

FS & DS SCALE SYSTEM



OPERATOR'S MANUAL

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TABLE OF CONTENTS

1.	THE PURPOSE AND GOAL OF MANUAL	3
2.	FUNCTION SUMMARY.....	3
3.	QUICK START GUIDE.....	4
4.	PLANT REQUIREMENTS.....	6
5.	SCALE CAPACITY.....	6
6.	INSTALLATION.....	6
7.	SAFETY	7
8.	OPERATOR INTERFACE.....	9
9.	STARTING THE SCALE.....	10
10.	MAINTENANCE SCHEDULE.....	20
11.	LEVEL INDICATOR SWITCH SETUP AND ADJUSTMENT.....	21
12.	MAINTENANCE LOGIN.....	22
13.	PARTS LIST.....	31
14.	TROUBLESHOOTING.....	34
15.	GLOSSARY OF TERMS.....	40
16.	APPENDIX.....	41

THE PURPOSE AND GOAL OF MANUAL

The purpose of this manual is to provide information so an operator can educate themselves on the Kice scale operation and to serve as a reference for troubleshooting potential problems.

A general overview is given in the function summary section and explains the Kice scale system's capabilities. A quick start section lists the steps necessary to begin using the scale. Operating instructions are located in the starting the scale section and describes how to navigate through the screens to make changes to settings. The scheduled maintenance section provides a guideline for routine maintenance to avoid unscheduled downtime, and a parts list is included to allow easy communication with Kice salesmen when ordering. Incorporated into the parts list are photos of each part to eliminate unnecessary confusion. The troubleshooting section includes possible problems and solutions so challenges can be quickly resolved. A glossary with brief definitions is also given to ensure that nomenclature does not become a source of uncertainty. Exploded views, electrical schematics, and pneumatic diagrams are also included for clarification.

FUNCTION SUMMARY

The Kice scale system is designed to be a continuous flow scale that can be used to monitor or meter flow rates in a process. Knowing that most plants are in operation 24 hours a day, 7 days a week, the scales are designed to require minimal maintenance to reduce downtime.

The heart of the scale is an Allen-Bradley CompactLogix controller which is a highly functional industrial processor that resides in an UL approved control enclosure located on the scale for ease of access.

The scales all operate on the same interface to accommodate correct sizing for the application without creating a need for operator training on each scale. When one scale interface is understood, it becomes easy to operate any model.

The product contact area within the scale is free of nuts and bolts to reduce the possibility of tramp metal entering the product stream.

The Kice scale system is available in two configurations; feeder and dump scales. Feeder scales meter product at a given flow rate while dump scales measure a flow rate. And yield management is optional programming that gathers information from several scales to calculate yields of each process flow.

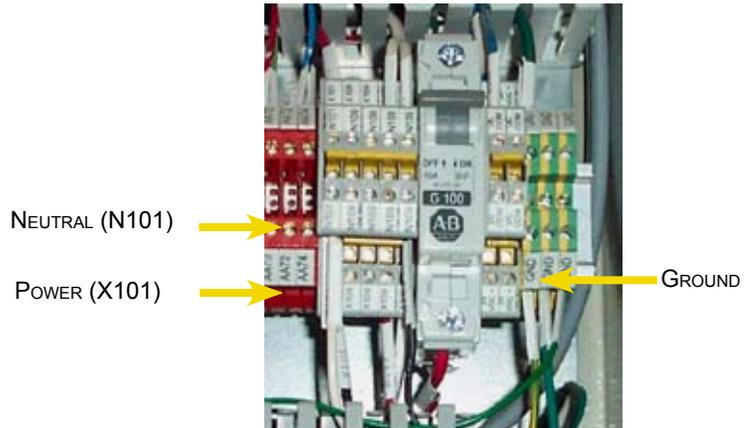
QUICK START GUIDE

No BATCHING AND LOCAL MODE

1. Please verify the following:

- The scale is firmly in place.
- The scale has been grounded to earth ground.
- Spouting connections have been made.
- Remove load cell shipping brackets, orange color.
- Tighten large load cell bolts (2 in the center of each load cell) that may have been loosened to protect the load cell during shipping.

2. Supply 115Vac, 60Hz, 10 Amp to scale control panel.



3. Connect plant air to the scale air filter inlet, 80 psi minimum.

4. Power up the control panel breaker – The PanelView display will go through a warm up sequence and display the main menu.

5. Since batching is not being used, leave batch size set to 0 which is the default value.

6. Putting scale to local mode.

- From the main menu press the right facing arrow twice to display the basic setup menu.
- Press F1 to select local mode.
- Press F2 to scroll to desired unit of measure.
- Clear the accumulated total by pressing F3.

7. Maintenance Login

- From the basic setup menu press and hold F4 for five seconds to display login screen
- Using the numeric entry method (right/left arrows select digit, up/down arrows scroll through numbers) type in 5321 and press enter
- Press the up facing arrow to access the screen list
- Scroll to the scale setup menu and press enter

i. Calibrate the scale by pressing the up arrow. This takes a couple of seconds and will display when the calibration is complete.

ii. Dump size

- Press F1 to enter the numeric entry screen.
- Press enter when desired size has been entered.

iii. Logout

- Press and hold the left facing arrow to return to the screen list.
- Scroll to login menu and press enter.
- Press F4 to logout.

8. From the main menu press F4 to clear any scale alarms.

9. From the main menu press F1 to toggle to scale running.

10. The Kice Scale is now ready for operation.



Air Filter Inlet

BATCH AND LOCAL MODE

1. Please verify the following:

- a. The scale is firmly in place.
- b. The scale has been grounded to earth ground.
- c. Spouting connections have been made.
- d. Remove load cell shipping brackets, orange color.
- e. Tighten large load cell bolts (2 in the center of each load cell) that may have been loosened to protect the load cell during shipping.

2. Supply 115Vac, 60Hz, 10 Amp to scale control panel. As shown on page 4.

3. Connect plant air to the scale air filter inlet, 80 psi minimum. As shown on page 4.

4. Power up the control panel breaker – The PanelView display will go through a warm up sequence and display the main menu.

5. Batch Setup

- a. From the main menu press the right facing once to display the batch setup menu.
- b. Set batch size to desired weight

- i. Press F1
- ii. Use numeric entry method (right/left arrows select digit, up/down arrows scroll through numbers) to enter a setpoint; when desired weight is shown, press enter.

c. Set batch warning, which will alarm when this amount remains to complete the batch. Example: if the batch target is 20,000 pounds and batch warning setpoint is 1,000 pounds, then the alarm will sound when 19,000 pounds has passed through the scale.

- i. Press F2
- ii. Use numeric entry method to enter a setpoint; when desired weight is shown, press enter.

d. Clear the batch accumulator by pressing F3.

6. Putting scale to local mode.

- a. From the main menu press the right facing arrow twice to display the basic setup menu.
- b. Press F1 to select local mode.
- c. Press F2 to scroll to desired unit of measure.
- d. Clear the accumulated total by pressing F3.

7. Maintenance Login

- a. From the basic setup menu press and hold F4 for five seconds to display login screen
- b. Using the numeric entry method type in 5321 and press enter
- c. Press the up facing arrow to access the screen list
- d. Scroll to the scale setup menu and press enter

i. Calibrate the scale by pressing the up arrow. This takes a couple of seconds and will display when the calibration is complete.

ii. Dump size

- (1) Press F1 to enter the numeric entry screen.
- (2) Press enter when desired size has been entered.

iii. Logout

- (1) Press and hold the left facing arrow to return to the screen list.
- (2) Scroll to login menu and press enter.
- (3) Press F4 to logout.

8. From the main menu press F4 to clear any scale alarms.

9. From the main menu press F1 to toggle to scale running.

10. The Kice Scale is now ready for operation.

PLANT REQUIREMENTS

The Kice scale system requires the following things to operate to its full potential:

115 VAC, 60 Hz, 10 Amp – This is used to supply power to the PLC, the solenoids, and the PanelView display. An inline surge suppressor or power conditioner is recommended.

80 psi clean, dry, plant air minimum – The dump valves are air actuated and performance can suffer as a result of low plant air pressure. Conversely the pressure should be regulated to no more than 100 psi.

Connectivity – The Kice scale can be operated as a stand alone unit or can be connected to a plant computer or PLC to be controlled remotely. Connecting to a plant computer or PLC can be accomplished with either an Ethernet connection or hardwired digital inputs and outputs. Each scale includes an Ethernet port and IO Terminals.

SCALE CAPACITY

Kice offers several different sizes of scales to accommodate most applications and flow rates. The capacities of the Kice lineup are listed below.

18-350

Volumetric flow rate: 350 cubic feet per hour
Weigh chamber volume: 2.04 cubic feet
Weight per cycle: max – 122 pounds
Density: max – 60 pounds/cubic foot

18-500

Volumetric flow rate: 500 cubic feet per hour
Weigh chamber volume: 2.82 cubic feet
Weight per cycle: max – 169 pounds
Density: max – 60 pounds/cubic foot

18-1000

Volumetric flow rate: 1000 cubic feet per hour
Weigh chamber volume: 5.64 cubic feet
Weight per cycle: max – 338 pounds
Density: max – 60 pounds/cubic foot

24-1500

Volumetric flow rate: 1500 cubic feet per hour
Weigh chamber volume: 8.62 cubic feet
Weight per cycle: max – 517 pounds
Density: max – 60 pounds/cubic foot

24-2000

Volumetric flow rate: 2000 cubic feet per hour
Weigh chamber volume: 11.54 cubic feet
Weight per cycle: max – 692 pounds
Density: max – 60 pounds/cubic foot

INSTALLATION

1. Lifting the scale into position should be done using the provided lifting loops at the top of the scale.
2. The surface that the scale will be installed on should be level and rigid – preferably on concrete.
3. The scale should be secured to the floor using the precut holes in the pads at the bottom of each leg.
4. The scale must be grounded to earth ground.

SAFETY

Kice recommends following OSHA and state safety laws to provide a safe working environment for operators, electricians, and maintenance personnel. Understanding electrical principles is important, when in doubt about a procedure ask your supervisor. Failure to follow proper safety guidelines can result in injury or death.

LOCK OUT / TAG OUT

Electrical power must be isolated when inspecting, servicing, or repairing the Kice scale system. To ensure the safety of personnel while repairs are being made, the equipment must be locked out and tagged out.

- Personnel should consult OSHA Standard 29CFR1910.147 for industry standards on lockout / tagout.

There are two main potential hazards intrinsic to the scale. These are pinching by the dump valves, which are actuated by air, and electric shock. To lock these out see the list below.

LOCKOUT LIST:

- Air – A ball valve installed on the air filter inlet filter provides an isolation point for each scale, this valve may be used to isolate individual scales should the need arise.
- Electrical – The electrical power may be isolated using a breaker switch inside the control panel. Note: This breaker will only cut the power to equipment installed on the scale.



HAZARD LEVELS

The following definitions for identifying hazard levels are:



Danger (red) – Danger is used to indicate the presence of a hazard which WILL cause SEVERE personal injury, death, or substantial property damage if the warning is ignored.



Warning (orange) – Warning is used to indicate the presence of a hazard which CAN cause SEVERE personal injury, death, or substantial property damage if the warning is ignored.



Caution (yellow) – Caution is used to indicate the presence of a hazard which WILL or CAN cause MINOR personal injury or property damage if the warning is ignored.



Danger (yellow) – Disconnect main power before opening or servicing. It WILL cause SEVERE personal injury, death, or substantial property damage if the warning is ignored.

Safety decals on the scale should not be removed, covered, painted, or otherwise become illegible. If this occurs, the decals should be replaced immediately. Contact our customer service department for replacements.

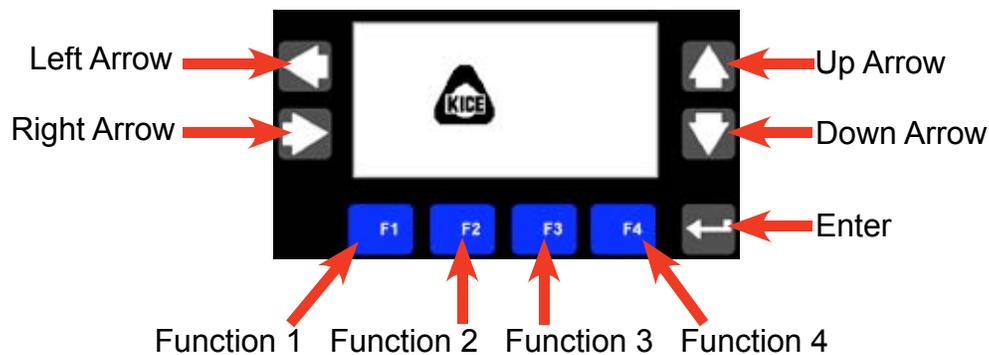
SAFETY CONTINUED

1. Do not attempt to install, connect power, operate or service your new scale without proper instruction and thorough training in its use by your employer.
2. Do not attempt to work on, clean, service, open or remove any protective cover, guard, gate, or maintenance panel until the POWER and AIR has been turned off and LOCKED OUT.
3. Do not manually override or electronically bypass any protective device.
4. Do not connect power or operate the scale unless all covers, guards, grates, and maintenance panels are in place and securely fastened.
5. Never place any part of your body under or near rotating members or moving parts of the scale.
6. Many scales are wired to start automatically or from remote locations. Keep clear of all moving parts on industrial equipment at all times.
7. The air supply line to the filter must be equipped with a properly functioning padlockable valve.
8. It is the owner and employer's responsibility to adequately train the employee – operator in the proper and safe use of the scale. Written safety programs and formal instructions are essential. All new employees must be made aware of company policies and operating rules, especially established safety and health procedures. Refresher training of experienced employees in the potential hazards of the job is important. Up to date training records must be maintained at the job site for OSHA compliance.
9. Special attention must be devoted to outside contractors engaged to enter and perform work on the Kice Scale System or in the work place. Special care must be exercised to insure all such personnel are fully informed of the potential hazards and follow plant rules – with special emphasis on explosion proof electrical tools and cutting or welding in unsafe environments.
10. Keep the work place free of dirt and dust at all times. Do not attempt to work on slippery or unsafe ladders or work platforms when maintenance or repair work is being performed on the scales.
11. Do not climb on ladders or work on platforms unless maximum load rating is posted. Do not exceed maximum load ratings when installing or servicing scales.
12. Operate safely at all times. Use personal protective equipment when and where appropriate such as hard hats, helmets, gloves, ear plugs, and eye protection devices. Keep personal protective equipment in good repair and convenient to the operator.
13. Never stand under any kind of hoist or lifting mechanism, whether or not it is in operation. Never stand under or near a scale when it is being lifted.
14. All scale lifting devices must be inspected by qualified personnel before each use. Never use lifting device to transport equipment. Never use a lifting device that is damaged, deteriorated, or in any way in need of repair.
15. All protective covers, guards, grates, maintenance panels, switches, and warning decals must be kept in place and in good repair. Any equipment with damaged, malfunctioning, defective, or missing protective devices must be taken out of service until protective devices can be repaired or replaced.
16. Any equipment which is used in the processing of explosive materials in hazardous environments requires an evaluation on the part of the user and operator of equipment monitoring devices, dust control, explosion proof venting, and electrical enclosures. Do not use your equipment in hazardous environments unless it has been properly equipped for the hazard.
17. It is ultimately the operator's responsibility to implement the above listed precautions and insure proper use of the equipment, maintenance, and lubrication. Keep these instructions and list of warnings with your machine at all times.

OPERATOR INTERFACE

The operator interface used on the Kice scale system is an Allen Bradley PanelView 300 Micro. The most prominent feature is the liquid crystal display that accommodates the graphics as well as the text to control and monitor the scale system.

The programming is designed to make use of the PanelView's buttons intuitive. The left facing arrow scrolls back a screen and moves the selector cursor to the left in numeric entry mode. The right facing arrow advances screens and moves the selector cursor to the right in numeric entry mode. The up and down arrows allow scrolling through submenus and selecting a numeral in numeric entry mode. The function buttons perform various tasks depending on the current menu. A given menu will display options along with the function key needed to access those options. In the lower right-hand corner of the PanelView is an enter button with a symbol common to most computer keyboards on the button itself. Pressing the enter button will save the changes made to the setup options.



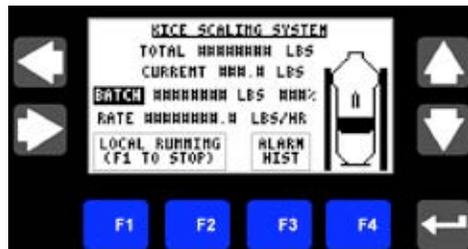
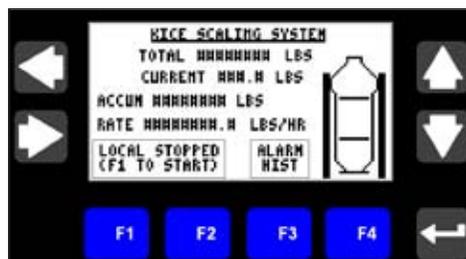
STARTING THE SCALE

There are three primary menus to choose from; main menu, batch menu, and basic setup menu. Menus can be selected by pressing the right arrow.

The default screen is the main menu. If the display shows the Kice logo moving about the screen, the screen saver has been activated. To return to the main menu press any button on the PanelView and the main menu will reappear.



MAIN MENU



The main menu provides the most often needed information at a glance. This includes total weight, the current weight in the weigh chamber, an accumulated total, the flow rate through the scale, mode of operation, scale status, levels in each compartment, and access to the alarm history.

The total is the weight that has flowed through the scale since commissioning. Think of this as an odometer on a car that rolls over at 99,999,999 pounds.

The accumulated weight is the total that has flowed through the scale since the last time it was reset (middle screen above). This value is not displayed when batch mode is active but does continue to update. Think of this as a trip meter on a car.

The batch accumulated weight is displayed if the batch mode is active (lower screen above). This value is the accumulated weight while running a batch and is incremented after every dump cycle. The batch accumulated total is zeroed at the start of a new batch or by pressing F3 on the batch setup menu.

The units for all values, accumulations, or rates can be selected from the batch setup menu.

Current weight displays the instantaneous weight in the weigh chamber.

The flow rate shows how fast product is passing through the scale in units/hour.

STARTING THE SCALE CONTINUED

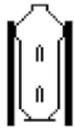
The mode of operation is shown in the lower left hand corner in a box. In the same box is displayed the scale status. To toggle between running and stopped in local mode, press the F1 button.

On the right side of the display is shown a representation of a scale. This picture is animated to indicate the position of the dump valves and product. If the gates are horizontal in the picture the gates are closed and if the gates are vertical the gates are open and dumping product into the next chamber.

The level is also animated in the weigh chamber and discharge hopper. The weigh chamber shows the level increase or decrease and the discharge hopper is highlighted when the level is at the high level indicator in the discharge hopper.

The alarm history can be shown by pressing F3. This will show the date, time, and condition for the 25 most recent alarms. Should an alarm occur, it can be reset by pressing F4 on the main menu screen. Press the left arrow to return to the main menu from the alarm history.

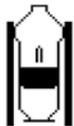
Displays



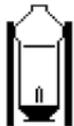
This graphic shows both the inlet and discharge gates open.



This graphic shows both the inlet and discharge gates closed.



This graphic shows the inlet gate open, discharge gate closed and product in the weigh chamber.



This graphic shows the inlet gate closed, the discharge gate open, and lower hopper at high level.

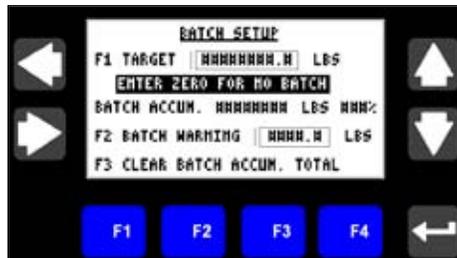


This graphic shows that a scale alarm is present.

Scale Status: The current status of the scale is indicated in a text box directly above the F1 and F2 buttons. Below is a list of the possible status messages and their meanings.

SCALE BYPASSED	Selected mode is Bypass, Inlet and Discharge gates are opened.
REMOTE STOPPED	Selected mode is Remote, Remote Run command is "OFF", Inlet and Discharge gates are closed.
REMOTE RUNNING	Selected mode is remote, remote run command is "ON", and scale is cycling.
LOCAL STOPPED (F1 TO START)	Selected mode is local mode, inlet and discharge gates are closed, press F1 to start cycling the scale.
LOCAL RUNNING (F1 TO STOP)	Selected mode is local mode and scale is cycling, press F1 to stop the scale.
BATCH IS DONE (F2 RESTART)	Batch is finished, inlet and discharge gates are closed, press F2 to restart.
BYPASSED CALIB. FAILED	Calibration has failed; scale is forced into bypass mode until a successful calibration is achieved. Inlet and discharge gates are opened.
BATCH IS DONE (REMOTE RUN)	Batch is finished, selected mode is remote, remote run command is "ON", and scale is cycling.
BATCH IS DONE (F1 TO STOP)	Batch is finished, selected mode is local and scale is cycling, press F1 to stop cycling the scale.

BATCH SETUP MENU



The batch setup is designed to allow a known amount of product pass through the scale to the next process. The scale can be configured to either alarm or stop at the completion of the batch. If the batch function is not desired, set the batch target to 0 using the steps below.

The options shown on the batch setup menu are target weight, batch accumulated total, batch warning, and clear batch accumulated total.

Target weight – is the amount of product that is desired. To change the target weight from the batch menu:

1. Press F1 to select the batch target numeric entry
2. Choose the digit to be changed by pressing the left or right arrows
3. Once the digit that should be changed is selected, use the up and down arrows to choose the correct value
4. To change another digit just press either the right or left arrow and repeat steps 2 and 3 until the desired weight is displayed
5. When the number shown is correct press the enter button to save the change or press ESC (F1) to abort the entry.

Note: if the batch target was originally entered as 5000 lbs. then display units were changed to cwts, the batch target will recalculate and be displayed as 50 cwts.

STARTING THE SCALE CONTINUED

The batch accumulated total displays the weight that has passed through the scale since the batch accumulated total was last reset. To the right of the accumulated weight is the percentage of the target that has been added. When the batch warning level has been reached, the batch % will blink as an indicator that the batch is near completion.

The batch warning function is the amount of weight remaining in the current batch to trigger an alarm for notification. For example if the batch target is 20,000 pounds and the batch warning is set for 1,000 pounds, a notification alarm will be triggered when 19,000 pounds have passed through the scale. To set the batch warning:

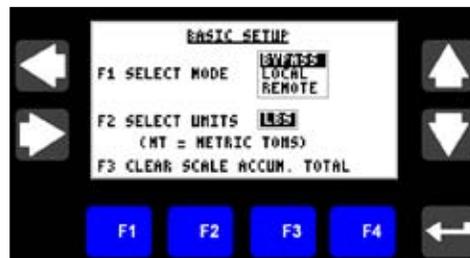
1. Press F2 to select the batch warning numeric entry
2. Choose the digit to be changed by pressing the left or right arrows
3. Once the digit that should be changed is selected, use the up and down arrows to choose the correct value
4. To change another digit press either the right or left arrow and repeat steps 2 and 3 until the desired weight is displayed
5. When the number shown is correct press the enter button to save the change or press ESC (F1) to abort the entry



To clear batch accumulated total:

Press F3 the display line on the bottom of the screen will be highlighted briefly, indicating that it has been reset. When a new batch is started the batch accumulated total will be cleared automatically.

BASIC SETUP MENU



The basic setup menu displays some of the less frequently changed settings. This includes mode of operation, display units, and clearing the scale accumulated total.

There are three modes of operation offered on the scale: **remote**, **local**, and **bypass**.

- **Remote mode** – allows control from a process computer.
- **Local mode** – the scale is controlled from the scale panel and can be displayed on a process computer.
- **Bypass mode** – opens both the inlet and discharge valves, this allows product to flow directly through the scale without being weighed

To change scale setup:

1. Press F1 to scroll through the modes
2. When the desired mode is highlighted, leave the cursor in place for 4 seconds to select.
3. Units can be changed from pounds (lbs), hundredweight (cwt), metric tons (mt), bushels (bu), or kilograms (kg). To choose units press F2 to scroll to the desired units.

To clear scale accumulated total:

Press F3, the display line on the bottom of the screen will be highlighted briefly indicating that it has been reset. When a new batch is started the batch accumulated total will be cleared automatically.

Feeder Scale

The Kice Scale System is available in a feeder scale configuration. When a scale is used in this manner an additional text box is added to the Basic Setup Menu page in which the flow rate can be set. The flow rate can either be changed on the PanelView itself or from the process computer remotely.

SCALE ALARMS

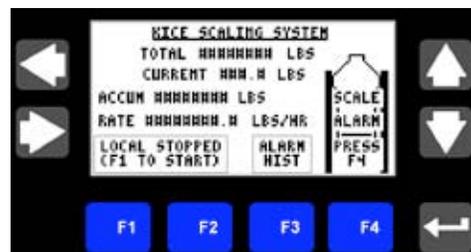
When an alarm occurs, the operator interface will display the alarm message and will trigger the alarm output according to the nature of the alarm. The alarm banner will only appear in the event of an alarm.



The different alarms that can be triggered are listed below.

Alarm #	Alarm Description	Nature of Alarm	Action Taken by Processor
1.	SLOW FILL OR INLET GATE NOT RESPONDING	Critical	Alarm Output is OFF
2.	DISCHARGE GATE NOT RESPONDING	Critical	Alarm Output is OFF
3.	DISCHARGE HOPPER HIGH LEVEL	Non Critical	Blinking Alarm Output
4.	DISCHARGE GATE LEAKAGE DETECTED	Critical	Alarm Output is OFF
5.	UPPER HOPPER LEVEL SENSOR HAS BEEN DISABLED	Non Critical	Blinking Alarm Output
6.	LOWER HOPPER LEVEL SENSOR HAS BEEN DISABLED	Non Critical	Blinking Alarm Output

Alarm Reset: The Scale Alarm graphic is displayed when an alarm is active or unacknowledged. Press F4 to clear Alarms.



Alarm History: Press F3 to display the Alarm History menu. Press the Left Arrow to return to the Main menu.



DIGITAL I/O INTERFACE

The Kice Scaling System has several pre configured digital inputs and outputs that can be used to remotely control and monitor the scale. Please ensure that the Kice Scaling System has been wired according to the Kice Automation electrical schematic. Below is a listing of the available inputs and outputs and their status indications.

Scale Digital Outputs: The following is a list of available digital outputs that can be used to monitor the status of the Kice Scaling System. These status outputs are updated regardless of the mode (bypass, local or remote) that is selected.

Scale Digital Outputs		
I/O Terminal #	Description	Status Indication
DCAA24	BATCH STATUS OUTPUT	“ON” = Batch is Done “Blinking” = Batch Warning
DCAA28	SCALE RUNNING OUTPUT	“ON” = Scale is Running
DCAA32	SCALE ALARM OUTPUT	“ON” = No Alarms “Blinking” = Non-Critical Alarm “OFF” = Critical Alarm

Note: “Blinking” output rate is 0.5 Hz (1.0 sec “ON”, 1.0 sec “OFF”, 1.0 “ON”, ... repeating)

Scale Digital Inputs: The following is a list of available digital inputs that can be used to control the Kice Scaling System.

Scale Digital Inputs		
I/O Terminal #	Description	Command Indication
DCAA48	REMOTE START/STOP INPUT	“ON” = Scale Run Command
DCAA50	REMOTE BATCH RESTART INPUT	“ON” = Restart Batch Command

Remote Start/Stop Input: This input is used to remotely start/stop the scale. The scale must be in “remote” mode to use this command. The input must be held “ON” for the scale to run. Please ensure that all necessary downstream equipment is running prior to issuing a run command.

Remote Batch Restart Input: This input is used to remotely restart a batch once the batch has completed. The batch status output can be monitored to determine when the batch is done. When the controller receives the batch restart input, the batch accumulation value will be zeroed and another batch will begin when a run command is received. Please ensure that this input is not held “ON” continuously.

ETHERNET STATUS AND COMMAND WORDS

The Kice Scaling System has been pre configured with a series of status and command addresses that can be used to remotely control and monitor the Scaling System. These addresses can be messaged from another PLC or HMI via an Ethernet network. These addresses were chosen to be compatible with (SLC, PLC5, CLX and CPLX processors). Below is a listing of the available status and command addresses and their indications.

Ethernet Status/ Command Addresses			
Addresses	# of Words	Data Type	Description
F13:0 – F13:29	30	Floating Point	Scale Status Words
N14:0 – N14:2	2	Integer	Scale Status Words
F11:0 - F11:9	10	Floating Point	Scale Command Words
N12:0 – N12:1	2	Integer	Scale Command Words

SCALE STATUS WORDS – FLOATING POINTS	
Address	Description
F13:0	Scale Non-Erasable Total, lbs (value will roll over at 99,999,999 lbs)
F13:1	Scale Accumulation, lbs (clear value with bit N12:0/5, will roll over at 99,999,999 lbs)
F13:2	Batch Accumulation, lbs (clear value with bit N12:0/4, will roll over at 99,999,999 lbs)
F13:3	Scale Actual, lbs
F13:4	Scale Flow rate, lbs/hr
F13:5	Batch Setpoint, lbs
F13:6	< reserved >
F13:7	< reserved >
F13:8	< reserved >
F13:9	< reserved >
F13:10	< reserved >
F13:11	< reserved >

STARTING THE SCALE CONTINUED

SCALE STATUS WORDS – FLOATING POINTS	
Address	Description
F13:12	< reserved >
F13:13	< reserved >
F13:14	Gross Weight, lbs
F13:15	Tare Weight, lbs
F13:16	Net Weight, lbs
F13:17	< reserved >
F13:18	< reserved >
F13:19	< reserved >
F13:20	< reserved >
F13:20	< reserved >
F13:21	< reserved >
F13:22	< reserved >
F13:23	< reserved >
F13:24	< reserved >
F13:25	< reserved >
F13:26	< reserved >
F13:27	< reserved >
F13:28	< reserved >
F13:29	< reserved >

SCALE STATUS WORDS – INTEGERS / BITS	
Address	Description
N14:0	Display Units, 0=lbs, 1=cwt, 2=tons (metric), 3=bu, 4=kg (use with F11:0)
N14:1/0	Slow Fill Alarm
N14:1/1	Discharge Hopper Gate not Responding Alarm
N14:1/2	Discharge Hopper High Level Alarm
N14:1/3	Discharge Gate Leakage Detected Alarm
N14:1/4	Upper Hopper Level Sensor is Disabled Notification Alarm
N14:1/5	Lower Hopper Level Sensor is Disabled Notification Alarm
N14:1/6	< reserved >
N14:1/7	< reserved >
N14:1/8	< reserved >
N14:1/9	< reserved >
N14:1/10	< reserved >
N14:1/11	< reserved >
N14:1/12	< reserved >

STARTING THE SCALE CONTINUED

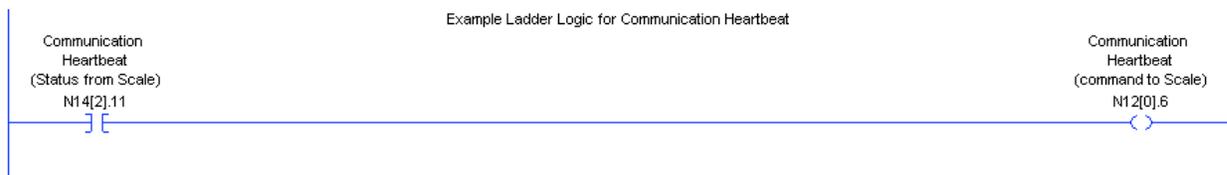
SCALE STATUS WORDS – INTEGERS / BITS	
Address	Description
N14:1/13	< reserved >
N14:1/14	< reserved >
N14:1/15	< reserved >
N14:2/0	Scale is Bypassed
N14:2/1	Scale in Local Mode
N14:2/2	Scale in Remote Mode
N14:2/3	Scale is Running
N14:2/4	Batch Warning
N14:2/5	Batch is Done
N14:2/6	Scale Alarm (clear Alarms with bit N7:0/3)
N14:2/7	Upper Level Sensor is Covered
N14:2/8	Lower Level Sensor is Covered
N14:2/9	Inlet Gate Close Solenoid Valve is Energized
N14:2/10	Discharge Gate Closed Solenoid Valve is Energized
N14:2/11	Communication Heartbeat (when this bit is received, respond with bit N12:0/6)
N14:2/12	< reserved >
N14:2/13	< reserved >
N14:2/14	< reserved >
N14:2/15	< reserved >

SCALE COMMAND WORDS – FLOATING POINTS	
Address	Description
F11:0	Batch Target Setpoint, in current displayed units (see address N14:0)
F11:1	Clock Year Setpoint (bit N12:0/7 must be “High” to update setpoint)
F11:2	Clock Month Setpoint (bit N12:0/7 must be “High” to update setpoint)
F11:3	Clock Day Setpoint (bit N12:0/7 must be “High” to update setpoint)
F11:4	Clock Hour Setpoint (bit N12:0/7 must be “High” to update setpoint)
F11:5	Clock Minute Setpoint (bit N12:0/7 must be “High” to update setpoint)
F11:6	< reserved >
F11:7	< reserved >
F11:8	< reserved >
F11:9	< reserved >

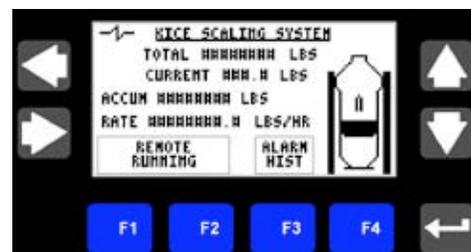
STARTING THE SCALE CONTINUED

SCALE COMMAND WORDS – INTEGER (BITS)	
Address	Description
N12:0/0	Batch Target Setpoint Notify (this bit must be “High” to update F11:0)
N12:0/1	Scale Run Command (scale must be in Remote mode)
N12:0/2	Batch Restart (Batch must be done, see N14:2/5)
N12:0/3	Clear Alarms
N12:0/4	Clear Batch Accum Total (see address F13:2)
N12:0/5	Clear Scale Accum Total (see address F13:1)
N12:0/6	Communication Heartbeat (this bit must be “High” , when N14:2/11 is received)
N12:0/7	Clock Setpoint Notify (this bit must be “High” to update clock settings F11:1 – F11:5)
N12:0/8	< reserved >
N12:0/9	< reserved >
N12:0/10	< reserved >
N12:0/11	< reserved >
N12:0/12	< reserved >
N12:0/13	< reserved >
N12:0/14	< reserved >
N12:0/15	< reserved >
N12:1	< reserved >

Communication Heartbeat: The communication heartbeat status bit N14:2/11 and heartbeat command bit N12:0/6 are used to validate successful communication between the plant PLC and scale controller over an Ethernet network. This heartbeat must be in place at all times. If the scale controller does not receive the heartbeat for a period of time, the command words are not accepted. Below is an example of how the communication heartbeat bits N14:2/11 and N12:0/6 should be programmed in the plant PLC’s ladder logic.



Communication Status Indicator: A “Heartbeat” status indicator, located in the upper left corner of the main menu, will blink on/off; indicating that communication between the plant PLC and scale controller has been established. If communication has not been established, the “Heartbeat” status indicator will not be visible.



MAINTENANCE SCHEDULE

The Kice scale system is designed to require minimal maintenance. Below is a list of maintenance at given intervals:

Daily

Walk-around inspection – check for anything out of the ordinary. Possible air or product leaks, excessive vibration, uncommon noise, etcetera.

Weekly

Check PanelView display and watch the scale cycle a couple of times – watch for anything out of the ordinary.

Monthly

Observe a couple of cycles – inspect the actuators for any abnormal movement.

Annually

1. Check load cell gap – should have .100” (2.5mm) clearance
2. Inspect electric wires and cables for wear
3. Inspect air lines for wear or creases
4. Inspect and clean the air loop by removing the branch fitting from the inlet hopper and the coupling from the lower deck
5. Change air filter cartridge

Biannually

1. Replace isolation sleeves.
2. Inspect dump valves for wear while the isolation sleeves are off. With all necessary equipment and air locked out and tagged out, look for grooves worn, hairline cracks, and excess movement in flaps.
3. Inspect valve blocks and seals for wear at the same time the valves are checked.

LEVEL INDICATOR SWITCH SETUP AND ADJUSTMENT

Level indicator switches used on the Kice scale are efector switches. The following instructions are used to set up and adjust the level indicator switches according to the manufacturer's recommendations. The switches should not require adjustment unless it is replaced and initial setup is needed.

The efector switch is sent from the factory in the normally open configuration, but the scale discharge hopper level indicator uses a normally closed operation. **To change from normally open to normally closed** follow the steps below:

1. Loosen the screw on the efector switch with a screwdriver.
2. Separate the black rear of the switch from the orange front of the switch.
3. To convert the switch from normally open to normally open to normally closed, cut the wire loop.
4. Reattach the black rear of the switch to the orange front of the switch and tighten the screw. Use caution while tightening the screw, the threaded portion is constructed of molded plastic and will break if the screw is over-tightened.

The efector switch has the capability of being mounted either straight or with a 90° bend. It comes from the factory in the straight configuration. **To change to the 90° bend**, follow the steps below:

1. Loosen the screw on the efector switch with a screwdriver.
2. Separate the black rear of the switch from the orange front of the switch.
3. Reattach the black rear of the switch to the orange front of the switch perpendicular to one another.
4. Tighten the screw with the screwdriver.

All capacitance switches have a potentiometer which allows switch sensitivity to be adjusted for the best results. **To establish the proper sensitivity for a particular set of conditions**, follow these procedures:

1. Mount the switch in the application. Set up the worst case condition which can cause a false "OFF" signal. As an example assume the switch is being used to sense the level of a liquid through a sight glass. The worst case condition exists when moisture is present on the inside surface of the glass. Turn the potentiometer clockwise (CW) until the LED is OFF, then turn the potentiometer counterclockwise (CCW) until it just turns on.
2. Bring the target into position. In the example, bring the water above the level of the switch. The LED should be OFF. Turn the potentiometer CCW and count the number of turns until the LED turns ON.
3. Turn the potentiometer CW for ½ the number of turns counted in step 2. For example, if it took 4 turns to have the LED go ON, now turn the potentiometer 2 turns CW. The switch will now be set.



MAINTENANCE LOGIN

Before You Begin

This section will help you access the advanced settings for the Kice Scaling System. We base this procedure on the assumption that you have an understanding of the basic settings covered in the previous sections.

Because it is a guide for experienced users, this section does not contain detailed explanations about the procedures. Kice Industries recommends reading all the instructions and manuals before attempting to run any equipment.

Electrical Interconnection

Please ensure that the Kice Scaling System has been wired according to the Kice Automation electrical schematic.

This Section Covers:

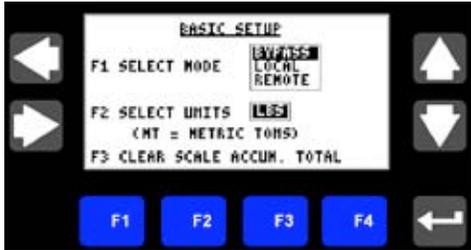
1. Password login screen.....	21
2. Screen select menu.....	22
3. Upper level setup menu.....	22
4. Lower level setup menu.....	22
5. End of batch setup menu.....	23
6. Scale setup/calibration menu.....	23
7. Alarm setup menu.....	25
8. Input check menu.....	26
9. Gate output check menu.....	26
10. Date setup menu.....	27
11. Time setup menu.....	28
12. Logging out.....	28

MAINTENANCE LOGIN CONTINUED

1. PASSWORD LOGIN SCREEN

To access the advance settings of the Kice Scaling System, you must login.

Note: After a period of inactivity, you will be automatically logged out.

<ul style="list-style-type: none">From the main menu, press the right arrow button twice, to display the basic setup menu.At the basic setup menu, press and hold F4 for 5 seconds. The login menu will be displayed.	
<ul style="list-style-type: none">Press F1 (Login).	
<ul style="list-style-type: none">Enter the Password: 5321<ol style="list-style-type: none">Press the left/right arrow to select a numerical digit to be changed.Press the up/down arrow to change numerical values.Repeat steps 1 and 2 as necessary.Press enter to accept the password or press esc to abort entry.	
<ul style="list-style-type: none">When correctly logged in, the displayed current user will be Maintenance.Press the up arrow button to go to the screen list menu or press the left arrow button to return to the main menu.	

MAINTENANCE LOGIN CONTINUED

2. SCREEN SELECT MENU

Once logged on, you have access to additional menus. A screen selection menu, is available to quickly navigate to the desired menu.

- From the main menu, press the right arrow button three times, to display the screen select menu.
- Use the up/down arrows to position the cursor at the upper level setup menu.
- Press enter to accept the selection.



3. UPPER LEVEL SETUP MENU

The upper level sensor can be “Disabled” if the sensor is not installed or is not functioning correctly.

- Press F1 to enable/disable the upper hopper level feature.



- If the upper hopper level is disabled, press F2 to select/de-select the daily notification that the sensor has been disabled.
- Press the right arrow for the next setup screen or press the left arrow for the previous screen or press and hold the left arrow to return to the screen select menu.



4. LOWER LEVEL SETUP MENU

The lower level sensor can be “Disabled” if the sensor is not installed or is not functioning correctly.

- Press F1 to enable/disable the lower hopper level feature



- If the lower hopper level is disabled, press F2 to select/de-select the daily notification that the sensor has been disabled.
- Press the right arrow for the next setup screen or press the left arrow for the previous screen or press and hold the left arrow to return to the screen select menu.

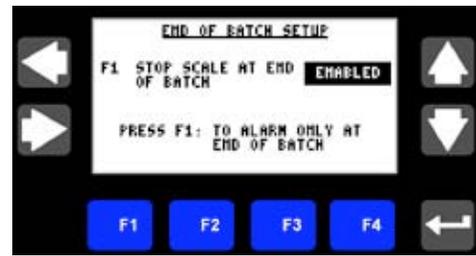


MAINTENANCE LOGIN CONTINUED

5. End of Batch Setup Menu

Select the action of the scale when a batch is completed.

- Press F1 to enable/disable the feature to stop the scale at the completion of the batch.
- Press the right arrow for the next setup screen or press the left arrow for the previous screen or press and hold the left arrow to return to the screen select menu.

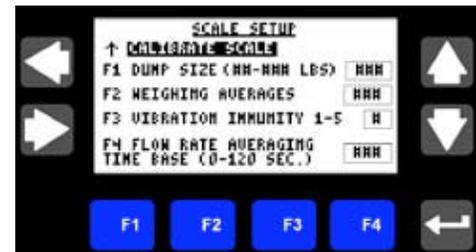


6. SCALE SETUP/CALIBRATION MENU

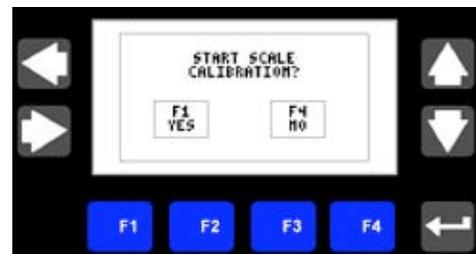
The scale setup menu is used to calibrate the scale, set the dump size, number of averages, vibration immunity and flow rate averaging.

- Calibrate the Scale
Note: Ensure that the scale is empty and free of external forces. Do not apply any calibration weights to the scale.

1. Press the up arrow (Calibrate Scale).



2. Scale confirmation screen is displayed.
3. Press F1-yes to continue, Press F4-no to abort.



4. While the scale is calibrating, the message: "Scale is Calibrating, Please Wait..." is displayed. (Calibration should take less than 10 seconds).



- *Successful Calibration Results*
1. Press F1 to Acknowledge.
2. Press the right arrow for the next setup screen or
3. Press the left arrow for the previous screen or press and hold the left arrow to return to the screen select menu.



MAINTENANCE LOGIN CONTINUED

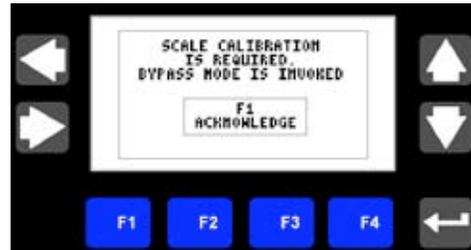
- **Failed Calibration Results**

1. Record the displayed status code.
2. Press F1 to acknowledge.
3. Check all load cell electrical connections.
4. Press the right arrow for the next setup screen or press the left arrow for the previous screen or press and hold the left arrow to return to the screen select menu.



5. The scale will now be forced into bypass mode, until a successful calibration is completed.
6. Attempting to change to local or remote modes will display the message: "Scale Calibration is Required. Bypass Mode is Invoked."

Note: Cycling power to the scale controller will abort this requirement; however the scale's accuracy could be unpredictable.



- **Set the Dump Size (in lbs.)**

1. Press F1 to select the dump size numeric entry.
2. Press the left/right arrow to select a numerical digit to be changed.
3. Press the up/down arrow to change numerical values.
4. Repeat steps 2 and 3 as necessary.
5. Press enter to save the new value.



- **Set the Number of Averages - This is the frequency which the load cells sample weight values.**

Note: Kice Automation recommends setting the number of averages to 15.

1. Press F2 to select the num averages numeric entry.
2. Repeat steps 2 through 5.

- **Set the Vibration Immunity - This function is used to filter plant vibration from the scale.**

Note: Kice Automation recommends setting the vibration immunity to 3.

1. Press F3 to select the vibration immunity numeric entry.
2. Repeat steps 2 through 5.

- **Set the Flow Rate Averaging Time Base - This is the length of time over which flow rate measurements are averaged. A longer time base will produce smoother transitions between flow rate variances.**

1. Press F4 to select the averaging time base numeric entry
2. Repeat 2 through 5

MAINTENANCE LOGIN CONTINUED

7. ALARM SETUP MENU

The alarm setup menu is used to set the slow fill alarm parameters and set the lower bin high level alarm delay.

Note: Enter a 0 to disable the alarm.

<ul style="list-style-type: none">• Slow Fill Alarm Setpoint (lbs) <i>Note: Kice Automation recommends setting the Slow Fill Alarm Setpoint to 5 lbs.</i><ol style="list-style-type: none">1. Press F1 to select the setpoint (lbs) numeric entry	 <p>The screenshot shows the 'ALARM SETUP' menu with 'SLOW FTLL ALARM:' selected. Below it, 'F1 SETPOINT (LBS)' is highlighted with a cursor. To the right of 'F1 SETPOINT (LBS)' and 'F2 DELAY (SECS)' are 'RH' buttons. Below these are 'F3 LOWER BIN HIGH LEVEL ALARM DELAY (SEC)' and 'ENTER 0 TO DISABLE ALARMS'. At the bottom are function keys F1, F2, F3, F4, and a left arrow key.</p>
<ol style="list-style-type: none">2. Press the left/right arrow to select a numerical digit to be changed3. Press the up/down arrow to change numerical values4. Repeat 2 and 3 as necessary5. Press enter to save the new value	 <p>The screenshot shows a numeric entry screen with '+000000' at the top. Below it is 'ENTER VALUE: (0 TO 99999)'. At the bottom left is an 'ESC' key. At the bottom are function keys F1, F2, F3, F4, and a left arrow key.</p>
<ul style="list-style-type: none">• Slow Fill Alarm Delay (seconds) <i>Note: Kice Automation recommends setting the Slow Fill Alarm Delay to 2 seconds.</i><ol style="list-style-type: none">1. Press F2 to select the delay (seconds) numeric entry2. Press the left/right arrow to select a numerical digit to be changed3. Press the up/down arrow to change numerical values4. Repeat 2 and 3 as necessary5. Press enter to save the new value	 <p>The screenshot shows the 'ALARM SETUP' menu with 'SLOW FTLL ALARM:' selected. Below it, 'F2 DELAY (SECS)' is highlighted with a cursor. To the right of 'F1 SETPOINT (LBS)' and 'F2 DELAY (SECS)' are 'RH' buttons. Below these are 'F3 LOWER BIN HIGH LEVEL ALARM DELAY (SEC)' and 'ENTER 0 TO DISABLE ALARMS'. At the bottom are function keys F1, F2, F3, F4, and a left arrow key.</p>
<ul style="list-style-type: none">• Lower Bin High Level Alarm Delay (seconds) <i>Note: Kice Automation recommends setting the Level Alarm Delay to 5 seconds.</i><ol style="list-style-type: none">1. Press F3 to select the lower bin high level alarm delay (seconds) numeric entry2. Press the left/right arrow to select a numerical digit to be changed3. Press the up/down arrow to change numerical values4. Repeat 2 and 3 as necessary5. Press enter to save the new value6. Press the right arrow for the next setup screen or press the left arrow for the previous screen or press and hold the left arrow to return to the screen select menu.	 <p>The screenshot shows a numeric entry screen with '+000000' at the top. Below it is 'ENTER VALUE: (0 TO 99999)'. At the bottom left is an 'ESC' key. At the bottom are function keys F1, F2, F3, F4, and a left arrow key.</p>

MAINTENANCE LOGIN CONTINUED

8. INPUT CHECK MENU

The input check menu is used to verify the Kice Scaling Control System Inputs.

- The status (covered/uncovered) of the upper level sensor is displayed.
- The status (covered/uncovered) of the lower level sensor is displayed.
- The status (on/off) of the remote start signal is displayed. (Note: The remote start signal can come from either the hard wired digital input or Ethernet command).
- The status (on/off) of the remote batch reset is displayed. (Note: The remote batch reset signal can come from either the hard wired digital input or Ethernet command).
- The status (online/offline) of the Ethernet command communications is displayed. (Note: An online status indicates that communication with the plant PLC has been successfully established).
- Press the right arrow for the next setup screen or press the left arrow for the previous screen or press and hold the left arrow to return to the screen select menu.



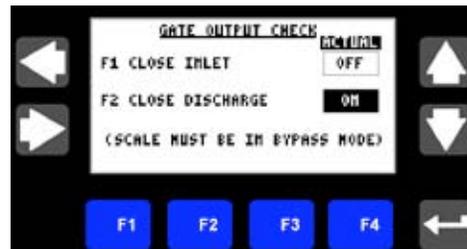
9. GATE OUTPUT CHECK MENU

The gate output check menu is used to verify the operation of the inlet and discharge gates.

Note: The Kice Scaling System must be in "Bypass" mode before checking the outputs.

The status of the gate outputs is displayed. An "ON" status indicates that the output is energized (gate closed). An "OFF" status indicates that the output is not energized (gate opened).

1. Press and hold F1 to close the inlet gate.
2. Press and hold F2 to close the discharge gate.
3. Press the right arrow for the next setup screen or press the left arrow for the previous screen or press and hold the left arrow to return to the screen select menu.



MAINTENANCE LOGIN CONTINUED

10. DATE SETUP MENU

The date setup menu is used to check the current date settings and set a new date for the operator interface and CompactLogix Controller.

Note: Ensure that the year, month and day settings are correct prior to pressing F4.

<ul style="list-style-type: none">• Set the current year<ol style="list-style-type: none">1. Press F1 to select the year numeric entry2. Press the left/right arrow to select a numerical digit to be changed3. Press the up/down arrow to change numerical values4. Repeat 2 and 3 as necessary5. Press enter to save the new value	 <p>The screenshot shows the 'DATE SETUP' menu with the date format 'MM/HH/YY'. The 'F1 YEAR' field is highlighted with a cursor. Below the menu are four function keys: F1, F2, F3, and F4. The F4 key is labeled 'F4 SET DATE'.</p>
<ul style="list-style-type: none">• Set the current month<ol style="list-style-type: none">1. Press F2 to select the month numeric entry2. Press the left/right arrow to select a numerical digit to be changed3. Press the up/down arrow to change numerical values4. Repeat 2 and 3 as necessary5. Press enter to save the new value	 <p>The screenshot shows a prompt 'ENTER VALUE: (0 TO 99999)' with a cursor. The 'ESC' key is visible at the bottom left. Below the prompt are four function keys: F1, F2, F3, and F4.</p>
<ul style="list-style-type: none">• Set the current day<ol style="list-style-type: none">1. Press F3 to select the day numeric entry2. Press the left/right arrow to select a numerical digit to be changed3. Press the up/down arrow to change numerical values4. Repeat 2 and 3 as necessary5. Press enter to save the new value<ul style="list-style-type: none">• Press F4-Set Date to update the date settings.• Press the right arrow for the next setup screen or press the left arrow for the previous screen or press and hold the left arrow to return to the screen select menu.	 <p>The screenshot shows the 'DATE SETUP' menu with the date format 'MM/HH/YY'. The 'F3 DAY' field is highlighted with a cursor. Below the menu are four function keys: F1, F2, F3, and F4. The F4 key is labeled 'F4 SET DATE'.</p>

MAINTENANCE LOGIN CONTINUED

11. TIME SETUP MENU

The time setup menu is used to check the current time settings and set a new time for the operator interface and CompactLogix Controller.

Note: Ensure that the hour, AM/PM, and minute settings are correct prior to pressing F4.

<ul style="list-style-type: none">• Set the Current Hour<ol style="list-style-type: none">1. Press F1 to select the hour numeric entry2. Press the left/right arrow to select a numerical digit to be changed3. Press the up/down arrow to change numerical values4. Repeat 2 and 3 as necessary5. Press enter to save the new value	
<ul style="list-style-type: none">• Press F2 to toggle the AM/PM setting• Set the current minute<ol style="list-style-type: none">1. Press F3 to select the minute numeric entry2. Press the left/right arrow to select a numerical digit to be changed3. Press the up/down arrow to change numerical values4. Repeat 2 and 3 as necessary5. Press enter to save the new value• Press F4-Set /Time to update the time settings.• Press the right arrow to return to the screen select menu or press the left arrow for the previous screen.	

12. LOGGING OUT

It is recommended that you logout after you have finished with the advanced menus. However, after a period of inactivity, you will be automatically logged out.

<ol style="list-style-type: none">1. From the screen select menu, use the up/down arrows to position the cursor at "Logout Screen".2. Press enter to accept the selection.	
<ol style="list-style-type: none">3. The login/logout menu is displayed. Press F4-Logout.	
<ol style="list-style-type: none">4. When successfully logged out, the following will be displayed: "Current User: Operator"5. Press the left arrow to return to the main menu.	

PARTS LIST

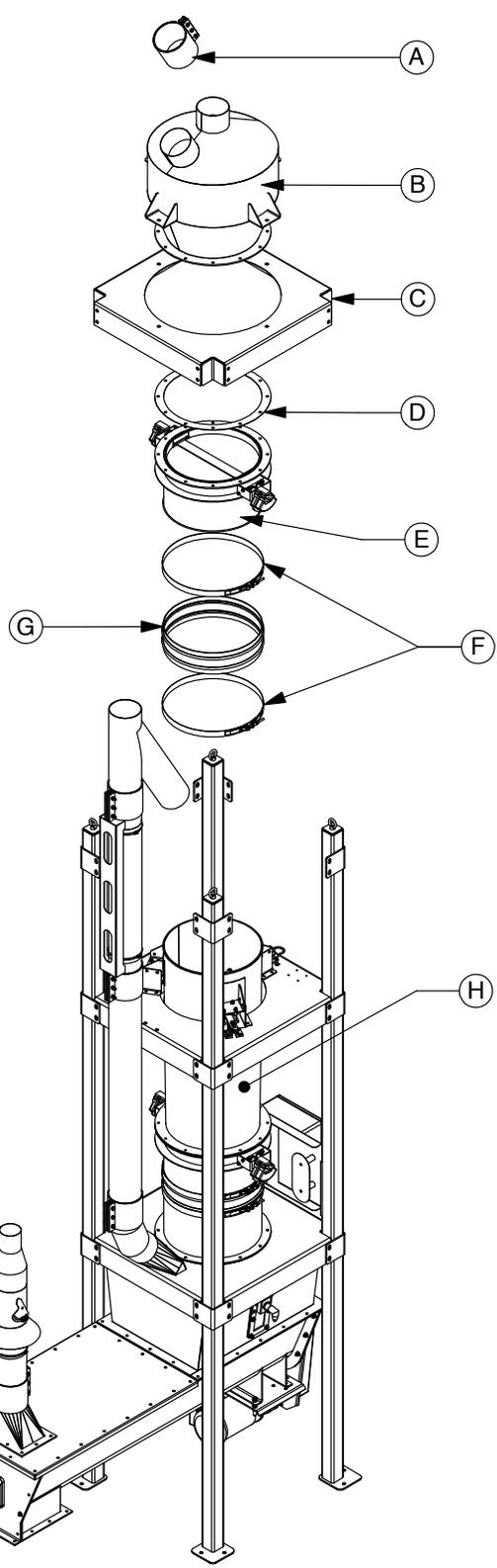
Part	Inventory Number	Photo
Air Connector 90 for 18" Scales	W369ML-4-4	
Air Connector 90 for 24" Scales	W169PL-6-6	
Air Connector Bulkhead	18" Scale: 66MLBH-4-4 24" Scale: 66MLBH-6-6	
Air Manifold	18" Scale: PSJ3B1N02NP 24" Scale: PSM5BXN02NP	
Air Muffler	18" Scale 45040004 24" Scale 45060060	
Actuator Solenoid	18"Scale: B31VBB553C 24" Scale: B511BB553C	
Air Tee with 1 Threaded End	18" Scale: 1/8" NPT to 1/4" tube W317ML-4-2 24" Scale: 1/4" NPT to 3/8" tube W317ML-6-4	
Air Tubing	18" Scale E-43-B-0100 24" Scale E-64-B-0500	

Air Connector Y	18" Scale: W368-4-4 24" Scale: W368ML-6-6	
Dump Valve	18" Scale: SCL-018-2000 24" Scale: SCL-024-2002	
Effector Level Indicator	KI 3513	
Isolation Sleeve	18" Scale: IS18.25X7P12 24" Scale: IS24.25x7P12	
Isolation Sleeve Clamp	18" Scale: 1-4352 24" Scale: SCL-024-2010	
Kinetrol Actuator	18" Scale: 059-100 24" Scale: 099-100	
Level Indicator Cable	889R-F3AEA-2	
Load Cell	HI LPRE 440-33C	

Roll Pin	18" Scale: 3/16" x 1 3/8" LG 24" Scale: 3/16" x 2" LG	
Scale Body	350 SCL-018-2120 500 SCL-018-2100 1000 SCL-018-2140 1500 SCL-024-2100 2000 SCL-024-2101	
Solenoid Cable	E492N50012C4L	
Valve Block (prepacked with bearing, seal, and spacers)	18" Scale: SCL-018-2090 24" Scale: SCL-024-2090	
Vent Sleeve	18" Scale: VS6.25x30PF12 24" Scale: VS8.25x30PF12	

TROUBLESHOOTING

Problem	Cause	Solution	
Discharge gate leakage alarm	Air pressure to discharge valve too low	Check plant air pressure (>80 psi)	Air valve not fully open
		Air line kinked, broken, disconnected	
	Valve flap not turning with actuator	Spring pin between actuator and discharge gate shaft broken - replace pin page 38	Actuator coupler edges have rounded - replace coupler
Discharge gate not responding	Weight does not decrease within allotted time	Check discharge gate actuators	Vibration immunity may be too high-set to 3 or 4
Lower hopper level alarm	Discharge hopper level indicator is covered	Empty the discharge hopper	If the hopper is empty, the level indicator may need to be adjusted. Page 21
Product will not flow through the scale	Batch system is enabled and has met target	If the batch system is not desired, set the batch target to 0. See page 12	Restart batch page 12
	Discharge hopper level indicator is covered	Empty the discharge hopper	If the hopper is empty, the level indicator may need to be adjusted. Page 21
Scale displays unbelievable weights and will not recalibrate	Load cell is not sensing weigh chamber weight	Check for loose electrical connections page 42	Check for loose load cell bolts
Scale displays unbelievable weights	Load cells need to be calibrated	Calibrate load cells. See page 25	
Scale does not cycle or show weights with product flowing through the scale	Bypass mode is selected	Change to either remote or local mode. See page 13	
Slow fill alarm	Adequate weight was not added to the weight chamber	Supply bin is empty	Conveyors feeding scale have been shut off
		Product is bridged above inlet hopper	



PARTS LIST

	QTY	ITEM	PART #
A	1	18" SCALE COMPRESSION COUPLING 24" SCALE COMPRESSION COUPLING	82M6-3CW 82M8-3CW
B	1	18-350 INLET HOPPER 18-500 INLET HOPPER 18-1000 INLET HOPPER 24-1500 & 2000 INLET HOPPER	SCL-018-2263 SCL-018-2261 SCL-018-2265 SCL-024-2201
C	1	INLET HOPPER SUPPORT DECK	PER DRAWING
D	1	18" SCALE VALVE GASKET 24" SCALE VALVE GASKET	SCL-900-3018 SCL-900-3020
E	1	18" SCALE VALVE 24" SCALE VALVE	SCL-018-2000 SCL-024-2002
F	2	18" SCALE ISOLATION SLEEVE CLAMP 24" SCALE ISOLATION SLEEVE CLAMP	1-4352 SCL-024-2019
G	1	18" SCALE ISOLATION SLEEVE 24" SCALE ISOLATION SLEEVE	IS18.25x7P12 IS24.25x7P12
H	1	18-350 SCALE BODY 18-500 SCALE BODY 18-1000 SCALE BODY 24-1500 SCALE BODY 24-2000 SCALE BODY	SCL-018-2120 SCL-018-2100 SCL-018-2140 SCL-024-2100 SCL-024-2101

NOTES:
 1 18-350, 18-500, 18-1000 SCALE MODELS ARE ALL 18" SCALES
 2 24-1500 and 24-2000 SCALE MODELS ARE BOTH 24" SCALES

SCALE EXPLODED VIEWS

DESCRIPTION:



KICE INDUSTRIES, INC.

5500 MILL HEIGHTS DR. WICHITA, KANSAS 67219
 PH: (316) 744-7151 FAX: (316) 744- 7355

JTK

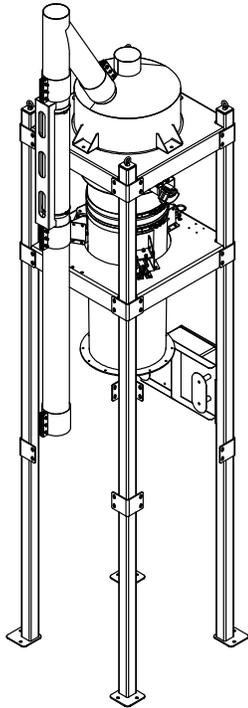
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SCL-5000

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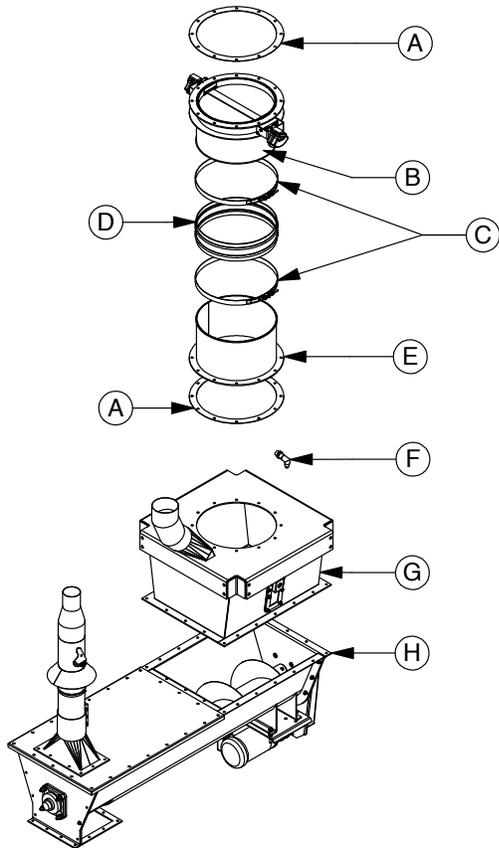
DATE:

DWG. NO.



PARTS LIST

	QTY	ITEM	PART #
A	2	18" SCALE FLANGE GASKET	SCL-920-3018
		24" SCALE FLANGE GASKET	SCL-920-3020
B	1	18" SCALE VALVE	SCL-018-2000
		24" SCALE VALVE	SCL-024-2002
C	2	18" SCALE ISOLATION SLEEVE CLAMP	1-4352
		24" SCALE ISOLATION SLEEVE CLAMP	SCL-024-2010
D	1	18" SCALE ISOLATION SLEEVE	IS18.25x7P12
		24" SCALE ISOLATION SLEEVE	IS24.25x7P12
E	1	SPOOL SECTION	PER DRAWING
F	1	EFFECTOR LEVEL INDICATOR SWITCH	KI 3513
G	1	DISCHARGE HOPPER	PER DRAWING
H	1	DISCHARGE SCREW	PER DRAWING



NOTES:

- 1 18-350, 18-500, 18-1000 SCALE MODELS ARE ALL 18" SCALES
- 2 24-1500 and 24-2000 SCALE MODELS ARE BOTH 24" SCALES

SCALE EXPLODED VIEWS

DESCRIPTION:



KICE INDUSTRIES, INC.

5500 MILL HEIGHTS DR. WICHITA, KANSAS 67219
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JTK 12/11/06

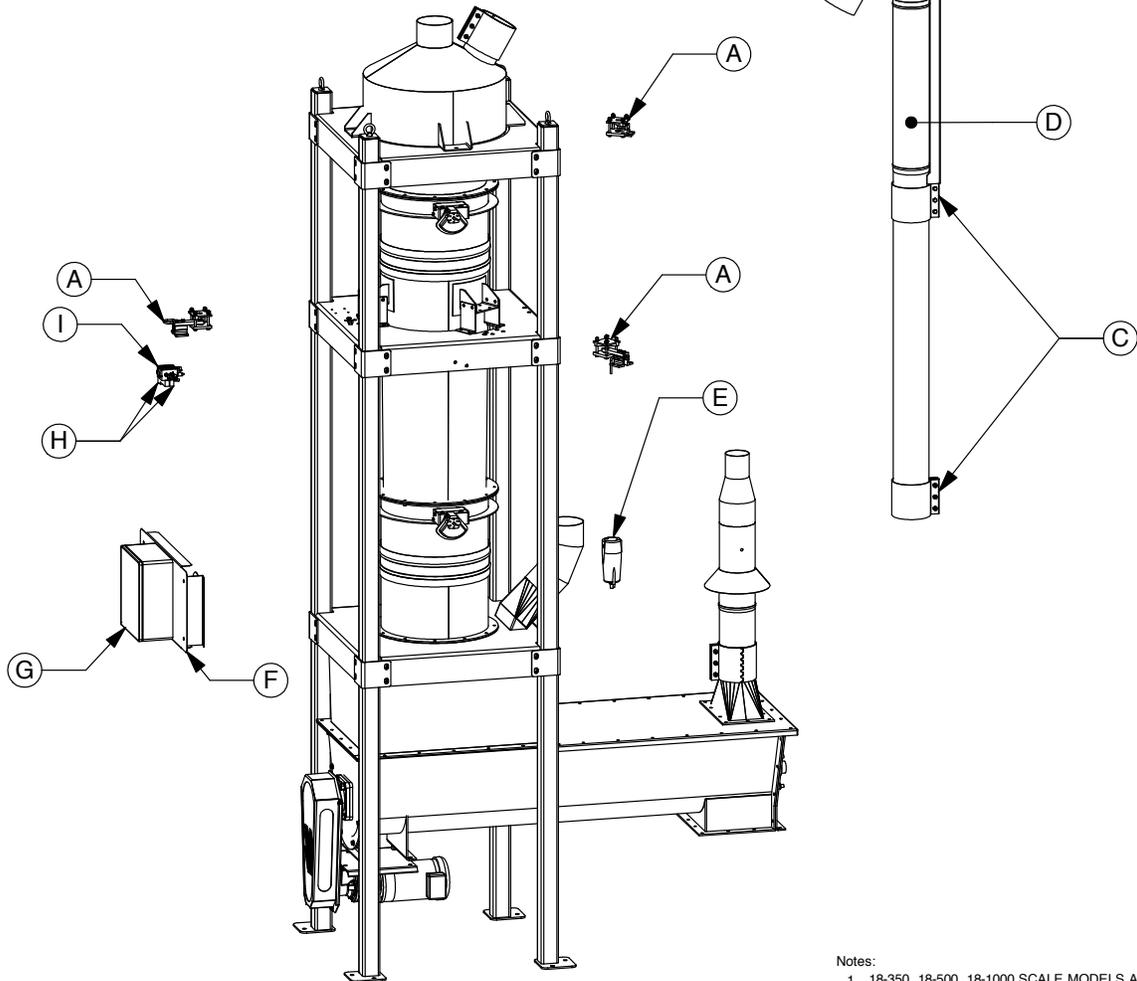
DWN: DATE:

SCL-5000

DWG. NO.

PARTS LIST

	QTY	ITEM	PART #
A	3	LOAD CELL	HI LPRE 440-33C
B	1	18" SCALE 30° BRANCH	41B6
		24" SCALE 30° BRANCH	41B8
C	3	18" SCALE COMPRESSION COUPLING	82M6-3CW
		24" SCALE COMPRESSION COUPLING	82M8-3CW
D	1	18" SCALE VENT SLEEVE	VS6.25x30P12
		24" SCALE VENT SLEEVE	VS8.25x30P12
E	1	AIR FILTER	2002N-1B1-DX
F	1	CONTROL PANEL MOUNTING BRACKET	PER DRAWING
G	1	CONTROL PANEL	EB 1752800
H	2	18" SCALE SOLENOID VALVES	B31VBB553C
		24" SCALE SOLENOID VALVES	B511BB553C
I	1	18" SCALE AIR MANIFOLD	PSJ3B1NO2NP
		24" SCALE AIR MANIFOLD	PSM5BXNO2NP



Notes:
 1 18-350, 18-500, 18-1000 SCALE MODELS ARE ALL 18" SCALES
 2 24-1500 and 24-2000 SCALE MODELS ARE BOTH 24" SCALES

SCALE EXPLODED VIEWS

DESCRIPTION:



KICE INDUSTRIES, INC.

5500 MILL HEIGHTS DR. WICHITA, KANSAS 67219
 PH: (316) 744-7151 FAX: (316) 744-7355

JTK 12/11/06

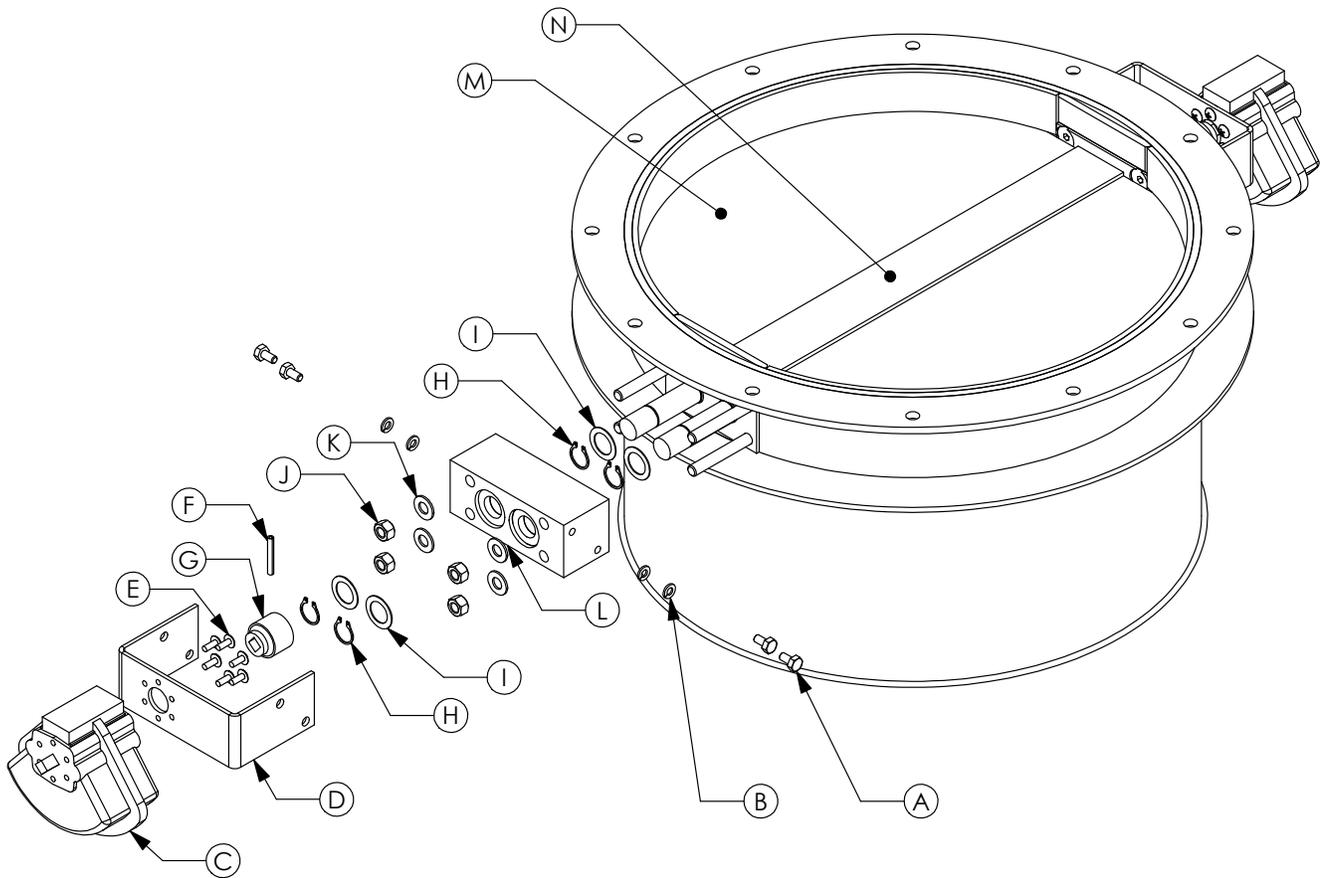
DWN: DATE:

SCL-5000

DWG. NO.

PARTS LIST (PER VALVE)

QTY	ITEM	PART #	QTY	ITEM	PART #
A 8	18" SCALE: 1/4"-20 x 1/2" HEX BOLTS 24" SCALE: 3/8"-16 x 3/4" HEX BOLTS		H 8	18" SCALE: 3/4" RETAINING RING 24" SCALE: 1 1/4" RETAINING RING	
B 8	18" SCALE: 1/4" LOCK WASHERS 24" SCALE: 3/8" LOCK WASHERS		I 8	18" SCALE: ARBOR SHIM 24" SCALE: ARBOR SHIM	25175 25255
C 2	18" SCALE ROTARY ACTUATOR 24" SCALE ROTARY ACTUATOR	059-100 099-100	J 8	3/8"-16 HEX NUT	
D 2	18" SCALE ACTUATOR MOUNTING BRACKET 24" SCALE ACTUATOR MOUNTING BRACKET	SCL-018-3054 SCL-024-3006	K 8	3/8" LOCK WASHER	
E 12	18" SCALE: 10-32 x 1/2" TRUSS SCREW 24" SCALE: 3/8"-16 x 1" HEX BOLT		L 2	18" SCALE: PIVOT BLOCK ASSEMBLY 24" SCALE: PIVOT BLOCK ASSEMBLY	SCL-018-2090 SCL-024-2090
F 2	18" SCALE: 3/16" x 1 3/8" SPRING PIN 24" SCALE: 3/16" x 2" SPRING PIN		M 4	18" SCALE: VALVE FLAP 24" SCALE: VALVE FLAP	SCL-018-3050 SCL-024-3002
G 2	18" SCALE: ACTUATOR COUPLER 24" SCALE: ACTUATOR COUPLER	SCL-018-3057 SCL-024-3009	N 2	18" SCALE: FLAP DIVERTER 24" SCALE: FLAP DIVERTER	SCL-018-3058 SCL-024-3010



VALVE EXPLODED VIEW

DESCRIPTION:



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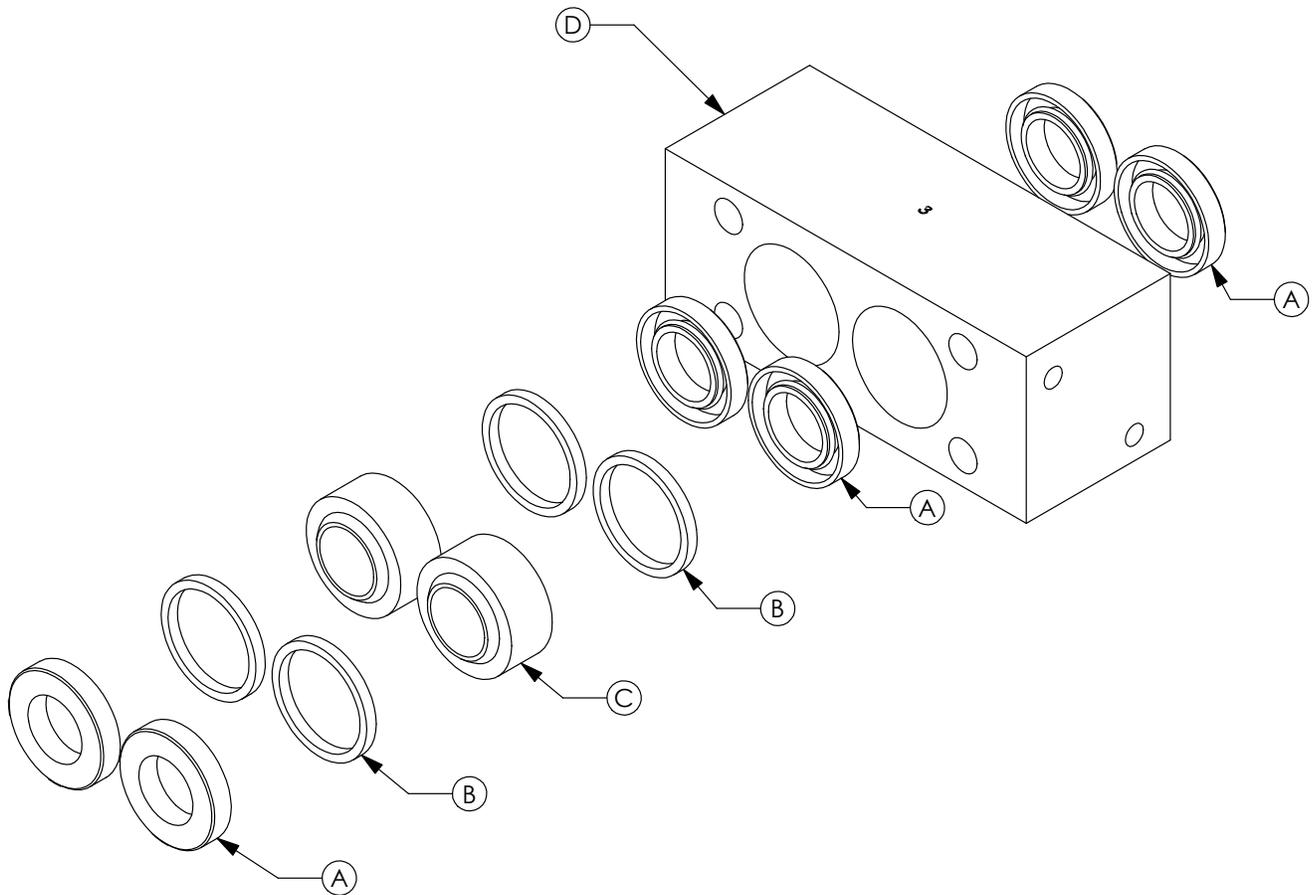
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DWN:

1-16-07
DATE:

SCL-5001
DWG. NO.

PARTS LIST (PER VALVE)

	QTY	ITEM	PART #
A	12	18" SCALE: SHAFT SEAL	CR 7474
	8	24" SCALE: SHAFT SEAL	CR12456
B	4	18" SCALE: SHAFT SPACER	SCL-018-3095
C	4	18" SCALE: BALL BUSHING	HDB 12P
		24" SCALE: BALL BUSHING	GEZ-104 ES-2RS
D	2	18" SCALE: PIVOT BLOCK	SCL-018-3090
		24" SCALE: PIVOT BLOCK	SCL-024-3007



PIVOT BLOCK

DESCRIPTION:



KICE INDUSTRIES, INC.

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 PH: (316) 744-7151 FAX: (316) 744- 7355

JTK
 DWN:

1-16-07
 DATE:

SCL-5002
 DWG. NO.

GLOSSARY OF TERMS

Term	Definition	Page #
Air actuator	Pneumatic powered rotary actuator that provides 90 degrees of rotation to cycle the dump valves.	20,31,32,34
Batch Mode	Allows a set amount of product to flow through the scale, then stop flow.	10
Bypass mode	A mode which allows product to pass through the scale without being weighed or restricted.	12,13,26,34
Dump scale	A scale that measures flow rate.	3
Dump valve	Valve consisting of two semicircle flaps that hold product in place while weighing; then opening to allow the product to move forward in the process.	6,7,11,20,32
Feeder scale	A scale that controls a flow rate.	3,14
Isolation sleeve	A narrow loop of fabric installed above and below the weigh chamber to isolate the desired region from the rest of the scale. This enables just the weigh chamber to be supported by the load cells allowing true weight to be determined.	20,32,40
Load cell	An electronic device that converts deflection of a cantilever into an electronic signal that can calculate weight.	4,5,20,26,32,34
Local mode	A mode which allows control from the PanelView. Product will be weighed as it passes through the scale.	4,5,11,13,13,18,34
PanelView	Allen-Bradley model name. Operator interface	4,5,6,9,10,14,20
Remote mode	A mode which allows control from the process computer or the PanelView. Product will be weighed as it passes through the scale.	13,18,19,26
Weigh chamber	The portion of the scale that holds product that is being weighed, located between the top isolation sleeve and the bottom dump valve.	10,11,34
Yield management system	Optional programming change which allows yields to be calculated as product flows through the scale. Product will be weighed as it passes through the scale.	

APPENDIX

- **ELECTRIC SCHEMATIC**
- **PNEUMATIC SCHEMATIC**

NOTES:

KICE INDUSTRIES, INC.
 5500 MILL HEIGHTS DR
 WICHITA KS 67219
 Phone (316) 744-7151 Fax (316) 744-7355
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DUMP SCALING SYSTEM



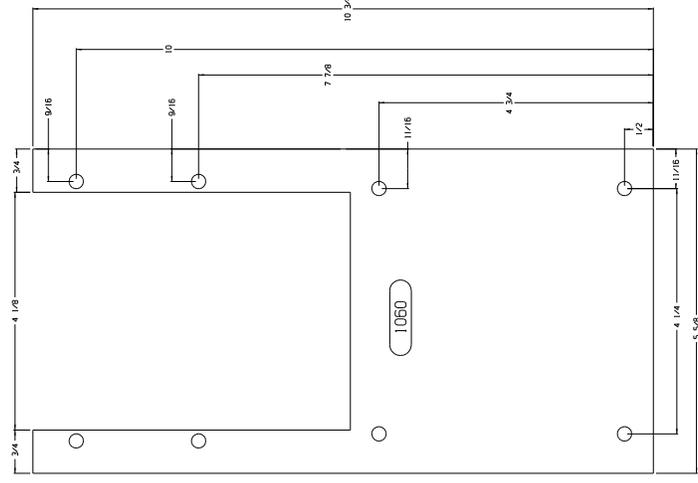
Automation

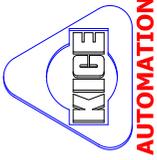
ITEM # **DESCRIPTION** **MFR** **CATALOG #** **QTY**

1000	Circuit Breaker (1 pole, 10 amp)	Allen Bradley®	1492-CBGT00	1
1001	Terminal Block (10 pin, 9 pin, 5 pin, 3 pin)	Allen Bradley®	1492-TB00	1
1010	CompactLogix™ Terminal End Cap (Right end)	Allen Bradley®	1769-ECR	1
1015	CompactLogix™ Isolate Input Expansion Module (120 VAC)	Allen Bradley®	1769-IA16	1
1020	CompactLogix™ 5332 Processor (256K Memory, 1 ENET / 1 RS-232 port)	Allen Bradley®	1769-L320	1
1025	CompactLogix™ Power Supply (120/240 VAC, 2 Amp @ 5 VDC)	Allen Bradley®	1769-PAC2	1
1030	CompactLogix™ Weight Scale Module	Allen Bradley®	1769-MS	1
1035	CompactLogix™ 5332 Processor (256K Memory, 1 ENET / 1 RS-232 port)	Allen Bradley®	1769-L320	1
1040	Summing Board w/485 Communications	Kice Industries, Inc.	KB-21189-SC	1
1045	Summing Board w/485 Communications	Kice Industries, Inc.	KB-21189-SC	1
1046	Summing Board w/485 Communications	Kice Industries, Inc.	KB-21189-SC	1
1048	Summing Board w/485 Communications	Kice Industries, Inc.	KB-21189-SC	1
1050	Summing Board w/485 Communications	Kice Industries, Inc.	KB-21189-SC	1
1055	NEMA 4 Enclosure w/Backplate (12 3/4" X 11 7/8" X 6 1/8")	Allen Bradley®	1B-1754-600	1

TITLE
 MOUNTING BRACKET DETAILS
 CUSTOMER NAME
 KICE INDUSTRIES, INC.
 CUSTOMER LOCATION
 WICHITA, KS
 SITE NAME
 WICHITA, KS
 SITE LOCATION

DATE
 08/06/06
 DRAWN BY
 000
 CHECKED BY
 000
 DATE PLOTTED
 08/06/06
 PLOT SCALE
 1:1
 JOB NO. STANDARD
 E-2





NOTES:

REV.	DATE	BY

JOB TITLE
KICE SCALE STANDARD

CUSTOMER NAME & LOCATION
KICE INDUSTRIES, INC.
WICHITA, KS

SITE NAME & LOCATION
KICE INDUSTRIES, INC.
WICHITA, KS

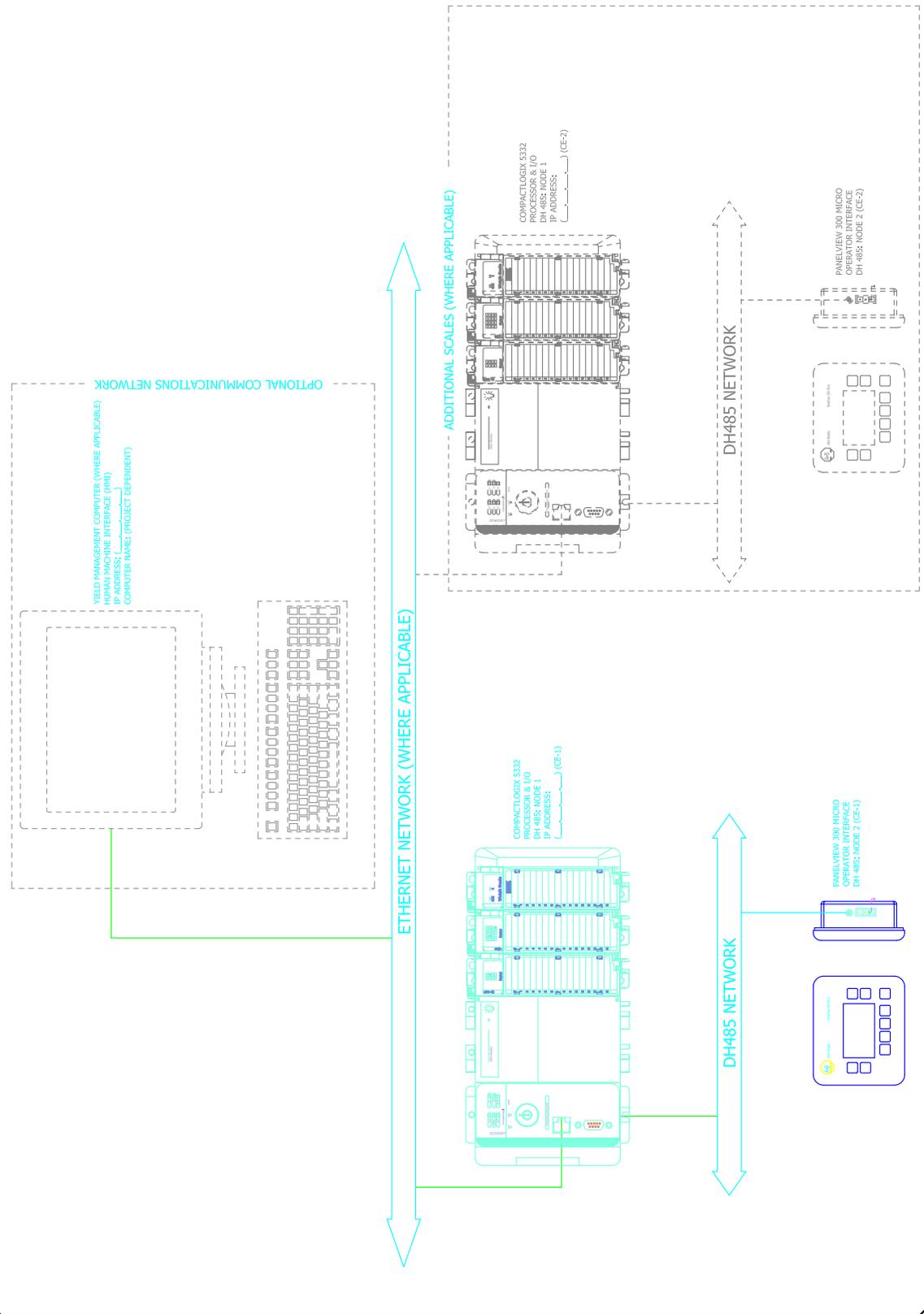
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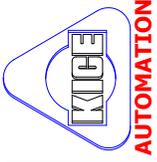
DATE
8/19/04

PROJECT SCALE
1:00

STANDARDS
DRAWING TITLE
COMMUNICATION OVERVIEW

DWG NO.
CO-1





NOTES:

- ① TYPICAL TERMINATION
- ② TYPICAL TERMINATION
- ③ TYPICAL TERMINATION

ETHERNET HMI TERMINAL (SERVIEW 32 OR EQUIVALENT)
 IP ADDRESS: 192.168.1.10
 SUBNET MASK: 255.255.255.0
 GATEWAY: 192.168.1.1

ETHERNET HMI TERMINAL (SERVIEW 32 OR EQUIVALENT)
 IP ADDRESS: 192.168.1.10
 SUBNET MASK: 255.255.255.0
 GATEWAY: 192.168.1.1

REV.	DATE	BY

780 TITLE
KICE SCALE STANDARD

CUSTOMER NAME & LOCATION
 KICE INDUSTRIES, INC.
 WICHITA, KS

SITE NAME & LOCATION
 KICE INDUSTRIES, INC.
 WICHITA, KS

SCALE
 NOT TO SCALE

DRAWN BY
 LES

DATE
 8/19/04

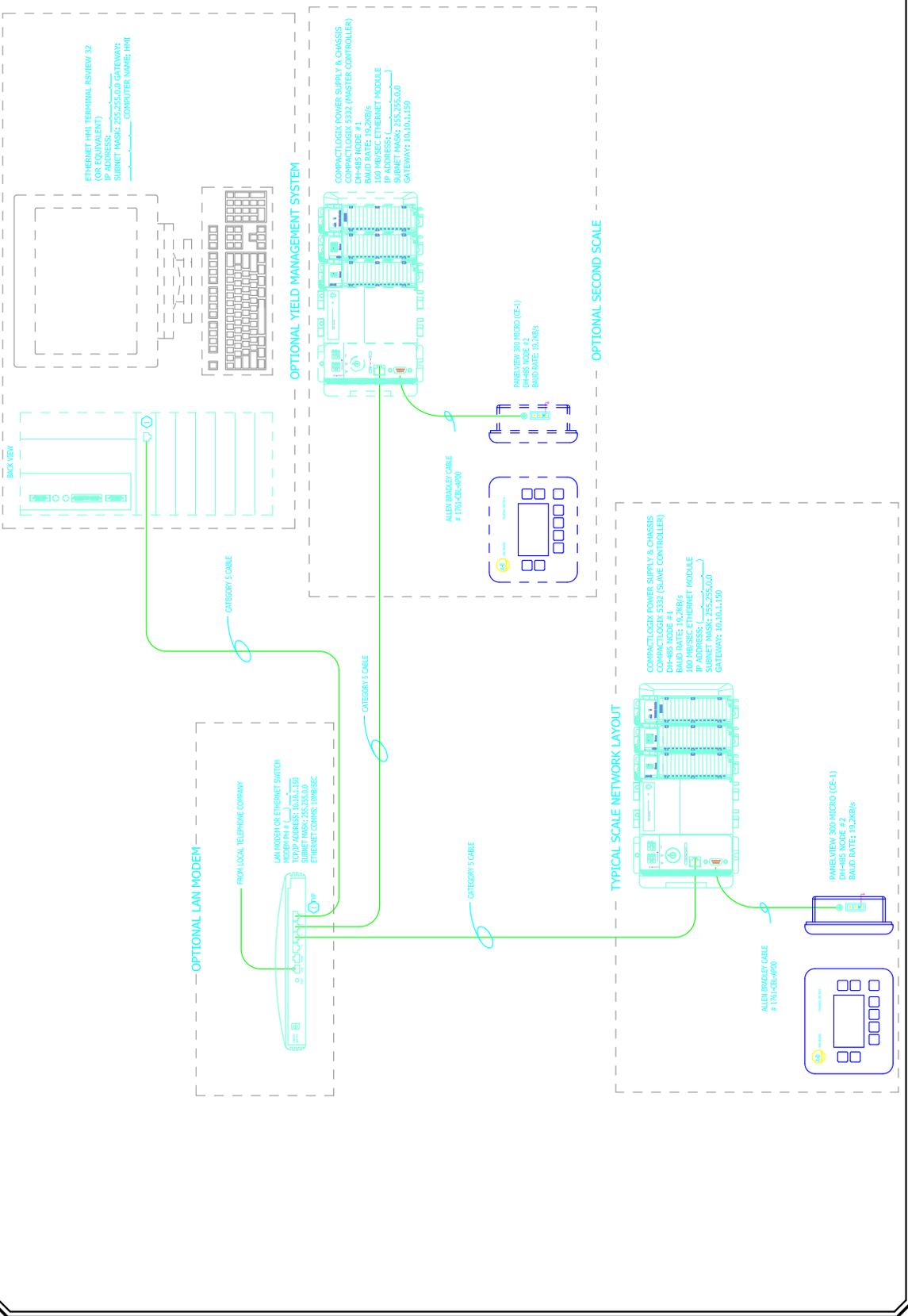
APPROVED BY
 LES

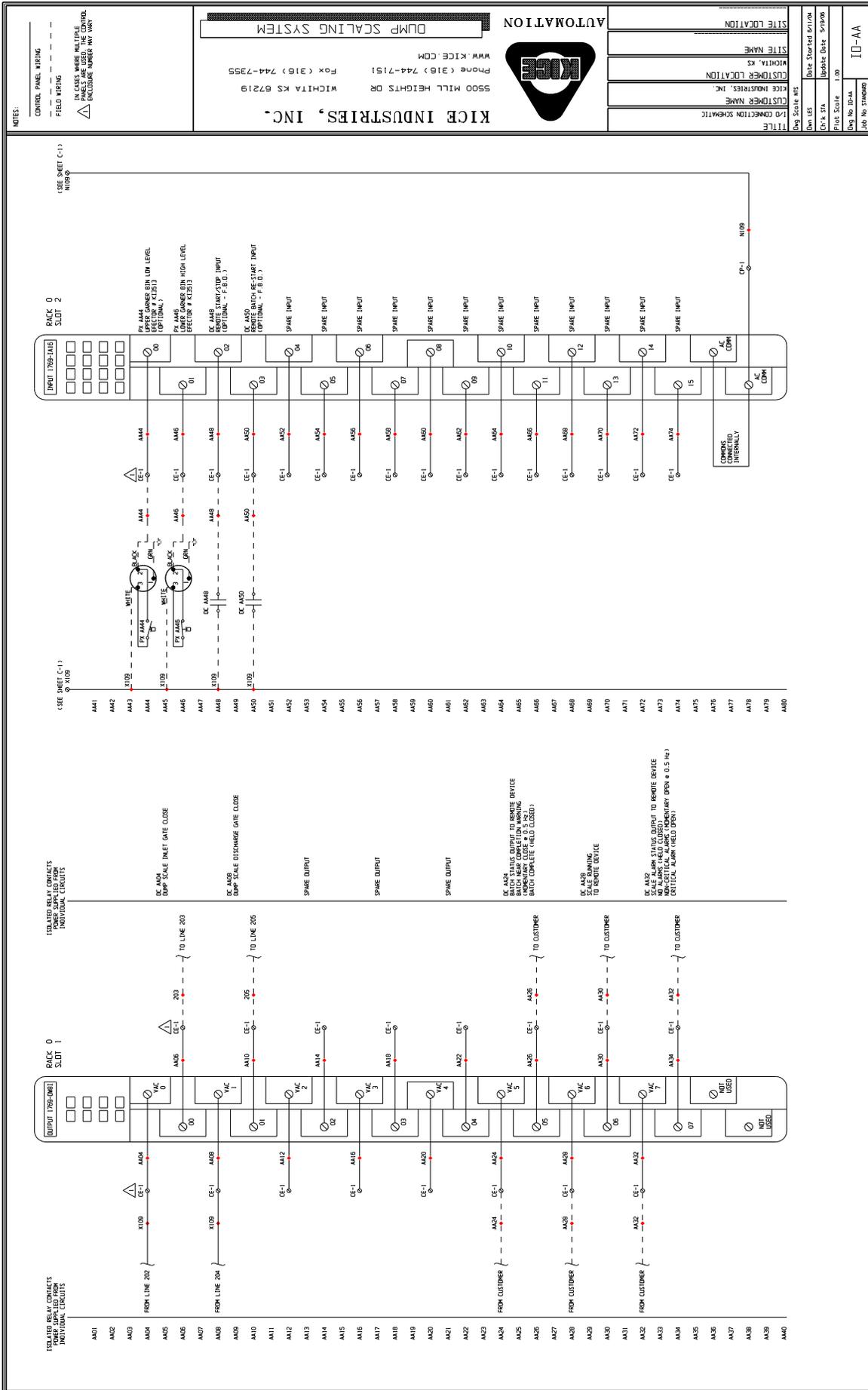
PLAT SCALE
 1.00

ZONE NO.
 STANDARDS

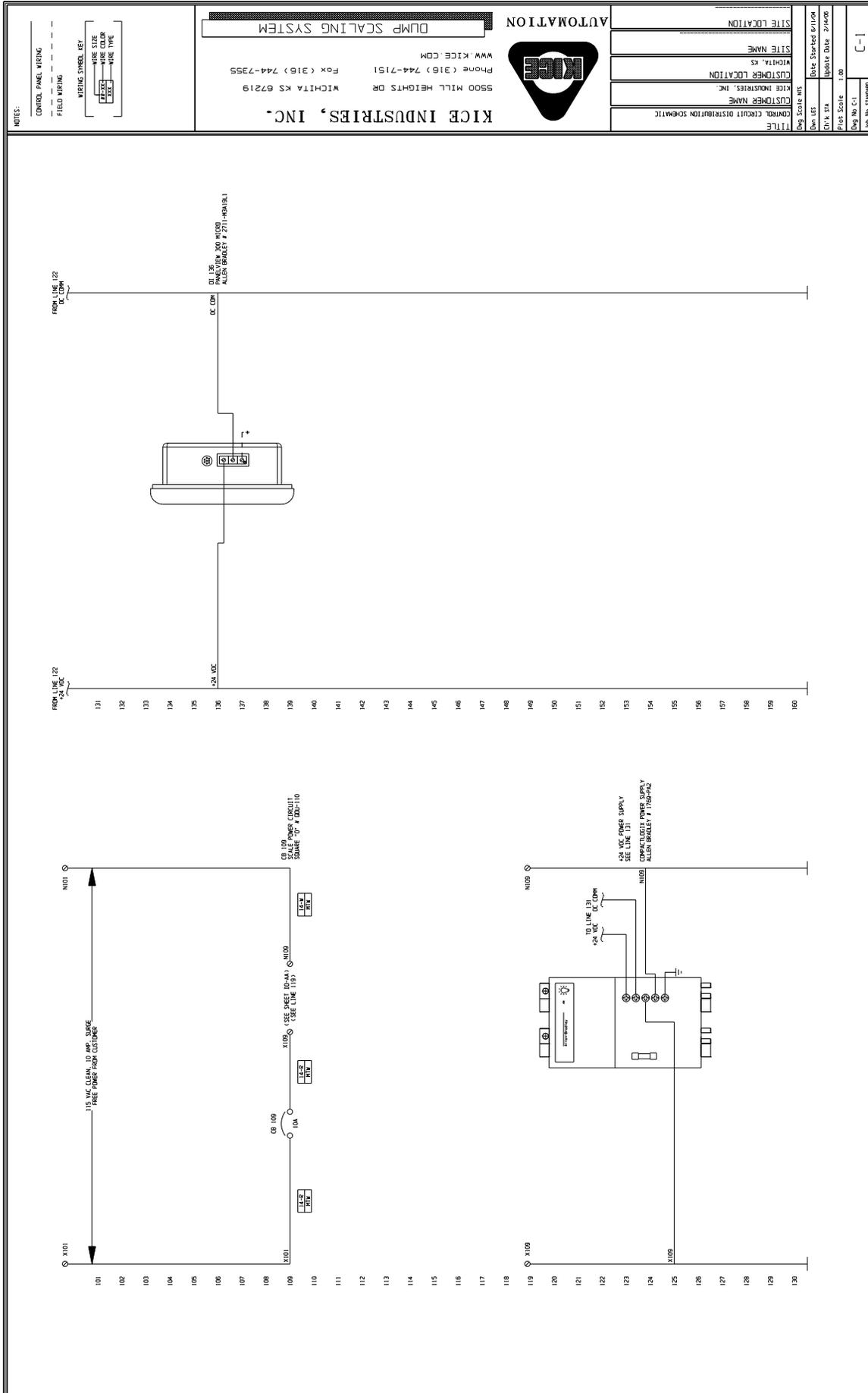
DWG TITLE
 COMMUNICATION DETAIL FOR MULTIPLE SCALES

DWG NO.
 CO-2





REVISED - 01/23/07



KICE INDUSTRIES, INC.
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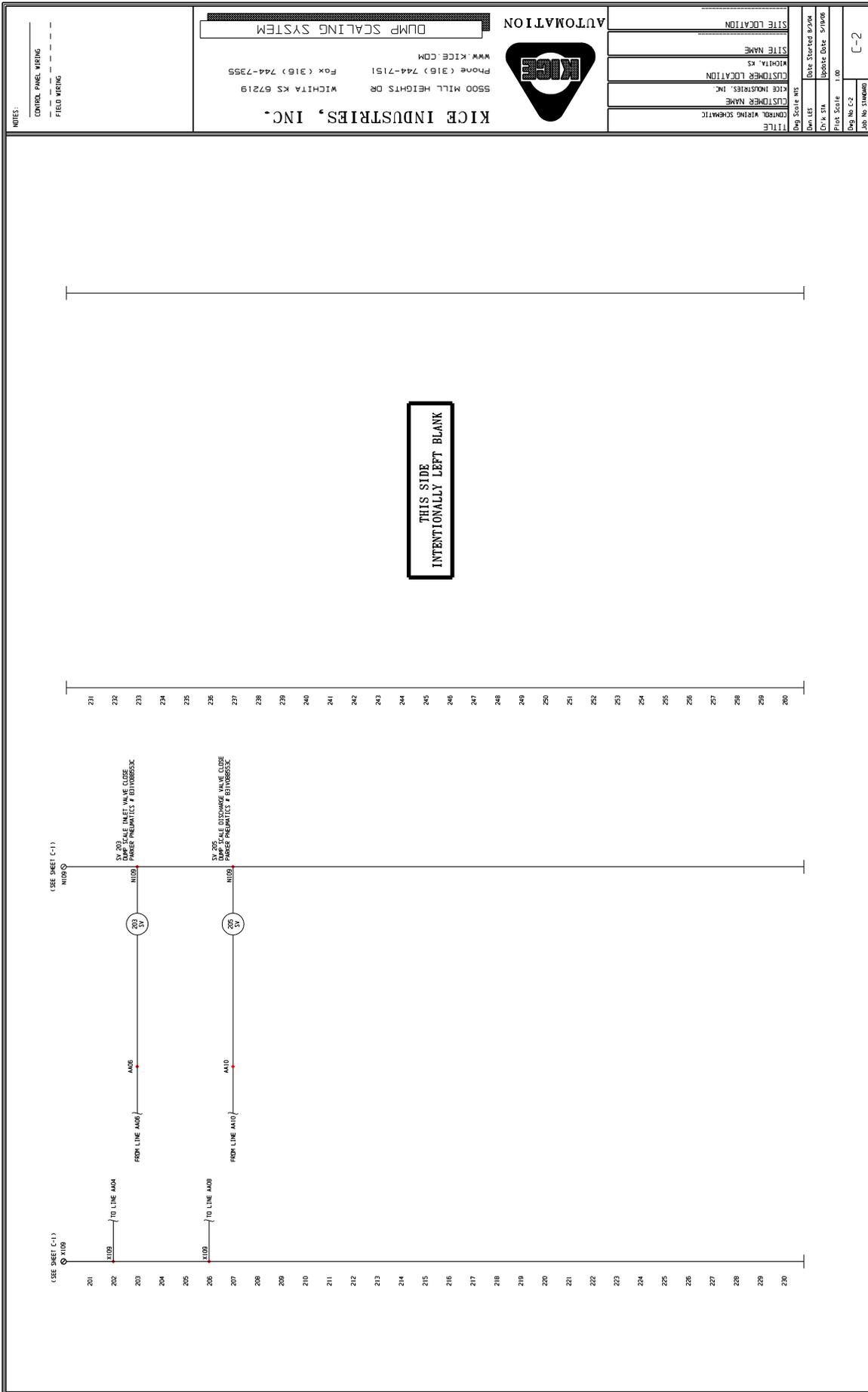
KICE AUTOMATION

DUMP SCALING SYSTEM

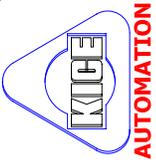
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CUSTOMER NAME	KICE INDUSTRIES, INC.
CUSTOMER LOCATION	WICHITA, KS
SITE NAME	
SITE LOCATION	

Rev	Scale	Job No.	Standard
001	1:00	C-1	

REVISED - 01/23/07



REVISED - 01/23/07

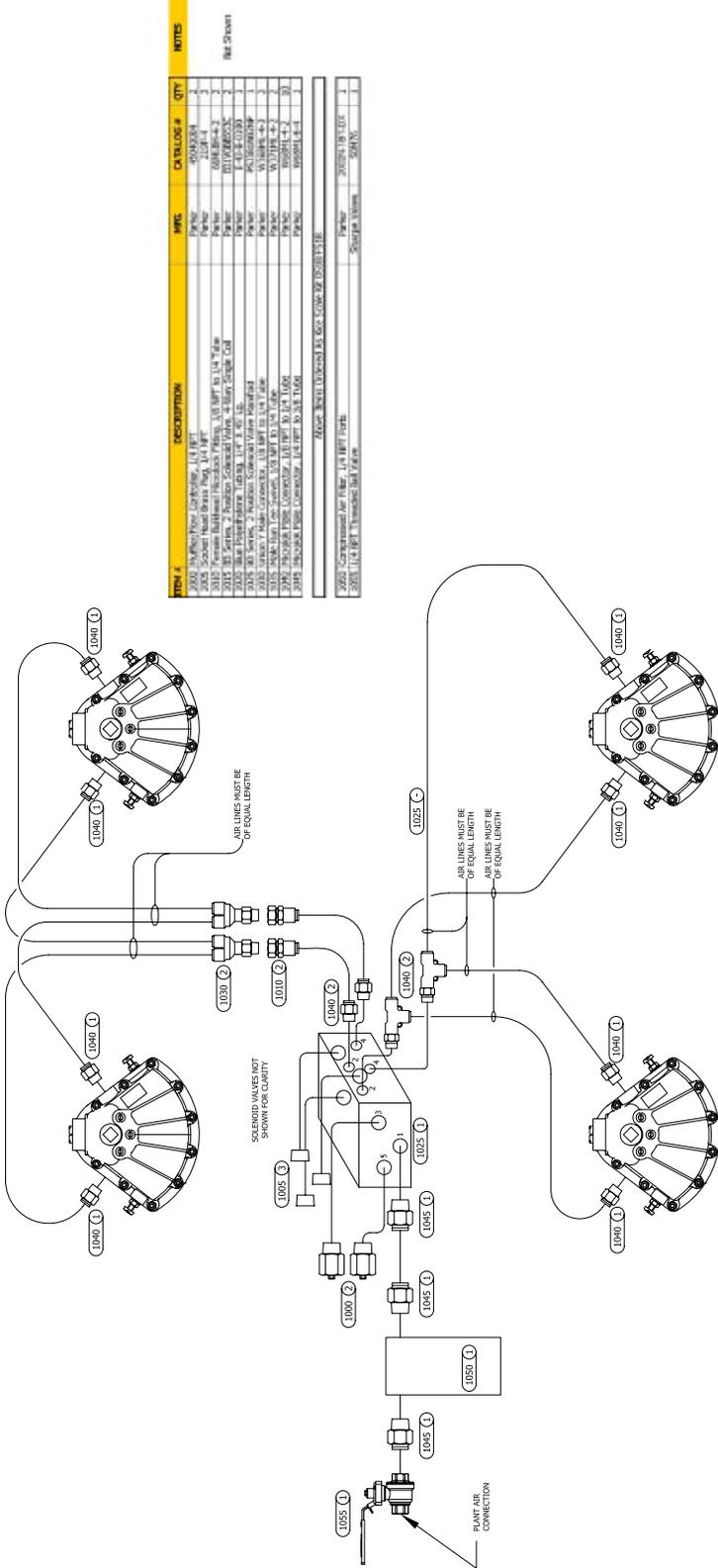


NOTES:

REV.	DATE	BY

JOB TITLE:
KICE SCALE STANDARD
 CUSTOMER NAME & LOCATION:
KICE INDUSTRIES, INC. WICHITA, KS
 SITE NAME & LOCATION:
KICE INDUSTRIES, INC. WICHITA, KS

SCALE: NOT TO SCALE
 DRAWN BY: LES
 DATE: 8/19/04
 APPROVED BY: LES
 PLOT SCALE: 1.00
 JOB NO.: STANDARDS
 DWG TITLE: PLUMBING DIAGRAM FOR DS18/FS18 SCALE
 DWG NO: F-1



ITEM #	DESCRIPTION	MFG.	CATALOG #	QTY	NOTES
2000	1/4" NPT Tee				
2001	1/4" NPT Tee				
2002	1/4" NPT Tee				
2003	1/4" NPT Tee				
2004	1/4" NPT Tee				
2005	1/4" NPT Tee				
2006	1/4" NPT Tee				
2007	1/4" NPT Tee				
2008	1/4" NPT Tee				
2009	1/4" NPT Tee				
2010	1/4" NPT Tee				
2011	1/4" NPT Tee				
2012	1/4" NPT Tee				
2013	1/4" NPT Tee				
2014	1/4" NPT Tee				
2015	1/4" NPT Tee				
2016	1/4" NPT Tee				
2017	1/4" NPT Tee				
2018	1/4" NPT Tee				
2019	1/4" NPT Tee				
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2026	1/4" NPT Tee				
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2097	1/4" NPT Tee				
2098	1/4" NPT Tee				
2099	1/4" NPT Tee				
2100	1/4" NPT Tee				

Kice Industries, Inc.
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Wichita, KS 67219



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SCL-Manual1