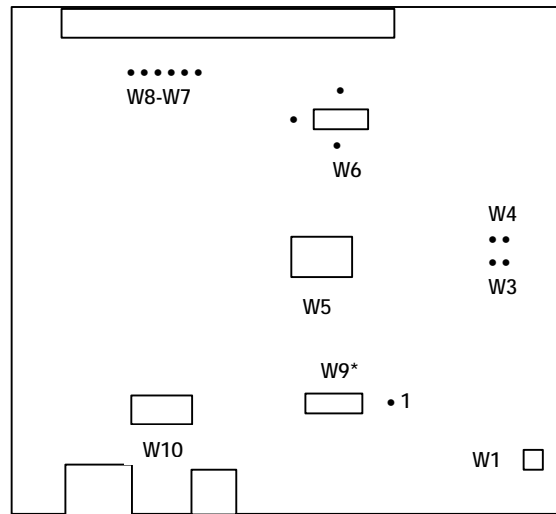
Figure 1-cc

W1   Always installed

W2   Factory test – do not install

W3   Board address, removed = PCB #1

W4   Always removed

W5   Always installed

W6   Install on pins 1-2

W7, W8   Always removed

*W9 is shown in the "internal" position meaning that the POWERCELL I/F PCB is using the internal power supply to power the CMOS load cells. If the application contains more than 14 CMOS POWERCELLs, an External Power Supply (P/N 0917-0240) must be used and the jumper should be in the external position.

W10 is the line termination jumper. It should be on if there is a single homerun cable with the JagMax controller at the end of the cable.

Multifunction I/O PCB

Jumpers on the Multifunction I/O PCB should be set as shown below:
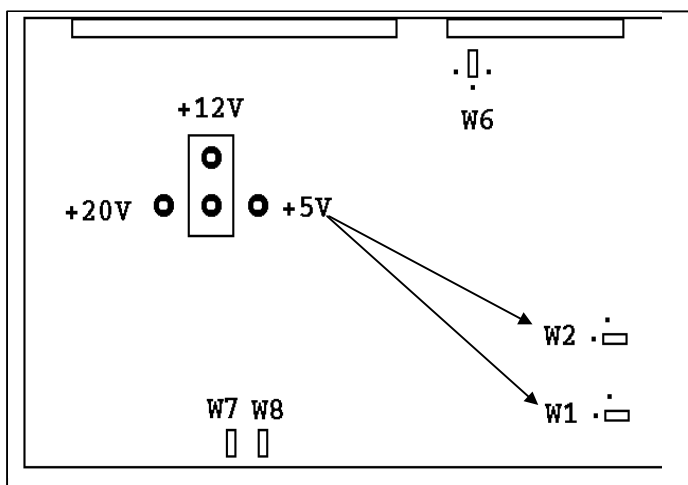
Figure 1-dd

W1—must be set for the desired voltage that the selected PAR 3 and PAR 4 parallel outputs will be referenced to through 10 K ohm pull-up resistors resident on the Multifunction PCB. It is also the voltage that will be present on the V OUT terminal of PAR 3. The choices are +5 VDC, +12 VDC, and +20 VDC.

W2—selects the voltage that will be present at the +V terminal of the COM4 port. The choices are +5 VDC, +12 VDC, and +20 VDC.

W3—ON, test (unused)

W4—OFF

W5—ON, test (unused)

W6—IRQ 4

W7—ON

W8--ON

Installing Options

JagMax controllers may be ordered with options already installed at the factory. Options may also be ordered separately and installed in the field. Remember that when installing options the Controller PCB must always be in the top slot. The remaining slots are for optional boards and can be used interchangeably. Refer to the information below for installing options. For information about specific options, contact your authorized Mettler Toledo representative.

To install JagMax controller options:
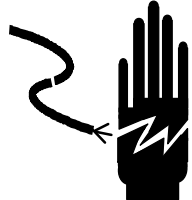
1. Disconnect all power to the controller.

2. Remove the rear cover of the general purpose model by removing the four screws securing the cover to the housing. For harsh environment enclosures, remove the front cover as described in Chapter 1.

3. Choose the available slot where the option will be installed.

4. Evenly align the edges of the PCB option board assembly in the grooves on each side of the board slot and slide the board into the JagMax controller.

5. Gently press the PCB into the open slot with your hand until it is seated.
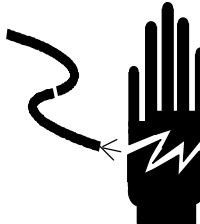
6. It is not necessary to use great force to push the PCB into the slot. Turning the thumb screws will help draw the PCB into its socket.

7. Turn the thumb screws clockwise to secure the panel assembly into the unit. Tighten these with your hand; a tool is not necessary.

Apply Power

After connecting all external wiring, configuring circuit board jumpers, and installing and configuring the option boards, power may be applied to the JagMax controller.

	⚠ **WARNING**
	Verify power, neutral, and ground wires are correct at their source prior to applying AC power. Failure to do so may result in bodily harm and/or property damage.

	⚠ **WARNING**
	AC power sources must have proper short circuit and over current protection in accordance with local and national electrical regulations. Failure to provide this may result in bodily injury and/or property damage.

Power-up Sequence

The JagMax controller goes through a series of self tests when it is turned on to confirm normal controller operation. The power-up sequence requires approximately 20 seconds.

1. All segments of the display windows are lit. This verifies operation of all segments. The display then shows dashes [---] in the upper display while the controller performs internal diagnostic self tests on memory and identifies optional boards that are installed.

    The controller also checks the location of setup parameters and memory fields. If these have been moved or changed, an error message will appear before displaying the software part number.

2. After a short delay, the controller displays the software part number and advances to normal operating mode.

3. The software part number is shown in the lower display area during power-up: for example, Rev. T.0.

4. The controller then tests communication with the load cell. It displays weight when successful communication is established. If the JagMax controller is unable to establish communication, an error is displayed.

5. If enabled, the JagMax controller power-up timer counts the minutes and seconds remaining before the JagMax controller advances to normal operating mode. Power-up timer configuration is discussed in Chapter 2, Application Environment Program Block.

Seal the Enclosure— Weights and Measures Applications

After setup is complete, most legal-for-trade applications require sealing the enclosure so modifications cannot be made.

If your JagMax controller is not used for legal-for-trade applications, skip this section.

Make sure the W3 jumper is ON (setup access disabled) before sealing the enclosure.

General Purpose Enclosure

1. Screw a special through-hole sealing screw into all three holes at the top of the rear cover plate.
2. Tighten the screws and run a wire seal through the holes in the heads of the screws.
3. Apply the lead seal.

Harsh Environment Enclosure

1. Sealing holes are located on the left and right sides of the bottom of the enclosure. With the front door firmly seated on the enclosure, run a wire seal through the door and tab holes.
2. Apply the lead seal.
3. Repeat for the opposite side.

Panel Mount Enclosure

1. Screw one special through-hole sealing screw into the hole labeled "CAL" on the rear of the Controller PCB and two more into the threaded holes directly above and below and to the left of the "CAL" opening.

2. Tighten these screws and run a wire seal through the holes in the heads of the screws.

3. Apply the lead seal.

4. Remove the two top screws near the front of the enclosure on at a time and replace them with special through-hole sealing screws.

5. Screw a third sealing screw into the unused hole adjacent to the right side screw.

6. Run a wire seal through the holes in the heads of the screws.

7. Apply the lead seal.
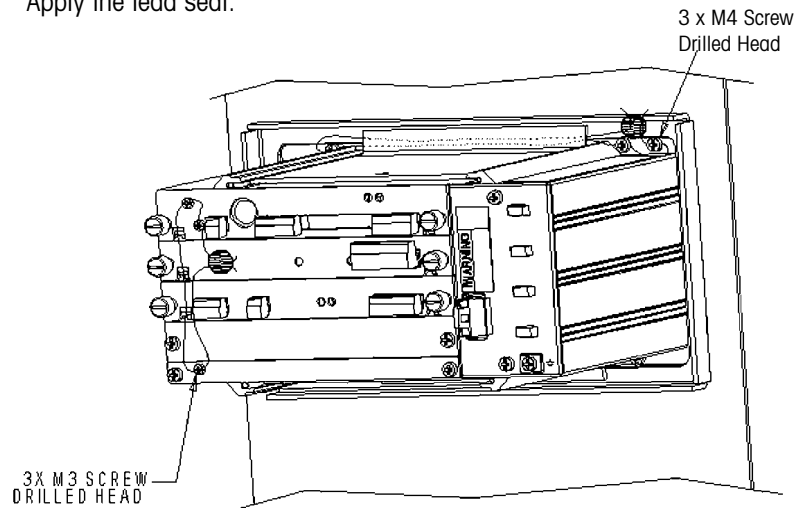
Figure 1-ee: Sealing Panel Mount Enclosure JagMax

2

System Set-up

This chapter discusses how to setup and configure each of the JagMax controller's system program blocks. Refer to Chapter 3 for information on the application-specific setup steps.

```
                          ┌──────────────────┐
                          │  Enter Setup?    │
                          │    (from         │
                          │                  │
                          └──────────────────┘
```

Scale Interface	Application Environment	Configure Serial	Configure Discrete	Configure Memory	Configure JagBASIC	Configure Network	Diagnostics
Market	Character Set	Configure Port	Parallel Inputs	Configure Literals	Keyboard	Network Keybd/Display	Memory Test
Scale Type	Language	Configure Template	Parallel Outputs	Configure Prompts	Display	PC Data Access	Display Test
Calibration Unit	Keyboard Type	Reset to Factory	Assign Setpoints	Configure Consecutive Numbering	Auto Start	PLC SP Control	Keyboard Test
Capacity	Scale ID		Reset to Factory	Reset to Factory	Manual Start	Reset to Factory	Scale Test
Increment Size	Time and Date				Send RAM Files		Serial Test
Shift Adjustment	Alternate Weight Units				Initialize RAM Disk		Parallel I/O Test
Linearity Correction	Power-Up Operation				Password Maintenance		Network Test
Calibration	Tare Operation				Reset to Factory		ARCNet Send BRAM
Zero Adjustment	Zero Operation						Zmodem Send BRAM
Span Adjustment	Stability Detection						Print Setup
Add in Sum?	Beeper Operation						Print Error Log
Gravity Adjustment	Inhibit Memory?						Reset to Factory
Reset to Factory	Application Type	Vibration Rejection	Reset to Factory				

General Program Block Information

Keystroke Functions

Throughout the manual, the names of the keys on the JagMax controller keypad are presented in all capital letters and are bold. Commands such as "select" – which tell you to do something -- are presented in lower case. For example:

>Press **SELECT** means to press the **SELECT** key on the key pad.

>Select an option means that you are to choose an option by pressing the **SELECT** key to display an item, then pressing **ENTER**.

Key names on the QWERTY keyboard are also in bold type but appear in parentheses. For example:

>Press **(F1)** means press the F1 key on the QWERTY keyboard.

Display messages that appear on the JagMax controller are in bold type and brackets. They may be all caps or in uppercase and lowercase letters, depending on how they actually appear on the display. For example:

>**[SELECT FUNCTION]** is a display message you will see on the JagMax controller display.

Display messages and the use of the keys on the QWERTY keyboard are covered more in-depth in the **JagMax Truck Scale Controller User's Guide**.

JagMax Keypad Keys

The following keys on the JagMax controller keypad are commonly used when configuring the program blocks.

Numeric Keys input numeric entries such as threshold values and scale capacity. These keys are also used for alphanumeric entries unless a PC type keyboard is installed.

SELECT scrolls through a list of choices. As the **SELECT** key is pressed, programming items are listed and appear in the lower display area.
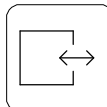
ENTER completes a response. Press **ENTER** after you have used the numeric keys to input data or used the **SELECT** key to display an option.
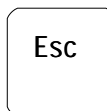
ESCAPE exits the current location. The parameters you have configured prior to pressing escape are saved when you exit. Each time you press **ESCAPE** you exit back to the previous level of setup. You may have to press **ESCAPE** several times to return to a desired location.
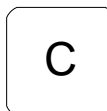
CLEAR clears the last character of a response and allows you to re-key the response. This is similar to the backspace key on a computer keyboard.
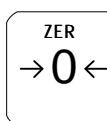
ZERO allows you to back up in the current program block and return to the previous step if you are in the first two levels of setup. The **ZERO** key does not function when you are beyond the second level in setup.

Navigating Within a Program Block

Navigation within the program blocks is the same from block to block.

1. Press **SELECT** to scroll through the available program blocks. When the desired block is displayed, press **ENTER** to open it.

2. Proceed through each step in all program blocks to configure all parameters the first time the JagMax controller is programmed.

Program blocks contain sub-blocks that handle specific areas of functionality. The **SELECT** and **ENTER** keys toggle and confirm parameter option selection.

After you have configured one sub-block, the JagMax controller proceeds to the next. When you finish the last sub-block in a program block, the JagMax controller returns to the first sub-block in the current program block.

To get to the next program block, press **ESC** until the current program block name is displayed. Press **SELECT** to advance to the next program block.

You can exit your position within a program block by pressing **ESCAPE** at any time. You may need to press **ESCAPE** several times to exit setup mode and continue to normal operation.

Arrows in the upper display area indicate your position within a program block. The following chart describes the arrows relative to block position.

ARROWS	BLOCK POSITION
1 Arrow	You are in setup mode, top level.
2 Arrows	You are in a program block.
3 Arrows	You are in a sub-block.
4 Arrows	You are configuring an element within a sub-block.

Audible Messages

The JagMax controller uses audible beeps to provide immediate feedback for keystrokes and controller responses. The beeps tell you that the controller registered a keystroke and whether the function associated with the keystroke is valid or invalid.

The audible messages can be programmed ON or OFF in setup. The controller is programmed at the factory with the key beeps OFF and the alarm beeps ON. Refer to the Beeper Operation sub-block of the *Application Environment* program block for instructions on enabling and disabling the beeper. The JagMax controller's coded beeps are as follows:

BEEP DESCRIPTION	INDICATION
1 short beep	A key has been pressed and recognized.
1 long beep	The keystroke(s) entered are invalid.
3 quick beeps	The entry is acknowledged, and the function is performed.

JagMax With Multiple Scales

A JagMax controller can operate with up to four scales. For multiple-scale operation:

1. Verify which scale is currently displayed. The cursor beneath the lower display will indicate scale A B, C,D or SUM (depending on the number of scales used). If a JagMax controller was previously programmed as a one-scale controller, scale A should be displayed.

2. Enter Setup mode and access the *Scale Interface* program block for scale A. Configure the **[# INTRNL SCLS]** parameter in the Scale Type sub-block for the number of scales used plus one for the sum scale. This will allow you to select the other scales from the home position (outside Setup mode).For example, if you have three scales, configure the # internal scales for 4.

3. Finish configuring and calibrating scale A.

4. After calibrating scale A, exit from setup.

5. From the home position, press the **SELECT** key until scale B, C or D is displayed in the lower display area. Press **ENTER** to select that scale.

   The upper display will now show weight from scale B, C or D. If no previous calibration exists for that scale, the upper display will show dashes. The lower display will show "No Scale B."

6. Configure and calibrate the next scale. **Do not change the parameter [# INTRNL SCLS back to 1]**—this will prohibit selection of any other scale.

Repeat the steps above for all other scales. The last scale will be configured as the sum scale. Select the sum scale type and set the total scale capacity. The sum scale does not require any calibration. Then exit setup when finished.

Reset to Factory

The last sub-block in each program block is *Reset to Factory* which returns <u>all</u> parameters in the current block to the original factory settings. Using the reset option is the same for all program blocks except *Diagnostics and Maintenance*.

The *Diagnostics and Maintenance* block has a Master Reset option that lets you reset all parameters in all blocks including or excluding *Scale Interface*.

To reset the program block parameters:

1. From within a program block, press **ENTER** at the **[Reset to Factory]** prompt.

   When you press **ENTER**, the controller responds with the prompt **[Are You Sure?]**

2. Press **SELECT** to display **[Y]** and press **ENTER** to confirm and reset the values to factory defaults. Then press **ESCAPE** to exit the sub-block.

3. Press **SELECT** to continue to the next program block.

Use caution when resetting the values for the Scale Interface Program Block. All calibration values will be reset.

Program Block Access

Before you can set program block parameters, you must enter the setup mode. To access the program blocks when the JagMax application is running:

1. Enter Maintenance Mode **(F11)**.

2. End program **(F5)**.

3. Enter a password. The JagMax controller will display **[NewPW:]**. You can either change the password or accept the password shown.

4. Press the **FUNCTION** key.

5. Press **SELECT** until the prompt **[Enter Setup?]** is displayed, then press **ENTER**.

6. If the **[Enter Setup?]** prompt is not displayed and the controller returns to Normal Operation mode, try the following steps:

   - Remove AC power.
   - Remove jumper W3 on the Controller PCB.
   - Replace the Controller PCB.
   - Power the controller and repeat the previous steps.

The first program block, *Scale Interface*, should be displayed. Press **ENTER** to open this block or press **SELECT** to choose another block to open. When you have finished configuring the parameters in each sub-block and wish to return to normal operation, press **ESCAPE** several times until the prompt **[Exit Setup?]** is displayed, then press **ENTER** to confirm. If you do not wish to exit at this time, press **SELECT** to choose another program block within the setup mode.

If you wish to protect the setup parameters from being changed, you can power-down the controller and install the W3 jumper on the Controller board.

Scale Interface Program Block

The *Scale Interface* program block lets you set and calibrate the features that affect weighing performance. The following diagram describes this block:
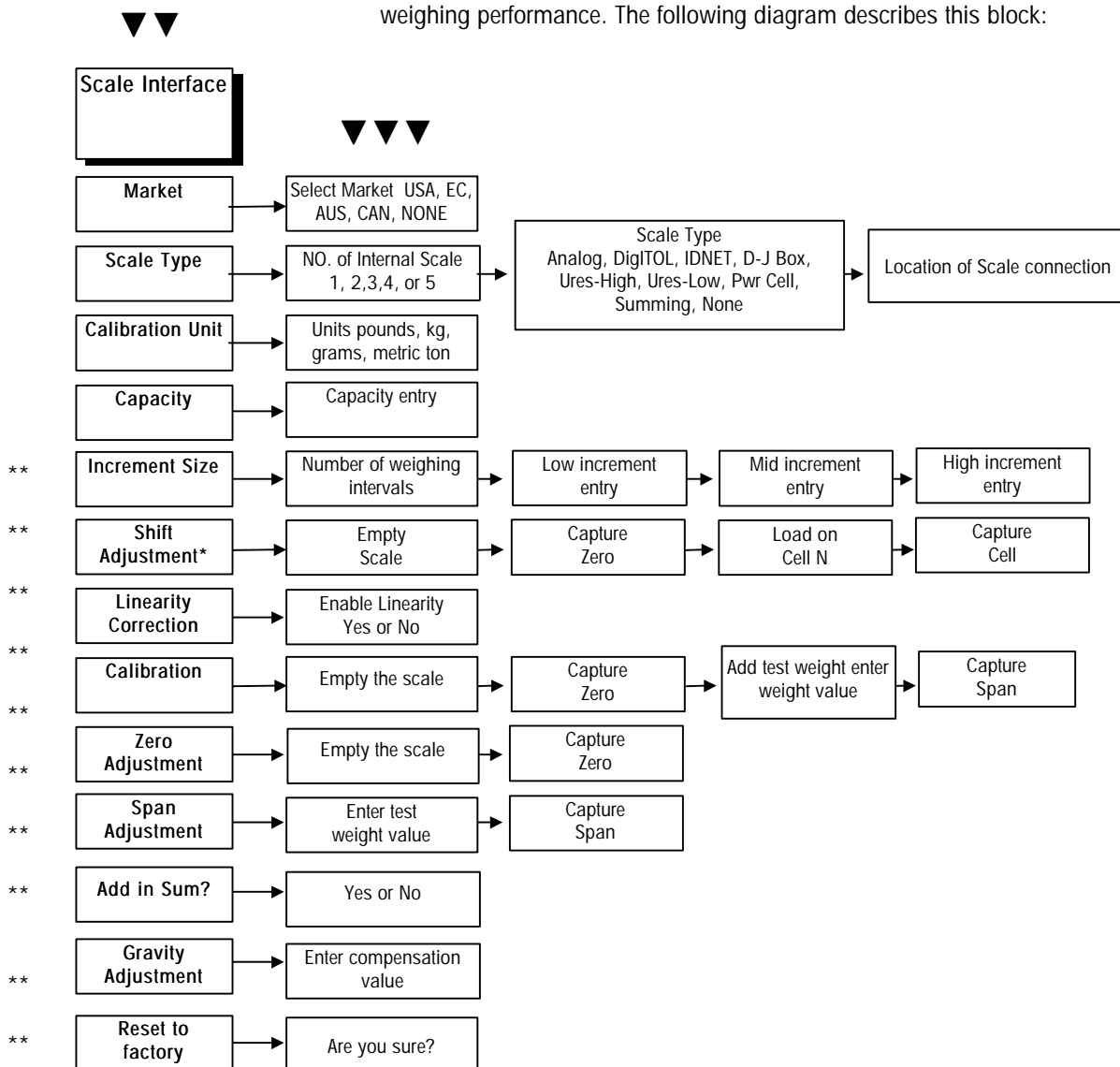
* Power Cell Scale Only.
** These blocks do not show up for summing scale.

Market Sub-block

The JagMax controller is factory set for use in the United States only. You can change the market to Canada, accept the current market setting and continue to the next sub-block , or press **ESCAPE** twice to exit setup mode. Do not select a market type other than Canada or the United States.

Scale Type Sub-block

The *Scale Type* sub-block prompts you for the number of internal scales and type of scale that will be used.

1. Press **ENTER** at the **[Scale Type]** prompt to open the sub-block.

2. At the **[# Intrnl Scls?]** prompt, press **SELECT** until the number of scales is displayed. Select the number of internal scales. Choose 1, 2, 3, 4 or 5, depending on the number of scales connected to the JagMax controller. (Remember to include one as the sum scale. For example, a three-scale system plus the sum scale would have four internal scales.)

3. Press **SELECT** at the **[Type?]** prompt until the desired scale type is displayed, then press **ENTER**. Scale types include:

   - Analog
   - POWERCELL
   - Summing
   - None

• DigiTOL	• UltraRes-High
• IDNet	• UltraRes-Low
• DJ-Box	

   Note: Do not use these selections.

   No other board types are valid for use with the JagMax controller and should NOT be selected.

If Analog is Selected

Select board #1 (BD1), board #2 (BD2), board #3 (BD3) depending on the address of the Analog PCB connected to the scale. The board address is determined by jumper W3 on the Analog PCB. If two analog PCBs are installed, they must have different board addresses.

Note: JagMax controllers with a single analog scale must use Board #1 (BD1).

If POWERCELL is Selected

1. At the **[Loc?]**prompt, select the address of the scale's first cell.

2. To address the cells of a single scale, or to address the cells of Scale A, select **[PwrCell #1]**. To configure cells of the second scale (Scale B), select **[PwrCell #31]**. To configure cells of the third scale (Scale C), select **[PwrCell #61]**. To configure cells of the fourth scale (Scale D), if present, select **[PwrCell #91]**.

3. You must configure each scale in a multi-scale JagMax separately.

4. At the **[# Load Cells?]** prompt, use the numeric keys to enter the number of load cells in the scale you are configuring.

5. At the **[Shift by?]** prompt, select whether to perform the shift procedure by single load cells or by pairs of cells (by section.)

6. At this point, you must address the individual POWERCELLs. This procedure is done through the *Diagnostics and Maintenance* program block. Please proceed to the section entitled **Scale Test Sub-block** in the **Diagnostics and Maintenance Program Block** (later in this chapter) and address the cells.

Calibration Unit Sub-block

This sub-block lets you enter the units of measure to use when calibrating the scale and configuring capacity and increment size. Recalibration is required if you change the calibration unit.

1. Press **ENTER** at the **[Calibration Unit]** prompt to open the sub-block.

2. At the **[Units?]** prompt, press **SELECT** until the desired calibration unit is displayed, then press **ENTER**. Acceptable calibration units include: pounds and kilograms and metric ton. Do not select grams.

3. The choices will be limited to the current settings for the primary and secondary weight units as specified in the *Application Environment* Program Block, *Alt. Weight Units* Sub-Block.

Capacity Sub-block

The *Capacity* sub-block lets you enter the maximum scale capacity. The capacity is given in the calibration units.

1. Press **ENTER** at the **[Capacity]** prompt to open the sub-block.

2. At the **[Wgt?]** prompt, input the desired scale capacity using the numeric keys.

3. Press **ENTER** to set the capacity.

4. Continue to the next sub-block or exit the setup mode.

Increment Size Sub-block

The increment size on all scales must the same. Only use the 1 interval selection.

To configure the increment size:

1. Press **ENTER** at the **[Increment Size]** prompt to open the sub-block.

2. At the **[Nbr of Intvls?]** prompt, select 1 interval.

3. At the **[Low?]** prompt, enter an acceptable increment size (10-100).

Shift Adjustment Sub-block

The *Shift Adjustment* sub-block lets you adjust multiple load cells connected to a POWERCELL scale. This sub-block only appears if you selected POWERCELL as the scale type in the Scale Type sub-block. This procedure goes through a complete shift adjustment of the POWERCELL scale. Use this procedure if two or more cells are replaced.

1. Press **ENTER** at the **[Shift Adjustment]** prompt to open the sub-block.

2. At the **[Empty the Scale]** prompt, remove any weight on the platform, then press **ENTER**. The display reads **[Capturing Zero]** as the controller captures zero.

3. At the **[Load On Cell N]** or **[Load On Pair N]** prompt, place on the platform a test weight equaling approximately 50% of the scale's capacity, then press ENTER.

   The JagMax controller automatically shift adjusts the scale for the current load cell as the display reads **[Capturing Cell N]** or **[Capturing Pair N]**.

4. Repeat steps 2 and 3 for each load cell/pair connected to the POWERCELL.

5. When all load cells are shift adjusted, the controller indicates **[Shift Complete]**. Continue to the next sub-block or exit the setup mode.

Linearity Correction Sub-block

Linearity correction lets you calibrate the scale using calibration reference weights at mid-scale and full-scale ranges. Linearity correction allows for compensation of the non-linear performance of a load cell(s) or weighing system. If linearity correction is enabled, the calibration process requires additional steps. The controller must be calibrated or recalibrated after you enable linearity correction.

1. Press **ENTER** at the **[Linearity Corr]** prompt to open the sub-block.

2. Select **[Y]** to enable or **[N]** to disable linearity correction.

3. Continue to the next sub-block or exit the setup mode.

Calibration Sub-block

Calibration involves emptying the scale then placing a known test weight on an empty platform and allowing the JagMax controller to capture values for zero and span. You can calibrate a scale with or without linearity correction. The JagMax controller prompts you through the calibration.

Without Linearity Correction

1. Press **ENTER** at the Calibration prompt to open the sub-block.

2. At the **[Empty the Scale]** prompt, remove any weight on the platform, then press **ENTER**. The controller automatically captures zero and the cursor moves across the lower display indicating the operation is in progress.

3. At the **[Add Test Weight]** prompt, place on the platform a test weight equaling the scale's capacity or another practical weight. Press **ENTER**. A minimum of 20% of scale capacity is necessary for calibration; Mettler-Toledo recommends 60% to 100%. A calibration error will result if insufficient weight is used.

4. At the **[Wgt?]** prompt, input the amount of weight you added in step 3. Press **ENTER**. The controller automatically captures span and the cursor moves across the lower display indicating the operation is in progress.

5. When the controller indicates **[Cal. Successful]**, continue to the next sub-block or exit the setup mode.

With Linearity Correction Enabled

1. Press **ENTER** at the Calibration prompt to open the sub-block.

2. At the **[Empty the Scale]** prompt, remove any weight on the platform then press **ENTER**. The controller automatically captures zero and the cursor moves across the lower display indicating the operation is in progress.

3. At the **[Add MidScale Wgt]** prompt, place a weight on the platform equaling between 35% and 65% of the scale's capacity.

4. At the **[Wgt?]** prompt, input the amount of weight you added in step 3. Press **ENTER**. The controller automatically captures mid-scale.

5. At the **[Add FulScale Wgt]** prompt, place weight on the platform equaling at least 90% of scale capacity or as much as is practical. Press **ENTER**.

6. At the **[Wgt?]** prompt, input the amount of weight you added in step 5. Press **ENTER**. The controller automatically captures full scale and the cursor moves across the lower display indicating the operation is in progress.

7. When the controller indicates **[Cal. Successful],** press **ENTER**.

Continue to the next sub-block or exit the setup mode.

Zero Adjustment Sub-block

The zero value is the scale-empty reference as determined during calibration. The *Zero Adjustment* block lets you re-establish this value to compensate for any change since the last calibration. The scale must be empty before resetting the zero value.

1. Press **ENTER** at the **[Zero Adjust]** prompt to open the sub-block.

2. At the **[Empty the Scale]** prompt, remove any weight on the platform and press **ENTER**. The controller automatically captures zero and displays the message **[Zero Adjusted]** when finished.

Continue to the next sub-block or exit the setup mode.

Span Adjustment Sub-block

The *Span Adjustment* feature lets you make minor span adjustments without completely recalibrating the scale. The controller guides you through the procedure.

1. Press ENTER at the **[Span Adjustment]** prompt.

2. At the **[Add Test Weight]** prompt, place the weight on the platform, then press ENTER.

3. At the **[Wgt?]** prompt, enter the amount of the weight added in step 2. The controller captures span, with the cursor moving across the display.

4. When complete, **[Span Adjusted]** is displayed, then advances to the next sub-block.

Add in Sum Sub-block

This sub-block allows you to include the selected scale's weight in the summing scale. If Yes is selected, the scale is included in the sum. If No is selected, the scale is not included in the sum.

Gravity Adjustment Sub-block

This sub-block lets you enter a factor to compensate for gravitational differences between where the scale was originally calibrated and where the scale is currently located. The value should be 1.0000 if the scale is calibrated where it is being used.

1. Press **ENTER** at the **[Gravity Adjust]** prompt to open the sub-block.

2. The current value is displayed. Press **ENTER** to accept the current factor or enter a new gravitational factor.

Continue to the Reset to Factory sub-block if desired, or exit the setup mode.

Reset to Factory Sub-Block

The last sub-block in each program block is *Reset to Factory* which returns all parameters in the current block to the original factory settings. The *Diagnostics and Maintenance* block has a Master Reset option that lets you reset all parameters in all blocks including or excluding *Scale Interface*.

Application Environment Program Block

The *Application Environment* program block lets you set the features of the scale that are specific to the customer's application. The following diagram describes this block:

Application Environment					
Character Set	USA				
Language	English				
Keyboard Type	English				
Scale ID	Enter A/N Scale ID				
Time and Date	Time Format	Date Format			
Alt Weight Units	Main units	Unit Switching Yes or No	Second Units	Enable Aux. Unit Yes or No	Auxiliary Unit
Power-Up Operation	Power-up Time Delay				
Tare Operation	Enable Tare Yes or No	Tare Interlock Yes or No	Enable PB tare Yes or No	Enable KB tare Yes or No	Enable auto tare Yes or No
	Net Sign Correction Yes or No	Display Tare Yes or No	Auto clear tare Yes or No		
Zero Operation	Power-up zero parameters	Push-button zero parameters	Zero Blanking parameters	Auto Zero Maint parameters	Center-of-Zero Indication
Stability Detection	Stability Range Entry	Stable Readings Entry			
Beeper Operation	Key Beeper Yes or No	Alarm Beeper Yes or No			
Inhibit Memory	Inhibit Memory Yes or No				
Application Type	Process Low, Mid, High				
Vibration Rejection	Adjust low pass filter	Adjust notch filter	Enable stability filter Yes or No		
Reset to Factory	Are you sure?				

Character Set Sub-block

The *Character Set* sub-block is automatically set to use a display character set appropriate for the United States. Continue to the next sub-block or exit the setup mode.

Language Sub-block

The *Language* sub-block is automatically set for the JagMax prompts and messages to be displayed in English. Continue to the next sub-block or exit the setup mode.

Keyboard Type Sub-block

A PC keyboard allows easy input of alphabetical, lowercase, or special characters. The *Keyboard Type* sub-block is automatically set to use an English language keyboard. Continue to the next sub-block or exit the setup mode.

Scale ID Sub-block

The *Scale ID* sub-block lets you assign an identification code to a scale. The ID may be used in printing and when selecting a scale for operator-viewing or interaction. The scale ID is determined by the customer and can be up to eight alphanumeric characters.

The default scale ID is the JagMax controller number as determined by the ARCnet address jumpers on the Controller board and by the internal scale designation.

1. Press **ENTER** at the **[Scale ID]** prompt.
2. At the **[ID?]** prompt you can either select a predefined scale identification or create a new ID.
3. Continue to the next sub-block or exit the setup mode.

Time and Date Sub-block

This sub-block lets you set the time and date format. If you do not select a format, the default time and date format based on the market location will be used.

To configure the sub-block:

1. Press **ENTER** at the **[Time and Date]** prompt.
2. Press **ENTER** at the **[Time Format?]** prompt.
3. At the **[Separator?]** prompt, select a character to separate hour, minutes, and seconds. Choices include:
   - (:) colon
   - (-) dash
   - (.) period
   - (sp) space
   - None
4. At the **[Format?]** prompt, select the desired time format. The time format choices are given with the separator you selected in step 3. Choices include:
   - 24:MM   • 24 hour clock, no seconds
   - 24:MM:SS   • 24 hour clock with seconds
   - 12:MM   • 12 hour clock, no seconds
   - 12:MM:SS   • 12 hour clock with seconds
   - None   • Time disabled through **MEMORY** key
5. Press **ENTER** at the **[Date Format?]** prompt.

6. At the **[Separator?]** prompt, select a character to separate month, day, and year. Choices include:

- (:) colon
- (-) dash
- (.) period
- (sp) space
- None
- (/) slash

7. At the **[Fmt?]** prompt, select the desired date format. The date format choices are given with the separator you selected in step 6. Choices include:

- DD/MMM/YYYY   Day (num), Month (alpha), Year (4 digits)
- DD/MM/YY   Day (num), Month (num), Year (2 digits)
- MM/DD/YY   Month (num), Day (num), Year (2 digits)
- MMM/DD/YYYY   Month (alpha), Day (num), Year (4 digits)
- YY/MM/DD   Year (2 digits), Month (num), Day (num)
- YYYY/MMM/DD   Year (4 digits), Month (alpha), Day (num)
- None   Date disabled through **MEMORY** key

8. Continue to the next sub-block or exit setup mode.

Alternate Weight Units Sub-block

The *Alternate Weight Units* sub-block lets you select the unit(s) of measure for top weight display, enable or disable units switching.

To configure the sub-block:

- Press **ENTER** at the **[Alt Weight Units]** prompt to open the sub-block.

- At the **[Main Units?]** prompt, select a main unit. Choose one:

   lb (pounds)
   kg (kilograms)
   g (grams) -- do not use
   t (Metric Ton)

- At the **[Unit Switching?]** prompt, select **Y** or **N** to enable or disable unit switching. If unit switching is enabled, it will switch between the Main Units and the Second Units.

   If no is selected, the following step will be skipped.

- At the **[Second Units?]** prompt, select a secondary weight unit. Choose one:

   lb (pounds)
   kg (kilograms)
   g (grams) — do not use
   t (Metric Ton)

The unit selected for calibration must be either main or secondary units.

If the main units selected above are not the calibration units (as selected in the *Scale Interface Program* block, *Calibration Units* sub-block), then this choice is restricted to the Calibration Units.

- At the **[Enbl Aux Unit?]** prompt, select **[N]** to disable the display of another unit of measure on the bottom display. The JagMax controller uses the lower display so auxiliary units cannot be used.

- Continue to the next sub-block or exit the setup mode.

Power Up Operation Sub-block

The *Power Up Operation* sub-block lets you specify a time delay before the scale is operational. This delay allows a sufficient warm-up period for stabilization of the scale and load cell electronics.

The JagMax controller displays a count-down clock indicating the time remaining in the specified warm-up period.

To configure the sub-block:

- Press **ENTER** at the **[Power-Up Oper]** prompt.
- At the **[Pwr-Up Timer?]** prompt, enter the number of minutes (0-99) that the JagMax controller will delay prior to indicating weight in normal operating mode.

Continue to the next sub-block or exit the setup mode.

Tare Operation Sub-block

The JagMax controller controls all tare functions. To configure the *Tare Operation* sub-block:

1. Press **ENTER** at the **[Tare Operations]** prompt to open the sub-block.
2. At the **[Enable Tare?]** prompt, select **[N]** to disable tare.
3. Continue to the next sub-block or exit the setup mode.

Zero Operation Sub-block

The *Zero Operation* sub-block lets you set the zero reference parameters. You can configure any or all of the following options:

- **Power-up Zero**—automatically zeros the controller at power-up if weight on the scale is within a given range. If the weight on the scale is beyond the designated range, the display will not read zero until weight falls within the range.
- **Pushbutton Zero**—manually compensates for material build-up on the scale and recaptures zero.
- **Zero Blank**—determines when the display will go blank if weight falls below zero.
- **Auto Zero Maintenance (AZM)**—automatically compensates for small changes in zero resulting from material build-up on the scale or temperature fluctuations.
- **AZM w/Net Mode**—automatically corrects zero close to net zero and gross zero.
- **Center of Zero**—determines if the center-of-zero annunciator lights at gross zero only or at gross and net zero.
- Power-up zero capture and pushbutton zero ranges are based on the actual calibrated zero. If the positive and/or negative range value for power-up zero is greater than that for pushbutton zero, it is possible for the scale to automatically capture more weight on power-up than can be compensated for manually.

To configure the sub-block:

1. Press **ENTER** at the **[Zero Operation]** prompt to open the sub-block, then press **ENTER** at the **[Power Up Zero]** prompt to configure the power up zero option.
2. At the **[Positve Rng?]** prompt, enter a numeric value for the positive range of zero capture. This value is a percent of scale capacity.
3. At the **[Negatve Rng?]** prompt, enter a numeric value for the negative range of zero capture. This value is also a percent of scale capacity.

4. Press **ENTER** at the **[Pushbutton Zero?]** prompt to access these parameters.

   Pushbutton zero values are stored in the JagMax controller's memory. In case of power loss, the controller will display an accurate weight when power is restored.

5. At the **[Positve Rng?]** prompt, enter a numeric value for the positive capture range. This value is a percent of scale capacity.

6. At the **[Negatve Rng?]** prompt, enter a numeric value for the negative capture range. This value is also a percent of scale capacity.

7. At the **[Zero Blank?]** prompt, enter 0-98 to specify the number of display divisions behind zero before display blanking. The default is 5 divisions. A setting of 99 programs the JagMax controller to display up to 50% of the calibrated capacity under gross zero.

8. Press **ENTER** at the **[Auto Zero Maint?]** prompt to configure the option.

9. A pre-determined number of consecutive readings from the scale must fall within the range specified before the scale compensates for changes in the zero reference.

   At the **[Range?]** prompt, enter a range (in divisions) within which the JagMax controller adjusts for small changes in zero. Enter divisions +/- 0.1 - 10. Adjustments are made at a rate of 0.03 increments per second

10. At the **[AZM w/Net Mode?]** prompt, select **[Y]** to automatically correct zero close to net zero and gross zero. Select **[N]** for AZM to function only near gross zero.

11. At the **[COZ?]** prompt, select if the center-of-zero annunciator should illuminate at **Gross Only,** at **Gross and Net** zero, or at **OFF** should not illuminate.

12. Continue to the next sub-block or exit the setup mode.

Stability Detect Sub-block

The stability detection feature determines when a no-motion condition exists on the weighing platform. The sensitivity level determines what is considered stable. Printing and tare operations will wait for scale stability before carrying out the command.

Stability detection occurs over a predefined period of time and allows a predetermined "acceptable" amount of motion in scale divisions. The acceptable amount of motion is considered the range and the period of time is called the interval.

To configure the sub-block:

1. Press **ENTER** at the **[Stability Detect]** prompt, then press **ENTER** at the **[Stability Range?]** prompt.

2. At the **[Range?]** prompt, enter the acceptable motion range (+/- 0.1 to 9.9 divisions).

3. Press **ENTER** at the **[Stable Readings?]** prompt.

4. At the **[Intrval?]** prompt, enter the number of seconds (0 to 9.9) that the weight must remain within the range values for a no-motion condition.

5. Continue to the next sub-block or exit the setup mode.

Beeper Operation Sub-block

The JagMax is capable of an audible beep each time a key is pressed and an audible error alarm when an inappropriate key is pressed. This sub-block lets you enable or disable these sounds.

To configure the sub-block:

1. Press **ENTER** at the **[Beeper Operation]** prompt to open the sub-block.

2. At the **[Key Beeper?]** prompt, select **[Y]** or **[N]** to enable or disable sound each time a key is pressed. This also enables the double beep acknowledgment message.

3. At the **[Alarm Beeper]** prompt, select **[Y]** or **[N]** to enable or disable an audible alarm that sounds each time an error occurs or an inappropriate button is pressed.

Continue to the next sub-block or exit the setup mode.

Inhibit Memory Sub-Block

The Inhibit Memory sub-block allows the Memory key on the keypad to be disabled. If Y(es) is selected, the Memory key will be disabled. If N(o) is selected, the Memory key will function as normal.

Application Type Sub-block

The Application Type sub-block indicates whether or not the scale is used for a process application. This sub-block affects the A/D rate and the ability to enable and/or disable the stability filter.

To configure the sub-block:

1. Press ENTER at the **[Application Type]** prompt to open the sub-block.

2. At the **[Process?]** prompt, select Low, Mid, or High.

   If You Select High

   The stability filter cannot be enabled. For Analog Loadcells, the A/D and setpoint comparison rates are 50 Hz, and the standard continuous output updates the weight 17 times per second.

   Ultra-Res, DigiTOL, High Precision, and Power Cell load cells—The A/D rate is the rate of which the load cell is capable, and the standard continuous output update rate is the same as the A/D rate.

   If You Select Mid

   The stability filter can be enabled or disabled. For Analog Loadcells, the A/D and setpoint comparison rates are 20 Hz, and the standard continuous output updates the weight 10 times per second for all scale types.

   If You Select Low

   The continuous output is at 5 Hz.

Vibration Rejection Sub-block

This does not normally apply to the JagMax controller. You should accept the factory default settings. This sub-block does let you configure the TraxDSP filters for optimum vibration/disturbance rejection.

The *Vibration Rejection* sub-block allows programming of values including:

- **Lowpass Filter Frequency**—Low Pass Frequency is the frequency above which all disturbances are filtered out. The lower the frequency, the better the disturbance rejection, but the longer the settling time required for the scale.

- **Poles**—The number of poles determines the slope of the filtering cutoff. For most applications, a slope value of 8 is acceptable; however, decreasing this number

will improve settling time slightly. Do not enter a value lower than 4 for this parameter.

- **Notch Filter Frequency**—The Notch Filter allows selection of one specific frequency below the lowpass filter value that can also be filtered out. This enables setting the lowpass filter higher to filter out all but one frequency (that the notch filter will handle) and obtain a faster settling time.

- **Stability Filter**—The Stability Filter eliminates weight changes within a given range around a stable weight reading. This filter eliminates fluctuations in the weight display created by movement. You cannot enable the stability filter if the **Process Application** parameter is configured High for dynamic weighing such as batching or filling applications. The stability filter uses very stiff filtering as long as there is motion on the scale so that the weight display changes slowly. There is minimal jitter on the weight display. Once the JagMax controller detects a "no motion" condition on the scale, it switches the stability filter to the standard lowpass filter. As a result, the weight quickly moves to its final value.

To configure the sub-block:

1. Press **ENTER** at the **[Vibration Reject]** prompt to open the sub-block.

2. Press **ENTER** at the **[Adjust Lowpass?]** prompt to configure the parameters governing the low pass filter. Disturbances falling below these parameters pass through the filter; disturbances above the parameters are filtered out.

3. At the **[Frequency?]** prompt, enter the frequency above which disturbances are filtered out.

4. At the **[Poles?]** prompt, enter the number of poles.

5. The Adjust Notch parameter appears only if you are configuring an analog load cell. At the **[Adjust Notch?]** prompt, press **ENTER** to configure the parameters governing selective filtering.

6. At the **[Frequency?]** prompt, enter the frequency at which any disturbance is filtered out.

7. You cannot enable the stability filter if the **Process Application** parameter is configured High for dynamic weighing such as batching or filling applications.

   At the **[Stable Filter?]** prompt, select **[Y]** or **[N]** to enable or disable the stability filter. Use this for static weighing applications only.

The default values for vibration rejection that are programmed in the factory are good for most applications; however, if you find that the weight display is still unstable, the following steps may help:

1. Set the Low Pass filter to 9.9, poles to 8, and the Notch Filter to 0.0.

2. Lower the frequency setting of the Low Pass Filter by increments of 1.0 and observe the amount of variation at each setting. When you see a noticeable improvement in display stability, vary the Low Pass Filter setting slightly below the frequency setting in increments of 0.1 for minimum fluctuation.

3. Record the frequency and approximate number of increments variation for the settings that show noticeable reduction in display fluctuation. This is the lowest frequency of vibration causing the display to fluctuate.

4. Set the Low Pass Filter back to 9.9.

5. Set the Notch Filter to the frequency that caused the largest reduction in increments change (recorded in step 3).

6. If the display is still fluctuating too much, repeat step 2, observing the display fluctuation. Reduce the Low Pass Filter setting until the display is acceptable.

7. Always check the weight display update time after each filter adjustment to be sure the update rate is fast enough for the application.

Reset to Factory Sub-Block

The last sub-block in each program block is *Reset to Factory* which returns all parameters in the current block to the original factory settings. The *Diagnostics and Maintenance* block has a Master Reset option that lets you reset all parameters in all blocks including or excluding *Scale Interface*.

Serial Interface Program Block

The *Serial Interface* program block (Configure Serial) lets you set parameters controlling data flow across the JagMax controller's serial communication (COM) ports. The following diagram describes the *Serial Interface* program block:
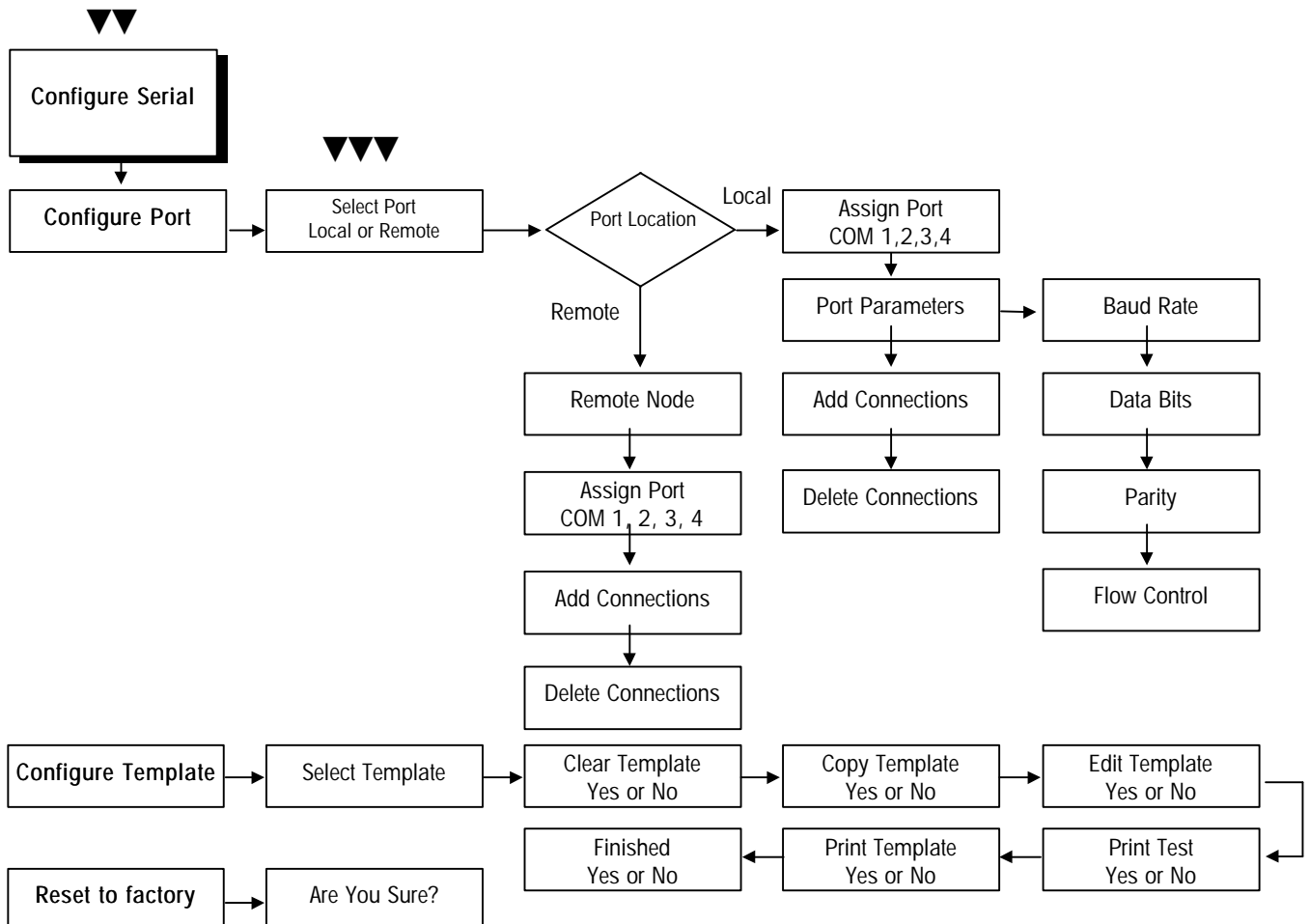
Configure Port Sub-block

This sub-block lets you configure the serial ports on your local controller for data exchange, and enables communication with other JagMax controllers in an ARCnet cluster. You can configure only those ports that are physically available. See Appendix 1 of this manual for detailed information on hardware connections, data output format, and template programming and formats. To configure the program block:

1. Press **ENTER** at the **[Configure Serial]** prompt to open the program block. Press **ENTER** at the **[Configure Port]** prompt, then press **ENTER** again at the **[Select Port]** prompt.

2. At the **[Location?]** prompt, select Local. Local refers to COM ports on the JagMax controller you are working with at the time. (Remote refers to COM ports on other JagMax controllers connected in an ARCnet cluster. Do not select Remote COM ports for the JagMax terminal.)

Local

Configuring a local COM port involves defining the parameters that govern how data is transmitted through the port. You can configure communication parameters only for your local controller.

1. At the **[Assign Prt?]** prompt, select the local COM port to be configured. COM1 and COM2 are available. COM3 and COM4 are available if an optional Multifunction PCB is installed.

2. Press **ENTER** at the **[Port Parameters?]** prompt, then configure the following parameters:

    *   Interface Type (COM2 only)
    *   Baud Rate
    *   Data Bits
    *   Parity
    *   Flow

Interface Type

If COM2 is being configured, you must identify the interface type. The interface type prompt does not appear if you are configuring COM1, COM 3, or COM 4.

1. At the **[I/F Type?]** prompt, select the desired interface type. Choices include

    *   RS-232
    *   RS-422
    *   RS-485

Baud Rate

The baud rate is the rate of information transfer in bits-per-second. At the **[Baud Rate?]** prompt, select the desired rate for the selected port. Baud rates include:

• 300	• 19.2k
• 600	• 38.4k
• 1200	• 57.6k
• 2400	• 76.8k
• 4800	• 115.2k
• 9600	

Data Bits

COM1, COM2, COM3. and COM4 always have 1 stop bit. Data bits refers to the number of bits that make up an ASCII character that is transferred between two units. Most Mettler-Toledo equipment communicates using seven data bits.

1. At the **[Data Bits?]** prompt, select 7 or 8 data bits.

Parity

Parity is an error checking mechanism for each byte. At the **[Parity?]** prompt, select the desired option. Parity options include:

- **Even**—The controller sends an even number of logic 1 data bits. If the sum is odd, an eighth logic 1 bit is added for an even total. If the sum is even, a 0 bit is included to leave it unchanged.

- **Odd**—The controller sends an odd number of logic 1 data bits. If the sum is even, an eighth logic 1 bit is added for an odd total. If the sum is odd, a 0 bit is included to leave it unchanged.

- **None**—For use with eight data bits.

Flow

XON/XOFF requires character input. It will only work if the serial port has no other input connections. For example, you cannot configure CTPZSU In and XON/XOFF on the same port.

The flow parameter lets you control data flow from the selected port to a peripheral device such as a printer that supports XON/XOFF data flow. If enabled, the JagMax controller monitors the XON/XOFF characters and controls data flow to help eliminate buffer overflow problems that can cause printing errors.

- At the **[Flow?]** prompt, select the desired data flow option:
  - **None**—The JagMax controller does not respond to XON/XOFF.
  - **XON/XOFF**—The JagMax controller stops transmission on receipt of the XOFF character (13h) and resumes on receipt of the XON character (11h).

The JagMax controller is programmed at the factory for COM1 to output. COM2 is not configured at the factory. Factory default:

COM1

Cust Print 1 (Template 1 and 2)
Cust Print 2 (Template 1 and 3)
Cust Print 3 (Template 1 and 4)
Cust Print 4 (Template 1 and 5)

COM2

No connections

1. Press **ENTER** at the **[Add Connection?]** prompt.

2. At the **[Type?]** prompt, select the type of serial connection for the scale. Options include:

   - Serial Out

   - Cust Print from template (1- 5)

   - MultiCont1

   - MultiCont2

   - CTPZSU In

   - Bar Code In

   - Keyboard In   ← Do not use these selections.

   - TDC3000

   - BasTerminal

If Serial Out is Selected

1. At the **[Enter Scale#?]** prompt, select the internal scale letter then press **ENTER**.

2. At the **[Mode?]** prompt, select **Continuous** which refers to a constant stream of information that is sent from the controller.

Serial Out—Demand Mode

Do not select this mode of serial output.

Serial Out—Continuous Mode

1. At the **[Status?]** prompt, select the mode for the status bits in the continuous mode. Options include:

   Standard—for continuous mode to operate normally.

   4 Setpnt—to include the status of setpoints 1 through 4 in the continuous output format. If enabled, the first setpoint assigned to a scale becomes the first setpoint in the continuous output.

   Template—to use one of the five print templates for continuous output. Select the desired template (1 through 5). The next step is skipped of Template is selected as the status.

2. At the **Checksum?** prompt, select Y or N to enable or disable the checksum feature. Checksum is a method of checking each line of data transmitted by encoding a check digit character at the end of the string. The receiving device must be able to calculate and compare this character to verify that the data is correct.

   Checksum is defined as the 2's complement of the seven low-order bits of the binary sum of all characters preceding the checksum including control characters.

Bit 8 of the checksum is the parity bit (if enabled) of the seven low-order bits of the checksum character.

CTPZSU In
Do not select this mode of serial output.

Bar Code In
Do not select this mode of serial output.

Keyboard In
Do not select this mode of serial output.

If Custom Print from Template is Selected
This connection directs the serial port to output the selected characters and information from the selected template(s) (Templates 1-5). These connections are used by the JagMax application to print tickets.

BasTerminal
Do not select this mode of serial output.

If MultiCont1 is selected:
Multiple Continuous output that transmits all enabled scales and the sum in the 8617 or 8618 scoreboard multi-drop format.

[MultiCont 1 Checksum?] – Select Y to enable the checksum or N to disable. Refer to Appendix 1 for more information.

If MultiCont2 is selected:
Multiple Continuous output that transmits all enabled scales and the sum in the 8724 remote display multi-drop format.

[MultiCont 2 Checksum?] – Select Y to enable the checksum or N to disable. Refer to Appendix 1 for more information.

TDC 3000
Do not select this mode of serial output.

Delete a Connection
1. Select the port from which you wish to delete a connection through the Select Port, Location, and Assign Port steps.
2. Press **SELECT** until the **[Delete Connect?]** prompt is displayed, then press **ENTER**. The controller displays the first connection you have chosen. If the connection you want to delete is not displayed, press **SELECT** until the desired connection is displayed.
3. Press **ENTER** to delete the connection and return to **[Select Port?]**. You may also press **ESCAPE** to return to the **[Delete Connect?]** prompt without deleting a connection.

Configure Template Sub-block

This sub-block lets you define up to five flexible templates (preconfigured output strings that are transmitted when a print operation is requested). You can use the five stored default templates as they are, edit them, or clear them and create custom templates.

The JagMax controller is designed to accommodate most template size needs. Each template can store up to 400 format characters. When configuring a template, occasionally test print since the JagMax controller cannot determine if it has run out of space until it "compiles" all the data included in the template and tries to print it. If you do overfill the allocated space, a **[TEMPLATE OVERFLOW]** error will be displayed and the data that exceeds the 400 character limit will be lost.

1. Press **ENTER** at the **[Config Template]** prompt to open the sub-block.

2. At the **[Temp?]** prompt, press **SELECT** to choose the number and name of the template you wish to edit or create. If an existing template has a customized name assigned to it, the name appears to the right of the prompt: **[Temp? 1 Mettler.]**

3. Select the action you want to take with the selected template. Actions include:
   - Clear Template
   - Copy Template
   - Edit/Create Template
   - Print Test
   - Print Temp

You must respond **[Y]** or **[N]** to the prompt for each action.

Clear Template

Select **[Y]** or **[N]** at the **[Clear Template?]** prompt. If **[Y],** you must confirm your decision at the **[Are You Sure?]** prompt.

If you are creating multiple templates that are similar to each other, use the copy and edit template features to save time.

Copy Template

Select **[Y]** or **[N]** to copy another template into the current template. If **[Y]**, select the template to be copied and confirm your decision at the **[Are You Sure?]** prompt. The current template will be cleared before the copy is made.

Edit/Create Template

1. Select **[Y]** or **[N]** if you wish to edit the current template. If **[Y],** you can edit the template name and/or edit, insert, or delete template components.

   If **[Y],** the display reads **[Name?]** with the current name of the template given to the right of the prompt.

2. Change the template name by entering a new name (maximum 8 characters), or keep the current name by pressing **ENTER**.

   The JagMax displays **[E001]** (element number 001) in the top display indicating that the first element of the template is displayed in the lower display area. If **End of Template** is shown on the lower display, then the template is empty.

3. Press **SELECT** to display the next element in the template. Press **ZERO** to display the previous element in the template. You can access any element in the template using the **SELECT** and **ZERO** keys.

   You can also access specific elements by entering the number of the desired element. After entering the first digit of a new element, the lower display reads **[Element? X]** where "x" is the digit just entered. When the complete element number has been entered, press **ENTER** to access that element. If the element number you enter is greater than the last element number in the template, the JagMax controller automatically displays the last element in the template.

4. Press **ENTER** to begin editing the displayed element. You can also begin editing at the **[End of Template]** position.

5. At the **[Action?]** prompt, select an editing option.

6. **[EDIT]** allows you to "replace" the current element with new data. The current element is automatically deleted.

    [INSERT] allows you to insert a new field or character before the currently displayed element. All following elements are moved back one element number.

    [DELETE] deletes the current element and moves each remaining element up one element number.

    [DEL END] deletes all remaining elements from the displayed position to the end of the template.

If you are editing or inserting, at the **[What?]** prompt, select a data type. Data can be field information, printable ASCII characters, or special characters.

[FIELD] refers to actual data fields available through the JagMax controller such as time, date, prompts, literals and weight data. Enter a field code defined in the Field Code tables that follow.

The lengths shown in the table reflect the length of the field when matching the template to the desired result. When calculating the number of elements in the template, the JagMax data fields only take up seven characters. The JagMax accepts field codes entered in upper or lower case.

JAGMAX Data	Field Code	Length
Axle 1 weight	pmt01	6 A/N
Axle 2 weight	pmt02	6 A/N
Axle 3 weight	pmt03	6 A/N
Axle 4 weight	pmt04	6 A/N
Axle 5 weight	pmt05	6 A/N
Axle 6 weight	pmt06	6 A/N
Axle 7 weight	pmt07	6 A/N
Axle 8 weight	pmt08	6 A/N
Axle 9 weight	pmt09	6 A/N
Summed gross weight	var01	6 A/N
Summed tare weight	var02	6 A/N
Summed net weight	var03	6 A/N
Weight unit	var04	2 A/N
Ticket number	var05	6 A/N
ID[4]	var06	8 A/N
Transaction Mode1[1]	var07	10 A/N
Fee	var08	7 A/N
Date[5]	var09	11 A/N
Time[5]	var10	8 A/N
Site ID[2]	var11	8 A/N
Text 1[2]	var12	45 A/N
Text 2[2]	var13	45 A/N
Text 3[2]	var14	45 A/N
Comment[3]	var15	45 A/N
Literal 1	lit01	40 A/N
Literal 2 - 20	lit02 - lit20	40 A/N (each)

[1] The transaction mode will be a description of the type of transaction that has been completed. Depending on which mode has been selected, the data in this field could be: Weigh, Re-Weigh, Double, Triple, Dbl ReWgh, Trpl ReWgh, Moving Van, Inbound, Outbound.

[2] Site ID, Text 1, Text 2, and Text 3 will contain the data configured in the application setup for these items.

[3] If the Comment field is enabled in the application setup, the data in this field will contain the information entered by the operator.

[4] If the ID field is enabled in the application setup, the data in this field will contain the information entered by the operator.

[5] The Date and Time fields will be formatted as configured in the Application Environment program block of System Setup.

At the **[Format?]** prompt, select the data position (justification) and field width. If field width is less than the code length default specified in the Field Code tables (above), characters will be stripped off automatically. Justification choices include:

- **[DEFAULT]** prints data as defined by Mettler-Toledo default.

- Format options Left, Center, and Right use more memory than Default. Each justification takes up six characters in the template.

- **[LEFT]** prints data left justified within the field width. At the **[Field Width?]** prompt, enter the number of characters to define the field width.

- **[CENTER]** prints data centered within the field. At the **[Field Width?]** prompt, enter the number of characters to define the field width.

- **[RIGHT]** prints data right justified within the field. At the **[Field Width?]** prompt, enter the number of characters to define the field width.

[CHAR] refers to normal printable ASCII characters and CR/LF (carriage return and line feed) characters. You can enter ASCII characters from the QWERTY keyboard or the JagMax keypad. CR/LF makes the termination of a printed line faster than selecting each character individually, and allows quick addition of multiple new lines to advance to the end of the page or to position a line on a page. To choose CR/LF as a character, press **SELECT** at the **[Character?]** prompt.

[SPEC CHAR] refers to "special" control characters that are not printable ASCII characters such as ASCII SO (shift out - OE hex) which may be used for printer control. Special characters also include lower case letters and various punctuation not available on the standard JagMax keypad. Use the JagMax controller's **SELECT** and **ZERO** keys to scroll through the list of these characters and choose a character, or use the numeric keys to enter the decimal value of any special character between 0-255.

When an element is viewed on the lower display, the data is shortened to fit in the display area. The following examples illustrate the displayed data format.

Example 1

/var01 L 15 where:

"/" indicates a JagMax Data Field. The other possibility is "A" for ASCII character.

"var01" is the summed gross weight field.

"L" indicates this field is left justified. Other possibilities are "R" for right and "C" for center.

"15" is the specified field width.

Example 2

A 'G' 001 where:

"A" indicates an ASCII character. The other possibility is "/" for a JagMax Data Field.

"G" is the ASCII character selected.

"001" is the quantity of the "G" character to be transmitted. Printing multiple characters is a quick way to add spacing or create custom printouts. For example, multiple underscores (_) can create a signature line.

Print test allows you to check your data output without exiting the template sub-block.

- Press **ESCAPE**. At the **[Print Test?]** prompt, select **[Y]** or **[N]** to initiate or skip a test print of the template. If **[Y]** the data defined by the template will be output to the first COM port selected for Demand Mode.

  Print template gives a hard-copy record of the template configuration that can be useful for "debugging" a format as you configure the template.

- At the **[Print Temp?]** prompt, select **[Y]** or **[N]** to print the template elements. If Y(es), template elements are output in the shortened format described above to the first COM port selected for Demand Mode.

- At the **[Finished?]** prompt, select **[Y]** if you are finished or **[N]** to continue editing this template.

- Continue to the *Reset to Factory* sub-block or exit setup mode.

Reset to Factory Sub-Block

The last sub-block in each program block is *Reset to Factory* which returns all parameters in the current block to the original factory settings. The *Diagnostics and Maintenance* block has a Master Reset option that lets you reset all parameters in all blocks including or excluding *Scale Interface.*

Configure Discrete Program Block

The *Configure Discrete* program block lets you configure inputs and outputs for PAR 1 and PAR 2 ports. If an optional Multifunction PCB is installed, PAR 3 and PAR 4 will be available.

This program block also lets you control the controller's setpoints. The JagMax controller has 12 setpoints. Setpoints are assigned to an internal scale (A,B,C,D or E) or can be disabled.

When a setpoint is assigned to a scale, the operator can use the **MEMORY** key to access the setpoint and set its value. The setpoints that are available correspond to the selected scale.

The following diagram describes the *Configure Discrete* program block:

```
▼▼
┌──────────────┐
│  Configure   │
│  Discrete    │
└──────────────┘
                    ▼▼▼
┌──────────────┐   ┌──────────────┐   ┌──────────────┐   ┌──────────────┐   ┌──────────────┐
│  Parallel    │→  │ Select PAR   │→  │ Select Input │→  │ Select       │→  │ Select       │
│  Inputs      │   │ Input Port   │   │ Number       │   │ Polarity     │   │ Discrete     │
│              │   │ (1 or 3)     │   │              │   │ Option (+ or-)│   │ Assignment   │
└──────────────┘   └──────────────┘   └──────────────┘   └──────────────┘   └──────────────┘
┌──────────────┐   ┌──────────────┐   ┌──────────────┐   ┌──────────────┐   ┌──────────────┐
│  Parallel    │→  │ Select PAR   │→  │ Select Output│→  │ Select       │→  │ Select       │
│  Outputs     │   │ Output Port  │   │ Number       │   │ Polarity     │   │ Discrete     │
│              │   │ (2 or 4)     │   │              │   │ Option (+ only)│  │ Assignment   │
└──────────────┘   └──────────────┘   └──────────────┘   └──────────────┘   └──────────────┘
┌──────────────┐   ┌──────────────┐
│  Assign      │→  │ Setpoint 1-12│
│  Setpoints   │   │              │
└──────────────┘   └──────────────┘
┌──────────────┐   ┌──────────────┐
│  Reset to    │→  │ Are You Sure?│
│  Factory     │   │              │
└──────────────┘   └──────────────┘
```

Discrete Inputs Sub-block

The JagMax application controls the use of PAR1 (discrete inputs). PAR3 (on the optional Multifunction PCB) should not be used.

Discrete Outputs Sub-block

The JagMax application controls the use of PAR2 (discrete outputs). PAR4 (on the optional Multifunction PCB) should not be used.

Assign Setpoints Sub-block

The JagMax application uses and configures setpoint 1. The other setpoints cannot be used.

Configure Memory Program Block

This program block lets you configure literals, prompt lists, and consecutive numbers. These items are accessed when an operator presses the **MEMORY** key in Normal Operating mode. The following diagram describes the *Configure Memory* program block:
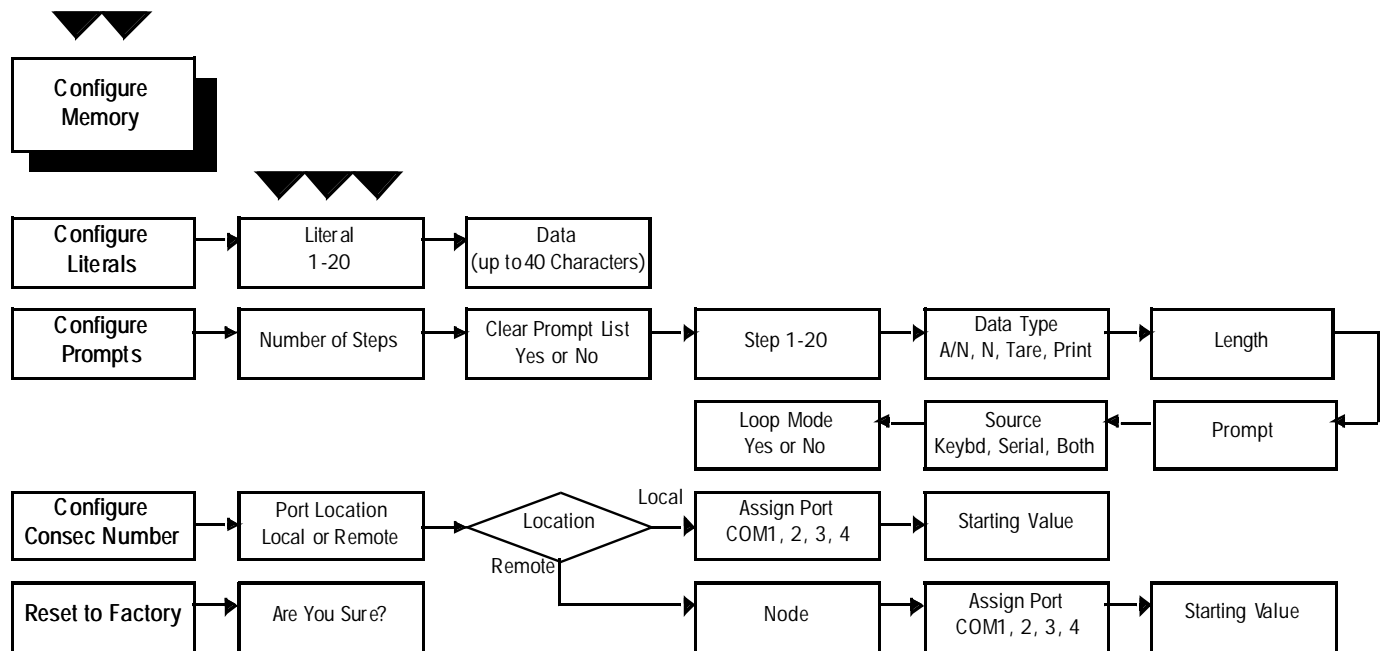
Configure Literals Sub-block

Literals are text strings such as site name or address that can be printed in a template. They can be up to 40 characters in length and are referenced by a field code (see the section entitled *Configure Template* Sub-block in this chapter). You can program up to 20 literals.

To configure literals:

1. Press **ENTER** at the **[Config Literals?]** prompt to open the sub-block.

2. At the **[Literal? O]** prompt, enter a number for the literal you are creating or editing (01-20).

3. At the **[Data?]** prompt, enter the text for the literal. You can enter up to 40 alphanumeric characters. To enter lower case letters and characters other than those available on the JagMax keypad, you should use the QWERTY keyboard. Repeat the previous two steps for each literal you wish to configure.

4. Continue to the next sub-block or exit the setup mode.

Configure Prompts Sub-block

Prompts cannot be used with the JagMax application.

Configure Consecutive Numbering Sub-block

Consecutive numbering is used for sequencing purposes. The JagMax controller automatically increments the number from a defined starting point.

To configure consecutive numbering:

1. Press **ENTER** at the **[Configure CN?]** prompt to open the sub-block.

2. At the **[Port Loc?]** prompt, select the port location through which data will flow triggering the next consecutive number. You must select a port configured for demand output from this specific JagMax controller. Choose local or remote.

If Local

1. At the **[Assign Prt?]** prompt, select the appropriate COM port.

2. At the **[Start?]** prompt, enter the first consecutive number to be used (0-99999999) after a reset.

3. Press **ENTER** to continue to the next sub-block or press **ESCAPE** to exit setup mode.

If Remote

1. At the **[Node?]** prompt, select the appropriate remote JagMax controller (1-6), then select the COM port at the **[Assign Prt?]** prompt as for local.

2. At the **[Start?]** prompt, enter the first consecutive number to be used (0-99999999) after a reset.

3. Press **ENTER** to continue to the next sub-block or press **ESCAPE** to exit setup mode.

Reset to Factory Sub-Block

The last sub-block in each program block is *Reset to Factory* which returns all parameters in the current block to the original factory settings. The *Diagnostics and Maintenance* block has a Master Reset option that lets you reset all parameters in all blocks including or excluding *Scale Interface*.

Configure JagBASIC Program Block

JagBASIC is always installed on JagMax controllers. The following diagram describes this sub-block:

▼ ▼

```
┌─────────────┐
│  Configure  │
│  JagBasic   │
└─────────────┘            ▼ ▼ ▼
┌─────────────┐   →   ┌─────────────────────────┐
│  Keyboard   │       │      Select Data        │
└─────────────┘       │     Entry Method        │
                      └─────────────────────────┘
┌─────────────┐   →   ┌─────────────────────────┐
│   Display   │       │      Select Display     │
└─────────────┘       │      Functionality      │
                      └─────────────────────────┘
┌─────────────┐   →   ┌─────────────────────────┐
│ Auto Start  │       │ Enable/Disable JagBASIC on│
└─────────────┘       │ Power-up and Exit of Setup│
                      └─────────────────────────┘
┌─────────────┐   →   ┌─────────────────────────┐
│Manual Start │       │ Enable/Disable JagBASIC │
└─────────────┘       │    from FUNCTION Key    │
                      └─────────────────────────┘
┌─────────────┐   →   ┌─────────────────────────┐
│Send Ram Files│      │  Select File Transfer   │
└─────────────┘       │       Direction         │
                      └─────────────────────────┘
┌─────────────┐   →   ┌─────────────────────────┐
│  Initialize │       │  Delete All Data in RAM │
│  RAM Disk   │       │      Disk? (Y/N)        │
└─────────────┘       └─────────────────────────┘
┌─────────────┐   →   ┌─────────────────────────┐
│  Password   │       │     Enter/Change        │
│ Maintenance │       │     Password            │
└─────────────┘       └─────────────────────────┘
┌─────────────┐   →   ┌─────────────────────────┐
│  Reset to   │       │    Are You Sure?        │
│  Factory    │       │                         │
└─────────────┘       └─────────────────────────┘
```

Enter the JagBASIC password to access the program block. If no password has been entered since the last Master Reset, press **ENTER** to access the program block.

Keyboard Sub-block

While the JagMax program is running, Keyboard is set to **[Both]**. When the application program is exited, Keyboard is set to **[Kboard]**.

The *Keyboard* sub-block lets you select the type of device that will be used to input data to JagBASIC at an Input or Inkey prompt. The selected device is also used for BASIC command line mode.

To configure the *Keyboard* sub-block:

1. Press **ENTER** at the **[Config JagBASIC]** prompt to access the program block.

2. At the **[Passwd?]** prompt, enter the JagBasic password. If no password has been entered since the last Master Reset, press **ENTER**.

3. Press **ENTER** at the **[Keyboard]** prompt, then select the desired input device:

    [None]—No keyboard input is required. This option is used with programs designed to operate in the background and monitor data input and output without operator intervention.

    [Keypad]—The JagMax keypad will be used for JagBASIC input.

    [Kboard]—A PC-type QWERTY keyboard will be used for JagBASIC input.

    [Both]—The JagMax keypad and a keyboard will be used for JagBASIC input.

    If Both is selected, standard JagMax functions (including setup) cannot be accessed with the keyboard. If you need to access setup with both keyboard and

keypad selected, short the test jumper W11, then power up to enter setup and change this option to Keyboard. Remove the W11 jumper when finished.

4. Press **ENTER** to continue to the next sub-block or press **ESCAPE** to exit the setup mode.

Display Sub-block

The JagMax application sets the display to **[Jaguar]**.

The *Display* sub-block lets you select the display area to be used by a Jag BASIC program when a Print statement is executed.

To configure the sub-block:

1. Press **ENTER** at the **[Display]** prompt, then select the display area for JagBASIC output:

    [None]—JagBASIC output is not displayed.

    [Jaguar]—The JagMax controller lower display area shows JagBASIC output <u>and</u> standard JagMax output.

2. Press **ENTER** to select the display option and continue to the next sub-block.

Auto Start Sub-block

The JagMax application sets autostart to **[Y]**.

Auto Start starts the JagMax JagBASIC application program automatically on power-up or exit of setup.

To configure the sub-block:

1. Press **ENTER** at the **[Autostart]** prompt, then press **SELECT** to display **[Y]** or **[N]**. If **[Y],** the JagBASIC program will automatically start each time power is applied to the JagMax and each time setup is exited.

2. Press **ENTER** to select the auto start option and continue to the next sub-block.

Manual Start Sub-block

The JagMax application sets the manual start to **[Y]**.

The *Manual Start* sub-block lets you configure JagBASIC as an operation associated with the **FUNCTION** key.

To configure the sub-block:

1. Press **ENTER** at the **[Manual Start]** prompt, then press **SELECT** to display **[Y]** or **[N]**. If **[Y],** JagBASIC programs can be started manually when the operator presses the **FUNCTION** key.

2. Press **ENTER** to select the manual start option and continue to the next sub-block.

Send RAM Files Sub-block

This sub-block works with the JagBASIC send and receive programs that must be installed in your personal computer and lets you initiate file transfer to and from the JagMax and your PC. File transfer is initiated in setup mode. Please refer to the **JagBASIC Programmer's Guide** for more details on file transfer using a personal computer.

Communications must be established between the PC and JagMax to transfer files. If communications are not established, the JagMax will time-out and return to the beginning of this sub-block.

To transfer files:

1. Press **ENTER** at the **[Send RAM Files]** prompt.

2. At the **[Files to PC?]** prompt, select **[Y]** if you want to enable file transfer from the JagMax to your PC, or select **[N]** if you do not want file transfer in this direction.

If **[Y] is selected, a**t the **[Are You Sure?]** prompt, select **[Y]** to enable the JagMax to transfer files from its RAM disk to your PC. If you respond **[N]** to this prompt, JagMax prompts **[Files From PC?]**

If **[N] is selected, a**t the **[Files From PC?]** prompt, select **[Y]** to enable file transfer from your PC to the JagMax, then respond **[Y]** at the **[Are You Sure?]** prompt. The JagMax displays **["Recving from PC.]**

3. Press **ENTER** to continue to the next sub-block.

Initialize RAM Disk Sub-block

This sub-block lets you delete all files in the JagMax controller's RAM disk and initialize it for new files.

1. Press **ENTER** at the **[Init RAM Disk?]** prompt.
2. At the **[Are You Sure?]** prompt, select **[Y]** to delete the RAM disk files. Select **[N]** if you do not wish to erase all files on the RAM disk at this time.
3. **Use caution if you select Yes to delete all RAM disk files. These files cannot be recovered once they are deleted.**
4. Press **ENTER** to continue to the next sub-block.

Password Maintenance Sub-block

The *Password Maintenance* sub-block lets you enter a password that must be used each time the JagBASIC program block is accessed. The password secures the JagBASIC program block against unauthorized access and changes.

To configure the sub-block:

1. Press **ENTER** at the **[Password Maint]** prompt.
2. At the **[Passwd?]** prompt, enter a unique password (up to eight characters).
3. Press **ENTER** to accept the password and continue to the next sub-block.

After exiting the Configure JagBASIC program block the first time, you must use the password each time you reenter the program block.

Reset to Factory Sub-Block

The last sub-block in each program block is *Reset to Factory* which returns all parameters in the current block to the original factory settings. The *Diagnostics and Maintenance* block has a Master Reset option that lets you reset all parameters in all blocks including or excluding *Scale Interface*.
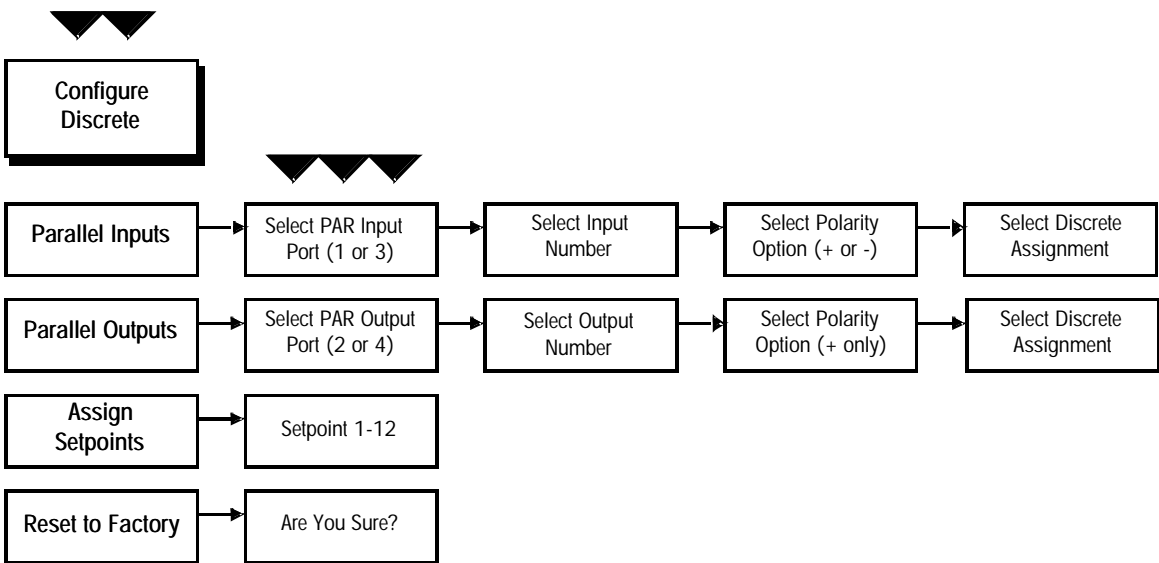
Configure Network Program Block

The JagMax controller can be configured as a network device on a local area network (LAN). The Network Interface block lets you configure the network port and identify which controller nodes it may access. Refer to Appendix 3 for additional information on networking. The following diagram describes this block:
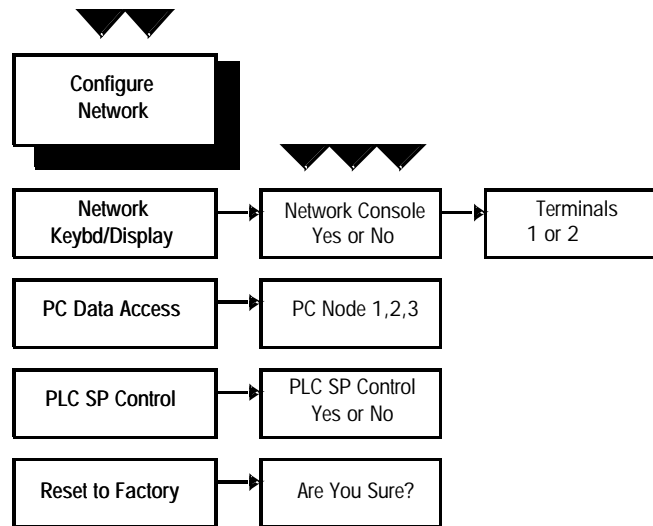
Network Keyboard/Display Sub-block

This sub-block lets you configure your JagMax controllers to function as network devices. Console JagMax controllers can act as a remote keyboard/display for all scales on any other networked JagMax controller. The console can also be used to program any other JagMax on the network. To configure the Network Keyboard/Display sub-block:

1. Press **ENTER** at the **[Config. Network]** prompt, then press **ENTER** again at the **[Net Key/Display]** prompt.

2. At the **[Net Console?]** prompt, select **[Y]** or **[N]** to identify this JagMax controller's keyboard and display as a network device. Net Console allows the keyboard/display of the JagMax you are configuring to access other controllers in its ARCnet cluster. You can configure this parameter only if the JagMax controller is networked.

3. At the **[Terminal #?]** prompt, select **[Y]** or **[N]** to identify controller # "x" as a network device. Repeat the identification process for the remaining network controllers. The JagMax will not prompt for your controller.

Press **ENTER** to continue to the next sub-block or press **ESCAPE** to exit the setup mode.

PC Data Sub-block

The *PC Data* sub-block lets you configure the JagMax controller to communicate with a personal computer connected to the ARCnet network. Mettler-Toledo offers several PC software programs that can be used to develop an application on the PC that can communicate with JagMax controllers. Contact Mettler-Toledo's Industrial Marketing department for more information about these software products.

To configure a JagMax for PC communications on ARCnet:

1. Press **ENTER** at the **[PC Data Access]** prompt.

2. At the **[PC Node #]** prompt, select **[Y]** or **[N]** to enable or disable this JagMax for ARCnet communications to each PC node (1 through 3).

Continue to the next sub-block or press **ESCAPE** to exit the setup mode.

PLC SP Control Sub-block
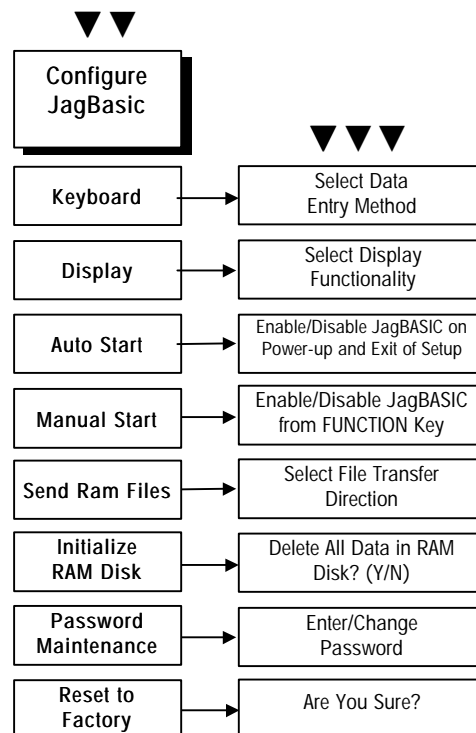
The JagMax application does not use this feature.

Reset to Factory Sub-Block

The last sub-block in each program block is *Reset to Factory* which returns all parameters in the current block to the original factory settings. The *Diagnostics and Maintenance* block has a Master Reset option that lets you reset all parameters in all blocks including or excluding *Scale Interface*.

Diagnostics and Maintenance Program Block

⚠ WARNING

ONLY PERMIT QUALIFIED PERSONNEL TO SERVICE THIS EQUIPMENT. EXERCISE CARE WHEN MAKING CHECKS, TESTS AND ADJUSTMENTS THAT MUST BE MADE WITH POWER ON. FAILING TO OBSERVE THESE PRECAUTIONS CAN RESULT IN BODILY HARM.

Every JagMax industrial controller can perform a series of diagnostic and maintenance tests to detect problems and perform regular maintenance testing. The tests are done through this block while in the setup mode.

▼▼

Diagnostics

▼▼▼

Memory Test	Test the memory on the display board	Test the memory on the controller board	Test the analog load cell board memory
Display Test	Light the display		
Keyboard Test	Press keys to display verification		
Scale Test	Calibration Values	View Load Cell Output	Power Cell Maintenance*	Shift Functions**
Serial Test	Test COMx Port COM1, 2, 3, 4		
Parallel I/O Test	Test PARx Port PAR1,2,3,4		
Network Test	This is node x	Displays other connected nodes	
ARCNet Send BRAM	Remote Node Number		
Zmodem Send BRAM	Calibrate Data? Yes or No	Literals Only? Yes or No	Files to PC	Files from PC
Print Setup	Print? Yes or No		
Print Error Log	Print Error?	Print Zero?	Reset Error?
Reset to Factory	Are You Sure?		

* Power Cell Scale Only
** Power Cell Scale Only

Memory Test Sub-block

The *Memory Test* sub-block tests the controller's internal memory. These diagnostics test the Flash Memory, RAM, and EEPROM on the Controller board and any optional boards that are installed. The results of the memory tests are displayed on the controller.

To execute the memory tests:

1. Press **ENTER** at the **[Memory Test]** prompt.

   The JagMax controller automatically tests the Controller board, and proceeds to any optional boards that are installed. The controller flashes the software revision and part number of the component currently being tested and its status. As the tests are complete, the controller flashes the results on the lower display.

2. Continue to the next sub-block or exit the setup mode.

Display Test Sub-block

This sub-block tests the upper and lower display areas of the controller and tests display ROM and RAM.

1. Press **ENTER** at the **[Display Test]** prompt to initiate the display test. The JagMax automatically tests the display by lighting each segment for visual inspection.

2. The controller then displays the software revision and part number and tests display ROM and RAM and flashes the results on the lower display.

When the test is finished, continue to the next sub-block or exit the setup mode.

Keyboard Test Sub-block

The keyboard test verifies the operation of each key on the JagMax keypad or an externally connected PC-AT keyboard.

1. Press **ENTER** at the **[Keyboard Test]** prompt to initiate the test. You can press **ESCAPE** to exit the keyboard test.

2. Press each key on the JagMax keyboard or PC keyboard. If the depressed key works, the key name is displayed. If the depressed key does not work, the controller does not respond.

3. For example, to test the **MEMORY** key, press **MEMORY** on the keypad. If it works properly, the display reads **Memory**. If the **MEMORY** key is inoperative, the display remains blank.

4. Repeat step 2 to test as many keys as you like.

5. When finished, exit the keyboard test by pressing **ESCAPE**.

Scale Test Sub-block

This sub-block holds several scale operation and calibration parameters that were used when you calibrated the scale through the Scale Interface program block. You can use this sub-block to:

- View and record calibration values.

- Reenter the values quickly when you replace the load cell, or if the load cell fails.

If you need to reenter calibration values due to a failure, please understand that this program block lets you get the scale back into operation. You may experience error in linearity or zero reference up to 2% until the scale is recalibrated.

If the scale type is POWERCELL, the scale test sub-block lets you address each individual POWERCELL at the time of installation and configuration, or you can re-address POWERCELLs if necessary.

POWERCELL Bases

1. If the scale type is POWERCELL, the scale test sub-block lets you reset the shift value.

2. Press **ENTER** at the **[Scale Test]** prompt.

3. Press **ENTER** at the **[Cal Values]** prompt, then view or enter new calibration values for the following: **ZeroCnts**—View/enter the zero reference number at gross zero.

If linearity correction is disabled:
HighWt—is the test weight used for calibration
HighCnts—is the analog count at the high weight

If linearity correction is enabled:
MidWt—is the test weight used for mid weight during calibration
MidCnts—is the analog count at mid weight
HighWt—is the test weight used for calibration
HighCnts—is the analog count at the high weight
Cell XX-XX—For POWERCELL applications, the prompt may read various cells depending on the number of scales and the number of cells in each scale.

1. Press **ENTER** at the **[View LC Output]** prompt to view the output count of the Analog PCB. For POWERCELL scales, you can view each load cell individually.

2. The **[Cell Counts]** is shown on the lower display and raw count data on the upper display. You do not have to press ENTER here. The Cell Counts feature is useful for observing scale output for slow drift, shift adjustment, or for locating an unstable load cell.

3. The **[PwrCell Maint.]** prompt appears only if POWERCELL is selected as the scale type.

4. Press **ENTER** at the **[PwrCell Maint.]** prompt, then select the maintenance procedure to perform. POWERCELL maintenance options include Re-Address Cell, Diagnose Cell, AutoAddress Cell, and Address All 240.

If Re-Address Cell is Selected
The Re-address feature lets you address CMOS POWERCELLs when you install a new scale.

1. Press **ENTER** at the **[Re-Address Cell]** prompt. The JagMax disconnects power to the POWERCELL and displays the message **[Power Now Off.]**

2. With the power disconnected to the POWERCELL, connect the first cell to be addressed (cell 1 for a single scale configuration, cell 31 for a second scale, cell 61 for a third scale, and cell 91 for a fourth scale). No cells other than the POWERCELL to be addressed should be connected at this time.

3. Press **ENTER** at the Power Now Off prompt when the cell is connected.

4. At the **[What Addrs? 0]** prompt, use the numeric keys to enter the first cell's address. Enter 1 for a single scale configuration, 31 for the first cell in a second scale, cell 61 for a third scale, or cell 91 for a fourth scale. While the cell address is being changed, the display will show **Addressing X**, where X is the cell address which has been entered. When the JagMax controller has re-addressed the POWERCELL, it displays the message "Addressed OK." When you press **ENTER**, the JagMax re-displays the message **[Power Now Off.]**

5. At the **[Power Now Off]** prompt, disconnect the first cell, then connect the second cell to be addressed.

6. Repeat this procedure to address or re-address each POWERCELL. When all cells have been addressed and with the **[Power Now Off]** message displayed, reconnect all cells.

If Diagnose Cell is Selected

1. Press **ENTER** at the **[Diagnose Cell]** prompt. The JagMax disconnects power to the POWERCELL and displays the message **[Power Now Off.]**

2. With the power disconnected to the POWERCELL, connect the first cell to be diagnosed (cell 1 for a single scale configuration, cell 31 for a second scale, cell 61 for a third scale, and cell 91 for a fourth scale). No cells other than the POWERCELL to be diagnosed should be connected at this time.

3. Press **ENTER** at the **[Power Now Off]** prompt when the cell is connected. The JagMax searches for the cell and confirms its correct address with the message **Address=address found**. An error message appears if the cell address is not OK. The JagMax controller displays cell counts on the upper display. When the cell is diagnosed, the JagMax re-displays the message **[Power Now Off.]**

4. At the **[Power Now Off]** prompt, disconnect the first cell, then connect the second cell to be diagnosed.

5. Repeat this procedure for each POWERCELL to be diagnosed. When all cells have been diagnosed and with the **[Power Now Off]**message displayed, reconnect all cells.

If AutoAddressing POWERCELL Load Cells is Selected

The AutoAddressing Menu Selection helps you to address POWERCELL Load Cells in a new POWERCELL Scale or to replace a single POWERCELL in an existing POWERCELL scale. AutoAddressing searches POWERCELL addresses in the network, finds the first missing address in the addressing sequence, and readdresses a POWERCELL with address #240 to the missing address. You can have only one POWERCELL with address #240 on-line at a time. New POWERCELL Load Cells have address #240.

The beginning of the searching sequence for a POWERCELL scale is either address #1, address #31, address #61 or address #91, whichever is the starting address for the POWERCELLs in the scale. You select the starting address for the scale in the Scale Interface, Scale Type, Loc? menu selection.

Use the following procedure to address the POWERCELL Load Cells in a new POWERCELL scale:

1. Press **ENTER** at the AutoAddress prompt. The JagMax controller turns off the electrical power to the POWERCELL network and displays the message **[Power Now Off.]**

2. Connect POWERCELL #1 to the network. It must have default address #240.

3. Press **ENTER**. The JagMax displays the message "**Searching…**" while it is searching for the first missing cell. Once it finds #1 is the missing cell, the JagMax displays **[Addressing 1]**. When it completes addressing the cell, the JagMax displays **[Addressed OK]**.

4. Press **ENTER**. The JagMax controller turns off the network and displays **[Power Now Off.]**

5. Do not disconnect POWERCELLs that you have already addressed.

6. Connect the next POWERCELL, #N, to the network. #N represents the sequence of cell addresses #2, #3, #4 .... up to all cells in the scale. #N must have default address #240.

7. Press **ENTER**. The JagMax controller displays the message **[Searching…]** while it is searching for the first missing cell. Once it finds that #N is the missing cell, the JagMax controller displays **[Addressing N.]** When it completes addressing the cell, the JagMax controller displays **[Addressed OK.]**

8. Repeat steps 4-7 until you have addressed all the POWERCELLs. If JagMax controller does not find any missing cells when it is doing the search in Step 7, the JagMax controller displays [No Missing Cell]

Use the following procedure to replace a POWERCELL Load Cell in an existing POWERCELL scale:

1. Go to Diagnostics, Scale Test, PwrCell Maint, AutoAddress in the JagMax setup menus.

2. Press ENTER. The JagMax turns off the electrical power to the POWERCELL network and displays the message [Power Now Off].

3. Replace the POWERCELL, #N, in the network. #N represents the cell to be replaced. It must have default address #240. DO NOT DISCONECT THE OTHER POWERCELLs.

4. Press ENTER. The JagMax displays the message [Searching…] while it is searching for the first missing cell. Once it finds that #N is the missing cell, the JagMax displays [Addressing N]. When it completes addressing the cell, the JagMax displays [Addressed OK].

If Address All 240 is Selected

1. When you press ENTER, the JagMax displays [Power Now Off.]

2. Connect all POWERCELLs to the network that you want to re-address to 240.

3. When you press ENTER, the JagMax displays the message [Addressing 240.] It can take a few minutes to re-address all cells depending on the number of cells and their old addresses.

4. When addressing is complete, the JagMax displays [Addressed OK].

Shift Functions

1. Press ENTER at the [Shift Functions] prompt to access the shift functions.

2. At the [Reset Shift] prompt, press ENTER to reset the shift adjustment factors for a POWERCELL. This resets all Shift Adjust Factors to 1.0.

3. At the [Are You Sure?] prompt, select [Y] or [N] to confirm or abort the reset operation.

4. Press ENTER at the [Adjust Cell/Pair] prompt to begin the POWERCELL adjustment procedure.

5. At the [What Cell?] prompt, enter the number of the cell or pair of cells to be adjusted.

6. At the [Empty the Scale] prompt, remove any weight on the platform, then press ENTER. The display reads Capturing Zero as the controller captures zero.

At the [Load On Cell N] or [Load On Pair N] prompt, place on the platform a test weight equaling approximately 50% of the scale's capacity.

The JagMax controller automatically shift adjusts the scale for the current load cell as the display reads [Capturing Cell N] or [Capturing Pair N].

A complete shift adjust is more accurate and should be used if more than one POWERCELL is being replaced on the scale. The single-cell shift adjust procedure described here allows you to perform a quick approximation of the shift adjust value when a single, bad cell is being replaced on the scale.

Continue to the next sub-block or exit the setup mode.

Serial Test Sub-block

The *Serial Test* sub-block tests the serial I/O ports. You can transmit a test string of data to a designated port, or you can receive a string of input data. The input data scrolls across the lower display as received. You may see special characters representing control characters in the test string. This serial test is useful in installation and controller and hardware diagnostics.

1. Press **ENTER** at the **[Serial Test]** prompt to test serial ports.

2. At the **[Test COM Port?]** prompt, press **SELECT** to view the serial port you wish to test (COM1 or COM2, or COM 3 or COM 4 if multifunction board installed), then press ENTER.

3. The controller can test only COM ports that are physically available on your JagMax controller. You cannot test remotely located ports.

4. The lower display reads **[Testing COMX:]** until a serial input is received. When input is received, the characters are displayed in the lower display. The JagMax controller is constantly outputting the string **[Testing COMX: N]** where x is the COM port number and N is a transmission number beginning at 00 and counting through 99.

5. If a jumper wire is placed between the transmit and receive controllers on the serial port being tested, you can test both the input and output of a port and view the string of data being transmitted on the lower display.

6. Press **ESCAPE** to exit the serial test when you are finished.

7. Repeat previous steps to test additional COM ports.

8. Continue to the next sub-block or exit the setup mode.

Parallel I/O Test Sub-block

⚠ WARNING

PARALLEL I/O TESTING WILL ENERGIZE EQUIPMENT CONNECTED TO THE I/O. USE CAUTION WHEN MAKING THIS TEST.
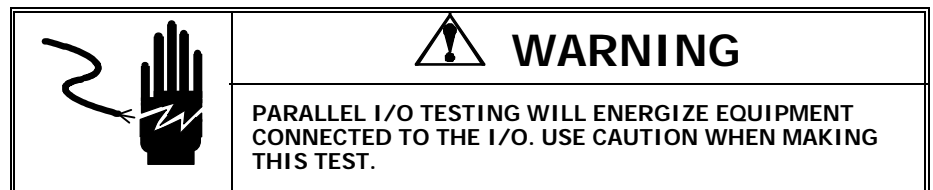
The *Parallel I/O Test* sub-block tests the discrete I/O ports. The test can "turn on" each output and monitors inputs. The Parallel I/O test is useful in installation and controller and hardware diagnostics. See Appendix 2 for more information on parallel I/O ports.

When you enter the Parallel I/O test, the **[!WARNING]** message is flashed on the display four times. Then, the prompt **[Are You Sure?]** is displayed. Select **[Y]** to continue or **[N]** to exit the test.

1. At the **[Test Par Port]**prompt, select the desired port to test. The controller only offers parallel ports that are physically available on your JagMax controller.

PAR 1 or PAR 3 (Discrete Input)

1. The display will read **[PAR 1 = FFFF]** or **[PAR 3 = FFFFFFFF]** indicating that the four or eight discrete inputs are all false or "OFF". When one of the inputs is held to logic ground for 100 ms or longer, the "F" will change to a "T" to indicate a true or "ON" condition.

2. When done, press **ESCAPE** to exit the test routine for the discrete inputs.

PAR 2 or PAR 4 (Discrete Output)

1. The display will read **[PAR 2 = 0000]** or **[PAR 4 = 00000000]** indicating that the four or eight discrete outputs are all logic 0 or "OFF". The first digit will be blinking indicating that output 1 is the active output to be changed for test.

2. To turn this output on, press the number "1" key. Pressing "0" returns this output to the "OFF" condition. To move to the next output (output 2), press **SELECT**. The second digit now blinks. Each of the four or eight discrete outputs can be turned "ON" or "OFF" using this method.

3. When done, press **ESCAPE** to exit the test routine for the discrete outputs.

4. Press **ESCAPE** to exit the parallel I/O test and continue to the next sub-block, or exit the setup mode.

Network Test Sub-block

This sub-block tests the network connections. The test is done by first displaying the number of the local controller, then requesting and receiving the node number and type of all other active nodes on the network.

1. Press **ENTER** at the **[Network Test]** prompt. The controller automatically acquires the local network connection information. Connection information is displayed in the lower display area as follows:

   This is node x refers to the local JagMax controller being tested.
   Node x Connected where "x" is the address of the next JagMax controller in the network.

   This process continues until all active nodes in the cluster have been identified, then the display sequence will start over again.

2. To end the test, press **ESCAPE**.

3. Continue to the next sub-block or exit the setup mode.

   You must configure a network giving access to other JagMax controllers in order for the Network Test to identify other controllers.

ARCNet Send BRAM Sub-block

This sub-block allows you to send the Shared Data BRAM parameters from one JagMax to another JagMax over the ARCNet LAN. You can setup the BRAM parameters on one JagMax and duplicate them on another. Scale calibration parameters are NOT sent.

1. Press **ENTER** at the **[ARCnet Send BRAM]** prompt.

2. Select the appropriate node and press **ENTER**.

Zmodem Send BRAM Sub-block

This sub-block allows you to upload or download the Shared Data BRAM parameters from one JagMax to a PC via Zmodem communications from COM1. The data transferred can include or exclude calibration data. Literals only can be selected to have prompt loop, user variable, literal, and template data transferred only.

1. Press ENTER at the [**Zmodem Send BRAM**] prompt.

Note: Zmodem of BRAM data requires a huge portion of the available heap space. If there is not enough space to complete the transfer, an "Out Of Memory" message will be displayed and the JagMax will go through a power reset operation. Once the power reset is complete, the Zmodem transfer will occur.

2. Select Y at the [**Calib Data Y/N**] prompt if you wish to transfer scale calibration data. Otherwise, select N.

3. Select Y at the [**Literals Only Y/N**] prompt if you wish to transfer only the prompt loop, user variable, literal, and template data. Otherwise, select N.

4. Pressing **SELECT** toggles between [**Files to PC?**] and [**Files From PC?**]. [**Files to PC?**] prompt, select Y if you want to enable the transfer from the JagMax to your PC, or select N if you do not want the transfer in this direction.

    At the [**Files to PC?**] prompt:

    *   Select Yes to enable the Jaguar to transfer the selected data. If you select No, the transfer will not occur.

    At the [**Files from PC?**] prompt:

    *   Select Yes to enable the transfer from your PC to the Jaguar. If no is selected, the transfer will not occur.

Print Setup Sub-block

The *Print Setup* sub-block prints the controller setup information as it is defined in the program blocks. It may be useful to have a hard-copy of each controller's setup parameters as back-up.

*   Print setup data will be sent out the port that has been selected for demand output. If a network port has been selected, the data is sent through that port.

*   Press **ENTER** at the [**Print Setup**] prompt. Press **ENTER** again at the [**Print?**]prompt if you wish to print the setup parameters as defined in the program blocks for this JagMax controller. If you do not want to print the setup, press **ESCAPE**.

    Setup data is printed in a 40 column format that is compatible with the Mettler-Toledo 8856 Strip Printer. A standard 80 column printer will also work. Label printers are not acceptable devices for printing this information since there are many lines of data.

*   If a Mettler-Toledo model 8856 is used at 9600 baud, connect both TXD and RXD lines. Configure the port for XON/XOFF operation.

Print Error Log

The *Print Error Log* Sub-Block prints error information associated with the scale bases. It is most useful in isolating errors associated with power cell scales. The selected information prints to the first demand print serial port connection for Scale A.

Press **ENTER** at the **[Print Error Log]** prompt to enter the sub-block.

The **[Print Error?]** selection prints the current load cell count, the latest error, and the number of errors since the last reset for each load cell. Press **ENTER** to print or **ESCAPE** to stop printing.

The [**Print Zero?**] selection prints the calibrated zero count and the current zero count for each load cell. This allows you to isolate load cells that are fatiguing and potentially failing by checking the "zero drift" for each cell.

The **[Reset Error?]** selection allows you to reset the error counts displayed in the **[Print Errors]** selection.

Reset to Factory Sub-block

The *Reset to Factory* sub-block in this program block differs from other blocks. Because this program block has no unique parameters to set, Reset to Factory performs a master reset which returns all of the parameters for all blocks to their original settings.

To perform a master reset:

*   Press **ENTER** at the **[Reset to Factory]** prompt.
*   Select **[Y]** at the **[Are You Sure?]** prompt to confirm your intention to reset, or select **[N]** to exit without resetting all parameters.

If Yes

At the **[Reset Calib?]** prompt, select the default **[N]** to reset all parameters **except** calibration. Select **[Y]** to reset all parameters including the scale calibration parameters.

If you choose to reset the calibration values, the current scale capacity, increment size, and span and zero values will all be lost and scale recalibration will be required.

The JagMax controller displays the message **[Performing Reset]** and all parameters are returned to factory settings.

After resetting, the JagMax controller will perform its normal power-up sequence.

3   Maintenance Mode

Application Setup

⚠ **WARNING**
ONLY PERMIT QUALIFIED PERSONNEL TO SERVICE THIS EQUIPMENT. EXERCISE CARE WHEN MAKING CHECKS, TESTS AND ADJUSTMENTS THAT MUST BE MADE WITH POWER ON. FAILING TO OBSERVE THESE PRECAUTIONS CAN RESULT IN BODILY HARM.
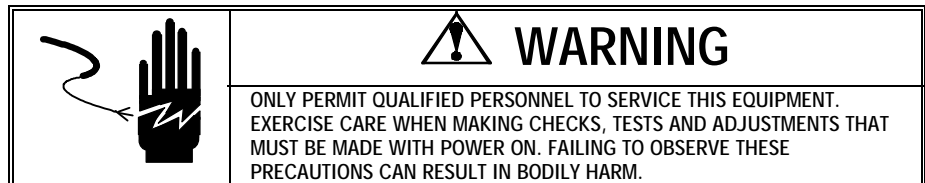
This section describes how to set up the application-specific parameters within the JagMax controller. During application setup, you can program what you want the JagMax controller to do and allow or restrict operator access to various functions. The factory defaults are shown in Appendix 5, Print Reports, Print Application Setup.

Entering Application Setup

To access the application setup mode when the unit is in normal operation (processing trucks):

- Press **(F11)** to enter Maintenance Mode. **[Maint. Functions]** will be displayed. The traffic light(s) will turn red.

- Press **(F1)** to enter Application Mode.

Once you are in Application Mode, the lower display on the JagMax controller will read **[Applic. Setup   ]** for two seconds then move on to the **[Password:]** prompt.

At the **[Password:]** prompt, enter the setup password (which can have up to six characters).

NOTE: The default is no password. Just press ENTER. If you use a password, make sure you keep your password in a secure place. There is no "back door" access to passwords in the JagMax controller.

- If the correct password is entered, the display will show **[NewPW: XXXXXXX]** with XXXXXX being the current password. Enter a new password if desired, or press **ENTER** to keep the existing password.

- If an incorrect password is entered, the **[Incorrect Passwd]** prompt will be displayed for two seconds, then the display will return to **[Maint. Functions]**.

Moving Through Application Setup

After setting the password, the display will read **[GENERAL   ]**, indicating that you are now at the first category of application setup. **Please be sure to read the following information before proceeding.** Application setup includes the following categories:

- GENERAL
- WEIGH MODE
- RE-WEIGH MODE
- DOUBLE MODE
- TRIPLE MODE
- MOVING VAN MODE

- ID MODE
- SEND SETUP FILE
- PRINT SETUP

Within each category, you will be asked to determine how you want the JagMax controller to function. All entries are made using the QWERTY keyboard. While a category name is displayed, the following keys may be used to move through the Application Setup:

- Press **ENTER** to access the current category.

- Press **(F9)** or the space bar to scroll through the setup categories.

- Press **(Esc)** to exit application setup and return to Maintenance Functions.

- Press **(F11)** to exit Maintenance to Process Trucks.

Now you can continue the application setup procedures.

General Setup

To enter the General category, press **ENTER** at the [GENERAL] prompt.

[**Thresh:** XXXXXX] will be displayed. Enter a threshold weight value or press **ENTER** to keep the current value. The JagMax application will assume that a truck is on the scale when the summed weight exceeds this threshold weight value, and that the truck is properly positioned on the scales when the weight on scale A exceeds this value.

The maximum length of the weight value is six characters.

At the [**Alarm On:** XXXXXX] prompt, enter the Alarm On time or press **ENTER** to keep the current value.

- This value is the number of whole seconds that the Alarm On Output will stay on after a truck enters the scale (when the threshold value is exceeded). The maximum value is 60 (alarm output on for 60 seconds).

- Entering **(0)** will keep the output from turning on.

At the [**Site ID:**   XXXXXXXX] prompt, enter eight alpha-numeric characters for a site ID or press **ENTER** to keep the current value. The site ID can be printed on tickets, and is included with records sent to a host PC.

[**Text 1:** XXXXXXXX] is displayed, where XXXXXXXX represents the first eight characters of the current Text 1 value. Enter up to 45 alpha-numeric characters for the first line of the address/header information that can be used on tickets or press **ENTER** to keep the existing Text 1.

[**Text 2:** XXXXXXXX] is displayed, where XXXXXXXX represents the first eight characters of the current Text 2 value. Enter up to 45 alpha-numeric characters for the second line of the address/header information that can be used on tickets or just press **ENTER** to keep the existing Text 2.

[**Text 3:** XXXXXXXX] is displayed, where XXXXXXXX represents the first eight characters of the current Text 3 value. Enter up to 45 alpha-numeric characters for the third line of address/header information that can be used on tickets or press **ENTER** to keep the existing Text 3.

At the [Ticket: XXXXXXXX] prompt, enter the ticket number (up to 6 digits) or press ENTER to keep the current ticket number. This ticket number will be assigned to the next ticket printed.

At the [Aud Tr (A/S/N):X] prompt, press (F9) or the space bar to toggle between [A] (Automatic), [S] (Semi-automatic), and [N] (None).

- Press ENTER to accept the current selection.
- Select [A] for Automatic audit trail printing for each transaction.
- Select [S] for Semi-automatic audit trail printing.
- Select [N] for No audit trail printing.

If [N] was selected for no audit trail printing, the program will skip the following prompt, going directly to the [Report Port:X] prompt.

At the [Audit Tr Port: X] prompt:

- Press ENTER to accept the current selection.
- Press (F9) or the space bar to scroll through the valid port numbers. Select the desired audit trail port number. The valid range is 1-2 if the multi-function card is not installed;1-4 if the multi-function card is installed.

At the [Report Port: X] prompt:

- Press ENTER to accept the current selection.
- Press (F9) or the space bar to scroll through the valid port numbers. Select the port number to be used for reports. Valid numbers are 1-2 if no multi-function card is installed; 1-4 if a multi-function card is installed.

At the [Save Trans: X] prompt:

- Press ENTER to accept the current selection.
- Press (F9) or the space bar to toggle between [Y] and [N].
  - Select [Y] to save transaction data in the transaction file.
  - Select [N] to disable transaction data being saved in the transaction file. If [N] is selected, tickets cannot be reprinted, transactions cannot be voided, and the transaction report cannot be printed or sent to the host.

At the [Host Port: X] prompt:

- Press ENTER to accept the current selection.
- Press (F9) or the space bar to scroll through the valid port numbers and 0.
  - Select the port number to be used for host communications. Valid ports are 1-2 if no multi-function card is installed; 1-4 if a multi-function card is installed.
  - Select (0) to disable the host port function.

At the [Scrbd Tk#Port: X] prompt:

- Press ENTER to accept the current selection.
- Press (F9) or the space bar to scroll through the valid port numbers and 0.
  - Select the port number to be used with a scoreboard to display the current ticket number. Valid ports are 1-2 if no multi-function card is installed; 1-4 if a multi-function card is installed.
  - Select [0] to disable.

At the [TrafficLights: X] prompt:

- Press F9 or the space bar to toggle between [Y] and [N].
- Press (ENTER) to accept the current selection.
  - Select [Y] if traffic light(s) will be used in this application. In this mode, tailgating is not permitted. The last weighed truck must completely exit the scale before the next truck pulls onto the scale.
  - Select [N] if traffic lights will not be used in this application. This mode allows tailgating.

After entering the appropriate information at this prompt, the display will advance to the [WEIGH MODE] category display. Press (ENTER) to set up this category, (F9) to move to the next category, (Esc) to exit application setup and return to [Maint. Functions], or (F11) to go back to [Process Trucks].

Weigh Mode Setup

Weigh Mode is used for quick processing of standard semi trucks, printing axle and gross weights, and charging the Weigh Mode fee. At this stage of setup, you have the opportunity to setup the JagMax controller to automatically use this mode of operation or to allow the operator to use this mode of operation. You can also determine if the JagMax controller should prompt for an ID or the entry of a comment.

Press ENTER at the [WEIGH MODE] display to access this category.

At the [Auto Weigh: X] prompt:

- Press ENTER to accept current selection.
- Press (F9) or the space bar to toggle between [Y] and [N].
  - Select [Y] if automatic Weigh Mode is to be enabled. In Automatic Weigh Mode when a truck comes on to the scale, the controller executes a Weigh Mode transaction. The F1 key does not have to be pressed to select Weigh Mode, and no other transaction modes may be used.
  - Select [N] if automatic Weigh Mode is to be disabled

If [Y] is selected, the program will skip the following prompt, going directly to the [Weigh ID:X] prompt.

At the [Weigh Mode: X] prompt, press (F9) or the space bar to toggle between [Y] and [N]. Press ENTER to accept the current selection.

- Select [Y] if Weigh Mode is to be used. The program advances to the [Weigh ID: X] display.
- Select [N] if Weigh Mode is not allowed. If [N] is selected, the program will advance to the next category display, [REWEIGH MODE].

At the [Weigh ID: X] prompt, press (F9) or the space bar to toggle between [Y] and [N]. Press ENTER to accept the current selection.

- Select [Y] if Weigh mode should prompt for ID.
- Select [N] to disable IDs in Weigh mode.

At the [Weigh Comment: X] prompt, press (F9) or the space bar to toggle between [Y] and [N]. Press ENTER to accept the current selection.

- Select [Y] if Weigh mode should prompt for comments.
- Select [N] to disable comments in Weigh Mode.

At the [Wgh Fee: XXXX.XX] prompt, enter the fee (in dollars and cents) to be charged for a Weigh Mode transaction. Press ENTER to accept the current value.

At the [Weigh CustPrt: X] prompt, press (F9) or the space bar to scroll through the valid custom print numbers 1-5. Press ENTER to accept the current selection. Select the custom print number to be used for a Weigh Mode ticket.

The program will advance to the [REWEIGH MODE] category display. Press (ENTER) to set up this category, (F9) to move to the next category, (Esc) to exit application setup and return to [Maint. Functions], or (F11) to go back to [Process Trucks].

Re-Weigh Mode Setup

Re-Weigh mode is used for quick re-processing of standard trucks, printing axle and gross weights, and charging the reduced Re-Weigh Mode fee.

Press ENTER at the [REWEIGH MODE] display to access this category.

At the [Re-Weigh Mode: X] prompt, press (F9) or the space bar to toggle between [Y] and [N]. Press ENTER to accept the current selection.

- Select [Y] if Re-Weigh Mode is to be used. (This enables Re-Weigh, Double Re-Weigh, and Triple Re-Weigh modes.)
- Select [N] if Re-Weigh Mode is not allowed. The program will advance to the [DOUBLE MODE] category display.

At the [RWgh Fee:XXXX.XX] prompt, enter the fee to be charged for a Re-Weigh Mode transaction, or press ENTER to accept the current value. (This fee will be used for Re-Weigh, Double Re-Weigh, and Triple Re-Weigh.)

The program will advance to the [DOUBLE MODE] category display. Press (ENTER) to access this category, (F9) to move to the next category, (Esc) to exit application setup and return to [Maint. Functions], or (F11) to go back to [Process Trucks].

Double Mode Setup

Double Mode is used for processing or re-processing trucks with two trailers (maximum of nine axles), printing axle and gross weights, and charging either the Double Mode or Re-Weigh Mode fee.

Press ENTER at the [DOUBLE MODE] display to access this category.

At the [Double Mode: X] prompt, press (F9) or the space bar to toggle between [Y] and [N]. Press ENTER to accept the current selection.

- Select [Y] if Double Mode is to be used.
- Select [N] if Double Mode is not allowed. The program will advance to the [TRIPLE MODE] category display.

At the [Double ID: X] prompt, press (F9) or the space bar to toggle between [Y] and [N]. Press ENTER to accept the current selection.

- Select [Y] if Double mode should prompt for ID.
- Select [N] to disable IDs in Double mode.

At the [Double Comment:X] prompt, press (F9) or the space bar to toggle between [Y] and [N]. Press ENTER to accept the current selection.

- Select [Y] if Double mode should prompt for comments.
- Select [N] to disable comments in Double Mode.

At the [Dbl Fee: XXXX.XX] prompt, enter the fee to be charged for a Double Mode transaction or press ENTER to accept the current value.

At the [Dbl Cust Prt: X] prompt, press (F9) or the space bar to scroll through the valid custom print numbers 1-5. Press ENTER to accept the current selection. Select the custom print number to be used for a Double Mode ticket.

The program will advance to the [TRIPLE MODE] category display.

Press (ENTER) to setup this category, (F9) to move to the next category, (Esc) to exit application setup and return to [Maint. Functions], or (F11) to go back to [Process Trucks].

Triple Mode Setup

Triple Mode is used for processing or re-processing trucks with three trailers (maximum of nine axles), printing axle and gross weights, and charging either the Triple Mode or Re-Weigh Mode fee.

Press ENTER at the [TRIPLE MODE] display to access this category.

At the [Triple Mode: X] prompt, press (F9) or the space bar to toggle between [Y] and [N]. Press ENTER to accept the current selection.

- Select [Y] if Triple Mode is to be used.
- Select [N] if Triple Mode is not allowed. The program will advance to the [MOVING VAN MODE] category display.

At the [Triple ID: X] prompt, press (F9) or the space bar to toggle between [Y] and [N].Press ENTER to accept the current selection.

- Select [Y] if Triple mode should prompt for ID.
- Select [N] to disable IDs in Triple mode.

At the [Triple Comment:X] prompt, press (F9) or the space bar to toggle between [Y] and [N]. Press ENTER to accept the current selection.

- Select [Y] if Triple mode should prompt for comments.
- Select [N] to disable comments in Triple mode.

At the [Trpl Fee:XXXX.XX] prompt, enter the fee to be charged for a Triple Mode transaction or press ENTER to accept the current value.

At the [Trpl Cust Prt: X] prompt, press (F9) or the space bar to scroll through the valid custom print numbers 1-5. Press ENTER to accept the current selection. Select the custom print number to be used for a Triple Mode ticket.

The display will advance to the [MOVING VAN MODE] category display.

Press (ENTER) to set up this category, (F9) to move to the next category, (Esc) to exit application setup and return to [Maint. Functions], or (F11) to go back to [Process Trucks].

Moving Van Mode Setup

Moving Van Mode is used for processing moving van type trucks, printing axle and gross weights, and charging the Moving Van Mode fee.

Press ENTER at the [MOVING VAN MODE] display to access this category.

At the [Moving Mode: X] prompt, press (F9) or the space bar to toggle between [Y] and [N]. Press ENTER to accept the current selection.

- Select [Y] if Moving Van Mode is to be used.

- Select [N] if Moving Van Mode is not allowed. The program will advance to the [ID MODE] category display.

At the [Moving ID: X] prompt, press (F9) or the space bar to toggle between [Y] and [N]. Press ENTER to accept the current selection.

- Select [Y] if Moving Van mode should prompt for ID.

- Select [N] to disable IDs in Moving Van mode.

At the [Mov Comment: X] prompt, press (F9) or the space bar to toggle between [Y] and [N]. Press ENTER to accept the current selection.

- Select [Y] if Moving Van mode should prompt for comments.

- Select [N] to disable comments in Moving Van mode.

At the [Mov Fee: XXXX.XX] prompt, enter the fee to be charged for a Moving Van Mode transaction. Press ENTER to keep the current value.

At the [Mov Cust Prt: X] prompt, press (F9) or the space bar to scroll through the valid custom print numbers 1-5. Press ENTER to accept the current selection. Select the custom print number to be used for a Moving Van Mode ticket.

The program will advance to the [ID MODE] category display.

Press (ENTER) to set up this category, (F9) to move to the next category, (Esc) to exit application setup and return to [Maint. Functions], or (F11) to go back to [Process Trucks].

ID Mode Setup

ID Mode is used for processing a truck, storing a weighment (a printout may not be required for the inbound or first weighment) and recalling that stored weight at the second weighment. A gross/tare/net weight ticket will then be printed and the ID Mode fee will be charged. The outbound axle weights may also be printed on the ticket.

Press ENTER at the [ID MODE] display to access this category.

At the [ID Mode: X] prompt, press (F9) or the space bar to toggle between [Y] and [N].

- Press ENTER to accept the current selection.

- Select [Y] if ID Mode is to be used.
- Select [N] if ID Mode is not allowed. The program will advance to the [SEND SETUP FILE] category display.

At the [Auto Assign ID:X] prompt, press (F9) or the space bar to toggle between [Y] and [N].
- Press ENTER to accept the current selection.
- Select [Y] if ID's may be Auto Assigned. Auto Assigned ID's use the format XXXXAUTO, where XXXX is a four-digit counter (0001AUTO to 9999AUTO).
- Select [N] if only manual entry of ID's is allowed.

At the [Inbound Print: X] prompt, press (F9) or the space bar to toggle between [Y] and [N].
- Press ENTER to accept the current selection.
- Select [Y] if a ticket should be printed for an ID Mode inbound truck (first weighment in ID mode).
- Select [N] if no ticket is required for an ID Mode inbound truck. The next two prompts will be skipped. [ID in Comment] will be automatically set to No, and the program will advance to the [ID Out Comment:X] prompt.

At the [ID In Comment: X] prompt, press (F9) or the space bar to toggle between [Y] and [N].
- Press ENTER to accept the current selection.
- Select [Y] if ID mode inbound should prompt for comments.
- Select [N] to disable comments in ID mode inbound.

At the [ID In CustPrt: X] prompt, press (F9) or the space bar to scroll through the valid custom print numbers 1-5.
- Press ENTER to accept the current selection.
- Select the custom print number to be used for an ID Mode inbound ticket.

At the [ID Out Comment:X] prompt, press (F9) or the space bar to toggle between [Y] and [N].
- Press ENTER to accept the current selection.
- Select [Y] if ID Mode outbound should prompt for comments.
- Select [N] to disable comments in ID Mode outbound.

At the [ID Fee: XXXX.XX] prompt, enter the fee to be charged for an ID Mode transaction, or press ENTER to keep the current value. The fee is charged on the outbound (second) weighment.

At the [ID Out CustPrt:X] prompt, press (F9) or the space bar to scroll through the valid custom print numbers 1-5.
- Press ENTER to accept the current selection.
- Select the custom print number to be used for an ID Mode outbound ticket.

The program will advance to the [SEND SETUP FILE] category display.

Press (ENTER) to access this category, (F9) to move to the next category, (Esc) to exit application setup and return to [Maint. Functions], or (F11) to go back to [Process Trucks].

Send Setup File

This category allows the setup file to be sent to a PC. The setup file can be used to restore setup values or to duplicate setups on other JagMax controllers.

Press ENTER at the [SEND SETUP FILE] display to access this category.

At the [Send file?   N] prompt, press (F9) or the space bar to toggle between [Y] and [N] .

- Press ENTER to accept the current selection.

- Select [Y] to initiate sending the setup file to a PC using Zmodem file transfer through serial port 1. [Sending to PC] followed by [SETUP] will be displayed on the lower JagMax display while the file is sent.

  When complete, the program will advance to the [PRINT SETUP] category display.

- Select [N] to skip transmitting the setup file. The program advances to the [PRINT SETUP] category display.

Press (ENTER) to access this category, (F9) to move to the next category, (Esc) to exit application setup and return to [Maint. Functions] or (F11) to go back to [Process Trucks].

Print Setup

Note: If [Load Paper+Enter] is displayed, the printer is not accepting data from the JagMax controller. Check the printer, load paper if needed, and press (ENTER).

This category allows the Application Setup parameters to be printed through the Report Port.

Press ENTER at the [PRINT SETUP] display to access this category.

At the [Print File? N] prompt, press (F9) or the (Space Bar) to toggle between [N] and [Y]. Press (ENTER) to accept the current selection.

- Select [Y] initiate printing. [Printing…] will be displayed while the Application Setup parameters are printed.

- Select [N] to skip printing the Application Setup parameters.

Since this is the last category in Application Setup, the display will return to the [GENERAL] category display

Press ENTER to set up this category, (F9) to move to the next category, (ESC) to exit application setup and return to [Maint. Functions], or (F11) to go back to [Process Trucks].

Transaction Report

NOTE: The default is no password. Just press ENTER. If you use a password, make sure you keep your password in a secure place. There is no "back door" access to passwords in the JagMax controller.

The Transaction Report section of Maintenance Mode allows the transaction report to be printed, the transaction file to be sent to a PC, and all transactions to be cleared. From the normal operating mode, press (F11) to enter Maintenance Mode. Then press (F2) to enter the Transaction Report section.

[Transaction Rpt] will be displayed for 2 seconds.

At the [Password:] prompt, enter the report password (up to six characters). [New PW: XXXXXX] is displayed, where XXXXXX is the current password. Enter a new password if desired, or just press ENTER to keep the existing password.

If there are no records in the transaction file, [NO TRANSACTIONS] will be displayed for two seconds. Then the program will return to [Maint. Functions] prompt.

AT the [Print Trans?] prompt, press (F9) or the space bar to toggle between [Y] and [N]. Press ENTER to accept the current selection.

- Select [N] to skip printing the transaction report and return to the [Maint. Functions] prompt.
- Select [Y] to print the transaction report. [Printing . . .] is displayed while the transaction report is being printed. The report will print on the device attached to the report port (as defined in setup).

At the [Send file?] prompt, press (F9) or the space bar to toggle between [Y] and [N]. Press ENTER to accept the current selection.

- Select [Y] to initiate sending the transaction file to a PC using Zmodem file transfer through serial port 1. [Sending to PC] followed by [TRANS] will be displayed on the JagMAX lower display while the file is sent.
- Select [N] to skip transmitting the transaction file.

At the [Clear Trans?] prompt, press F9 or the spacebar to toggle between [Y] and [N].
Press ENTER to accept the current selection.

- Select [N] to keep the transaction data. The program will return to the [Maint. Functions] prompt.
- Select [Y] to clear the transaction data.

   At the [Are You Sure? N] prompt, press (F9) or the spacebar to toggle between [Y] or [No].

   Press ENTER to accept the current selection.

   - Select [N] to keep the transaction data. The program will return to the [Maint. Functions] prompt.
   - Select [Y] to clear all transaction data. [Processing   ] will be displayed while the system is deleting the transaction data. The program will return to the [Maint. Functions] prompt.

In-Process Report

The In-Process Trucks Report section of Maintenance Mode allows the in-process report to be printed, sent to a PC, and individual in-process records to be deleted. (The in-process file contains data for ID Mode inbound trucks which have not yet weighed out.)

From normal operating mode, press (F11) to enter Maintenance Mode. Press (F3) to enter the In-Process Trucks Report section.

[In-Process Rpt] will be displayed for 2 seconds.

NOTE: The default is no password. Just press ENTER. If you use a password, make sure you keep your password in a secure place. There is no "back door" access to passwords in the JagMax controller.

At the [Password:] prompt, enter the report password (up to six characters). [NewPW: XXXXXX   ] is displayed, where XXXXXX is the current password.   Enter a new password if desired, or just press ENTER to keep the existing password.

If there are no records in the in-process file, [NONE IN-PROCESS] will be displayed for two seconds. Then the program will return to the [Maint. Functions] prompt.

At the [Print In-Proc? Y] prompt, press (F9) or the space bar to toggle between [Y] and [N].
Press ENTER to accept the current selection.

- Select [N] to skip printing the in-process trucks report and return to the [Maint. Functions] prompt.
- Select [Y] to print the in-process trucks report.

  [Printing . . .] will be displayed while the in-process report is printed. The report will print on the device attached to the report port (as defined in setup).

At the [Send file? N] prompt, press (F9) or the space bar to toggle between [Y] and [N]. Press ENTER to accept the current selection.

- Select [Y] to initiate sending the in-process file to a PC using Zmodem file transfer through serial port 1. [Sending to PC] followed by [INPROC] will be displayed on the lower JagMAX display while the file is sent.
- Select [N] to skip transmitting the in-process file.

At the [Delete Rec?   N] prompt, press (F9) or the space bar to toggle between [Y] and [N].
Press ENTER to accept the current selection.

- Select [N] to keep the in-process records. The program will return to the [Maint. Functions] prompt.
- Select [Y] to delete an in-process record.

At the [ID / Ticket: Tkt] prompt, press (F9) or the space bar to toggle between [ID] and [Tkt].

- Select [Tkt] to identify the in-process record to delete by ticket number. [Ticket:] will be displayed. Type the ticket number of the in-process record to delete and press ENTER.

- Select [ID] to identify the in-process record to delete by ID. [ID:] will be displayed. Type the ID of the in-process record to delete and press ENTER.

If **no matching record** is found, [NO MATCHES] will be displayed for two seconds. The program will return to the [Delete Rec? N] prompt.

If **more than one matching record** is found, the date and time of the first matching record will be displayed. Press (F9) or the space bar to view the date and time of the next matching record. If another record is found, its date and time are displayed. If you have scrolled through all of the matching records [REPEATING] is displayed for two seconds. Then the date and time of the first matching record is displayed When the date and time of the record that you want to delete is displayed, press ENTER to select it.

After selecting the record to delete by its date and time, or if there is **only one matching record**, [Are You Sure? N] will be displayed. Press (F9) or the space bar to toggle between [Y] and [N]. Press ENTER to accept the current selection.

- Select [N] to keep the selected in-process record. The program will return to the [Delete Rec? N] prompt.

- Select [Y] to delete the selected in-process record. [RECORD DELETED] will be displayed for two seconds.

If all in-process records have been deleted, [NONE IN-PROCESS] will be displayed for two seconds, then the program will return to the [Maint. Functions] prompt.

If there are still records in the in-process file, the program will return to the [Delete Rec? N] prompt.

Accumulation Report

NOTE: The default is no password. Just press ENTER. If you use a password, make sure you keep your password in a secure place. There is no "back door" access to passwords in the JagMax controller.

The Accumulation Report section of Maintenance Mode allows the accumulation report to be printed, the accumulation file to be sent to a PC, and the accumulators to be cleared.

From normal operating mode, press (F11) to enter Maintenance Mode. Press (F4) to enter the Accumulation Report section.

[Accumulation Rpt] will be displayed for 2 seconds.

At the [Password:] prompt, enter the report password (up to six characters).

[NewPW: XXXXXX   ] is displayed, with XXXXXX as the current password. Enter a new password if desired, or press ENTER to keep the existing password.

At the [Print Accum?   Y] prompt, press (F9) or the space bar to toggle between [Y] and [N]. Press ENTER to accept the current selection.

- Select [N] to skip printing the accumulation report. The program will return to the [Maint. Functions] prompt.
- Select [Y] to print the accumulation report. [Printing . . .] will be displayed while the accumulation report is printed. The report will print on the device attached to the report port (as defined in setup).

At the [Send file?   N] prompt, press F9 or the space bar to toggle between [Y] and [N].
Press ENTER to accept the current selection.

- Select [Y] to initiate sending the accumulation file to a PC using Zmodem file transfer through serial port 1. [Sending to PC] followed by [ACCUM] will be displayed on the lower JagMAX display while the file is sent.
- Select [N] to skip transmitting the accumulation file.

At the [Clear Accum?   N] prompt, press (F9) or the space bar to toggle between [Y] and [N].
Press ENTER to accept the current selection.

- Select [N] to keep the accumulation data. The program will return to the [Maint. Functions] prompt.
- Select [Y] to clear the accumulation data.

   At the [Are You Sure? N] prompt, press (F9) or the space bar to toggle between [Y] and [N].

   Press ENTER to accept the current selection.

   - Select [N] to keep the accumulation data and return to the [Maint. Functions] prompt.

- Select [Y] to clear the accumulation data. [Processing   ] will be displayed while the system is clearing the accumulators. The program will return to the [Maint. Functions] prompt.

End Program

NOTE: The default is no password. Just press ENTER. If you use a password, make sure you keep your password in a secure place. There is no "back door" access to passwords in the JagMax controller.

The End Program feature in Maintenance Mode allows you to end the JagMax program and to use the JagMax keypad to enter setup and perform operations such as scale calibration.

From the normal operating mode, press (F11) to enter Maintenance Mode. Press (F5) to enter the End Program feature.

[End Program   ] will be displayed for two seconds.

At the [Password:] prompt, enter the end program password (up to six characters).

[New PW: XXXXXX] is displayed with the XXXXXX as the current password. Enter a new password if desired, or press ENTER to keep the existing password. The program will terminate.

Printing

The display will read [LOAD PAPER+ENTER] while printing an Audit Trail record or the Transaction, In-Process, or Accumulation reports if the printer being used is unable to receive the data as it is sent by the JagMAX. Most likely, the printer is out of paper. Check the printer, load paper if necessary, and press ENTER to continue printing.

300 Baud should not be used for JagMAX print operations.

4 Service and Maintenance

Tools and Supplies

The following tools should be available for servicing the JagMax controller.

- Volt-Ohm meter
- Analog load cell simulator Part Number 082451JAG or 10086500A (10 step) (if an analog load cell scale is used)
- Soft, lint-free cleaning cloth
- Antistatic bags for PCBs Part Number 14006300A (5″ x 8″)
- Antistatic wrist strap and mat
- Mettler-Toledo screw driver Part Number A14476100A
- Phillips head screw driver
- Allen wrench (2 mm)

> ⚠ **WARNING**
>
> ONLY PERMIT QUALIFIED PERSONNEL TO SERVICE THIS EQUIPMENT. EXERCISE CARE WHEN MAKING CHECKS, TESTS AND ADJUSTMENTS THAT MUST BE MADE WITH POWER ON. FAILING TO OBSERVE THESE PRECAUTIONS CAN RESULT IN BODILY HARM.
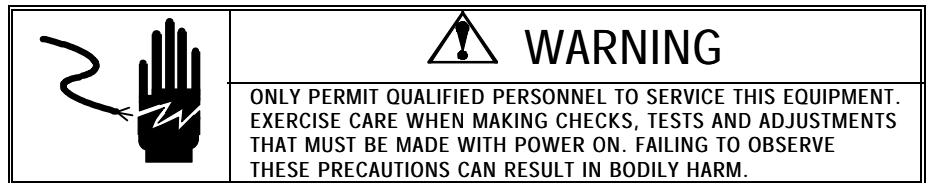
Cleaning and Regular Maintenance

You may wipe the keypad and/or keyboard and covers with a clean, soft cloth that has been dampened with a mild glass cleaner. Do not use any type of industrial solvent such as toluene or isopropanol (IPA). These may damage the controller's finish. Do not spray cleaner directly onto the controller.

Regular maintenance inspections by a qualified service technician are also recommended.

Troubleshooting

If problems occur, do not attempt to repair the JagMax controller before you have determined the source of the problem. Record as much information as possible about what has happened, including any error messages and physical responses of the controller and/or scale. Perform the troubleshooting tests described in this section to help identify the problem.

Status Lights

The two red lights on the back of the Analog A/D board are diagnostic tools and indicate the status of the controller. The following table describes the possible light indications. Refer to the Error Codes and Actions section for corrective actions.

A	B	STATUS
Blink	Blink	OK
On	On	RAM Error
On	Off	EPROM Error
Off	On	MELSI Error

Error Codes and Actions

The following table lists the JagMax controller's error messages, probable cause, and remedy.

Error Message	Description	Probable Cause	Remedy
ALC_EE_CHKSM_ER	Checksum Error was detected in accessing the Scale Calibration parameters on the Analog Load Cell Card	Static, power problems, inductive noise. Bad EEPROM.	Reset to Factory in Scale Interface Menu. Recalibrate scale. If problem persists, replace the Analog Load Cell card.
ALC_EE_NO_ACCESS	JagMax controller cannot access Scale Calibration parameters on the Analog Load Cell card.	JagMax controller configured for a nonexistent Analog L/C card. The Analog L/C card is not jumpered properly. The Analog L/C is not seated properly; or the Analog L/C card is not working.	Check your configuration; check the jumpers on the L/C card; reseat the L/C card. If none of these actions correct the problem, put in a new Analog L/C card.
ALC_EEPROM_ERROR	Analog L/C EEPROM memory error	Static, power problems, inductive noise. Bad EEPROM.	Re-power and recalibrate. Check for good power, suppress noise; take static precautions. Replace Analog PCB.
ALC_EPROM_ERROR	Analog L/C EEPROM memory error	Defective Analog PCB.	Replace appropriate Analog PCB.
ALC_MELSI_ERROR	Analog load cell A/D error	A/D error has occurred	Re-power the unit. Check with weight simulator. Replace Analog PCB.
ALC_NO_RESPONSE	Analog load cell A/D communications error.	A/D error has occurred	Re-power the unit. Check all ALC jumpers. Check with weight simulator. Replace Analog PCB.
ALC_RAM_ERROR	Analog load cell A/D RAM error.	Static, power problems, inductive noise. Bad Analog PCB.	Re-power and recalibrate. Check for good power, suppress noise; take static precautions. Replace Analog PCB.
ALC_RESPONSE_ERR	Analog Load Cell A/D communications response error.	Internal Error.	Re-power the unit. Check with weight simulator. If error persists, replace Analog PCB.
ALC_UNDEFINED_ERR	Analog Load Cell A/D undefined error.	Analog load cell A/D memory error has occurred.	
ARCNET_BAD_ADDRS ARCNET_DUP_ADDRS	You have configured the ARCnet address jumpers with either a duplicate address with another node on the network or an illegal ARCnet address.	The ARCnet address jumpers are not set up properly	Check network address jumpers on main controller card.

Error Message	Description	Probable Cause	Remedy
ARCNET_TEST_ERR	Standard power up testing of the ARCnet adapter failed.	ARCnet Adapter Failure.	Re-power up the JagMax controller. If problem persists, replace the controller card.
BAD_NUMBER_CELLS	The JagMax controller has been configured with an illegal number of load cells in a POWERCELL scale or DJ-Box scale.	Improper Setup.	Check number of load cells configured for both scales. Correct the setup.
BRAM Bad - Rst?	Battery backed RAM error.	Setup parameters in Battery Back RAM have been corrupted. Likely causes are too long of storage for JagMax controller, power has been removed from JagMax controller memory too long, battery failure, or hardware failure.	Respond Y(es) to reset to factory settings. Reprogram setup parameters. If problem persists, you may have to replace battery, power supply, or controller card.
BRAM CKSUM ERROR	Setup variables corrupt	Electrical malfunction. Power has been removed from the JagMax controller memory too long. The battery and super-cap on the controller card has been drained.	Press ENTER key to continue. Check setup parameters for desired settings
BRAM Err - Rst? Y (Will appear during power-up sequence only after loading new software.) BRAM VERSION ERR	Different program version detected. Storage locations for setup parameters and memory locations moved in a new software update.	New software version has been downloaded to JagMax controller.	Press ENTER to accept the reset default Y response. All parameters will be reset to factory default values. Re-program setup parameters.
BRAM Power Fail!	JagMax controller detected low power supply voltage while attempting to write permanent data to BRAM Shared Data.	You have an early version of the JagMax controller power supply or a bad power supply.	Upgrade the power supply on the JagMax controller with the latest version of the power supply.
CALIBRATION_ERR	Calibration error.	The most likely cause is an improper setup or calibration sequence. Another possible cause is a bad load cell.	Check wiring. Check with simulator. Check load cell and recalibrate. Verify calibration setup parameters.
Can't redim. var	JagBASIC programming error.	Once a JagBASIC application has declared a variable or an array, it can not later be re-dimensioned to a different size array.	Correct JagBASIC program.

Error Message	Description	Probable Cause	Remedy
Can't redim. var	JagBASIC programming error.	Once a JagBASIC application has declared a variable or an array, it can not later be re-dimensioned to a different size array.	Correct JagBASIC program.
CHANGE PWCEL ERR	There was an error when attempting to change a POWERCELL address.	Communications error with POWERCELL.	Run the cell diagnostics to verify what the POWERCELL address is. If it is still at its old address, change the address. If the problem persists, you may have to replace the POWERCELL.
CLEAR_TARE_AT_0	According to the scale setup parameters, the scale must be at gross zero in order to clear tare.	If you select Tare Interlock, the scale must be at gross 0 in order to clear tare.	Check local Legal-for-Trade requirements. If you don't want this feature, turn off Tare Interlock selection.
Command error	An error occurred in trying to access a file from the JagBASIC interpreter.	Most likely, you tried to access a file that does not exist. It is also possible that the file system has been corrupted	Use the DIR command from the JagBASIC Interpreter to verify the RAM disk directory. If the file system has been corrupted, re-initialize it from the JagBASIC setup menus and rebuild it from the backup files you are maintaining on a PC.
CONECT_NOT_ FOUND	Serial connection not found.	Improper serial setup.	Reset serial programming block to factory defaults Re-program serial setup parameters
CTL_EE_NO_ACCESS	Physical error accessing the EEPROM on the Controller Board. This EEPROM holds the calibration parameters for single-cell DigiTOL and DJBox scales.	Hardware malfunction.	Power down/up the JagMax controller. If problem persists, replace the EEPROM on the controller board or replace the controller board itself
DEST_NOT_CONNECT	The remote JagMax controller that is the destination for a cluster communications message is not connected.	The remote JagMax controller that is the destination for a cluster communications message is not connected.	Verify network setup; verify ARCnet wiring, addresses, and terminations.
Device error	JagBASIC programming error.	The JagBASIC program has referred to an illegal device or a device that is not open	Correct the JagBASIC program.
DIM not array	JagBASIC programming error	The JagBASIC program has attempted to dimension a variable that is not an array.	Correct the JagBASIC program.

Error Message	Description	Probable Cause	Remedy
Divide by zero	JagBASIC programming error.	The JagBASIC program has attempted to divide a number by zero	Correct the JagBASIC program.
EE A CErr - Rst? Y EE B CErr - Rst? Y	EEPROM Checksum Error. The scale calibration parameters stored on the EEPROM have been corrupted.	Hardware Failure	Press **ENTER** to accept the reset default Y response. You must recalibrate JagMax controller scale.
EE A VErr - Rst? Y EE B VErr - Rst? Y EE VERSION ERROR	Version number in the EEPROM does not match the version expected by the JagMax controller operating system.	The JagMax controller scale was calibrated with an earlier version of the JagMax controller operating system.	Press **ENTER** to accept the reset default Y response. You must recalibrate JagMax controller scale.
EE Reset Error	An attempt to access the EEPROM for the selected scale has failed.	JagMax controller improperly configured with nonexistent scale devices, improperly seated scale board, or a hardware malfunction on the scale board.	Check your scale configuration in setup. You may have to do Reset to Factory. Try reseating the boards. If these efforts fail, replace the scale board.
END_OF_FILE	End of File encountered while reading Shared Data.	End of File encountered while reading Shared Data.	None.
END_OF_SHIFT_ADJ	Last load cell or pair completed during shift adjust procedure.	Last load cell or pair completed during shift adjust procedure.	None.
ERROR in line	JagBASIC programming error. This message indicates the line in which the error occurred.	JagBASIC programming error. There will also be an error code indicating the type of programming error.	Correct the JagBASIC program.
Event def error	JagBASIC programming error.	There is a programming error in defining an event.	Correct JagBASIC program.
File open failed	JagBASIC programming error.	JagBASIC program attempted to open a nonexistent RAM disk file or serial communications device.	Correct JagBASIC program.
FOS_RESP_TIMEOUT	The Formatted Output Server (FOS) generates demand print and continuous print messages. They may be directed to a local or remote serial port. This error occurs when the FOS does not receive a response serial port driver within a specified amount of time.	This error usually occurs when print data is directed to a remote serial port. If the ARCnet LAN is disconnected while the FOS is waiting for a response, this error may occur.	Check ARCnet wiring.

Error Message	Description	Probable Cause	Remedy
Illegal command	JagBASIC programming error.	The JagBASIC program has issued a command that is not a legal command	Correct the JagBASIC program.
Incomplete line	JagBASIC programming error.	The JagBASIC program contains a line that does not have the full syntax required for a line.	Correct JagBASIC program.
INCRM_CHAIN_TARE	A decreasing chain tare was attempted in a market where only incremental chain taring is permitted.	Chain taring that causes a decrease in the tare weight is not permitted in some markets in legal-for-trade applications. An incremental chain tare is a new tare on top of an already existing tare value where the new tare value is greater than the old tare value.	Check the market setting in setup. Check the "tare interlock" setting in setup. Check the legal-for-trade jumper on the controller board. Verify that these are set properly.
Internal Errors 1 Through 13	Various errors.	Programming failure, hardware failure.	Power down, then up. If error still occurs, reset JagMax controller to factory settings and reprogram setup parameters. Replace controller or Analog PCB.
Invalid device #	JagBASIC programming error.	The JagBASIC program is referencing a device # that is not open.	Correct the JagBASIC program
INVALID_FILE_NAME	There was an attempt to access Shared Data with an invalid file name.	This could be caused by an internal or external access of Shared Data	Determine if an internal or external access caused the error. For an external access error, correct the PLC or Host PC program. For an internal source error, power down then up. If the error still occurs, reset the JagMax controller to factory settings and reprogram setup parameters

Error Message	Description	Probable Cause	Remedy
LADDER_EMPTY	Discrete I/O setup error.	User attempted to delete a rung from the ladder that is empty.	Reset discrete configuration to factory and setup discretes again
LADDER_FULL	Discrete I/O setup error	User attempted to add a rung to the ladder that is already full.	Reset discrete configuration to factory and setup discretes again.
Line # invalid	JagBASIC programming error.	The JagBASIC program contains a line number that is greater than 30000 or is a duplicate of an existing line number.	Correct the JagBASIC program.
Line too big	JagBASIC programming error.	The size of a JagBASIC line is greater than 80 characters	Correct the JagBASIC program.
LOAD::no filename	JagBASIC programming error.	The LOAD command does not contain a file name.	Correct the JagBASIC command
Memory find fail	JagBASIC programming error.	The JagBASIC program has exceeded the memory limits of the system.	Reduce the number of lines. Eliminate unnecessary spaces in the program. Reduce the number of variables. Reduce the size of the arrays. When chaining JagBASIC programs, always load in the largest program first which reduces memory fragmentation.
NEXT without FOR	JagBASIC programming error.	There is a NEXT statement without the required FOR statement.	Correct JagBASIC program.
No line number	JagBASIC programming error.	The program line does not have a line number.	Correct JagBASIC program.

Error Message	Description	Probable Cause	Remedy
No Remote Access	JagBASIC programming error.	The program is attempting to access a device that is already in use by a serial connection or by another JagBASIC program in the JagMax controller cluster.	If you want to access a serial device, you must remove all serial connections to the device in setup. If you want to share a serial device among JagBASIC programs, you must set up a scheme where only one program has the device open at a time.
No Scale A Type No Scale B Type No Scale C Type No Scale D Type No Scale E Type	Scale type definition is missing.	No scale type entered in Scale Interface menu.	Go to the "Scale Interface" setup menu and properly set the scale type
NO_CHAIN_TARE	User attempted to take a second or "chain" tare after a tare was already taken.	When the tare interlock is selected in setup, chain taring is illegal in certain markets.	Check the local "legal for trade" requirements. Check the market selection and tare interlock settings in setup. The system will continue to operate properly but will not allow the chain tare
NO_DISCRETE_CBCK	There are no more discrete callback structures available.	The setup of this system and the JagBASIC application has exceeded this system limit.	Power down, then up. If error still occurs, reset JagMax controller to factory settings and reprogram setup parameters.
NO_DMD_PRNT_CON	There is demand print connection configured in setup.	No demand print entered in the "Config Serial, Configure Port" menu.	Change setup parameters.
NO_KEYBOARD_TARE	Keyboard tare disabled.	Keyboard Tare is disabled in the "Application Envn, Tare Operation" setup menu.	Change setup parameters to enable this feature.

Error Message	Description	Probable Cause	Remedy
NO_PUSHBUTT_TARE	Pushbutton tare disabled.	Pushbutton Tare is disabled in the "Application Envn, Tare Operation" setup menu.	Change setup to enable this feature.
NO_PWCEL_OLD_ADR	POWERCELL re-addressing error.	When re-addressing a POWERCELL, no POWERCELL was found at the specified old address. This problem could also be caused by a entering an invalid address or by a POWERCELL communications error.	Run the cell diagnostics to verify the POWERCELL address. If the cell is at its old address, try changing the address again. If the problem persists, you may have to replace the POWERCELL
NO_SECOND_UNITS	Secondary units not specified.	No secondary units selected in "Application Envn, Alt Weight Units" mode setup.	Change setup to enable the feature
OFF LINE ERROR	JagMax controller on ARCNET network not responding	Loss of communication between JagMax controllers	Check ARCNET cabling. Check JagMax controllers on network. Power down, then up affected JagMax controllers.
ON no GOSUB	JagBASIC programming error	ON statement is present without required GOSUB.	Correct JagBASIC program.
Oper. File Error	Cannot read language messages file.	Unexpected operation.	Power down, then up. If error still occurs, reset JagMax controller to factory settings and reprogram setup parameters.
OPTION BASE->DIM	JagBASIC programming error.	The JagBASIC program must define the OPTION BASE before dimensioning an array.	Correct JagBASIC program

Error Message	Description	Probable Cause	Remedy
Out of data	JagBASIC programming error.	The JagBASIC program has issued more READ commands to initialize system variables than there is data specified in DATA statements	Correct JagBASIC program.
OUT_OF_COMM_BUFS	Cluster communications error.	The system has exceeded the fixed limit on the number of communication buffers that can be used at one time. Most likely one JagMax controller is sending messages to a second JagMax controller faster than the second JagMax controller can process them	Power down, then up. If error still occurs, reset JagMax controller to factory settings and reprogram setup parameters.
OUT_OF_MEMORY	The JagMax controller software cannot get the dynamic memory it needs to continue running.	The system is using more dynamic "heap" memory than is available or the heap memory has become fragmented.	There are many ways to reduce the system memory usage. Reduce the size of a JagBASIC program. Eliminate unnecessary spaces in the program. Reduce the number of variables. Reduce the size of the arrays. When chaining JagBASIC programs, you should always chain in the largest program first. This will reduce memory fragmentation. Eliminate unused network connections, serial connections, and printer templates.
OUT_OF_ZERO_RANG	Operator has attempted to zero the scale outside of the legal zeroing range.	The zeroing limits are set up in the "Application Envn, Zero Operation" menu.	Change zeroing range in setup, if necessary.

Error Message	Description	Probable Cause	Remedy
Overflow	JagBASIC programming error.	A JagBASIC program causes an overflow error by exceeding certain system limits. In particular, the maximum size of the "gosub" stack, the "for-next" stack, and the "while-wend" stack is 9 entries each. Then, for example, if you try to nest subroutines more than 9 entries deep, you will get an Overflow error. Overflow errors can also be caused by particular language syntax errors	Correct JagBASIC program.
PRINT REQUESTED	The operator has re-quested a Demand Print through the Control Panel.	None.	None.
PRINT_IN_PROGRES	The operator has re-quested a second demand print while the first is in progress.	None.	None.
PRINT_NOT_READY	Scale is in motion while attempting to print.	None.	None.
Program too big	JagBASIC programming error.	First problem: The program exceeds 300 text lines or 15KB. Second problem: This error can also occur while you are typing in a JagBASIC program at they JagMax controller when the temporary program buffer becomes full.	For the first problem, sepa-rate the program into smaller files that can be run independently or chained together. When chaining, always start execution with the largest program to avoid memory fragmentation. For the second problem, save the current program and load it in again. This will cause a larger temporary program buffer to be allocated.
PWC_PROTOCOL_ERR PWC_TIMEOUT_ERR PWC_UNDEFIND_ERR PWC_BUFF_OVFLOW	Communication Error between controller card and POWERCELL card.	Bad POWERCELL card.	If error persists, replace the POWERCELL card.

Error Message	Description	Probable Cause	Remedy
PWC_CHECKSUM_ERR	Checksum error on firmware on POWERCELL card	Bad POWERCELL card.	If error persists, replace the POWERCELL card.
PWC_EEPROM_ACCES	Unable to access EEPROM on POWERCELL card	Bad POWERCELL card	If error persists, replace the POWERCELL card.
PWC_EEPROM_ERR PWC_EEPROM_CHECK	Checksum error on power scale calibration data stored on EEPROM on POWERCELL card.	New version of JagMax controller software. Hardware failure caused corruption of EEPROM data.	Recalibrate scale. If problem persists, replace the POWERCELL card
PWC_NO_ERROR PWC_NO_ERROR2	None.	None.	None.
PWC_RAM_ERR	RAM memory error on POWERCELL card.	Bad POWERCELL card	If error persists, replace the POWERCELL card.
PWCEL_AT_NEW_ADR	You attempted to re-address a POWERCELL to a new address that already exists on the POWERCELL network.	Your addressing procedure for the POWERCELLs has created duplicate addresses.	Recheck your addressing scheme. If necessary, reset all POWERCELL addresses to the factory default address of 240. Begin addressing the cells again. Use the AutoAddress capability to minimize addressing errors.
PWCEL_BAD_FMT	The format of the data from the remote POWERCELL is invalid.	Most likely, this is a communication error or power supply problem for the remote POWERCELLs. Bad remote POWERCELL.	If problem persists, validate wiring, line terminations, and power in the POWERCELL network. Replace the remote POWERCELL, if necessary
PWCEL_EEP_ERR	The remote POWERCELL has reported a checksum error in its EEPROM	Bad remote POWERCELL.	Replace remote POWERCELL.
PWCEL_NEG_RNG	The weight reported by a remote POWERCELL is in the negative weight range.	Bad remote POWERCELL.	Replace remote POWERCELL

Error Message	Description	Probable Cause	Remedy
PWCEL_NO_DATA	No weight data is being reported by a remote POWERCELL.	Most likely, this is a communication error or power supply problem for the remote POWERCELLs. It could also be caused by a bad remote POWERCELL.	If problem persists, validate wiring, line terminations, and power in the POWERCELL network. Replace the remote POWERCELL, if necessary.
PWCEL_NO_RESP	The remote POWERCELL is not responding to polls from the JagMax controller.	Most likely, this is a communication error or power supply problem for the remote POWERCELLs. It could also be caused by a bad remote POWERCELL.	If problem persists, validate wiring, line terminations, and power in the POWERCELL network. Replace the remote POWERCELL, if necessary
PWCEL_ROM_ERR PWCEL_RAM_ERR	The remote POWERCELL is reporting an error in its local memory.	Bad remote POWERCELL.	Replace remote POWERCELL.
PWCEL_RESTART	The JagMax controller has restarted a remote POWERCELL after the POWERCELL has not responded with valid data.	Most likely, this is a communication error or power supply problem for the remote POWERCELLs. It could also be caused by a bad remote POWERCELL.	If problem persists, validate wiring, line terminations, and power in the POWERCELL network. Replace the remote POWERCELL, if necessary
Record not found	JagBASIC programming error.	A record specified in GET statement for an indexed sequential file could not be found in the file.	There should be an ON ERROR statement in the JagBASIC program to handle these potential situations.
REPORT NET ERR	There was a network error in attempting to print a demand print, continuous print, or setup report.	This error typically occurs when the demand print or continuous print is directed to a remote JagMax controller. It occurs when ARCnet network messaging fails.	Check network setup, addresses, wiring, terminations, and connections
Resource in use	JagBASIC programming error.	The JagBASIC application tried to access a system resource that is already in use by another JagMax controller task. In particular, a JagBASIC application cannot open a serial port that has been assigned to a serial port connection in setup. Also, when two or more JagBASIC applications are sharing a remote serial port, only one application can have the port open at a time.	Correct JagBASIC application. To share remote serial ports between multiple JagBASIC applications, you will have to develop sharing logic that checks for this specific error code.
RETURN no GOSUB	JagBASIC programming error.	RETURN statement is present without required	Correct JagBASIC applica-

		GOSUB	tion.
Error Message	**Description**	**Probable Cause**	**Remedy**
SCALE_IN_MOTION	Scale in motion. This is a normal occurrence and not necessarily an error.	Motion on the scale during taring or zeroing the scale	Try mechanical methods to stabilize the scale base first. Then, try changing the filtering to a stiffer setting in set-up. Then, try changing the motion stability settings to make it less sensitive.
SCALE_UNDER_ZERO	The scale gross weight has gone more than "n" divisions below the current zero. The default "n" is 5, but it can be adjusted in setup.	The zero value for the scale could have been reset by hitting the zero button. There could be a connection problem to the base, particularly, with an analog base.	Take all weight off the scale base and reset the zero value. Zero settings in setup determine the range of how far from the calibrated zero that you can set a new zero value. If your weighing process uses below zero weight values, you can disable the under zero by setting the zero blanking value to 99 divisions. Check the analog base wiring.
SCL_OVERCAPACITY	The weight on the scale exceeds the calibrated capacity of the scale by more than 5 divisions.	There is too much weight on the scale based on calibration parameters.	Reduce the weight on the scale.
SD string > max.	JagBASIC programming error.	JagBASIC can only access Shared Data fields whose length is less than maximum string size of 80 bytes.	Correct JagBASIC program.
SD_BAD_BUFFER	There was an invalid access to Shared Data	A Shared Data access request provided a buffer that is not long enough.	Make sure that the external agency is providing a large enough buffer to match the requested Shared Data field
SD_WRITE_DISABLE	There was an invalid access to Shared Data.	An external agency attempted to access a protected Shared Data field in legal-for-trade mode.	Check external agency program

Error Message	Description	Probable Cause	Remedy
SER CONST ERROR	The JagMax controller could not start or restart a logical serial connection.	JagMax controller software error.	Power down, then up. If error still occurs, reset JagMax controller to factory settings and reprogram setup parameters.
SER_BUFFER_FULL	The JagMax controller demand print buffer is full.	JagMax controller software error.	Power down, then up. Reset JagMax to factory settings and re-program setup parameters.
SER_IN_TIMEOUT	There was a timeout waiting for serial input.	Most likely, the serial device talking to the JagMax controller is has not sent the required input to the JagMax controller. This could also be caused by communication errors.	Verify message exchange between JagMax controller and serial device.
SER_MSG_SEQ_ERR	There was an error in the sequencing of demand print messages.	Most likely, when one JagMax controller is printing at a remote JagMax controller, a message was lost in the ARCnet communications	If problem persists, check ARCnet wiring, terminations, and connections.
SERIAL_MSG_ERROR	The Serial Services software modules got an invalid request.	JagMax controller software error.	Power down, then up. If error still occurs, reset JagMax controller to factory settings and re-program setup parameters.
SETPOINT_NO_RATE	The user has configured a rate setpoint, but has not configured rate calculation.	The user has not configured the rate calculation.	Configure the rate function in the Alternate Weight Units sub-block.
SHIFT_ADJUST_ERROR	The shift adjustment factors could not be calculated.	The weight placements during the shift adjust procedure was incorrect.	Carefully redo the shift adjustment, perhaps, with bigger weights.

Error Message	Description	Probable Cause	Remedy
SPX_NET_ERROR	SPX returned a network error status	Most likely, there is a problem with the ARCnet wiring.	Check the network setup, wiring, connections, addressing, and terminations.
Syntax error	JagBASIC programming error.	The JagBASIC program has a syntax error.	Correct the JagBASIC program.
TARE_ABOVE_LIMIT	Tare value exceeds the allowed limit.	In a legal for trade environment in certain markets, the tare value cannot exceed the highest weight in the lowest range of a multi-range scale.	Check local legal-for-trade requirements.
TARE_NOT_IN_INCR	Keyboard Tare is not entered in a rounded value to the nearest increment	In certain markets, the keyboard tare value must be entered in as a value rounded to the nearest increment.	Make sure the keyboard tare value is rounded to the nearest increment.
TARE_OVER_CAPCTY	Tare exceeds the capacity of the scale.	The tare value cannot exceed the capacity of the scale.	Make sure that the tare value is less than the capacity of the scale.
TARE_TOO_SMALL	Pushbutton tare value is less than one division.	Weight on scale must be at least one division when taking Pushbutton tare.	Make sure scale has at least one division of weight before taking pushbutton tare.
TARE_UNDER_ZERO	Attempted to take tare when scale is under zero and has an invalid weight.	Cannot take tare when scale is under zero.	Make sure scale has valid weight before taking tare.
TEMPLATE_ERROR	Template error.	Error detected in template configuration.	Check template configuration. Correct it as necessary. If problem persists, reset template to factory and re-enter template.
Too many dimens.	JagBASIC programming error.	JagBASIC arrays can have at most three dimensions	Correct the JagBASIC program.
TOO_SMALL_INCRMT	Increment size is too small.	The scale increment size is too small so that you are asking for more resolution than the scale base is capable of supporting.	Choose a larger increment size parameter in setup and recalibrate the scale.
Type mismatch	JagBASIC programming error.	The JagBASIC statement is using an invalid data type or is relating two incompatible data types.	Correct the JagBASIC program.

Error Message	Description	Probable Cause	Remedy
Undefined funct.	JagBASIC programming error.	The JagBASIC statement is referring to an undefined function.	Correct the JagBASIC program.
Value out range	JagBASIC programming error.	The JagBASIC statement is referring to a value out of the range of acceptable values.	Correct the JagBASIC program.
WRONG SCALE MODE	Zeroing scale in net mode.	User attempted to zero the scale in net mode.	Clear tare to put scale in gross mode before zeroing scale.
ZERO_NOT_CAPTURED	Tare attempted before power up zero value was captured.	Tare attempted before power up zero value was captured.	Wait a few seconds after power up before attempting a tare.

Diagnostic Tests
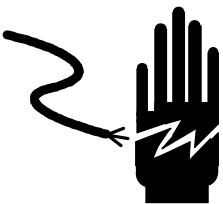
You can perform several tests to help identify and isolate potential problems with the JagMax controller.

AC Power Test

Using the Volt-Ohm meter, check the AC input power. Input power must be within -15% to +10% of the nominal AC line voltage.

Voltage Test

The instructions below describe testing voltages to the Power Supply PCB, Analog PCB, discrete I/O ports, and the keyboard.

⚠ **WARNING**

ONLY PERMIT QUALIFIED PERSONNEL TO SERVICE THIS EQUIPMENT. EXERCISE CARE WHEN MAKING CHECKS, TESTS AND ADJUSTMENTS THAT MUST BE MADE WITH POWER ON. FAILING TO OBSERVE THESE PRECAUTIONS CAN RESULT IN BODILY HARM.

Power Supply Voltage

When testing the power supply voltages it is necessary to remove the power supply from the JagMax controller enclosure. Extreme caution must be taken since the PCB components will be exposed.

1. Unplug the JagMax controller from the external power source.

2. Remove the power supply assembly from the JagMax controller enclosure and lay it component side down on a non-conductive surface.

3. Verify that the fuse located on the Power Supply PCB is good before testing any of the voltages. If the fuse is bad, replace it and recheck the power wiring and connections for damage.

4. Locate the 12 solder connections for the connector which plugs into the back panel connector PCB. Refer to Figure 4-a for test point locations and correct voltage readings. Use caution not to short adjacent pins.
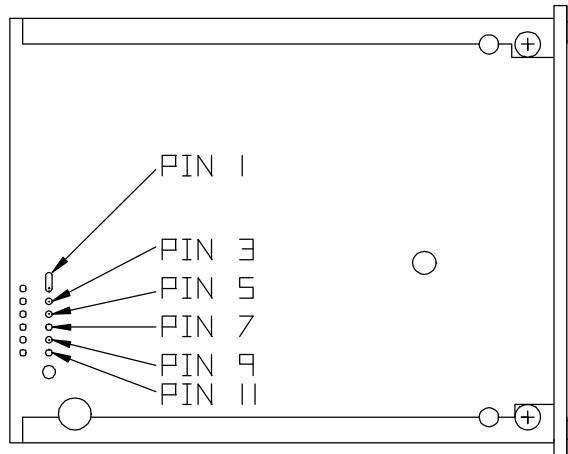
Test Points	Voltage Readings
Chassis GND & Pin 1	4.75 to 5.2 VDC
Chassis GND & Pin 3	4.75 to 5.2 VDC
Chassis GND & Pin 5	4.75 to 5.2 VDC
Chassis GND & Pin 7	4.75 to 5.2 VDC
Chassis GND & Pin 9	18 to 22 VDC
Chassis GND & Pin 11	4.75 to 5.2 VDC

Figure 4-a: Power Supply Test Points and Voltage Chart

5. Reapply AC power to the power supply using extreme caution.

If any of the test point voltages listed above are missing or incorrect, first verify that the power supply fuse and AC line voltage input are OK. If the fuse and line voltage are good, replace the Power Supply PCB and retest.

Analog PCB Voltage

The only place to test output from the Analog PCB is at the load cell connection. Verify voltage of 15 VDC between + and - Excitation (DC volts). If the JagMax controller has power and the Analog PCB has no voltage, replace the PCB.

Discrete Output Voltage

With no load applied and the weight of the scales at zero, the following voltages should be measured. Refer to the controller panel diagram and the following table for test point locations and correct voltage readings.
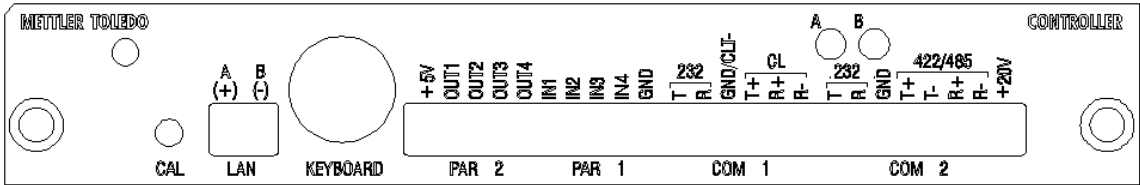
Note: OUT 1 – OUT 4 are open collector devices. A pull-up resistor to +5V is required for accurate measurements at these terminals.

Test Points	Voltage Readings
GND & +5	5 VDC*
+5V & OUT1	5 VDC*
+5V & OUT2	5 VDC*
+5V & OUT3	5 VDC*
+5V & OUT4	5 VDC*

*If voltages are not within the +4.5 to +5.2 VDC range, check for:

- Correct wiring. Refer to the section entitled **Outputs** in Appendix 2 for wiring information.
- Correct programming parameter configuration. Start the JagMax application program, then exit the program.

QWERTY Keyboard Voltage

The JagMax controller has been tested with many PC-AT keyboards, but some may be incompatible, especially older models. Make sure that keyboards with an XT/AT switch are set to AT.

Test the voltages at the keyboard jack on the Controller PCB panel with the keyboard plug removed. Refer to Figure 4-b for test locations and correct voltage readings.

Pin 1 Pin 2 Pin 3 Pin 4 Pin 5
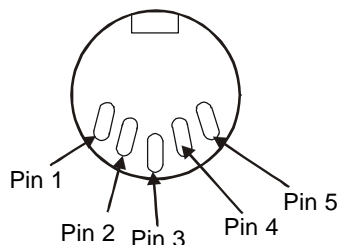
Figure 4-b

If the voltages are correct and the keyboard still does not work, connect another keyboard.

Test Points	Voltage Readings
PIN 1 & PIN 4	5 VDC
PIN 2 & PIN 4	5 VDC
PIN 4 & PIN 5	5 VDC

Backup Battery Test

Disconnect the connector plug from J3 of the power supply PCB and put your voltmeter leads at pin 1 (+ red) and pin 4 (- black).

If your reading is between 3.7 volts and 4.2 volts, the battery should be considered operational.

Ground Test

If the ground is insufficient, the JagMax controller may lock up frequently or give unstable weight readings.

To confirm ground integrity, a commercial branch circuit analyzer like an ICE model SureTest ST-1D (or equivalent) is recommended. It uses a high amperage pulse to check ground resistance, measures the voltage from the neutral wire to the ground connection, and assesses the line loading. Visual inspections and a query of the user will provide information about equipment sharing the power line.

Using a Volt-Ohm meter to check for excessive voltage between neutral and ground on the AC input is not suitable to confirm power grounding integrity. In some cases, a power line conditioner may help to correct adverse power conditions.

External Equipment Test

- Disconnect all nonessential external equipment such as printers, computers, and remote displays and retest the scale.

- Reconnect the equipment one piece at a time to isolate a problem with peripheral equipment.

- If the analog scale option is installed, connect an analog load cell simulator to replace the scale assigned to this option.

- Verify that the positive sense is connected to the positive excitation and the negative sense is connected to the negative excitation.

Internal Testing

Access the *Diagnostics and Maintenance* program block and perform the tests to detect internal problems.

Memory—to test memory on the controller board, flash memory, RAM, and the EEPROM.

Display—to test each segment of the upper and lower display areas and the display ROM and RAM.

Keyboard—to test each key of the JagMax controller keypad, and/or an external PC keyboard.

Scale—to test the weighing functions of a scale that is connected or simulate weighing functions in the expanded x 10 display mode.

Serial ports—to test the serial I/O ports, including a loop back test.

Parallel ports—to test the discrete I/O ports.

Network—to test the network connections.

20 mA and RS-232 Printer Tests

20 mA Output Test

If you suspect the JagMax controller may not be transmitting data to the printer when using 20 mA current loop, follow this test procedure to determine whether the current loop is operational.

1. Remove power from the JagMax controller and the printer and disconnect the data cable from the printer.

2. Connect the red volt meter lead to the + 20 mA receive pin on the printer end of the cable.

3. Connect the black volt meter lead to the - 20 mA receive pin on the printer end of the cable. Set the meter to read DC milliamps.

4. Apply power. The meter should read as follows:

When measuring the higher baud rates in the Demand mode, the meter display will fluctuate for a shorter period of time.

- For 300 to 9600 baud in Demand mode, the meter should display a stable reading between 18.0 and 40.0 mA. Any reading below 18.0 mA or above 40.0 mA indicates a malfunction in the sending device. To test the Demand baud rates, press the **PRINT** key on the JagMax controller and the display should fluctuate from 1/2 to 3/4 of the initial reading, then become stable again. This indicates the controller has transmitted data.

- For 2400 to 9600 in Continuous mode, the meter should fluctuate continuously between 16 mA and 22 mA. The constant fluctuation on the meter display indicates the scale/indicator is transmitting information.

RS-232 Output Test

Use the following test procedure to determine whether the RS-232 serial port is operational.

1. Remove power from the JagMax controller and the printer and disconnect the data cable from the printer.

2. Set the voltmeter to read 20 volts DC.

3. Connect the red lead to pin 2 of the printer end of the data cable and connect the black lead to pin 7.

4. Apply power. For 300 to 9600 baud in Demand mode, the meter should read between -5 and -15 with no fluctuation.

   When measuring the higher baud rates in the Demand mode, the meter display will fluctuate for a shorter period of time. To test the Demand baud rates, press the **PRINT** key on the JagMax controller. The display should fluctuate between -5 and +5 volts for the duration of the transmission, then become stable again. This indicates the controller has transmitted data.

   For 2400 to 9600 baud in Continuous mode, the meter should fluctuate between -5 and +5 continuously. The constant fluctuation on the meter display indicates the scale/controller is transmitting information.

Replacing the Power Supply

The JagMax controller's power supply is designed to operate under normal conditions and usage. Follow the instructions in this section if you should ever need to replace the power supply due to damage from power surges or malfunction.

The Controller board has a Super Action Cap that supports its RAM for up to 24 hours. It is unlikely that disconnecting the power supply or battery will result in loss of setup data; however, you should have a record of the setup parameters for added security. See the section entitled Diagnostics and Maintenance Program Block, Zmodem Send BRAM, in Chapter 2 of this manual for more information on saving setup parameters.

To replace the JagMax controller's power supply unit:

1. Disconnect AC power to the controller.

2. Disconnect the power cable at the rear of the unit. For general purpose units, remove the back cover.

3. Using a Phillips head screwdriver, remove the two screws located on the top and bottom of the power supply assembly, freeing it from the power supply housing. General purpose units have only a top screw.

4. Carefully pull the power supply assembly toward you and slide the assembly from the JagMax controller enclosure. Disconnect the battery harness fromJ3.

5. Remove the two screws holding the Power Supply PCB to the power supply back panel assembly.

6. Attach the new PCB to the back panel, then reattach the battery harness to J3 and slide the assembly back into the JagMax controller unit.

7. Replace and tighten the power supply retention screws removed in step 3.

8. Reconnect the power cable, replace the cover on a general purpose unit, and reapply power.

Replacing the Battery
Back-up

A 4.5 volt alkaline battery (Part Number 145486 00A) is installed as a back-up in case the power to the unit should fail. You should check the battery periodically to ensure it is working properly and change it as necessary. Refer to the Battery Back-up Test section in this chapter

To replace the battery back-up:

1. Disconnect AC power to the controller.

2. Disconnect the power cable at the rear of the unit. Remove the back cover for general purpose units.

3. Using a Phillips head screwdriver, remove the two screws located on the top and bottom of the power supply assembly, freeing it from the power supply housing. general purpose units have only a top screw.

4. Carefully pull the power supply assembly toward you and slide the assembly from the JagMax controller enclosure. Disconnect the battery harness from J3.

5. JagMax controllers use a standard PC-type battery which is available in most computer service centers.

6. Remove the old battery and install the new battery ensuring that pin 1 on J3 is on the (+) side (red wire) of the battery. Connect the battery harness to J3 on the power supply and slide it back into the JagMax controller

7. Replace and tighten the power supply retention screws removed in step 3.

8. Reconnect the power cable, replace the cover on the general purpose unit, and reapply power.

5   Parts and Accessories

General Purpose Parts
(Front View)
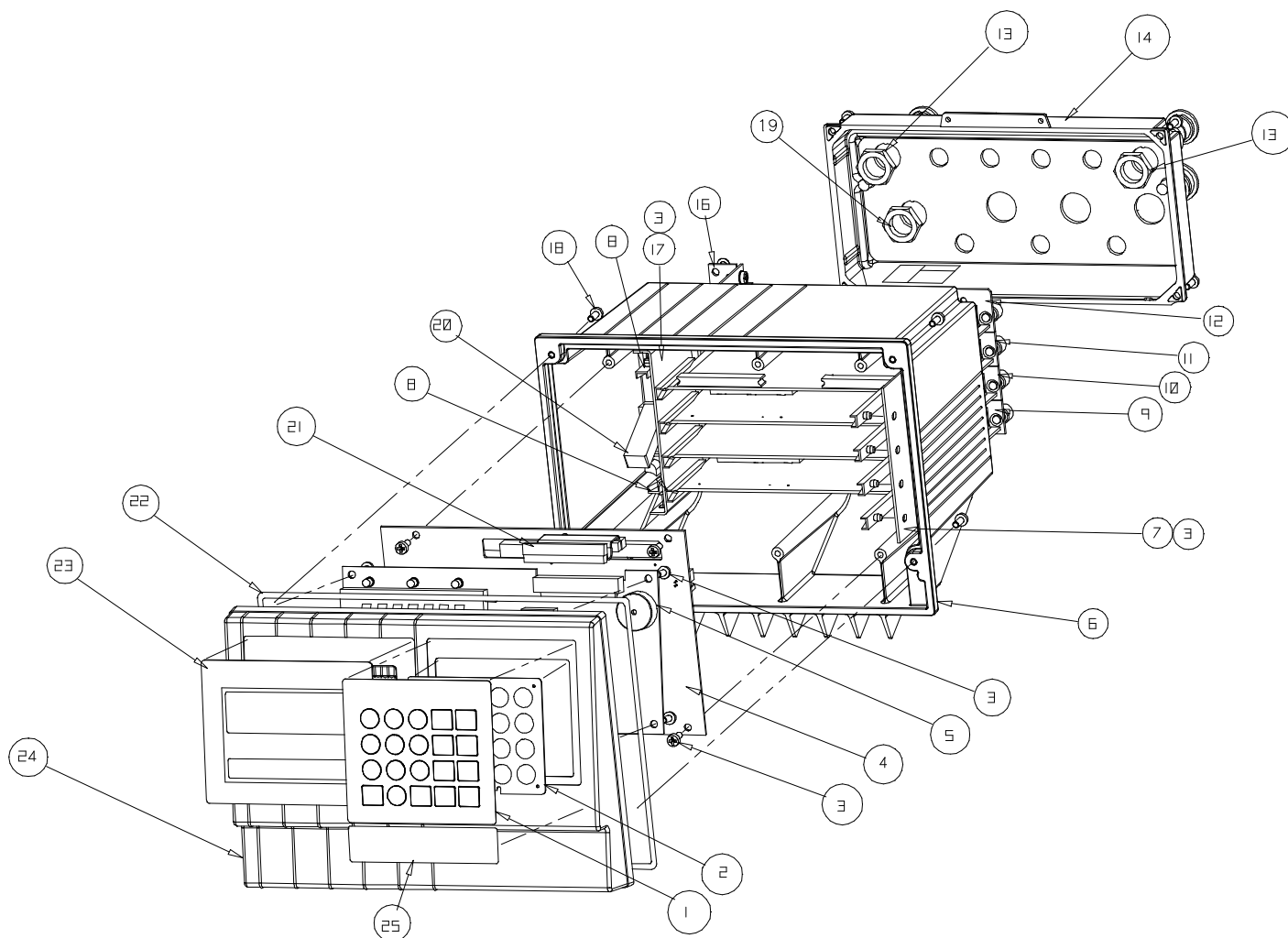
General Purpose JagMax Terminal (Front View)			
Ref #	Part Number	Description	Qty
1 and 2	(*)14538600A	Keyboard Assembly	1
3	R0511100A	Screw, M4 10 Taptite	14
4	(*)14411000A	Connector (mother) PCB Assembly	1
5	(*)14091800A	VF Display PCB Assembly	1
6	(*)14398800A	Enclosure Assembly, Wall/Desk	1
7	(*)14546800A	Bracket, PCB Guide, Right	1
8	(*)14399400A	Card Guide, 2.5"	2
9	Slot 3 - Refer to the Optional Panels Table**		
10	Slot 2 - Refer to the Optional Panels Table**		
11	Slot 1 - Refer to the Optional Panels Table**		
12	***	Controller Assembly	1
13	(*)14400300A	Hex Nut, PG9, Nylon	2
14	(*)14398700A	Rear Access Cover	1
15	(*)12699700A	Warning Label	1
16	(*)14399600A	Power Supply Assembly	1
17	(*)14546900A	Bracket, PCB Guide, Left	1
18	R0516900A	Seal Screw, M4 10 PHD	4
19	(*)14724100A	Nut, PG11	1
20	(*)14548600A	Battery, 4.5 Volt	1
21	(*)14015900A	Harness, VF Display	1
22	(*)14399800A	O-Ring, Sponge	1
23	(*)15511900A	Display Lens, VF	1
24	(*)14398600A	Front Panel, Alpha-numeric	1
25	(*)14901700A	Capacity Label	1

* May have revision level prefix.

** Table is located near the end of this chapter.

*** Refer to the section entitled Controller PCB in this chapter for part numbers and details.

General Purpose Parts
(Rear View)
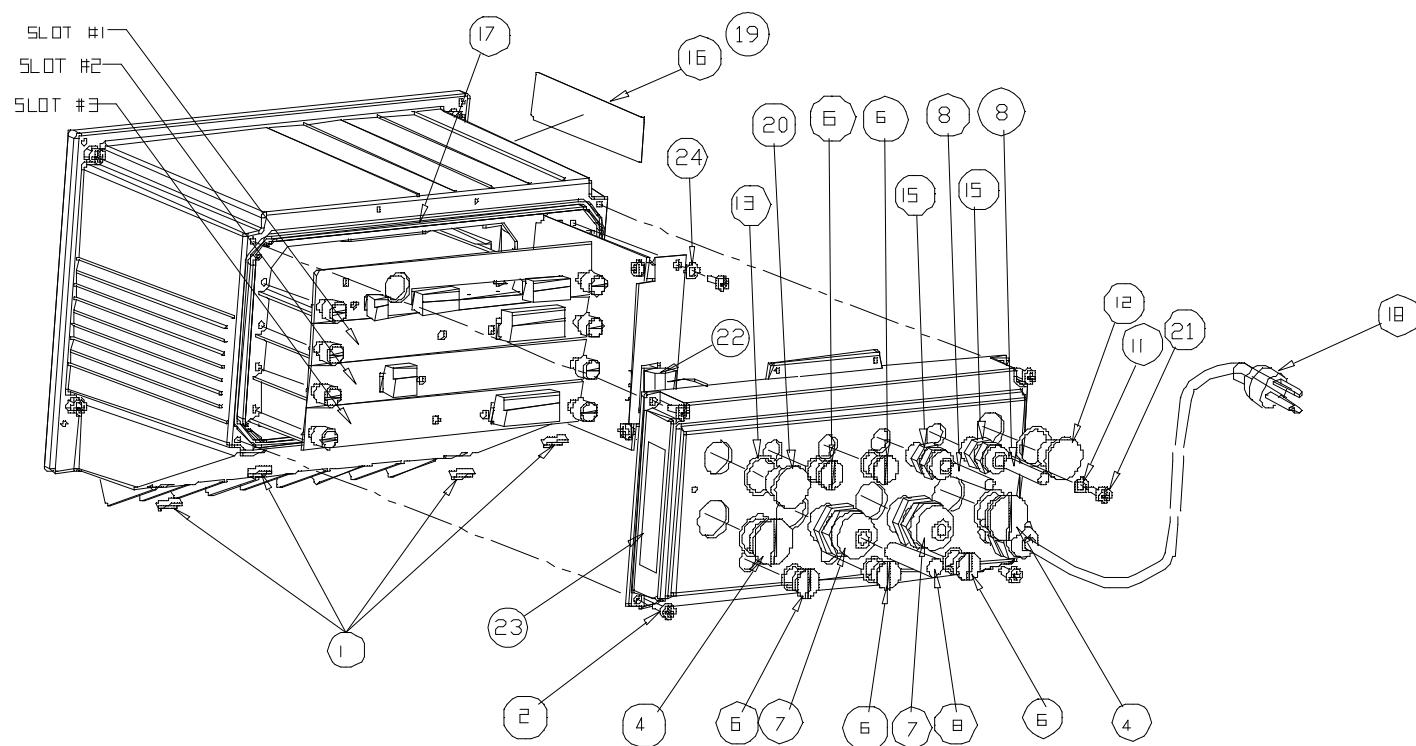
General Purpose JagMax Terminal (Rear View)			
Ref #	Part Number	Description	Qty
1	(*)10839700A	Foot, Stick On	4
2	R0511100A	Screw, M4 10 Taptite	4
4	(*)14400100A	Hole Plug, PG13.5	2
6	(*)14399900A	Hole Plug PG7	5
7	(*)12903900A	Connector, Cord, w/locknut	2
8	(*)14467600A	Hole Plug, (.24/.38 Diameter)	3
9	(*)14054000A	Grip Bushing Assembly	1
11	R00589 130	Lockwasher, #8 Int. Tooth	1
12	(*)14400200A	Hole Plug, 18 mm ID	1
15	(*)12901800A	Connector, Cord w/locknut	2
16	(*)14800000A	Data Plate	1
17	(*)14399700A	O-Ring, sponge, 7.5 ID	1
18	(*)14962000A	Line Cord	1
19	(*)14801800A	Shield, Data Label	1
20	(*)15204000A	Qwerty Keyboard Harness	1
21	R0511200A	Screw, M3 x 8, PH Self-Tapping	1
22	(*)14636400A	Conn, Termblk, Plug. 3 Pos.	1
23	(*)11397100A	FCC Label	1
24	R0541500A	Screw with Lock Washer (for line cord grounding)	2

(*) May have revision letter prefix.

Panel Mount Parts
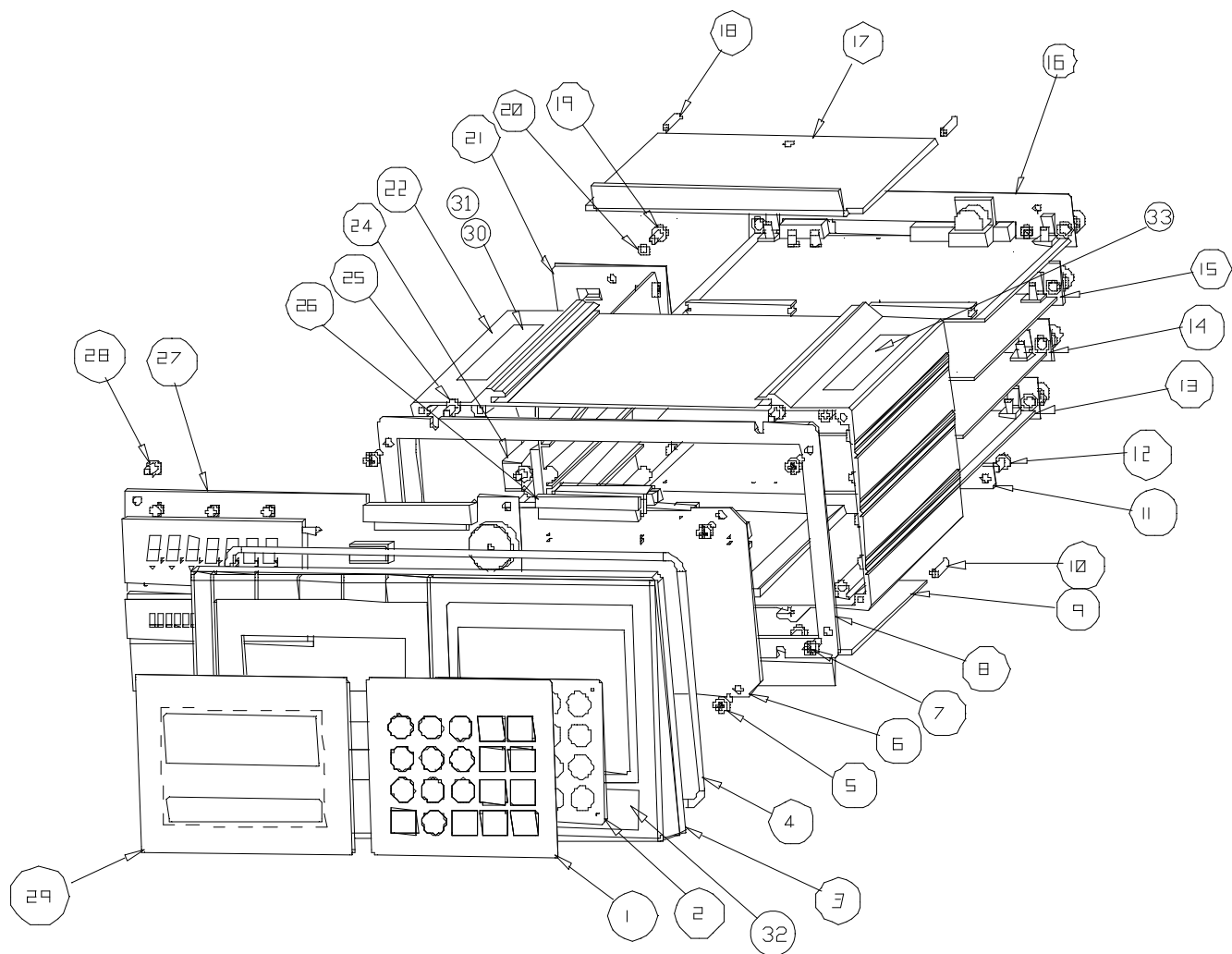
Panel Mount JagMax Terminal			
Ref #	Part Number	Description	Qty
1 and 2	(*)14538600A	Keyboard Assembly	1
3	(*)14162800A	Front Panel	1
4	(*)14016100A	Seal, Panel O-Ring	1
5	R0511100A	Screw, 4M x 10 Taptite	4
6	(*)14146200A	Connector (mother) PCB	1
7	R0511100A	Screw, M4 x 10 Taptite	4
8	(*)14014100A	Plate, Interface	1
9	(*)14015200A	Clamp Bracket	1
10	R0511300A	Screw, Set M4 x 20	2
11	(*)14015800A	Rear Cover Plate, Bottom	1
12	R0511100A	Screw, M4 x 10 Taptite	2
13	Slot 3 Refer to the Optional Panels Table **		1
14	Slot 2 Refer to the Optional Panels Table **		1
15	Slot 1 Refer to the Optional Panels Table **		1
16	***	Controller PCB Assembly	1
17	(*)14015200A	Clamp Bracket	1
18	R0511300A	Screw, Set M4 x 20	2
19	R0511100A	Screw, M4 x 10 Taptite	3
20	R00589130	Lock washer, #8 Int. Tooth	2
21	(*)14163600A	Power Supply Assembly	1
22	(*)14546400A	Indicator Chassis	1
24	(*)14548600A	Battery 4.5 Volt	1
25	R0511100A	Screw, M4 x 10 Taptite	4
26	(*)14015900A	Harness	1
27	(*)14091800A	Display PCB	1
28	R0511100A	Screw, M4 x 10 Taptite	4
29	(*)15511900A	Display Lens	1
30	(*)14800000A	Data Label	1
31	(*)14801800A	Shield, Data Label	1
32	(*)11397100A	Label, FCC	1
33	(*)14901700A	Label, Capacity	1

***Refer to the section entitled Controller PCB in this chapter for part numbers and details.

** Table is located near the end of this chapter.

(*) May have revision letter prefix.

Harsh Environment
JagMax Terminal
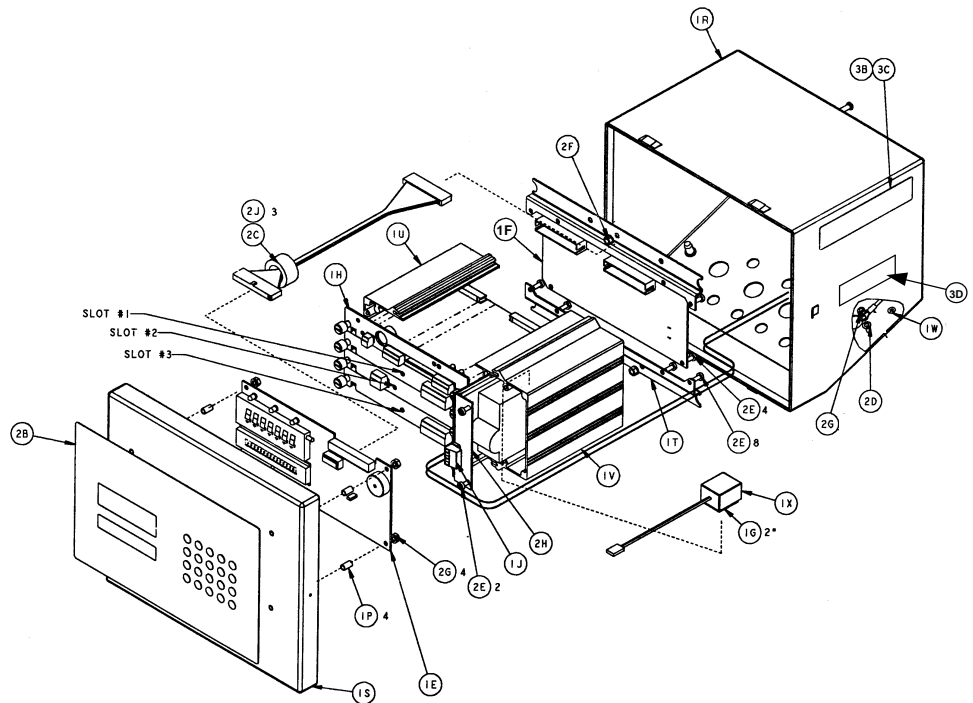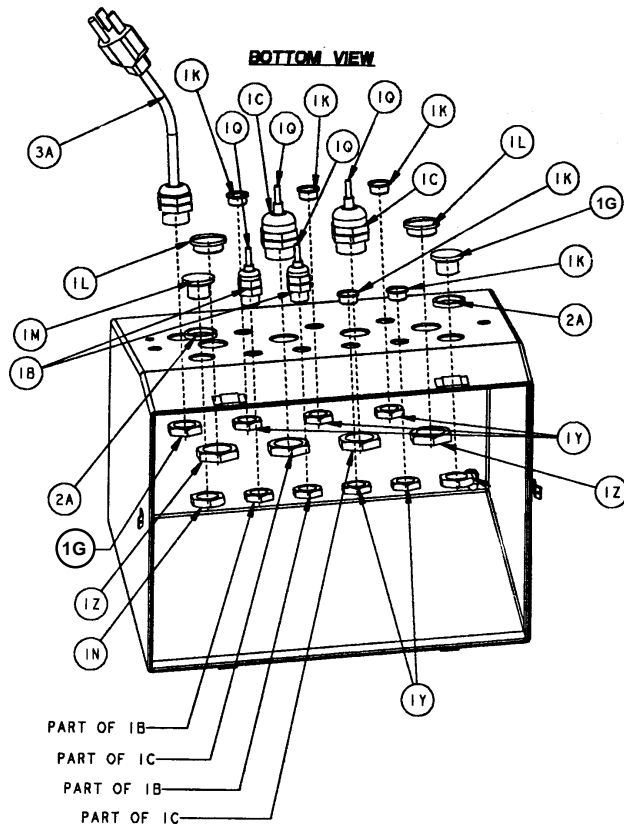
Ref #	Part Number	Description	Qty
		Harsh Environment JagMax Terminal (Top/Front View)	
1B	(*)12901800A		2
1C	(*)12903900A	Conn. Cord w/ Locknut (0.240-0.470)	2
1D	(*)15204000A	Qwerty Keyboard Harness	1
1E	(*)14091800A	PCB Assembly, VF Display	1
1F	(*)14146200A	PCB Assembly, Connector	1
1H	***	Controller PCB	1
1J	(*)14636400A	Conn. Term. Plug, 3 Pos.	1
1K	(*)14399900A	Hole Plug (PG7)	5
1L	(*)14400100A	Hole Plug (PG13.5)	2
1M	(*)14400200A	Hole Plug, 18 mm	1
1N	(*)14400300A	Hex Nut, PG9	1
1P	(*)14465900A	Spacer, RD, M4	4
1Q	(*)14467600A	Hole Plug (.24/.38 Diameter)	4
1R	(*)14519800A	Enclosure Assembly (Bottom)	1
1S	(*)14519900A	Enclosure Assembly (Top)	1
1T	(*)14520200A	Bracket, Mounting	2
1U	(*)14520600A	Card Guide (Left)	1
1V	(*)14528600A	Card Guide (Right)	1
1W	(*)14531400A	Label, Ground BSI	1
1X	(*)14548600A	Battery, Alkaline, 4.5 V	1
1Y	(*)14577900A	Hex Nut, PG7	5
1Z	(*)14578000A	Hex Nut PG 13.5	2
2A	(*)14578300A	Gasket, Grip	2
2B	(*)15533200A	Assembly, Keyboard (JMHA)	1
2C	(*)14636500A	Harness, Display	1
2D	R00589130	Washer #8 I.T. Lock	1
2E	R0511100A	Screw, Pan HD M4 10, PH, Taptite	14
2F	R0519200A	Nut, Hex KEPS, M5	3
2G	R0519600A	Nut, Hex KEPS M4	5
2H	(*)14130400A	Power Supply	1
3A	(*)15003100A	Line Cord, North America	1
2J	(*)09827100A	Band Clamp	2
3B	(*)14800000A	Data Label	1
3C	(*)14801800A	Shield, Data Label	1
3D	(*)11397100A	FCC Label	1
1G	(*)14724100A	Nut, PG11	1
Slot 1	Slot 3 Refer to the Optional Panels Table **		1
Slot 2	Slot 2 Refer to the Optional Panels Table **		1
Slot 3	Slot 1 Refer to the Optional Panels Table **		1

(*) May have revision letter prefix.

** Table is located near the end of this chapter.

*** Refer to the section entitled Controller PCB in this chapter for part numbers and details.

Controller PCB
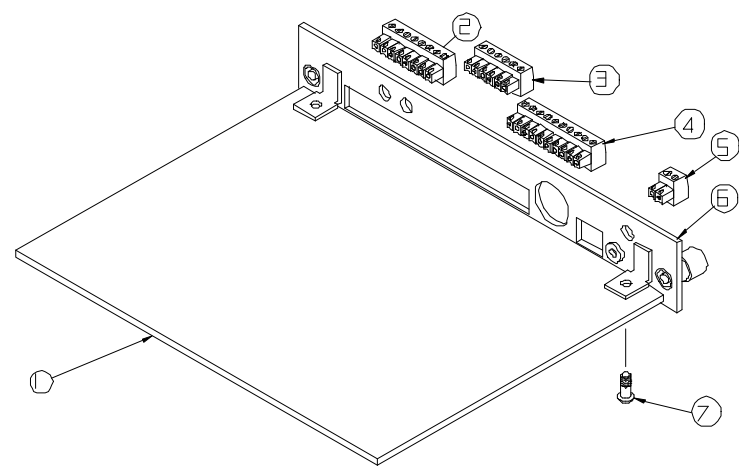
Controller PCB			
Ref #	Part Number	Description	Qty
1	(*)14091400A	Jaguar Controller PCB	1
2	(*)14113300A	Connector, 8 Position Terminal Block	1
3	(*)14113100A	Connector, 6 Position Terminal Block	1
4	(*)14113400A	Connector, 10 Position Terminal Block	1
5	(*)14112900A	Connector, 2 Position Terminal Block	1
6	(*)14162200A	I/O Plate Assembly, Controller	1
7	R0511100A	Screw, M4 10 Taptite	2
--	(*)15660900A	PCB/Panel Assy Complete w/software	--

(*) May have revision letter prefix.

Analog PCB
HAP Analog PCB
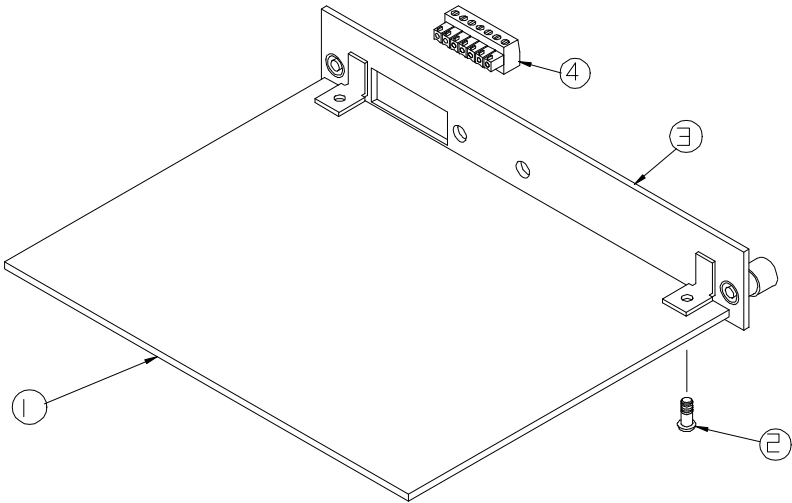
Analog PCB			
Ref #	Part Number	Description	Qty
1	(*)15345400A	Analog PCB	1
	(*)15360200A	HAP Analog PCB	1
2	R0511100A	Screw, M4 10 Taptite	2
3	(*)15359000A	I/O Plate Assembly, Analog I/O Plate Assembly,	1
	(*)15360800A	HAP Analog	1
4	(*)11924100A	Connector, 7 Position Terminal Block	1
Not Shown	(*)14532800A	Intrinsic Safe Warning Label (HAP Analog only)	1

(*) May have revision letter prefix.

Power Supply
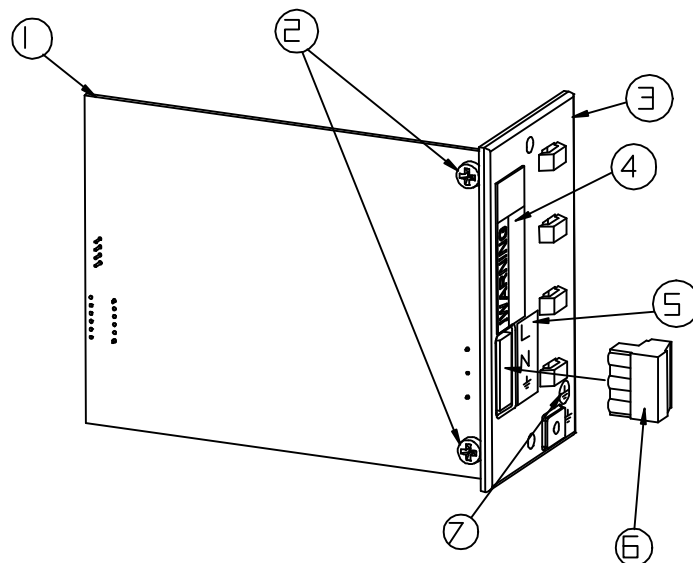
Parts List Power Supply			
Ref #	Part Number	Description	Qty
1	(*)14200200A	Power Supply PCB	1
2	R0511100A	Screw, M4 10 Taptite	2
3	(*)14015100A	I/O Plate, Power Supply (Panel)	1
	(*)14520300A	Bracket, Power Supply (Harsh)	1
	(*)14399500A	Cover Plate, Power Supply, (Desk/Wall)	
4	(*)12699700A	Label, Warning – Power	1
5	(*)14400500A	Label, AC Power In	1
6	(*)14636400A	Connector, 3 Position Terminal Block	1
7	(*)14531400A	Label, Ground, BSI	1
	(*)14399500A	Cover Plate, Power Supply	1

(*) May have revision letter prefix.

Dual Analog PCB
HAP Dual Analog PCB
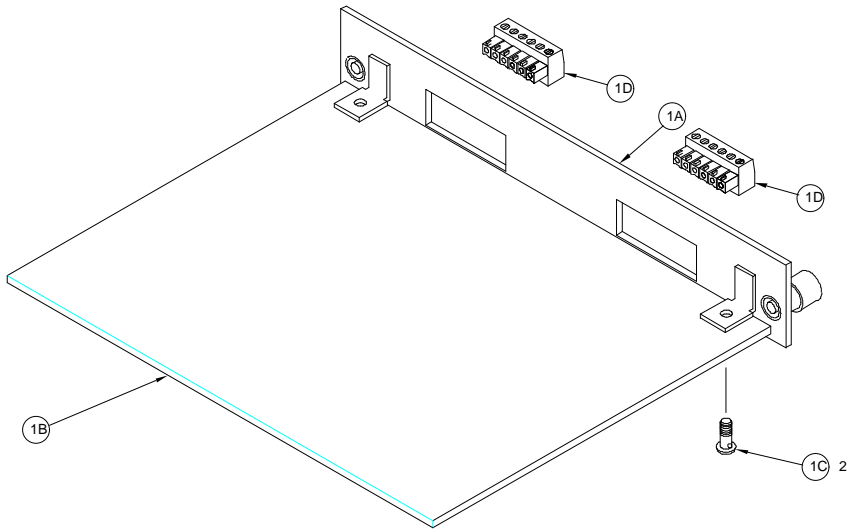
Ref #	Part Number	Description	Qty
1A	(*)14517500A	I/O Plate, Dual Analog	1
	(*)15360700A	I/O Plate, HAP Dual Analog	
1B	(*)15290700A	PCB, Dual Analog	1
	(*)15360100A	PCB, HAP Dual Analog)	
1C	R0511100A	Screw, M4 10 Taptite	2
1D	(*)11924100A	Connector, 7-Position Terminal Block	1 or 2

(*) May have revision letter prefix.

POWERCELL PCB
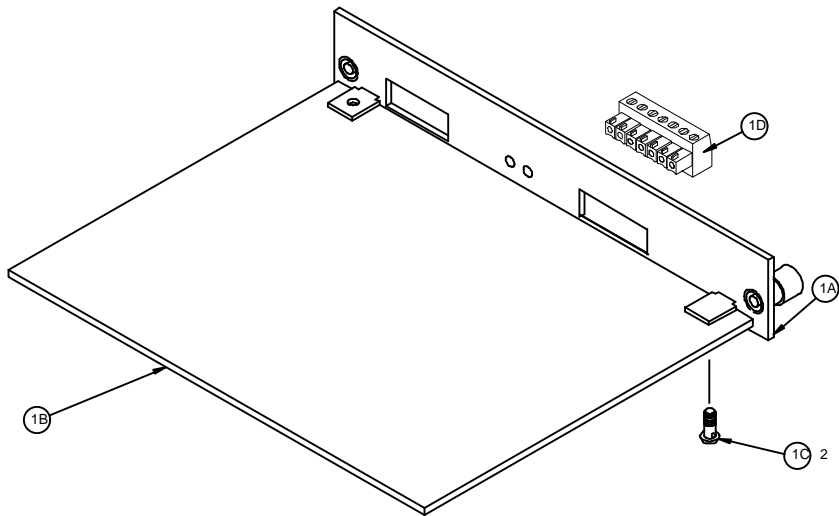
Ref #	Part Number	Description	Qty
1A	(*)14546100A	POWERCELL Assembly I/O Plate	1
1B	(*)14092600A	POWERCELL PCB Assembly	1
1C	R0511100A	Screw, M4 10, Taptite	2
1D	14113300A	Connector, 8 Pos. Terminal Block	1
Not Shown	(*)12471400A	Ring Lug	1
Not Shown	R0519600A	Nut, Hex, M4 Keps	1

(*) May have revision letter prefix.

Multifunction PCB
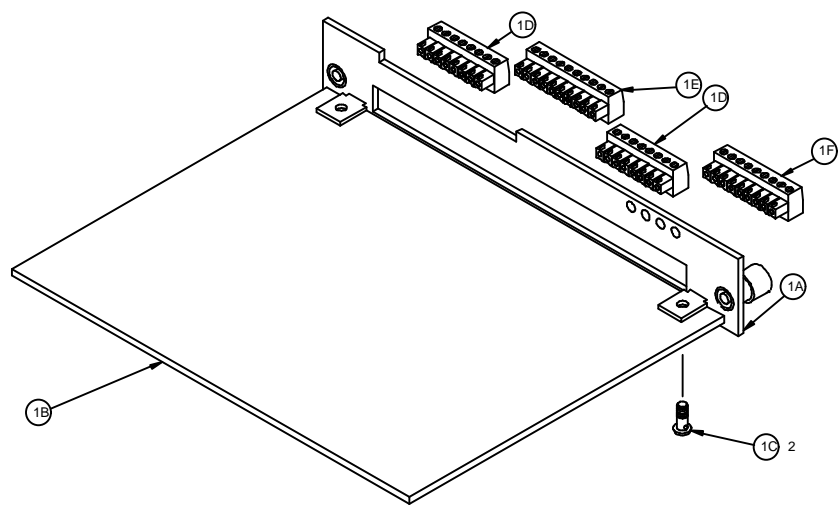
Ref #	Part Number	Description	Qty
1A	(*)14164900A	Multifunction I/O Plate	1
1B	(*)14094200A	Multifunction PCB Assembly	1
1C	R0511100A	Screw, M4 10 ST PHD	2
1D	(*)14113300A	Connector, 8 Pos. Terminal Block	2
1E	(*)14113400A	Connector, 10 Pos. Terminal Block	1
1F	(*)14405300A	Connector, 9 Pos. Terminal Block	1

(*) May have revision letter prefix.

Optional Accessories

Optional Accessories		
Part Number	Description	Factory Number
(*)14526100A	Wall/Column Bracket - GP Model	0917-0209
(*)14528400A	Blank Plate For Open Slot	0917-0210
(*)14512800A	Analog Load Cell Kit	0917-0211
(*)14534600A	HAP Analog Load Cell Kit	0917-0212
(*)14534700A	External Keyboard Connector Kit	0917-0215
(*)10086500A	Analog Load Cell Simulator (10-step)	0917-0091
(*)082451JAG	Analog Load Cell Simulator (variable)	
(*)14476100A	Mettler-Toledo Screw Driver	
(*)90093600A	RS-232/20 mA Converter	
(*)14690100A	Multifunction Kit	0917-0223
(*)14690200A	POWERCELL Kit	0917-0224
(*)15567500A	External Power Supply	
(*)90382800A	Traffic Light I/O	
(*)15572800A	Legend, Keyboard Functions	
(*)14800900A	Panel Stiffener *(Panel Mount)	0917-0241

(*) May have revision letter prefix.

Optional Panels

Optional Panels		
Slot Number	Part Number	Description
Slot 1	(*)14517700A	Dual Analog PCB Panel Assembly
	(*)15360300A	HAP Dual Analog PCB Panel Assembly
	(*)14546200A	DigiTOL POWERCELL PCB Assembly
Slot 2	(*)14163300A	Analog PCB Panel Assembly
	(*)14490200A	HAP Analog PCB Panel Assembly
	(*)14517700A	Dual Analog PCB Assembly
	(*)15360300A	HAP Dual Analog PCB Assembly
Slot 3	(*)14164000A	Multifunction PCB Assembly

(*) May have revision letter prefix.

Recommended Spare Parts

Mettler Toledo recommends you keep the following spare replacement parts in the quantities listed.

Recommended Spare Parts		
Part Number	Description	Qty
**	Controller PCB	1
**	Power Supply PCB	1
**	Analog PCB (if used)	1
**	POWERCELL PCB (if used)	1
**	Multifunction PCB (if used)	1
***	Keyboard Assembly	1
(*)14548600A	4.5 Volt Battery	1
(*)14399800A	O-Ring, G.P.	1

(*) May have revision letter prefix.

** For specific part numbers and details on each PCB, refer to the section in this chapter describing the specific PCB.

*** For part numbers for the different enclosure types, refer to the enclosure assemblies in the front of this chapter.

6 Appendices

Appendix 1: Serial Interface Reference

Two serial ports, COM 1 and COM 2, are standard on the JagMax controller PCB.

- **COM1** provides both RS-232 and 20 mA current loop interfaces. Both types of interfaces can be output simultaneously; however, only one input can be connected.

- **COM2** provides either RS-232, RS-422 or RS-485 interfaces. Both RS-232 and RS-422 can be output simultaneously. However, only one input can be connected. If RS-485 is selected for COM2, it is the only type of interface that can be used.

- Two additional serial ports (COM3 and COM4) are available on optional Multifunction PCB. COM3 has the same functionality as COM1 but does not have 20mA; COM4 has the same functionality as COM2.

Character framing is programmable in setup mode. Framing can be:

- 1 start bit

- 7 or 8 ASCII data bits (selectable)

- 0 or 1 parity bit (even, odd, mark, space or none)

- 1 or 2 stop bits (COM3 and COM4 only)

You can also configure the baud rate (from 300 to 115.2k baud) and checksum character interface parameters.

Software Hand Shaking (XON/XOFF)

The JagMax controller uses software handshaking to control data flow commonly referred to as XON/XOFF handshaking. When a receiving device (typically a printer) is getting information from a JagMax controller and cannot receive any more in its buffer, it sends an ASCII XOFF (13h) telling the JagMax controller to temporarily stop sending data until its buffer clears.

When the device can receive more data, it sends an ASCII XON (11h) telling the JagMax controller to begin sending data again. This process can occur as often as required by receiving device.

The XON/XOFF method is the only type of handshaking supported by the JagMax controller at this time.

Hardware Connections

All connections to the serial ports on the JagMax controller are made using terminal strips, which provide an easier, more secure connection than other types of connections. The terminal strips are removable for ease of connection or replacement of the PCB.

The general purpose enclosure has grip bushings on the rear cover to properly secure and seal around the serial cable. The harsh environment enclosure has grip bushings on the bottom of the enclosure.

The standard 15-foot RS-232 printer cable available for the JagMax controller (Factory Number 0900-0309, part number 14656100A) is wired as shown below

JagMax			RS-232 Printer
TxD	Blue	3	RxD
RxD	Red	2	TxD
GND	Black	7	GND
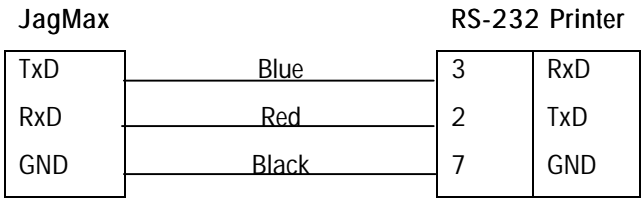
RS-232 Printer Cable Wiring

A custom cable (such as a cable to a computer) can also be used. Mettler-Toledo recommends using either 20 or 22 gauge wire size. The maximum cable length is determined by the interface type used. As a rule, the following limitations apply

Cable	Maximum Length
RS-232	50 feet
20 mA	1000 feet
RS-422	2000 feet
RS-485	2000 feet

Connections other than RS-232 are shown in the section entitled **Serial Port Connections** in Chapter 1. A custom cable to a computer (or other RS-232 device) should be configured as shown below:

JagMax			25-Pin Computer		JagMax			9-Pin Computer
TxD		3	RxD		TxD		2	2 RxD
RxD		2	TxD		RxD		3	TxD
GND		7	GND		GND		5	GND
		4	RTS				1	
		5	CTS				4	DTR
		6	DSR				6	DSR
		8					7	RTS
		20	DTR				8	CTS
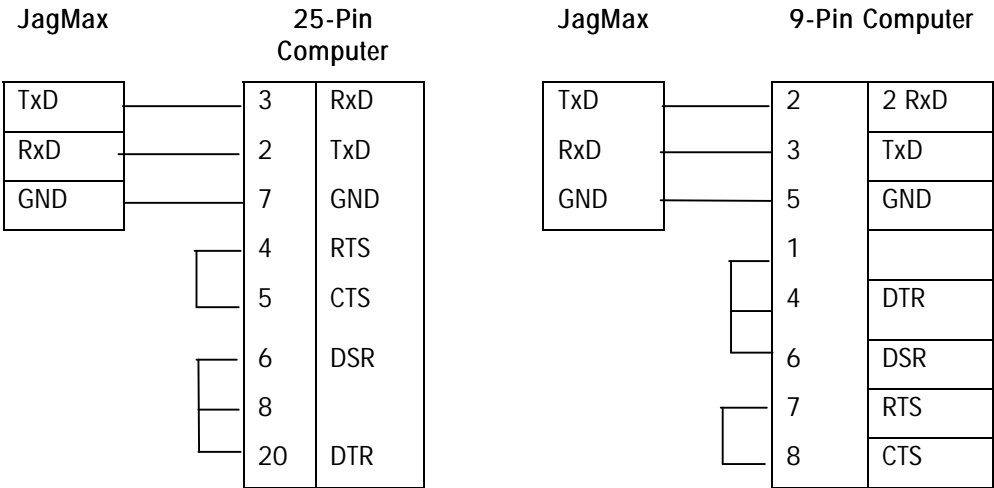
Custom Cable Configuration

Output Modes and Formats

The JagMax controller only supports a continuous data output. The JagMax application handles all "demand" mode printing.

Continuous mode transmits a predetermined 18-byte string of data from the serial port approximately five times a second (without any request). This mode is typically used when continuous monitoring of the scale weight is required by an external device. Mettler-Toledo Model 8618 scoreboard is one device that operates in continuous output mode.

If **4 Setpnt** status is selected in the Serial Interface Program Block, setpoints 1-4 will be included in the continuous output format. The first setpoint assigned to a scale becomes the first setpoint in the continuous output. For example, if the JagMax controller setpoints 5-8 are assigned to scale A, setpoints 5-8 are mapped to continuous setpoint bits 1-4.

The continuous output format is the same for standard mode and 4-setpoint status mode. This format is shown below.

STX	SW A	SW B	SW C	X	X	X	X	X	X	X	X	X	X	X	X	CR	CKS
1	2			3						4						5	6
	STATUS BYTES			GROSS/NET WEIGHT						TARE WEIGHT							

1. <STX> ASCII Start of Text Character, Hex 02.

2. <SWA>, <SWB>, <SWC> Status Word Bytes A, B, and C. Refer to the Bit Identification Tables for individual bit definition.

3. Displayed weight, either Gross or Net weight. Six digits, no decimal point or sign. Non-significant leading zeros are replaced with spaces.

4. Tare weight. Six digits, no decimal point or sign.

5. <CR> ASCII Carriage Return, Hex 0d.

6. <CKS> Checksum character, 2's complement of the 7 low order bits of the binary sum of all characters on a line preceding the checksum, including the STX and CR.

Standard Status Bytes A, B, and C

The following tables detail the standard status bytes for continuous output.

Bit Identification Table for Status Byte A			
Bits 0, 1, and 2			
0	1	2	Decimal Point Location
0	0	0	XXXX00
1	0	0	XXXXX0
0	1	0	XXXXXX
1	1	0	XXXXX.X
0	0	1	XXXX.XX
1	0	1	XXX.XXX
0	1	1	XX.XXXX
1	1	1	X.XXXXX
Bits 3 and 4			
3	4		Build Code
1	0		X1
0	1		X2
1	1		X5
Bit 5			Always = 1
Bit 6			Always = 0

Bit Identification Table for Status Byte B	
Status Bits	Function
Bit 0	Gross=0, Net=1
Bit 1	Sign, Positive=0, Negative=1
Bit 2	Out of Range =1 (Over capacity or under zero)
Bit 3	Motion=1
Bit 4	Lb=0, kg=1 (see also Status Byte C, bits 0-2)
Bit 5	Always=1
Bit 6	In Power Up=1

Bit Identification Table for Status Byte C			
Bits 0,1, and 2			Weight Description
0	1	2	
0 1	0 0	0 0	Lb or kg, selected by Status Byte B, bit 4 Grams
Bit 3			Print Request=1
Bit 4			Expand Data x 10=1
Bit 5			Always=1
Bit 6			Always=1

4-Setpoint Status Bytes A, B, and C

The mode of operation for the status bytes A, B, and C (standard or 4-setpoint) is determined when the continuous connection is made in the configure Serial program block.

The following tables detail the 4-setpoint status bytes for continuous output.

Bit Identification Table for Status Byte A			
Bits 0, 1, and 2			
0	1	2	Decimal Point Location
0	0	0	XXXX00
1	0	0	XXXXX0
0	1	0	XXXXXX
1	1	0	XXXXX.X
0	0	1	XXXX.XX
1	0	1	XXX.XXX
0	1	1	XX.XXXX
1	1	1	X.XXXXX
Bit 3			Setpoint 1 (1st assigned to this scale), Feeding = 0
Bit 4			Setpoint 2 (2nd assigned to this scale), Feeding =0
Bit 5			Always = 1
Bit 6			Setpoint 3 (3rd assigned to this scale), Feeding =0

Bit Identification Table for Status Byte B	
Status Bits	**Function**
Bit 0	Gross=0, Net=1
Bit 1	Sign, Positive=0, Negative=1
Bit 2	Out of Range =1 (Over capacity or under zero)
Bit 3	Motion=1
Bit 4	Lb=0, kg=1 (see also Status Byte C, bits 0-2)
Bit 5	Always=1
Bit 6	In Power Up=1

Bit Identification Table for Status Byte C			
Bits 0, 1, and 2			
0	**1**	**2**	**Weight Description**
0	0	0	Lb or kg, selected by Status Byte B, bit 4
1	0	0	Grams
Bit 3	Print Request=1		
Bit 4	Setpoint 4 (4th assigned to this scale), Feeding=0		
Bit 5	Always = 1		
Bit 6	Always = 0		

Multi Cont 1

This continuous output is used with multi-drop scoreboards. The string consists of separate messages for every enabled scale and the sum. The structure for each scale's message is shown below:

ADR	SW A	SW B	SW C	X	X	X	X	X	X	X	X	X	X	X	X	CR	CKS
1	2			3						4						5	6
	STATUS BYTES			GROSS/NET WEIGHT						TARE WEIGHT							

Table Notes

1. ASCII Character in hex that represents the scale address 01=scale A, 02=scale B, 03=scale C, 04=scale D, 05=scale E (sum)

2. <SWA>, <SWB>, <SWC> Status Word Bytes A, B, and C. Refer to the Standard Status Bytes A, B and C Bit Identification Tables for individual bit definition.

3. Displayed weight, either Gross or Net weight. Six digits, no decimal point or sign. Non-significant leading zeros are replaced with spaces.

4. Tare weight. Six digits, no decimal point or sign. Non-significant leading zeros are replaced with spaces.

5. <CR> ASCII Carriage Return, Hex 0d.

6. <CKS> Checksum character, 2's complement of the 7 low order bits of the binary sum of all characters on a line preceding the checksum, including the STX and CR.

For example, a three-scale unit would send the following: 01, SWA, SWB, SWC, gross weight, tare weight, CR, chksum, 02, SWA, SWB, SWC, gross weight, tare weight, CR, chksum, 03, SWA, SWB, SWC, gross weight, tare weight, CR, chksum, 05, SWA, SWB, SWC, gross weight, tare weight, CR, chksum.

MultiCont 2

This continuous output is used with multi-drop remote displays. The string consists of separate messages for every enabled scale. The structure for each scale's message is shown below:

STX	SW A	SW B	SW C	X	X	X	X	X	X	X	X	X	X	X	X	CR	CKS
1	2			3						4						5	6
	STATUS BYTES			GROSS/NET WEIGHT						TARE WEIGHT							

Table Notes

1. <STX> ASCII Start of Text Character, Hex 02.

2. <SWA>, <SWB>, <SWC> Status Word Bytes A, B, and C. Refer to the Bit Identification Tables for individual bit definition.

3. Displayed weight, either Gross or Net weight. Six digits, no decimal point or sign. Non-significant leading zeros are replaced with spaces.

4. Tare weight. Six digits, no decimal point or sign. Non-significant leading zeros are replaced with spaces.

5. <CR> ASCII Carriage Return, Hex 0d.

6. <CKS> Checksum character, 2's complement of the 7 low order bits of the binary sum of all characters on a line preceding the checksum, including the STX and CR.

The following tables detail the standard status bytes for continuous output.

Bit Identification Table for Status Byte A			
Bits 0, 1, and 2			
0	1	2	Decimal Point Location
0	0	0	XXXX00
1	0	0	XXXXX0
0	1	0	XXXXXX
1	1	0	XXXXX.X
0	0	1	XXXX.XX
1	0	1	XXX.XXX
0	1	1	XX.XXXX
1	1	1	X.XXXXX
Bits 3 and 4			
3	4		Build Code
1	0		X1
0	1		X2
1	1		X5
Bit 5			Always = 1
Bit 6			Always = 0

Bit Identification Table for Status Byte B	
Status Bits	Function
Bit 0	Gross=0, Net=1
Bit 1	Sign, Positive=0, Negative=1
Bit 2	Out of Range =1 (Over capacity or under zero)
Bit 3	Motion=1
Bit 4	Lb=0, kg=1
Bit 5	Always=1
Bit 6	In Power Up=1

Bit Identification Table for Status Byte C			
Bits 0- 2			Weight Description
0	1	2	
1	0	0	Scale A
0	1	0	Scale B
1	1	0	Scale C
0	0	1	Scale D
1	0	1	Scale E (Sum)
Bit 3			Print Request=1
Bit 4			Expand Data x 10=1
Bit 5			Always=1
Bit 6			Always=0

Host Protocol

Host Availability

All host functions are available while the system is idle (current time, "Select Function", or an individual scale weight is shown on the JagMAX lower display).

Only the weight request functions (1,2,3,4,S) are available while a truck is being processed.

During any other activity, the host is unavailable and any requests sent will be ignored. The host is unavailable during the following: maintenance mode, reprint ticket, void transaction.

General Description

In general, host commands to the JagMAX will be of the form <STX><R><ETX><Cksum>. Responses from the JagMAX controller to the host will be of the form <STX><R><Data><ETX><Cksum>.

A simple form of ACK/NAK protocol will be used when multiple records must be sent. There will be no resend on timeout. When all records have been sent and acknowledged, the JagMAX controller will send an <EOT> character.

Requests for action by the JagMAX controller which do not require a data response will be acknowledged with an <ACK> character.

STX - ASCII Start of Text Character   (ASCII = 2 dec. = 02 hex.)

ETX - ASCII End of Text Character   (ASCII = 3 dec. = 03 hex.)

ACK - ASCII Acknowledge Character   (ASCII = 6 dec. = 06 hex.)

NAK - ASCII Negative Acknowledge Character   (ASCII = 21 dec. = 15 hex.)

EOT - ASCII End of Transmission Character   (ASCII = 4 dec. = 04 hex.)

Cksum - Standard checksum (same as used in standard Toledo Continuous format).

7 bit, 2's complement of the sum of all characters preceding the checksum character.

R - Is the requested operation

Data Formats: The following format codes are used throughout this document.

A Alpha field, left justified and filled to field length with trailing spaces.

N Numeric field, right justified and filled to field length with leading spaces.

$ Currency value. Always includes 1 digit to the left of the decimal point, a decimal point, and 2 digits to the right of the decimal. Right justified and filled to field length with leading spaces. (Example for currency value of length 7: 0.00 to 9999.99 with leading spaces)

Request codes: (these are all single ASCII characters)

1 - Send Scale 1 Gross Weight

2 - Send Scale 2 Gross Weight

3 - Send Scale 3 Gross Weight

4 - Send Scale 4 Gross Weight

S - Send Gross Weight Sum of Scales 1-4

T - Send Transaction File

C - Clear Transaction File

A - Send Accumulators

R - Reset Accumulators

I - Send In-Process Trucks File

1 - Send Scale 1 Gross Weight

2 - Send Scale 2 Gross Weight

3 - Send Scale 3 Gross Weight

4 - Send Scale 4 Gross Weight

S - Send Gross Weight Sum of Scales 1-4

Host sends <STX><R><ETX><Cksum> to request weight.

The JagMAX controller responds to request 1-4 and S with
<STX><R><S><M>WWWWWWWWWWWWWWUU<ETX><Cksum>.

R - Echo of the host request ('1' for scale 1, etc)

S - Status character. 'M' for motion, 'C' for over capacity, 'U' for under capacity, 'E' for error (such as no such scale), 'O' for center of zero, or ' ' if good weight not in motion.

M - 'G' for gross mode or 'N' for net mode.

WWWWWWWWWWWWW - Twelve characters of weight data including sign if negative and decimal point if build is less than x1. Field is to have leading spaces.

UU - Units ('lb' for pounds, 'kg' for kilograms, ' t' for metric tons).

Notes:

If Status is 'E' (error), the values in the mode, weight, and unit fields may be invalid and should be ignored.

If the weight is requested for a non-existent scale, Status will be set to 'E' (error) and the mode, weight, and unit fields will be filled with blanks.

T - Send Transaction File
Host sends <STX><T><ETX><Cksum> to request the transaction file data.

The JagMAX controller responds with <STX><T><Transaction Record><ETX><Cksum>.

T - Echo of the host request

Transaction Record:

Field	Length	Format
Site ID	8	as entered in Application Setup
Ticket Number	6	N
Time	8	as formatted in controller setup
Date	11	as formatted in controller setup
ID	8	A
Axle 1 Wt	6	N
Axle 2 Wt	6	N
Axle 3 Wt	6	N
Axle 4 Wt	6	N
Axle 5 Wt	6	N
Gross Wt	6	N
Tare Wt	6	N
Net Wt	6	N
Fee	7	$
Trans. Mode	2	See Transaction Codes Table to the left..
Void	1	'0' if not voided, '1' if voided
Wt Units	2	'lb' or 'kg' or ' t'

Transaction Codes	
Mode	**Code**
Weigh	01
Re-Weigh	51
Double	03
Double Re-Weigh	53
Triple	04
Triple Re-Weigh	54
Moving Van	05
ID	06

Transaction records will be sent in chronological order from oldest to newest.

The host responds with an <ACK> or a <NAK>. If <NAK>, the same transaction record will be sent again (as many times as the host wants to <NAK>). If <ACK>, the next transaction record will be sent. This process will repeat until there are no more records to send.

When there are no more transaction records to send, the JagMAX controller will send an ASCII <EOT> character.

A maximum of 600 transaction records will be stored.

C - Clear Transaction File

To clear the transaction file, the host will send <STX><C><ETX><Cksum>.

The JagMAX will respond with an <ACK>.

A - Send Accumulators

Host sends <STX><A><ETX><Cksum> to request the accumulation file data.

JagMAX responds with <STX><A><Accumulation Data><ETX><Cksum>

Accumulation Data:

Field	Mode Name & Number	Length	Format
Site ID		8	as entered in Application Setup
Total number of transactions:	Weigh 01	8	N
Total dollar amount for transactions:		9	$
Total number of transactions:	Re-Weigh 51,53,54	8	N
Total dollar amount for transactions:		9	$
Total number of transactions:	Double 03	8	N
Total dollar amount for transactions:		9	$
Total number of transactions:	Triple 04	8	N
Total dollar amount for transactions:		9	$
Total number of transactions:	Moving Van 05	8	N
Total dollar amount for transactions:		9	$
Total number of transactions:	ID 06	8	N
Total dollar amount for transactions:		9	$
Total number of trucks processed			
All completed in/out transactions		8	N
Total dollar amount for all transactions:		9	$

R - Reset Accumulators

Host sends <STX><R><ETX><Cksum> to request that all accumulators be reset to zero. JagMAX responds with an <ACK>.

I - Send In-Process Trucks File

Host sends <STX><I><ETX><Cksum> to request the in-process truck file data.

The JagMAX responds with <STX><I><In-Process Truck Record><ETX><Cksum>.

In-Process Truck Record:

Field	Length	Format
Site ID	8	as entered in Application Setup
Ticket Number	6	N
Time	8	as formatted in controller setup
Date	11	as formatted in controller setup
ID	8	A
Gross Wt	6	N
Wt Units	2	'lb' or 'kg' or ` t' for metric ton

In-process records will be sent in alphanumeric order by ID.

The host responds with an <ACK> or a <NAK>. If <NAK> is received, the same in-process record will be sent again (as many times as the host wants to <NAK>.) If <ACK> is received, the next in-process record will be sent. This process will repeat until there are no more records to send.

When there are no more in-process records to send, the JagMax controller will send as ASCII <EOT> character. A maximum of 100 in-process vehicles will be stored.

Default Template Formats

Sample 1 (Header)

```
15:12     08/17/98

Ticket:      5
ID: ERC936

Mettler Toledo
1150 Dearborn Drive
Worthington, OH  43085
```

Template 1 (Header)

```
Template:  Temp 1
Location:  /ptp01

 1 /     /var10
 2 A ' ' 005
 3 /     /var09
 4 A CR/LF 002
 5 A 'T' 001
 6 A 'i' 001
 7 A 'c' 001
 8 A 'k' 001
 9 A 'e' 001
10 A 't' 001
11 A ':' 001
12 A ' ' 001
13 /     /var05
14 A CR/LF 001
15 A 'I' 001
16 A 'D' 001
17 A ':' 001
18 A ' ' 001
19 /     /var06
20 A CR/LF 002
21 /     /var12
22 A CR/LF 001
23 /     /var13
24 A CR/LF 001
25 /     /var14
26 A CR/LF 002
---End Template Data---
```

Sample 2 (3 Axles)

```
Axle 1:    9350   lb
Axle 2:   32810   lb
Axle 3:   31100   lb
Total:    73260   lb

Weigh Fee: $    6.50
```

Template 2 (3 Axles)

```
Template:  Temp 2
Location:  /ptp02

 1 A 'A' 001
 2 A 'x' 001
 3 A 'l' 001
 4 A 'e' 001
 5 A ' ' 001
 6 A '1' 001
 7 A ':' 001
 8 A ' ' 001
 9 /     /pmt01
10 A ' ' 002
11 /     /var04
12 A CR/LF 001
13 A 'A' 001
14 A 'x' 001
15 A 'l' 001
16 A 'e' 001
17 A ' ' 001
18 A '2' 001
19 A ':' 001
20 A ' ' 001
21 /     /pmt02
22 A ' ' 002
23 /     /var04
24 A CR/LF 001
25 A 'A' 001
26 A 'x' 001
27 A 'l' 001
28 A 'e' 001
29 A ' ' 001
30 A '3' 001
31 A ':' 001
32 A ' ' 001
33 /     /pmt03
34 A ' ' 002
35 /     /var04
36 A CR/LF 001
37 A 'T' 001
38 A 'o' 001
39 A 't' 001
40 A 'a' 001
41 A 'l' 001
42 A ':' 001
43 A ' ' 002
44 /     /var01
45 A ' ' 002
46 /     /var04
47 A CR/LF 002
48 /     /var07
49 A ' ' 001
50 A 'F' 001
51 A 'e' 001
52 A 'e' 001
53 A ':' 001
54 A ' ' 001
55 A '$' 001
56 /     /var08
57 A CR/LF 002
```

```
---End Template Data---
```

Sample 3 (5 Axles)

```
Axle 1:   9100  lb
Axle 2:  15080  lb
Axle 3:  16250  lb
Axle 4:  16000  lb
Axle 5:  16950  lb
Total:   73380  lb

Double  Fee: $   6.50
```

Template 3 (5 Axles)

```
Template:  Temp 3
Location:  /ptp03

  1 A 'A' 001
  2 A 'x' 001
  3 A 'l' 001
  4 A 'e' 001
  5 A ' ' 001
  6 A 'l' 001
  7 A ':' 001
  8 A ' ' 001
  9 /     /pmt01
 10 A ' ' 002
 11 /     /var04
 12 A CR/LF 001
 13 A 'A' 001
 14 A 'x' 001
 15 A 'l' 001
 16 A 'e' 001
 17 A ' ' 001
 18 A '2' 001
 19 A ':' 001
 20 A ' ' 001
 21 /     /pmt02
 22 A ' ' 002
 23 /     /var04
 24 A CR/LF 001
 25 A 'A' 001
 26 A 'x' 001
 27 A 'l' 001
 28 A 'e' 001
 29 A ' ' 001
 30 A '3' 001
 31 A ':' 001
 32 A ' ' 001
 33 /     /pmt03
 34 A ' ' 002
 35 /     /var04
 36 A CR/LF 001
 37 A 'A' 001
 38 A 'x' 001
 39 A 'l' 001
 40 A 'e' 001
 41 A ' ' 001
 42 A '4' 001
 43 A ':' 001
 44 A ' ' 001
 45 /     /pmt04
 46 A ' ' 002
 47 /     /var04
 48 A CR/LF 001
 49 A 'A' 001
 50 A 'x' 001
 51 A 'l' 001
```

```
52 A 'e' 001
53 A ' ' 001
54 A '5' 001
55 A ':' 001
56 A ' ' 001
57 /     /pmt05
58 A ' ' 002
59 /     /var04
60 A CR/LF 001
61 A 'T' 001
62 A 'o' 001
63 A 't' 001
64 A 'a' 001
65 A 'l' 001
66 A ':' 001
67 A ' ' 002
68 /     /var01
69 A ' ' 002
70 /     /var04
71 A CR/LF 002
72 /     /var07
73 A ' ' 001
74 A 'F' 001
75 A 'e' 001
76 A 'e' 001
77 A ':' 001
78 A ' ' 001
79 A '$' 001
80 /     /var08
81 A CR/LF 002
---End Template Data---
```

Sample 4 (7 Axles)

```
Axle 1:   9580  lb
Axle 2:  10130  lb
Axle 3:  10950  lb
Axle 4:  10000  lb
Axle 5:   9590  lb
Axle 6:  10430  lb
Axle 7:  10980  lb
Total:   71660  lb

Triple  Fee: $   6.50
```

Template 4 (7 Axles)

```
Template:  Temp 4
Location:  /ptp04

  1 A 'A' 001
  2 A 'x' 001
  3 A 'l' 001
  4 A 'e' 001
  5 A ' ' 001
  6 A '1' 001
  7 A ':' 001
  8 A ' ' 001
  9 /     /pmt01
 10 A ' ' 002
 11 /     /var04
 12 A CR/LF 001
 13 A 'A' 001
 14 A 'x' 001
 15 A 'l' 001
 16 A 'e' 001
 17 A ' ' 001
 18 A '2' 001
 19 A ':' 001
 20 A ' ' 001
 21 /     /pmt02
 22 A ' ' 002
 23 /     /var04
 24 A CR/LF 001
 25 A 'A' 001
 26 A 'x' 001
 27 A 'l' 001
 28 A 'e' 001
 29 A ' ' 001
 30 A '3' 001
 31 A ':' 001
 32 A ' ' 001
 33 /     /pmt03
 34 A ' ' 002
 35 /     /var04
 36 A CR/LF 001
 37 A 'A' 001
 38 A 'x' 001
 39 A 'l' 001
 40 A 'e' 001
 41 A ' ' 001
 42 A '4' 001
 43 A ':' 001
 44 A ' ' 001
 45 /     /pmt04
 46 A ' ' 002
 47 /     /var04
 48 A CR/LF 001
 49 A 'A' 001
 50 A 'x' 001
 51 A 'l' 001
 52 A 'e' 001
 53 A ' ' 001
 54 A '5' 001
 55 A ':' 001
 56 A ' ' 001
 57 /     /pmt05
 58 A ' ' 002
 59 /     /var04
 60 A CR/LF 001
 61 A 'A' 001
 62 A 'x' 001
 63 A 'l' 001
```

```
 64 A 'e' 001
 65 A ' ' 001
 66 A '6' 001
 67 A ':' 001
 68 A ' ' 001
 69 /    /pmt06
 70 A ' ' 002
 71 /    /var04
 72 A CR/LF 001
 73 A 'A' 001
 74 A 'x' 001
 75 A 'l' 001
 76 A 'e' 001
 77 A ' ' 001
 78 A '7' 001
 79 A ':' 001
 80 A ' ' 001
 81 /    /pmt07
 82 A ' ' 002
 83 /    /var04
 84 A CR/LF 001
 85 A 'T' 001
 86 A 'o' 001
 87 A 't' 001
 88 A 'a' 001
 89 A 'l' 001
 90 A ':' 001
 91 A ' ' 002
 92 /    /var01
 93 A ' ' 002
 94 /    /var04
 95 A CR/LF 002
 96 /    /var07
 97 A ' ' 001
 98 A 'F' 001
 99 A 'e' 001
100 A 'e' 001
101 A ':' 001
102 A ' ' 001
103 A '$' 001
104 /    /var08
105 A CR/LF 002
---End Template Data---
```

Sample 5 (GTN)

```
Gross:  76820  lb
Tare:   28610  lb
Net:    48210  lb

Outbound Fee: $   6.50
```

Template 5 (GTN)

```
Template:  Temp 5
Location:  /ptp05

  1 A 'G' 001
  2 A 'r' 001
  3 A 'o' 001
  4 A 's' 002
  5 A ':' 001
  6 A ' ' 001
  7 /     /var01
  8 A ' ' 002
  9 /     /var04
 10 A CR/LF 001
 11 A 'T' 001
 12 A 'a' 001
 13 A 'r' 001
 14 A 'e' 001
 15 A ':' 001
 16 A ' ' 002
 17 /     /var02
 18 A ' ' 002
 19 /     /var04
 20 A CR/LF 001
 21 A 'N' 001
 22 A 'e' 001
 23 A 't' 001
 24 A ':' 001
 25 A ' ' 003
 26 /     /var03
 27 A ' ' 002
 28 /     /var04
 29 A CR/LF 002
 30 /     /var07
 31 A ' ' 001
 32 A 'F' 001
 33 A 'e' 002
 34 A ':' 001
 35 A ' ' 001
 36 A '$' 001
 37 /     /var08
 38 A CR/LF 001
---End Template Data---
```

Sample of default Custom Print 1, combining Template 1 and Template 2. Custom Print 1 is the default for Weigh Mode and Moving Van Mode.

```
        *** 3 Axle ***
        14:59     08/17/98

        Ticket:        2
        ID: AAA1111

        Mettler Toledo
        1150 Dearborn Drive
        Worthington, OH   43085

        Axle 1:    9350   lb
        Axle 2:   32810   lb
        Axle 3:   31100   lb
        Total:    73260   lb

        Weigh     Fee: $   1.50
```

Sample of default Custom Print 2, combining Template 1 and Template 3. Custom Print 2 is the default for Double Mode.

```
        *** 5 Axle ***
        15:02     08/17/98

        Ticket:        3
        ID: BBB2222

        Mettler Toledo
        1150 Dearborn Drive
        Worthington, OH   43085

        Axle 1:    9100   lb
        Axle 2:   15080   lb
        Axle 3:   16250   lb
        Axle 4:   16000   lb
        Axle 5:   16950   lb
        Total:    73380   lb

        Double    Fee: $   3.50
```

Sample of default Custom Print 3, combining Template 1 and Template 4. Custom Print 3 is the default for Triple Mode.

```
        *** 7 Axle ***
        15:05    08/17/98

        Ticket:      4
        ID: JOHN SMITH

        Mettler Toledo
        1150 Dearborn Drive
        Worthington, OH  43085

        Axle 1:   9580  lb
        Axle 2:  10130  lb
        Axle 3:  10950  lb
        Axle 4:  10000  lb
        Axle 5:   9590  lb
        Axle 6:  10430  lb
        Axle 7:  10980  lb
        Total:   71660  lb

        Triple    Fee: $   4.50
```

Sample of default Custom Print 4, combining Template 1 and Template 5. Custom Print 4 is the default for ID Mode Inbound, ID Mode Outbound.

```
        *** GTN ***
        15:12    08/17/98

        Ticket:      5
        ID: ERC936

        Mettler Toledo
        1150 Dearborn Drive
        Worthington, OH  43085

        Gross:  76820  lb
        Tare:   28610  lb
        Net:    48210  lb

        Outbound  Fee: $   6.50
```

Input Modes

This section describes various input modes shown in the setup of the JagMax controller. Do not select any of these choices! They are not supported by the JagMax controller.

CTPZSU In Remote ASCII Control Character Input

The JagMax controller does not support ASCII input characters. Do not select this as an input mode.

Bar Code In

The JagMax controller does not support ASCII input characters. Do not select this as an input mode.

Keyboard In

The JagMax controller does not support ASCII input characters. Do not select this as an input mode.

TDC3000 Protocol

The JagMax controller does not support ASCII input characters. Do not select this as an input mode.

BasTerminal Protocol

The JagMax controller does not support ASCII input characters. Do not select this as an input mode for normal operation.

ASCII Characters

The charts on the following pages list the ASCII Standard and Control characters and ASCII Special characters that are used in JagMax controller templates.

The first chart below gives replacement characters for display (and printing) purposes depending on the character set selected in the *Application Environment* program block and the printer setup selection.

The first chart, ASCII Standard and Control Characters, gives the ASCII character, decimal (Dec.), and hexadecimal (Hex.) value for each ASCII character from 00 to FF hex.

The second chart, ASCII Characters in Special Character Set, gives the ASCII character, name, and hexadecimal (Hex.) value for the characters that can be used as "special characters" in template programming. These include all of the characters not already available on the standard JagMax controller keypad.

ASCII Standard and Control Characters											
Char.	Dec.	Hex.	Char.	Dec.	Hex.	Char.	Dec.	Hex.	Char.	Dec.	Hex.
NUL	0	00	SP	32	20	@	64	40	`	96	60
SOH	1	01	!	33	21	A	65	41	a	97	61
STX	2	02	"	34	22	B	66	42	b	98	62
ETX	3	03	#	35	23	C	67	43	c	99	63
EOT	4	04	$	36	24	D	68	44	d	100	64
ENQ	5	05	%	37	25	E	69	45	e	101	65
ACK	6	06	&	38	26	F	70	46	f	102	66
BEL	7	07	'	39	27	G	71	47	g	103	67
BS	8	08	(	40	28	H	72	48	h	104	68
HT	9	09	)	41	29	I	73	49	i	105	69
LF	10	0A	*	42	2A	J	74	4A	j	106	6A
VT	11	0B	+	43	2B	K	75	4B	k	107	6B
FF	12	0C	,	44	2C	L	76	4C	l	108	6C
CR	13	0D	-	45	2D	M	77	4D	m	109	6D
SO	14	0E	.	46	2E	N	78	4E	n	110	6E
SI	15	0F	/	47	2F	O	79	4F	o	111	6F
DLE	16	10	0	48	30	P	80	50	p	112	70
DC1	17	11	1	49	31	Q	81	51	q	113	71
DC2	18	12	2	50	32	R	82	52	r	114	72
DC3	19	13	3	51	33	S	83	53	s	115	73
DC4	20	14	4	52	34	T	84	54	t	116	74
NAK	21	15	5	53	35	U	85	55	u	117	75
SYN	22	16	6	54	36	V	86	56	v	118	76
ETB	23	17	7	55	37	W	87	57	w	119	77
CAN	24	18	8	56	38	X	88	58	x	120	78
EM	25	19	9	57	39	Y	89	59	y	121	79
SUB	26	1A	:	58	3A	Z	90	5A	z	122	7A
ESC	27	1B	;	59	3B	[	91	5B	{	123	7B
FS	28	1C	<	60	3C	\	92	5C	|	124	7C
GS	29	1D	=	61	3D	]	93	5D	}	125	7D
RS	30	1E	>	62	3E	^	94	5E	~	126	7E
US	31	1F	?	63	3F	_	95	5F		127	7F

ASCII Standard and Control Characters											
Char.	Dec.	Hex.	Char.	Dec.	Hex.	Char.	Dec.	Hex.	Char.	Dec.	Hex.
Ç	128	80	á	160	A0	lb	192	C0	°	248	F8
ü	129	81	í	161	A1		193	C1	¨	249	F9
é	130	82	ó	162	A2		194	C2		250	FA
ã	131	83	ú	163	A3		195	C3	§	251	FB
ä	132	84	ñ	164	A4	oz	196	C4		252	FC
à	133	85	Ñ	165	A5		197	C5		253	FD
å	134	86		166	A6		198	C6		254	FE
ç	135	87		167	A7		199	C7		255	FF
	136	88	¿	168	A8		224	E0			
ë	137	89		169	A9	ß	225	E1			
è	138	8A		170	AA		226	E2			
ï	139	8B		171	AB		227	E3			
î	140	8C		172	AC		228	E4			
ì	141	8D	¡	173	AD		229	E5			
Ä	142	8E	«	174	AE		230	E6			
Å	143	8F	»	175	AF		231	E7			
É	144	90		176	B0		232	E8			
æ	145	91		177	B1		233	E9			
Æ	146	92		178	B2		234	EA			
ô	147	93		179	B3		235	EB			
ö	148	94		180	B4		236	EC			
ò	149	95		181	B5		237	ED			
û	150	96		182	B6		238	EE			
ù	151	97		183	B7		239	EF			
_	152	98		184	B8	≡	240	F0			
ö	153	99		185	B9	±	241	F1			
Ü	154	9A		186	BA	≥	242	F2			
	155	9B		187	BB		243	F3			
	156	9C		188	BC	Ø	244	F4			
	157	9D		189	BD	ø	245	F5			
Pt	158	9E		190	BE	÷	246	F6			
ƒ	159	9F		191	BF		247	F7			

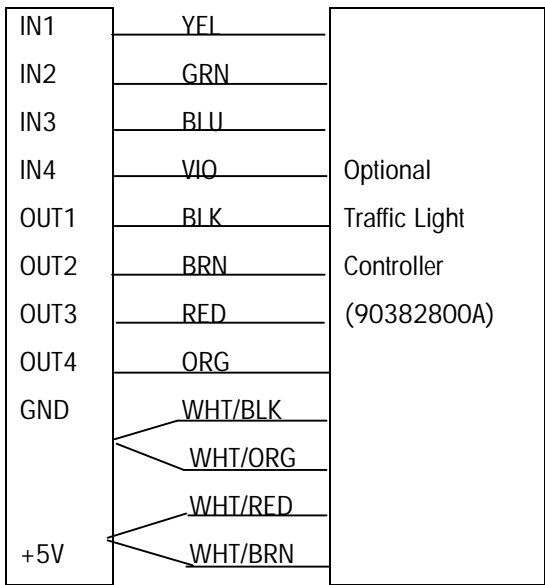| ASCII Characters in Special Character Set								
Char.	Name	Hex.	Char.	Name	Hex.	Char.	Name	Hex.
NUL	Null	00	SP	Space	20	`	Left Single Quote	60
SOH	Start of Header	01	!	Exclamation	21	a		61
STX	Start of Text	02	"	Quote	22	b		62
ETX	End of Text	03	#	Number Sign	23	c		63
EOT	End of Trans.	04	$	Dollar	24	d		64
ENQ	Enquire	05	%	Percent	25	e		65
ACK	Acknowledge	06	&	Ampersand	26	f		66
BEL	Bell	07	'	Apostrophe	27	g		67
BS	Backspace	08	(	Left Parenthesis	28	h		68
HT	Horizontal Tab	09	)	Right Parenthesis	29	i		69
LF	Line Feed	0A	*	Asterisk	2A	j		6A
VT	Vertical Tab	0B	+	Plus	2B	k		6B
FF	Form Feed	0C	,	Comma	2C	l		6C
CR	Carriage Return	0D	-	Hyphen	2D	m		6D
SO	Shift Out	0E	.	Period	2E	n		6E
SI	Shift In	0F	/	Forward Slash	2F	o		6F
DLE	Data Link Escape	10	:	Colon	3A	p		70
DC1	Device Control 1	11	;	Semicolon	3B	q		71
DC2	Device Control 2	12	<	Less Than	3C	r		72
DC3	Device Control 3	13	=	Equal	3D	s		73
DC4	Device Control 4	14	>	Greater Than	3E	t		74
NAK	Negative Ack.	15	?	Question	3F	u		75
SYN	Synchronous Idle	16	@	At	40	v		76
ETB	End Trans. Block	17	[	Left Bracket	5B	w		77
CAN	Cancel	18	\	Back Slash	5C	x		78
EM	End of Medium	19	]	Right Bracket	5D	y		79
SUB	Substitute	1A	^	Caret	5E	z		7A
ESC	Escape	1B	_	Underline	5F	{	Left Brace	7B
FS	Field Separator	1C				|	Pipe	7C
GS	Group Separator	1D				}	Right Brace	7D
RS	Record Separator	1E				~	Tilde	7E
US	Unit Separator	1F				DEL	Delete	7F

Appendix 2: Discrete I/O Reference

The JagMax controller has a discrete I/O port with four input terminals and four output terminals on the controller board. The input and output assignments are:

- OUT 1 – Entrance traffic light
- OUT 2 – Exit Traffic Light
- OUT 3 – Truck On Alarm
- In 1 – Remote Weigh Pushbutton
- In 2 – Remote Re-Weigh Pushbutton
- In 3 – ESC for ARCNet Remote Mode

The following diagram shows a typical wiring scheme:

IN1	YEL	
IN2	GRN	
IN3	BLU	
IN4	VIO	Optional
OUT1	BLK	Traffic Light
OUT2	BRN	Controller
OUT3	RED	(90382800A)
OUT4	ORG	
GND	WHT/BLK	
	WHT/ORG	
	WHT/RED	
+5V	WHT/BRN	

Traffic Light Controller Wiring Diagram

Inputs

The inputs are TTL compatible and are capable of handling from 5- to 30-volt DC signals. To initiate one of the inputs, you must ground the input terminal for the desired function and hold the input at logic ground level for at least 100 ms. The inputs are leading edge triggered. The maximum recommended "ON" time for an input is 1 second.

It is not necessary to supply any voltage to the inputs when not triggering (grounding). Internally, a 5-volt power supply with a pull-up resistor keeps the inputs in the "OFF" condition. Because the signals are low level, the maximum recommended distance between the JagMax controller and the device triggering the input (a switch or relay contact) is 10 feet or less.

The JagMax controller has an internal diagnostic test to verify that each input is functional. See the section entitled *Diagnostics and Maintenance Program Block* in Chapter 2 of this manual for more information.

Outputs

The outputs are TTL-compatible, current-sinking components which can handle from 5- to 30-volt DC signals at a maximum of 35 mA current. A solid state relay or OPTO 22 is typically connected to buffer the JagMax controller outputs to a 120 or 220-volt AC signal.

An output terminal supplies a 5 volt DC signal for reference to the outputs. Because the supply is rated at 115 mA of DC current, make sure that the current draw from the devices you are using (relays or optos) does not exceed this limit. If the calculated current draw exceeds 115 mA, an external power supply is required. External power supplies are available from the Systems group of Mettler-Toledo or through your local authorized Mettler-Toledo representative.

The outputs are negative true and "ON" when the displayed weight is below the setpoint coincidence value. The setpoints operate on the absolute value of the setpoint value so they can be used for both weigh-in and weigh-out processes. There are no interlocks or relay logic included with the standard JagMax controller. If start-stop logic is required, it is recommended that you purchase this hardware (and design) through your local authorized Mettler-Toledo representative. Setpoint outputs are not used with the standard JagMax application.

The JagMax controller has an internal diagnostic test to verify that each output is functional. See the section entitled *Diagnostics and Maintenance Program Block* in Chapter 2 of this manual for more information.

Appendix 3: Network Reference

The JagMax controller provides an ARCnet (Attached Resource Computer Network) local area network connection. This allows JagMax controllers to be combined to share display/keyboards and serial ports and to exchange data with personal computers and file servers.

Performance

ARCnet's 2.5M baud transmission rate provides a higher throughput than the RS-485 serial multi-drop networks traditionally used in scale instrumentation. It improves transmission speed by 260 times over the 9600 baud rate used in traditional types of networks. ARCnet has a highly efficient protocol for controlling access to the network. This protocol is a token-passing network access method that ensures that only one network node speaks at any one time and limits the time that any one node can speak. JagMax controllers exploit the increased speed and performance of ARCnet to provide real time performance for data exchange between JagMax controllers.

The JagMax controller also uses a protocol called IPX/SPX which is licensed by Novell, Incorporated, to establish and maintain the dialog between two different JagMax controller software functions. This protocol ensures future JagMax controller compatibility with the most commonly used network technology for personal computers.

Cabling

ARCnet supports several cable types and network wiring topologies (how the cable gets from node-to-node). JagMax controllers use twisted-pair wiring in a bus (multi-drop) topology, allowing you to use inexpensive, two conductor, unshielded, twisted pair cable. Mettler Toledo can supply a suitable cable (P/N14315200A) or recommends Belden 8442. This cable is connected to a two-position removable terminal strip located on the left side of the Controller board. A jumper on the Controller board (W1) makes it easy to install a termination resistor for JagMax controllers located on the ends of the ARCnet cable.

The twisted pair cable cannot exceed a maximum length of 330 ft (100 m) and must be a minimum of 6 ft (2 m). Optimum cable length is calculated by adding the length of each cable segment between JagMax controllers. For example, if JagMax controller 1 is 220 feet from JagMax controller 2 which is 50 feet from a PC, the total cable length would be 270 feet.

JagMax Terminal Clusters and Addressing

Two JagMax controllers connected together on ARCnet are called a JagMax controller cluster. Single JagMax controller clusters are limited to a maximum of two JagMax controllers due to a restriction imposed by Mettler-Toledo for JagMax controllers.

The address of each JagMax controller is configured with jumpers W4 through W10 on the Controller board. JagMax controllers on the same network can not share the same address. Using jumpers helps avoid inadvertent address conflicts. The system installer sets the address of each JagMax controller with the jumpers. Then, regardless of software or set up changes, the addresses are always as installed. If another JagMax controller is added to the cluster later or a new Controller board is installed in an existing networked JagMax controller, be sure to set the ARCnet address jumpers to avoid address conflict with existing JagMax controllers. The address has no relationship to the order in which the JagMax controllers are physically wired. Refer to

Chapter 1, **Installation —JagMax Terminal Jumper Settings,** for more details on setting the ARCnet address jumpers.

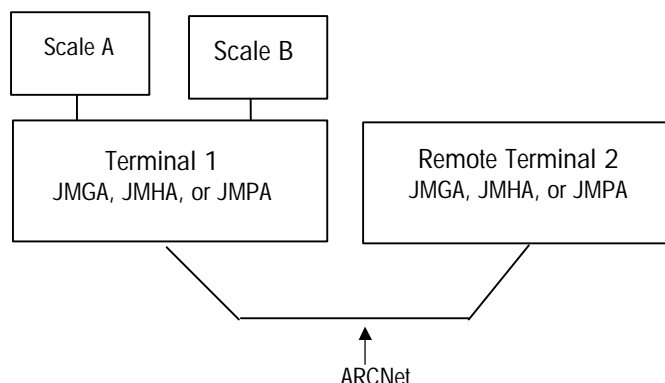The following diagram illustrates a two JagMax controller ARCnet cluster

Figure A3-1: Two JagMax Terminal ARCnet Cluster

The names given to the JagMax controllers in this diagram are the same as their address numbers. Terminal 2 would be used as a remote access controller to access JagMax controller #1.

Keyboard/Display Sharing

Any JagMax controller may be used to interact with the other JagMax controller in its cluster. A JagMax controller must be configured as a network console, and it must be set up to have access to the other JagMax controller. Referring to the network diagram above, if Terminal 2 is to be used as a network console and can access Terminal 1, Terminal 2 will be set up as follows:

TERMINAL 2 NETWORK SETUP	
Net Console	YES
Terminal #1	YES

Terminal 2 does not appear in this list since a JagMax controller always has access to its own internal scale(s).

TERMINAL 1 NETWORK SETUP	
Net Console	NO
Terminal #2	YES

Notice that Terminal 1 is configured to allow access from Terminal 2. Terminal 2 is used as the keyboard/display for Terminal 1.

Refer to Chapter 2 **Programming and Calibration—Configure Network Program Block** for details on how to set these parameters.

Selecting a Network Scale for Interaction
The **SELECT** key is used to connect to another JagMax controller from a keyboard/display. For example, if you wish to connect to Terminal 1 from Terminal 2:

- Press **SELECT** until the name for Terminal 1's Scale E is displayed.

- Press **ENTER** to select.

You are now connected to JagMax controller 1 Scale E. The annunciators under the lower display point to **1** and to E, reminding you which scale is current. Interaction with this scale is now identical to interacting with an internal scale.

Redirecting Serial Output

The JagMax controller does not support the use of redirecting serial output.

Appendix 4: Loading JagMax Terminal Software

The JagMax controller is designed to allow easy software installation and upgrade. Using Mettler-Toledo's "Flashpro" installation program from a personal computer (PC), you can easily load the latest version of JagMax controller software (Jag O/S and JagMax JagBASIC program) and burn it into the controller's flash memory. Upgrade software is available from Mettler-Toledo.

STOP!
The JagMax controller must be reprogrammed and calibrated after you load new software.

Flash the Software

The first step is to extract the new JagMax controller files from the floppy disk onto the PC. To extract the files:

1. Create a directory and go to the directory on the PC where the new files will be stored. Use the DOS MD command if you need to create a new directory to hold the JagMax controller files, and the CD command to change directories.

2. Insert the diskette with the new software files into the floppy disk drive A or B. The files on this diskette are compressed into a single file named JAGUAR.EXE.

3. At the DOS prompt, type **A:JAGUAR.EXE** or **B:JAGUAR.EXE** depending on where you inserted the diskette, then press **ENTER**.

4. The compressed files will automatically extract themselves from JAGUAR.EXE into the current directory on the computer. The extracted files require approximately 2.6 MEG of storage space on the PC's hard drive.

5. Edit the FP.BAT file using the DOS text editor or another and verify the new software name and serial port are correct. The FP.BAT file resembles the example below. Edit only the -t and -com elements.

Example:

flashpro -tSYS9_16.HEX -b115.2 -com1 -pe -d7 -s1

where:
-t is followed by the file name to be saved such as SYS9_16.HEX.

-b is the baud rate (in kbaud). The software is transferred at 115.2 kbaud. DO NOT CHANGE THIS PARAMETER.

-com is the serial com port on the PC that will be used to transfer the new software to the JagMax controller.

-p is the parity. The parity is set to even. DO NOT CHANGE THIS PARAMETER.

-d is the number of data bits used. Data bits are set to seven. DO NOT CHANGE THIS PARAMETER.

-s is the number of stop bits used. Stop bits are set to one. DO NOT CHANGE THIS PARAMETER.

You are now ready to use the flashpro batch file (FP.BAT) to load the software into the JagMax controller's flash memory.

To load JagMax controller software:

1. Disconnect power to the JagMax controller.

2. Use an anti-static strap and remove the Controller board and remove the W2 (WDI) jumper. W11 must also be off. Reinstall the Controller board without the jumper.

3. Connect a bi-directional RS-232 cable from a PC to JagMax controller's COM2 serial port. Wire the cable as follows:

JagMax COM2	9-Pin COM	25-Pin COM
T232	2	3
R232	3	2
Gnd	5	7
Jumpers	4 to 6, 7 to 8	4 to 5, 6 to 20

4. With the cursor in the directory containing the new JagMax controller files, type FP at the DOS prompt, but DO NOT press **ENTER** to execute the command.

5. Using a small, non-conducting object such as a bare Q-Tip, press and hold the pushbutton switch behind the CAL opening on the back of the Controller PCB.

6. With the CAL switch still depressed, apply power to the JagMax controller then press **ENTER** or **RETURN** on your computer immediately to execute the flashpro installation program.

7. Release the CAL switch when a framed box scrolling a string of A's appears on the computer monitor indicating the installation has begun.

    The box will continue to scroll A's until the installation procedure is complete. This process will continue with brief pauses occasionally for about 10 to 15 minutes. If the box with A's does not appear, press **Esc** on the computer and remove power from the JagMax controller. Repeat steps 4 through 7.

8. If the new software was downloaded successfully, DOS prompt will be restored on the computer and the JagMax controller will perform a power-up sequence.

    During the power-up sequence, the storage locations for setup parameters and memory fields are checked. If any have been moved or added in the new version of software, you must respond **Yes** to the following prompts:

    [BRAM Bad - Rst? Y] or [BRAM Err - Rst? Y]

    [EError - Reset? Y] or [EE A Err - Rst? Y]

Press **ENTER** at the prompt to reset the JagMax controller's program block parameters to factory defaults. If you select N(o), you will encounter scale errors.

-   If **[BRAM Err - Rst? Y]** is displayed, you must reconfigure the JagMax controller.

-   If **[EError – Reset]** is displayed, you must recalibrate the scale.

-   If **[EE A Err - Rst? Y]** is displayed, you must recalibrate the scale.

9. If you encounter errors that will not reset, you must perform a master reset. To do this, disconnect power, then reconnect power to the JagMax controller. When the JagMax controller lights all display segments in the power-up sequence, press and hold the **CAL** pushbutton (as described in step 5) until the

JagMax controller displays the **[Master Reset!!!]** prompt. This returns all program block parameters to factory defaults.

10. Use an anti-static strap and disconnect power from the JagMax controller then remove the Controller board and reinstall the W2 (WDI) jumper. Finally, reinstall the Controller board with the jumper in place.

Appendix 5: Print Reports

The following are sample print reports that can be generated using the JagMax controller.

Transaction Codes Table

Transaction Codes	
Mode	**Code**
Weigh	01
Re-Weigh	51
Double	03
Double Re-Weigh	53
Triple	04
Triple Re-Weigh	54
Moving Van	05
ID	06

Format Codes

Data Formats: The following format codes are used throughout this document.

A Alpha field, left justified and filled to field length with trailing spaces.

N Numeric field, right justified and filled to field length with leading spaces.

$ Currency value. Always includes 1 digit to the left of the decimal point, a decimal point, and 2 digits to the right of the decimal. Right justified and filled to field length with leading spaces. (Example for currency value of length 7: 0.00 to 9999.99 with leading spaces)

Audit Trail Report

```
      1 13:51:35 Nov/17/1998 DCL5247  01    1.50  50260                     lb
 12460  14080  12600  11120
comment one
      2 13:54:52 Nov/17/1998 KDT7354  51    1.00  43850                     lb
 11640  12580  11290   8340
comment two
      3 13:57:06 Nov/17/1998 BWK2866  03    3.50  56040                     lb
 11730   9930  11530  11120  11730
comment three
      4 13:58:48 Nov/17/1998 MNB1458  53    1.00  65620                     lb
 11540  14850  13790  13900  11540
comment four
      5 14:02:58 Nov/17/1998 DFG2138  04    4.50  90160                     lb
 12870  13900  12750  11120  12870  13900  12750
comment five
      6 14:04:51 Nov/17/1998 RTJ5284  54    1.00  84460                     lb
 12350  11620  11310  13900  12350  11620  11310
comment six
      7 14:08:53 Nov/17/1998 VCS4169  05    5.50  47440                     lb
 12660  13050  10610  11120
comment seven
      9 14:14:17 Nov/17/1998 THP6499  06    6.50  54240  39180  15060 lb

comment eight
```

Audit Trail Description
A transaction is three lines if comments are enabled for the mode used, two lines if comments are disabled.
One space between fields.
<CR> <LF> at end of each line.
No blank lines between transactions.

Line 1

Field	Length	Format
Ticket	6	N
Time	8	as configured in controller setup
Date	11	as configured in controller setup
ID	8	A
Mode	2	(see Transaction Codes Table)
Fee	7	$
Gross	6	N
Tare	6	N
Net	6	N
Weight Units	2	lb, kg, g, t

Line 2

Field	Length	Format
Axle 1	6	N
Axle 2	6	N
Axle 3	6	N
Axle 4	6	N
Axle 5	6	N
Axle 6	6	N
Axle 7	6	N
Axle 8	6	N
Axle 9	6	N

Line 3 (Included only if comments are enabled for the current mode.)

Field	Length	Format
Comment	45	A

Transaction Report

```
Ticket Time     Date         ID       Md Fee     Gross  Tare   Net    WU V
------ -------- -----------  -------- -- ------- ------ ------ ------ -- -
Axle 1  Axle 2       Axle 3   Axle 4      Axle 5
------  ------       ------   ------      ------

     1 13:51:35 Nov/17/1998 DCL5247  01    1.50  50260                lb 0
 12460    14080        12600    11120

     2 13:54:52 Nov/17/1998 KDT7354  51    1.00  43850                lb 0
 11640    12580        11290     8340

     3 13:57:06 Nov/17/1998 BWK2866  03    3.50  56040                lb 0
 11730     9930        11530    11120       11730

     4 13:58:48 Nov/17/1998 MNB1458  53    1.00  65620                lb 0
 11540    14850        13790    13900       11540

     5 14:02:58 Nov/17/1998 DFG2138  04    4.50  90160                lb 0


     6 14:04:51 Nov/17/1998 RTJ5284  54    1.00  84460                lb 0


     7 14:08:53 Nov/17/1998 VCS4169  05    5.50  47440                lb 0
 12660    13050        10610    11120

     9 14:14:17 Nov/17/1998 THP6499  06    6.50  54240  39180  15060 lb 0
```

Transaction Report Description
First four lines are column headings, followed by one blank line.
Each transaction is two lines.
Spacing between columns varies.
One blank line between transactions.
<LF> <CR> at end of each line.

Line 1

Field	Length	Format
Ticket	6	N
Time	8	as configured in controller setup
Date	11	as configured in controller setup
ID	8	A
Mode	2	(see Transaction Codes Table)
Fee	7	$
Gross	6	N
Tare	6	N
Net	6	N
Weight Units	2	lb, kg, g, t
Void	1	0, 1

Line 2

Field	Length	Format
Axle 1	6	N
Axle 2	6	N
Axle 3	6	N
Axle 4	6	N
Axle 5	6	N

In-Process Report

```
Ticket Time     Date        ID       Weight WU
------ -------- ----------- -------- ------ --

    14 14:40:13 Nov/17/1998 DTF2865   32660 lb

    13 14:38:14 Nov/17/1998 EJY9835   56560 lb

    12 14:35:58 Nov/17/1998 NRT5541   44990 lb

    15 14:41:11 Nov/17/1998 RBK7260   41580 lb
```

In-Process Report Description
First two lines are column headings, followed by one blank line.
Each In-Process transaction is one line.
One space between columns.
One blank line between In-Process transactions.
<LF> <CR> at end of each line.

Line 1

Field	Length	Format
Ticket	6	N
Time	8	as configured in controller setup
Date	11	as configured in controller setup
ID	8	A
Weight (Gross)	6	N
Weight Units	2	lb, kg, g, t

Accumulation Report

```
Category     Mode #    Count     $ Total
-----------  --------  --------  ---------
Weigh        01               5      7.50
Re-Weigh     51,53,54         7      7.00
Double       03               2      7.00
Triple       04               2      9.00
Moving Van   05               2     11.00
ID           06               2     13.00
Total Trans  All             20     54.50
Blind                         0
```

Accumulation Report Description
Format as shown above.
'Count' and '$ Total' values are the only fields which change.
<LF> <CR> at end of each line.

Field	Length	Format
Count	8	N
$ Total	9	$

Print Application Setup

Following is a sample of the output generated through Maintenance Mode, Application Setup, and Print Setup. It shows the factory default values for each parameter.

```
GENERAL
Threshold:  10000
Alarm On:  5
Site ID: TWI 9999
Text 1: Mettler Toledo
Text 2: 1150 Dearborn Drive
Text 3: Worthington, OH 43085
Ticket:       1
Audit Trail: N
Audit Trail Port:  2
Report Port:  2
Save Transactions: Y
Host Port:  2
Scoreboard Ticket Number Port:  0
Traffic Lights: Y

WEIGH MODE
Auto: N
Mode: Y
ID: N
Comment: N
Fee:    0.00
Custom Print:  1

RE-WEIGH MODE
Mode: Y
Fee:    0.00

DOUBLE MODE
Mode: Y
ID: N
Comment: N
Fee:    0.00
Custom Print:  2

TRIPLE MODE
Mode: Y
ID: N
Comment: N
Fee:    0.00
Custom Print:  3

MOVING VAN MODE
Mode: Y
ID: N
Comment: N
Fee:    0.00
Custom Print:  1

ID MODE
Mode: Y
Auto Assign ID: Y
Inbound Print: Y
Inbound Comment: N
Inbound Custom Print:  4
Outbound Comment: N
Fee:    0.00
Outbound Custom Print:  4
```

METTLER TOLEDO
Publication Evaluation Report
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Publication Name: METTLER TOLEDO JagMaxTerminal Technical Manual

Publication Part Number:15559000A Publication Date: 3/99

PROBLEM(S) TYPE:	DESCRIBE PROBLEM(S):	INTERNAL USE ONLY
☐ Technical Accuracy	☐ Text ☐ Illustration	
☐ Completeness What information is missing?	☐ Procedure/step ☐ Illustration ☐ Definition ☐ Example ☐ Guideline ☐ Feature ☐ Explanation ☐ Other (please explain below)	☐ Info. in manual ☐ Info. not in manual
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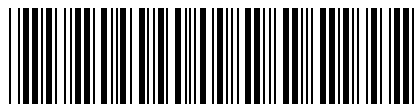## Fax this completed form to Light Capacity Industrial Marketing at (614) 438-4355

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