3015

SETPOINT CONTROLLER

PART NUMBER
3/96

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
1150 Dearborn Drive
Worthington, Ohio 43085-6712
(614) 438-4400

WARNING!

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

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

PRECAUTIONS

READ this manual BEFORE operating or servicing this equipment.

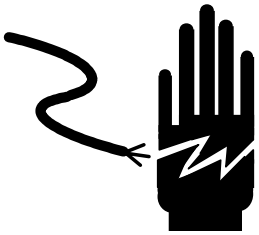
FOLLOW these instructions carefully.

SAVE this manual for future reference.

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

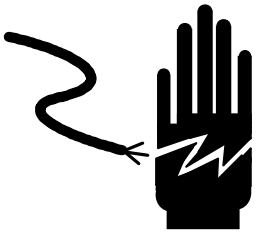
ALWAYS DISCONNECT this equipment from the power source before cleaning or performing maintenance.

CALL METTLER TOLEDO for parts, information, and service.



WARNING

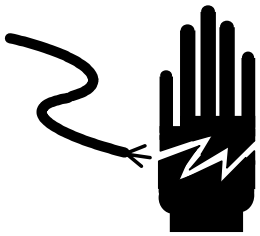
ONLY PERMIT QUALIFIED PERSONNEL TO SERVICE THIS EQUIPMENT. EXERCISE CARE WHEN MAKING CHECKS, TESTS AND ADJUSTMENTS THAT MUST BE MADE WITH POWER ON. FAILING TO OBSERVE THESE PRECAUTIONS CAN RESULT IN BODILY HARM.



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 REMOVING THE FUSE OR SERVICING.

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

The 3015-1XXX Setpoint controller is designed to be interfaced with the Masstron Scale M8141 and M5000 or Toledo Scale indicators that have Setpoint capabilities. The Setpoint controller is user configurable to operate as a simple coincidence output device or as a intelligent single material batching system. When operating in the coincidence mode and receiving Toledo continuous format, the 3015 may be used to send single character ASCII clear, tare, print, and zero (C, T, P, & Z) commands to the indicator. The 3015 serial port is selectable as 20 mA passive or RS232.

The control I/O are selectable as AC or DC in out and outputs by installing the appropriate solid state modules. A maximum of 8 I/O may be installed to custom tailored the unit to a specific application.

Controller Description	Model Number
3015, Mild Steel, Wall Mount Enclosure	3015 1001 000
3015, Mild Steel, Wall Mount Enclosure with START, STOP, and DISCHARGE Pushbuttons. Add Relay Modules.	3015 1002 000
3015, Mild Steel, Wall Mount Enclosure with CLEAR, TARE, PRINT, and ZERO Pushbuttons. Add Relay Modules.	3015 1003 000
3015, Stainless Steel, Wall Mount Enclosure	3015 1011 000
3015, Stainless Steel, Wall Mount Enclosure with START, STOP and DISCHARGE Pushbuttons. Add Relay Modules.	3015 1012 000
3015 Stainless Steel, Wall Mount Enclosure with CLEAR, TARE, PRINT, and ZERO Pushbuttons. Add Relay Modules.	3015 1013 000
3015, Panel/Chassis Mount	3015 1021 000
3015, NEMA 7/9 Enclosure w/o Operators	3015 1031 000
3015, NEMA 7/9 Enclosure with START, STOP, DISCHARGE and JOG OPERATORS	3015 1032 000

Overview

This is a general overview of the 3015 Setpoint Controller

Physical Layout

OEM version (no enclosure):	7.5” x 8.25” 3.25”h
Mild Steel enclosure:	10”w x 12”h x 5”d
Stainless Steel enclosure:	10”w x 12”h x 6”d

Environment

Operating Temperature:	0° C to 40° C
Humidity:	20 to 90% relative humidity, non-condensing

Electrical

Operating Voltage:	97 - 240 VAC
Power:	15 watts nominal
Frequency:	47 - 63 Hz

Serial Data I/O

Interface:	20mA current loop, RS232, or Fiber Optics with optional converter
Baud Rate:	300, 1200, 4800 jumper selectable
Masstron Data Format:	1 start bit, 8 data bits, 1 stop bit, no parity
Toledo Data Format: even	1 start bit, 7 data bits, 1 stop bit, parity with checksum

Control I/O

Hardware:	Solid state plug-in modules AC/DC
Number of I/O	1 to 8 (8 Maximum)
Overload protection	Each Output fused by a 5 Amp pico fuse

I/O Module Specifications

AC Output module 115/230V

Minimum load Voltage	24 V rms
Maximum load Voltage	240 V rms
Minimum load Current	20 mA
Maximum load Current	2 Amps rms
Frequency Range	47 to 63 Hz
On state voltage	1.5V peak
Off state leakage	5 mA rms

DC Output Module 24V

Minimum load Voltage	3 VDC
Maximum load Voltage	60 VDC
Minimum load current	20 mA
Maximum load current	2 Amps
On state voltage	1.5 V @ 2 Amps
Off state voltage	1 mA

AC Input Module 115V

Minimum input on voltage	90 V rms
Maximum in/out on voltage	140 V rms
Minimum in/out off voltage	0 V rms
Maximum input off voltage	30 V rms
Maximum allowable current for off state	2 mA rms
Input current @ 120 VAC	6 mA rms
Frequency range	47 to 420 Hz

AC In/Out Module 230V

Minimum input on voltage	180 V rms
Maximum in/out on voltage	280 V rms
Minimum in/out off voltage	0 V rms
Maximum input off voltage	60 V rms
Maximum allowable current for off state	1.5 mA rms
Input current @ 240 VAC	6 mA rms
Frequency range	47 to 420 Hz

DC Input Module

Minimum input on voltage	10 VDC
Maximum in/out on voltage	32 VDC
Minimum in/out off voltage	-32 VDC
Maximum input off voltage	3 VDC
Maximum allowable current for off state	2 mA rms
Input current @ 12 VDC	9 mA rms
In/out Current @ 32 VDC	32 mA rms
Frequency range	47 to 420 Hz

Dry Contact Output Module

Contact Rating	10 VA
Switching Volts	100 VDC / 130 VAC Maximum
Switching Current	.5 Amps Maximum
Carry Current	1.5 Amps Maximum
Contact On-Resistance	200 Milli/ohms
On-Time	500 Microseconds
Off-Time	500 Microseconds
Contact Bounce	250 Microseconds

2 Installation

This chapter gives detailed instruction and important information you will need to install the 3015 Setpoint Controller successfully. Please read this chapter thoroughly before you begin installation.

Environment

Before you install your 3015 Setpoint Controller, identify the best location for the equipment. The proper environment enhances the operation and longevity of your 3015 Setpoint Controller. Choose a favorable location for the 3015 Setpoint Controller based on its environmental specifications as listed in Chapter 1 of this manual.

Unpacking

Please inspect the package as it is delivered by the carrier. If the shipping container is damaged, check for internal damage and file a freight claim with the carrier if necessary.

If the container is undamaged, unpack the 3015 Setpoint Controller from its protective package, noting how it was packed, and inspect each component for damage. If it is necessary to ship the terminal, use the original shipping container if possible. The 3015 Setpoint Controller must be packed correctly to ensure its safe transportation.

If the package is to be disposed of, please recycle the materials.

Package contents for all 3015 Setpoint controllers include:

- 3015 Setpoint Controller
- 3015 Manual

Mounting

Select a suitable location and mount the 3015 Setpoint Controller using the mounting tabs provided.

Power Connection

The 3015 may be power by 115 VAC or 230 VAC. Connect the AC power to the terminal strip labeled " L1, L2, GND" as shown in drawing # 902491R.

The terminal strip will accommodate wire sizes ranging from 16 to 12 AWG. The wires sizes used must meet all local and national electrical codes.

The 3015 Setpoint Controller requires a true earth ground for reliable operation. To test the quality of the earth ground, measure the AC voltage between neutral and ground at the AC outlet. If the neutral ground voltage is greater the 0.2 VAC, then the ground connection is inadequate and must be corrected before connecting to the 3015 Setpoint Controller.

Instrument Interface

The 3015 must be connected to the continuous data output port of the indicator. The 3015 will communicate either 20 mA current loop or RS232 data. The 3015 is passive transmit, passive receive.

The baud rate is selectable at 300, 1200 or 4800 baud. Serial interface is made to terminal strip TB1. Terminal designations are shown below. Refer to the external wiring diagrams in the back of this manual for connections between the 3015 and the various indicators. The serial data format for Toledo ® indicators must be set up for 1 start bit, 7 data bits, even parity, 1 stop bit. The 3015 requires that the checksum be transmitted by the indicator.

TB1	Communications Connection
1	+5 VDC Input
2	Logic Ground / RS232 Signal Ground
3	TCL+ / RS232 TxD
4	TCL-
5	RCL+ / RS232 RxD
6	RCL-

Baud Rate Selection

The baud rate is jumper selectable at 300, 1200 or 4800 baud. Place jumper JU2 in the position to match the baud rate of the data being sent by the indicator.

20 mA / RS232 Interface Select

The 3015 can communicate either 20 mA current loop or RS232. Place jumper JU1 in the proper position for the interface being used. The JU11 and JU12 jumpers must be installed for RS232 and removed for 20 mA current loop. If the optional fiber optic converter is connected to J2 the JU1 jumper must be removed.

JU1 -	Receive select 20 mA / RS232
JU2 -	Baud rate select
JU3 to JU10 - module	TTL module select jumper, Install if using TTL xxx, Remove for all others
JU11 -	RS232 xmit enable, install for RS232, remove for 20 mA
JU12 -	RS232 receive enable, install for RS232, remove for 20 mA

Fiber Optic Interface

Tell about the Fiber Optic interface here.

Control I/O Interface

The I/O assignments vary depending upon the configuration of the 3015. Refer to section 6.4 and the external wiring diagrams in the back of this manual for i/o designations and placement of I/O modules for the different operating modes. Because of the noise generated when switching inductive loads, it is required that the control power for driving the I/O's be supplied from a separate power source than the power supplying the logic supply. Be sure to observe polarities when connecting devices to the I/O's. Also make sure to install quencharcs across all outputs as shown on the wiring diagrams. The quencharc should be installed as close to the load as possible.

3 Dip Switch Setup

Dip switches SW1 and SW2 are used to select several options to configure the 3015 for a specific application. The functions of the dip switches are determined by the type of data being received from the indicator. The 3015 will automatically detect the data format as either Masstron continuous or Toledo continuous. If the indicator is sending data in the Masstron format, refer to the sections for “Masstron Format Only”. If the indicator is sending data in the Toledo continuous format, refer to the sections for “Toledo Format Only.”

Setting SW2 positions 1-8 all ON selects the test mode. Refer to the troubleshooting section 7.0 for details of the test mode.

4 Sequence of Operation

This is the sequence of operation for the 3015

Initialization

- Before powerup make sure all switch settings (SW1, SW2) are in the correct positions for the desired sequence of operation.
- Upon power up, the control outputs will be turned off.
- The processor will read the dip switches to see if the self test mode is selected. If so, the self test diagnostic routine will be performed. (See Troubleshooting section 7.0)
- The controller will look at the serial data received. The controller will automatically recognize the Toledo continuous format with checksum, or the Masstron continuous format.
- While the controller is performing it auto recognition, LED D32 will flash on and off indicating that data has not been received that conforms to the proper format. Once valid data has been received, LED D32 will be turned off, this process should take approximately 2 seconds.
- The dip switch functions or assignments are determined by the type of data being received, Masstron format or Toledo format.
- The controller will then resume normal operation. If the controller fails to receive data within 2 seconds or if an instrument error (over capacity, etc.) occurs, LED D32 will flash and all control outputs will be turned off. The LED will continue to flash until the error is cleared. Sequence operation will resume upon receipt of a new start or discharge command, provided the data error has cleared.

Coincidence Operation - Toledo Format Only

SW1 Settings

1-1	1-2	1-3	Information
OFF	OFF	OFF	Select Coincident mode
ON	OFF	OFF	Select weigh up sequence
OFF	ON	OFF	Select weigh out sequence

(Other switch combinations are undefined)

NOTE - In the coincidence mode, SW2 is not used.

In the coincidence mode, SW2 is not used. The switch assignments for SW1 are as follows:

SW 1-4	Output Polarity Select
OFF	Denotes that the outputs are turned off below Setpoint, and turned on above Setpoint
ON	Denotes that the outputs are turned on below Setpoint, and are turned off above Setpoint
SW 1-5	**Negative Trip Select**
OFF	Denotes that the outputs will trip in both the positive and negative direction (absolute values)
ON	Denotes that the outputs will only trip in the positive direction. The outputs will remain in the below Setpoint state whenever the weight is negative.
SW 1-6	**Trip During Motion**
OFF	Denotes that the outputs will always reflect the current Setpoint status
ON	Denotes that the outputs will only be updated to the current Setpoint status when no motion is detected
SW 1-7	**Number of Setpoint Outputs Select**
OFF	Denotes that six coincidence Setpoint outputs are enabled, and two inputs for clear and tare are enabled
ON	Denotes four coincidence Setpoint outputs are enabled, and four inputs for clear, tare, print and zero are enabled

SW 1-8	C, T, P, Z Format Select
OFF	Denotes that no carriage return is sent after the single ASCII character C, T, P, Z command
ON	Denotes that a carriage return will be sent after the single character C, T, P Z command. This switch must be on when interfaced to an 8582 counting scale

Coincidence Operation - Toledo Format Only

1) When coincidence operation is selected (SW1-1, 2, 3 off), the outputs will reflect the state of the Setpoint status bits received from the indicator. The polarity of the outputs are determined by the setting of SW1-4. If SW1-4 is off, the outputs will be turned off when the weight is below Setpoint and will be turned don when the weight is greater than or equal to Setpoint. If SW1-4 is on, the output will be turned on when the weight is below Setpoint and turned off when the weight is greater than or equal to Setpoint.

For indicators that have tolerance outputs, and coincidence mode in the 3015 is selected tolerance 1 is output 5, tolerance 2 is output 6. Tolerance outputs operate at greater than, (not greater than or equal to) the entered value.

NOTE(S): Polarity selected is by user. Polarity selected must provide for a fail safe installation. Outputs will trip if a data error occurs. Outputs must be configured and installed to go to their safe non-active condition if a data error occurs and/or power to the 3015 is interrupted.

2) The setting of SW1-5 determines whether the setpoints will trip in the positive direction only, or if they will trip in both the positive and negative direction (absolute values). If SW1-5 is off, the setpoints will trip on absolute values. If SW1-5 is on, setpoints will only trip when the weight is positive and above Setpoint.

3) The setting SW1-6 determines whether the outputs will be updated continuously or only when no motion exists. If SW1-6 is off, the outputs will be updated to reflect the current Setpoint status each time data is received from the indicator. If SW1-6 is on, the outputs will only be updated to reflect the current Setpoint status when no motion exists.

4) The setting of SW1-7 determines the number of coincidence outputs as well as the number of inputs available. If SW1-7 is off, the unit is configured to provide six coincidence outputs and two inputs for clear and tare.

Outputs I/O 1 - 6 will reflect the status of setpoints 1 thru 4 as well as the two tolerance setpoints of the indicator. If SW1-7 is on, then the unit is configured to provide four coincidence outputs and four inputs for clear, tare, print and zero. Outputs I/O 1 - 4 will reflect the status of setpoints 1 - 4 of the indicator. No outputs are available for the tolerance setpoints. Whenever an input is turned on, the respective single character ASCII command is sent to the indicator, clear is I/O 8, tare is I/O 7, print is I/O 6, zero is I/O 5.

5) The setting of SW1-8 determines the format of the C, T, P, Z command being sent to the indicator. If SW1-8 is off, no carriage return is transmitted following the single character command. If SW1-8 is on, then a carriage return is sent following the single character command. This switch must be turned on when interfaced to an 8582 counting scale.

6) An over-capacity error or communications error will force the outputs to the above Setpoint (tripped) state.

7) See external wiring diagram in the drawing section of this manual for field wiring.

Weigh-Up Sequencing - Toledo Format Only

SW1 Settings

1-1	1-2	1-3	Information
N/A	N/A	N/A	Select Coincident mode
ON	OFF	OFF	Select weigh up sequence
N/A	N/A	N/A	Select weigh out sequence

(Other switch combinations are undefined)

When using the 3015 with the 8582, feed sequences with discharge are not possible. Either two speed feed with no discharge, or single speed feed with no discharge is possible.

When using the 3015 with the 8510, two speed feed with discharge is possible. The tolerance Setpoint is used as the discharge cutoff. However, this value is only accessible in setup, and has limited selections. If single speed is selected, then Setpoint 2 is used as the discharge Setpoint.

SW 1-4	**Setpoint Data Format Select**
OFF	Denotes that the data format is the standard Toledo continuous output format with Setpoint status for two 2 speed setpoints or 4 coincidence setpoints
ON	Denotes that the data format is the standard Toledo continuous output format with Setpoint status for two coincidence setpoints. This switch must be on when interfacing to an 8510 or an 8582 indicator
SW 1-5	**Two Speed Feed Select**
OFF	Denotes that single speed feed is selected
ON	Denotes that two speed feed is selected
SW 1-6	**Two Speed Feed Configuration**
OFF	Denotes that alternate feed is selected. Only the respective output, fast or slow, will be on at the appropriate time.
ON	Denotes that simultaneous feed is selected. Both feed outputs, fast and slow, will turn on for fast feed operation with only the slow feed output remaining on for slow feed.
SW 1-7	**NET WEIGHT BATCHING SELECT**
OFF	Denotes that the system will batch in the gross mode. The 3015 will tare the indicator before feeding. The 3015 will automatically tare before discharging if a discharge cycle is included in the weigh sequence.
ON	
SW 1-8	**Motion Detection Enable**
OFF	Denotes that a no motion condition need not exist after the feed or discharge cycle is complete before proceeding with the sequence.
ON	Denotes that a no motion condition must occur after the feed or discharge cycle is complete before the sequence will continue.
SW 2-1	**Print Enable**
OFF	Denotes no printing is required after feeding.
ON	Denotes that the 3015 will command the indicator to print after the feed cycle is complete. The 3015 will always wait for a no motion condition before commanding the indicator to print regardless of the setting of the SW1-8.

SW2 -2 & 2-3 Settings (Tolerance Check Enable)

2-2	2-3	Information
OFF	OFF	No tolerance checking is enabled
ON	OFF	Weight tolerance check after feed cycle is complete
OFF	ON	Zero tolerance check before feed cycle starts
ON	ON	Not defined

Note(s):
1. Zero Tolerance and weight tolerances are available separately only. They cannot be used together in the same sequence.
2. Selection of weight or zero tolerance in scale indicator must agree with the setup on the 3015 Setpoint Controller.

SW 2-4	Hold After Feed Cycle Enable
OFF	Denotes that no hold at the end of the feed cycle is required. The 3015 will proceed to the discharge cycle.
ON	Denotes that the 3015 will hold at the end of the feed cycle until receipt of a start discharge command.
SW 2-5	**DISCHARGE ENABLE**
OFF	Denotes that no discharge cycle is required
ON	Denotes that the discharge cycle is enabled.
SW2-6	**HOLD AFTER DISCHARGE CYCLE ENABLE**
OFF	Denotes that no hold at the end of the discharge cycle is required. The 3015 will proceed to the feed cycle.
ON	Denotes that the 3015 will hold at the end of the discharge cycle until receipt of a start command.
SW2-7	**NOT USED**
SW2-8	**NOT USED**

Note:
Discharge is not for use with the 8582

Weigh-Out Sequencing - Toledo Format Only

Note: Weigh-Out is not for use with the 8582

SW1 Settings

1-1	1-2	1-3	Information
OFF	ON	OFF	Select weigh out sequence

When using the 3015 with the 8510, single speed feed with two speed discharge is not possible since the 8510 indicator has only two setpoints. Either two speed discharge with no feed, or single speed discharge with single speed feed is possible.

SW1-4	SETPOINT DATA FORMAT SELECT
OFF	Denotes that the data format is the standard Toledo continuous output format with Setpoint status for two 2 speed setpoints or 4 coincidence setpoints.
ON	Denotes that the data format is the standard Toledo continuous output format with Setpoint status for two coincidence setpoints. This switch must be on when interfacing to an 8510.
SW1-5	**TWO SPEED DISCHARGE SELECT**
OFF	Denotes that single speed discharge is selected
ON	Denotes that two speed discharge is selected.
SW1-6	**TWO SPEED DISCHARGE CONFIGURATION**
OFF	Denotes that alternate discharge is selected. Only the respective output, fast or slow, will be on the appropriate time.
ON	Denotes that simultaneous discharge is selected. Both discharge outputs, fast and slow, will turn on for fast discharge operation with only the slow discharge output remaining on for slow discharge.
SW1-7	**SPARE**
SW1-8	**MOTION DETECTION ENABLE**
OFF	Denotes that no motion condition need not exist after the feed or discharge cycle is complete before proceeding with the sequence.
ON	Denotes that a no motion condition must occur after the feed or discharge cycle is complete before the sequence will

	continue.
S**W2-1**	**PRINT ENABLE**
OFF	Denotes no printing is required after discharging.
ON	Denotes that the 3015 will command the indicator to print after the discharge cycle is complete. The 3015 will always wait for a no motion condition before commanding the indicator to print regardless of the setting of SW1-8.

SW2 -2 & 2-3 Settings (Tolerance Check Enable)

2-2	**2-3**	**Information**
OFF	OFF	No tolerance checking is enabled
ON	OFF	Weight tolerance check after discharge cycle is complete
OFF	ON	Zero tolerance check before feed cycle starts
ON	ON	Not defined

Note(s):
1. Zero Tolerance and weight tolerances are available separately only. They cannot be used together in the same sequence.
2. Selection of weight or zero tolerance in scale indicator must agree with the setup on the 3015 Setpoint Controller.

SW2-4	HOLD AFTER FEED CYCLE ENABLE
OFF	Denotes that no hold at the end of the feed cycle is required. The 3015 will proceed to the discharge cycle.
ON	Denotes that the 3015 will hold at the end of the feed cycle until receipt of a start discharge command.
SW2-5	**NOT USED**
SW2-6	**HOLD AFTER DISCHARGE CYCLE ENABLE**
OFF	Denotes that no hold at the end of the discharge cycle is required. The 3015 will proceed to the feed cycle.
ON	Denotes that the 3015 will hold at the end of the discharge cycle until receipt of a start command.
SW2-7	**NOT USED**
SW2-8	**NOT USED**

Sequence Operation - Toledo Format

This detailed sequence of operation for a single speed and two speed feed explains the operation when all selectable options are enable via dip switch selection. The paragraphs defined may not apply if the option has not been selected.

The Following Conditions Apply to All Modes Of Operation:

1) Anytime a communication error occurs or if the indicator is over capacity, the control outputs will be turned off. The error LED (D32) will flash. Operation will not resume until a new start or discharge command (whichever applies) is received and valid data is received. Operation will resume where it was stopped.

2) Whenever a stop command is received or if an error occurs, all control outputs will be turned off and the sequence will be stopped. Operation will resume where it was stopped upon receipt of a new start or discharge command, whichever applies.

When WEIGH-IN sequencing is used, the fill cycle may be stopped and a discharge may then be initiated. However, a discharge cycle must be completed before a fill cycle may be started. When WEIGH-OUT sequencing is used, the discharge cycle may be stopped and a fill may then be initiated. However, a fill cycle must be completed before a discharge cycle may be started.

3) When WEIGH-IN sequencing is used, and the 3015 is interfaced to an indicator that has only two coincidence setpoints such as the 8510 or the 8582, Setpoint 1 is the target Setpoint and Setpoint 2 is the dribble feed Setpoint. If both feed and discharge cycles are included in the weigh sequence, two speed feed is only available if the indicator has a zero tolerance Setpoint to be used as the discharge cutoff. Setpoint 1 is then the target Setpoint, and Setpoint 2 is the dribble feed Setpoint. The 8582 is not for use with a discharge cycle.

4) When WEIGH-IN sequencing is used, and the 3015 is interfaced to an indicator that has coincidence setpoints only, such as the 8530, Setpoint 1 is the target Setpoint and Setpoint 3 is the dribble feed Setpoint. Setpoint 2 is the discharge Setpoint. If the indicator has only two setpoints see paragraph 5.6.3 above.

5) When WEIGH-IN sequencing is used, and the 3015 is interfaced to an indicator that has two setpoints with dribble and pre-act such as the 8142 or the 8141, Setpoint 1 is the target Setpoint and Setpoint 2 is the discharge Setpoint. The fast feed cutoff value is equal to Setpoint 1 minus the dribble value entered for Setpoint 1. The slow feed cutoff value is equal to Setpoint 1 minus the pre-act value entered for Setpoint 1. The discharge cutoff value is equal to Setpoint 2 minus the pre-act value entered for Setpoint 2. The scale weight must go below this point to cutoff the discharge.

6) When WEIGH-OUT sequencing is used, and the 3015 is interfaced to an indicator that has only two coincidence setpoints such as the 8510, Setpoint 1 is the target Setpoint and Setpoint 2 is the dribble discharge Setpoint. If both feed and discharge cycles are included in the weigh sequence, two speed discharge is not available. Setpoint 1 is then the discharge Setpoint, and Setpoint 2 is the feed Setpoint.

7) When WEIGHT-OUT sequencing is used, the indicator must have tare capability. The 3015 will wait until the indicator is tared before starting a discharge cycle.

8) When WEIGH-OUT sequencing is used, and the 3015 is interfaced to an indicator that has coincidence setpoints only, such as the 8530, Setpoint 1 is the target Setpoint and Setpoint 3 is the dribble discharge Setpoint. Setpoint 2 is the feed Setpoint. If the indicator has only two setpoints see paragraph 5.6.6 above.

9) When WEIGH-OUT sequencing is used, and the 3015 is interfaced to an indicator that has two setpoints with dribble and pre-act such as the 8142 or the 8141, Setpoint 1 is the discharge Setpoint and Setpoint 2 is the feed Setpoint. The fast discharge Setpoint value is equal to Setpoint 1 minus the dribble value entered for Setpoint 1. The slow discharge Setpoint value is equal to Setpoint 1 minus the pre-act value entered for Setpoint 1. The feed Setpoint value is equal to Setpoint 2 minus the pre-act value entered for Setpoint 2.

10) Zero and weight tolerance checking is only available if the indicator has the capability of entering tolerance values for these functions.

11) Printing is only possible if the indicator has the capability of transmitting continuous data and printer data simultaneously via two separate serial ports. The indicator must also have remote print command capability.

! WARNING
WHEN SEQUENCE OPERATION IS USED WHERE CLEAR AND TARE FUNCTIONS PERFORMED BY THE 3015, TARE OR CLEAR MUST NOT BE ENTERED THROUGH THE INDICATOR KEYBOARD.

12) Weigh-Out is not for use with the 8582.

Weigh-Up Sequence Operation - Single Speed Feed - Toledo Format

- Upon power up, the cycle complete output will be turned on. The controller will wait until a start command or a discharge command is received. If a discharge command is detected, the sequence will proceed to the beginning of the discharge cycle.
- The controller will check to make sure the indicator is in the gross mode. If not, it will send a clear command to the indicator, then wait for the indicator to switch to the gross mode. If the 8510/8582 Setpoint format is selected (SW1-4), this step will be skipped.
- The controller will check to see if the weight is within the zero tolerance band (if enabled). If out of tolerance, the sequence will be stopped and the error output will be turned on. Operation will resume when a new start command is received.
- The controller will send a tare command (if enabled) to the indicator, then wait until the indicator switches to the net mode or until the displayed weight equals zero.
- The controller will turn on the feed output. The feed output will remain on until the feed Setpoint is reached. The output will then be turned off.
- The controller will wait for the scale to settle if motion detection is enabled.
- The controller will wait for no motion, then send a print command to the indicator (if enabled).
- The controller will check to see if the weight is within tolerance (if enabled). If out of tolerance, the sequence will be stopped and the error output will be turned on. Operation will resume when a new start command or discharge command is received.
- If hold after feed is enabled, the sequence will be stopped. If the discharge cycle is enabled, operation will resume when a discharge command is received. Otherwise, the cycle complete output will be turned on and the sequence will wait for a start command.
- The controller will send a clear command to the indicator.
- The controller will turn on the discharge output. The discharge output will remain on until the weight drops below the discharge Setpoint. The discharge output will then be turned off.

- The controller will wait for the scale to settle if motion detection is enabled.
- The cycle complete output will be turned on. If hold after discharge is enabled, the sequence will be stopped. The sequence will be repeated when a new start command is received. If hold after discharge is not enabled, the sequence will automatically re-start at the beginning of the sequence.

Weigh-Up Sequence Operation - Two Speed Alternate Feed-Toledo Format

- Upon power up, the cycle complete output will be turned on. The controller will wait until a start command or a discharge command is received. If a discharge command is received, the sequence will proceed to the beginning of the discharge cycle.
- The controller will check to make sure the indicator is in the gross mode. If not, it will send a clear command to the indicator, then wait for the indicator to switch to the gross mode. If the 8510/8582 Setpoint format is selected (SW1-4 on), this step will be skipped.
- The controller will check to see if the weight is within the zero tolerance band (if enabled). If out of tolerance, the sequence will be stopped and the error output will be turned on. Operation will resume when a new start command is received.
- The controller will send a tare command (if enabled) to the indicator, then wait until the indicator switches to the net mode or until the displayed weight equals zero.
- The controller will turn on the fast feed output. the fast feed output will remain on until the fast feed Setpoint is reached. The output will then be turned off.
- The controller will turn on the slow feed output. the slow feed output will remain on until the slow feed Setpoint is reached. The output will then be turned off.
- The controller will wait for no motion, then send a print command to the indicator (if enabled).
- The controller will wait for no motion, then send a print command to the indicator (if enabled).
- The controller will check to see if the weight is within tolerance (if enabled). If out of tolerance, the sequence will be stopped and the error output will be turned on. Operation will resume when a new start command or discharge command is received.
- If hold after feed is enabled, the sequence will be stopped. If the discharge cycle is enabled, operation will resume when a discharge command is received. Otherwise, the cycle complete output will be turned on and the sequence will wait for a start command.

- The controller will send a clear command to the indicator.
- The controller will turn on the discharge output. The discharge output will remain on until the weight drops below the discharge Setpoint. The discharge output will then be turned off.
- The controller will wait for the scale to settle if motion detection is enabled.
- The cycle complete output will be turned on. If hold after discharge is enabled, the sequence will be stopped. The sequence will be repeated when a new start command is received. If hold after discharge is not enabled, the sequence will automatically restart at the beginning of the sequence.

Weigh-Up Sequence - Two Speed Simultaneous Feed Toledo Format

- Upon power up, the cycle complete output will be turned on. The controller will wait until a start command or a discharge command is received. If a discharge command is received, the sequence will proceed to the beginning of the discharge cycle.
- The controller will check to make sure the indicator is in the gross mode. If not, it will send a clear command to the indicator, then wait for the indicator to switch to the gross mode. If the 8510/8582 Setpoint format is selected (SW1-4), this step will be skipped.
- The controller will check to see if the weight is within the zero tolerance band (if enabled). If out of tolerance, the sequence will be stopped and the error output will be turned on. Operation will resume when a new start command is received.
- The controller will send a tare command (if enabled) to the indicator, then wait until the indicator switches to the net mode, or until the displayed weight equals zero.
- The controller will turn on the fast and slow feed outputs. The fast feed output will remain on until the fast feed Setpoint is reached. The fast feed output will then be turned off and the slow feed output will remain on.
- The slow feed output will remain on until the slow feed Setpoint is reached. The output will then be turned off.
- The controller will wait for the scale to settle if motion detection is enabled.
- The controller will wait for no motion, then send a print command to the indicator (if enabled).
- The controller will check to see if the weight is within tolerance (if enabled). If out of tolerance, the sequence will be stopped and the error output will be turned on. Operation will resume when a new start command or discharge command is received.
- If hold after feed is enabled, the sequence will be stopped. If the discharge cycle is enabled, operation will resume when a discharge command is received. Otherwise, the cycle complete output will be turned on and the sequence will wait for a start command.

- The controller will send a clear command to the indicator.
- The controller will turn on the discharge output. The discharge output will remain on until the weight drops below the discharge Setpoint. The discharge output will then be turned off.
- The controller will wait for the scale to settle if motion detection is enabled.
- The cycle complete output will be turned on. If hold after discharge is enabled, the sequence will be stopped. The sequence will be repeated when a new start command is received. if hold after discharge is not enabled, the sequence will automatically re-start at the beginning of the sequence.

Weigh-Out Sequence Operation - Single Speed Discharge - Toledo Format

- Upon power up, the cycle complete output will be turned on. The controller will wait until a start command or a discharge command is received. if a discharge command is received, the sequence will proceed to the beginning of the discharge cycle.
- The controller will check to make sure the indicator is in the gross mode. If not, it will send a clear command to the indicator, then wait for the indicator to switch to the gross mode.
- The controller will check to see if the weight is within the zero tolerance band (if enabled). If out of tolerance, the sequence will be stopped and the error output will be turned on. Operation will resume when a new start command is received.
- The controller will turn on the feed output. The feed output will remain on until the feed Setpoint is reached. The output will then be turned off.
- The controller will wait for the scale to settle if motion detection is enabled.
- If hold after feed is enabled, the sequence will be stopped. Operation will resume when a discharge command is received.
- The controller will send a clear command to the indicator.
- The controller will send a tare command to the indicator, then wait until the indicator switches to the net mode or until the displayed weight equals zero.
- The controller will turn on the discharge output. The discharge output will remain on until the weight drops below the discharge Setpoint. The discharge output will then be turned off.
- The controller will wait for the scale to settle if motion detection is enabled.
- The controller will wait for no motion, then send a print command to the indicator (if enabled).

- The controller will check to see if the weight is within tolerance (if enabled). If out of tolerance, the sequence will be stopped and the error output will be turned on. Operation will resume when a new start command or discharge command is received.
- The cycle complete output will be turned on. If hold after discharge is enabled, the sequence will be stopped. The sequence will be repeated when a new start command or discharge command is received. If hold after discharge is not enabled, the sequence will automatically re-start at the beginning of the sequence.

Weigh-Out Sequence Operation - Two Speed Alternate Discharge - Toledo Format

- Upon power up, the cycle complete output will be turned on. The controller will wait until a start command or a discharge command is received. If a discharge command is received, the sequence will proceed to the beginning of the discharge cycle.
- The controller will check to make sure the indicator is in the gross mode. If not, it will send a clear command to the indicator, then wait for the indicator to switch to the gross mode.
- The controller will check to see if the weight is within the zero tolerance band (if enabled). If out of tolerance, the sequence will be stopped and the error output will be turned on. Operation will resume when a new start command is received.
- **4)**The controller will turn on the feed output. The feed output will remain on until the feed Setpoint is reached. The output will be turned off.
- The controller will wait for the scale to settle if motion detection is enabled.
- If hold after feed is enabled, the sequence will be stopped. Operation will resume when a discharge command is received.
- The controller will send a clear command to the indicator.
- The controller will send a tare command to the indicator, then wait until the indicator switches to the net mode or until the displayed weight equals zero.
- The controller will turn on the fast discharge output. The fast discharge output will remain on until the weight drops below the slow discharge Setpoint. The fast discharge output will then be turned off.
- The controller will turn on the slow discharge output. The slow discharge will remain on until the weight drops below the slow discharge Setpoint. The slow discharge output will then be turned off.
- The controller will wait for the scale to settle if motion detection is enabled.
- The controller will wait for no motion, then send a print command to the indicator (if enabled).

- The controller will check to see if the weight is within tolerance (if enabled). If out of tolerance, the sequence will be stopped and the error output will be turned on. Operation will resume when a new start command or discharge command is received.
- The cycle complete output will be turned on. If hold after discharge is enabled, the sequence will be stopped. The sequence will be repeated when a new start command or discharge command is received. If hold after discharge is not enabled, the sequence will automatically re-start at the beginning of the sequence.
- Weigh-out operation is not intended for use with the 8582 counting scale.

Weigh-Out Sequence - Two Speed Simultaneous Discharge - Toledo Format

- Upon power up, the cycle complete output will be turned on. The controller will wait until a start command or a discharge command is received. If a discharge command is received, the sequence will proceed to the beginning of the discharge cycle.
- The controller will check to make sure the indicator is in the gross mode. If not, it will send a clear command to the indicator, then wait for the indicator to switch to the gross mode.
- The controller will check to see if the weight is within the zero tolerance band (if enabled). If out of tolerance, the sequence will be
  stopped and the error output will be turned on. Operation will resume when a new start command is received.
- The controller will turn on the feed output. The feed output will remain on until the feed Setpoint is reached. The output will then be turned off.
- The controller will wait for the scale to settle if motion detection is enabled.
- If hold after feed is enabled, the sequence will be stopped. Operation will resume when a discharge command is received.
- The controller will send a clear command to the indicator.
- The controller will send a tare command to the indicator, then wait until the indicator switches to the net mode or until the displayed weight equals zero.
- The controller will turn on the fast and slow discharge outputs. The fast and slow discharge outputs will remain on until the weight drops below the fast discharge Setpoint. The fast discharge output will then be turned off and the slow discharge output will remain on.
- The slow discharge output will remain on until the weight drops below the slow discharge Setpoint. The slow discharge output will then be turned off.
- The controller will wait for the scale to settle if motion detection is enabled.

- The controller will wait for no motion, then send a print command to the indicator (if enabled).
- The controller will check to see if the weight is within tolerance (if enabled). If out of tolerance, the sequence will be stopped and the error output will be turned on. Operation will resume when a new start command or discharge command is received.
- The cycle complete output will be turned on. If hold after discharge is enabled, the sequence will be stopped. The sequence will be repeated when a new start command or discharge command is received. If hold after discharge is not enabled, the sequence will automatically re-start at the beginning of the sequence.
- Weighout operation is not intended for use with the 8582 counting scale.

Considerations for Interfacing Mettler - Toledo Instruments

Toledo 8582 to the 3015 Setpoint Controller

The Toledo ® counting scale Setpoint continuous output data is fixed at 4800 baud. The ASCII receive input for remote commands is via the Host port. Since the 3015 does not have a split baud rate, both I/O 1 and I/O 2 of the 8582 must have the same baud rate, which mandates that the host port be set to 4800 baud.

The printer port is a dedicated I/O and does not have remote print command capability. If the printer port is used all printing must be initiated by the operator via the 8582 keyboard or via the auto-print feature of the 8582, the 3015 cannot command the printer. The host port can be used to output data via a remote command but is intended to interface to a computer, not to a printer.

The average piece weight and/or the number of samples must already be entered and the 8582 showing the piece count prompt before the 8582 will output count data. Setup of the 8582 for average piece weight and number of samples must be accomplished by the operator. To prevent having to reenter the average piece weight and/or number of samples before each fill operation, the 3015 does not send a clear command at the start of a sequence -- the 3015 reads SW1-4 to determine if an 8582 is being used. A manual clear is required when changing to a different sample.

3015/8582 applications are not intended to include weigh and discharge in the same operation. Status Word B, bit "0" is the Gross/Net flag in Toledo ® type indicators and is used by the 3015 to read the indicator's status. However, Status Word B, Bit "0" is already in gross mode. Since Status Word B, bit "0" is always a zero the 3015 reads the scale as if in gross mode and does not send a clear. In short, if the 3015/8582 is setup to include both fill and discharge cycles the system will not work because the scale will accumulate heel. For this same reason the 3015 is not intended for use with 8582 in a Weigh-out application.

Sample parameter setup for 8582 option ports connected to the 3015.

F7.1	Multidrop N	
F7.2	Function I/O 1	Host *See Note
F7.3	Function I/O 2	Remote
F7.6	Setpoint enable	Y
F8.1	Host Port Parity	Even
F8.2	Checksum Enable	N (this is for commands, not continuous data)
F8.3	Stop Bits	1
F8.4	Baud Rate	4800

The above parameters consider I/O port 1 as Host and I/O 2 as continuous Setpoint data output.

***NOTE(S):** The 8582 host is either standard or TLAN (Toledo Local Area Network). TLAN setup will not accept the ASCII type inputs, therefore if the 8582 has a TLAN host the 3015 commands (tare, print) to the 8582 won't work.

Considerations for Interfacing a Toledo 8141 to the 3015 Setpoint Controller

The 8141 has two different continuous output formats available, Masstron and Toledo.

When Masstron format is used the 3015 will consider the 8141 as if it were an M5000. Parameter 35 can be set either to a 1 (displayed weight Setpoint) or a 2 (gross weight Setpoint). Parameter 41 must be set to "0" for Coincidence mode, or "1" for Dribble/Pre-act mode. When in Masstron mode the 3015 will not send ASCII commands to the indicator.

When Toledo format is used for the 8141 can be set for either Coincidence mode or Dribble/Pre-act, depending on parameter 41. Parameter 35 has the same function for both Masstron and Toledo format. Toledo format uses ASCII receive commands for print and tare commands. Use of the ASCII commands is more straight-forward, required less hardware, and is faster. When Toledo format is used the baud rate is adjustable in the 8141. 4800 is the fastest available baud rate for interface to the 3015.

When weigh-out mode is selected and a printer is used, be sure to set the 8141 parameter 17 to "0" to enable printing below gross zero.

Considerations for Interfacing a Toledo 8510 Panel Mount to the 3015 Setpoint Controller

The Toledo ® model 8510 scale indicator has a single I/O channel for data communications. This channel is used to interface to the 3015. Since there are no other I/O channels it is not possible to connect a printer to an 8510 when a 3015 is used.

Since the 8510 has only two setpoints, the zero tolerance Setpoint is used as the discharge cutoff when weighup sequences using two speed feed with discharge are selected. This limits the discharge cutoff value to the selections available via parameter F11.1. The zero tolerance is not accessible by the operator.

8510 revision level. The 3015 will not work with any 8510 that has a pre “E*” revision 129124 Main PCB. Any old 8510 must be updated to the current revision, which at this writing is “E”, before being used with the 3015.

Setup parameters in the 8510 pertinent to 3015 interfacing.

F9	Tare Active	Set to “1” if tare used
F11	Options	Set to “1” for Setpoint enable
F11.1	Zero Tolerance Range	Adjustable; “5” is a good starting point
F11.3	Setpoint Entry	Set to “0” for Setpoint entry while 8510 is in weight mode
F12.1	Serial Data Out	Set to “0” for continuous data
F12.2	Baud Rate	Set to “4800” for fasted 3015 capability
F12.3	Parity	Set to “2” for even parity
F12.4	Checksum	Set to “1” to enable checksum
F13.	Remote Commands	Set to “1” to enable remote inputs.

NOTE(S): The above information in paragraph 5.15 is relevant to the 8510 panel mount scale indicator only (Ram 2001 and 2011). The 8510SS (Ram 1001, 1011) is different.

***NOTE(S):** Upgrade kit part number 136043 is available to bring old 8510 panel mount up to current revision level.

5 Coincidence Mode - Masstron Format Only

In the coincidence mode, SW2 is not used. The switch assignments for SW1 are as follows:

SW1-1 OUTPUT POLARITY SELECT

OFF Denotes that the outputs are turned off below Setpoint, and turned on above Setpoint.

ON Denotes that the outputs are turned on below Setpoint, and are turned off above Setpoint.

SW1-2 NEGATIVE TRIP SELECT

OFF Denotes the outputs will trip in both the positive and negative direction (absolute values).

ON Denotes the outputs will only trip in the positive direction. The outputs will remain in the below Setpoint state whenever the weight is negative.

SW1-3 TRIP DURING MOTION

OFF Denotes that the outputs will always reflect the current Setpoint status.

ON The outputs will only be updated to the current Setpoint status when no motion is detected.

SW1-4 NOT USED

SW1-5 ROTARY SWITCH PRE-ACT SELECT

OFF Denotes pre-act feature is disabled. When the pre-act feature is disabled, all of the rotary switches are used as setpoints. Up to six banks of rotary switches may be installed to provide a maximum of six setpoints.

ON Denotes that when the rotary switch feature is enabled (SW1-6 on), every other bank of rotary switches is used to enter a pre-act value for the setpoints. In this configuration, a maximum of three setpoints are available.

The first bank of rotary switches is for Setpoint 1, and the second bank is the pre-act for Setpoint 1. The third bank is for Setpoint 2, and the fourth bank is the pre-act for Setpoint 2. The fifth bank is for Setpoint 3, and the sixth bank is the pre-act for Setpoint 3.

SW1-6 ROTARY SWITCH SELECT

OFF Denotes that the Setpoint status information received from the indicator is used.

ON Denotes that the rotary switches are used. This switch must be on to use the rotary switch pre-act option. When the rotary switch option is enabled, the Setpoint status information received from the indicator is ignored.

SW1-7 START/STOP/ENABLE

OFF Denotes start/stop inputs disabled

ON Denotes that the outputs are only active after a start command has been received. They remain active until a stop command is received. If the sealing feature is enabled (SW1-8 on), then the outputs will remain tripped once the Setpoint has been exceeded until a stop command or another start command is received.

SW1-8 SEALING FEATURE ENABLE

OFF Denotes the outputs are updated normally as determined by the other switch settings.

ON Denotes the outputs will remain tripped once the Setpoint has been exceeded as long as the seal input (I/O 8) is turned on even if the weight drops below Setpoint. If the start/stop inputs are enabled (SW1-7 on), then the outputs will remain tripped until a stop command or another start command is received.

Coincidence Operation - Masstron Format Only

- When coincidence operation is selected (SW2 all off), outputs I/O 1 - 8 will reflect the state of the Setpoint status bits received from the indicator or as compared against the rotary switch settings if used. The polarity of the outputs are determined by the setting of SW1-1. If SW1-1 is off, the outputs will be turned off when the weight is below Setpoint and will be turned on when the weight is above. If SW1-1 is on, the outputs will be turned on when the weight is below Setpoint and turned off when the weight is above.
- The setting of SW1-2 determines whether the setpoints will trip in the positive direction only, or if they will trip in both the positive and negative direction (absolute values). If SW1-2 is off, the setpoints will trip on absolute values. If SW1-2 is on, setpoints will only trip when the weight is positive and above Setpoint.
- The setting of SW1-3 determines whether the outputs will be updated continuously or only when no motion exists. If SW1-3 is off, the outputs will be updated to reflect the current Setpoint status each time data is received from the indicator. If SW1-3 is on, the outputs will only be updated to reflect current setup status when no motion exists.
- The setting of SW1-7 determines whether the start/stop inputs will be used to control when the outputs will be active. If SW1-7 is off, the outputs will be active all of the time. If SW1-7 is off, the outputs are only active until a stop command is received. If the sealing feature is enabled (SW1-8 on), then the outputs will remain tripped once the Setpoint has been exceeded until a stop command or another start command is received.
- The setting of SW1-8 determines whether the sealing feature is enabled or disabled. If SW1-8 is off, the outputs are updated normally as determined by the other switch settings. If SW1-8 is on, the outputs will remain tripped once the Setpoint has been exceeded as long as the seal input (I/O 8) is turned on even if the weight drops below Setpoint. If the start/stop inputs are enabled (SW1-7 on), then the outputs will remain tripped until a stop command or another start command is received.

Selectable Weigh Sequences - Masstron Format Only

Several single material batching sequences are dip switch selectable. Dip switch SW2 is used to configure the special sequencing.

When special sequencing is selected, via SW2 ONLY the following dip switches on SW1 are used:

SW1-2 NEGATIVE TRIP SELECT

OFF Selects that the outputs will trip in both the positive and negative direction (absolute values).

ON Denotes that the outputs will only trip in the positive direction. The outputs will remain in the below Setpoint state whenever the weight is negative.

SW1-5 ROTARY SWITCH PRE-ACT SELECT

OFF Denotes pre-act feature is disabled.

ON Denotes that when the rotary switch option is enabled (SW1-6 on), this switch determines whether all of the switch banks are to be defined as setpoints, or if the switch banks are to be defined as setpoints with pre-act.

When the switch is off, all of the rotary switches are used as setpoints. Up to six banks of rotary switches may be installed to provide a maximum of six setpoints. When the switch is on, every other bank of rotary switches is used to enter a pre-act value for the setpoints. In this configuration, a maximum of three setpoints are available.

The first bank of rotary switches is for Setpoint 1 (fast feed Setpoint), and the second bank is the pre-act for Setpoint 1. The third bank is for Setpoint 2, (slow feed Setpoint) and the fourth bank is the pre-act for Setpoint 2. The fifth bank is for Setpoint 3 (discharge Setpoint), and the sixth bank is the pre-act for Setpoint 3.

SW1-6 ROTARY SWITCH SELECT

OFF Denotes that the Setpoint status information received from the indicator is used.

ON Denotes that the rotary switches are used. This switch must be on to use the rotary switch pre-act option. When the rotary switch option is enabled, the Setpoint status information received from the indicator is ignored.

Dip switch SW2 is used to select the different weigh sequences. The following table lists the available sequences. A detailed description of each sequence follows:

SEQUENCE DESCRIPTION	SW2	1	2	3	4	5	6	7	8
WEIGH HOLD (1 SPEED)		0	0	0	0	0	0	0	0
WEIGH HOLD (2 SPEED-ALTERNATE)		0	0	0	0	0	0	0	0
WEIGH HOLD (2 SPEED-SIMULTANEOUS)		0	0	0	0	0	0	0	0
TARE WEIGH HOLD (1 SPEED)		0	0	0	0	0	0	0	0
TARE WEIGH HOLD (2 SPEED-ALTERNATE)		0	0	0	0	0	0	0	0
TARE WEIGH HOLD (2 SPEED-SIMULTANEOUS)		0	0	0	0	0	0	0	0
WEIGH PRINT HOLD (1 SPEED)		0	0	0	0	0	0	0	0
WEIGH PRINT HOLD (2 SPEED-ALTERNATE)		0	0	0	0	0	0	0	0
WEIGH PRINT HOLD (2 SPEED-SIMULTANEOUS)		0	0	0	0	0	0	0	0
TARE WEIGH PRINT HOLD (1 SPEED)		0	0	0	0	0	0	0	0
TARE WEIGH PRINT HOLD (2 SPEED - ALTERNATE)		0	0	0	0	0	0	0	0
TARE WEIGH PRINT HOLD (2 SPEED - SIMULTANEOUS)		0	0	0	0	0	0	0	0
WEIGH HOLD DISCHARGE HOLD (1 SPEED)		0	0	0	0	0	0	*	*
WEIGH HOLD DISCHARGE HOLD (2 SPEED-ALTERNATE)		0	0	0	0	0	0	*	*
TARE WEIGH HOLD DISCHARGE HOLD (1 SPEED)		0	0	0	0	0	0	*	*
TARE WEIGH HOLD DISCHARGE HOLD (2 SPEED-ALT.)		0	0	0	0	0	0	*	*
WEIGH PRINT HOLD DISCHARGE HOLD (1 SPEED)		0	0	0	0	0	0	*	*
WEIGH PRINT HOLD DISCHARGE HOLD (2 SPEED-ALT)		0	0	0	0	0	0	*	*
TARE WEIGH PRINT HOLD DISCHARGE HOLD (1 SPEED)		0	0	0	0	0	0	*	*
TARE WEIGH PRINT HOLD DISCHARGE HOLD (2 SPEED ALT)		0	0	0	0	0	0	*	*
WEIGH HOLD TARE DISCHARGE PRINT HOLD (1 SPEED)		0	0	0	0	0	0	*	*
WEIGH HOLD TARE DISCHARGE PRINT HOLD (2-SPEED ALT.)		0	0	0	0	0	0	*	*

O = OPEN (OFF)
C = CLOSED (ON)
* = SEE INFORMATION REGARDING CONTINUOUS RUN FEATURE

Table 6-1 Available Weigh Sequences

When the SW1-2 is off, the outputs will trip in both the positive and negative direction (absolute values). This will allow you to use any of the WEIGH-UP sequences for WEIGH-OUT operation when manual filling of the scale is provided. Simply connect the feed outputs to the discharge valve or gate. When SW1-2 is on, the outputs will only trip in the positive direction. The outputs will remain in the below Setpoint state whenever the weight is negative. This will allow you to start filling from a negative weight whose absolute value is greater than the cutoff Setpoint.

6.3.1 Rotary Switch Pre-act Select

This pre-act select feature works in conjunction with the rotary switch select switch setting. The pre-act feature is only available when rotary switches are used for Setpoint control. When SW1-2 is on, the outputs will only trip in the positive direction. The outputs will remain in the below Setpoint state whenever the weight is negative. This will allow you to start filling from a negative weight whose absolute value is greater than the cutoff Setpoint.

6.3.2 Rotary Switch Select

When SW1-6 is off, the rotary switch feature is disabled and the Setpoint status information from the indicator is used to determine cutoffs. When SW1-6 is on, the rotary switches feature is enabled. Setpoint values are entered via the rotary switches, and all Setpoint status information received from the indicator is ignored. This switch must be on to use the rotary switch pre-act option.

Negative Trip Select

When SW1-2 is off, the outputs will trip in both the positive and negative direction (absolute values). This will allow you to use any of the WEIGH-UP sequences for WEIGH-OUT operation when manual filling of the scale is provided. Simply connect the feed outputs to the discharge valve or gate. When SW1-2 is on, the outputs will only trip in the positive direction. The outputs will remain in the below Setpoint state whenever the weight is negative. This will allow you to start filling from a negative weight whose absolute value is greater than the cutoff Setpoint.

6.3.1 Rotary Switch Pre-act Select

This pre-act select feature works in conjunction with the rotary switch select switch setting. The pre-act feature is only available when .rotary switches are used for Setpoint control. When SW1-5 is off, the pre-act feature is disabled. When SW1-5 is on, every other bank of rotary switches is used to enter a pre-act value for the setpoints. In this configuration, a maximum of three setpoints are available. The first bank of rotary switches is for Setpoint 1 (fast feed Setpoint), and the second bank is the pre-act for Setpoint 1. The third bank is for Setpoint 2, (slow feed Setpoint) and the fourth bank is the pre-act for Setpoint 2. The fifth bank is for Setpoint 3 (discharge Setpoint), and the sixth bank is the pre-act for Setpoint 3.

6.3.2 Rotary Switch Select

When SW1-6 is off, the rotary switch feature is disabled and the Setpoint status information from the indicator is used to determine cutoffs. When SW1-6 is on, the rotary switches feature is enabled. Setpoint values are entered via the rotary switches, and all Setpoint status information received from the indicator is ignored. This switch must be on to use the rotary switch pre-act option.

6.3.3 Continuous Run Feature

SW2-7

OFF Normal operation - Hold after discharge cycle is complete.

ON Bypass hold after discharge cycle.

For example: If a weigh-hold-discharge-hold sequence is selected, and SW2-7 is on and SW2-8 is off, the 3015 will weigh-discharge-hold bypassing the hold after the feed cycle. Using the same sequence, only setting SW2-7 off and SW2-8 on, the 3015 will weigh-hold. Now a discharge command must be received to start the discharge cycle. The 3015 will then discharge-weigh-hold bypassing the hold after discharge.

If both SW1-7 and SW2-8 are both on, the 3015 will weigh-discharge, then repeat the sequence until receipt of a stop command. The sequence is re-started where it was stopped by receipt of another start command, even if it was stopped during a discharge cycle. If the 3015 is continuously weighing and discharging, and the operator wants to finish discharging a batch without starting a new one, he can stop the sequence, then issue a discharge command to finish the discharge cycle. The 3015 will not automatically start another feed cycle since a new start command hasn't been received yet.

Weigh Hold (Single Speed Feed)

Upon receipt of a start command, I/O 1 will be turned on until Setpoint 1 is reached.

Receipt of a stop command stops the sequence. Receipt of a start command starts the sequence where it was stopped. Once completed, the sequence is restarted upon receipt of another start command.

The sequence may only be reset by interrupting power to the 3015.

SW2 Settings

Other switch combinations are undefined

1	2	3	4	5	6	7	8
C	O	O	O	O	O	O	O

C = CLOSED (ON)

O = OPEN (OFF)

I/O Assignments

Module	Quantity Required
Input	2
Output	1

Operators Required

Type	Quantity Required
Normally Open Momentary Pushbuttons	2

I/O Assignments

I/O	Description
1	Feed Output
7	Start Input
8	Stop Input

Weigh Hold (2 Speed Alternate Feed)

Upon receipt of a start command, I/O 1 will be turned on and I/O 2 will remain off. I/O 1 will remain on until Setpoint 1 is reached. At this time, I/O will be turned off and I/O 2 will turn on until Setpoint 2 is reached.

Receipt of a stop command stops the sequence. Receipt of a start command starts the sequence where it was stopped. Once completed, the sequence is restarted upon receipt of another start command.

The sequence may only be reset by interrupting power to the 3015.

SW2 Settings

Other switch combinations are undefined

1	2	3	4	5	6	7	8
O	C	O	O	O	O	O	O

C = CLOSED (ON)

O = OPEN (OFF)

I/O Assignments

Module	Quantity Required
Input	2
Output	2

Operators Required

Type	Quantity Required
Normally Open Momentary Pushbuttons	2

I/O Assignments

I/O	Description
1	Fast Feed Output
2	Slow Feed Output
7	Start Input
8	Stop Input

Weigh Hold (2 Speed Simultaneous Feed)

Upon receipt of a start command, I/O 1 and I/O 2 will be turned on. I/O 1 will turn off when Setpoint 1 is reached and I/O 2 will turn off when Setpoint 2 is reached.

Receipt of a stop command stops the sequence. Receipt of a start command starts the sequence where it was stopped. Once completed, the sequence is restarted upon receipt of another start command.

The sequence may only be reset by interrupting power to the 3015.

SW2 Settings

Other switch combinations are undefined

1	2	3	4	5	6	7	8
C	C	O	O	O	O	O	O

C = CLOSED (ON)

O = OPEN (OFF)

I/O Assignments

Module	Quantity Required
Input	2
Output	2

Operators Required

Type	Quantity Required
Normally Open Momentary Pushbuttons	2

I/O Assignments

I/O	Description
1	Fast Feed Output
2	Slow Feed Output
7	Start Input
8	Stop Input

Tare Weigh Hold (Single Speed Feed)

Upon receipt of a start command, the 3015 will wait for no motion, then turn on I/O 4 for 200 milliseconds (tare command). I/O 1 will then be turned on until Setpoint 1 is reached.

Receipt of a stop command stops the sequence. Receipt of a start command starts the sequence where it was stopped. Once completed, the sequence is restarted upon receipt of another start command.

The indicator must not be below zero for sequence to tare.

The sequence may only be reset by interrupting power to the 3015.

SW2 Settings

Other switch combinations are undefined

1	2	3	4	5	6	7	8
O	O	C	O	O	O	O	O

C = CLOSED (ON)

O = OPEN (OFF)

I/O Assignments

Module	Quantity Required
Input	2
Output	1
Dry Contact Output	1

Operators Required

Type	Quantity Required
Normally Open Momentary Pushbuttons	2

I/O Assignments

I/O	Description
1	Fast Feed Output
4	Tare Output
7	Start Input
8	Stop Input

Tare Weigh Hold (2 Speed Alternate Feed)

Upon receipt of a start command, the 3015 will wait for a no motion, then turn on I/O 4 for 200 milliseconds (tare command). I/O 1 will then be turned on and I/O 2 will remain off. I/O 1 will remain on until Setpoint 1 is reached. At this time, I/O 1 will be turned off and I/O 2 will be turned on until Setpoint 2 is reached.

Receipt of a stop command stops the sequence. Receipt of a start command starts the sequence where it was stopped. Once completed, the sequence is restarted upon receipt of another start command.

The indicator must not be below zero for sequence to tare.

The sequence may only be reset by interrupting power to the 3015.

SW2 Settings

Other switch combinations are undefined

1	2	3	4	5	6	7	8
C	O	C	O	O	O	O	O

C = CLOSED (ON)

O = OPEN (OFF)

I/O Assignments

Module	Quantity Required
Input	2
Output	2
Dry Contact Output	1

Operators Required

Type	Quantity Required
Normally Open Momentary Pushbuttons	2

I/O Assignments

I/O	Description
1	Fast Feed Output
2	Slow Feed Output
4	Tare Output
7	Start Input
8	Stop Input

Tare Weigh Hold (2 Speed Simultaneous Feed)

Upon receipt of a start command, the 3015 will wait for no motion, then turn on I/O 4 for 200 milliseconds (tare command). Both I/O 1 and I/O 2 will be turned on. I/O 1 will turn off when Setpoint 1 is reached and I/O 2 will turn off when Setpoint 2 is reached.

Receipt of a stop command stops the sequence. Receipt of a start command starts the sequence where it was stopped. Once completed, the sequence is restarted upon receipt of another start command.

The indicator must not be below zero for sequence to tare.

The sequence may only be reset by interrupting power to the 3015.

SW2 Settings

Other switch combinations are undefined

1	2	3	4	5	6	7	8
O	C	C	O	O	O	O	O

C = CLOSED (ON)

O = OPEN (OFF)

I/O Assignments

Module	Quantity Required
Input	2
Output	2
Dry Contact Output	1

Operators Required

Type	Quantity Required
Normally Open Momentary Pushbuttons	2

I/O Assignments

I/O	Description
1	Fast Feed Output
2	Slow Feed Output
4	Tare Output
7	Start Input
8	Stop Input

Weigh Print Hold (Single Speed Feed)

Upon receipt of a start command, I/O 1 will be turned on until Setpoint 1 is reached. The 3015 will wait for no motion, then turn on I/O 5 for 200 milliseconds (print command).

Receipt of a stop command stops the sequence. Receipt of a start command starts the sequence where it was stopped. Once completed, the sequence is restarted upon receipt of another start command.

The sequence may only be reset by interrupting power to the 3015.

SW2 Settings

Other switch combinations are undefined

1	2	3	4	5	6	7	8
C	C	C	O	O	O	O	O

C = CLOSED (ON)

O = OPEN (OFF)

I/O Assignments

Module	Quantity Required
Input	2
Output	1
Dry Contact Module	1

Operators Required

Type	Quantity Required
Normally Open Momentary Pushbuttons	2

I/O Assignments

I/O	Description
1	Fast Feed Output
5	Print Output
7	Start Input
8	Stop Input

Weigh Print Hold (2 Speed Alternate Feed)

Upon receipt of a start command, I/O 1 will be turned on and I/O 2 will remain off. I/O 1 will remain on until Setpoint 1 is reached. At this time, I/O 1 will be turned off and I/O 2 will turn on until Setpoint 2 is reached. The 3015 will wait for no motion, then turn on I/O 5 for 200 milliseconds (print command).

Receipt of a stop command stops the sequence. Receipt of a start command starts the sequence where it was stopped. Once completed, the sequence is restarted upon receipt of another start command.

The sequence may only be reset by interrupting power to the 3015.

SW2 Settings

Other switch combinations are undefined

1	2	3	4	5	6	7	8
O	O	O	C	O	O	O	O

C = CLOSED (ON)

O = OPEN (OFF)

I/O Assignments

Module	Quantity Required
Input	2
Output	2
Dry Contact Output	1

Operators Required

Type	Quantity Required
Normally Open Momentary Pushbuttons	2

I/O Assignments

I/O	Description
1	Fast Feed Output
2	Slow Feed Output
5	Print Output
7	Start Input
8	Stop Input

Weigh Print Hold (2 Speed Simultaneous Feed)

Upon receipt of a start command, I/O 1 and I/O 2 will be turned on. I/O 1 will turn off when Setpoint 1 is reached and I/O 2 will turn off when Setpoint 2 is reached. The 3015 will wait for no motion, then turn on I/O 5 for 200 milliseconds (print command).

Receipt of a stop command stops the sequence. Receipt of a start command starts the sequence where it was stopped. Once completed, the sequence is restarted upon receipt of another start command.

The sequence may only be reset by interrupting power to the 3015.

SW2 Settings

Other switch combinations are undefined

1	2	3	4	5	6	7	8
C	O	O	C	O	O	O	O

C = CLOSED (ON)

O = OPEN (OFF)

I/O Assignments

Module	Quantity Required
Input	2
Output	2
Dry Contact Output	1

Operators Required

Type	Quantity Required
Normally Open Momentary Pushbuttons	2

I/O Assignments

I/O	Description
1	Fast Feed Output
2	Slow Feed Output
5	Print Output
7	Start Input
8	Stop Input

Tare Weigh Print Hold (Single Speed Feed)

Upon receipt of a start command, the 3015 will wait for no motion, then turn on I/O 4 for 200 milliseconds (tare command). I/O 1 will then be turned on until Setpoint 1 is reached. The 3015 will wait for no motion, then turn on I/O 5 for 200 milliseconds (print command).

Receipt of a stop command stops the sequence. Receipt of a start command starts the sequence where it was stopped. Once completed, the sequence is restarted upon receipt of another start command.

The indicator must not be below zero for the sequence to tare.

The sequence may only be reset by interrupting power to the 3015.

SW2 Settings

Other switch combinations are undefined

1	2	3	4	5	6	7	8
O	C	O	C	O	O	O	O

C = CLOSED (ON)

O = OPEN (OFF)

I/O Assignments

Module	Quantity Required
Input	2
Output	1
Dry Contact Output	2

Operators Required

Type	Quantity Required
Normally Open Momentary Pushbuttons	2

I/O Assignments

I/O	Description
1	Fast Feed Output
4	Tare Output
5	Print Output
7	Start Input
8	Stop Input

Tare Weigh Print Hold (2 Speed Alternate Feed)

Upon receipt of a start command, the 3015 will wait for no motion, then turn on I/O 4 for 200 milliseconds (tare command). I/O 1 will then be turned on and I/O 2 will remain off. I/O 1 will remain on until Setpoint 1 is reached. At this time, I/O 1 will be turned off and I/O 2 will be turned on until Setpoint 2 is reached. The 3015 will wait for no motion, then turn on I/O 5 for 200 milliseconds (print command).

Receipt of a stop command stops the sequence. Receipt of a start command starts the sequence where it was stopped. Once completed, the sequence is restarted upon receipt of another start command.

The indicator must not be below zero for the sequence to tare.

The sequence may only be reset by interrupting power to the 3015.

SW2 Settings

Other switch combinations are undefined

1	2	3	4	5	6	7	8
C	C	O	C	O	O	O	O

C = CLOSED (ON)

O = OPEN (OFF)

I/O Assignments

Module	Quantity Required
Input	2
Output	2
Dry Contact Output	2

Operators Required

Type	Quantity Required
Normally Open Momentary Pushbuttons	2

I/O Assignments

I/O	Description
1	Fast Feed Output
2	Slow Feed Output
4	Tare Output
5	Print Output
7	Start Input
8	Stop Input

Tare Weigh Print Hold (2 Speed Simultaneous Feed)

Upon receipt of a start command, the 3015 will wait for no motion, then turn on I/O 4 for 200 milliseconds (tare command). Both I/O 1 and I/O 2 will be turned on. I/O 1 will turn off when Setpoint 1 is reached and I/O 2 will turn off when Setpoint 2 is reached. The 3015 will wait for no motion, then turn on I/O 5 for 200 milliseconds (print command).

The indicator must not be below zero for the sequence to tare.

The sequence may only be reset by interrupting power to the 3015.

SW2 Settings

Other switch combinations are undefined

1	2	3	4	5	6	7	8
O	O	C	C	O	O	O	O

C = CLOSED (ON)

O = OPEN (OFF)

I/O Assignments

Module	Quantity Required
Input	2
Output	2
Dry Contact Output	2

Operators Required

Type	Quantity Required
Normally Open Momentary Pushbuttons	2

I/O Assignments

I/O	Description
1	Fast Feed Output
2	Slow Feed Output
4	Tare Output
5	Print Output
7	Start Input
8	Stop Input

Weigh Hold Discharge Hold (Single Speed Feed)

Upon receipt of a start command, I/O 1 will be turned on until Setpoint 1 is reached. Upon receipt of a discharge command, I/O 3 will be turned on until the weight drops below Setpoint 3.

Receipt of a stop command stops the sequence. Receipt of a start command starts the sequence where it was stopped unless the sequence is in the discharge cycle, if so, receipt of a discharge command restarts the sequence. If the sequence is stopped before the feed cycle is completed, then receipt of a discharge command will start the discharge cycle. The sequence is considered completed only after the discharge cycle is finished. The sequence is not started by receipt of another start command until the discharge cycle is completed. Once completed, the sequence is restarted upon receipt of another start command.

SW2 Settings

Other switch combinations are undefined

1	2	3	4	5	6	7	8
C	O	C	C	O	O	*	*

C = CLOSED (ON)

O = OPEN (OFF)

* = CONTINUOUS RUN OPTION

IF 7 = C, BYPASS HOLD AFTER THE FEED CYCLE

IF 8 = C, BYPASS HOLD AFTER DISCHARGE CYCLE

I/O Assignments

Module	Quantity Required
Input	3
Output	2

Operators Required

Type	Quantity Required
Normally Open Momentary Pushbuttons	3

I/O Assignments

I/O	Description
1	Feed Output
3	Discharge Output
6	Discharge Input
7	Start Input
8	Stop Input

Weigh Hold Discharge Hold (2 Speed Alternate Feed)

Upon receipt of a start command, I/O 1 will be turned on and I/O 2 will remain off. I/O 1 will remain on until Setpoint 1 is reached. At this time, I/O 1 will be turned off and I/O 2 will turn on until Setpoint 2 is reached. Upon receipt of a discharge command, I/O 3 will turn on until the weight drops below Setpoint 3.

Receipt of a stop command stops the sequence. Receipt of a start command starts the sequence where it was stopped unless the sequence is in the discharge cycle. If so, receipt of a discharge command restarts the sequence. If the sequence is stopped before the feed cycle is completed, then receipt of a discharge command will start the discharge cycle. The sequence is considered completed only after the discharge cycle is finished. The sequence is not started by receipt of another start command until the discharge cycle is completed. Once completed, the sequence is restarted upon receipt of another start command.

The sequence may only be reset by interrupting power to the 3015.

SW2 Settings

Other switch combinations are undefined

1	2	3	4	5	6	7	8
O	C	C	C	O	O	*	*

C = CLOSED (ON)

O = OPEN (OFF)

* = CONTINUOUS RUN OPTION

IF 7 = C, BYPASS HOLD AFTER THE FEED CYCLE

IF 8 = C, BYPASS HOLD AFTER DISCHARGE CYCLE

I/O Assignments

Module	Quantity Required
Input	3
Output	3

Operators Required

Type	Quantity Required
Normally Open Momentary Pushbuttons	3

I/O Assignments

I/O	Description
1	Fast Feed Output
2	Slow Feed Output
3	Discharge Output
6	Discharge Input
7	Start Input
8	Stop Input

Tare Weigh Hold Discharge Hold (Single Speed Feed)

Upon receipt of a start command, the 3015 will wait for no motion, then turn on I/O 4 for 200 milliseconds (tare command). I/O 1 will be turned on until Setpoint 1 is reached. Upon receipt of a discharge command, I/O 3 will be turned on until the weight drops below Setpoint 3.

Receipt of a stop command stops the sequence. Receipt of a start command starts the sequence where it was stopped unless the sequence is in the discharge cycle. If so, receipt of a discharge command restarts the sequence. If the sequence is stopped before the feed cycle is completed, then receipt of a discharge command will start the discharge cycle. The sequence is considered completed only after the discharge cycle is finished. The sequence is not started by receipt of another start command until the discharge cycle is completed. Once completed, the sequence is restarted upon receipt of another start command.

The indicator must not be below zero for the sequence to tare.

The sequence may only be reset by interrupting power to the 3015.

SW2 Settings

Other switch combinations are undefined

1	2	3	4	5	6	7	8
O	O	O	O	C	O	*	*

C = CLOSED (ON)

O = OPEN (OFF)

* = CONTINUOUS RUN OPTION

IF 7 = C, BYPASS HOLD AFTER THE FEED CYCLE

IF 8 = C, BYPASS HOLD AFTER DISCHARGE CYCLE

I/O Assignments

Module	Quantity Required
Input	3
Output	2
Dry Contact Output	1

Operators Required

Type	Quantity Required
Normally Open Momentary Pushbuttons	3

I/O Assignments

I/O	Description
1	Feed Output
3	Discharge Output
4	Tare Output
6	Discharge Input
7	Start Input
8	Stop Input

Tare Weigh Hold Discharge Hold (2 Speed Alternate Feed)

Upon receipt of a start command, the 3015 will wait for no motion, then turn on I/O 4 for 200 milliseconds (tare command). I/O 1 will be turned on and I/O 2 will remain off. I/O 1 will remain on until Setpoint 1 is reached. At this time, I/O 1 will be turned off and I/O 2 will turn on until Setpoint 2 is reached. Upon receipt of a discharge command, I/O 3 will turn on until the weight drops below Setpoint 3.

Receipt of a stop command stops the sequence. Receipt of a start command starts the sequence where it was stopped unless the sequence is in the discharge cycle. If so, receipt of a discharge command restarts the sequence. If the sequence is stopped before the feed cycle is completed, then receipt of a discharge command will start the discharge cycle. The sequence is considered completed only after the discharge cycle is finished. The sequence is not started by receipt of another start command until the discharge cycle is completed. Once completed, the sequence is restarted upon receipt of another start command.

The indicator must not be below zero for the sequence to tare.

The sequence may only be reset by interrupting power to the 3015.

SW2 Settings

Other switch combinations are undefined

1	2	3	4	5	6	7	8
C	O	O	O	C	O	*	*

C = CLOSED (ON)

O = OPEN (OFF)

* = CONTINUOUS RUN OPTION

IF 7 = C, BYPASS HOLD AFTER THE FEED CYCLE

IF 8 = C, BYPASS HOLD AFTER DISCHARGE CYCLE

I/O Assignments

Module	Quantity Required
Input	3
Output	3
Dry Contact Module	1

Dry Contact Module (1) required for Tare

Operators Required

Type	Quantity Required
Normally Open Momentary Pushbuttons	3

I/O Assignments

I/O	Description
1	Fast Feed Output
2	Slow Feed Output
3	Discharge Output
4	Tare Output
6	Discharge Input
7	Start Input
8	Stop Input

Weigh Print Hold Discharge Hold (Single Speed Feed)

Upon receipt of a start command, I/O 1 will be turned on until Setpoint 1 is reached. The 3015 will wait for no motion, then turn on I/O 5 for 200 milliseconds (print command). Upon receipt of a discharge command, I/O 3 will be turned on until the weight drops below Setpoint 3.

Receipt of a stop command stops the sequence. Receipt of a start command starts the sequence where it was stopped unless the sequence is in the discharge cycle. If so, receipt of a discharge command restarts the sequence. If the sequence is stopped before the feed cycle is complete, then receipt of a discharge command will start the discharge cycle. The sequence is considered complete only after the discharge cycle is finished. The sequence is not started by receipt of another start command until the discharge cycle is complete. Once completed, the sequence is restarted upon receipt of another start command.

The sequence may only be reset by interrupting power to the 3015.

SW2 Settings

Other switch combinations are undefined

1	2	3	4	5	6	7	8
C	C	O	O	O	O	*	*

C = CLOSED (ON)

O = OPEN (OFF)

* = CONTINUOUS RUN OPTION

IF 7 = C, BYPASS HOLD AFTER THE FEED CYCLE

IF 8 = C, BYPASS HOLD AFTER DISCHARGE CYCLE

I/O Assignments

Module	Quantity Required
Input	3
Output	3
Dry Contact Module	1

Dry Contact Module (1) required for Print

Operators Required

Type	Quantity Required
Normally Open Momentary Pushbuttons	3

I/O Assignments

I/O	Description
1	Feed Output
3	Discharge Output
5	Print Output
6	Discharge Input
7	Start Input
8	Stop Input

Weigh Print Hold Discharge Hold (2 Speed Alternate Feed)

Upon receipt of a start command, I/O 1 will be turned on and I/O 2 will remain off. I/O 1 will remain on until Setpoint 1 is reached. At this time, I/O 1 will be turned off and I/O 2 will turn on until Setpoint 2 is reached. The 3015 will wait for no motion, then turn on I/O 5 for 200 milliseconds (print command). Upon receipt of a discharge command, I/O 3 will turn on until the weight drops below Setpoint 3.

Receipt of a stop command stops the sequence. Receipt of a start command starts the sequence where it was stopped unless the sequence is in the discharge cycle. If so, receipt of a discharge command restarts the sequence. If the sequence is stopped before the feed cycle is completed, then receipt of a discharge command will start the discharge cycle. The sequence is considered completed only after the discharge cycle is finished. The sequence is not started by receipt of another start command until the discharge cycle is completed. Once completed, the sequence is restarted upon receipt of another start command.

The sequence may only be reset by interrupting power to the 3015.

SW2 Settings

Other switch combinations are undefined

1	2	3	4	5	6	7	8
O	O	C	O	C	O	*	*

C = CLOSED (ON)

O = OPEN (OFF)

* = CONTINUOUS RUN OPTION

IF 7 = C, BYPASS HOLD AFTER THE FEED CYCLE

IF 8 = C, BYPASS HOLD AFTER DISCHARGE CYCLE

I/O Assignments

Module	Quantity Required
Input	3
Output	3
Dry Contact Module	1

Dry Contact Module (1) required for Print

Operators Required

Type	Quantity Required
Normally Open Momentary Pushbuttons	3

I/O Assignments

I/O	Description
1	Fast Feed Output
2	Slow Feed Output
3	Discharge Output
5	Print Output
6	Discharge Input
7	Start Input
8	Stop Input

Tare Weigh Print Hold Discharge Hold (single Speed Feed)

Upon receipt of a start command, the 3015 will wait for no motion, then turn on I/O 4 for 200 milliseconds (tare command). I/O 1 will be turned on until Setpoint 1 is reached. The 3015 will wait for no motion, then turn on I/O 5 for 200 milliseconds (print command). Upon receipt of a discharge command, I/O 3 will be turned on until the weight drops below Setpoint 3.

Receipt of a stop command stops the sequence. Receipt of a start command starts the sequence where it was stopped unless the sequence is in the discharge cycle. If so, receipt of a discharge command restarts the sequence. If the sequence is stopped before the feed cycle is completed, then receipt of a discharge command will start the discharge cycle. The sequence is considered completed only after the discharge cycle is finished. The sequence is not started by receipt of another start command until the discharge cycle is completed. Once completed, the sequence is restarted upon receipt of another start command.

The indicator must not be below zero for the sequence to tare.

The sequence may only be reset by interrupting power to the 3015.

SW2 Settings

Other switch combinations are undefined

1	2	3	4	5	6	7	8
O	C	C	O	C	O	*	*

C = CLOSED (ON)

O = OPEN (OFF)

* = CONTINUOUS RUN OPTION

IF 7 = C, BYPASS HOLD AFTER THE FEED CYCLE

IF 8 = C, BYPASS HOLD AFTER DISCHARGE CYCLE

I/O Assignments

Module	Quantity Required
Input	3
Output	2
Dry Contact Module	2

Dry Contact Module (2) required for Print and Tare

Operators Required

Type	Quantity Required
Normally Open Momentary Pushbuttons	3

I/O Assignments

I/O	Description
1	Feed Output
3	Discharge Output
4	Tare Output
5	Print Output
6	Discharge Input
7	Start Input
8	Stop Input

Tare Weigh Print Hold Discharge Hold (2 Speed Alternate Feed)

Upon receipt of a start command, the 3015 will wait for no motion, then turn on I/O 4 for 200 milliseconds (tare command). I/O 1 will be turned on and I/O 2 will remain off. I/O 1 will remain on until Setpoint 1 is reached. At this time, I/O 1 will be turned off and I/O 2 will turn on until Setpoint 2 is reached. At this time, I/O 1 will be turned off and I/O 2 will turn on until Setpoint 2 is reached. The 3015 will wait for no motion, then turn on I/O 5 for 200 milliseconds (print command). Upon receipt of a discharge command, I/O 3 will turn on until the weight drops below Setpoint 3.

Receipt of a stop command stops the sequence. Receipt of a start command starts the sequence where it was stopped unless the sequence is in the discharge cycle. If so, receipt of a discharge command restarts the sequence. If the sequence is stopped before the feed cycle is completed, then receipt of a discharge command will start the discharge cycle. The sequence is considered completed only after the discharge cycle is finished. The sequence is not started by receipt of another start command until the discharge cycle is completed. Once completed, the sequence is restarted upon receipt of another start command.

The indicator must not be below zero for the sequence to tare.

The sequence may only be reset b interrupting power to the 3015.

SW2 Settings

Other switch combinations are undefined

1	2	3	4	5	6	7	8
C	C	C	O	C	O	*	*

C = CLOSED (ON)

O = OPEN (OFF)

* = CONTINUOUS RUN OPTION

IF 7 = C, BYPASS HOLD AFTER THE FEED CYCLE

IF 8 = C, BYPASS HOLD AFTER DISCHARGE CYCLE

I/O Assignments

Module	Quantity Required
Input	3
Output	3
Dry Contact Module	2

Dry Contact Module (2) required for Print and Tare

Operators Required

Type	Quantity Required
Normally Open Momentary Pushbuttons	3

I/O Assignments

I/O	Description
1	Fast Feed Output
2	Slow Feed Output
3	Discharge Output
4	Tare Output
5	Print Output
6	Discharge Input
7	Start Input
8	Stop Input

Weigh Hold tare Discharge Print Hold (Single Speed Discharge or Weigh-Out)

Upon receipt of a start command, I/O 1 will be turned on until Setpoint 1 is reached. Upon receipt of a discharge command, the 3015 will wait for no motion, then turn on I/O 4 for 200 milliseconds (tare command). I/O 3 will then be turned on until the weight reaches Setpoint 3. The 3015 will wait for no motion, then turn on I/O 5 for 200 milliseconds (print command).

Receipt of a stop command stops the sequence. Receipt of a start command starts the sequence where it was stopped unless the sequence was in the discharge cycle. If so, receipt of a discharge command starts the sequence where it was stopped. If the sequence is stopped before the feed cycle is completed, then receipt of a discharge command will start the discharge cycle and vice versa.

The sequence may only be reset by interrupting power to the 3015.

SW2 Settings

Other switch combinations are undefined

1	2	3	4	5	6	7	8
O	O	O	C	C	O	*	*

C = CLOSED (ON)

O = OPEN (OFF)

* = CONTINUOUS RUN OPTION

IF 7 = C, BYPASS HOLD AFTER THE FEED CYCLE

IF 8 = C, BYPASS HOLD AFTER DISCHARGE CYCLE

I/O Assignments

Module	Quantity Required
Input	3
Output	2
Dry Contact Module	2

Dry Contact Module (2) required for Print and Tare

Operators Required

Type	Quantity Required
Normally Open Momentary Pushbuttons	3

I/O Assignments

I/O	Description
1	Fast Feed Output
3	Discharge Output
4	Tare Output
5	Print Output
6	Discharge Input
7	Start Input
8	Stop Input

Weigh Hold Tare Discharge Print Hold (2 Speed Alternate Discharge or Weigh-Out)

Upon receipt of a start command, I/O 1 will be turned on until Setpoint 1 is reached. Upon receipt of a discharge command, the 3015 will wait for no motion, then turn on I/O 4 for 200 milliseconds (tare command). I/O 2 will then be turned on until the weight reaches Setpoint 2. I/O 2 will then be turned off and I/O 3 will be turned on until the weight reaches Setpoint 3. The 3015 will then wait for no motion, then turn on I/O 5 for 200 milliseconds (print command).

Receipt of a stop command stops the sequence. Receipt of a start command starts the sequence where it was stopped unless the sequence was in the discharge cycle. If so, receipt of a discharge command starts the sequence where it was stopped. If the sequence is stopped before the feed cycle is completed, then receipt of a discharge command will start the discharge cycle and vice versa.

The sequence may only be reset by interrupting power to the 3015.

SW2 Settings

Other switch combinations are undefined

1	2	3	4	5	6	7	8
C	O	O	C	C	O	*	*

C = CLOSED (ON)

O = OPEN (OFF)

* = CONTINUOUS RUN OPTION

IF 7 = C, BYPASS HOLD AFTER THE FEED CYCLE

IF 8 = C, BYPASS HOLD AFTER DISCHARGE CYCLE

I/O Assignments

Module	Quantity Required
Input	3
Output	3
Dry Contact Module	2

Dry Contact Module (2) required for Print and Tare

Operators Required

Type	Quantity Required
Normally Open Momentary Pushbuttons	3

I/O Assignments

I/O	Description
1	Fast Feed Output
2	Fast Discharge Output
3	Slow Discharge Output
4	Tare Output
5	Print Output
6	Discharge Input
7	Start Input
8	Stop Input

Considerations for interfacing an M5000 to a 3015 Setpoint Controller

The M5000 is the standard indicator of the Masstron family of scales. The MD3015 was designed to work with the M5000. When the MD3015 was redesigned to include interfacing to the Toledo family of indicators, the original features were left intact. In other words, the 3015 interfacing to an M5000 is identical to that of an MD3015.

The M5000 continuous data output is fixed at 4800 baud, therefore, JU2 on the 3015 board must be set to the 4800 position. The M5000 continuous output data is 20 mA active only, therefore JU1 on the 3015 must be set to 20 mA. The M5000 does not have an ASCII receive capability (except for the host port) therefore TARE and PRINT operations are accomplished via dry contact modules wired to remote TARE and remote PRINT in the M5000 J1 connector.

The data output of the M5000 is J4, J5, and J6. If J5 or J6 is used to output to the 3015 the internal jumper between pin 2 and pin 3 of the J5 or J6 connector must be removed. J4 has a shunting resistor across pin 2 and pin 3, therefore, if J4 is used, no change to the connector need be made, do not remove the resistor.

Maximum distance between the M5000 and 3015 is limited to 15' if print and/or tare are used. This is because print and tare are TTL signals. Shielded cable should always be used for the tare and print remote wiring. If neither tare nor print are used, the maximum distance is determined by limitations of the 20 mA current loop, typically 1000'.

If tare and/or print are used, the M5000 must be setup to enable these features, as well as being setup to enable setpoints.

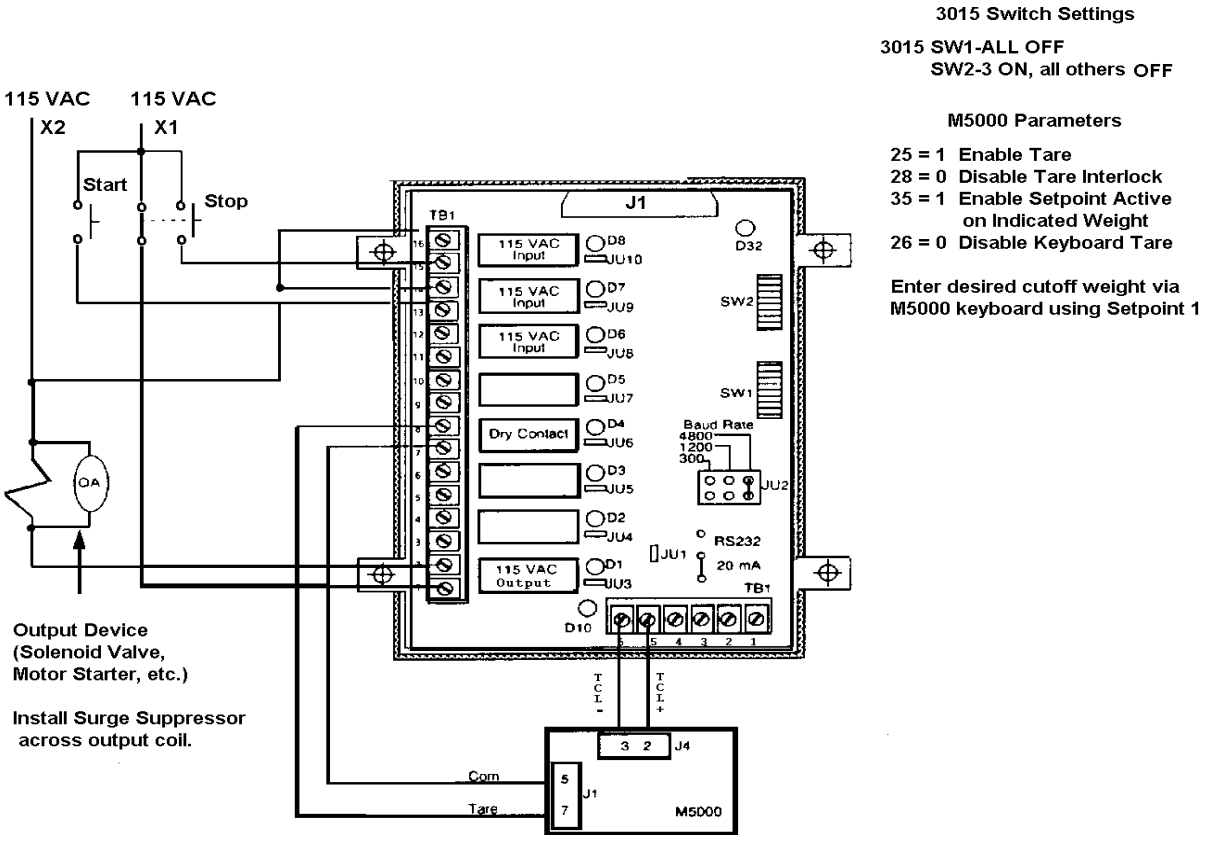


Figure 6. 1 M5000 to 3015 Configuration for Tare-Weigh-Hold Single Speed

6 Troubleshooting

Sequence of Checks

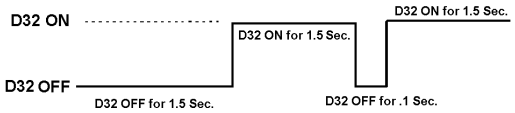
! CAUTION

DURING THIS TEST, THE OUTPUTS WILL BE TURNED ON AND OFF. MAKE SURE POWER TO THE CONTROL I/O IS TURNED OFF OR DISCONNECTED BEFORE PERFORMING THIS TEST.

- Check the AC power supply to the unit for proper voltage and make sure that you have a good ground. Also check the line fuse.
- Check the 5 VDC supply for proper output voltage at TB1. TB1-1 is 5 VDC and TB1-2 is ground. The output voltage should be 5 VDC ± .1 VDC.
- Remove power to the 3015. Remove the top cover from the Setpoint controller PC board. Select the self test mode by setting the dip switch SW2 all positions ON (or closed). *Make note of SW2 switch settings before changing SW2 switch settings to the test mode. Apply power to the 3015. The outputs will be turned on sequentially starting with I/O 1. Each output will remain turned on for 1/2 second. The status LED corresponding to the output being turned on will only light if an output module is installed at that location. If the status LED does not light, replace the output module and repeat the test. If the LED still fails to light, the controller board should be replaced. If the status LED lights, but the output fails to turn on, check the fuse located on the PC board next to the I/O module. If the fuse is OK, replace the output module.
- **NOTE(S):** If jumpers JU3 - JU10 are installed the associated LED will not light.
- Remove power to the 3015. Return SW2 to its proper setting. Now check the input modules for proper operation. Input modules can be tested by applying power to them and observing the status LED for that module. If the LED does not light, check the fuse for that module. If the fuse is OK, replace the input module, then repeat the test. If the test still fails, the controller board should be replaced.

- Observe the LED marked D32. The controller will try continuously to receive data until it receives valid data in either the MASSTRON format or the TOLEDO continuous format with checksum.
- D32 on 3015 Setpoint controller is the error LED. If D32 is flashing it means that the microprocessor is running and has detected an error. Close observation of D32 can aid in problem diagnosing.
- Upon powerup D32 will come on then go out after successful auto recognition of the data format (Masstron or Toledo). If the 3015 is not able to Auto recognize the data format within 2 seconds it will start flashing D32 at a specific rate:

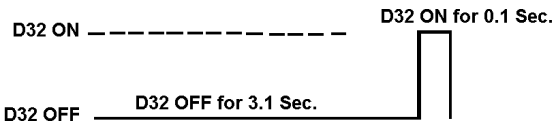
AUTO RECOGNITION ERROR



If you receive an auto recognition error, check baud rate JU2 jumper and RS232/20 mA jumper JU1. Check external wiring to the indicator and make sure that the indicator is setup to transmit continuous Setpoint data and that it is transmitting

If the 3015 successfully auto recognizes the data format and then the data is lost or becomes unreadable for more than 2 seconds the 3015 will consider this a time-out error. The 3015 will flash D32 at a specific rate:

TIME-OUT ERROR

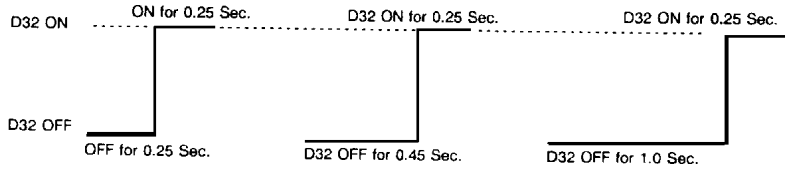


Then the pattern repeats.

If you receive a time-out error, check for loose connections in the data wiring. The data may be bad coming from the instrument or the baud rate may have been changed since powerup.

If the 3015 detects an error message from the indicator, it will announce this error by flashing D32. This flash rate is baud rate dependent, see samples below:

DATA ERROR



Check if the indicator is blank, over capacity or (if in Masstron format) the indicator is sending an error code.

All times are approximate.

- If 20 mA current loop interface is being used, LED D10 should be lit and will flicker when data is received. If the LED is lit but does not flicker, then the indicator is not transmitting data or there is an interface wiring problem. If RS232 interface is used, the LED will not be lit.

7 Spare Parts

Spare Parts

Part Number	Description	Model #
90139400A	Setpoint PC Board	
90249900A	Power Supply	
KN761983020	115 VAC Input Module	0962-0025
KN764494020	230 VAC Input Module	0962-0027
KN764493020	115/230 VAC Output Module	0962-0028
90073500A	Dry Contact Module	0962-0024
KN761985020	24 VDC Input Module	0962-0030
KN761984020	24 VDC Output Module	0962-0031
KT665015AAS	5 Amp Pico Fuse	
11887400A	Quench Arc	0962-0034
90232100A	Fiber Optics KOP	

TTL Output Module MA01471 has been replaced by the Dry Contact Module Part # 90073500A.

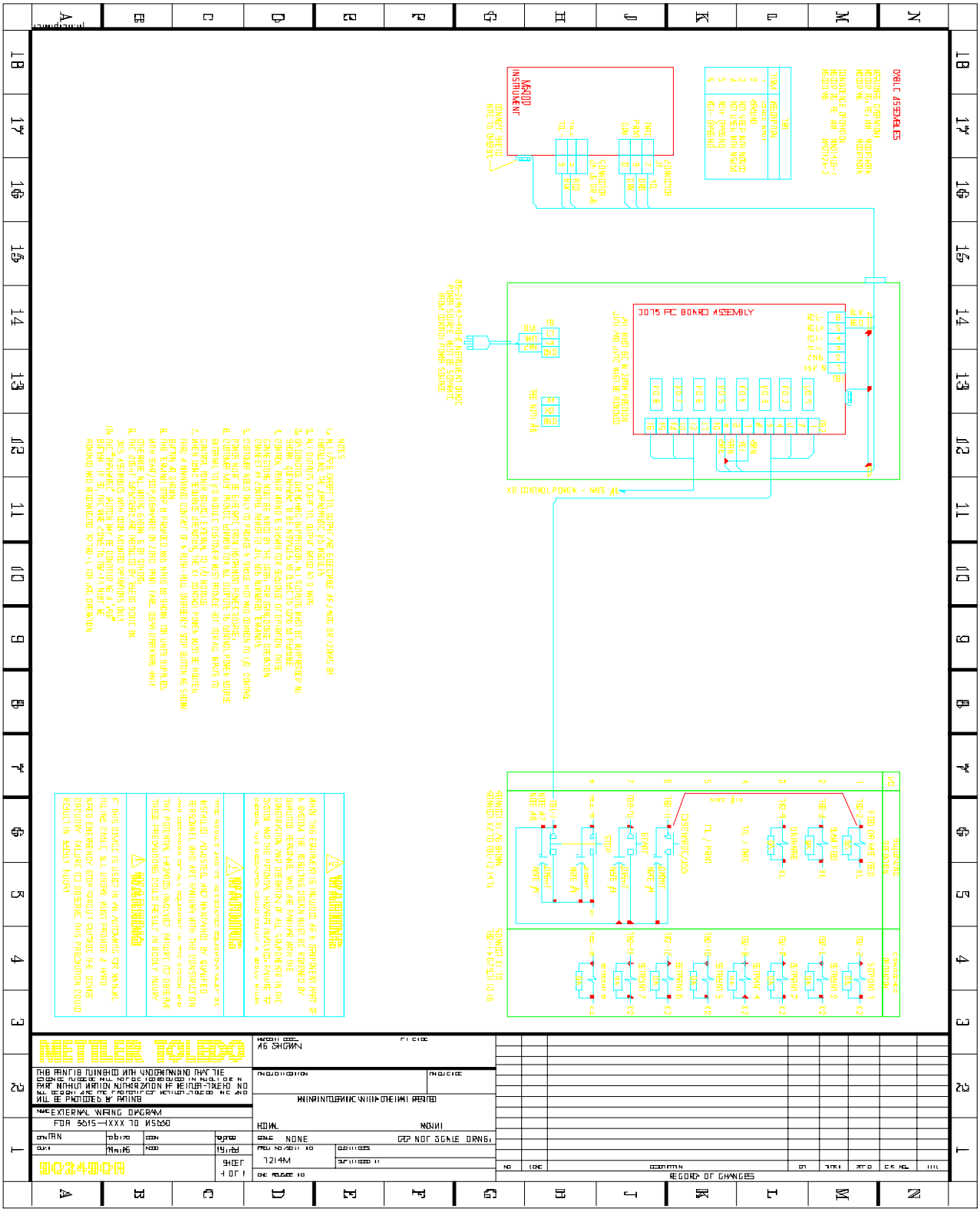
Cables - Instrument to 3015, All Versions	Spare Part #	Cable Model #
Fiber Optics Module	902275 00A	0960 0012 000
8142 Desk/Rack to 3015, 6 ft. (4 - 20mA)	900615 00A	0960 0013 000
8142 Wall to 3015, 15 ft. (4 - 20mA)	900616 00A	0960 0014 000
M5000 DG/PE/WM to 3015, 15 ft.	900613 00A	0960 0015 000
M5000 WS to 3015, 15 ft.	900614 00A	0960 0016 000
8510 Panel to 3015, 15 ft.	900617 00A	0960 0017 000
8510 Desk to 3015, 6 ft.	900620 00A	0960 0018 000
8582 Desk to 3015, 6 ft.	900620 00A	0960 0019 000
8582 Wall to 3015, 6 ft.	900621 00A	0960 0020 000
8530 Wall to 3015, 15 ft. (4 - 20mA)	600619 00A	0960 0021 000
8530/8142 Desk/Wall to 3015, 6 ft (RS232)	902493 00A	
8530/8142 Wall to 3015, 15 ft (RS232)	902492 00A	
8530 Desk/Rack to 3015, 6 ft (4 - 20mA)	900618 00A	

8 Drawings

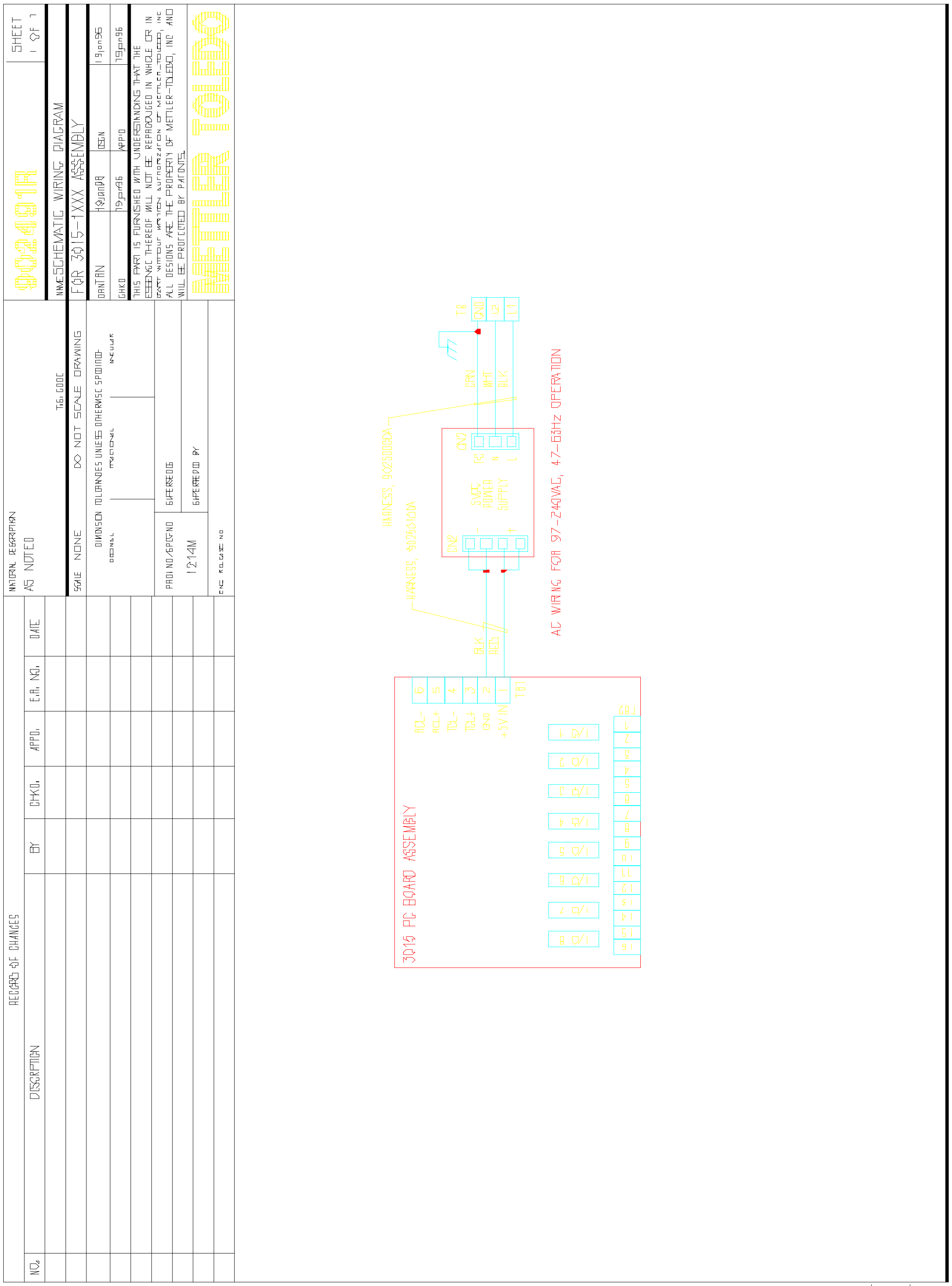
Drawing Numbers

Here is a list of the Drawing included in this manual.

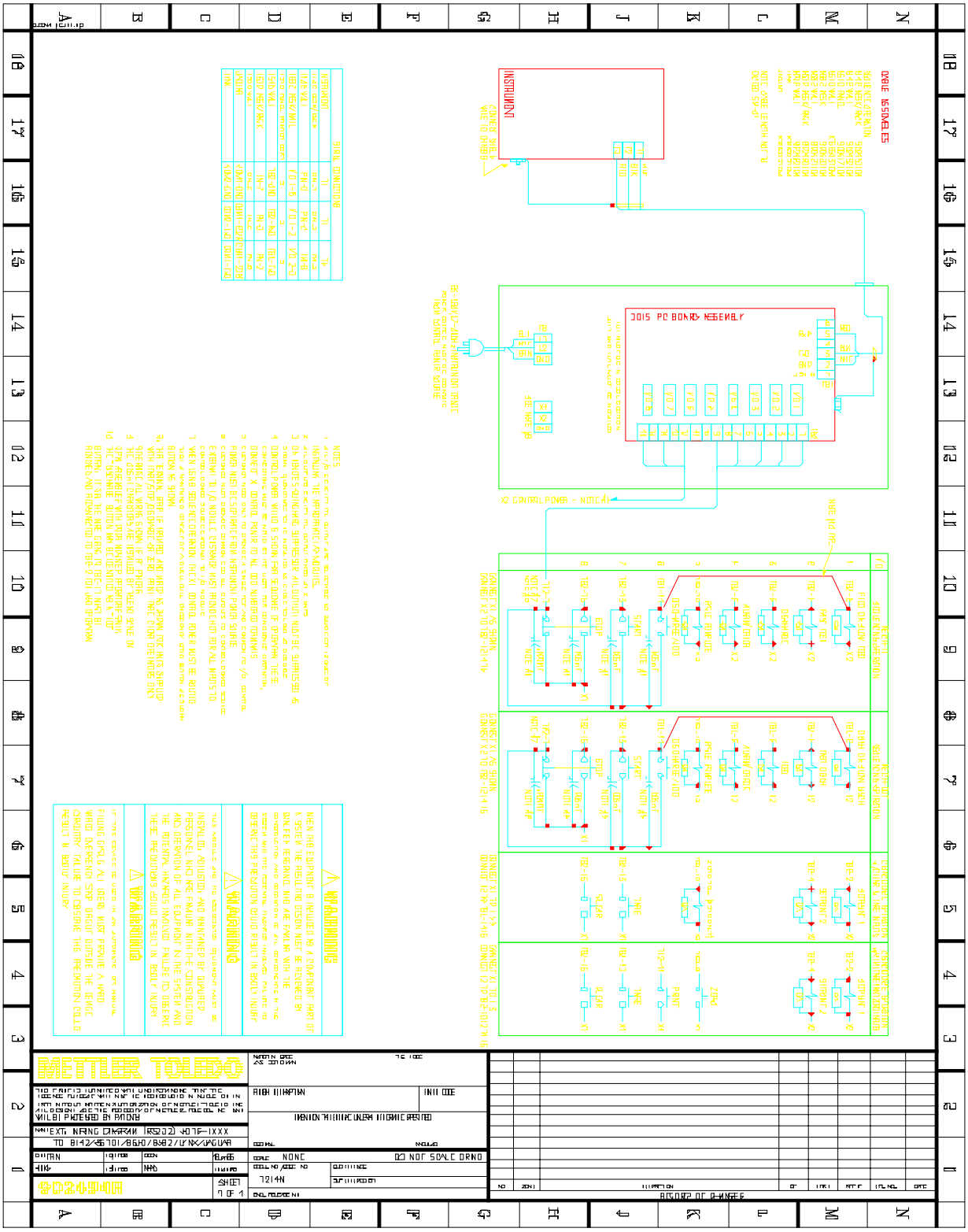
XXXXXX



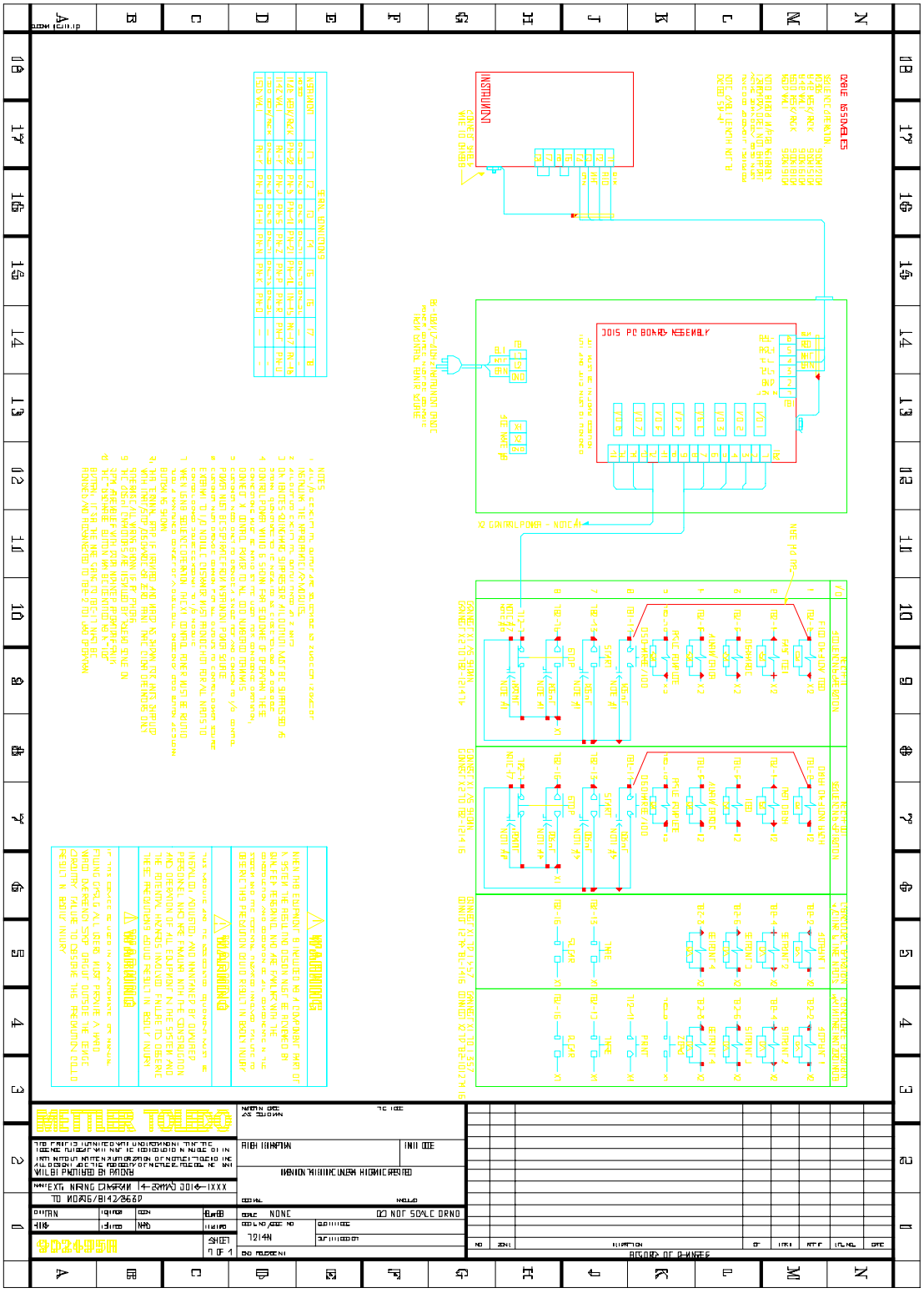
XXXXX


SCHEMATIC WIRING DIAGRAM
FOR 3015-1XXX ASSEMBLY
3015 PC BOARD ASSEMBLY
AC WIRING FOR 97-240VAC, 47-63Hz OPERATION

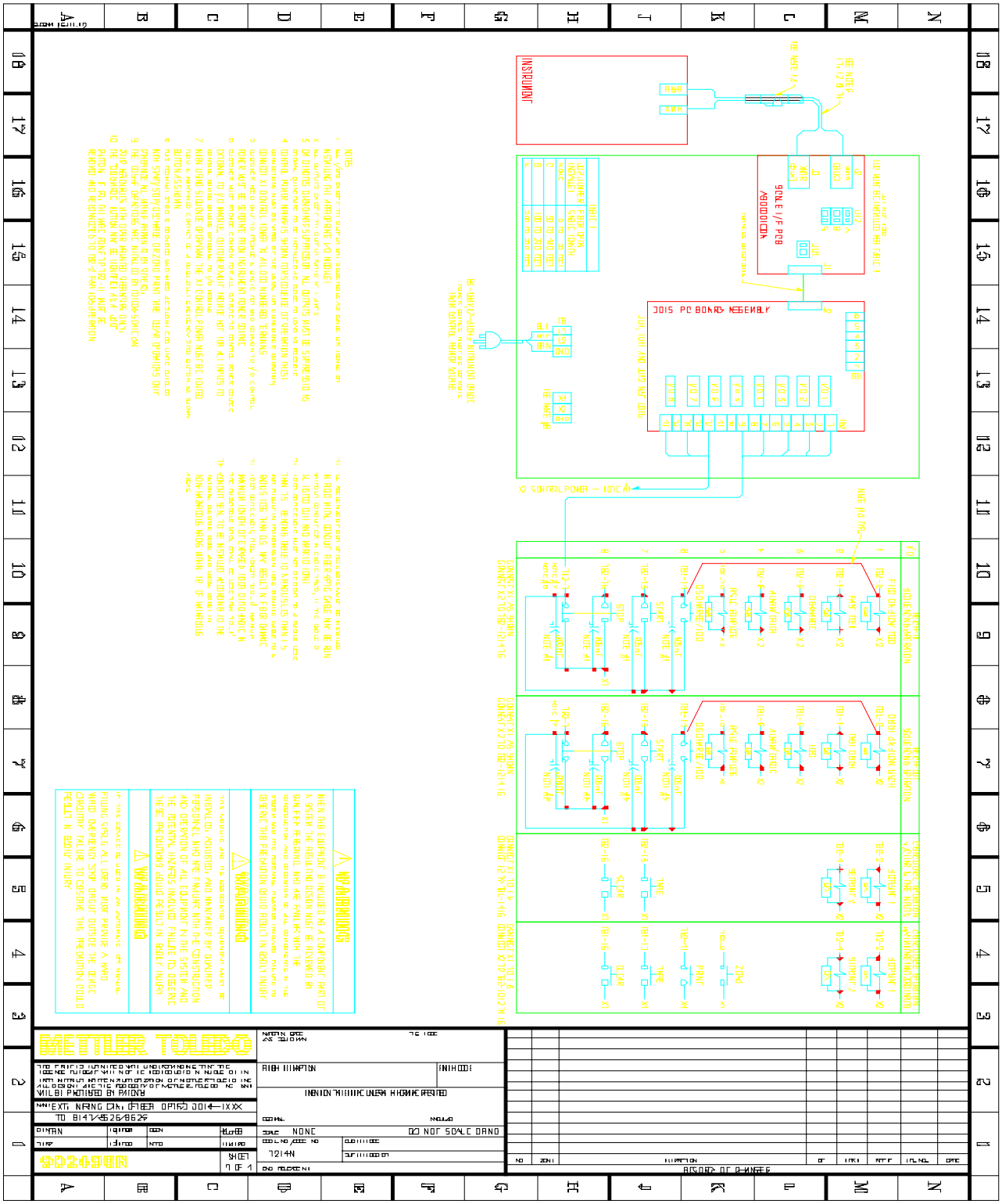
XXXXX



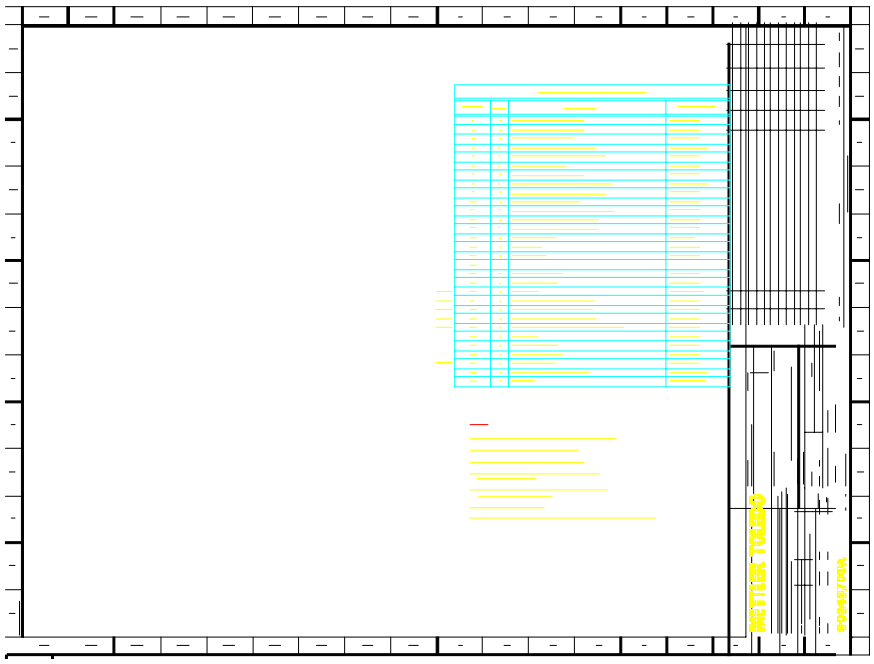
XXXXXXXX



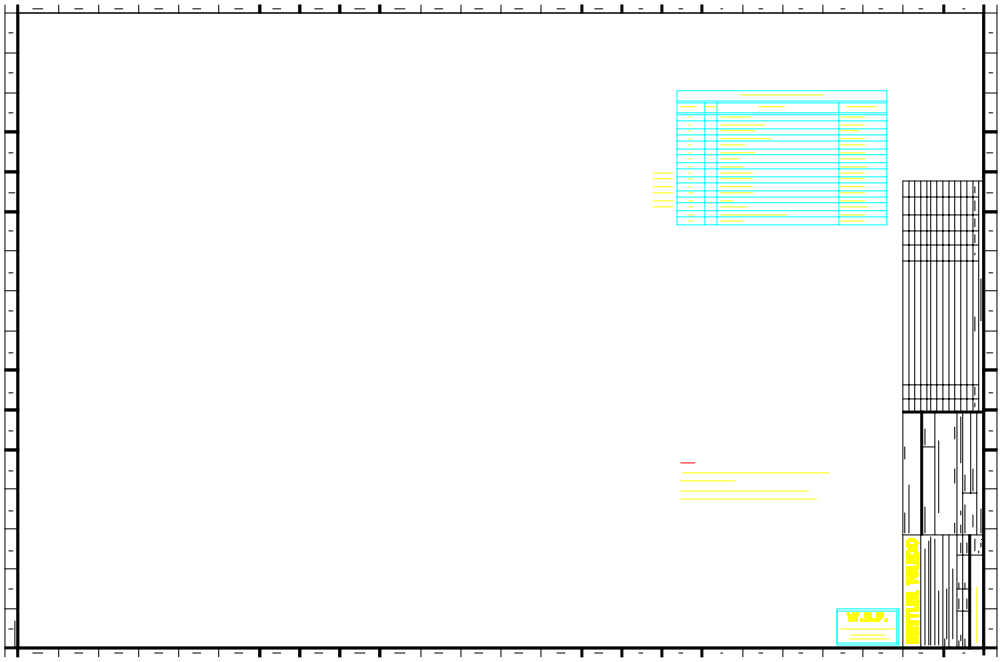
XXXX



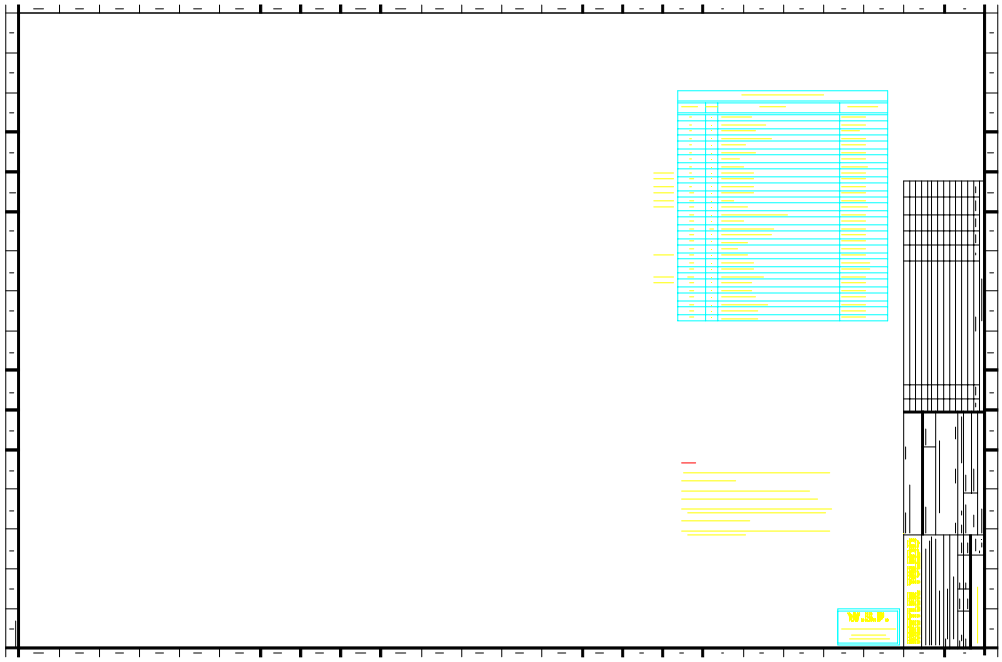
XXXX



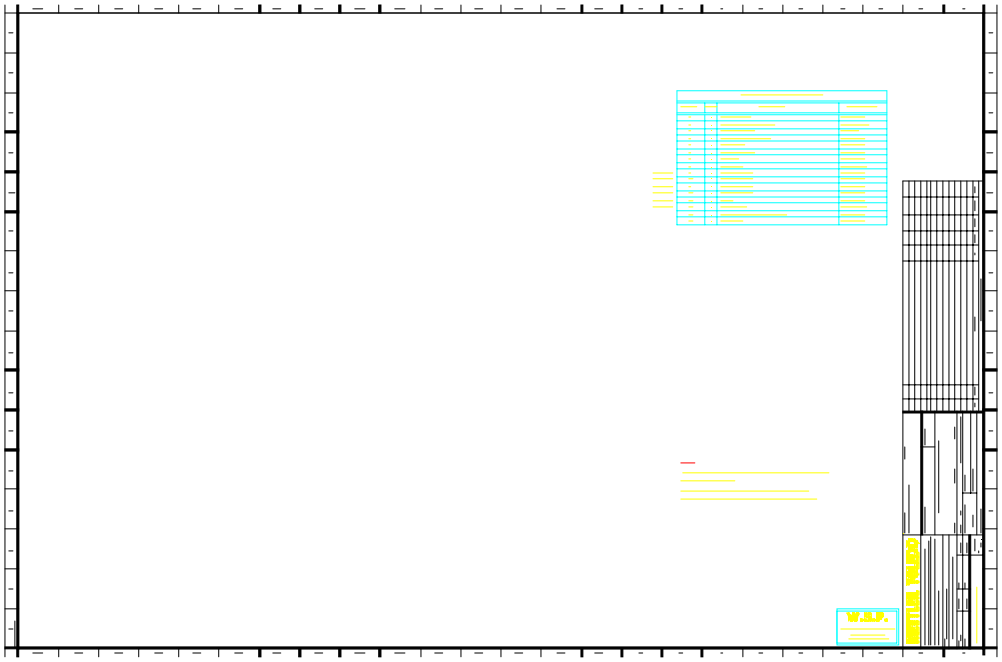
XXXX



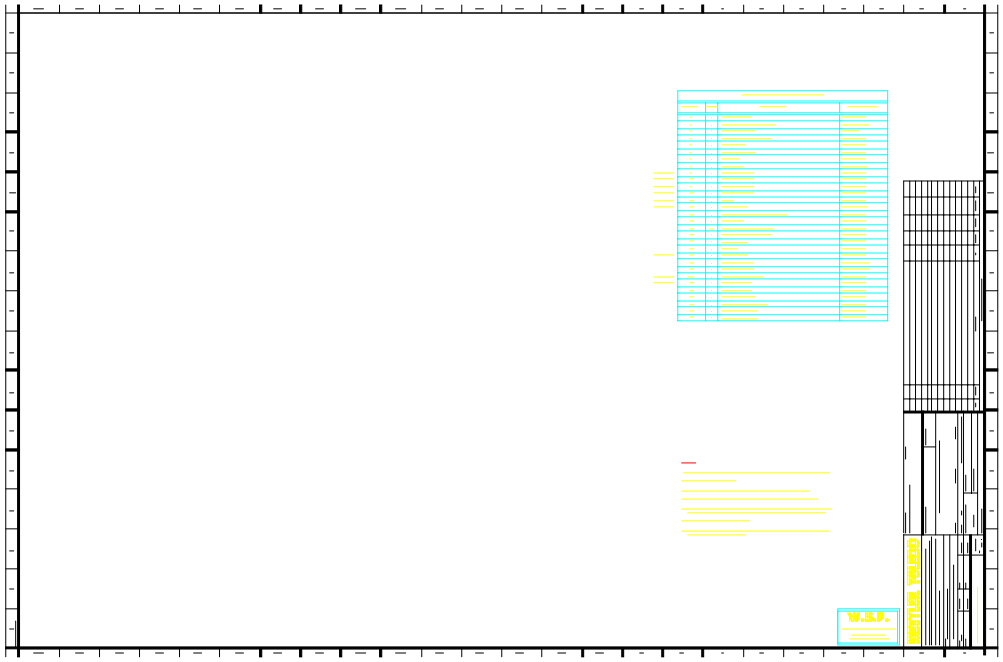
XXXXXXX



XXXXXX



XXXXXX



METTLER TOLEDO
Scales & Service
350 West Wilson Bridge Road
Worthington, Ohio 43085-2273

P/N:

1/96

PLACE BAR CODE HERE